4.12 NOISE AND VIBRATION

4.12.1 INTRODUCTION

This section describes existing noise sources within the Hyatt Place project (project) vicinity and evaluates whether construction and operational noise generated by the project would exceed applicable noise standards, and proposes mitigation measures to reduce potentially significant impacts associated with noise impacts. The section also evaluates potential vibration impacts associated with project construction.

Information presented in this section was obtained from:

- Hyatt Half Moon Bay Noise and Vibration Assessment, Illingworth and Rodkin, Inc. Included in this Environmental Impact Report (EIR) as **Appendix G**
- City of Half Moon Bay General Plan Noise Element, 1991

Project consistency with the 2021 Local Coastal Land Use Plan (LCLUP) is analyzed and included below. The LCLUP was updated and adopted by City Council in October 2020 and certified by the California Coastal Commission (CCC) in April 2021. The updated LCLUP comprises the City's reexamined and updated policy approach for carrying out the Coastal Act in a manner that addresses changed conditions since certification of the 1996 LCLUP.

All documents referenced in the draft EIR are available via CD or weblink upon request. The location of the other reference materials is cited at the end of this section. Hard copies of the draft EIR are located at the City of Half Moon Bay, Planning Division, 501 Main St, Half Moon Bay, CA 94019.

Comments were submitted in response to the Notice of Preparation for this EIR, concerning the following comments regarding the project's noise:

- Concern about noise impacts that would interfere with the local character of Half Moon Bay
- How construction and operational noise will be mitigated
- Traffic noise levels

These noise-related comments are be addressed in this section.

4.12.2 NOISE AND VIBRATION CONCEPTS

Noise

Noise is typically defined as unwanted sound and is commonly measured with an instrument called a sound level meter. The sound level meter "captures" sound with a microphone and converts it into a number called a sound level. Sound levels are expressed in units called decibels (dB). To correlate this signal to a level that corresponds to the way humans perceive noise, an A-weighting filter is used which de-emphasizes low-frequency and very high-frequency sound in a manner similar to human hearing. The abbreviation dBA is often used when the A-weighted sound level is reported. **Table 4.12-1** provides definitions for terms and concepts regarding noise measurement and characteristics.

Table 4.12-1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. 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.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.

Term	Definition
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m.to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which 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, 1998.

In environmental noise, a change in the noise level of 3 dBA is considered a "just noticeable" difference. A 5-dBA change is clearly noticeable, but not dramatic. A 10-dBA change is perceived as a halving or doubling in loudness. Refer to **Table 4.12-2** for typical environmental noise types.

Table 4.12-2 Typical Noise Levels in the Environment

Common outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
	60 dBA	
Heavy traffic at 300 feet		

Common outdoor Activities	Noise Level (dBA)	Common Indoor Activities
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night
	20 dBA	
	10 dBA	Broadcast/recording studio
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Noise Descriptors

Because of the time-varying nature of environmental sound, there are many descriptors that are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. There are four descriptors that are commonly used in environmental studies:

- Maximum instantaneous noise level (L_{max}) is used to identify the loudness of a single event such as a car pass-by or airplane flyover.
- Equivalent noise level (L_{eq}) is used to express the average noise level. The L_{eq} can be measured over any length of time, but it is typically reported for periods of 15 minutes to 1 hour.
- Sound level exceeded 90 percent of the time (L_{90}) refers to background noise level (or residual noise level) during the quietest moments. It is usually generated by steady sources such as distant highway traffic.
- CNEL is the average A-weighted noise level during a 24-hour day, obtained after addition of 5 dB in the evening from 7:00 p.m.to 10:00 p.m. and after addition of 10 dB to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.

Traffic Noise

The source level of traffic noise depends on four primary factors, including the volume of the traffic, speed of the traffic, number of trucks, and the road

surface condition. Generally, the loudness of traffic noise is increased by higher traffic volumes, faster speeds, more trucks, and rougher pavement. Noise generally increases 3 dB with each doubling of traffic volume and 6 dB with each doubling of speed. Higher ratios of trucks and rougher pavement do not have as direct of an effect on the noise levels.

Noise Attenuation

Most noise sources can be classified as either point sources (e.g., stationary equipment), or line sources (e.g., a roadway). Sound generated by a point source nominally diminishes (attenuates) at a rate of 6 dBA for each doubling of distance away from the source. For example, a 60 dBA noise level measured at 50 feet from a point source would be 54 dBA at 100 feet from the source and 48 dBA at 200 feet from the source. Noise from a line source normally attenuates at 3 dBA per doubling of distance.

Sound levels can also be attenuated by man-made or natural barriers. Solid walls, berms, or elevation differences typically reduce noise levels by 5 to 10 dBA. Closed windows can reduce interior levels anywhere from 20 to 40 dBA, while buildings with partially open windows can reduce interior noise levels around 15 dBA.

Vibration

Ground vibrations are small oscillatory disturbances to the soil, which are transmitted outwards from their source and reduce in magnitude with increasing distance. The vibration source stimulates the adjacent ground, creating vibration waves that travel through the various soil and rock strata to the foundations of nearby buildings. The vibration then travels from the building foundation throughout the remainder of the building structure. Vibration levels are expressed in inches per second (in/sec) as units called peak particle velocity (PPV), which is defined as the maximum instantaneous peak of the vibration amplitude.

The vibration of floors and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a rumble noise. The rumble is the noise radiated from the motion of the room surfaces which act like a giant loudspeaker. This is called groundborne noise.

Groundborne vibration is harder to perceive by people who are outdoors. Although the motion of the ground may be felt, the motion does not provoke the same adverse human reaction without the effects associated with the shaking of a building. In addition, the rumble noise that usually accompanies the building vibration can typically only occur inside buildings.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving, and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. The two primary concerns with construction-induced vibration are the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a particular structure are subjective and depend on a variety of criteria. The damage criteria presented in **Table 4.12-3** include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings.” Construction-induced vibration that can be detrimental to a building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

Table 4.12-3 Reactions of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Building
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Building
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.

4.12.3 EXISTING CONDITIONS

The project site is located north of the intersection of SR-1 and Main Street/Higgins Canyon Road in the City of Half Moon Bay. The site is currently vacant. An auto dealership adjoins the site to the north, and opposite Main Street to the east is the Coastside Fire Protection District Station No. 40, the Coastal Repertory Theater, and multi-family residences.

The noise environment at the site and in the surrounding areas results primarily from vehicular traffic along SR-1. Local traffic from Main Street, as well as operational noise from the nearby fire station, would also affect the noise environment at the project site. Farming activity just to the south and occasional aircraft associated with Half Moon Bay Airport and San Francisco International Airport contribute to ambient noise levels at the project site.

4.12.4 REGULATORY SETTING

State

2019 California Building Code, Title 24, Part 2

The current version of the California Building Code (CBC) requires interior noise levels attributable to exterior environmental noise sources to be limited to a level not exceeding 45 dBA L_{dn}/CNEL in any habitable room.[1]

[1] This interior limit assumes all exterior windows and doors are closed.

California Code of Regulations

California's Model Community Noise Ordinance (Construction Noise)

The State of California's Model Community Noise Ordinance (Office of Noise Control 1977) contains noise level limits of 75 dBA for mobile construction equipment and 60 dBA for stationary construction equipment at single-family residential areas.

Project Consistency

The noise study conducted for the project used California's Model Community Noise Ordinance limits to assess the construction noise impacts at residences. These standards have not been adopted by Half Moon Bay. Half Moon Bay does not have quantitative noise performance standards for construction activities.

As discussed below in Local regulations, project construction would adhere to the City's Municipal Code noise regulations.

Local

Half Moon Bay Noise Element

The Half Moon Bay Noise Element (adopted September 4, 1990, rev. January 18, 1991) provides policy and guidance on noise for the City. The Key Issued identified for the Noise Element are as follows:

1. Transportation Noise Control- Within the City of Half Moon Bay are a number of transportation related noise sources including major arterials and collector roadways. These sources are the major contributors of noise in Half Moon Bay. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

2. Community Noise Control for Non-Transportation Noise Sources - Residential land uses and areas identified as noise sensitive must be protected from excessive noise from non-transportation sources including commercial and construction activities. These impacts are most effectively controlled through the adoption and application of a City Noise Ordinance.

3. Noise and Land Use Planning Integration - Information relative to the existing and future noise environment within Half Moon Bay should be integrated into future land use planning decisions. The Element presents the noise environment in order that the City may include noise impact considerations in development programs. Noise and land use

compatibility guidelines are presented, as well as noise standards for new developments.

The Noise Element establishes land use compatibility criteria in terms of the Community Noise Equivalent Level (CNEL) to describe noise exposure for noise compatibility planning purposes. For transportation noise sources, the Noise Element establishes an exterior noise level criterion of 60 dB CNEL for outdoor activity areas of residential land uses. Outdoor activity areas generally include backyards of single-family residences, individual patios or decks of multi-family developments and common outdoor recreation areas of multi-family developments. The intent of the exterior noise level requirement is to provide an acceptable noise environment for outdoor activities and recreation.

The Noise Element also requires that interior noise levels attributable to exterior sources not exceed 45 dB CNEL. This standard is consistent with interior noise level criteria applied by the State of California and the U.S. Department of Housing and Urban Development (HUD). The intent of the interior noise level standard is to provide an acceptable noise environment for indoor communication and sleep.

In addition, the Noise Element includes a discussion of Noise/Land Use Compatibility in Section 2.4.2. According to this section, specifically Exhibit 13 – Interior and Exterior Noise Standards, hotel, motel and transient lodging are required to only meet an interior noise standard of 45 CNEL.

Half Moon Bay Municipal Code

Section 14.40.010 Hours Designated

The Half Moon Bay noise ordinance provides an exemption for noise sources, as follows:

- 7:00 a.m. to 6:00 p.m. on weekdays
- 8:00 a.m. to 6:00 p.m. on Saturdays
- 10:00 a.m. to 6:00 p.m. Sundays and holidays

Project Consistency

The project would comply with the City's noise policies and ordinance. Chapter 9.23 and 14.40 of the City's Municipal Code qualitatively limits noise generation within the City. The Municipal Code includes the following regulations, which are listed by title only and a brief summary (for the full text of the code regulations, see **Appendix G**):

9.23.010 Curfew--Offensive noise.

Summary: No Offensive noise permitted between 10 p.m. and 8 a.m. unless it falls within the noted exceptions.

9.23.020 Unreasonably disturbing noises.

Summary: General disturbing noise limitation, authority and definitions.

9.23.025 Public health and safety.

Summary: Allowance for large truck noise associated with trash, recycling and other City maintenance, or otherwise permitted activities.

14.40.020 Modification.

Summary: Authorizes the Director of Public Works and the City Engineer to modify hours of construction for due cause.

4.12.5 IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

The following thresholds of significance for noise and vibration were derived from the *Environmental Checklist in the California Environmental Quality Act (CEQA) Guidelines Appendix G*. These thresholds of significance have been amended or supplemented, as appropriate, to address lead agency requirements and the full range of potential impacts related to this project.

An impact of the project would be considered significant and would require mitigation if it would meet one of the following thresholds of significance:

Noise a) 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;

Noise b) Generation of excessive groundborne vibration or groundborne noise levels;

Noise c) 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.

Methodology

Noise Measurements

A noise monitoring survey was conducted at the project site between Wednesday, May 22, 2019 and Friday, May 24, 2019.[2] The survey included two long-term (LT-1 and LT-2, 46-hour duration) noise measurements and two short-term (ST-1 and ST-2, 10 minute duration) noise measurements. Three of the measurement locations were on the project site and a fourth location was east of the project site along Main Street. Further details of the noise monitoring and assessment methodology can be found in **Appendix G**.

Long-term noise measurement LT-1 was made along the northern boundary of the site, approximately 225 feet east of the centerline of SR-1 (or approximately 190 feet from the westerly property line). Hourly average noise levels at LT-1 typically ranged from 57 to 65 dBA L_{eq} during daytime hours (between 7:00 a.m. and 10:00 p.m.). Measured noise levels were sporadically high throughout the measurement period. During nighttime hours (between 10:00 p.m. and 7:00 a.m.), hourly average noise levels ranged from 45 to 59 dBA L_{eq}. The average community noise equivalent level during the monitoring period was 63 dBA CNEL.

LT-2 was made from a tree adjoining Main Street, approximately 20 feet from the centerline of the roadway. Hourly average noise levels at LT-2 ranged from 60 to 65 dBA L_{eq} during daytime hours and from 49 to 64 dBA L_{eq} during nighttime hours. Measured noise levels were generally higher between noon and 7:00 p.m. The average community noise equivalent level during the monitoring period was 65 dBA CNEL.

Short-term noise measurements were made on a weekday between 11:30 a.m. and 12:20 p.m. Each of the short-term measurements were made in 10-minute intervals, and the results of the measurements are summarized in **Table 4.12-4**.

[2] Schools were in session at the time noise surveys were conducted.

Table 4.12-4 Summary of Short-Term Noise Measurements

Noise Measurement Location (Date, Time)	Measures Noise Level, dBA					
	L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	$L_{eq(10\text{-}min)}$
ST-1: Center of project site (5/22/2019, 11:30-11:40)	68	66	64	59	53	60
ST-2: ~30 feet east of the centerline of Main Street (5/22/2019, 12:10-12:20)	73	69	65	57	51	60

Source: Illingworth & Rodkin, 2019.

Short-term noise measurement ST-1 was made near the center of the project site, approximately 160 feet east of the centerline of SR-1 and approximately 220 feet west of the centerline of Main Street. The dominant noise source at ST-1 was traffic on SR-1, with passenger vehicles generating noise levels of 57 to 63 dBA during a 10-minute measurement. Additionally, small aircraft flyovers occurred during this measurement, generating noise levels of 58 to 60 dBA. The 10-minute L_{eq} measured at ST-1 was 60 dBA $L_{eq(10\text{-}min)}$. ST-2 was made in front of the Coastal Repertory Theater, approximately 30 feet east of the centerline of Main Street. The predominant noise source was Main Street traffic. During the 10-minute period, vehicle pass-bys generated noise levels ranging from 60 to 68 dBA, while buses generated noise levels of 70 to 73 dBA. The 10-minute L_{eq} measured at ST-2 was 60 dBA $L_{eq(10\text{-}min)}$.

Groundbourne Vibration

The California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for buildings that are structurally sound and designed to modern engineering standards, which typically consist of buildings constructed since the 1990s. A conservative vibration limit of 0.3 in/sec PPV has been used for buildings that are found to be structurally sound but where structural damage is a major concern (see **Table 4.12-3** above for further explanation). For historical buildings or buildings that are documented to be structurally weakened, a cautious limit of 0.08 in/sec PPV is often used to provide the highest level of protection. No historical buildings or buildings that are documented to be structurally weakened adjoin the project site.

Noise-Sensitive Receptors

Noise-sensitive receptors within the project vicinity are the nearby residences located east of the project site across Main Street and north of Seymour Street. There is also the nearby theater located to the east of the project site, opposite Main Street.

Discussion of Impacts

Noise a) 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?

Impact NOI-1. The project would exceed thresholds for ambient noise levels as a result of construction and operation.

Construction

Less than Significant with Mitigation. Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The highest maximum noise levels generated by project construction would typically range from about 80 to 90 dBA L_{max} at a distance of 50 feet from the noise source. The temporary construction noise impact would be considered significant if project construction activities exceeded 60 dBA L_{eq} at nearby residences or exceeded 70 dBA L_{eq} at nearby commercial land uses and exceeded the ambient noise environment by 5 dBA L_{eq} or more for a period longer than one year. **Table 4.12-5** summarizes typical construction noise levels at 50 feet from the noise source.

Table 4.12-5 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Building Construction	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

Notes: **I** – All pertinent equipment present at site
II – Minimum required equipment present at site

Source: : U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Project construction is projected to last for approximately 566 working days. The "worst-case" construction noise level is considered to be the hourly average noise levels for each phase of construction, assuming every piece of equipment would operate simultaneously. For each phase, the worst-case hourly average noise level, as estimated at the property line of each surrounding land use, is also shown in **Table 4.12-6**.

The results in **Table 4.12-6** show that hourly average noise levels during construction would temporarily exceed 60 dBA L_{eq} at residential land uses and 70 dBA L_{eq} at commercial land uses and would exceed ambient noise levels by 5 dBA L_{eq} or more. Since construction is expected to last for a period of more than one year, this would be considered a significant impact. **Mitigation Measure NOI-1a** would be implemented to reduce noise levels to a less-than-significant level.

Table 4.12-6 Estimated Construction Noise Levels at the Noise-Sensitive Receptors

Phase of Construction	Time Duration	Construction Equipment (Quantity)	Calculated Hourly Average Noise Levels, L_{eq} (dBA)				
			Residences			Commercial	
			East (185 ft)	North (335 ft)	North West (665 ft)	Dealership (120 ft)	Theater (115 ft)
Demolition	1 day	Tractor/Loader/Backhoe (1)	69 dBA L_{eq}	64 dBA L_{eq}	58 dBA L_{eq}	72 dBA L_{eq}	73 dBA L_{eq}
Site Preparation	5 days	Rubber-Tired Dozer (3) Tractor/Loader/Backhoe (4)	76 dBA L_{eq}	71 dBA L_{eq}	65 dBA L_{eq}	80dBA L_{eq}	80 dBA L_{eq}
Grading/ Excavation	10 days	Excavator (1) Grader (1) Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (3)	76 dBA L_{eq}	71 dBA L_{eq}	65 dBA L_{eq}	80 dBA L_{eq}	80 dBA L_{eq}
Trenching	20 days	Tractor/Loader/Backhoe (1) Excavator (1)	70 dBA L_{eq}	65 dBA L_{eq}	59 dBA L_{eq}	74 dBA L_{eq}	75 dBA L_{eq}
Building Exterior	335 days	Crane (1) Forklift (3) Generator Set (1) Tractor/Loader/Backhoe (3) Welder (1)	75 dBA L_{eq}	70 dBA L_{eq}	64 dBA L_{eq}	79 dBA L_{eq}	79 dBA L_{eq}
Building Interior/ Architectural Coating	175 days	Air Compressor (1)	62-75[a] dBA L_{eq}	57-70 dBA L_{eq}	51-64dBA L_{eq}	66-79 dBA L_{eq}	67-79 dBA L_{eq}
Paving	20 days	Cement and Mortar Mixer (2) Paver (1) Paving Equipment (2) Roller (2) Tractor/Loader/Backhoe (1)	76 dBA L_{eq}	71 dBA L_{eq}	65 dBA L_{eq}	80 dBA L_{eq}	81 dBA L_{eq}

[a] Range in temporary noise levels for the building interior/architectural coating phase represents the equipment for this phase only, as well as the time period when this phase would operate simultaneously with the building exterior phase.

Source: Illingworth & Rodikin, 2019.

Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction material, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life.

Temporary construction activities would be conducted in accordance with the provisions of the Half Moon Bay's Municipal Code, which limits temporary construction work to between 7:00 a.m. and 6:00 p.m. on weekdays, between 8:00 a.m. and 6:00 p.m. on Saturdays, and between 10:00 a.m. and 6:00 p.m. on Sundays and holidays. Additionally, the construction crew shall adhere to the following construction best management practices to reduce temporary construction noise levels emanating from the site and minimize disruption and annoyance at existing noise-sensitive receptors in the project vicinity. The project would also incorporate the construction best management practices in **Mitigation Measure NOI-1a** to minimize disruption and annoyance during temporary construction activities**.**

Mitigation Measure NOI-1a: Construction Best Management Practices

Prior to issuance of a grading permit, the applicant shall develop a construction noise control plan meeting the approval of the City Manager or his/her designee and/or third-party peer review, including, but not limited to, the performance standards listed below. The applicant shall employ an acoustical consultant pre-approved by the City Manager or designee, to ensure the efficacy of the noise control plan. The acoustical consultant shall conduct onsite checks during construction to ensure that nuisance noise is being reduced in accordance with the noise control plan. Monthly reports shall be submitted to City Manager's office for the duration of construction or until such time that the City Manager or designee deems it no longer necessary.

- Installation of temporary sound barriers/blankets along the northern and western project boundary line adjacent to the single-family receivers. The temporary barriers/blankets shall have a minimum 5 dBA reduction. The temporary barriers/blankets will be of sufficient height to extend from the top of the temporary construction fence and drape on the ground or be sealed at the ground. The temporary barriers/blankets will have grommets along the top edge with exterior grade hooks, and loop fasteners along

the vertical edges with overlapping seams, with a minimum overlap of 2 inches.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Unnecessary idling of internal combustion engines should be strictly prohibited.
- Locate stationary noise-generating equipment, such as air compressors or portable power generators, as far as possible from sensitive receptors as feasible. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) shall be used to reduce noise levels at the adjacent sensitive receptors. Any enclosure openings or venting shall face away from sensitive receptors.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- Locate material stockpiles, as well as maintenance/equipment staging and parking areas, as far as feasible from residential receptors.
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.
- As part of the Noise Control Plan the contractor shall prepare a detailed construction schedule for major noise-generating construction activities. The Plan shall identify a procedure for coordination with adjacent residential land uses so that construction activities can be scheduled to minimize noise disturbance, and will be reviewed by the City.
- Designate a "disturbance coordinator" who would be responsible for responding to any complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., bad muffler, etc.) and will require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include in it the notice sent to neighbors regarding the construction schedule.

Significance after Mitigation. The implementation of **Mitigation Measure NOI-1a** described above would reduce construction noise levels emanating from the project site, minimizing disruption and annoyance. With the implementation of these controls, as well as the Municipal Code limits on allowable construction hours, and considering that construction is temporary, the impact would be reduced to a less-than-significant level.

Operation

Less than Significant with Mitigation. Project operation would also produce permanent noise through increased traffic levels and by use of mechanical equipment on site.

Traffic Noise

A significant impact would occur if the permanent noise level increase due to project-generated traffic was 3 dBA CNEL or greater for future noise levels exceeding 60 dBA CNEL, or was 5 dBA CNEL or greater for future noise levels at or below 60 dBA CNEL. The ambient measurements made for the proposed project indicate that existing noise levels at the noise-sensitive receptors located in the project vicinity exceed 60 dBA CNEL; therefore, a significant impact would occur if project-generated traffic increased levels by 3 dBA CNEL or more (equivalent to doubling the existing traffic volumes along a roadway).

See **Section 4.15, Transportation and Traffic** for the detailed discussion of traffic impacts and **Appendix H** for the transportation technical analysis. The noise level increase due to the proposed project was calculated by comparing the peak hour traffic volumes for the existing plus project scenario to the existing volumes for each intersection included in the report. During typical weekdays, a 2 dBA CNEL noise level increase would occur along Seymour Street between SR-1 and Main Street. Along every other roadway segment in the project vicinity, a noise level increase of 1 dBA CNEL or less was calculated during typical weekdays. For typical weekdays, this would be a less-than-significant impact.

The traffic study also included a peak hour weekend scenario, which would result in a noise level increase of 3 dBA CNEL along Seymour Street between SR-1 and Main Street, while all other roadway segments would result in a noise level increase of 1 dBA CNEL or less.

While there are two residences located along Seymour Street between SR-1 and Main Street that would potentially be impacted, the peak hour traffic volumes along this roadway segment are insignificant in their sound level compared to those of the intersecting roadways. The existing noise environment located at these residences would be dominated by SR-1 and

Main Street. Since the traffic volumes along these roadways would not double with the inclusion of the proposed project, the future noise environment at the residences would not increase by 3 dBA CNEL under existing plus project conditions.

Therefore, the project operation would not result in a permanent noise increase at existing noise-sensitive receptors in the project vicinity due to increase traffic levels. This impact would be less than significant.

Mechanical Equipment Noise

Half Moon Bay's General Plan and Municipal Code do not include operational noise thresholds for mechanical equipment. However, Sections 9.23.010 and 9.23.020 discuss "offensive noise" and unreasonably disturbing noises, which would annoy people or would cause physical discomfort. Mechanical equipment noise generated at the project site would be considered a less-than-significant impact if noise levels fell below or within the range of the ambient noise environment.

The proposed hotel would include mechanical equipment, such as heating, ventilation, and air conditioning systems. Typically, mechanical equipment at hotel buildings would be located within equipment rooms on the interior of the buildings, on the ground level surrounding the buildings, or on the rooftops. Because detailed plans showing floorplans or roof layouts were not available at the time of writing this EIR, worst-case conditions were assumed, which would be ground floor along the nearest building façade facing the surrounding residential land uses.

Under worst-case conditions, mechanical equipment (such as interior climate control units) that would operate on a daily basis would not be expected to exceed 40 dBA L_{eq} at the surrounding noise-sensitive land uses. Therefore, mechanical equipment noise would not be expected to increase the ambient noise environment at the noise-sensitive receptors surrounding the site. This would be a less-than-significant impact.

In addition to HVAC units, the proposed hotel would also include an emergency generator, which would be 300 kW in capacity. The generator would provide emergency electrical services for elevators, lighting, and kitchen refrigerators. With an acoustic enclosure, the proposed generator would produce noise levels of 75.4 dB at a distance of 23 feet under full-load conditions.

Typically, emergency generators are tested monthly for about 1 to 2 hours during the daytime. From each of the proposed generator positions, noise levels at the property line of the nearest residences would range from 56 dBA to 67 dBA. Hourly average noise levels, as represented by LT-2, typically

range from 60 to 75 dBA L_{eq} during daytime hours. Therefore, testing the emergency generator at any of the proposed on-site locations would not generate noise levels exceeding ambient conditions at the nearest noise-sensitive receptor. All other noise-sensitive receptors would be farther from the project site and would be exposed to generator noise levels lower than the residences to the east. Mechanical equipment noise impacts during project operation would be less than significant.

Truck Loading and Unloading

Truck deliveries for the proposed hotel would have the potential to generate noise. The loading zones would be located south of the main entrance and also on-site by front entrance doors for the hotel. Delivery access would likely be accessible from a driveway off Main Street, which is south of the main entrance. For a hotel of this size, it is assumed that one or two truck deliveries would occur per week, and typical deliveries would take approximately 15 minutes or less. The project would incorporate construction delivery times in **Mitigation Measure NOI-1b** to minimize disruption and annoyance during nighttime deliveries.

Mitigation Measure NOI-1b: Nighttime Truck Delivery

To minimize the noise impact associated with truck deliveries, it is assumed that deliveries shall only occur between 7:00 a.m. and 10:00 p.m. Based on the size of the proposed land use, smaller delivery and vendors would be expected for the proposed project. These trucks typically generate maximum noise levels of 65 to 70 dBA at a distance of 50 feet. The noise levels due to deliveries at the nearest sensitive receptors would range from 60 to 65 dBA. Compared to the ambient noise environment, which has maximum instantaneous noise levels ranging from 67 to 107 dBA L_{max} and hourly average noise levels ranging from 60 to 75 dBA L_{eq}, truck deliveries would not be expected to increase the existing noise environment, assuming daytime deliveries only.

Noise due to truck loading and unloading would be a less-than-significant impact with **Mitigation Measure NOI-1b**. Therefore, this impact would be less than significant with mitigation.

Noise b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant. Project construction may generate perceptible vibration when heavy equipment or impact tools (e.g., jackhammers, hoe rams) are used. Construction activities would include site demolition, preparation work, foundation work, and new building framing and finishing.

Project construction would not require pile driving, which can cause excessive vibration. For the purposes of this analysis, groundborne vibration levels exceeding the conservative 0.3 in/sec PPV limit at the existing nearby sensitive buildings would have the potential to result in a significant vibration impact.

Table 4.12-7 presents typical vibration levels that could be expected from construction equipment at a distance of 25-feet. Construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Because landscaping would not be expected to require heavy equipment, all distances were measured from the edge of the parking lot on the project site to the surrounding buildings.

The nearest residences and the theater, which are both east of Main Street, would be 85 to 95 feet from the nearest heavy construction activity. These sensitive structures would be exposed to vibration levels at or below 0.06 in/sec PPV. The fire station, which would not be considered a sensitive land use, would be more than 165 feet from the nearest heavy construction activity and would be exposed to vibration levels at or below 0.03 in/sec PPV.

Table 4.12-7 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft (in./sec)	Vibration Levels at Nearest Surrounding Building Façades (in./sec PPV)				
			Sensitive Uses		Non-Sensitive Uses		
			East Residence (85 ft)	East Theater (95 ft)	North Mechanic Building (15 ft)	North Main Dealership Building (85 ft)	East Fire Station (165 ft)
Clam shovel drop		0.202	0.053	0.047	**0.354**	0.053	0.025
Hydromill (slurry wall)	In soil	0.014	0.002	0.002	0.014	0.001	0.001
	In rock	0.030	0.004	0.004	0.030	0.003	0.002
Vibratory Roller		0.210	0.055	0.048	**0.368**	0.055	0.026
Hoe Ram		0.089	0.023	0.020	0.156	0.023	0.011
Large bulldozer		0.089	0.023	0.020	0.156	0.023	0.011
Caisson drilling		0.089	0.023	0.020	0.156	0.023	0.011

Equipment	PPV at 25 ft (in./sec)	Vibration Levels at Nearest Surrounding Building Façades (in./sec PPV)				
		Sensitive Uses		Non-Sensitive Uses		
		East Residence (85 ft)	East Theater (95 ft)	North Mechanic Building (15 ft)	North Main Dealership Building (85 ft)	East Fire Station (165 ft)
Loaded trucks	0.076	0.020	0.018	0.133	0.020	0.010
Jackhammer	0.035	0.009	0.008	0.061	0.009	0.004
Small bulldozer	0.003	0.001	0.001	0.005	0.001	0.0004

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006 and modified by Illingworth & Rodkin, Inc., June 2019.

Note: **Bold** indicates an exceedance of the 0.3 PPV standard.

Construction activity for the proposed project is not expected to result in cosmetic damage to the residences and theater. While the main dealership building would not be exposed to vibration levels exceeding 0.3 in/sec PPV, the mechanic shop located along the shared northern boundary of the project site would potentially be exposed to vibration levels in excess of the 0.3 in/sec PPV standard. However, this type of building is not considered a sensitive use. Therefore, these groundbourne vibration levels would not be a significant impact.

There are no activities expected during project operation that would be expected to result in significant groundborne noise or groundborne vibration levels. There would be no operational impact with respect to groundborne noise or vibration.

Noise c) Would the project expose people residing or working in the project area to excessive noise levels 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?

Less than Significant. Half Moon Bay Airport is a public general aviation airport located approximately 4.9 miles northwest of the project site in unincorporated San Mateo County. San Francisco International Airport is a public-use airport located more than 10 miles north of the project site. Because of the distance from these airports, the project site lies outside the 65 dBA CNEL noise contour for both airports. Although aircraft-related noise would be audible at the project site, noise from aircraft would not substantially increase ambient noise levels. Exterior and interior noise levels resulting from

aircraft would be compatible with the proposed project. This impact would be less than significant.

4.12.6 CUMULATIVE IMPACTS

See **Chapter 4.0, Setting, Impacts, and Mitigation Measures**, for the full list of cumulative projects within Half Moon Bay.

A significant impact would occur if the cumulative traffic noise level increase was 3 dBA CNEL or greater for future levels exceeding 60 dBA CNEL. A significant impact would also occur if the cumulative traffic noise level increase was 5 dBA CNEL or greater for future levels at or below 60 dBA CNEL and if project construction or operation would make a "cumulatively considerable" contribution to the overall traffic noise increase. A "cumulatively considerable" contribution would be defined as an increase of 1 dBA CNEL or more attributable solely to the proposed project.

Cumulative traffic noise level increases were calculated by comparing the cumulative (no project) traffic volumes and the cumulative plus project volumes to existing traffic volumes, as described in **Appendix H**. A noise level increase of 2 dBA DNL or less was calculated along each of the roadway segments included in the traffic study, except along Seymour Street between SR-1 and Main Street where a 4 dBA CNEL increase was calculated under the cumulative plus project traffic scenario. Along this segment, a noise level increase of 1 dBA CNEL was calculated under the cumulative (no project) scenario. While this would be considered a "cumulative considerable" contribution, the existing traffic volumes along this segment are significantly lower than the volumes along the surrounding roadways (SR-1 and Main Street), therefore implementation of the project would not cause the noise levels to exceed the applicable significance level. Therefore, as discussed in threshold **Noise (b)**, even a doubling of the traffic along this roadway segment would not result in a measurable increase in noise levels because the noise environment is dominated by the other intersecting roadways. Therefore, the project in conjunction with past, present, and foreseeable projects, would not result in a cumulative impact.

4.12.7 REFERENCES

City of Half Moon Bay General Plan Noise Element, 1991

Illingworth and Rodkin, 2019. Hyatt Half Moon Bay Noise and Vibration Assessment. July 2019.

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