
Marriot AC/Residence Inn Hotel

NOISE & VIBRATION IMPACT ANALYSIS CITY OF RIVERSIDE

PREPARED BY:

Bill Lawson, PE, INCE
blawson@urbanxroads.com
(949) 336-5979

Patrick Mara,
pmara@urbanxroads.com

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13563-07 Noise Study

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
NRHP	National Register of Historic Places
PPV	Peak Particle Velocity
Project	Marriot AC/Residence Inn Hotel
RMS	Root-mean-square
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise and vibration exposure for the proposed Marriot AC/Residence Inn Hotel development ("Project"). The proposed Marriot AC/Residence Inn Hotel site is located south of Mission Inn Avenue between Lemon Street and Lime Street in the City of Riverside, as shown on Exhibit 1-A. The project site is located in the City of Riverside Historic District with several nearby historic structures.

The proposed Project is to consist of an 8-story dual branded hotel with 226-rooms. The proposed project site plan is shown on Exhibit 1-B. This study has been prepared to assess the potential Project-related construction noise and vibration impacts consistent with applicable City of Riverside noise standards and significance criteria.

CONSTRUCTION NOISE ANALYSIS

To control noise impacts associated with the construction of the proposed Project, the City of Riverside has established limits to the hours of operation. Section 7.35.020 (G) of the General Noise Regulations indicates that *noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.* Therefore, Project construction noise levels are considered exempt from municipal regulation if activities occur within the hours specified Section 7.35.020 (G); provided a permit has been obtained from the City as required.

However, neither the City of Riverside General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts. Construction activities are expected to create high-level noise conditions at receivers surrounding the Project site. Using sample reference noise levels to represent the planned construction activities of Marriot AC/Residence Inn Hotel site, this analysis estimates that the Project-related construction noise levels are expected to range from 61.1 to 71.7 dBA L_{eq} at the nearest receiver locations. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} exterior noise level threshold identified by the FTA at all receiver locations. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

CONSTRUCTION VIBRATION ANALYSIS

Construction activities has the potential to result in varying degrees of ground vibration, depending on the specific construction activities and equipment used. To minimize the potential construction vibration levels, non-impact pile driving equipment (e.g., caisson drilling or other non-impact methods) shall be required to reduce the pile driving equipment noise levels at the nearest receiver locations. At distances ranging from 30 to 215 feet from Project construction

activity, the typical Project construction vibration levels will satisfy the historic building damage thresholds at all the nearest receiver locations. Therefore, the vibration impacts due to the Project construction activities are considered *less than significant*.

Further, vibration levels at the nearest receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Marriot AC/Residence Inn Hotel (“Project”). This noise study describes the proposed Project, provides information regarding noise fundamentals, outlines the local regulatory setting, provides the study methods and procedures for noise and vibration analysis. In addition, this study includes an analysis of the potential Project-related construction noise and vibration impacts.

1.1 SITE LOCATION

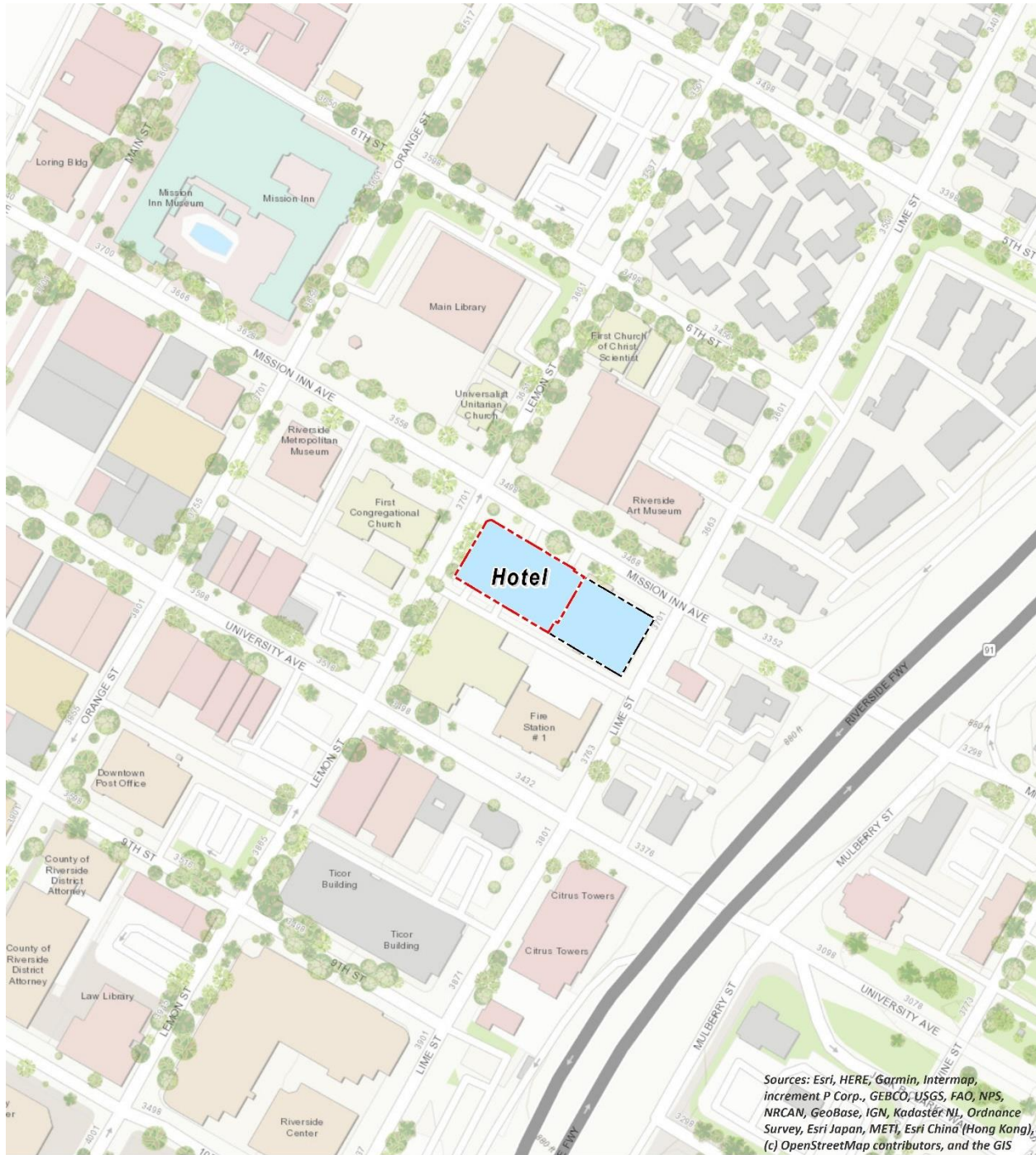
The proposed Marriot AC/Residence Inn Hotel site is located south of Mission Inn Avenue between Lemon Street and Lime Street in the City of Riverside, as shown on Exhibit 1-A. The project site is located in the Mission Inn Historic District with several nearest historic structures. According to the Downtown Riverside Historic Walking Guide (1), the nearest Mission Inn Historic District structures include:

- Riverside Municipal Auditorium building at 3485 Mission Inn Avenue, is located approximately 121 feet northeast of the Project site. This historic building was dedicated as a memorial to Riverside’s World War I veterans, the Mission Revival style building was designed by Arthur Benton and G. Stanley Wilson and was completed in 1929.
- Life Arts Center at 3485 University Avenue is located approximately 30 feet southwest of the Project site. Built in 1909, this historic building was designed by architect Arthur Benton to evoke an early Italian Renaissance Palazzo. The Young Men’s Christian Association occupied the building until 1968. It is currently used as studio space by various artists.
- First Congregational Church at 3504 Mission Inn Avenue is located approximately 65 feet west of the Project site. This historic building was completed in 1913 as the third home of the city’s oldest church congregation, the building was designed by architect Myron Hunt in Spanish Renaissance Revival styled with a Churrigueresque tower and details.
- Universalist Unitarian Church of Riverside at 3657 Lemon Street is located approximately 153 feet northwest of the Project site. This historic building was built in 1891, the Arizona sandstone structure was designed by architect A. C. Willard in the Gothic Revival style of a medieval English parish church.

1.2 PROJECT DESCRIPTION

The proposed Project is to consist of an 8-story dual branded hotel with 226-rooms. The proposed project site plan is shown on Exhibit 1-B. The Project will include a bar, buffet, outdoor swimming pool, and underground parking areas. In addition, the Project will include four sub-levels for underground parking. Construction of the underground parking structure and hotel building will require excavations on the order 40 feet below existing ground surface. Shoring using (non-impact pile driving equipment e.g., caisson drilling or other non-impact methods) piles will be required to support excavation sidewalls and adjacent properties. (2)

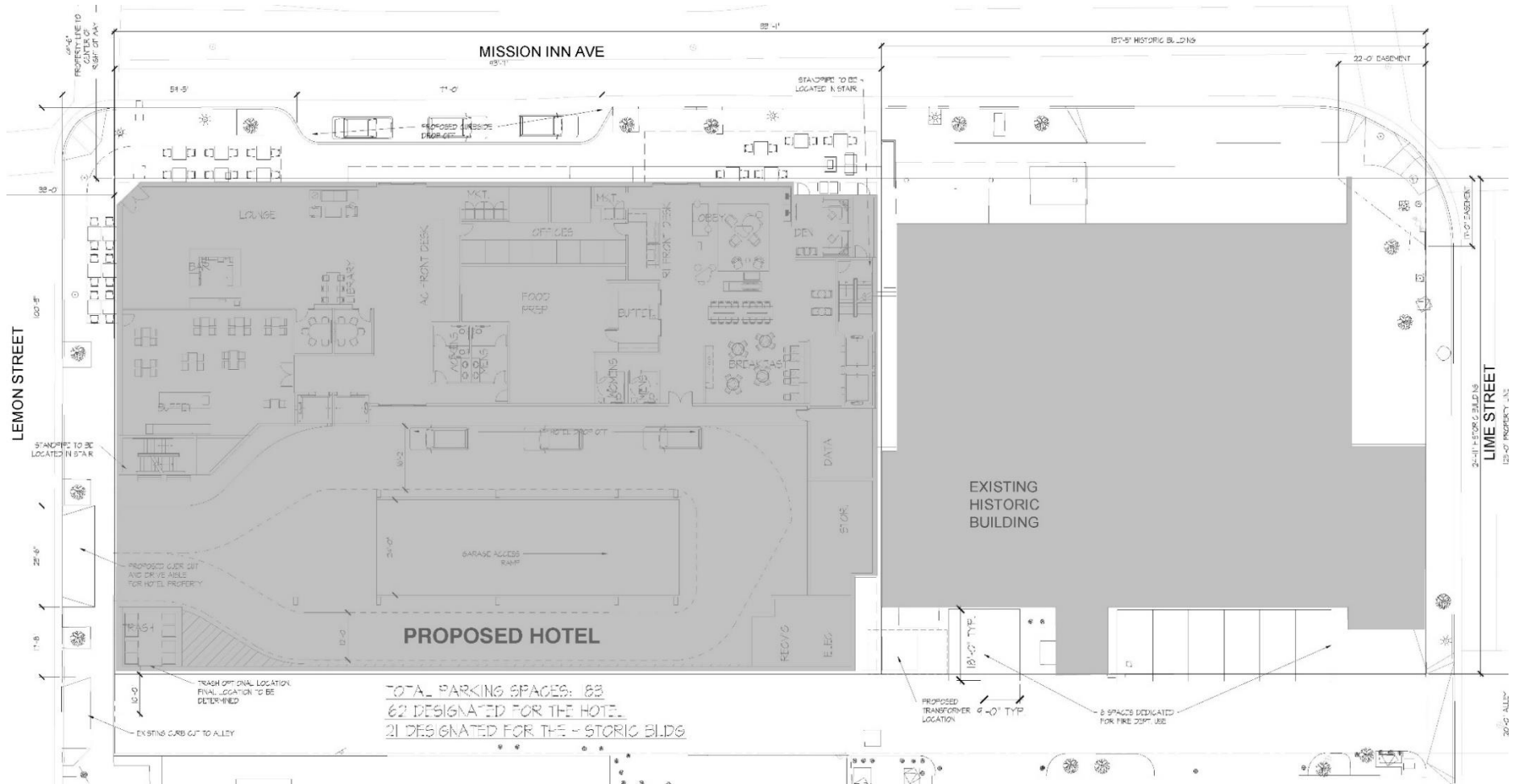
EXHIBIT 1-A: LOCATION MAP



LEGEND:

 Hotel Project Limits

EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	SPEECH INTERFERENCE
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (3) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (4) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the “average” noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Day-Night Average Noise Level (LDN) and the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The LDN and CNEL are weighted averages of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The LDN time of day corrections include the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. The CNEL time of day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., in addition to the corrections for the LDN. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. LDN and CNEL do not represent the actual sound level heard at any time, but rather represent the total sound exposure. The City of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (3)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation

associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (5)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (3)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (5)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

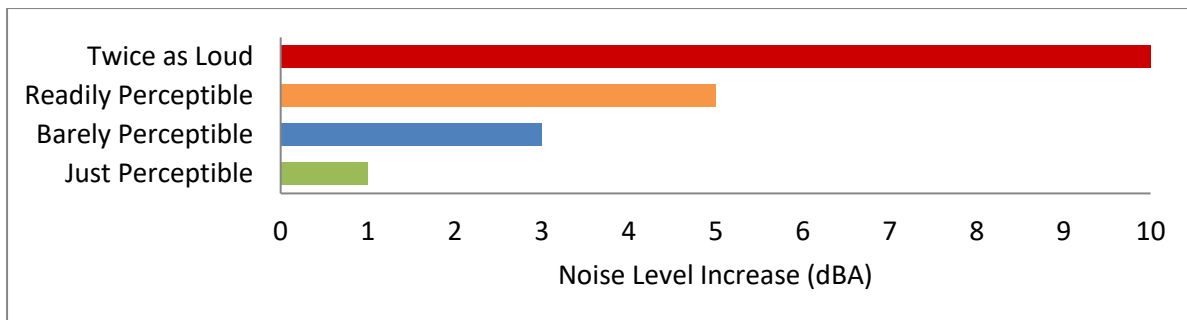
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (7) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (7) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



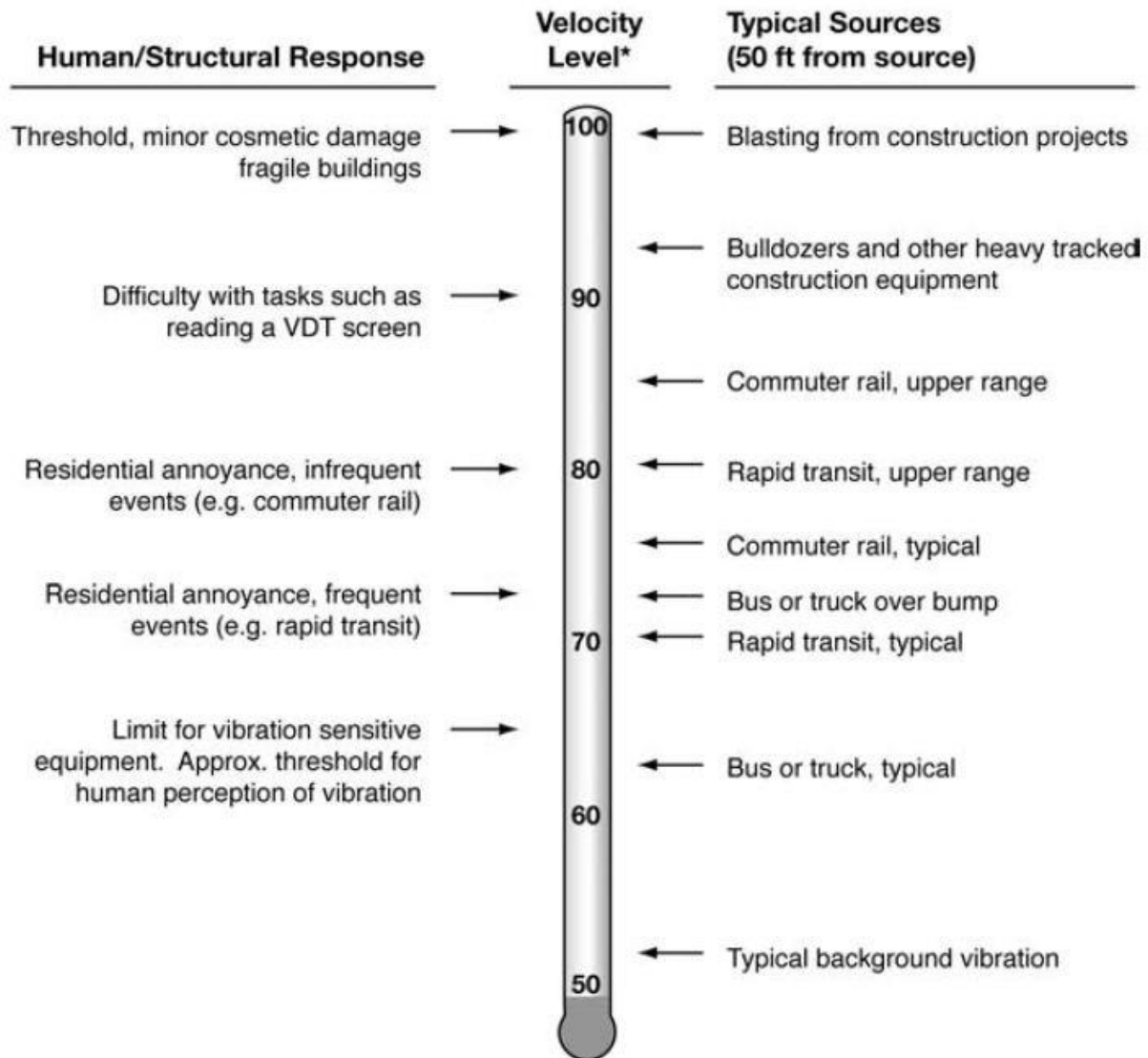
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



* RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 CITY OF RIVERSIDE CONSTRUCTION NOISE STANDARDS

Pursuant to Municipal Code Section 7.35.020 *Exemptions* subsection (G), "Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday." Therefore, construction noise associated with the proposed Project is considered exempt from the City's Noise Ordinance. Consistent with the standards of the City Noise Ordinance, if Project construction activities occur within the permitted hours of Municipal Code, Section 7.35.020(G), the construction noise levels will be considered exempt from the Municipal Code noise level standards, and therefore, the construction of the Project will result in a *less than significant* noise impact.

3.2 CONSTRUCTION NOISE STANDARDS

To evaluate whether the Project will generate potentially significant construction noise levels a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (8 p. 179)

3.4 CONSTRUCTION VIBRATION CRITERIA

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the operation and construction of the Marriot AC/Residence Inn Hotel, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Riverside does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (9 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations.

While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration. The construction vibration damage potential criteria include consideration of the building conditions. (4 p. 182) Table 3-1 describes the maximum acceptable transient and continuous vibration building damage potential levels by structure type and condition.

TABLE 3-1: BUILDING DAMAGE VIBRATION CRITERIA

Structure and Condition	Maximum Transient Vibration Levels PPV (in/sec)	Maximum Continuous Vibration Levels PPV (in/sec)
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.

According to the NCHRP 25-25, an "historic property" is any property that is list in or qualifies for listing the National Register of Historic Places (NRHP). (10) The term "historic structure" can encompass a wide variety of structure types, including free standing monuments, buildings, and existing older infrastructure such as bridges and even underground structures (e.g., brick sewer lines) and archeological sites. The spectrum of historical structural types includes several different construction methods, such as wood frame and unreinforced masonry, which affect a structure's response to vibration and complicates the task of determining its susceptibility to damage. Fragile buildings represent structures and/or finishes that are possibly weakened due to the method of construction (such as unreinforced masonry) and deterioration with age and/or lack of adequate maintenance.

The existing buildings adjacent to the Project site can best be described as “historic” representing a variety of structural types with several different construction methods, such as wood frame and unreinforced masonry with a maximum acceptable continuous vibration threshold of 0.25 PPV (in/sec). However, for the purposes of this analysis, a more conservative maximum acceptable continuous vibration threshold for fragile buildings of 0.10 PPV (in/sec) is used.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (11) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

- 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?
- B. Generation of excessive ground-borne vibration or ground-borne noise levels?
- 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?

While the City of Riverside General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearest public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is not located within two miles of a public airport or within an airport land use plan; nor is the Project within the vicinity of a private airstrip. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant*, and no further noise analysis is conducted in relation to Guideline C.

4.2 SIGNIFICANCE CRITERIA

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Construction Analysis	Receiving Land Use	Condition(s)	Significance Criteria
Noise	Noise Sensitive	Permitted between 7:00 a.m. and 7:00 p.m. on weekdays, 8:00 a.m. to 5:00 p.m. on Saturdays. None on Sundays or a Federal holidays ¹	
		Noise Level Threshold ²	80 dBA Leq
Vibration	Fragile Buildings	Building Damage Threshold ³	0.10 PPV (in/sec)

¹ City of Riverside Municipal Code Section 7.35.020(E).

² FTA, Transit Noise and Vibration Impact Assessment Manual, Table 7-3, p.179.

³ Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 20, p. 38.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, short-term one-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected during typical weekday conditions by Urban Crossroads, Inc. on July 21st, 2020. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the noise levels were measured during typical weekday conditions over a one-hour period. The short-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (12)

5.2 NOISE MEASUREMENT LOCATIONS

The short-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources.* (3) Further, FTA guidance states, *that it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community.* (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearest sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing ambient noise levels described below:

TABLE 5-1: SHORT-TERM AMBIENT NOISE LEVEL MEASUREMENTS

Location ¹	Description	Energy Average Noise Level (dBA Leq) ²
L1	Located northeast of the Project site on Mission Inn Avenue by the Riverside Municipal Auditorium at 3485 Mission Inn Avenue.	65.5
L2	Located east of the Project site on Lime Street at 3398 Mission Inn Avenue.	68.2
L3	Located south of the Project site by the Life Arts Center at 3485 University Avenue.	59.6
L4	Located west of the Project site on Lemon Street by the First Congregational Church at 3504 Mission Inn Avenue.	61.3
L5	Located northwest of the Project site on Mission Inn Avenue by the Universalist Unitarian Church of Riverside at 3657 Lemon Street.	61.3

¹ See Exhibit 5-A for the noise level measurement locations.

² Energy (logarithmic) average levels. The measurement worksheets are included in Appendix 5.2.

Table 5-1 provides the (energy average) noise levels used to describe the ambient conditions. Appendix 5.2 provides summary worksheets of the noise levels for the full hour as well as the minimum, maximum, L_1 , L_2 , L_5 , L_8 , L_{25} , L_{50} , L_{90} , L_{95} , and L_{99} percentile noise levels. The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. The existing noise level measurement results are shown on Table 5-1.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



LEGEND:

▲ Measurement Locations

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6 SENSITIVE RECEIVER LOCATIONS

To assess the potential for short-term construction noise impacts, the following receiver locations, as shown on Exhibit 6-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, five receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 4.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

- R1: Location R1 represents the Riverside Municipal Auditorium at 3485 Mission Inn Avenue, located approximately 121 feet northeast of the Project site. A short-term noise measurement was taken near this location, L1, to describe the existing ambient noise environment. This historic building was dedicated as a memorial to Riverside's World War I veterans, the Mission Revival style building was designed by Arthur Benton and G. Stanley Wilson and was completed in 1929. (1)
- R2: Location R2 represents 3398 Mission Inn Avenue, located approximately 215 feet southeast of the Project site. A short-term noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents the Life Arts Center at 3485 University Avenue, approximately 30 feet southwest of the Project site. A short-term noise measurement near this location, L3, is used to describe the existing ambient noise environment. Built in 1909, this historic building was designed by architect Arthur Benton to evoke an early Italian Renaissance Palazzo. The Young Men's Christian Association occupied the building until 1968. It is currently used as studio space by various artists. (1)
- R4: Location R4 represents the First Congregational Church at 3504 Mission Inn Avenue, approximately 65 feet west of the Project site. A short-term noise measurement near this location, L4, is used to describe the existing ambient noise environment. This historic building was completed in 1913 as the third home of the city's oldest church

congregation, the building was designed by architect Myron Hunt in Spanish Renaissance Revival styled with a Churrigueresque tower and details.

- R5: Location R5 represents the Universalist Unitarian Church of Riverside at 3657 Lemon Street, located approximately 153 feet northwest of the Project site. A short-term noise measurement near this location, L5, is used to describe the existing ambient noise environment. This historic building was built in 1891, the Arizona sandstone structure was designed by architect A. C. Willard in the Gothic Revival style of a medieval English parish church.

EXHIBIT 6-A: RECEIVER LOCATIONS



LEGEND:

● Receiver Locations

— Distance from receiver to Project site boundary (in feet)

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7 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 7-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 6. To prevent high levels of construction noise from impacting noise-sensitive land uses the City of Riverside Municipal Code Section 7.35.020(G) exempts construction noise from its stationary-source noise level limits provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

7.1 CONSTRUCTION NOISE SOURCES

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The Project construction noise sources are expected to include a combination of loaders, cranes, welders, drill rigs, diesel generators, concrete pumps, and mixture of other construction equipment.

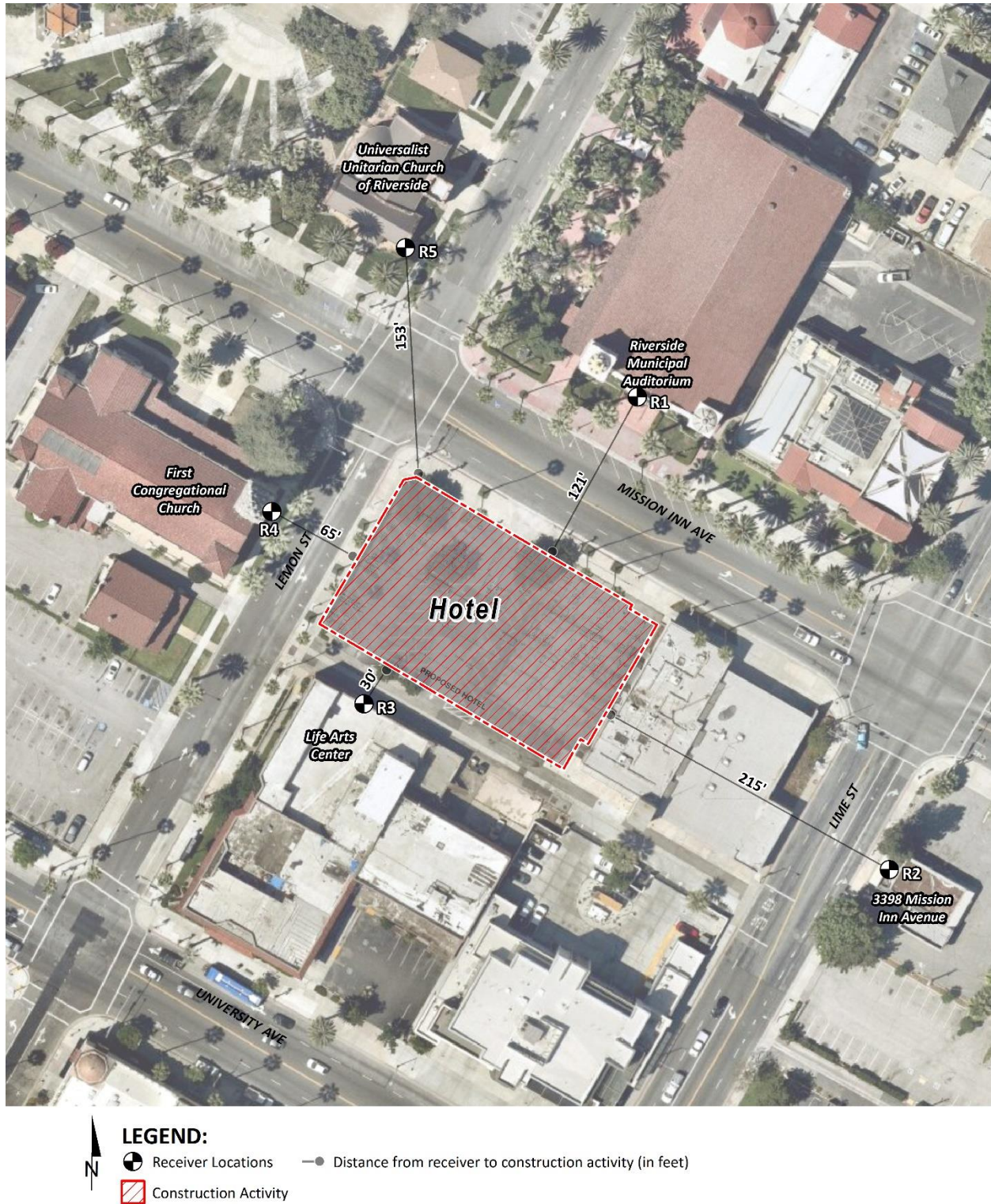
7.2 REFERENCE CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver.

EXHIBIT 7-A: CONSTRUCTION NOISE SOURCE AND RECEIVER LOCATIONS



7.3 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project typical construction noise levels, measurements were collected for similar activities at several construction sites. Table 7-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances of 30 feet and 50 feet, all construction noise level measurements presented on Table 7-1 have been adjusted for consistency to describe a uniform reference distance of 50 feet.

TABLE 7-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})	Highest Reference Noise Level (dBA L _{eq})
Demolition	Demolition Activity	67.9	71.9
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Site Preparation	Scraper, Water Truck, & Dozer Activity	75.3	75.3
	Backhoe	64.2	
	Water Truck Pass-By & Backup Alarm	71.9	
Grading	Rough Grading Activities	73.5	73.5
	Water Truck Pass-By & Backup Alarm	71.9	
	Construction Vehicle Maintenance Activities	67.5	
Building Construction	Foundation Trenching	68.2	71.6
	Framing	62.3	
	Concrete Mixer Backup Alarms & Air Brakes	71.6	
Paving	Concrete Mixer Truck Movements	71.2	71.2
	Concrete Paver Activities	65.6	
	Concrete Mixer Pour & Paving Activities	65.9	
Architectural Coating	Air Compressors	65.2	65.2
	Generator	64.9	
	Crane	62.3	

¹ Reference construction noise level measurements taken by Urban Crossroads, Inc.

7.4 TYPICAL CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 7-2, the construction noise levels are expected to range from 51.0 to 71.7 dBA L_{eq} , and the highest construction levels are expected to range from 61.1 to 71.7 dBA L_{eq} at the nearest receiver locations. Appendix 7.1 includes the detailed CadnaA construction noise model inputs.

TABLE 7-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location ¹	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels ²
R1	62.3	65.7	63.9	62.0	61.6	55.6	65.7
R2	57.7	61.1	59.3	57.4	57.0	51.0	61.1
R3	68.3	71.7	69.9	68.0	67.6	61.6	71.7
R4	64.7	68.1	66.3	64.4	64.0	58.0	68.1
R5	59.5	62.9	61.1	59.2	58.8	52.8	62.9

¹ Noise receiver locations are shown on Exhibit 7-A.

² Construction noise level calculations based on distance from the project site boundaries (construction activity area) to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 7.1.

The construction noise analysis presents a conservative approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from primary construction activity to the nearest sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location.

7.5 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 7-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 7-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location ¹	Construction Noise Levels (dBA L _{eq})		
	Highest Construction Noise Levels ²	Threshold ³	Threshold Exceeded? ⁴
R1	65.7	80	No
R2	61.1	80	No
R3	71.7	80	No
R4	68.1	80	No
R5	62.9	80	No

¹ Noise receiver locations are shown on Exhibit 7-A.

² Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 7-2.

³ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.

⁴ Do the estimated Project construction noise levels exceed the construction noise level threshold?

7.5 CONSTRUCTION VIBRATION ASSESSMENT

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 7-4. To minimize the potential construction vibration levels, non-impact pile driving equipment (e.g., caisson drilling or other non-impact methods) shall be required to reduce the pile driving equipment noise levels at the nearest receiver locations. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$

TABLE 7-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Caisson Drill	0.089

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

7.6 CONSTRUCTION VIBRATION LEVELS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from typical Project construction activities would cause only intermittent or transient, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- **Heavy Construction Equipment:** Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term (transient) and is not of enough magnitude to cause building damage.
- **Trucks:** Trucks hauling building materials to construction sites can be sources of transient vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Table 7-5 presents the expected Project related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 30 to 215 feet from Project construction activity, the transient construction vibration velocity levels are estimated to range from 0.004 to 0.068 PPV in/sec, as shown on Table 7-5. Based on maximum acceptable continuous vibration threshold of 0.10 PPV (in/sec) for fragile buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all the nearest historic building receiver locations.

In addition, the typical construction vibration levels at the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries. For pile driving, there are few cases of direct damage to structures located farther from a pile than the length of that pile. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures. Noise from the equipment typically overshadows any meaningful ground vibration effects on people. (9 p. 45)

TABLE 7-5: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver ¹	Location	Structure Type ²	Distance to Const. Activity (Feet) ³	Typical Construction Vibration Levels PPV (in/sec) ⁴					Thresholds PPV (in/sec) ⁵	Thresholds Exceeded? ⁶
				Small bulldozer	Jack-hammer	Loaded Trucks	Caisson Drill	Highest Vibration Level		
R1	Riverside Municipal Auditorium	Fragile	121'	0.000	0.003	0.007	0.008	0.008	0.10	No
R2	3398 Mission Inn Avenue	Other	215'	0.000	0.001	0.003	0.004	0.004	0.10	No
R3	Life Arts Center	Fragile	30'	0.002	0.027	0.058	0.068	0.068	0.10	No
R4	First Congregational Church	Fragile	65'	0.001	0.008	0.018	0.021	0.021	0.10	No
R5	Universalist Unitarian Church	Fragile	153'	0.000	0.002	0.005	0.006	0.006	0.10	No

¹ Receiver locations are shown on Exhibit 7-A.

² Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38. The existing buildings adjacent to the Project site can best be described as "historic" representing a variety of structural types with several different construction methods, such as wood frame and unreinforced masonry. However, for the purposes of this analysis, a more conservative maximum acceptable continuous vibration threshold for fragile buildings is used.

³ Distance from receiver location to Project construction boundary.

⁴ Based on the Vibration Source Levels of Construction Equipment (Table 7-4).

⁵ Thresholds for transient sources associated with typical construction activities, Caltrans Transportation and Construction Vibration Manual, April 2020 p.38. (see Table 3-1).

⁶ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

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8 REFERENCES

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2. **G3 SoilWorks.** *Preliminary Engineering Geologic/Geotechnical Evaluation Proposed AC Marriott Residence Inn Dual Brand*. March 2020.
3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol*. Sacramento, CA : s.n., September 2013.
4. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974. EPA/ONAC 550/9/74-004.
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6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response*. April 2000. p. 3.
7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise*. October 1979 (revised July 1981). EPA 550/9/82/106.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual*. September 2018.
9. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual*. April 2020.
10. **NCHRP 25-25/Tash 72.** *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects*. 2020.
11. **State of California.** *California Environmental Quality Act, Appendix G*. 2019.
12. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013*.

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9 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Marriot AC/Residence Inn Hotel Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
260 E. Baker Street, Suite 200
Costa Mesa, CA 92626
(949) 336-5979
blawson@urbanxroads.com



EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF RIVERSIDE MUNICIPAL CODE

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Title 7

NOISE CONTROL

Chapters:

7.05	POLICY AND INTENT
7.10	DEFINITIONS
7.15	ADMINISTRATION AND ENFORCEMENT
7.20	SOUND LEVEL MEASUREMENT
7.23	AMBIENT NOISE LEVELS
7.25	NUISANCE EXTERIOR SOUND LEVEL LIMITS
7.30	NUISANCE INTERIOR SOUND LEVEL LIMITS
7.35	GENERAL NOISE REGULATIONS
7.40	VARIANCE PROCEDURE
7.45	SEVERABILITY

Chapter 7.05

POLICY AND INTENT

Sections:

7.05.010 Policy and intent.

Section 7.05.010 Policy and intent.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this chapter. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment. (Ord. 6273 § 1 (part), 1996)

Chapter 7.10

DEFINITIONS

Sections:

7.10.010	Definitions generally.
7.10.015	A-weighted sound level.
7.10.020	Agricultural property.
7.10.025	Ambient noise level.
7.10.030	Commercial purpose.
7.10.035	Construction.
7.10.040	Community support land use category.
7.10.045	Cumulative period.
7.10.050	Decibel (dB).
7.10.055	Demolition.
7.10.060	Emergency.
7.10.065	Emergency work.
7.10.070	Fixed noise source.
7.10.075	Grading.
7.10.080	Impulsive sound.
7.10.085	Industrial land use category.
7.10.090	Intrusive noise.
7.10.095	Minor maintenance.
7.10.100	Mobile noise source.
7.10.105	Motor vehicle.
7.10.110	Muffler or sound dissipative device.
7.10.115	Noise.
7.10.120	Noise Control Officer.
7.10.125	Noise disturbance.
7.10.130	Noise source.
7.10.135	Noise zone.
7.10.140	Nonurban land use category.
7.10.145	Office/commercial land use category.
7.10.150	Person.
7.10.155	Powered model vehicle.
7.10.160	Public recreation facility land use category.
7.10.165	Public right-of-way.
7.10.170	Public space.
7.10.175	Residential land use category.
7.10.180	Sound.
7.10.185	Sound amplifying equipment.
7.10.190	Sound level.
7.10.195	Sound level meter.
7.10.200	Sound pressure.
7.10.205	Sound pressure level.
7.10.210	Supplementary definitions of technical terms.

Section 7.10.010 Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter. (Ord. 6273 § 1 (part), 1996)

Section 7.10.015 A-weighted sound level.

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level is designated dB(A) or dBA. (Ord. 6273 § 1 (part), 1996)

Section 7.10.020 Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.025 Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location. (Ord. 6273 § 1 (part), 1996)

Section 7.10.030 Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment. (Ord. 6273 § 1 (part), 1996)

Section 7.10.035 Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, or similar action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.040 Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.045 Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous. (Ord. 6273 § 1 (part), 1996)

Section 7.10.050 Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (twenty micronewtons per square meter). (Ord. 6273 § 1 (part), 1996)

Section 7.10.055 Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site improvements, landscaping or utilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.060 Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.065 Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.070 Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices. (Ord. 6273 § 1 (part), 1996)

Section 7.10.075 Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements. (Ord. 6273 § 1 (part), 1996)

Section 7.10.080 Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another. (Ord. 6273 § 1 (part), 1996)

Section 7.10.085 Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones. (Ord. 6967 § 2, 2007; (Ord. 6273 § 1 (part), 1996)

Section 7.10.090 Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level. (Ord. 6273 § 1 (part), 1996)

Section 7.10.095 Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state. (Ord. 6273 § 1 (part), 1996)

Section 7.10.100 Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source. (Ord. 6273 § 1 (part), 1996)

Section 7.10.105 Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code. (Ord. 6273 § 1 (part), 1996)

Section 7.10.110 Muffler or sound dissipative device.

"Muffler or sound dissipative device" means a device for abating the sound of escaping gases from an internal combustion engine. (Ord. 6273 § 1 (part), 1996)

Section 7.10.115 Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans. (Ord. 6273 § 1 (part), 1996)

Section 7.10.120 Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance. (Ord. 6273 § 1 (part), 1996)

Section 7.10.125 Noise disturbance.

"Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities or endangers or injures personal or real property. (Ord. 6273 § 1 (part), 1996)

Section 7.10.130 Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor. (Ord. 6273 § 1 (part), 1996)

Section 7.10.135 Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels. (Ord. 6273 § 1 (part), 1996)

Section 7.10.140 Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more. (Ord. 6273 § 1 (part), 1996)

Section 7.10.145 Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.150 Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State. (Ord. 6273 § 1 (part), 1996)

Section 7.10.155 Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power. (Ord. 6273 § 1 (part), 1996)

Section 7.10.160 Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.165 Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.170 Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.175 Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.180 Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.185 Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes. (Ord. 6273 § 1 (part), 1996)

Section 7.10.190 Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply. (Ord. 6273 § 1 (part), 1996)

Section 7.10.195 Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute specifications for

sound level meters, S1.4-1971, or the most recent revision thereof. (Ord. 6273 § 1 (part), 1996)

Section 7.10.200 Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy. (Ord. 6273 § 1 (part), 1996)

Section 7.10.205 Sound pressure level.

"Sound pressure level" in decibels means twenty times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated. (Ord. 6273 § 1 (part), 1996)

Section 7.10.210 Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof. (Ord. 6273 § 1 (part), 1996)

Chapter 7.15

ADMINISTRATION AND ENFORCEMENT

Section:

7.15.005 Administration and enforcement.

Section 7.15.005 Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community & Economic Development Department and/or the Riverside Police Department.

B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this Title and to perform all other functions required by this Title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education. (Ord. 7341 § 6, 2016; Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

Chapter 7.20

SOUND LEVEL MEASUREMENT

Section:

7.20.010 Sound level measurement.

Section 7.20.010 Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighting scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season. (Ord. 6273 § 1 (part), 1996)

Chapter 7.23

AMBIENT NOISE LEVELS

Sections:

- 7.23.010 Ambient Sound Levels.**
- 7.23.020 Mixed Use Development.**
- 7.23.030 Infill Single-Family Residential Development.**

Section 7.23.010 Ambient Sound Levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the Health and Safety Code of the State of California as may be amended from time to time. (Ord. 6967 § 3, 2007)

Section 7.23.020 Mixed Use Development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Section 7.23.030 Infill Single-Family Residential Development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Chapter 7.25

NUISANCE EXTERIOR SOUND LEVEL LIMITS

Section:
7.25.010 **Exterior sound level limits.**

Section 7.25.010 **Exterior sound level limits.**

- A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
 - 1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than thirty minutes in any hour; or
 - 2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than fifteen minutes in any hour; or
 - 3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
 - 4. The exterior noise standard of the applicable land use category, plus fifteen decibels, for the cumulative period of more than one minute in any hour; or
 - 5. The exterior noise standard for the applicable land use category, plus twenty decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.
- C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.
- D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed sixty dBA for units installed before 1-1-80 and fifty-five dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	Time Period	Noise Level
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA
Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010B

Land Use Category/Zoning Matrix	
Land Use Category	Underlying Zone
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30

NUISANCE INTERIOR SOUND LEVEL LIMITS

Section:
7.30.015 Interior sound level limits.

Section 7.30.015 Interior sound level limits.

- A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:
1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
 2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
 3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.
- C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	Time Period	Noise Level
Residential	Night (10 p.m. C 7 a.m.) Day (7 a.m. C 10 p.m.)	35 dBA 45 dBA
School	7 a.m. C 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 6273 § 1 (part), 1996)

Chapter 7.35

GENERAL NOISE REGULATIONS

Sections:

7.35.010 **General noise regulations.**

7.35.020 **Exemptions.**

Section 7.35.010 **General noise regulations.**

A. Notwithstanding the sound level meter standards described in this ordinance, it is nonetheless unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.
4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.
10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The following acts, among others, are declared to be disturbing, excessive and offensive noises in violation of this section:

1. Radios, Television Sets, Musical Instruments and similar stationary or mobile devices: Operating, playing or permitting the operation or playing of any radio, television set, audio equipment, drum, musical instrument, or similar device which produces or reproduces sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity. The operation of any such set, instrument, audio equipment, television set, machine or similar device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of 50 feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of a violation of this section.

2. Loud Speakers (Amplified Sound): Using, or operating, or permitting to be used or operated, for any purpose, any loud speaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom creates a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category, except for any non-commercial public speaking, public assembly or other activity for which a variance has been issued.

3. Animals and Birds: Owning, possessing, or permitting to be harbored any animal or bird which frequently or for a continued duration howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial property line.

4. Loading and Unloading: Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

5. Construction: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on week days and between 5:00 p.m. and 8:00 a.m. on Saturdays or at any time on Sunday or federal holidays.

6. Domestic Power Tools: Operating or permitting the operation of any mechanically powered saw, sander, drill grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line. Any motor, machinery, pump, compressor, generator etc., shall be sufficiently muffled and maintained so as not to create a noise disturbance.

7. Powered Model Vehicles: Operating or permitting the operation of powered model vehicles between the hours of 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

8. Stationary Non-emergency Signaling Devices: Sounding, or permitting the sounding of any signal from any stationary bell, chime, siren, whistle, or similar device intended primarily for non-emergency purposes, from any place, for more than 10 seconds in any hourly period. Houses of worship and the Mission Inn carillons shall be exempt from the operation of this provision. Sound sources covered by this provision and not exempted under this subsection may be exempted by a variance.

9. Emergency Signaling Devices: The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing. Testing of a stationary emergency signaling device shall not occur before 7:00 a.m. or after 7:00 p.m. Any such testing shall only use the minimum cycle test time. In no case shall the test time exceed 10 seconds or occur more than once each calendar month.

10. Vehicle, Motorcycle, Motorboat or Aircraft Repair and Testing: Repairing, rebuilding, modifying or testing any motor vehicle, motorboat or aircraft, or permitting any these activities, in such a manner as to create a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category shall not be permitted except where said activities are directly related to officially sanctioned events. underlying land use category.

11. For other than noise sources identified in 1-10 above, the following noise disturbance shall be prohibited:

- a. Plainly audible across property boundaries;
- b. Plainly audible through partitions common to two residences within a building;
- c. Plainly audible at a distance of 50 feet in any direction from the source of music or sound between the hours of 7:00 a.m. and 10:00 p.m.; or
- d. Plainly audible at a distance of 25 feet in any direction from the source of music or sound between the hours of 10:00 p.m. and 7:00 a.m. (Ord. 7341 §6, 2016; Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

Section 7.35.020

Exemptions.

The following activities shall be exempt from the provisions of this title:

- A. Emergency Work. The provisions of this Title shall not apply to the emission of

sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.

B. Entertainment Events. The provisions of this Title shall not apply to those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of 7:00 a.m. and 10:00 p.m.

C. Federal or State Preempted Activities. The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. Minor Maintenance to Residential Property. The provisions of this Title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of 7:00 a.m. and 10:00 p.m.

E. Right-Of-Way Construction. The provisions of this Title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. Public Health, Welfare and Safety Activities. The provisions of this Title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

G. Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday. (Ord. 7341 § 6, 2016; Ord. 6917 § 1, 2006; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40

VARIANCE PROCEDURE

Sections:

7.40.010 Variance procedure.

7.40.020 Appeals.

Section 7.40.010 Variance procedure.

A. The Zoning Administrator is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Zoning Administrator. The application shall be signed by the property owner or owner's representative using forms supplied by the Community & Economic Development Department - Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Zoning Administrator may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C. A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Any person who claims to be adversely affected by the allowance of the variance may file a statement with the Zoning Administrator containing any information to support his claim. If the Zoning Administrator determines that a sufficient controversy exists regarding a variance application, the variance may be set for public hearing before the Planning Commission.

D. Public notice of the consideration of a proposed variance from the standards of this chapter shall be provided by the Zoning Administrator by mailing such notice to property owners within three hundred feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Division of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Zoning Administrator or the Planning Commission shall consider comments received from property owners within three hundred feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Zoning Administrator or the Planning Commission finds that:

1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this title;
2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;
3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;

4. The granting of such variance will not be contrary to the objectives of any part of the adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Zoning Administrator does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council. (Ord. 7341 § 6, 2016; Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

Section 7.40.020 Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Zoning Administrator or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the same criteria presented to the Zoning Administrator. (Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45

SEVERABILITY

Section:

7.45.010 Severability

Section 7.45.010 Severability

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional. (Ord. 6328 § 3, 1996)

APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 13563 Study Area Photos



L1_E

33, 58' 54.820000", 117, 22' 16.240000"



L1_N

33, 58' 54.910000", 117, 22' 16.270000"



L1_S

33, 58' 54.800000", 117, 22' 16.240000"



L1_W

33, 58' 54.780000", 117, 22' 16.320000"



L2_E

33, 58' 51.950000", 117, 22' 13.360000"



L2_N

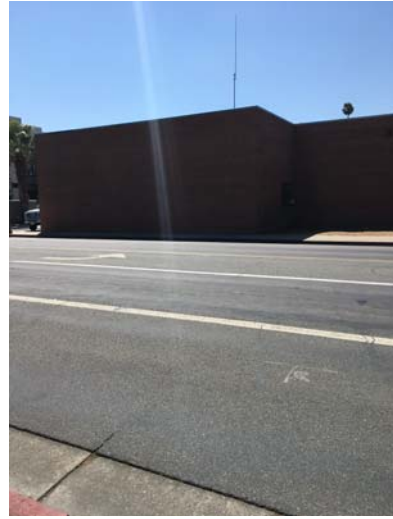
33, 58' 51.950000", 117, 22' 13.360000"

JN: 13563 Study Area Photos



L2_S

33, 58' 51.940000", 117, 22' 13.330000"



L2_W

33, 58' 51.970000", 117, 22' 13.380000"



L3_E

33, 58' 52.850000", 117, 22' 17.260000"



L3_N

33, 58' 52.890000", 117, 22' 17.200000"



L3_S

33, 58' 52.830000", 117, 22' 17.230000"



L3_W

33, 58' 52.820000", 117, 22' 17.230000"

JN: 13563 Study Area Photos



L4_E

33, 58' 53.900000", 117, 22' 17.560000"



L4_N

33, 58' 53.890000", 117, 22' 17.530000"



L4_S

33, 58' 53.890000", 117, 22' 17.530000"



L4_W

33, 58' 53.890000", 117, 22' 17.480000"



L5_E

33, 58' 55.390000", 117, 22' 17.640000"



L5_N

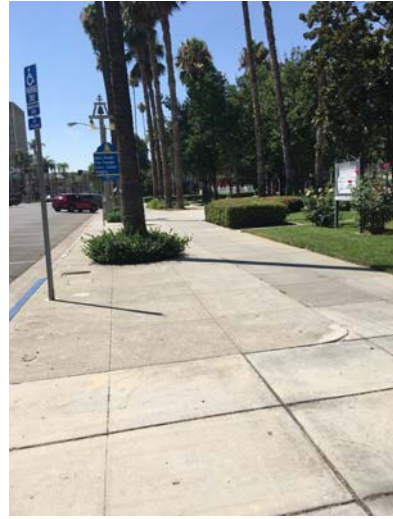
33, 58' 55.390000", 117, 22' 17.640000"

JN: 13563 Study Area Photos



L5_S

33, 58' 55.360000", 117, 22' 17.700000"



L5_W

33, 58' 55.350000", 117, 22' 17.720000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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Short-Term Noise Level Measurement Summary

Project Name: Marriot AC/Residence Inn Hotel
Measurement ID: L1
Measurement Location: Riverside Arts Council
 3700 6th St, Riverside, CA 92501
Sound Level Meter: SoftdB Piccolo Type 2
Response: Slow
Noise Source: Traffic noise from local surface streets.

JN: 13563

Analyst: P. Mara

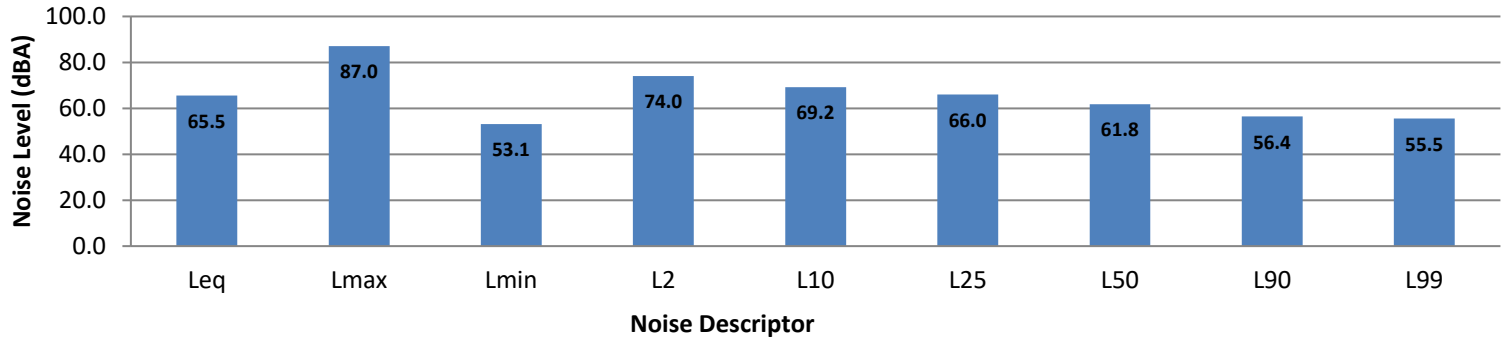
Date: 7/21/2020

Measurement Time (hh:mm:ss)

Start	Stop	Duration
3:20:00 PM	4:20:00 PM	1:00:00

L1

Noise Levels (dBA)



Measurement Results (dBA)

L _{eq}	L _{max}	L _{min}	L ₂	L ₁₀	L ₂₅	L ₅₀	L ₉₀	L ₉₉
65.5	87.0	53.1	74.0	69.2	66.0	61.8	56.4	55.5

Short-Term Noise Level Measurement Summary

Project Name: Marriot AC/Residence Inn Hotel
Measurement ID: L2
Measurement Location: Riverside Municipal Auditorium
 3485 Mission Inn Avenue, Riverside, CA 92501
Sound Level Meter: SoftdB Piccolo Type 2
Response: Slow
Noise Source: Traffic noise from local surface streets.

JN: 13563

Analyst: P. Mara

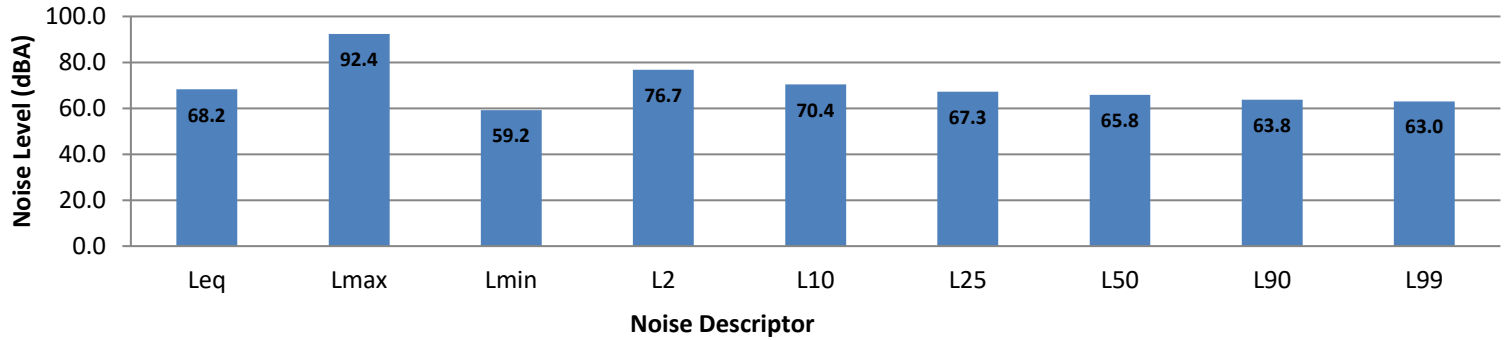
Date: 7/21/2020

Measurement Time (hh:mm:ss)

Start	Stop	Duration
3:20:00 PM	4:20:00 PM	1:00:00

L2

Noise Levels (dBA)



Measurement Results (dBA)

L _{eq}	L _{max}	L _{min}	L ₂	L ₁₀	L ₂₅	L ₅₀	L ₉₀	L ₉₉
68.2	92.4	59.2	76.7	70.4	67.3	65.8	63.8	63.0

Short-Term Noise Level Measurement Summary

Project Name: Marriot AC/Residence Inn Hotel
Measurement ID: L3
Measurement Location: Life Arts Center
 3485 University Ave, Riverside, CA 92501
Sound Level Meter: SoftdB Piccolo Type 2
Response: Slow
Noise Source: Traffic noise from local surface streets.

JN: 13563

Analyst: P. Mara

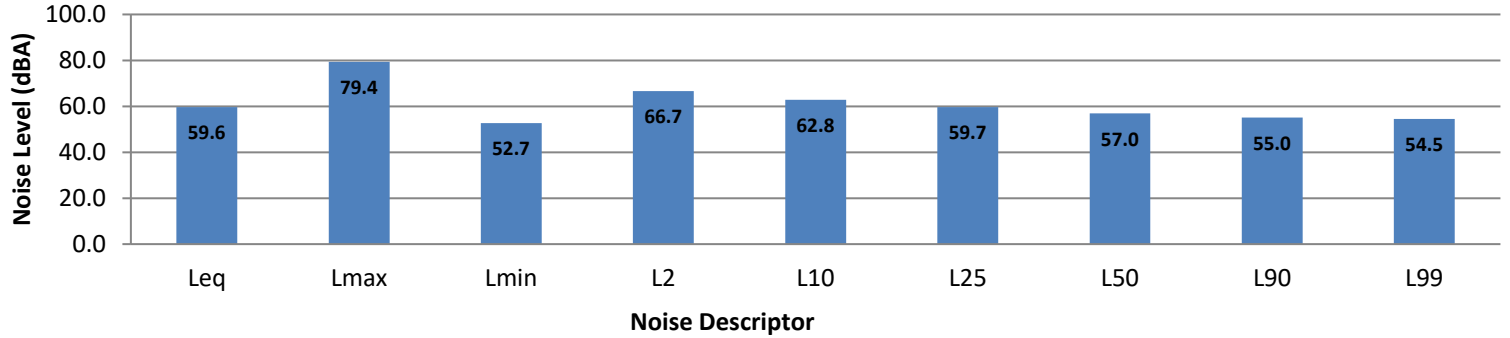
Date: 7/21/2020

Measurement Time (hh:mm:ss)

Start	Stop	Duration
3:20:00 PM	4:20:00 PM	1:00:00

L3

Noise Levels (dBA)



Measurement Results (dBA)

L _{eq}	L _{max}	L _{min}	L ₂	L ₁₀	L ₂₅	L ₅₀	L ₉₀	L ₉₉
59.6	79.4	52.7	66.7	62.8	59.7	57.0	55.0	54.5

Short-Term Noise Level Measurement Summary

Project Name: Marriot AC/Residence Inn Hotel
Measurement ID: L4
Measurement Location: First Congregational Church
 3504 Mission Inn Avenue, Riverside, CA 92501
Sound Level Meter: SoftdB Piccolo Type 2
Response: Slow
Noise Source: Traffic noise from local surface streets.

JN: 13563

Analyst: P. Mara

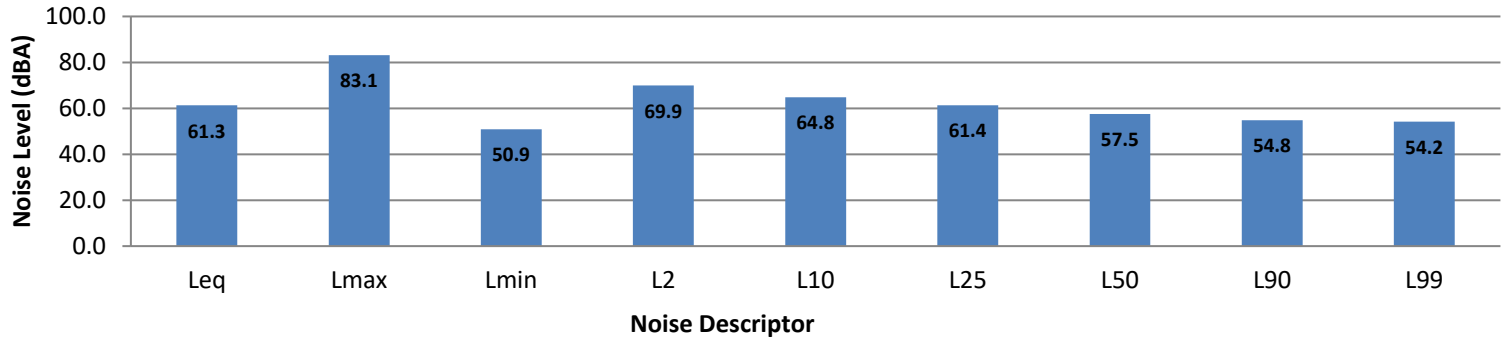
Date: 7/21/2020

Measurement Time (hh:mm:ss)

Start	Stop	Duration
3:20:00 PM	4:20:00 PM	1:00:00

L4

Noise Levels (dBA)



Measurement Results (dBA)

L _{eq}	L _{max}	L _{min}	L ₂	L ₁₀	L ₂₅	L ₅₀	L ₉₀	L ₉₉
61.3	83.1	50.9	69.9	64.8	61.4	57.5	54.8	54.2

Short-Term Noise Level Measurement Summary

Project Name: Marriott AC/Residence Inn Hotel
Measurement ID: L5
Measurement Location: Universalist Unitarian Church of Riverside
 3657 Lemon Street, Riverside, CA 92501
Sound Level Meter: SoftdB Piccolo Type 2
Response: Slow
Noise Source: Traffic noise from local surface streets.

JN: 13563

Analyst: P. Mara

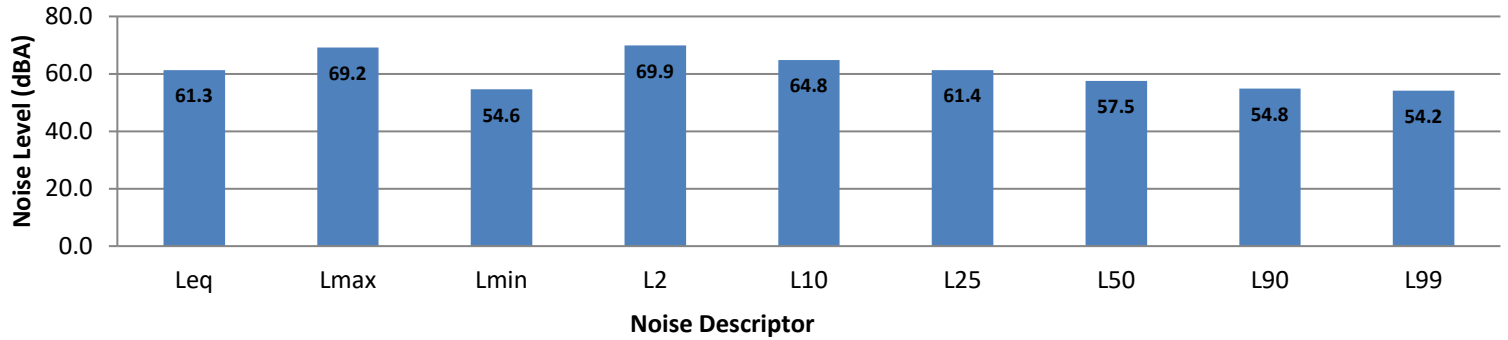
Date: 7/21/2020

Measurement Time (hh:mm:ss)

Start	Stop	Duration
3:20:00 PM	4:20:00 PM	1:00:00

L5

Noise Levels (dBA)



Measurement Results (dBA)

L _{eq}	L _{max}	L _{min}	L ₂	L ₁₀	L ₂₅	L ₅₀	L ₉₀	L ₉₉
61.3	69.2	54.6	69.9	64.8	61.4	57.5	54.8	54.2

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APPENDIX 7.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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13563 - Marriot AC/Residence Inn Hotel

CadnaA Noise Prediction Model: 13563 Construction.cna

Date: 03.08.20

Analyst: P. Mara

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.00
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height	Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type		X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(ft)	(ft)	(ft)	(ft)
RECEIVERS		R1	65.6	65.6	0.0	0.0		x	Total	5.00 a	6221835.96	2302721.47	5.00
RECEIVERS		R2	61.0	61.0	0.0	0.0		x	Total	5.00 a	6222002.89	2302408.29	5.00
RECEIVERS		R3	71.7	71.7	0.0	0.0		x	Total	5.00 a	6221654.75	2302518.21	5.00
RECEIVERS		R4	68.0	68.0	0.0	0.0		x	Total	5.00 a	6221593.81	2302645.47	5.00
RECEIVERS		R5	62.8	62.8	0.0	0.0		x	Total	5.00 a	6221682.42	2302820.09	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li		Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
Construction		Construction	108.5	108.5	108.5	75.3	75.3	75.3	Lw"	75.3					8 a

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
Construction	8.00 a		6221681.01	2302666.61	8.00	0.00
			6221689.26	2302668.30	8.00	0.00
			6221832.34	2302583.59	8.00	0.00
			6221830.75	2302580.90	8.00	0.00
			6221848.64	2302570.40	8.00	0.00
			6221803.16	2302491.58	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6221798.30	2302494.71	8.00	0.00
			6221786.84	2302474.91	8.00	0.00
			6221625.14	2302570.99	8.00	0.00