

The Park at Live Oak

NOISE IMPACT ANALYSIS CITY OF IRWINDALE

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11112-08 Noise Study



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LIST OF ABBREVIATED TERMS

Reference
Average Daily Traffic
American National Standards Institute
California Vehicle Noise
California Environmental Quality Act
Community Noise Equivalent Level
A-weighted decibels
Federal Highway Administration
Federal Transit Administration
Interstate 605
Institute of Noise Control Engineering
Equivalent continuous (average) sound level
Maximum level measured over the time interval
Minimum level measured over the time interval
Miles per hour
Planning Area
Peak Particle Velocity
The Park at Live Oak
Reference Energy Mean Emission Level
Root-mean-square
Vibration Decibels



EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures, if any, for the proposed The Park at Live Oak development ("Project"). The Project site is located west of the Interstate 605 (I-605) freeway between Arrow Highway and Live Oak Avenue in the City of Irwindale. The Project is entitling a Specific Plan for the proposed Project, which identifies allowable uses based on Planning Areas (PAs) including high-cube warehouse, general light industrial, warehousing, manufacturing, restaurant, commercial retail, gas station, and coffee shop uses. This study has been prepared consistent with applicable City of Irwindale noise standards, and significance criteria based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) In addition, since some of the nearby receiver locations are located in the adjacent jurisdictions of the Cities of Duarte, Baldwin Park, El Monte, and Monrovia, appropriate standards and thresholds from each jurisdiction are used in this analysis where applicable.

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 24 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in *The Park at Live Oak Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Opening Year 2020, and Horizon Year 2040 conditions. The analysis shows that the unmitigated Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

Note that the *Traffic Impact Analysis* overstates the Project's commercial square footage by 1,600 square feet. The total amount of commercial square footage studied by the *Traffic Impact Analysis* totals 53,200 square feet in PAs 1A, 2A, and 3A, but the Project Specific Plan proposes only a maximum square footage of 51,600 square feet within PAs 1A, 2A, and 3A. Thus, the trip generation for the Project is overstated, and therefore, the off-site traffic noise levels generated by the Project are overstated as well.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the potential noise sources within The Park at Live Oak site, this analysis estimates the Project-related operational (stationary-source) noise levels at the nearby noise-sensitive receiver locations. The Project-related operational noise sources are expected to include idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, refrigerated containers or reefers, roof-top air conditioning units, drive-through speakerphones, parking lot vehicle movements, and gas station activity. The analysis shows that the unmitigated Project-related operational noise levels will satisfy the City of



Irwindale and adjacent jurisdictions' exterior noise level standards at the closest noise-sensitive and non-noise sensitive receiver locations in the Project study area. Therefore, operational noise impacts are considered *less than significant*.

While the Project identifies allowable uses for each Planning Area, shown on Exhibit 1-B of this study, the operational noise levels provided herein represent the worst-case operational noise levels assuming each potential Project noise source is located at the closest point on the Project site to each nearby receiver location, to present a conservative approach.

Further, this analysis demonstrates that the Project-related noise level increases to the existing noise environment at all receiver locations would be less than the Federal Interagency Committee on Noise (FICON) guidance for noise level increases, and thus would be *less than significant* during daytime and nighttime hours. Therefore, the operational noise level impacts associated with the proposed Project activities, such as the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, refrigerated containers or reefers, roof-top air conditioning units, drive-through speakerphones, parking lot vehicle movements, and gas station activity will be *less than significant*.

CONSTRUCTION NOISE ANALYSIS

Using sample reference noise levels to represent the construction activities of The Park at Live Oak site, this analysis estimates the Project-related construction noise levels at nearby receiver locations. The Project-related short-term construction noise levels at the nearby sensitive receiver locations are expected to range from 32.4 to 67.9 dBA L_{eq} during on-site Project construction activities and between 29.0 to 59.2 dBA L_{eq} during off-site water line construction activities. The analysis demonstrates that the unmitigated construction noise levels satisfy the City of Irwindale construction noise level threshold of 5 dBA L_{eq} above the ambient noise level at the nearby receiver locations. Therefore, Project construction noise levels are considered a *less than significant* impact.

The construction noise analysis presents a conservative approach with the highest noise-levelproducing equipment for each stage of Project construction operating at the closest point from primary construction activity to the nearby 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.

CONSTRUCTION VIBRATION ANALYSIS

Project construction vibration velocity levels are expected to approach 0.003 in/sec RMS. Since the study area jurisdictions do not identify specific vibration level thresholds this analysis relies on the County of Los Angeles vibration level threshold of 0.01 in/sec RMS. Based on this criteria, the proposed Project construction activities will not exceed the vibration threshold at the nearby sensitive receiver locations during Project construction activities. Therefore, the Project-related vibration impacts will be *less than significant* during the construction activities at the Project site.



Further, the Project-related construction vibration levels do not represent levels capable of causing building damage to nearby residential homes. The FTA identifies construction vibration levels capable of building damage ranging from 0.12 to 0.5 in/sec PPV. (3) The peak Project-construction vibration levels are shown to approach 0.004 in/sec PPV and will remain below the FTA vibration levels for building damage at the residential homes near the Project site. Further, the impacts at the site of the closest sensitive receivers 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.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this The Park at Live Oak Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures described below.

Analysia	Report Section	Significance Findings		
Analysis		Unmitigated	Mitigated	
Off-Site Traffic Noise	7	Less Than Significant	n/a	
Operational Noise	9	Less Than Significant	n/a	
Operational Vibration		Less Than Significant	n/a	
Construction Noise	10	Less Than Significant	n/a	
Construction Vibration	10	Less Than Significant	n/a	

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

"n/a" = No mitigation required since the impact will be less than significant.



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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed The Park at Live Oak ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed The Park at Live Oak Project is located west of the Interstate 605 (I-605) freeway between Arrow Highway and Live Oak Avenue in the City of Irwindale, as shown on Exhibit 1-A. I-605 is located immediately east of the Project site, and El Monte Airport is located roughly 2.8 miles southwest of the Project site. Existing land uses in the Project study area include quarry and industrial uses north, east, and west of the Project site, and the Irwindale Event Center to the south across Live Oak Avenue. The Project site currently operates as an Inert Debris Engineered Fill Operation (IDEFO) and generates existing noise levels associated with this use under existing conditions.

1.2 PROJECT DESCRIPTION

The Project is entitling a Specific Plan for the proposed Project, which identifies allowable uses for each Planning Area (PA). Due to uncertainties in future market conditions, the listed land use assumptions below are intended to be just that – assumptions. For purposes of this noise study, the Project has assumed the following mix of land uses based on the allowable uses and intensities identified in the Specific Plan to conservatively estimate future Project traffic. The *Traffic Impact Analysis* overstates the Project's commercial square footage by 1,600 square feet. The total amount of commercial square footage studied by the *Traffic Impact Analysis* totals 53,200 square feet in PAs 1A, 2A, and 3A, but the Project Specific Plan proposes only a maximum square footage of 51,600 square feet within PAs 1A, 2A, and 3A. Thus, the trip generation for the Project is overstated, and therefore, the off-site traffic noise levels generated by the Project are overstated as well.

- PA 1: 412,500 square feet High-Cube Fulfillment Center Warehouse
- PA 1: 412,500 square feet of High-Cube Transload and Short-Term Storage Warehouse (Without Cold Storage)
- PA 1A: 8,700 square feet of Fast Food Restaurant with Drive-through Window
- PA 1A: 12,000 square feet of Fast Food Restaurant without Drive-through Window
- PA 1A: 12,000 square feet of Commercial Retail use
- PA 1A: 8 vehicle fueling position Gas Station with Convenience Market



- PA 2: 218,400 square feet of High-Cube Transload and Short-Term Storage Warehouse (Without Cold Storage)
- PA 2: 54,600 square feet of General Light Industrial
- PA 2: 60,000 square feet of Warehousing
- PA 3: 102,000 square feet of Manufacturing
- PA 3: 191,400 square feet of Warehousing
- PA 3A: 3,000 square feet of Coffee-shop with Drive-Through Window
- PA 3A: 7,000 square feet of Fast Food Restaurant without Drive-through Window
- PA 3A: 10,500 square feet of Commercial Retail use
- PA 4: 47,000 square feet of Commercial Retail use

The land use plan showing the various planning areas is shown on Exhibit 1-B. The anticipated Opening Year for the Project is 2020.

Per *The Park at Live Oak Traffic Impact Analysis* prepared by Urban Crossroads, Inc. the Project is expected to generate a net total of approximately 14,607 trip-ends per day (actual vehicles). (2) The Project trip generation includes 808 truck trip-ends per day from the proposed Project site. This noise study relies on the Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network.



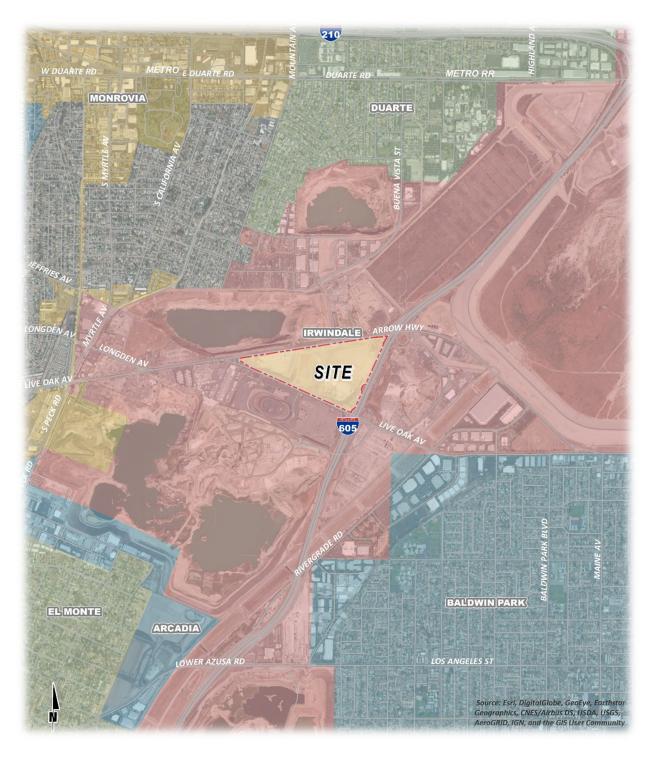
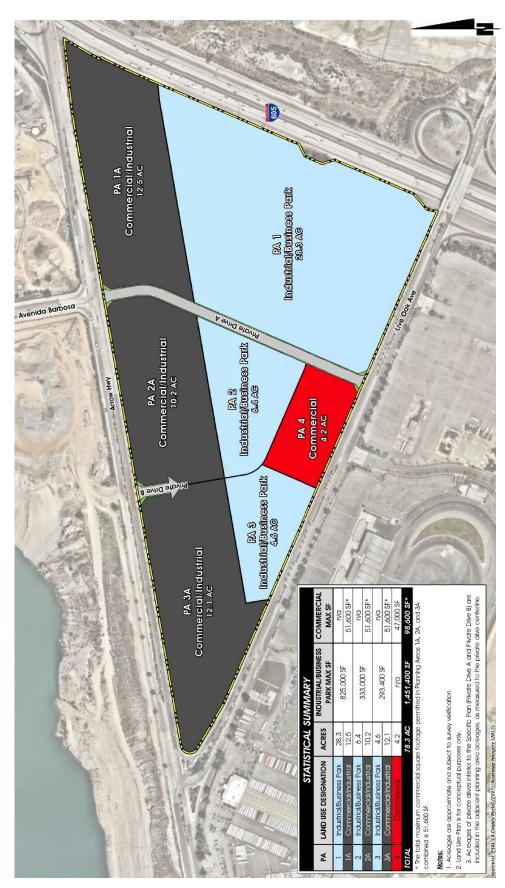


EXHIBIT 1-A: LOCATION MAP









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2 FUNDAMENTALS

Noise has been 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.

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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. (4) 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. (5) 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 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 Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The 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., and the additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Irwindale 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. (4)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor 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 receptor, 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 receptor 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. (6)

2.3.3 ATMOSPHERIC EFFECTS

Receptors 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. (4)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. 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 nearby resident. 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. (6)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor 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 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 receptor. 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. (6)



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. (7)

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. Another 25-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. (8) 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. (8) 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. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

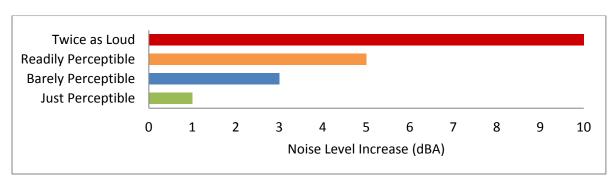


EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION

2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (3), 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.

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.



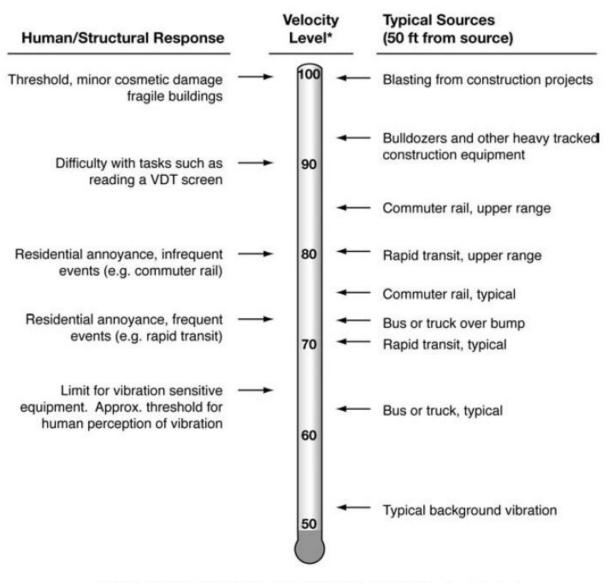


EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION

* RMS Vibration Velocity Level in VdB relative to 10⁻⁶ inches/second

14

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 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research. (9) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING STANDARDS

The 2016 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (10) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available, and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 CITY OF IRWINDALE GENERAL PLAN NOISE ELEMENT

The Public Safety Element of the City of Irwindale General Plan identifies noise compatibility criteria consistent with the Governor's Office of Planning and Research (OPR). (11) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*.



The guidelines included in the General Plan Noise Element consider land use compatibility and identify exterior noise level compatibility criteria for transportation related noise. The *Noise and Land Use Compatibility* criteria provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

Per the City's *Noise and Land Use Compatibility* criteria, noise-sensitive land uses such as residential uses are *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels approaching 70 dBA CNEL. Industrial uses, such as the Project, are *conditionally acceptable* with exterior noise levels between 67 to 78 dBA CNEL and *normally unacceptable* with exterior noise levels above 75 dBA CNEL. For the purposes of this noise study, industrial land uses are considered *normally acceptable* land use with exterior noise levels below 70 dBA CNEL, consistent with the adjacent jurisdictional compatibility criteria of the General Plans for the nearby Cities of Duarte, Baldwin Park, El Monte, and Monrovia.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as The Park at Live Oak Project, stationary-source (operational) noise such as the expected idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, refrigerated containers or reefers, roof-top air conditioning units, drive-through speakerphones, parking lot vehicle movements, and gas station activity are typically evaluated against standards established under a City's Municipal Code. Although the Project site is located within the City of Irwindale, nearby receiver locations are also located in the adjacent Cities of Duarte, Baldwin Park, El Monte, and Monrovia. Therefore, to accurately describe the potential operational noise levels, this analysis presents the appropriate operational noise standards for each of the noisesensitive receivers located within each respective jurisdiction, as shown on Table 3-1.



Jurisdiction	Land Use	Time Period	Exterior Noise Levels (dBA L _{eq}) ⁶
	Residential	Daytime	50
	Residential	Nighttime	45
City of	Commercial	Daytime	55
Irwindale ¹	Commercial	Nighttime	50
	Industrial	Daytime	70
		Nighttime	60
	Residential (R-1, R-2)	Daytime	55
City of		Nighttime	45
Duarte ²	Residential (R-3, R-4)	Daytime	55
		Nighttime	50
		Day	55
City of Baldwin Park ³	Residential	Evening	50
Daluwin Fark		Night	45
City of	Residential	Daytime	50
El Monte ⁴	(Single-Family)	Nighttime	45
City of	Desidential	Daytime	55
Monrovia ⁵	Residential	Nighttime	50

TABLE 3-1: OPERATIONAL NOISE STANDARDS

¹ Source: City of Irwindale Municipal Code, Section 9.28.030 (Appendix 3.1).

² Source: City of Duarte Municipal Code, Section 9.68.050.

³ Source: City of Baldwin Park Municipal Code, Section 153.140.070.

⁴ Source: City of El Monte Municipal Code, Section 8.36.040.

⁵ Source: City of Monrovia Municipal Code, Section 9.44.040.

⁶ L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. "Daytime" & "Nighttime" Hours by Jurisdiction:

Irwindale, Duarte, & El Monte: "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.;

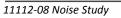
Baldwin Park: "Day" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.; Monrovia: "Daytime" = 7:00 a.m. to 9:00 p.m.; "Nighttime" = 9:00 p.m. to 7:00 a.m.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of The Park at Live Oak, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. The Municipal Code noise standards for construction are described below based on those of the City of Irwindale, Duarte, Baldwin Park, El Monte, and Monrovia to determine the potential noise impacts at receivers within each jurisdiction. The construction-related noise standards for each City are summarized in Table 3-2 below.

3.5.1 CITY OF IRWINDALE CONSTRUCTION NOISE STANDARDS

The City of Irwindale has set restrictions to control noise impacts associated with the construction of the proposed Project. Municipal Code, Section 9.28.110, indicates that construction activity cannot constitute a violation of Section 9.28.040 unless authorized by a building inspector.





Section 9.28.040 identifies the construction noise level threshold for use in this noise study and indicates that Project construction noise levels shall not exceed the base exterior noise level standard or the ambient noise level, whichever is greater, by more than 5 dBA at the nearby receiver locations. (12)

3.5.2 OTHER CITY CONSTRUCTION NOISE STANDARDS

While the Cities of Duarte, Baldwin Park, El Monte, and Monrovia establish limits to the hours during which construction activity may take place within each jurisdiction, neither the Cities' General Plans nor their Municipal Codes establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, the City of Irwindale construction noise level standards are used in this analysis to assess potential impacts within the adjacent jurisdictions and is also consistent with the Los Angeles Municipal Code construction noise level limits (Section 112.02).

Jurisdiction	Permitted Hours of Construction Activity	Construction Noise Level Standards (dBA L _{eq})
City of Irwindale ¹	7:00 a.m. to 7:00 p.m.	Base Standard or Ambient Noise Level + 5 dBA
City of Duarte	Not Applicable	n/a
City of Baldwin Park	Not Applicable	Lowest Allowable Increase of 5 dBA
City of El Monte	Not Applicable	n/a
-	reshold for determining the relative significance f Project construction noise levels: ²	Base Standard or Ambient Noise Level + 5 dBA

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

¹ Source: City of Irwindale Municipal Code, Section 9.28.110 (Appendix 3.1).

² Construction noise level threshold based on the City of Irwindale Municipal Code standards, consistent with the City of Baldwin Park standards and the Los Angeles Municipal Code construction noise level limits (Section 112.02).

"n/a" = Municipal Code does not identify maximum acceptable construction source noise levels.



3.6 VIBRATION STANDARDS

Since the City of Irwindale, Duarte, Baldwin Park, El Monte, and Monrovia General Plans and Municipal Codes do not identify specific vibration level standards, the Los Angeles County Code, Section 12.08.350, vibration perception threshold of 0.01 in/sec RMS is used in this analysis. (13) For the purposes of this analysis, the perception threshold of 0.01 in/sec RMS shall be used to assess the potential impacts due to Project construction at nearby sensitive receiver locations.

Typically, the human response at the perception threshold for vibration includes annoyance in residential areas as previously shown on Exhibit 2-B, when vibration levels expressed in vibration decibels (VdB) approach 75 VdB. The County, however, identifies a vibration perception threshold of 0.01 in/sec RMS. For vibration levels expressed in velocity, the human body responds to the average vibration amplitude often described as the root-mean-square (RMS). The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a one-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to reduce the range of numbers used to describe human response to vibration. Therefore, the County of Los Angeles threshold of 0.01 in/sec in RMS velocity levels is used in this analysis to assess the human perception of vibration levels due to Project-related construction activities.



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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. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

- A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or
- D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.
- E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.
- F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and the City of Irwindale 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 under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, if any, and the Project's land use compatibility. The Project site is not within two miles of a public airport or located near 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 Guidelines E and F.

4.1 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (14) Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and distatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.



In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (15) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL), energy average noise level (L_{eq}), and median noise level (L_{50}).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Federal Interagency Committee on Noise (FICON), 1992.

4.2 NON-NOISE-SENSITIVE RECEIVERS

Non-noise-sensitive industrial uses, such as the Project, are considered *conditionally acceptable* with exterior noise levels between 67 to 78 dBA CNEL and *normally unacceptable* with exterior noise levels above 75 dBA CNEL. For the purposes of this noise study, industrial land uses are considered *normally acceptable* land use with exterior noise levels below 70 dBA CNEL, consistent with the adjacent jurisdictional compatibility criteria of the General Plans for the nearby Cities of Duarte, Baldwin Park, El Monte, and Monrovia.

To determine if Project-related traffic noise level increases are significant at off-site non-noisesensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria are used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the City of Irwindale General Plan *Noise and Land Use Compatibility* criteria.

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
 - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase; or
 - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase; or
 - already exceed 65 dBA CNEL, and the Project creates a community noise level impact of greater than 1.5 dBA CNEL (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g. industrial, etc.):
 - are less than the City of Irwindale General Plan Noise and Land Use Compatibility 70 dBA CNEL criteria and the Project creates a readily perceptible 5 dBA CNEL or greater Projectrelated noise level increase; or
 - are greater than the City of Irwindale General Plan Noise and Land Use Compatibility 70 dBA CNEL criteria and the Project creates a barely perceptible 3 dBA CNEL or greater Project-related noise level increase.

OPERATIONAL NOISE

- If Project-related operational (stationary-source) noise levels exceed the exterior noise level limits at receiver locations within the jurisdiction of the City of Irwindale, Duarte, Baldwin Park, El Monte, or Monrovia (as listed on Table 3-1).
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
 - are less than 60 dBA L_{eq} and the Project creates a *readily perceptible* 5 dBA L_{eq} or greater Project-related noise level increase; or
 - \circ range from 60 to 65 dBA L_{eq} and the Project creates a *barely perceptible* 3 dBA L_{eq} or greater Project-related noise level increase; or
 - $\circ~$ already exceed 65 dBA $L_{eq},$ and the Project creates a community noise level impact of greater than 1.5 dBA L_{eq} (FICON, 1992).
- If long-term Project-generated operational vibration levels could exceed the Los Angeles County acceptable vibration threshold of 0.01 in/sec RMS at sensitive receiver locations (Los Angeles County Code, Section 12.08.350).



CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities create noise levels at nearby receiver locations exceeding the ambient noise level plus 5 dBA L_{eq} (City of Irwindale Municipal Code, Section 9.28.110 (Appendix 3.1). The construction noise level threshold is based on the City of Irwindale Municipal Code standards, consistent with the City of Baldwin Park standards and the Los Angeles Municipal Code construction noise level limits (Section 112.02)).
- If short-term Project-generated construction source vibration levels could exceed the Los Angeles County acceptable vibration standard of 0.01 in/sec RMS at sensitive receiver locations (Los Angeles County Code, Section 12.08.350).

Analusia	Receiving	luvia di ati a v		Significance Criteria	
Analysis	Land Use	Jurisdiction	Condition(s)	Daytime	Nighttime
	Noise- Sensitive ¹	All	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
0.00			If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
Off-Site Traffic			If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNE	L Project increase
Indific	Non-Noise- Sensitive ²		if ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase	
			if ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
	Any	All	Exterior Noise Level Limits	See Table 3-1.	
	Noise- I Sensitive	All ¹	if ambient is < 60 dBA L_{eq}	\geq 5 dBA L _{eq} Project increase	
Operational			if ambient is 60 - 65 dBA L_{eq}	≥ 3 dBA L _{eq} Project increase	
			if ambient is > 65 dBA L_{eq}	≥ 1.5 dBA L _{eq}	Project increase
	Any	All	Vibration Level Threshold ³	0.01 ir	/sec RMS
Construction	Any	All	Noise Level Threshold ⁴	Ambient + 5 dBA L _{eq}	
Construction			Vibration Level Threshold ³	0.01 ir	/sec RMS

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

¹ Source: FICON, 1992.

² Based on the City of Irwindale General Plan, Noise and Land Use Compatibility criteria (Page 146) and consistent with adjacent criteria of the Cities of Duarte, Baldwin Park, and El Monte criteria.

³ Source: Los Angeles County Code, Section 12.08.350.

⁴ Source: City of Irwindale Municipal Code, Section 9.28.110 (Appendix 3.1). The construction noise level threshold is based on the City of Irwindale Municipal Code standards, consistent with the City of Baldwin Park standards and the Los Angeles Municipal Code construction noise level limits (Section 112.02).

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "RMS" = root-mean-square



5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, eight individual 24-hour noise level measurements were taken at receiver 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 by Urban Crossroads, Inc. on Thursday, August 24th, 2017 at the closest sensitive receiver locations and non-noise-sensitive receiver locations. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-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. (16)

5.2 NOISE MEASUREMENT LOCATIONS

The long-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 any 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. (4) 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. (3)*

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. (3) 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 nearby 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 hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels on Longden Avenue west of the Project adjacent to Longden Avenue Park, Plymouth Elementary School, and existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 70.5 dBA CNEL. The hourly noise levels measured at location L1 ranged from 63.0 to 69.4 dBA L_{eq} during the daytime hours and from 51.0 to 69.6 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 66.3 dBA L_{eq} with an average nighttime noise level of 63.3 dBA L_{eq}.
- Location L2 represents the noise levels north of the Project site on Meridian Street near existing residential homes and industrial uses. The noise level measurements collected show an overall 24-hour exterior noise level of 70.6 dBA CNEL. The hourly noise levels measured at location L2 ranged from 61.8 to 70.4 dBA L_{eq} during the daytime hours and from 52.4 to 66.4 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 67.2 dBA L_{eq} with an average nighttime noise level of 62.9 dBA L_{eq}.
 - This location was chosen based on conditions in the field to represent the residential uses north of the Project site. Due to the long-term nature of the measurements (a minimum 24 hours), a secure location was selected at a greater distance from the Project site than that of residential homes located at closer distances (e.g., homes on Van Meter Street). Further, all measurement locations were selected consistent with the FTA and Caltrans guidance previously described in Section 5.2 above.
- Location L3 represents the noise levels north of the Project site on Kellwill Way near existing residential homes and Beardslee Elementary School. The 24-hour CNEL indicates that the overall exterior noise level is 58.6 dBA CNEL. At location L3 the background ambient noise levels ranged from 49.3 to 57.6 dBA L_{eq} during the daytime hours to levels of 44.9 to 56.0 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 55.3 dBA L_{eq} with an average nighttime noise level of 51.0 dBA L_{eq}.
- Location L4 represents the noise levels in the Santa Fe Dam Recreation Area east of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 52.6 dBA CNEL. The hourly noise levels measured at location L4 ranged from 43.9 to 58.6 dBA L_{eq} during the daytime hours and from 37.4 to 47.9 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 51.8 dBA L_{eq} with an average nighttime noise level of 43.0 dBA L_{eq}.



- Location L5 represents the noise levels southeast of the Project adjacent to existing industrial uses on Live Oak Avenue and nearby residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 60.5 dBA CNEL. The hourly noise levels measured at location L5 ranged from 52.0 to 58.9 dBA L_{eq} during the daytime hours and from 49.4 to 58.4 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 56.1 dBA L_{eq} with an average nighttime noise level of 53.3 dBA L_{eq}.
- Location L6 represents the noise levels south of the Project site near Walnut Elementary School, existing residential homes, and Olive Middle School. The noise level measurements collected show an overall 24-hour exterior noise level of 61.6 dBA CNEL. The hourly noise levels measured at location L6 ranged from 52.6 to 59.6 dBA L_{eq} during the daytime hours and from 50.7 to 58.0 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 56.3 dBA L_{eq} with an average nighttime noise level of 54.7 dBA L_{eq}.
- Location L7 represents the noise levels southwest of the Project site near existing residential homes on Durfee Avenue. The noise level measurements collected show an overall 24-hour exterior noise level of 57.0 dBA CNEL. The hourly noise levels measured at location L7 ranged from 49.6 to 55.5 dBA L_{eq} during the daytime hours and from 40.7 to 53.7 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 53.2 dBA L_{eq} with an average nighttime noise level of 49.5 dBA L_{eq}.
- Location L8 represents the noise levels south of the Project site on Live Oak Avenue near the Irwindale Event Center and existing industrial uses. The noise level measurements collected show an overall 24-hour exterior noise level of 83.8 dBA CNEL. The hourly noise levels measured at location L8 ranged from 75.7 to 82.3 dBA L_{eq} during the daytime hours and from 71.3 to 80.0 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 80.1 dBA L_{eq} with an average nighttime noise level of 76.4 dBA L_{eq}.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L₁, L₂, L₅, L₈, L₂₅, L₅₀, L₉₀, L₉₅, and L₉₉ percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network and stationary-source noise associated with existing quarry and industrial uses. Further, the Project site currently operates as an Inert Debris Engineered Fill Operation (IDEFO) and generates existing noise levels associated with this use under existing conditions. The 24-hour existing noise level measurements shown on Table 5-1 present the existing ambient noise conditions.



Location ¹	Distance to Project Boundary (Feet)	Description	Energy Average Noise Level (dBA L _{eq}) ²		CNEL
			Daytime	Nighttime	
L1	4,900'	Located on Longden Avenue west of the Project adjacent to Longden Avenue Park, Plymouth Elementary School, and existing residential homes.	66.3	63.3	70.5
L2	2,800'	Located north of the Project site on Meridian Street near existing residential homes and industrial uses.	67.2	62.9	70.6
L3	5,125'	Located north of the Project site on Kellwill Way near existing residential homes and Beardslee Elementary School.	55.3	51.0	58.6
L4	6,330'	Located in the Santa Fe Dam Recreation Area east of the Project site.	51.8	43.0	52.6
L5	5,000'	Located southeast of the Project adjacent to existing industrial uses on Live Oak Avenue and nearby residential homes.	56.1	53.3	60.5
L6	4,230'	Located south of the Project site near Walnut Elementary School, existing residential homes, and Olive Middle School.	56.3	54.7	61.6
L7	5,575'	Located southwest of the Project site near existing residential homes on Durfee Avenue.	53.2	49.5	57.0
L8	60'	Located south of the Project site on Live Oak Avenue near the Irwindale Event Center and existing industrial uses.	80.1	76.4	83.8

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

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

² Energy (logarithmic) average hourly levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.



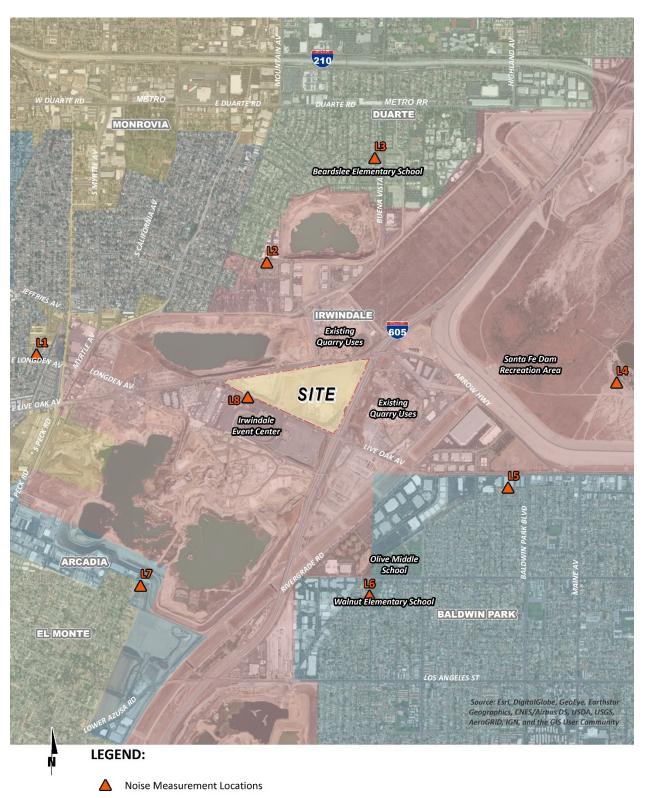


EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (17) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (18) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 24 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Irwindale, Duarte, Baldwin Park, El Monte, and Monrovia General Plan Circulation Elements, and the posted vehicle speeds. The ADT volumes used in this study are presented on Table 6-2 are based on *The Park at Live Oak Traffic Impact Analysis* prepared by Urban Crossroads, Inc., for the following traffic scenarios: Existing, Opening Year 2020, Horizon Year 2040. (2) For this analysis, soft site conditions are used to analyze the traffic noise impacts within the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Caltrans' research has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model as used in this off-site traffic noise analysis. (19)

Per *The Park at Live Oak Traffic Impact Analysis* prepared by Urban Crossroads, Inc. the Project is expected to generate a net total of approximately 14,607 trip-ends per day (actual vehicles). (2) The Project trip generation includes 808 truck trip-ends per day from the proposed Project site. This noise study relies on the Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network.



To quantify the off-site noise levels, the Project-related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project-related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. The 808 daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Impact Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-7 show the vehicle mixes used for the with Project traffic scenarios.



ID	Roadway	Segment	Adjacent Planned (Existing) Land Use ¹	Distance from Centerline to Nearest Adjacent Land Use (Feet) ²	Posted Vehicle Speed (mph)
1	Myrtle Av.	n/o Longden Av.	Industrial	30'	40
2	Peck Rd.	s/o Arrow Hwy.	Industrial	60'	40
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	30'	40
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	30'	40
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	30'	40
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	30'	40
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	30'	50
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	40'	30
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	50'	40
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	40'	35
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	30'	40
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	30'	40
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	48'	40
14	Arrow Hwy.	e/o Peck Rd.	Industrial	40'	45
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	40'	45
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	40'	45
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	40'	45
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	40'	45
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	40'	45
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	40'	45
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	50'	45
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	50'	45
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	50'	45
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	50'	45

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1. ² Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the General Plan Circulation Elements.



		Average Daily Traffic Volumes ¹						
ID	Roadway Segment	Existing		Opening Year Cumulative 2020		Horizon Year 2040 Without		
		Without Project	With Project	Without Project	With Project	Without Project	With Project	
1	Myrtle Av. n/o Longden Av.	25,837	26,527	27,774	28,464	29,493	30,183	
2	Peck Rd. s/o Arrow Hwy.	21,475	22,165	23,235	23,925	23,383	24,073	
3	Avenida Barbosa n/o Buena Vista St.	6,136	6,826	6,857	7,547	7,265	7,955	
4	Avenida Barbosa s/o Buena Vista St.	15,611	16,301	17,446	18,136	18,485	19,175	
5	Rivergrade Rd. s/o Arrow Hwy.	5,363	8,399	8,112	11,148	8,469	11,505	
6	Rivergrade Rd. s/o Stewart Av.	2,535	5,571	2,690	5,726	2,859	5,895	
7	Rivergrade Rd. s/o Live Oak Av.	11,042	11,594	14,673	15,225	15,407	15,959	
8	Stewart Av. s/o Live Oak Av.	5,755	6,445	6,771	7,461	7,154	7,844	
9	Baldwin Park Bl. s/o Live Oak Av.	11,684	12,374	13,419	14,109	14,196	14,886	
10	Maine Av. s/o Arrow Hwy.	10,106	10,796	11,725	12,415	12,397	13,087	
11	Longden Av. w/o Myrtle Av.	13,381	14,071	14,556	15,246	15,446	16,136	
12	Longden Av. e/o Myrtle Av.	16,851	18,231	18,595	19,975	19,716	21,096	
13	Live Oak Av. w/o Peck Rd.	25,108	25,822	27,883	28,597	29,553	30,267	
14	Arrow Hwy. e/o Peck Rd.	23,789	25,193	26,917	28,321	28,500	29,904	
15	Arrow Hwy. e/o Longden Av.	41,218	44,002	46,253	49,037	48,995	51,779	
16	Arrow Hwy. e/o I-605 Fwy.	27,508	31,924	31,969	36,385	33,799	38,215	
17	Arrow Hwy. w/o Rivergrade Rd.	24,194	28,610	26,801	31,217	28,411	32,827	
18	Arrow Hwy. e/o Rivergrade Rd.	21,137	22,517	25,978	27,358	27,384	28,764	
19	Arrow Hwy. w/o Maine Av.	44,296	45,676	50,172	51,552	53,119	54,499	
20	Arrow Hwy. e/o Maine Av.	32,875	33,719	37,273	38,117	39,460	40,304	
21	Live Oak Av. w/o Rivergrade Rd.	27,508	29,456	31,971	33,919	33,801	35,749	
22	Live Oak Av. e/o Rivergrade Rd.	30,406	31,802	34,512	35,908	36,535	37,931	
23	Live Oak Av. e/o Stewart Av.	29,466	30,172	33,071	33,777	35,031	35,737	
24	Live Oak Av. w/o Arrow Hwy.	25,119	25,825	29,041	29,747	30,712	31,418	

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

¹ Source: The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.



		Total of Time of		
Vehicle Type	Daytime	Evening	Nighttime	Day Splits
Autos	72.45%	9.15%	18.40%	100.00%
Medium Trucks	77.70%	4.78%	17.52%	100.00%
Heavy Trucks	84.32%	2.68%	13.00%	100.00%

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

¹ Based on existing 24-hour classification counts by vehicle type taken on 11/28/2017 at Arrow Highway west of Maine Avenue (The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018). Vehicle mix percentage values rounded to the nearest one-hundredth.

"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT CONDITIONS VEHICLE MIX

Classification		Total % Traffic Flow ¹		Tatal
Classification	Autos	Medium Trucks	Heavy Trucks	Total
All Segments	85.65%	9.12%	5.23%	100.00%

¹ Based on existing 24-hour classification counts by vehicle type taken on 11/28/2017 at Arrow Highway west of Maine Avenue (The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018). Vehicle mix percentage values rounded to the nearest one-hundredth.



				With P	roject ¹	
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²
1	Myrtle Av.	n/o Longden Av.	86.02%	8.89%	5.09%	100.00%
2	Peck Rd.	s/o Arrow Hwy.	86.10%	8.84%	5.06%	100.00%
3	Avenida Barbosa	n/o Buena Vista St.	87.10%	8.20%	4.70%	100.00%
4	Avenida Barbosa	s/o Buena Vista St.	86.26%	8.74%	5.00%	100.00%
5	Rivergrade Rd.	s/o Arrow Hwy.	90.84%	5.83%	3.34%	100.00%
6	Rivergrade Rd.	s/o Stewart Av.	93.47%	4.15%	2.38%	100.00%
7	Rivergrade Rd.	s/o Live Oak Av.	86.33%	8.69%	4.98%	100.00%
8	Stewart Av.	s/o Live Oak Av.	87.19%	8.15%	4.67%	100.00%
9	Baldwin Park Bl.	s/o Live Oak Av.	86.45%	8.61%	4.93%	100.00%
10	Maine Av.	s/o Arrow Hwy.	86.57%	8.54%	4.89%	100.00%
11	Longden Av.	w/o Myrtle Av.	86.35%	8.68%	4.97%	100.00%
12	Longden Av.	e/o Myrtle Av.	86.74%	8.43%	4.83%	100.00%
13	Live Oak Av.	w/o Peck Rd.	85.95%	8.89%	5.16%	100.00%
14	Arrow Hwy.	e/o Peck Rd.	86.36%	8.63%	5.01%	100.00%
15	Arrow Hwy.	e/o Longden Av.	86.50%	8.55%	4.94%	100.00%
16	Arrow Hwy.	e/o I-605 Fwy.	87.64%	7.86%	4.50%	100.00%
17	Arrow Hwy.	w/o Rivergrade Rd.	87.87%	7.71%	4.42%	100.00%
18	Arrow Hwy.	e/o Rivergrade Rd.	86.53%	8.56%	4.91%	100.00%
19	Arrow Hwy.	w/o Maine Av.	86.08%	8.85%	5.07%	100.00%
20	Arrow Hwy.	e/o Maine Av.	85.96%	8.90%	5.13%	100.00%
21	Live Oak Av.	w/o Rivergrade Rd.	86.55%	8.53%	4.92%	100.00%
22	Live Oak Av.	e/o Rivergrade Rd.	86.23%	8.73%	5.04%	100.00%
23	Live Oak Av.	e/o Stewart Av.	85.93%	8.92%	5.15%	100.00%
24	Live Oak Av.	w/o Arrow Hwy.	85.98%	8.89%	5.13%	100.00%

TABLE 6-5: EXISTING WITH PROJECT CONDITIONS VEHICLE MIX

¹ Source: The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.
 ² Total of vehicle mix percentage values rounded to the nearest one-hundredth.



				With P	roject ¹	
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²
1	Myrtle Av.	n/o Longden Av.	86.00%	8.90%	5.10%	100.00%
2	Peck Rd.	s/o Arrow Hwy.	86.06%	8.86%	5.08%	100.00%
3	Avenida Barbosa	n/o Buena Vista St.	86.96%	8.29%	4.75%	100.00%
4	Avenida Barbosa	s/o Buena Vista St.	86.20%	8.78%	5.03%	100.00%
5	Rivergrade Rd.	s/o Arrow Hwy.	89.56%	6.64%	3.80%	100.00%
6	Rivergrade Rd.	s/o Stewart Av.	93.26%	4.29%	2.46%	100.00%
7	Rivergrade Rd.	s/o Live Oak Av.	86.17%	8.79%	5.04%	100.00%
8	Stewart Av.	s/o Live Oak Av.	86.98%	8.28%	4.74%	100.00%
9	Baldwin Park Bl.	s/o Live Oak Av.	86.35%	8.68%	4.97%	100.00%
10	Maine Av.	s/o Arrow Hwy.	86.45%	8.62%	4.94%	100.00%
11	Longden Av.	w/o Myrtle Av.	86.30%	8.71%	4.99%	100.00%
12	Longden Av.	e/o Myrtle Av.	86.64%	8.49%	4.86%	100.00%
13	Live Oak Av.	w/o Peck Rd.	85.93%	8.91%	5.17%	100.00%
14	Arrow Hwy.	e/o Peck Rd.	86.28%	8.68%	5.04%	100.00%
15	Arrow Hwy.	e/o Longden Av.	86.42%	8.61%	4.97%	100.00%
16	Arrow Hwy.	e/o I-605 Fwy.	87.39%	8.02%	4.59%	100.00%
17	Arrow Hwy.	w/o Rivergrade Rd.	87.68%	7.83%	4.49%	100.00%
18	Arrow Hwy.	e/o Rivergrade Rd.	86.37%	8.66%	4.96%	100.00%
19	Arrow Hwy.	w/o Maine Av.	86.04%	8.88%	5.09%	100.00%
20	Arrow Hwy.	e/o Maine Av.	85.93%	8.93%	5.14%	100.00%
21	Live Oak Av.	w/o Rivergrade Rd.	86.43%	8.61%	4.96%	100.00%
22	Live Oak Av.	e/o Rivergrade Rd.	86.16%	8.78%	5.06%	100.00%
23	Live Oak Av.	e/o Stewart Av.	85.90%	8.94%	5.16%	100.00%
24	Live Oak Av.	w/o Arrow Hwy.	85.94%	8.92%	5.15%	100.00%

TABLE 6-6: OPENING YEAR 2020 WITH PROJECT CONDITIONS VEHICLE MIX

¹ Source: The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.

² Total of vehicle mix percentage values rounded to the nearest one-hundredth.



				With P	roject ¹	
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²
1	Myrtle Av.	n/o Longden Av.	85.98%	8.91%	5.11%	100.00%
2	Peck Rd.	s/o Arrow Hwy.	86.06%	8.86%	5.08%	100.00%
3	Avenida Barbosa	n/o Buena Vista St.	86.90%	8.33%	4.77%	100.00%
4	Avenida Barbosa	s/o Buena Vista St.	86.17%	8.79%	5.04%	100.00%
5	Rivergrade Rd.	s/o Arrow Hwy.	89.44%	6.72%	3.85%	100.00%
6	Rivergrade Rd.	s/o Stewart Av.	93.04%	4.42%	2.53%	100.00%
7	Rivergrade Rd.	s/o Live Oak Av.	86.15%	8.81%	5.05%	100.00%
8	Stewart Av.	s/o Live Oak Av.	86.91%	8.32%	4.77%	100.00%
9	Baldwin Park Bl.	s/o Live Oak Av.	86.32%	8.70%	4.98%	100.00%
10	Maine Av.	s/o Arrow Hwy.	86.41%	8.64%	4.95%	100.00%
11	Longden Av.	w/o Myrtle Av.	86.26%	8.73%	5.00%	100.00%
12	Longden Av.	e/o Myrtle Av.	86.59%	8.53%	4.88%	100.00%
13	Live Oak Av.	w/o Peck Rd.	85.91%	8.92%	5.17%	100.00%
14	Arrow Hwy.	e/o Peck Rd.	86.24%	8.71%	5.05%	100.00%
15	Arrow Hwy.	e/o Longden Av.	86.38%	8.64%	4.98%	100.00%
16	Arrow Hwy.	e/o I-605 Fwy.	87.31%	8.07%	4.62%	100.00%
17	Arrow Hwy.	w/o Rivergrade Rd.	87.58%	7.90%	4.52%	100.00%
18	Arrow Hwy.	e/o Rivergrade Rd.	86.34%	8.69%	4.98%	100.00%
19	Arrow Hwy.	w/o Maine Av.	86.01%	8.89%	5.09%	100.00%
20	Arrow Hwy.	e/o Maine Av.	85.91%	8.94%	5.15%	100.00%
21	Live Oak Av.	w/o Rivergrade Rd.	86.39%	8.63%	4.98%	100.00%
22	Live Oak Av.	e/o Rivergrade Rd.	86.14%	8.80%	5.07%	100.00%
23	Live Oak Av.	e/o Stewart Av.	85.89%	8.95%	5.16%	100.00%
24	Live Oak Av.	w/o Arrow Hwy.	85.92%	8.93%	5.15%	100.00%

TABLE 6-7: HORIZON YEAR 2040 WITH PROJECT VEHICLE MIX

¹ Source: The Park at Live Oak Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.
 ² Total of vehicle mix percentage values rounded to the nearest one-hundredth.



6.3 CONSTRUCTION VIBRATION ASSESSMENT METHODOLOGY

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with several types of construction equipment are summarized on Table 6-8. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

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

TABLE 6-8: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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



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7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *The Park at Live Oak Traffic Impact Analysis*. (2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- <u>Existing Conditions Without / With Project</u>: This scenario refers to the existing present-day noise conditions without and with the proposed Project.
- <u>Opening Year 2020 Without / With the Project</u>: This scenario refers to Opening Year noise conditions without and with the proposed Project. This scenario includes all cumulative projects identified in the Traffic Impact Analysis.
- <u>Horizon Year 2040 Without / With Project Avenue Extension</u>: This scenario below refers to the background noise conditions at future Year 2040 without and with the proposed Project plus ambient growth. This scenario corresponds to Year 2040 conditions, and includes all cumulative projects identified in the *Traffic Impact Analysis*.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 and 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the 24 study area roadway segments analyzed from the without Project to the with Project conditions under Existing, Opening Year 2020, Horizon Year 2040 traffic conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.



			Adjacent	CNEL at Nearest		nce to Co enterline	
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Myrtle Av.	n/o Longden Av.	Industrial	78.0	102	220	473
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.4	100	216	466
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	71.7	39	84	182
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	75.8	73	157	338
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	71.1	36	77	166
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	67.9	RW	47	101
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	76.3	79	170	366
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	67.0	RW	55	118
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	71.9	67	145	313
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	70.8	45	98	210
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.1	66	142	305
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.1	n/a	n/a	n/a
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	75.6	114	245	527
14	Arrow Hwy.	e/o Peck Rd.	Industrial	78.1	139	300	646
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	80.5	201	432	932
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	78.8	153	330	711
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	78.2	141	303	653
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	77.6	129	277	597
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	80.8	211	454	977
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	79.5	173	372	801
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	79.2	204	440	948
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	79.6	218	470	1013
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	79.5	214	461	992
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	78.8	192	414	892

TABLE 7-1:	EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1. ² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

		_	Adjacent	CNEL at Nearest		nce to Co enterline	
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Myrtle Av.	n/o Longden Av.	Industrial	78.0	102	221	476
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.4	101	217	469
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	71.9	40	86	185
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	75.8	73	158	341
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	71.7	39	84	182
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	69.1	RW	56	121
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	76.4	80	172	370
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	67.2	RW	56	120
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	72.0	68	147	316
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	70.9	46	99	213
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.2	66	143	308
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.2	n/a	n/a	n/a
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	75.7	115	247	533
14	Arrow Hwy.	e/o Peck Rd.	Industrial	78.2	141	305	656
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	80.6	204	439	946
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	78.9	158	340	733
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	78.4	146	314	676
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	77.7	130	280	604
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	80.9	212	456	983
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	79.6	174	375	807
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	79.3	208	447	963
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	79.7	221	476	1025
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	79.5	215	464	999
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	78.8	194	418	900

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1.

			Adjacent	CNEL at Nearest		nce to Co enterline	
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Myrtle Av.	n/o Longden Av.	Industrial	78.3	107	231	497
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.7	106	228	491
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	72.2	42	91	196
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	76.3	79	169	364
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	72.9	47	102	219
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	68.1	RW	49	105
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	77.5	95	205	442
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	67.8	RW	61	132
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	72.5	74	159	343
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	71.5	50	108	232
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.5	70	150	323
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.5	n/a	n/a	n/a
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	76.1	122	263	566
14	Arrow Hwy.	e/o Peck Rd.	Industrial	78.7	151	325	701
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	81.0	217	467	1006
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	79.4	169	365	786
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	78.6	151	325	699
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	78.5	148	318	685
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	81.4	229	493	1062
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	80.1	188	404	871
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	79.8	226	486	1048
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	80.2	238	512	1103
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	80.0	231	497	1072
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	79.4	212	456	983

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1. ² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

			Adjacent	CNEL at Nearest		nce to Co enterline	
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Myrtle Av.	n/o Longden Av.	Industrial	78.3	108	232	499
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.7	106	229	494
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	72.3	43	92	199
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	76.3	79	170	367
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	73.3	50	108	233
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	69.3	RW	58	124
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	77.6	96	207	446
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	67.8	RW	62	133
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	72.6	75	161	346
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	71.5	50	109	234
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.5	70	151	326
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.6	n/a	n/a	n/a
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	76.1	123	265	571
14	Arrow Hwy.	e/o Peck Rd.	Industrial	78.7	153	330	711
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	81.1	220	473	1020
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	79.6	174	375	807
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	78.8	155	335	721
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	78.6	149	321	692
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	81.4	230	496	1068
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	80.1	189	407	877
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	79.9	229	493	1062
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	80.2	240	517	1113
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	80.0	232	501	1078
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	79.4	213	459	990

TABLE 7-4: OPENING YEAR 2020 WITH PROJECT CONDITIONS NOISE CONTOURS	

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1. ² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

			Adjacent	CNEL at Nearest		nce to Co enterline	
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Myrtle Av.	n/o Longden Av.	Industrial	78.5	111	240	517
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.7	106	229	493
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	72.5	44	94	203
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	76.5	82	176	379
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	73.1	48	104	225
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	68.4	RW	51	109
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	77.7	98	212	457
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	68.0	RW	63	136
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	72.8	77	165	356
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	71.7	52	112	241
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.7	72	156	336
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.8	85	184	395
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	76.3	127	273	588
14	Arrow Hwy.	e/o Peck Rd.	Industrial	78.9	157	338	728
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	81.3	225	485	1045
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	79.6	176	379	816
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	78.9	157	337	727
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	78.7	153	329	709
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	81.6	238	512	1103
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	80.3	195	420	905
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	80.1	234	505	1087
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	80.4	247	532	1145
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	80.2	240	517	1114
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	79.6	220	473	1020

 TABLE 7-5: HORIZON YEAR 2040 WITHOUT PROJECT CONDITIONS

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1.

			Adjacent	CNEL at Nearest		Distance to Contour from Centerline (Feet)		
ID	Road	Segment	Planned (Existing) Land Use ¹	Adjacent Land Use (dBA) ²	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
1	Myrtle Av.	n/o Longden Av.	Industrial 78.6		112	241	519	
2	Peck Rd.	s/o Arrow Hwy.	Industrial	73.8	107	230	496	
3	Avenida Barbosa	n/o Buena Vista St.	Quarry (Industrial)	72.6	44	96	207	
4	Avenida Barbosa	s/o Buena Vista St.	Quarry	76.6	82	177	381	
5	Rivergrade Rd.	s/o Arrow Hwy.	Industrial	73.5	51	111	239	
6	Rivergrade Rd.	s/o Stewart Av.	Industrial	69.5	RW	60	128	
7	Rivergrade Rd.	s/o Live Oak Av.	Open Space/Industrial	77.8	99	214	460	
8	Stewart Av.	s/o Live Oak Av.	Industrial/Residential	68.1	RW	64	138	
9	Baldwin Park Bl.	s/o Live Oak Av.	Industrial/Residential	72.8	77	167	359	
10	Maine Av.	s/o Arrow Hwy.	Industrial/Residential	71.8	52	113	243	
11	Longden Av.	w/o Myrtle Av.	Industrial (Residential)	75.8	73	157	339	
12	Longden Av.	e/o Myrtle Av.	Quarry/Industrial	76.9	86	186	400	
13	Live Oak Av.	w/o Peck Rd.	Industrial (Residential)	76.4	128	275	593	
14	Arrow Hwy.	e/o Peck Rd.	Industrial	79.0	159	343	738	
15	Arrow Hwy.	e/o Longden Av.	Quarry (Industrial)	81.3	228	492	1059	
16	Arrow Hwy.	e/o I-605 Fwy.	Open Space/Commercial	79.8	180	388	836	
17	Arrow Hwy.	w/o Rivergrade Rd.	Open Space/Industrial	79.1	161	347	748	
18	Arrow Hwy.	e/o Rivergrade Rd.	Open Space/Industrial	78.8	154	332	716	
19	Arrow Hwy.	w/o Maine Av.	Open Space/Industrial	81.6	239	515	1109	
20	Arrow Hwy.	e/o Maine Av.	Open Space/Industrial	80.4	196	423	910	
21	Live Oak Av.	w/o Rivergrade Rd.	Open Space/Industrial	80.1	237	511	1102	
22	Live Oak Av.	e/o Rivergrade Rd.	Industrial/Commercial	80.5	249	537	1156	
23	Live Oak Av.	e/o Stewart Av.	Industrial (Vacant)	80.3	241	520	1120	
24	Live Oak Av.	w/o Arrow Hwy.	Industrial (Vacant)	79.7	221	477	1027	

TABLE 7-6: HORIZON YEAR 2040 WITH PROJECT CONDITIONS

¹ City of Irwindale General Plan Exhibit 2-3, City of Baldwin Park Zoning Map, and City of Monrovia General Plan Land Use Element Figure 1.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The without Project exterior noise levels are expected to range from 67.0 to 80.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 67.2 to 80.9 dBA CNEL. As shown on Table 7-7 the Project will generate a noise level increase of up to 1.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing conditions at the land uses adjacent to roadways conveying Project traffic.



ID	Road	Segment		EL at Adjao nd Use (dB		Noise- Sensitive Land	Threshold Exceeded? ²	
			No Project	With Project	Project Addition	Use?	Executed.	
1	Myrtle Av.	n/o Longden Av.	78.0	78.0	0.0	No	No	
2	Peck Rd.	s/o Arrow Hwy.	73.4	73.4	0.0	No	No	
3	Avenida Barbosa	n/o Buena Vista St.	71.7	71.9	0.2	No	No	
4	Avenida Barbosa	s/o Buena Vista St.	75.8	75.8	0.0	No	No	
5	Rivergrade Rd.	s/o Arrow Hwy.	71.1	71.7	0.6	No	No	
6	Rivergrade Rd.	s/o Stewart Av.	67.9	69.1	1.2	No	No	
7	Rivergrade Rd.	s/o Live Oak Av.	76.3	76.4	0.1	No	No	
8	Stewart Av.	s/o Live Oak Av.	67.0	67.2	0.2	Yes	No	
9	Baldwin Park Bl.	s/o Live Oak Av.	71.9	72.0	0.1	Yes	No	
10	Maine Av.	s/o Arrow Hwy.	70.8	70.9	0.1	Yes	No	
11	Longden Av.	w/o Myrtle Av.	75.1	75.2	0.1	Yes	No	
12	Longden Av.	e/o Myrtle Av.	76.1	76.2	0.1	No	No	
13	Live Oak Av.	w/o Peck Rd.	75.6	75.7	0.1	Yes	No	
14	Arrow Hwy.	e/o Peck Rd.	78.1	78.2	0.1	No	No	
15	Arrow Hwy.	e/o Longden Av.	80.5	80.6	0.1	No	No	
16	Arrow Hwy.	e/o I-605 Fwy.	78.8	78.9	0.1	No	No	
17	Arrow Hwy.	w/o Rivergrade Rd.	78.2	78.4	0.2	No	No	
18	Arrow Hwy.	e/o Rivergrade Rd.	77.6	77.7	0.1	No	No	
19	Arrow Hwy.	w/o Maine Av.	80.8	80.9	0.1	No	No	
20	Arrow Hwy.	e/o Maine Av.	79.5	79.6	0.1	No	No	
21	Live Oak Av.	w/o Rivergrade Rd.	79.2	79.3	0.1	No	No	
22	Live Oak Av.	e/o Rivergrade Rd.	79.6	79.7	0.1	No	No	
23	Live Oak Av.	e/o Stewart Av.	79.5	79.5	0.0	No	No	
24	Live Oak Av.	w/o Arrow Hwy.	78.8	78.8	0.0	No	No	

TABLE 7-7: EXISTING CONDITION OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use. ² Significance Criteria (Section 4).

7.3 OPENING YEAR 2020 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-3 presents the Opening Year 2020 without Project conditions CNEL noise levels. The without Project exterior noise levels are expected to range from 67.8 to 81.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Opening Year 2020 with Project conditions will range from 67.8 to 81.4 dBA CNEL. As shown on Table 7-8 the Project will generate a noise level increase of up to 1.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Opening Year 2020 conditions at the land uses adjacent to roadways conveying Project traffic.



ID	Road	Segment		EL at Adjao nd Use (dB		Noise- Sensitive Land	Threshold Exceeded? ²	
			No Project	With Project	Project Addition	Use?	Executed:	
1	Myrtle Av.	n/o Longden Av.	78.3	78.3	0.0	No	No	
2	Peck Rd.	s/o Arrow Hwy.	73.7	73.7	0.0	No	No	
3	Avenida Barbosa	n/o Buena Vista St.	72.2	72.3	0.1	No	No	
4	Avenida Barbosa	s/o Buena Vista St.	76.3	76.3	0.0	No	No	
5	Rivergrade Rd.	s/o Arrow Hwy.	72.9	73.3	0.4	No	No	
6	Rivergrade Rd.	s/o Stewart Av.	68.1	69.3	1.2	No	No	
7	Rivergrade Rd.	s/o Live Oak Av.	77.5	77.6	0.1	No	No	
8	Stewart Av.	s/o Live Oak Av.	67.8	67.8	0.0	Yes	No	
9	Baldwin Park Bl.	s/o Live Oak Av.	72.5	72.6	0.1	Yes	No	
10	Maine Av.	s/o Arrow Hwy.	71.5	71.5	0.0	Yes	No	
11	Longden Av.	w/o Myrtle Av.	75.5	75.5	0.0	Yes	No	
12	Longden Av.	e/o Myrtle Av.	76.5	76.6	0.1	No	No	
13	Live Oak Av.	w/o Peck Rd.	76.1	76.1	0.0	Yes	No	
14	Arrow Hwy.	e/o Peck Rd.	78.7	78.7	0.0	No	No	
15	Arrow Hwy.	e/o Longden Av.	81.0	81.1	0.1	No	No	
16	Arrow Hwy.	e/o I-605 Fwy.	79.4	79.6	0.2	No	No	
17	Arrow Hwy.	w/o Rivergrade Rd.	78.6	78.8	0.2	No	No	
18	Arrow Hwy.	e/o Rivergrade Rd.	78.5	78.6	0.1	No	No	
19	Arrow Hwy.	w/o Maine Av.	81.4	81.4	0.0	No	No	
20	Arrow Hwy.	e/o Maine Av.	80.1	80.1	0.0	No	No	
21	Live Oak Av.	w/o Rivergrade Rd.	79.8	79.9	0.1	No	No	
22	Live Oak Av.	e/o Rivergrade Rd.	80.2	80.2	0.0	No	No	
23	Live Oak Av.	e/o Stewart Av.	80.0	80.0	0.0	No	No	
24	Live Oak Av.	w/o Arrow Hwy.	79.4	79.4	0.0	No	No	

TABLE 7-8: OPENING YEAR OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use. ² Significance Criteria (Section 4).



7.4 HORIZON YEAR 2040 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-5 presents the Horizon Year 2040 without Project conditions CNEL noise levels. The without Project exterior noise levels are expected to range from 68.0 to 81.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the Horizon Year 2040 with Project conditions will range from 68.1 to 81.6 dBA CNEL. As shown on Table 7-9 the Project will generate a noise level increase of up to 1.1 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Horizon Year 2040 conditions at the land uses adjacent to roadways conveying Project traffic.



ID	Road Segment		CNEL at Adjacent Land Use (dBA) ¹			Noise- Sensitive Land	Threshold Exceeded? ²	
			No Project	With Project	Project Addition	Use?	LACEEded:	
1	Myrtle Av.	n/o Longden Av.	78.5	78.6	0.1	No	No	
2	Peck Rd.	s/o Arrow Hwy.	73.7	73.8	0.1	No	No	
3	Avenida Barbosa	n/o Buena Vista St.	72.5	72.6	0.1	No	No	
4	Avenida Barbosa	s/o Buena Vista St.	76.5	76.6	0.1	No	No	
5	Rivergrade Rd.	s/o Arrow Hwy.	73.1	73.5	0.4	No	No	
6	Rivergrade Rd.	s/o Stewart Av.	68.4	69.5	1.1	No	No	
7	Rivergrade Rd.	s/o Live Oak Av.	77.7	77.8	0.1	No	No	
8	Stewart Av.	s/o Live Oak Av.	68.0	68.1	0.1	Yes	No	
9	Baldwin Park Bl.	s/o Live Oak Av.	72.8	72.8	0.0	Yes	No	
10	Maine Av.	s/o Arrow Hwy.	71.7	71.8	0.1	Yes	No	
11	Longden Av.	w/o Myrtle Av.	75.7	75.8	0.1	Yes	No	
12	Longden Av.	e/o Myrtle Av.	76.8	76.9	0.1	No	No	
13	Live Oak Av.	w/o Peck Rd.	76.3	76.4	0.1	Yes	No	
14	Arrow Hwy.	e/o Peck Rd.	78.9	79.0	0.1	No	No	
15	Arrow Hwy.	e/o Longden Av.	81.3	81.3	0.0	No	No	
16	Arrow Hwy.	e/o I-605 Fwy.	79.6	79.8	0.2	No	No	
17	Arrow Hwy.	w/o Rivergrade Rd.	78.9	79.1	0.2	No	No	
18	Arrow Hwy.	e/o Rivergrade Rd.	78.7	78.8	0.1	No	No	
19	Arrow Hwy.	w/o Maine Av.	81.6	81.6	0.0	No	No	
20	Arrow Hwy.	e/o Maine Av.	80.3	80.4	0.1	No	No	
21	Live Oak Av.	w/o Rivergrade Rd.	80.1	80.1	0.0	No	No	
22	Live Oak Av.	e/o Rivergrade Rd.	80.4	80.5	0.1	No	No	
23	Live Oak Av.	e/o Stewart Av.	80.2	80.3	0.1	No	No	
24	Live Oak Av.	w/o Arrow Hwy.	79.6	79.7	0.1	No	No	

TABLE 7-9: HORIZON YEAR 2040 PROJECT TRAFFIC NOISE IMPACTS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use. ² Significance Criteria (Section 4).



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8 **RECEIVER LOCATIONS**

To assess the potential for long-term operational and short-term construction noise impacts, the following 11 receiver locations as shown on Exhibit 8-A were identified as representative locations for focused 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, quarry, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Sensitive receivers in the Project study area include existing residential homes and school uses, as described below, at locations R1 to R7. Non-noise-sensitive receiver locations are identified below, at locations R8 to R11, to evaluate potential impacts related to the operational and construction noise level standards identified on Table 3-1 within each applicable jurisdiction. 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.

- R1: Located approximately 4,245 feet west of the Project site, R1 represents an existing residential community north of Arrow Highway/Live Oak Avenue. A 24-hour noise level measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2: Location R2 represents existing residential homes located approximately 1,900 feet north of the Project site. A 24-hour noise level measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents an existing residential homes and Beardslee Elementary School located roughly 4,532 feet north of the Project site. A 24-hour noise level measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the existing Santa Fe Dam Recreation Area located roughly 6,315 feet east of the Project site. A 24-hour noise level measurement was taken near this location, L4, to describe the existing ambient noise environment.
- R5: Location R5 represents existing residential homes located roughly 4,358 feet southeast of the Project site, south of Live Oak Avenue. A 24-hour noise level measurement was taken east of this location, L5, to describe the existing ambient noise environment.
- R6: Location R6 represents Olive Middle School, Walnut Elementary School, and existing residential homes located approximately 3,516 feet southeast of the Project site. A 24-



hour noise level measurement was taken near this location, L6, to describe the existing ambient noise environment.

- R7: Located approximately 5,590 feet south of the Project site, R7 represents existing residential homes. A 24-hour noise level measurement was taken near this location, L7, to describe the existing ambient noise environment.
- R8: Location R8 represents existing quarry uses north of the Project site at roughly 150 feet across Arrow Highway. The 24-hour noise level measurement at location L8 is used to describe the existing ambient noise environment at this receiver location.
- R9: Location R9 represents existing quarry uses located roughly 317 feet east of the Project site across I-605. The 24-hour noise level measurement at location L8 is used to describe the existing ambient noise environment at this receiver location.
- R10: Location R10 represents the Irwindale Event Center located approximately 253 feet south of the Project site. The 24-hour noise level measurement at location L8 is used to describe the existing ambient noise environment at this receiver location.
- R11: Located approximately 209 feet southwest of the Project site, R11 represents existing industrial uses, west of the Irwindale Event Center. The 24-hour noise level measurement at location L8 is used to describe the existing ambient noise environment at this receiver location.



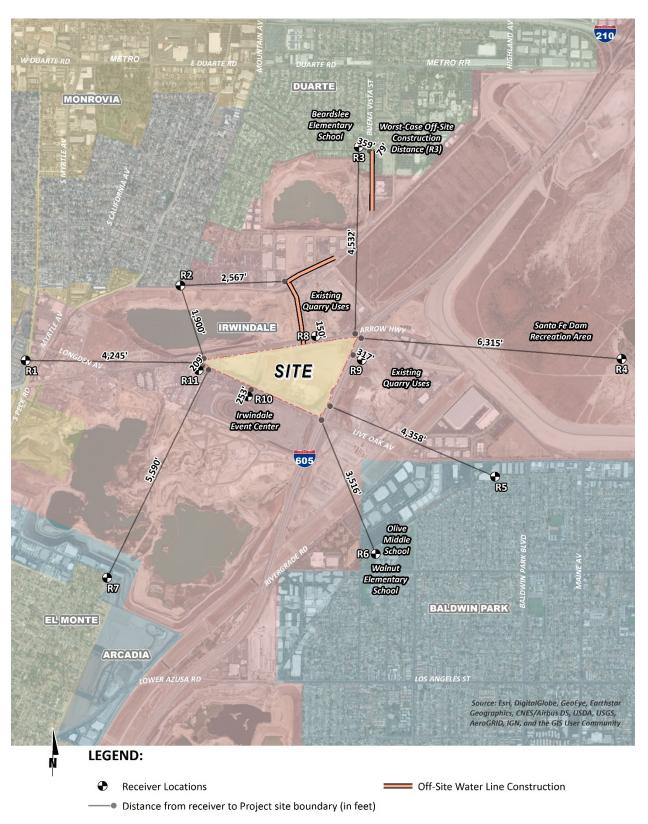


EXHIBIT 8-A: RECEIVER LOCATIONS



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9 OPERATIONAL IMPACTS

This section analyzes the potential operational noise impacts due to the Project's stationary noise sources on the off-site sensitive receiver locations identified in Section 8. Exhibit 9-A identifies the receiver locations and noise source locations used to assess the Project-related operational noise levels.

9.1 **REFERENCE NOISE LEVELS**

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, refrigerated containers or reefers, roof-top air conditioning units, drive-through speakerphones, parking lot vehicle movements, and gas station activity all operating continuously. These noise level impacts will likely vary throughout the day.

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Noise Source Height (Feet)	Hourly Activity (Mins) ⁶		ce Noise JBA L _{eq}) @ 50 Feet
Truck Idle/Reefer Activity ¹	00:14:00	30'	8'	60	70.1	65.7
Roof-Top Air Conditioning Units ²	96:00:00	5'	25'	39	77.2	57.2
Drive-Through Speakerphone ³	02:00:00	15'	3'	60	62.0	51.5
Parking Lot Vehicle Movements ⁴	01:00:00	10'	5'	60	52.2	41.7
Gas Station Activity ⁵	00:03:00	5'	5'	60	68.2	48.2

 TABLE 9-1:
 REFERENCE NOISE LEVEL MEASUREMENTS

¹ As measured by Urban Crossroads, Inc. on 1/7/2015 at the Nature's Best Distribution Facility in the City of Chino.

² As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.

³ As measured by Urban Crossroads, Inc. on 12/19/2014 at the Panera Bread located at 423 Associated Road in the City of Brea.

⁴ As measured by Urban Crossroads, Inc. on 5/17/2017 at the Panasonic Avionics Corporation parking lot in the City of Lake Forest.

⁵ As measured by Urban Crossroads, Inc. on 4/26/2016 at the Quail Hill ARCO gas station in the City of Irvine.

⁶ Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site based on the reference noise level measurement activity.

9.1.1 WORST-CASE LAND USE ASSUMPTIONS

As previously shown on Exhibit 1-B, and described in Section 1.2, the Project land uses within Planning Areas 1A, 2A, and 3A may vary in location at the time of actual Project operation. Therefore, this analysis assumes all noise sources, both industrial and commercial-use related, may operate at the closest point within the Project site to each nearby receiver location. Using this approach, a conservative analysis is presented herein which accounts for the potential land use configurations previously shown on Exhibit 1-B.



9.1.2 TRUCK IDLING, LOADING/UNLOADING, BACKUP ALARMS, AND REFRIGERATED CONTAINERS

On Wednesday, January 7th, 2015, Urban Crossroads, Inc. collected short-term operational noise level measurements at the Nature's Best distribution facility located at 16081 Fern Avenue in the City of Chino. Operations at the Nature's Best distribution facility measurements represent the typical weekday logistics warehouse activities with both dry goods and cold storage from a single building, of approximately 397,000 square feet, with loading dock areas located on both sides of the building. To describe the loading dock activities, a reference noise level measurement was collected to represent the truck idling/reefer activity. A second reference noise level measurement at this location was collected to assess the entry gate noise source activity.

During the 14-minute truck idling/reefer activity reference noise level measurement, approximately 20 delivery trucks were docked, idling, or parked in the northern loading dock area. The truck idling/reefer activity reference noise level measurement was taken in the center of the loading dock activity area and represents multiple concurrent noise sources resulting in a combined noise level of 65.7 dBA L_{eq} at a uniform reference distance of 50 feet.

Specifically, the truck idling/reefer activity reference noise level measurement represents one truck located approximately 30 feet from the noise level meter with another truck passing by to park roughly 20 feet away, both with their engines idling. Throughout the reference noise level measurement, a separate docked and running reefer truck was located approximately 50 feet east of the measurement location. Additional background noise sources included truck pass-by noise, truck drivers talking to each other next to docked trucks, and air brake release noise when trucks parked.

9.1.3 ROOF-TOP AIR CONDITIONING UNITS

To assess the impacts created by the roof-top air conditioning units at the Project buildings, reference noise levels measurements were taken at the Santee Walmart on July 27th, 2015. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of an existing Walmart store. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At 5 feet from the roof-top air conditioning unit, the exterior noise levels were measured at 77.2 dBA L_{eq}. Using the uniform reference distance of 50 feet, the noise level is 57.2 dBA L_{eq}. The operating conditions of the reference noise level measurement reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. The roof-top air condition units were observed to operate the most during the daytime hours for a total of 39 minutes per hour. The noise attenuation provided by a parapet wall is not reflected in this reference noise level measurement.



9.1.4 DRIVE-THROUGH SPEAKERPHONE

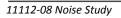
To describe the potential noise level impacts associated with a drive-through speakerphone and vehicle activities, a reference noise level measurement was collected on Friday, December 19th, 2014 at a Panera Bread restaurant located at 423 South Associated Road in the City of Brea. The reference noise levels collected at the Panera Bread restaurant are expected to reflect potential drive-through speakerphone noise level activities at the Project site, since the reference measurement includes both drive-through speakerphone and vehicle activity noise. The noise sources included in the reference noise level measurement consist of voices of the Panera Bread employees over the speakerphone, customers' voices ordering food, car engines idling, car radios playing music, and cars queuing in the drive-through lane. At a uniform distance of 50 feet from the speakerphone, a reference noise level of 51.5 dBA L_{eq} was measured. This reference noise level measurement overstates the actual average noise levels since it represents the average of 28 speakerphone menu board ordering events observed over a two-hour period. In other words, the Panera Bread speakerphone menu board reference noise level describes continuous drive-through operations and does not include any periods of inactivity.

9.1.5 PARKING LOT VEHICLE MOVEMENTS (AUTOS)

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements over a 24-hour period on May 17^{th} , 2017 at the parking lot for the Panasonic Avionics Corporation in the City of Lake Forest. The peak hour of activity measured over the 24-hour noise level measurement period occurred between 12:00 p.m. to 1:00 p.m., or the typical lunch hour for employees working in the area. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 41.7 dBA L_{eq}. The parking lot noise levels are mainly due to cars pulling in and out of spaces during peak lunch hour activity and employees talking.

9.1.6 GAS STATION ACTIVITY

To describe the potential noise level impacts created by the gas station of the proposed Project uses, a reference noise level measurement was collected on Tuesday, April 26th, 2016 at an ARCO gas station located at 6501 Quail Hill Parkway in the City of Irvine. The reference noise level measurement includes six cars fueling at once, car doors closing, engines starting, fuel pump TV sounds, and background car pass-by events within a 3-minute period. At a uniform reference distance of 50 feet from the gas station, a reference noise level of 48.2 dBA L_{eq} was measured.



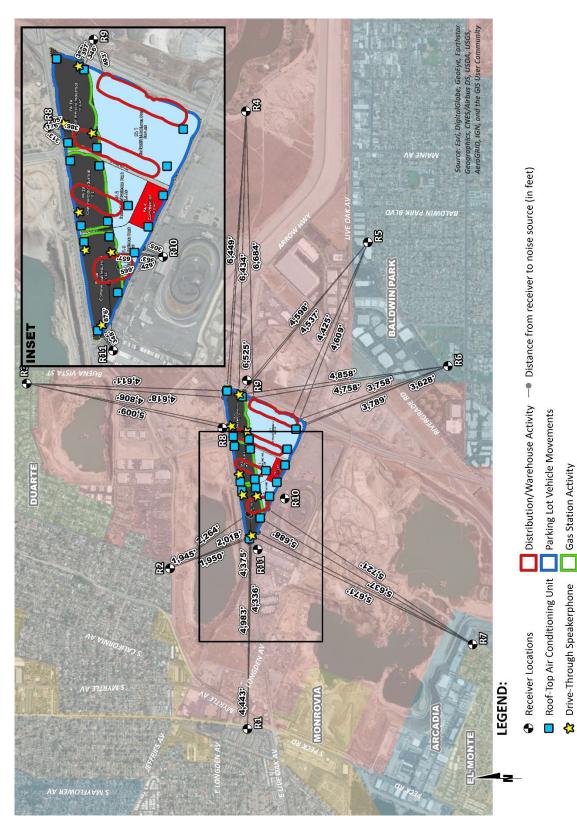


EXHIBIT 9-A: OPERATIONAL NOISE SOURCE AND RECEIVER LOCATIONS

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9.2 OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at each of the sensitive receiver locations. The operational noise level calculations shown on Table 9-2 account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL₁):

$$SPL_2 = SPL_1 - 20log(D_2/D_1)$$

Where SPL₂ is the resulting noise level after attenuation, SPL₁ is the source noise level, D₂ is the distance to the reference sound pressure level (SPL₁), and D₁ is the distance to the receiver location. Table 9-2 indicates that the unmitigated operational noise levels associated with the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, refrigerated containers or reefers, roof-top air conditioning units, drive-through speakerphones, parking lot vehicle movements, and gas station activity are expected to range from 23.9 to 33.4 dBA L_{eq} at noise-sensitive receiver locations R1 to R7, and from 44.3 to 49.4 dBA L_{eq} at non-noise sensitive receiver locations R8 to R11. The unmitigated operational noise level calculation worksheets are included in Appendix 9.1.



		Noise Lev	vels by Individua	l Source ²		Combined
Receiver Location ¹	Truck Idle/Reefer Activity	Roof-Top Air Conditioning Unit	Drive-Through Speakerphone	Parking Lot Vehicle Movements	Gas Station Activity	Operational Noise Levels (dBA L _{eq}) ³
R1	25.7	16.5	12.6	12.6	9.4	26.6
R2	32.5	23.5	19.4	17.9	16.4	33.4
R3	25.6	15.6	11.9	12.2	8.9	26.4
R4	23.1	13.1	9.2	10.1	6.0	23.9
R5	26.7	16.0	12.3	12.3	9.0	27.4
R6	28.1	17.7	11.8	13.8	8.6	28.8
R7	24.5	14.2	10.4	10.9	7.2	25.3
R8	47.9	39.4	39.3	33.5	37.3	49.4
R9	45.8	37.3	33.9	29.1	31.4	46.8
R10	44.1	38.1	29.2	29.9	26.6	45.4
R11	40.8	39.3	34.7	30.7	33.5	44.3

TABLE 9-2: UNMITIGATED PROJECT OPERATIONAL NOISE LEVELS

¹ See Exhibit 9-A for the receiver and noise source locations.

² Reference noise sources as shown on Table 9-1.

³ Calculations for each noise source are provided in Appendix 9.1.

9.3 OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Irwindale and adjacent jurisdictions' noise level standards. Table 9-3 shows the operational noise levels associated with The Park at Live Oak Project will satisfy the exterior noise level standards at all nearby sensitive receiver locations, under each applicable jurisdictions' standards. Therefore, operational noise impacts are considered *less than significant*.



Receiver Location ¹	City	Land Use	Noise Level at Receiver Locations	-	hresholds eiving Land (dBA L _{eq})		Three	shold Excee	eded? ³
			(dBA L _{eq}) ²	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
R1	Irwindale	s)	26.6	50	-	45	No	-	No
R2	Irwindale	ensitive Standards)	33.4	50	-	45	No	-	No
R3	Duarte	isitiv tanc	26.4	55	-	45	No	-	No
R4	Irwindale	-Sen ial S	23.9	50	-	45	No	-	No
R5	Baldwin Park	Noise-Sensitive (Residential Standa	27.4	55	50	45	No	No	No
R6	Baldwin Park	N esid	28.8	55	50	45	No	No	No
R7	El Monte	(R	25.3	50	-	45	No	-	No
R8	Irwindale	_	49.4	70	-	60	No	-	No
R9	Irwindale	stria	46.8	70	-	60	No	-	No
R10	Irwindale	Industrial	45.4	70	-	60	No	-	No
R11	Irwindale	=	44.3	70	-	60	No	-	No

TABLE 9-3: UNMITIGATED OPERATIONAL NOISE LEVEL COMPLIANCE

¹ See Exhibit 9-A for the receiver and noise source locations.

² Estimated Project operational noise levels as shown on Table 9-2.

³ Do the estimated Project operational noise levels meet the operational noise level thresholds?

"-" = Jurisdiction does not identify evening noise level limits (daytime and nighttime only); "Daytime," "Evening," and "Nighttime" based on the hours specified on Table 3-1 by each respective jurisdiction.

9.4 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels were combined with the existing ambient noise levels measurements for the off-site receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (4) Instead, they must be logarithmically added using the following base equation:

 $SPL_{Total} = 10log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \dots 10^{SPLn/10}]$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when unmitigated Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 9-4 and 9-5, respectively.



As indicated on Tables 9-4 and 9-5, the Project will not contribute an operational noise level increase during the daytime hours and will contribute an operational noise level increase during the nighttime hours of up to 0.1 dBA L_{eq}. Based on the without Project (ambient) noise levels, the Project operational noise level increases will satisfy the significance criteria discussed in Section 4, and therefore, the increases at the sensitive receiver locations will be *less than significant*. On this basis, Project operational stationary-source noise would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.

Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Contribution ⁶	Threshold Exceeded? ⁷
R1	26.6	L1	66.3	66.3	0.0	No
R2	33.4	L2	67.2	67.2	0.0	No
R3	26.4	L3	55.3	55.3	0.0	No
R4	23.9	L4	51.8	51.8	0.0	No
R5	27.4	L5	56.1	56.1	0.0	No
R6	28.8	L6	56.3	56.3	0.0	No
R7	25.3	L7	53.2	53.2	0.0	No
R4	49.4	L8	80.1	80.1	0.0	No
R5	46.8	L8	80.1	80.1	0.0	No
R6	45.4	L8	80.1	80.1	0.0	No
R7	44.3	L8	80.1	80.1	0.0	No

TABLE 9-4: DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS

¹ See Exhibit 9-A for the sensitive receiver locations.

² Total Project operational noise levels as shown on Table 9-3.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed ambient noise levels as shown on Table 5-1.

⁵ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

⁷ Significance Criteria as defined in Section 4.



Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Contribution ⁶	Threshold Exceeded? ⁷
R1	26.6	L1	63.3	63.3	0.0	No
R2	33.4	L2	62.9	62.9	0.0	No
R3	26.4	L3	51.0	51.0	0.0	No
R4	23.9	L4	43.0	43.1	0.1	No
R5	27.4	L5	53.3	53.3	0.0	No
R6	28.8	L6	54.7	54.7	0.0	No
R7	25.3	L7	49.5	49.5	0.0	No
R4	49.4	L8	76.4	76.4	0.0	No
R5	46.8	L8	76.4	76.4	0.0	No
R6	45.4	L8	76.4	76.4	0.0	No
R7	44.3	L8	76.4	76.4	0.0	No

TABLE 9-5: NIGHTTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS

¹ See Exhibit 9-A for the sensitive receiver locations.

² Total Project operational noise levels as shown on Table 9-3.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed ambient noise levels as shown on Table 5-1.

⁵ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

⁷ Significance Criteria as defined in Section 4.

9.5 **OPERATIONAL VIBRATION IMPACTS**

To assess the potential vibration impacts from truck haul trips associated with operational activities the threshold described in Section 4 for vibration of 0.01 in/sec RMS is used. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for The Park at Live Oak heavy truck activity at normal traffic speeds will approach 0.004 in/sec PPV and 0.003 in/sec RMS at 25 feet based on the FTA *Transit Noise Impact and Vibration Assessment*. (3) Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby receivers will not exceed the vibration threshold of 0.01 in/sec RMS, and therefore, will be *less than significant*.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction activity boundaries in relation to the nearby sensitive receiver locations.

10.1 CONSTRUCTION NOISE LEVELS

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 number and mix of construction equipment is expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Architectural Coating
- Paving
- Off-Site Water Line Construction

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 in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). 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. The construction stages used in this analysis are consistent with the data used to support the construction emissions in *The Park at Live Oak Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (20)

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 10-1 have been adjusted to describe a common reference distance of 50 feet.



ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L _{eq})	Reference Noise Levels @ 50 Feet (dBA L _{eq}) ⁷
1	Truck Pass-Bys & Dozer Activity ¹	30'	63.6	59.2
2	Dozer Activity ¹	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities ²	30'	71.9	67.5
4	Foundation Trenching ²	30'	72.6	68.2
5	Rough Grading Activities ²	30'	77.9	73.5
6	Residential Framing ³	30'	66.7	62.3
7	Water Truck Pass-By & Backup Alarm ⁴	30'	76.3	71.9
8	Dozer Pass-By ⁴	30'	84.0	79.6
9	Two Scrapers & Water Truck Pass-By ⁴	30'	83.4	79.0
10	Two Scrapers Pass-By ⁴	30'	83.7	79.3
11	Scraper, Water Truck, & Dozer Activity ⁴	30'	79.7	75.3
12	Concrete Mixer Truck Movements ⁵	50'	71.2	71.2
13	Concrete Paver Activities ⁵	30'	70.0	65.6
14	Concrete Mixer Pour & Paving Activities ⁵	30'	70.3	65.9
15	Concrete Mixer Backup Alarms & Air Brakes ⁵	50'	71.6	71.6
16	Concrete Mixer Pour Activities ⁵	50'	67.7	67.7
17	Forklift, Jackhammer, & Metal Truck Bed Loading	50'	67.9	67.9

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

¹As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.

² As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.

³As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.

⁴ As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within a construction site located in the City of Ontario.

⁵ Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.

⁶ As measured by Urban Crossroads, Inc. on 9/9/16 during the demolition of an existing paved parking lot at 41 Corporate Park in Irvine. ⁷ Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).





EXHIBIT 10-A: CONSTRUCTION ACTIVITY AND RECEIVER LOCATIONS

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10.3 CONSTRUCTION NOISE ANALYSIS

Tables 10-2 to 10-6 show the Project construction stages and the reference construction noise levels used for each stage. Table 10-7 provides a summary of the noise levels from each stage of construction at each of the receiver locations. Based on the reference construction noise levels, the Project-related construction noise levels when the highest reference noise level is operating at the edge of primary construction activity nearest each sensitive receiver location will range from 32.4 to 67.9 dBA L_{eq} at the sensitive receiver locations, as shown on Table 10-7.

Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Dozer Pass-By	79.6
Highest Reference Noise Level at 50 Feet (dBA L _{eq}):	79.6

TABLE 10-2: SITE PREPARATION ACTIVITY NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R1	4,356'	-38.8	-5.0	35.8
R2	2,517'	-34.0	-5.0	40.5
R3	4,581'	-39.2	-5.0	35.3
R4	6,424'	-42.2	-5.0	32.4
R5	4,422'	-38.9	-5.0	35.6
R6	3,651'	-37.3	-5.0	37.3
R7	5,662'	-41.1	-5.0	33.5
R8	191'	-11.6	0.0	67.9
R9	370'	-17.4	0.0	62.2
R10	283'	-15.1	0.0	64.5
R11	254'	-14.1	0.0	65.4

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

² Distance from the nearest point of construction activity to the nearest receiver.

³ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.



Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Dozer Pass-By	79.6
Two Scrapers Pass-By	79.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	79.6

TABLE 10-3: GRADING ACTIVITY NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R1	4,356'	-38.8	-5.0	35.8
R2	2,517'	-34.0	-5.0	40.5
R3	4,581'	-39.2	-5.0	35.3
R4	6,424'	-42.2	-5.0	32.4
R5	4,422'	-38.9	-5.0	35.6
R6	3,651'	-37.3	-5.0	37.3
R7	5,662'	-41.1	-5.0	33.5
R8	191'	-11.6	0.0	67.9
R9	370'	-17.4	0.0	62.2
R10	283'	-15.1	0.0	64.5
R11	254'	-14.1	0.0	65.4

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

² Distance from the nearest point of construction activity to the nearest receiver.

³ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.



Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Highest Reference Noise Level at 50 Feet (dBA L _{eq}):	68.2

TABLE 10-4: BUILDING CONSTRUCTION ACTIVITY NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R1	4,356'	-38.8	-5.0	24.4
R2	2,517'	-34.0	-5.0	29.1
R3	4,581'	-39.2	-5.0	23.9
R4	6,424'	-42.2	-5.0	21.0
R5	4,422'	-38.9	-5.0	24.2
R6	3,651'	-37.3	-5.0	25.9
R7	5,662'	-41.1	-5.0	22.1
R8	191'	-11.6	0.0	56.5
R9	370'	-17.4	0.0	50.8
R10	283'	-15.1	0.0	53.1
R11	254'	-14.1	0.0	54.0

 $^{\rm 1}$ Reference construction noise level measurements taken by Urban Crossroads, Inc.

 $^{\rm 2}$ Distance from the nearest point of construction activity to the nearest receiver.

³ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.



Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Highest Reference Noise Level at 50 Feet (dBA L _{eq}):	68.2

TABLE 10-5: ARCHITECTURAL COATING ACTIVITY NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R1	4,356'	-38.8	-5.0	24.4
R2	2,517'	-34.0	-5.0	29.1
R3	4,581'	-39.2	-5.0	23.9
R4	6,424'	-42.2	-5.0	21.0
R5	4,422'	-38.9	-5.0	24.2
R6	3,651'	-37.3	-5.0	25.9
R7	5,662'	-41.1	-5.0	22.1
R8	191'	-11.6	0.0	56.5
R9	370'	-17.4	0.0	50.8
R10	283'	-15.1	0.0	53.1
R11	254'	-14.1	0.0	54.0

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

 $^{\rm 2}$ Distance from the nearest point of construction activity to the nearest receiver.

 $^{\rm 3}$ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.



Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.6

TABLE 10-6: PAVING ACTIVITY NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R1	4,356'	-38.8	-5.0	27.8
R2	2,517'	-34.0	-5.0	32.6
R3	4,581'	-39.2	-5.0	27.4
R4	6,424'	-42.2	-5.0	24.4
R5	4,422'	-38.9	-5.0	27.7
R6	3,651'	-37.3	-5.0	29.3
R7	5,662'	-41.1	-5.0	25.5
R8	191'	-11.6	0.0	60.0
R9	370'	-17.4	0.0	54.2
R10	283'	-15.1	0.0	56.5
R11	254'	-14.1	0.0	57.5

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

² Distance from the nearest point of construction activity to the nearest receiver.

³ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.



	Construction Noise Level (dBA Leq)								
Receiver Location ¹	Site Preparation	Grading	Building Construction	Architectural Coating	Paving	Highest Levels ²			
R1	35.8	35.8	24.4	24.4	27.8	35.8			
R2	43.0	43.0	31.6	31.6	35.0	43.0			
R3	35.3	35.3	23.9	23.9	27.4	35.3			
R4	32.4	32.4	21.0	21.0	24.4	32.4			
R5	35.6	35.6	24.2	24.2	27.7	35.6			
R6	37.3	37.3	25.9	25.9	29.3	37.3			
R7	33.5	33.5	22.1	22.1	25.5	33.5			
R8	67.9	67.9	56.5	56.5	60.0	67.9			
R9	62.2	62.2	50.8	50.8	54.2	62.2			
R10	64.5	64.5	53.1	53.1	56.5	64.5			
R11	65.4	65.4	54.0	54.0	57.5	65.4			

TABLE 10-7: UNMITIGATED CONSTRUCTION ACTIVITY NOISE LEVEL SUMMARY

¹Noise receiver locations are shown on Exhibit 10-A.

² Estimated construction noise levels during peak operating conditions.

10.4 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

Table 10-8 shows the highest construction noise levels at the potentially impacted receiver locations during Project construction activities. As shown on Table 10-8, the construction noise levels are expected to range from 32.4 to 67.9 dBA L_{eq} and will satisfy the City of Irwindale 5 dBA L_{eq} above the ambient noise level significance threshold during temporary Project construction activities at all receiver locations, during both the daytime and nighttime hours. Therefore, the unmitigated noise impact due to Project construction is considered *less than significant*.

Receiver Location ¹ Jurisdiction	Land Use C	Highest Project Construction	Existing Ambient Noise Level ³		Plus 5 dBA Threshold for Construction	Threshold ⁴		Threshold Exceeded? ⁵		
			Noise Level ²	Daytime	Nighttime	Noise	Daytime	Nighttime	Daytime	Nighttime
R1	Irwindale	s)	35.8	66.3	63.3	+5	71.3	68.3	No	No
R2	Irwindale	:nsitive Standards)	43.0	67.2	62.9	+5	72.2	67.9	No	No
R3	Duarte	Sensitive al Standa	35.3	55.3	51.0	+5	60.3	56.0	No	No
R4	Irwindale		32.4	51.8	43.0	+5	56.8	48.0	No	No
R5	Baldwin Park	Noise-Se (Residential	35.6	56.1	53.3	+5	61.1	58.3	No	No
R6	Baldwin Park	Nc esid	37.3	56.3	54.7	+5	61.3	59.7	No	No
R7	El Monte	(R	33.5	53.2	49.5	+5	58.2	54.5	No	No
R8	Irwindale	_	67.9	80.1	76.4	+5	85.1	81.4	No	No
R9	Irwindale	stria	62.2	80.1	76.4	+5	85.1	81.4	No	No
R10	Irwindale	Industrial	64.5	80.1	76.4	+5	85.1	81.4	No	No
R11	Irwindale		65.4	80.1	76.4	+5	85.1	81.4	No	No

TABLE 10-8: UNMITIGATED CONSTRUCTION ACTIVITY NOISE LEVEL COMPLIANCE

¹ See Exhibit 10-A for the sensitive receiver locations.

² Highest Project construction noise levels as shown on Table 10-7.

³ Ambient exterior noise level at each receiver location (Table 5-1), since the existing ambient noise levels already exceed the base exterior noise level standards shown on Table 3-1.

⁴ Ambient exterior noise level standard plus 5 dBA per the City of Irwindale Municipal Code, Section 9.28.110.

⁵ Do the highest Project construction noise levels exceed the ambient plus 5 dBA threshold?



OFF-SITE WATER LINE CONSTRUCTION NOISE LEVELS

In addition, Table 10-9 shows the off-site water line daytime construction noise levels at the closest receiver locations, R2 and R3, as previously shown on Exhibit 10-A. The Project-related off-site water line daytime construction noise levels are anticipated to range from 29.0 to 59.2 dBA L_{eq} and will satisfy the 72.2 dBA L_{eq} daytime standard based on ambient conditions at receiver location R2, and the 60.3 dBA L_{eq} daytime standard based on ambient noise conditions at receiver location R3, thereby resulting in *less than significant* noise impacts.

Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})
Truck Pass-Bys & Dozer Activity	59.2
Foundation Trenching	68.2
Forklift, Jackhammer, & Metal Truck Bed Activities	67.9
Highest Reference Noise Level at 50 Feet (dBA L _{eq}):	68.2

TABLE 10-9: OFF-SITE WATER LINE CONSTRUCTION NOISE LEVELS

Receiver Location	Distance to Construction Activity (Feet) ²	Distance Attenuation (dBA L _{eq}) ³	Estimated Noise Barrier Attenuation (dBA L _{eq}) ⁴	Construction Noise Level (dBA L _{eq})
R2	2,567'	-34.2	-5.0	29.0
R3	79'	-4.0	-5.0	59.2

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

² Distance from the nearest point of construction activity to the nearest receiver.

³ Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

⁴ Estimated barrier attenuation from existing intervening structures (barriers, buildings, berms) in the Project study area.

10.5 CONSTRUCTION VIBRATION IMPACTS

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 Project construction activities would cause only intermittent, 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 and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of 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.



Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-10 presents the expected Project related vibration levels at the nearby receiver locations.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 0.089 in/sec PPV at 25 feet. At distances ranging from 191 to 6,424 feet from Project construction activities, construction vibration velocity levels are expected to approach 0.004 in/sec PPV, as shown on Table 10-10. To assess the human perception of vibration levels in PPV the velocities are converted to RMS vibration levels based on the Caltrans *Transportation and Construction Vibration Guidance Manual* conversion factor of 0.71. Table 10-10 shows the highest construction vibration levels in RMS are expected to approach 0.003 in/sec RMS at the nearby receiver locations. Based on the County of Los Angeles threshold of 0.01 in/sec RMS, the proposed Project construction activities will not exceed the vibration standard of 0.01 in/sec RMS at all receiver locations during Project construction. Therefore, the Project-related vibration impacts will be *less than significant* during the construction activities at the Project site.

Further, the Project-related construction vibration levels do not represent levels capable of causing building damage to nearby residential homes. The FTA identifies construction vibration levels capable of building damage ranging from 0.12 to 0.5 in/sec PPV. (3) The peak Project-construction vibration levels shown on Table 10-10, approaching 0.004 in/sec PPV, will remain below the FTA vibration levels for building damage at the residential homes near the Project site. Further, the impacts at the site of the closest sensitive receivers 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.



	Distance to		Receive	RMS				
Receiver ¹	Const. Activity (Feet)	Small Bulldozer	Jack- hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Levels	Vibration Level ³	Threshold Exceeded? ⁴
R1	4,356'	0.000	0.000	0.000	0.000	0.000	0.000	No
R2	1,900'	0.000	0.000	0.000	0.000	0.000	0.000	No
R3	4,581'	0.000	0.000	0.000	0.000	0.000	0.000	No
R4	6,424'	0.000	0.000	0.000	0.000	0.000	0.000	No
R5	4,422'	0.000	0.000	0.000	0.000	0.000	0.000	No
R6	3,651'	0.000	0.000	0.000	0.000	0.000	0.000	No
R7	5,662'	0.000	0.000	0.000	0.000	0.000	0.000	No
R8	191'	0.000	0.002	0.004	0.004	0.004	0.003	No
R9	370'	0.000	0.001	0.001	0.002	0.002	0.001	No
R10	283'	0.000	0.001	0.002	0.002	0.002	0.002	No
R11	254'	0.000	0.001	0.002	0.003	0.003	0.002	No

TABLE 10-10: UNMITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

¹Receiver locations are shown on Exhibit 10-A.

² Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.

³ Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2013.

⁴ Do the highest vibration levels exceed the maximum acceptable vibration threshold shown on Table 4-2?

OFF-SITE WATER LINE CONSTRUCTION VIBRATION LEVELS

At distances ranging from 79 to 2,567 feet from Project off-site water line construction activities, construction vibration velocity levels are expected to approach 0.006 in/sec PPV, as shown on Table 10-11. The highest construction vibration levels in RMS are expected to approach 0.004 in/sec RMS at the nearby receiver locations. Based on the County of Los Angeles threshold of 0.01 in/sec RMS, the proposed Project off-site water line construction activities will not exceed the vibration standard of 0.01 in/sec RMS at the nearby sensitive receiver locations. Therefore, the Project-related vibration impacts will be *less than significant* during the off-site water line construction activities.



	Distance to Off-Site	Receive	Receiver PPV Levels (in/sec) ²			
Receiver ¹	Const. Activity (Feet)	Small Bulldozer	Vibration		RMS Vibration Level ³	Threshold Exceeded? ⁴
R2	2,567'	0.000	0.000	0.000	0.000	No
R3	79'	0.001	0.006	0.006	0.004	No

TABLE 10-11: UNMITIGATED OFF-SITE CONSTRUCTION EQUIPMENT VIBRATION LEVELS

¹Closest sensitive receiver locations to the off-site water line locations are shown on Exhibit 10-A.

² Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
 ³ Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans

Transportation and Construction Vibration Guidance Manual, September 2013.

⁴ Do the highest vibration levels exceed the maximum acceptable vibration threshold shown on Table 4-2?



11 REFERENCES

- 1. State of California. California Environmental Quality Act, Appendix G. 2016.
- 2. Urban Crossroads, Inc. The Park at Live Oak Traffic Impact Analysis. May 2018.
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- 5. 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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- 8. 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.
- 9. Office of Planning and Research. State of California General Plan Guidlines 2003. October 2003.
- 10. State of California. 2016 California Green Building Standards Code. January 2017.
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- 15. Federal Interagency Committee on Noise. Federal Agency Review of Selected Airport Noise Analysis Issues. August 1992.
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- 19. California Department of Transportation. *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
- 20. Urban Crossroads, Inc. The Park at Live Oak Air Quality Impact Analysis. June 2018.

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12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed The Park at Live Oak 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 IRWINDALE MUNICIPAL CODE



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Chapter 9.28 - NOISE REGULATION^[]

Sections:

9.28.010 - Declaration of policy.

It is declared to be the policy of the city to prohibit unnecessary, excessive and annoying noises from all sources subject to its police power and contrary to the public interest. At certain levels noises are detrimental to the health and welfare of the citizenry and in the public interest shall be systematically proscribed.

(Ord. 297 § 1(part), 1976: prior code § 4800).

9.28.020 - Definitions.

As used in this chapter, unless the context otherwise clearly indicates, the words and phrases used in this chapter are defined as follows:

- A. "Ambient base noise level" means reasonable and representative ambient noise levels in various land use categories in the city and at various times as established by the planning commission.
- B. "Ambient noise level" means the all-encompassing noise associated with a given environment, usually being a composite of sounds with many sources excluding the alleged offensive noise at the location and approximate time at which a comparison with the alleged offensive noise is to be made.
- C. "Commercial purpose" means and includes the use, operation, or maintenance of any sound amplifying equipment for the purpose of advertising any business, or any good, or any services, or for the purpose of attracting the attention of the public to, or advertising for, or soliciting patronage or customers to or for any performance, show entertainment, exhibition, or event, or for the purpose of demonstrating any such sound equipment.
- D. "Decibel (dB)" means a unit of level which denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio of two amounts of power is ten times the logarithm to the base ten of this ratio.
- E. "Emergency work" means work made necessary to restore property to a safe condition following a public calamity, or work required to protect persons or property from an imminent exposure to danger, or work performed by public utilities or public agencies and utility companies.
- F. "Motor vehicles" includes, but is not limited to, off-road vehicles, minibikes and gocarts.
- G. "Noise level" means the "A" weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty micronewtons per square meter. The unit of measure is the dB(A).
- H. "Noncommercial purpose" means the use, operation, or maintenance of any sound amplifying equipment for other than a commercial purpose. "Noncommercial purpose" means and includes, but shall not be limited to, philanthropic, political, patriotic and charitable purposes.
- I. "Person" means a person, firm, association, copartnership, joint venture, corporation, or any entity, public or private in nature.
- J. "Sound amplifying equipment" means any machine or device for the amplification of the human voice, music, or any other sound. "Sound amplifying equipment" does not include standard automobile radios when used and heard only by the occupants of the vehicle in which the automobile radio is installed. "Sound amplifying equipment," as used in this chapter, does not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.
- K. "Sound level meter" means an instrument meeting American National Standard Institute's Standard S1.4-1971 for Type 1 or Type <u>2</u> sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.
- L. "Sound pressure level," in decibels, of a sound 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.
- M. "Sound truck" means any motor vehicle, or any other vehicle regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

(Ord. 297 § 1(part), 1976: prior code § 4801).

9.28.030 - Ambient base noise levels designated—Proof of violation.

A. Where the ambient noise level is less than designated in this section, the ambient base noise level in this section shall govern.

Zone	Ambient Base Noise Level		
	<u>10</u> p.m. to 7 a.m.	7 a.m. to <u>10</u> p.m.	
Residential	45	50	
Commercial	50	55	
Industrial	60	70	

B. Any noise at a level which exceeds the ambient or the ambient base level as set forth in subsection A of this section, whichever is greater, by more than ten

dB when measured at any boundary line of the property from which the noise emanates shall constitute sufficient proof of a violation. (Ord. 297 § 1(part), 1976: prior code § 4803).

9.28.040 - Noise level violation designated.

It is unlawful for any person to wilfully make or continue, or cause to be made or continued any noise at a level which exceeds by more than five dB the ambient or the ambient base level as set forth in <u>Section 9.28.030</u>, whichever is greater, when measured at any boundary line of the property from which the noise emanates.

(Ord. 297 § 1(part), 1976: prior code § 4804).

9.28.050 - Radios, television sets and similar devices.

It is unlawful for any person within any residential zone of the city to use or operate any radio receiving set, musical instrument, phonograph, television set or other machine or device for the producing or reproducing of sound in a manner which would constitute a violation of <u>Section 9.28.040</u>.

(Ord. 297 § 1(part), 1976: prior code § 4820).

9.28.060 - Hawkers and peddlers.

It is unlawful for any person within the city to sell anything by outcry within any area of the city zones for residential uses.

(Ord. 297 § 1 (part), 1976: prior code § 4821).

9.28.070 - Drums.

It is unlawful for any person to use any drum or other instrument or device of any kind for the purpose of attracting attention for commercial purposes by the creation of noise within the city. This section shall not apply to any person who is a participant in a duly authorized parade or who has been otherwise duly authorized to engage in such conduct.

(Ord. 297 § 1(part), 1976: prior code § 4822).

9.28.080 - Schools and churches.

It is unlawful for any person to create any noise on any street, sidewalk or public place adjacent to any school, institution of learning, or church while the same is in use, if such noise unreasonably interferes with the working of such institution or would constitute a violation of <u>Section 9.28.040</u>.

(Ord. 297 § 1(part), 1976: prior code § 4823).

9.28.090 - Animals and fowl.

No person shall keep or maintain, or permit the keeping of, upon any premises owned, occupied or controlled by such person, any animal or fowl otherwise permitted to be kept which, by any sound, cry, or behavior, shall cause noise in any residential neighborhood which would constitute a violation of <u>Section 9.28.040</u>, or otherwise constitute a nuisance.

(Ord. 297 § 1(part), 1976: prior code § 4824).

9.28.100 - Machinery, equipment, fans, and air conditioning.

It is unlawful for any person to operate any machinery, equipment, pump, fan, air-conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at any boundary line of any property from which such noise emanates to exceed the ambient noise level or the ambient base level as set forth in <u>Section 9.28.030</u>, whichever is greater, by more than ten decibels; provided, however, this section shall not prevent the reasonable operation of customary household gardening equipment or hobby shop equipment during the hours of eight a.m. to nine p.m., Monday through Saturday, and ten a.m. to eight p.m. on Sunday, provided the same may not exceed eighty decibels (as measured from the adjacent property line) for more than three hours from sunup to sundown.

(Ord. 297 § 1(part), 1976: prior code § 4825).

9.28.110 - Construction of building and projects—Times specified.

A. It is unlawful for any person within a residential zone, or within a radius of five hundred feet therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist or other construction type device on a development requiring a city permit, in such a manner that noise is produced which would constitute a violation of <u>Section 9.28.040</u>, unless beforehand authorization therefor has been duly obtained from the building inspector. Such activity is unlawful without a permit during all hours on Sunday. No permit shall be required to perform emergency work as defined in subsection E of <u>9.28.020</u>.

B. Construction authorized by subsection A of this section shall be limited to seven a.m. to seven p.m. (Ord. 297 § 1(part), 1976: prior code § 4830).

The noise level from industrial plants, auto wreckers, junkyards, racetracks or other industrial user shall not exceed the levels set forth in <u>Section 9.28.040</u>, except as may be specifically authorized by permit from the city.

(Ord. 297 § 1(part), 1976: prior code § 4860).

9.28.130 - Vehicle repairs.

It is unlawful for any person within any residential area of the city to repair, rebuild or test any motor vehicle thereby producing noise which would constitute a violation of <u>Section 9.28.040</u>.

(Ord. 297 § 1 (part), 1976: prior code § 4840).

9.28.140 - Motor-driven vehicles.

It is unlawful for any person to operate any motor-driven vehicle within the city in such a manner producing noise which would constitute a violation of Section 9.28.040.

(Ord. 297 § 1(part), 1976: prior code § 4841).

9.28.150 - Amplified sound—Purpose of provisions.

The council enacts this legislation for the sole purpose of securing and promoting the public health, comfort, safety and welfare for its citizenry. While recognizing that the use of sound amplifying equipment for certain purposes is protected by the constitutional rights of freedom of speech and assembly, the council nevertheless feels obligated to reasonably regulate the use of sound amplifying equipment in order to protect the correlative constitutional rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary noise.

(Ord. 297 § 1(part), 1976: prior code § 4850).

9.28.160 - Amplified sound-Commercial use prohibited.

It is unlawful for any person to install, use, or operate within the city for commercial purposes, a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon an.y sound truck.

(Ord. 297 § 1(part), 1976: prior code § 4851).

9.28.170 - Amplified sound-Registration statement-Required.

It is unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate within the city for noncommercial purposes a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place or public property without first filing a registration statement and obtaining approval thereof, as set forth in <u>Section 9.28.180</u>.

(Ord. 297 § 1(part), 1976: prior code § 4852).

9.28.180 - Amplified sound-Registration statement-Filing-Approval-Disapproval-Revocation.

A. Filing. Every user of sound amplifying equipment for noncommercial purposes shall file a registration statement with the chief of police ten days prior to the date on which the sound amplifying equipment is intended to be used, which statement shall contain the following information:

- 1. The name, address and telephone number of both the owner and user of the sound amplifying equipment;
- 2. The maximum sound producing power of the sound amplifying equipment which shall include the wattage to be used, the volume in decibels of sound which will be produced, and the approximate distance for which sound will be audible from the sound amplifying equipment;
- 3. The license and motor number if a sound truck is to be used;
- 4. A general description of the sound amplifying equipment which is to be used; and
- 5. The nature of the use of the sound amplifying equipment proposed to be used for noncommercial purposes.
- B. Approval. The chief of police shall return to the applicant an approved certified copy of the registration statement unless he finds that:
 - 1. The conditions of the motor vehicle movement are such that in the opinion of the chief of police, use of the equipment would constitute a detriment to traffic safety; or
 - 2. The conditions of pedestrian movement are such that use of the equipment would constitute a detriment to traffic safety; or
 - 3. The registration statement required reveals that the applicant would violate the provisions set forth in <u>Section 9.28.150</u>, or any other provisions of this code.
- C. Disapproval. In the event the registration statement is disapproved, the chief of police shall endorse upon the statement his reasons for disapproval and return it forthwith to the applicant.
- D. Revocation. Any such permit may be revoked for violation of <u>Section 9.28.150</u>.

(Ord. 297 § 1(part), 1976: prior code § 4853).

9.28.190 - Amplified sound—Appeals.

Any person aggrieved by disapproval of a registration statement may file an appeal to the city council within ten days of the date of disapproval. The city council shall decide the appeal at its next meeting.

(Ord. 297 § 1(part), 1976: prior code § 4854).

9.28.200 - Amplified sound—Regulations of noncommercial use.

The noncommercial use of sound amplifying equipment shall be subject to the following regulations:

- A. The only sound permitted shall be either music or human speech or both.
- B. The operation of sound amplifying equipment shall only occur between the hours of eight a.m. and six p.m. each day except on Sundays and legal holidays. The operation of sound amplifying equipment on Sundays and legal holidays shall only occur between the hours of ten a.m. and six p.m.
- C. No sound emanating from sound amplifying equipment shall exceed fifteen dB above the ambient as measured at any property line.
- D. Notwithstanding the provisions of subsection C of this section, sound amplifying equipment shall not be operated within two hundred feet of churches, schools, or city or county buildings, except by special permit.
- E. In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing or a nuisance to reasonable persons of normal sensitiveness within the area of audibility.

(Ord. 297 § 1(part), 1976: prior code § 4855).

9.28.210 - Excessive noise prohibited.

Notwithstanding any other provision of this chapter, it is unlawful for any person to wilfully make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace or quiet of any neighborhood.

(Ord. 297 § 1(part), 1976: prior code § 4870).

9.28.220 - Standards for determining violation of Section 9.28.210.

The standards which may be considered in determining whether a violation of the provisions of Section 9.28.210 exists shall include, but not be limited to, the following:

- A. The loudness of the noise;
- B. The intensity of the noise;
- C. Whether the nature of the noise is usual or unusual;
- D. Whether the origin of the noise is natural or unnatural;
- E. The loudness and intensity of the background noise, if any;
- F. The proximity of the noise to residential sleeping facilities;
- G. The nature and zoning of the area within which the noise emanates;
- H. The density of the inhabitation of the area within which the noise emanates;
- I. The time of the day or night the noise occurs;
- J. The duration of the noise;
- K. Whether the noise is recurrent, intermittent, or continuous; and
- L. Whether the noise is produced by a commercial or residential activity.

(Ord. 297 § 1(part), 1976: prior code § 4871).

9.28.230 - Exclusions to chapter applicability.

The provisions of this chapter shall not apply to:

- A. Sound produced by motor vehicles as regulated by sound limitation provisions of the California Vehicle Code when such vehicle is located or operated on any public street, right-of-way or highway;
- B. Aircraft operated in conformity with federal law;
- C. Public and private schools, organized activities including sports, carnivals, assemblies and other regular activities;
- D. Construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public works projects or essential public services and facilities, including those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission;
- E. Activities of the federal, state or local government;
- F. Any noise continuing for less than thirty seconds at intervals greater than once in three hours.

(Ord. 297 § 1(part), 1976: prior code § 4880).

Nothing in this chapter shall authorize any use otherwise prohibited or regulated by this code.

(Ord. 297 § 1(part), 1976: prior code § 4808).

9.28.250 - Noise level enforcement criteria.

Enforcement of the provisions of this chapter shall be based on a noise level measurement to establish the noise level. The measurement shall be taken in accordance with the city's administrative instruction concerning noise level measurement procedure.

(Ord. 297 § 1(part), 1976: prior code § 4802).

9.28.251 - Residential parties—Publicized commercialism regulated.

A. Definitions. For the purpose of this section:

- 1. "Major party" means a group of more than fifty persons meeting together for social, recreational or amusement purposes, but excluding meetings for political, charitable or religious purposes.
- 2. "Residence" means:
 - a. any property used for residential use; and
 - b. any property situated in any of the residential zones as defined and zoned in the zoning code of this city.
- 3. "Publicized" means an open invitation circulated by flyer or advertised by publication, posting or distribution in or about public places suggesting unlimited or unreserved attendance.
- 4. "Commercial" means the suggestion or request of a monetary charge for admission.
- 5. "Permit" means a permit issued by either the city council, city manager or police chief. Such permit shall be issued upon application unless the issuer finds that such party will (or is likely to) cause problems relating to traffic, overcrowding, noise, hours after eleven p.m. or other matters affecting residential quality of life. Such permits may also contain appropriate conditions.
- B. It is unlawful to have or permit a publicized commercial major party in a residence in this city without a permit or other than in compliance with such permit.
- C. violation of this section is punishable by a fine not to exceed five hundred dollars or by imprisonment for not to exceed six months, or by both such fine and imprisonment.

(Ord. 408 § 1, 1986: Ord. 366 § 1, 1983).

9.28.260 - Violations-Penalties.

Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be fined in an amount not exceeding five hundred dollars or be imprisoned in the county jail for a period not exceeding six months, or by both such fine and imprisonment. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such.

(Ord. 297 § 1(part), 1976: prior code § 4805).

9.28.270 - Violations—Additional remedies—Injunctions.

As an additional remedy, the operation or maintenance of any device, instrument, vehicle, or machinery in violation of any provision of this chapter shall be deemed, and is declared to be, a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

(Ord. 297 § 1(part), 1976: prior code § 4806).

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APPENDIX 5.1:

STUDY AREA PHOTOS



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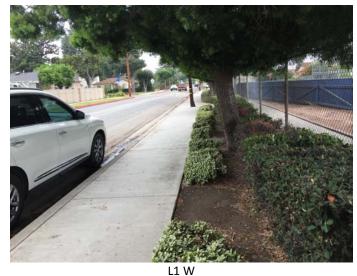
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L1 N 34, 6' 52.410000", 118, 0' 23.980000"



L1 S 34, 6' 52.290000", 118, 0' 23.870000"



34, 6' 52.280000", 118, 0' 23.870000"



L2 E 34, 7' 16.870000", 117, 59' 14.130000"



L2 N 34, 7' 16.870000", 117, 59' 14.130000"



L2 S 34, 7' 16.870000", 117, 59' 14.130000"



L2 W 34, 7' 16.760000", 117, 59' 13.990000"



L3 E 34, 7' 43.860000", 117, 58' 41.640000"



34, 7' 43.990000", 117, 58' 41.610000"



L3 S 34, 7' 43.860000", 117, 58' 41.640000"



L3 W 34, 7' 43.970000", 117, 58' 41.610000"



L4 E 34, 6' 48.270000", 117, 57' 28.360000"



L4 N 34, 6' 48.270000", 117, 57' 28.330000"



L4 S 34, 6' 48.380000", 117, 57' 28.390000"



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L6 E 34, 5' 52.870000", 117, 58' 41.640000"



L6 N 34, 5' 52.610000", 117, 58' 41.940000"



L6 S 34, 5' 52.830000", 117, 58' 41.720000"



L6 W 34, 5' 52.390000", 117, 58' 41.420000"



L7 E 34, 5' 52.760000", 117, 59' 52.200000"



L7 N 34, 5' 52.730000", 117, 59' 52.250000"



L7 S 34, 5' 52.760000", 117, 59' 52.170000"



L7 W 34, 5' 52.740000", 117, 59' 52.170000"



L8 E 34, 6' 42.150000", 117, 59' 19.870000"



L8 N 34, 6' 42.260000", 117, 59' 19.740000"



L8 S 34, 6' 42.280000", 117, 59' 19.740000"



L8 W 34, 6' 42.280000", 117, 59' 19.740000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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ď	<i>Project Name:</i> The Park at Live Oak	The Park at L	ive Oak		24-Hour No	oise Level	our Noise Level Measurement Summary	ent Summa		JN: 11112	Energy Average Leq	erage Leq	24-Hour
		L1- Located o	n Longden ∕	L1- Located on Longden Avenue west of the Project adjacent to Longden Avenue	the Project ad	ljacent to Lor	ngden Avenue		Analyst:	<i>Analyst:</i> A. Wolfe	Day	Night	CNEL
	госанон:	Park, Plymou	ith Elementa	Park, Plymouth Elementary School, and existin	existing reside	ig residential homes.			Date:	Date: 8/24/2017	66.3	63.3	70.5
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- 19	Min	51.0	-		65.0	60.0	48.0	42.0	38.0	38.0	35.0	35.0	35.0
Night	Max	69.6	82.9	41.9	76.0	75.0	74.0	73.0	71.0	67.0	51.0	48.0	44.0
Energy	Energy Average:	63.3	A	Average:	71.3	68.8	64.0	60.3	50.7	45.6	39.7	38.9	38.1
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66.4 $8.3.$ $4.2.1$ 77.0 74.0 70.0 66.0 62.0 57.0 44.0 67.5 91.7 46.1 75.0 73.0 71.0 69.0 66.0 62.0 51.0 49.0 68.5 87.7 46.6 78.0 77.0 75.0 73.0 66.0 62.0 51.0 49.0 68.5 84.7 45.5 72.0 77.0 65.0 59.0 51.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0 48.0 47.0		63.2 66.7	88.3	42.1	74.0	71.0	67.0	65.0 68.0	57.0	52.0 EE 0	45.0	44.0	43.0
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68.5 87.7 46.6 78.0 77.0 75.0 73.0 68.0 62.0 51.0 50.0 61.8 84.7 45.5 72.0 77.0 67.0 65.0 59.0 51.0 47.0		67.5	91.7	46.1	76.0	74.0	71.0	69.0	66.0	61.0	50.0	48.0	47.0
0.1.8 84.7 45.3 72.0 70.0 07.0 05.0 59.0 52.0 47.0 47.0 64.2 87.3 44.4 75.0 72.0 68.0 66.0 59.0 52.0 47.0 46.0 65.1 91.6 44.4 75.0 72.0 68.0 66.0 59.0 52.0 47.0 46.0 65.1 91.6 44.7 81.0 77.0 71.0 68.0 66.0 59.0 57.0 47.0 46.0 68.6 91.6 47.7 81.0 77.0 71.0 69.0 65.0 60.0 57.0 48.0 47.0 68.6 91.2 81.0 77.0 71.0 69.0 65.0 60.0 57.0 48.0 47.0 68.7 96.4 96.7 81.0 77.0 71.0 67.0 60.0 57.0 49.0 57.0 48.0		68.5 64 p	87.7	46.6 45 F	78.0	77.0	75.0	73.0	68.0	62.0 53.0	51.0	50.0 47.0	47.0
64.2 87.3 44.9 76.0 72.0 68.0 66.0 53.0 47.0 46.0 65.0 92.5 44.2 74.0 72.0 68.0 66.0 53.0 47.0 46.0 68.1 91.6 44.7 81.0 77.0 71.0 68.0 66.0 53.0 47.0 46.0 68.6 97.8 44.7 81.0 77.0 71.0 68.0 66.0 53.0 47.0 47.0 68.6 97.8 47.6 81.0 77.0 71.0 66.0 63.0 55.0 48.0 47.0 70.4 96.4 48.7 81.0 77.0 71.0 66.0 65.0 65.0 57.0 48.0 47.0 70.4 96.4 78.0 73.0 71.0 65.0 65.0 57.0 48.0 70.4 88.3 45.0 72.0 73.0		63.1	85.0	42.5 44.4	75.0	72.0	68.0 68.0	03.0 66.0	59.0	32.0 52.0	47.0	46.0	40.0 45.0
65.0 92.5 44.2 74.0 72.0 68.0 66.0 60.0 53.0 47.0 46.0 68.1 91.6 44.7 81.0 77.0 71.0 68.0 62.0 55.0 48.0 47.0 69.6 97.8 45.5 80.0 77.0 71.0 69.0 65.0 55.0 48.0 47.0 68.6 91.2 47.6 81.0 77.0 71.0 71.0 69.0 65.0 57.0 49.0 48.0 70.4 96.4 48.7 81.0 77.0 71.0 69.0 65.0 60.0 51.0 52.0 70.4 96.4 48.7 81.0 77.0 71.0 69.0 65.0 60.0 51.0 52.0 70.4 96.4 48.7 71.0 77.0 71.0 67.0 65.0 60.0 57.0 49.0 48.0 66.3 89.4 46.6 79.0 77.0 67.0 66.0 60.0 57.0 49.0 48.0 66.4 99.9 88.3 46.1 76.0 77.0 67.0 66.0 66.0 66.0 66.0 57.0 49.0 47.0 66.4 99.9 56.0 77.0 67.0 66.0 66.0 56.0 49.0 49.0 66.4 99.9 57.0 77.0 67.0 66.0 56.0 49.0 49.0 66.4 99.9 57.0 59.0 59.0 57.0 <td></td> <td>64.2</td> <td>87.3</td> <td>44.9</td> <td>76.0</td> <td>72.0</td> <td>68.0</td> <td>66.0</td> <td>59.0</td> <td>53.0</td> <td>47.0</td> <td>46.0</td> <td>45.0</td>		64.2	87.3	44.9	76.0	72.0	68.0	66.0	59.0	53.0	47.0	46.0	45.0
68.1 91.6 44.7 81.0 77.0 71.0 68.0 62.0 55.0 48.0 47.0 69.6 97.8 45.5 80.0 77.0 71.0 69.0 65.0 55.0 48.0 47.0 68.6 91.2 47.5 80.0 77.0 71.0 69.0 65.0 57.0 49.0 48.0 70.4 96.4 48.7 81.0 78.0 73.0 71.0 67.0 65.0 51.0 50.0 60.2 88.7 48.7 79.0 73.0 71.0 67.0 66.0 66.0 66.0 52.0 52.0 66.3 88.3 45.0 75.0 69.0 67.0 66.0 66.0 69.0 67.0 52.0 52.0 66.4 88.3 45.0 75.0 69.0 65.0 57.0 49.0 48.0 66.4 90.3 51.0		65.0	92.5	44.2	74.0	72.0	68.0	66.0	60.0	53.0	47.0	46.0	45.0
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66.3 89.4 46.6 79.0 75.0 69.0 67.0 61.0 56.0 49.0 48.0 64.4 88.3 45.0 76.0 72.0 67.0 66.0 60.0 52.5 47.0 47.0 47.0 66.5 91.9 46.1 76.0 71.0 67.0 65.0 61.0 57.0 49.0 49.0 64.9 90.8 51.2 75.0 71.0 67.0 65.0 61.0 55.0 55.0 49.0 49.0 65.0 90.9 52.7 71.0 67.0 65.0 61.0 55.0		69.2	89.7	48.3	79.0	76.0	73.0	72.0	69.0	65.0	54.0	52.0	49.0
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65.0 90.9 52.7 71.0 69.0 66.0 65.0 64.0 63.0 61.0 60.0 62.4 76.4 44.0 68.0 68.0 67.0 62.0 53.0 53.0 52.0		64.9	90.8	51.2	75.0	71.0	67.0	67.0	61.0	58.0	55.0	55.0	53.0
רייע בייע בייע בייע בייע בייע בייע בייע		65.0 62.4	90.9 76.4	52.7 44 0	71.0 68.0	69.0 68.0	66.0 68.0	65.0 67.0	64.0 62.0	63.0 59.0	61.0 53.0	60.0 52.0	54.0 50.0

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2 3 4 5 6 4 5		Location:	L3- Locat homes ai	ted nort nd Bear	th of the P dslee Elen	roject si nentary	te on Ke School.	llwil Way	near exis	sting resic	dential		Anaiy Dai	<i>st:</i> A. Wolfé <i>te:</i> 8/24/20	e 017	<i>Day</i> 55.3	Nign 51.C		CIVEL 58.6
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	nergy A	verage:	55.3				T.,	63.5		61.5	59.1	57.9	54.1	51.7	2	48.5	47.9		47.1
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14 55.4 71.3 64.0 65.0 60.0 55.0 55.0 49.0 <td></td> <td>13</td> <td>56.6</td> <td></td> <td>74.3</td> <td>4</td> <td>9.1</td> <td>64.0</td> <td></td> <td>62.0</td> <td>60.0</td> <td>59.0</td> <td>56.0</td> <td>24.0</td> <td>0 0</td> <td>51.0</td> <td>51.0</td> <td></td> <td>50.0</td>		13	56.6		74.3	4	9.1	64.0		62.0	60.0	59.0	56.0	24.0	0 0	51.0	51.0		50.0
16 57.6 81.6 46.4 65.0 63.0 61.0 60.0 56.0 54.0 50.0 49.0 17 55.4 71.4 47.4 63.0 61.0 59.0 53.0 53.0 50.0 49.0 18 55.5 75.9 75.9 45.1 64.0 62.0 59.0 58.0 55.0 53.0 49.0 47.0 19 55.3 75.9 45.1 64.0 62.0 59.0 58.0 55.0 53.0 49.0 47.0 20 53.9 78.4 44.2 63.0 61.0 57.0 55.0 53.0 49.0 47.0 21 49.3 66.6 43.5 59.0 58.0 55.0 51.0 49.0 47.0 22 48.3 67.3 41.2 58.0 55.0 51.0 49.0 47.0 23 47.1 66.5 41.2 56.0 55.0 51.0 49.0 44.0 23 47.1 66.5 41.2 56.0 57.0 51.0 49.0 44.0 23 47.1 66.5 41.2 56.0 57.0 50.0 47.0 44.0 23 47.1 66.5 41.2 56.0 53.5 50.5 47.0 44.0 24 47.1 66.5 41.2 56.0 57.0 57.0 47.0 44.0 24 47.1 47.0 47.0 47.0 44.0 44.0 44.0 <td< td=""><td>~</td><td>15 15</td><td>55.4</td><td></td><td>71.3 71.3</td><td>46</td><td>v. v.</td><td>64.0 64.0</td><td></td><td>63.U 62.0</td><td>60.0 60.0</td><td>59.0</td><td>55.0</td><td>52.0</td><td></td><td>49.0 48.0</td><td>49.U 47.0</td><td></td><td>48.U 47.0</td></td<>	~	15 15	55.4		71.3 71.3	46	v. v.	64.0 64.0		63.U 62.0	60.0 60.0	59.0	55.0	52.0		49.0 48.0	49.U 47.0		48.U 47.0
1/ 55.4 71.4 47.4 63.0 61.0 59.0 58.0 55.0 53.0 50.0 50.0 49.0 18 55.5 75.9 45.1 64.0 62.0 59.0 58.0 55.0 53.0 53.0 50.0 49.0 48.0 47.0 19 52.3 69.1 43.2 62.0 60.0 57.0 55.0 53.0 49.0 48.0 45.0 47.0 20 49.3 66.6 43.5 59.0 58.0 55.0 51.0 48.0 45.0 47.0 44.0 21 49.3 66.6 43.5 59.0 55.0 52.0 48.0 44.0 44.0 22 48.3 67.3 41.2 58.0 55.0 50.0 47.0 44.0 44.0 44.0 23 47.1 66.5 41.2 56.0 53.5 50.5 48.8 45.3 41.0 44.0 44.0 44.0 44.0 <t< td=""><td></td><td>16</td><td>57.6</td><td></td><td>81.6</td><td>46</td><td>5.4</td><td>65.0</td><td></td><td>63.0</td><td>61.0</td><td>60.0</td><td>56.0</td><td>54.0</td><td>0.0</td><td>50.0</td><td>49.0</td><td></td><td>48.0</td></t<>		16	57.6		81.6	46	5.4	65.0		63.0	61.0	60.0	56.0	54.0	0.0	50.0	49.0		48.0
		7 8	5.5.5 7.7.5		75.9	4 4	4	64.0		67.0 62.0	0.92 0.02	58.0	0.65	73.(0.02 49.0			49.0
20 53.9 78.4 44.2 63.0 61.0 58.0 56.0 51.0 48.0 45.0 45.0 45.0 21 21 49.3 66.6 43.5 59.0 55.0 53.0 52.0 48.0 44.0 <td></td> <td>19</td> <td>52.3</td> <td></td> <td>69.1</td> <td>45</td> <td>3.2</td> <td>62.0</td> <td></td> <td>60.0</td> <td>57.0</td> <td>55.0</td> <td>52.0</td> <td>49.0</td> <td></td> <td>45.0</td> <td>45.0</td> <td></td> <td>44.0</td>		19	52.3		69.1	45	3.2	62.0		60.0	57.0	55.0	52.0	49.0		45.0	45.0		44.0
21 47.1 66.5 41.2 58.0 53.5 50.5 48.8 45.3 43.8 42.0 41.0		20	53.9 49.3		78.4 66.6	4	4.2 7	63.0 59.0	_ 1	61.0 56.0	58.0 53.0	56.0	51.0 48.0	48.0	0 0	45.0 44.0	45.C		45.0 44.0
	t	22	48.3		67.3 66.5	(7 7	1.2	58.0		55.0 53.5	52.0 50 5	50.0	47.0	45.0		43.0	42.0		41.0 11 2
		62	4/.1		C.00	t	7.1	0.00		0.00	C.UC	40.0	C.C4		0	C.24			C.14

đ	<i>Project Name:</i> The Park at Live Oak	The Park a	at Live C	Jak		2.	24-Hour	Noise	Level	our Noise Level Measurement Summary	nent Su	mmar		JN: 11112	En	Energy Average Leq	age Leq	24-H	24-Hour
	Location.	11-00-01	54+ a: p	Ctorto V		Dorroati		ht of th	o Droioct	0. 			Analyst:	<i>Analyst:</i> A. Wolfe	D	Day	Night	CN	CNEL
	FOCALION	רל- בטכמופט ווו נוופ סמוומ רפ שמווו אפגופמווטוו אופמ פמצו טו נוופ דיו טופגרו צונפ.		e Janua		ואפטרפמוו	UII AI Ed (ie Project	sile.			Date:	Date: 8/24/2017	Ω.	51.8	43.0	52	52.6
Hourly Leg d	Hourly Leq dBA Readings (unadjusted)	unadjuste	d)																
																			Π
																		_	
													9	-				_	
1001	4.78 E.88	0.88	7.88	S:01	£'T	9.91	8.21	۲.05	s.71	τ.74 ε.74	S.et	9.61	28'3	6.62	8'9t	6 . 21	s.ət	6.71	8'St
				7	7				7	$\left \right $	7								7
	0 1	2	m	4	ഹ	6 7	8	6	10 :	11 12	. 13	14	15 16	17 1	18 19	20	21 2	22 2	23
									Ĭ	Hour Beginning									
Time Period	Hour	bəŢ		Гтах		Lmin	r1%		12%	r5%	%87	%	L25%	720%	67	%067	767	67	%667
Day	Min Max	43.9 58.6		58.9 89.0		39.0 43.8	52.0 65.0		50.0 62.0	46.0 58.0	45.0 57.0	0 0	42.0 52.0	41.0 47.0	ω 4	39.0 45.0	39.0 45.0	5£ 4	39.0 44.0
Energy A	Energy Average:	51.8			Average:		57.5		54.7	50.9	49.6	9	46.6	44.9	4	43.2	42.9	42	42.5
Night	Min	37.4		42.5		36.0	40.0		40.0	39.0	38.0	0.0	36.0	36.0	m ·	36.0	36.0	36	6.0
Laoren -	Max Morage:	47.9		11.2	.02000	41.6	56.U		53.0	49.0	46.0	0,0	45.0	44.0	4 6	43.0	43.0	42	42.0
	Ellel gy Avel age.	43.0		£	AVEI dge.		47.4		40.5	42.0	.T+	o.	39.7	39.2	n	ō.3	30.3	30	0.2
	ļ	ļ		9			2		Килон	ноипу зитал	:				ľ				
	0 -	37.4		47.3 515		36.0 36.0	43.0 46.0		42.0 44.0	39.0 47.0	39.0 40.0	0,0	36.0 36.0	36.0 36.0		36.0	36.0 36.0	5 %	36.0 36.0
	- 2	38.0		53.8		36.0	46.0		42.0	39.0	38.0	0	36.0	36.0	n m	36.0	36.0	3.65	36.0
Night	ςΩ	38.7		42.5		36.0	40.0		40.0	40.0	40.0	0.0	39.0	39.0	m i	36.0	36.0	36	36.0
	4 v	40.5 41.3		50.9 57.8		38.8 38.8	46.0 48.0		42.0 46.0	40.0	40.0	0,0	39.0 41.0	39.0 40.0	n ñ	39.0	39.0	55 65	39.0 39.0
	9	44.6		61.4		39.6	54.0		53.0	49.0	46.0	0	42.0	41.0	4	40.0	40.0	40	40.0
	7	43.9		58.9 Cr 4		39.0 40.7	54.0		52.0 51.0	46.0	45.0	0,0	42.0	41.0	ς, γ	39.0	39.0	39	39.0 11 0
	0 0	50.7		73.5		40.7 42.4	0.4.0 61.0		56.0	50.0	49.0		46.0	45.0	1 4	44.0	42.0	43	41.0
	10	47.5		63.5		43.7	54.0		53.0	51.0	50.0	0	47.0	45.0	4	44.0	44.0	4	44.0
	11	47.3		61.8 C2 4		43.4	56.0		54.0	51.0	49.0	0,0	46.0	45.0 45.0	4 4	44.0	44.0	43	43.0
	13	47.1 49.5		07.1 65.9		42.8 43.8	0.76		57.0	49.0 53.0	48.U 52.0		40.U 48.0	46.0	4 4	45.0 45.0	45.0 45.0	64 A	43.U 44.0
Day	14	49.6		80.4		42.6	57.0	_	54.0	50.0	49.0	0	47.0	46.0	4	44.0	43.0	43	43.0
	15	53.3		80.0		42.9	62.0		55.0	52.0	51.0	0	48.0	46.0	4	44.0	44.0	43	43.0
	16	58.6 53.0		89.0 70.7		42.0 11 9	65.0 64.0		62.0 61 0	58.0	57.0	0,0	52.0 49.0	47.0 46.0	4 <	44.0 13.0	43.0	43	43.0 42.0
	18	56.4		87.2		41.9	60.09	_	57.0	52.0	50.0	0 0	46.0	45.0	1 4	43.0	43.0	4 4	42.0
	19	46.8		63.7		41.8	56.0		53.0	50.0	48.0	0	46.0	44.0	4	43.0	42.0	42	42.0
	20	45.9		59.2		42.0	52.0		50.0	48.0	47.0	0	46.0	44.0	4	43.0	43.0	43	43.0
	21	46.5		62.7		42.7	52.0		51.0	49.0	48.0	0,0	46.0	45.0	4	43.0	43.0	43	43.0
Night	22 23	47.9 45.8		77.2 64.9		41.6 40.1	48.0 56.0		47.0 52.0	46.0 47.0	45.0	0.0	45.0 43.0	44.0 42.0	44	43.0 40.0	43.0 40.0	42 40	42.0 40.0

	24-Hour	CNEL	60.5				7.02	23			%667	48.0 51.0	49.3	47.0	48.0	47.4		47.0	48.0	47.0 47.0	47.0	48.0 48.0	48.0	50.0	49.0	0.02	48.0	49.0	50.0	51.0	50.0	49.0	49.0	48.0 48.0	48.0 47.0	
	rage Leq	Night	53.3				0.52	20 LC			L95%	48.0	0.2c 49.8	47.0	48.0	47.8		48.0	48.0	48.U 47.0	48.0	48.0 48.0	49.0	50.0	50.0	50.0	49.0	50.0	50.0	0.12 52.0	50.0	50.0	49.0	49.0 48.0	48.0 47.0	
	Energy Average Leg	Day	56.1				5.4.2	19 20			%067	48.0	50.3	47.0	49.0	48.0		48.0	48.0	48.U 47.0	48.0	49.0 49.0	50.0	51.0	50.0	50.0	49.0	51.0	51.0	52.0	51.0	51.0	50.0	49.0 48.0	48.0 47.0	
	1112	Wolfe	Date: 8/24/2017			\pm	85	17 18			T20%	50.0	52.5	48.0	52.0	49.3		48.0	48.0	48.0 48.0	51.0	52.0	53.0	53.0	52.0	52.0 53.0	53.0	53.0	53.0	54.0	53.0	54.0	52.0	50.0 50.0	49.0 48.0	
	JN: 11112	Analyst: A. Wolfe	Date: 8,				·95 8·75	16 			L25%	51.0	54.4	48.0	55.0	51.0		48.0	49.0	49.0 50.0	53.0	55.0	54.0	55.0	55.0	55.0	54.0	55.0	55.0	56.0	55.0	57.0	53.0	52.0 51.0	52.0 49.0	
our Noise Level Measurement Summary							85 85	13 14	-		78%	54.0	27.2	50.0	59.0	54.2		50.0	50.0	54.0	56.0	59.0 57.0	57.0	58.0	58.0	58.0 58.0	57.0	58.0	57.0	58.0	58.0	61.0	56.0	54.0 54.0	59.0 52.0	
asuremen		on Live					0.22	c 1		nour beginning	L5%	55.0	58.4	51.0	61.0	55.2	ımary	51.0	51.0	55.0	57.0	61.0 58 0	58.0	59.0	60.0	59.0 59.0	58.0	59.0	58.0	0.76	59.0	63.0	57.0	55.0 55.0	59.0 53.0	
e Level Me		to existing industrial uses on Live					E'SS E'SS	10			L2%	57.0	60.9	53.0	65.0	57.3	Hourly Summary	53.0	53.0	57.0	59.0	65.0 50.0	60.0	62.0	62.0	61.0 62 0	61.0	62.0	60.0	59.U	62.0	66.0	59.0	58.0 57.0	60.0 55.0	109
Hour Noise						Ŧ	85	σ ~			L1%	59.0	62.9	54.0	70.0	59.3		56.0	54.0	58.0	61.0	70.0 61.0	62.0	67.0	65.0	63.0 63.0	63.0	64.0	61.0	65.0	64.0	67.0	62.0 -2.0	59.0 59.0	60.0 58.0	
24-H		roject adjacer	intial homes.				2.42	6			Lmin	47.6 50.5	c.UC	46.8				47.7	47.9	47.0 46.8	47.3	47.6 47.7	47.9	49.3	49.2	49.5 48.7	48.0	49.1	49.1	50.5	48.7	49.1	48.8	48.0 47.6	47.6 47.3	
	Oak	heast of the P	nearby reside			4.	2.52	۲ ۲			Гтах	67.6	og.4 Average	4	80.4	Average		68.0	62.4 53.1	1.50 0.09	67.2	80.4 68 /	68.3	85.3	72.4	/3./ 71 3	77.0	89.4	70.1	07.0 78.8	86.6	79.9	74.2	73.0 72.2	68.3 66.0	
	<i>Project Name:</i> The Park at Live Oak	L5- Located southeast of the Project adjacent	Oak Avenue and nearby residential homes.	adjusted)			7.92	, c			bə1	52.0	56.1	49.4	58.4	53.3		49.6	49.4	50.9	53.2	58.4 54.2	54.7	58.6	55.7	55.3 55.3	55.0	58.9	54.9	56.9	57.6	58.5	54.2	52.4 52.0	54.1 50.4	
	ect Name: Th		Location: Oa	Readings (un			4. 9.4				Hour	Min	IVIAX Frage:	Min	Max	rage:		0	.⊣ r	v m	4	v u	2	8	ۍ ا	11	12	13	14	61 16	17	18	19	20 21	22 23	
	Proj			Hourly Leq dBA Readings (unadjusted)			nuoH 450.0	35.0 +-			Time Period	Day	Energy Average:	Night	Max	Energy Ave				Night)								Day						Night	

	Energy Average Leq 24-Hour	Day Night CNEL	56.3 54.7 61.6	-					2.4 9.7		19 20 21 22 23	77 17 07	L90% L95% L99%																						
24-Hour Noise Level Measurement Summary	JN: 11112	L6- Located south of the Project site near Walnut Elementary School, existing	ol. Date: 8/24/2017						2.23 9.4 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5		8 0 10 11 12 12 14 15 16 17 18	0 9 10 11 12 13 14 13 10 1/ Hour Boringing	L1% L2% L5% L8% L25% L50%			Data Not Available at this Location.			Hourly Summary								Note Average of Average								110
24		the Project site near	d Olive Middle Schoo					0	۲:9: 85: ۲:5		ר צ נ	D		9 43.1 5 767	Average:	-		Average:			3 50.0 2 47.5		 4 46.1 8 46.6			9 43.1 0 43.7		0 43.8		 6 45.2 ° 45.2			4 44.3 5 45.0	3 46.5	
	Project Name: The Park at Live Oak	.6- Located south of t	residential homes, and Olive Middle School.	nadjusted)					0.8	ES	с 	n		52.6 74.9 50.5		50.7 67.1		54.7			57.7 80.3 53.0 71.2		 55.7 81.4 58.0 85.8		55.2 82.6	53.6 80.0		54.6 78.0		57.3 83.6 E0 0 06 0			53.2 76.4 52.6 77.5	50.7 68.3	
	Project Name: 1		Location: r	Hourly Leq dBA Readings (unadjusted)		(Aa) 80.0		55.0		27 40.00 0.01 0.01 0.01 0.01 0.01 0.01 0.0	35.U		Time Period Hour	Day Min	Energy Average:	Min	Night Max	Energy Average:		0	1 0	Night 3	 Ω Q	7	∞ (υ (11	12	Day 14	 16	18	19	20	Night 23	

24-Hour	CNEL	57.0					0.02	23		7667	42.0	46.0	44.3	37.U 45.0	41.2		42.0	37.0	37.0 40.0	42.0	42.0 42.0	45.0	42.0	45.0	45.U 43.0	43.0	46.0	46.U	44.0	44.0	44.0	44.0	44.0	45.0 44.0	URBAN
age Leq	Night	49.5					0'TS 6'0S	21 22		L95%	43.0	47.0	45.0	37.0 45.0	41.6		43.0	37.0	37.0 41.0	42.0	42.0 43.0	46.0	43.0	46.0	45.U 44.0	44.0	46.0	47.U 16.0	45.0	45.0	45.0	44.0	45.0	45.0 44.0	
Energy Average Leq	Day	53.2		_			2.12 1.22	19 20		%067	43.0	47.0	45.2	37.U 45.0	41.7		43.0	37.0	37.0 41.0	42.0	42.0 44.0	46.0	43.0	46.0	46.U 45.0	44.0	47.0	47.0	45.0	45.0	45.0	44.0	45.0	45.0 44.0	
1112	. Wolfe	Date: 8/24/2017					2.4.2	17 18		L50%	45.0	48.0	47.1	47.0	43.1		43.0	39.0	39.0 43.0	43.0	43.0 47.0	47.0	46.0	47.0	47.0 48.0	47.0	48.0	48.0	48.0	47.0	48.0	45.0	46.0	46.0 45.0	
У JN: 11112	Analyst: A. Wolfe	Date: 8,					6.22 0.12	15 16		125%	46.0	51.0	49.2	39.0 48.0	44.0		43.0	39.0	40.0 44.0	44.0	45.0 48.0	50.0	47.0	49.0	48.U 51.0	50.0	50.0	0.02	51.0	50.0	51.0	46.0	47.0	48.0 45.0	
טער ואטואפ בפעפו ואופמאערפותפותן אעותותמרץ							7.L2 8.22	13 14		78%	51.0	57.0	53.8	41.0 54.0	47.2		44.0	41.0	43.0 50.0	46.0	50.0 54.0	52.0	54.0	55.0	57.0	54.0	54.0	0.53	56.0	57.0	56.0	51.0	51.0	51.0 46.0	
easurenie	ies on					HE	E.22 2.22	11 12	Beginning	L5%	53.0	60.0	56.1	42.U 58.0	49.2	mmary	45.0	42.0	44.0 52.0	48.0	54.0 58.0	54.0	58.0	57.0	0.02 60.0	56.0	57.0	0.00	58.0	59.0	58.0	54.0	53.0	52.0 48.0	
	existing residential homes on						9.64	10)	L2%	56.0	65.0	60.7	44.0 62.0	53.3	Hourly Summary	50.0	44.0	48.0	52.0	59.0 62 0	59.0	65.0	61.0	50.U 64.0	61.0	61.0	0.60	62.0	64.0	62.0 61 0	59.0	59.0	55.0 52.0	
							6.4.9	6 0		11%	59.0	69.0	63.4	45.U 66.0	57.4		56.0	45.0	53.U 62.0	58.0	62.0 66.0	62.0	69.0	63.0	0.9c 67.0	65.0	63.0	0.20	65.0	65.0	64.0 62.0	62.0	62.0	58.0 57.0	
	e Project site r						2.1.2	6 7		Lmin	42.0			5.75 44.9			42.1	37.5	39.3 39.3	41.4	41.5 41 4	45.2	42.0	44.4	44.5 43.1	43.2	45.2	40.U	43.9	43.7	44.3 2 c c r	43.4	44.2	44.9 44.0	
e Oak	uthwest of the	-i					£.74 5.74	4		Lmax	66.0	80.9	Average	7.20 79.6	Average		67.9	62.7	69.9 76.8	68.9	72.0 75 5	68.3	77.5	71.4	00.U 77.5	80.9	76.9	C.U/ 5.03	79.3	76.0	77.6	74.4	72.1	79.1	
Project Name: The Park at Live Oak	L7- Located southwest of the Project site near	Durfee Avenue.	nadjusted)				44°.2	2 3		Lea	49.6	55.5	53.2	40.7	49.5		46.4	40.7	44.2 49.9	47.3	50.1 53.7	51.2	54.9	52.3	49.0 55.5	55.3	52.8	51.0	55.3	54.2	54.1	51.2	50.9	50.0	
oject Name: 1		Location:	A Readings (u				4.04	0		Hour	Min	Max	verage:	Max	verage:		0	.⊢ (7 6	0 4	ۍ در	2	∞	б,	11	12	13	1 - 1 - 1 -	16	17	18	20	21	22	
Pr			Hourly Leq dBA Readings (unadjusted)				Houri 50:0 45:0 50:0 50:0 50:0 50:0 50:0 50:0	+ 0.c ɛ		Time Period		лау	Energy Average:	Night	Energy Average:				Night	0							č	۲dy						Night	

24-Hour	CNEL	83.8		<u>Е.17</u>	22 23		50.0 70.0		41.0	07.0 Ag g	6.64	41.0		43.0 47.0	58.0	62.0 61.0	0.10	60.0	57.0 EE 0	55.0	58.0	59.0	04.U 70.0	70.0	6/.U	58.0	56.0 50.0	49.0
Energy Average Leq	Night	76.4		8'LL	20 21	762%	54.0 73.0	65.1	43.0	66.U	C.2C	44 U	43.0	47.0	0.09	66.0 64.0	66.0	66.0	63.0	62.0	64.0	67.0	73.0	73.0	12.0	61.0	59.0 54.0	52.0
Energy	Day	80.1		0.08	18 19	%067	56.0 76.0	67.7	45.0	69.U 55 1	T'CC	47.0	45.0	49.0	63.0	69.0 67.0	68.0	68.0	66.0 66.0	66.0 66.0	67.0	70.0	75.0	76.0	/4.0 68 0	63.0	62.0 56.0	53.0
JN: 11112	<i>Analyst:</i> A. Wolfe	Date: 8/24/2017		9'T8	17	150%	69.0 81.0	76.3	55.0	/6.U	7.00	59 U	55.0	57.0	73.0	76.0	76.0	77.0	76.0	76.0	76.0	78.0	0.9/ 80.0	81.0	0.08	72.0	71.0 69.0	66.0
	Analyst	Date		0.28	15 16	L25%	75.0 83.0	80.1	64.0	80.0	7.71	68.0	64.0	66.0 74.0	79.0	80.0	81.0	80.0	80.0	80.0	80.0	81.0	82.U 82.0	83.0	81.0	78.0	75.0	72.0
ent summ				£.08	13 14 g	78%	80.0 85.0	83.3	74.0	84.U 70.2	C.E1	77.0	74.0	76.0	83.0	84.0 84.0	84.0	84.0	83.0	84.0	83.0	84.0	85.0	85.0	83.0 83.0	82.0	81.0 80.0	79.0
Vleasurem	vindale Event			8.eT	11 12 Hour Beginning	с Г5%	82.0 85.0	84.3	77.0	85.U 81.0	Hourly Summary	0.67	77.0	79.0	84.0	85.0 85.0	85.0	85.0	85.0 ef 0	85.0	84.0	85.0	85.0 85.0	85.0	0.08	83.0	82.0 82.0	80.0
iise Level I	ak Avenue near the Irwindale Event			2.e7	9 10 H	12%	84.0 87.0	86.1	81.0	87.0	Hourly	82.0	81.0	82.0 ee 0	86.0	87.0 86.0	86.0	87.0	86.0 °7.0	87.0	86.0	86.0	87.0 87.0	87.0	86.0 86.0	85.0	84.0 84.0	83.0
24-Hour Noise Level Measurement Summary	ive Oak Aven			0'08 	7 8	11%	85.0 89.0	87.3	83.0	88.U 85 3	C.CO	84 D	84.0	84.0	88.0	88.0 87.0	87.0	88.0	87.0	88.0	88.0	87.0	0.08 89.0	88.0	87.0 87.0	86.0	85.0 85.0	84.0
7	oject site on L	ial uses.		8.97	9	Lmin	49.6 61.9	Average:	39.5	Average:	lage.	39.5	40.1	42.3 45 2	55.8	58.9 56.4	59.5	55.0	54.1	52.4	53.2	55.5	50.4 61.5	59.9	6.1.9 57.4	54.3	54.3 49.6	47.0
ive Oak	L8- Located south of the Project site on Live O	Center and existing industrial uses.		0.08	4 5	Гтах	93.1 104.2		91.6			91.6	92.7	92.7 06.2	93.2	98.3 03.5	93.1	95.0	94.9 07.0	95.0	95.6	93.4	100.1 96.0	97.3	90.4 07 8	97.4	104.2 94.6	96.3
<i>Project Name:</i> The Park at Live Oak	L8- Located s	Center and ex	unadjusted)	72.2	2 3	bəŢ	75.7 82.3	80.1	71.3	80.0 76 A	10.4	6.07	71.4	72.2	78.6	80.0 79.8	79.8	80.0	79.5 70.7	79.8	79.7	80.4	81.1 82.0	82.3	0.18 0.18	77.8	77.8 75.7	74.1
roject Name:	:	Location:	Hourly Leq dBA Readings (unadjusted)	<u>ک۲</u> .4	0 1	Hour	Min Max	Energy Average:	Min	Fnerøv Average	verage.	C) न	2 0	04	ഗയ	2	• 00	6	11	12	13	14 15	16	18	19	20 21	22
P			Hourly Leq dB	(A8b) pອJ γlາuoH ສຶຮິກຽຕູດີຊີດຊີດຊີດ ດັດດັດດັດດັດດັດດັດ		Time Period	Day	Energy A	Night	Fnerøv A				Niaht	n g								Лау					Night

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FI	IWA-RD-77-108	B HIGHWA	Y NOISE F	REDICTIC	ON MOI	DEL			
Scenario: Existing N Road Name: Myrtle Av Road Segment: n/o Longo	. ,			Project N Job Nu			ark @ Live	Oak	
SITE SPECIFIC	NPUT DATA		011 0					S	
Highway Data Average Daily Traffic (Adt): Peak Hour Percentage: Peak Hour Volume:	25,837 vehicl 10% 2,584 vehicle		м	nditions (I edium Truc eavy Truck	A cks (2 A	Autos: xles):	15 15 15 15		
Vehicle Speed:	40 mph		Vehicle	Mix					
Near/Far Lane Distance:	12 feet		Ve	hicleType		Day	Evening	Night	Daily
Site Data				AL	itos:	72.4%	9.2%	18.4%	85.65%
Barrier Height: Barrier Type (0-Wall, 1-Berm):	0.0 feet 0.0		٨	ledium Tru Heavy Tru		77.7% 84.3%		17.5% 13.0%	
Centerline Dist. to Barrier:	30.0 feet		Noise S	ource Ele	vations	s (in fe	et)		
Centerline Dist. to Observer: Barrier Distance to Observer: Observer Height (Above Pad):	30.0 feet 0.0 feet 5.0 feet		Media	Autos: Im Trucks: vy Trucks:	0.0	000 297	Grade Ad	justment	: 0.0
Pad Elevation: Road Elevation:	0.0 feet 0.0 feet		Long E	quivalent	Diotone	o (in f	[a a 4]		
Road Elevation Road Grade: Left View: Right View:	0.0% -90.0 degre 90.0 degre		Media	Autos: Im Trucks: vy Trucks:	29.8 29.5	316 518			
FHWA Noise Model Calculatio	ns								
VehicleType REMEL	Traffic Flow	Distanc	e Finite	e Road	Fresn	el .	Barrier Att	en Ber	rm Atten
Autos: 66.5	1 2.12		3.26	-1.20		-4.49	0.0	000	0.00
Medium Trucks: 77.7			3.33	-1.20		-4.86		000	0.00
Heavy Trucks: 82.9	9 -10.02		3.32	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Levels (wi	hout Topo and	barrier at	tenuation)						
VehicleType Leq Peak H			q Evening	Leq N	·		Ldn		NEL
	0.7	68.5	65.5		63.8		71.1		71.
	2.2	70.4	64.3		65.1		72.6	-	72.
	'5.1 '7.8	73.6 76.1	64.6		66.7 70.1		74.7		74.
Centerline Distance to Noise			05.0	,	. 0. 1		11.0	,	70.
Centernine Distance to Noise	Jontour (In fee		70 dBA	65 d	BA	6	0 dBA	55	dBA
		Ldn:	99	214	4		461	g	993
		NEL:	102	220			473		020

	Evipting With									
	Peck Rd.	out Project				Name: 1 lumber: 1		ark @ Live	Oak	
SITE S	PECIFIC INP	JT DATA			r	NOISE N	IODE	L INPUT	s	
Highway Data				Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily T	raffic (Adt): 21	,475 vehicles				/	Autos:	15		
Peak Hour P	ercentage:	10%		Me	dium Tr	ucks (2 A	xles):	15		
Peak Ho	ur Volume: 2,	148 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Veh	icle Speed:	40 mph		Vehicle I	Niv					
Near/Far Lane	e Distance:	56 feet			icleType		Dav	Evening	Night	Daily
Site Data				ven			72.4%	0	18.4%	
				Me	edium T		77.7%		17.5%	
	ier Height:	0.0 feet					84.3%		13.0%	
Barrier Type (0-Wa	. ,	0.0 60.0 feet							10.070	0.20
Centerline Dist. Centerline Dist. to				Noise Sc	ource E	levations	s (in fe	eet)		
Barrier Distance to		60.0 feet 0.0 feet			Auto	s: 0.0	000			
Observer Height (A		5.0 feet			n Truck		297			
	l Elevation:	0.0 feet		Heav	y Truck	s: 8.0	004	Grade Adj	iustment.	0.0
	l Elevation:	0.0 feet		Lane Eq	uivalen	t Distand	e (in	feet)		
	pad Grade:	0.0%			Auto					
		90.0 degrees		Mediur	n Truck					
		90.0 degrees		Heav	y Truck	s: 53.1	151			
FHWA Noise Model	Calculations									
VehicleType			istance		Road	Fresn		Barrier Att		m Atter
Autos:	66.51	1.32	-0.5		-1.20		-4.69		000	0.00
Medium Trucks:	77.72	-8.41	-0.5		-1.20		-4.88		000	0.00
Heavy Trucks:	82.99	-10.82	-0.8		-1.20		-5.34	0.0	000	0.00
Unmitigated Noise		· ·								
21	eq Peak Hour	Leq Day	Leq E	vening	Leq	Night		Ldn		VEL
Autos:	66.1	63.9		61.0		59.2		66.6		66
Medium Trucks:	67.6	65.7		59.6		60.5		67.9		68
Heavy Trucks:	70.5	68.9		60.0		62.1		70.0		70
Vehicle Noise:	73.2	71.5		65.0		65.5		73.2	2	73
Centerline Distance	e to Noise Cont	our (in feet)	70	dDA	67	dDA		C dDA	57	dD A
		Ldn:		dBA 98		dBA 11	6	60 dBA 454		dBA 77
		CNFL:		98		16		454 466	-	// 004

FHV	VA-RD-77-108	HIGHW	AY NO	DISE PR	REDICTIO	NMODE			
e: Avenida Ba	irbosa							Oak	
SPECIFIC IN	IPUT DATA							5	
			S	ite Con	ditions (F				
, ,	- ,	s							
0						,	,		
				Hea	avy Truck	s (3+ Axle	es): 15		
			V	ehicle I	Nix				
ne Distance:	12 feet			Vehi	cleType	Da	y Evening	Night	Daily
					Au	tos: 72.	4% 9.2%	18.4%	85.65%
rrier Height:	0.0 feet			Ме	edium Tru	cks: 77.	7% 4.8%	17.5%	9.129
	0.0			H	leavy Tru	cks: 84.	3% 2.7%	13.0%	5.23%
st. to Barrier:	30.0 feet		N	oise So	urce Elev	ations (i	n feet)		
	30.0 feet				Autos:		,		
to Observer:	0.0 feet			Mediur	n Trucks				
Above Pad):	5.0 feet							ustment:	0.0
	0.0 feet				·				
	0.0 feet		Li	ane Equ			,		
	0.0%								
Right View:	90.0 degree	S		Heav	y Trucks:	29.547			
	-								-
REMEL	Traffic Flow	Distan		Finite		Fresnel			n Atten
	=								0.00
=									0.00
					-1.20	-5.1	77 0.0	00	0.00
					Log M	aht	l de	CN	-
	1 1		Y EVE	~	Leq N	v			EL 65.
									66.
									68.
									71.
		5.0		03.4		03.9	71.6		/1.
	ontour (in feet)				05.15		60 dBA	55 0	
ce to noise co			70 dF	BA	65 dF				
ce to Noise Co		.dn:	70 dE 38		65 dE 82	54	177	38	
	io: Existing Will re: Avenida Ba nt: n/o Buena' SPECIFIC IN Parcentage: four Volume: Parcentage: four Volume: rrier Height: rrier He	io: Existing Without Project ie: Avenida Barbosa nt: Ind Barbosa nt: Ind Barbosa nt: Ind Barbosa Preceitage: 10% four Volume: 61.4 vehicles Parcentage: 10% four Volume: 61.4 vehicles hicle Speed: 40 mph ne Distance: 12 feet Trier Height: 0.0 feet do Doserver: 30.0 feet to Observer: 30.0 feet do Elevation: 0.0 feet Red Elevation: 0.0 feet Red Elevation: 0.0 feet Red Elevation: 0.0 feet Red Elevation: 0.0 degree REMEL Traffic Flow 66.5 -4.12 77.72 -13.85 82.99 -16.27 Leq Peak Hour Leq Day 64.5 6 66.5 6 66.5 6	io: Existing Without Project ie: Avenida Barbosa nt. n/o Buena Vista St. SPECIFIC INPUT DATA Traffic (Adt): 6,136 vehicles Parcentage: 10% four Volume: 614 vehicles hicle Speed: 40 mph ne Distance: 12 feet Trief Height: 0.0 feet rol Observer: 30.0 feet to Observer: 0.0 feet ad Elevation: 0.0 feet ad Elevation: 0.0 feet ad Elevation: 0.0 feet Left View: 90.0 degrees Right View: 90.0 degrees elevation: 0.0 feet ad Elevation: 0.0 feet Backatt Traffic Flow Distant 66.51 -4.12 77.72 77.72 -13.85 82.99 eLevesl (without Topo and barrier at Leg Peak Hour Leg Paak Hour Leg Adv 66.5 62.3 66.0 64.1 68.9 67.3	ic: Existing Without Project ie: Avenida Barbosa nt. n/o Buena Vista St. SPECIFIC INPUT DATA SPECIFIC INPUT DATA SPECIFIC 10% Parcentage: 10% four Volume: 614 vehicles Parcentage: 10% four Volume: 614 vehicles hicle Speed: 40 mph ne Distance: 12 feet Trier Height: 0.0 feet rrier Height: 0.0 feet rrier Height: 0.0 feet All, I-Berm): 0.0 st. to Barrier: 30.0 feet to Observer: 30.0 feet to Observer: 0.0 feet da Elevation: 0.0 feet da Elevation: 0.0 feet da Elevation: 0.0 feet Left View: -90.0 degrees Right View: -90.0 degrees Right View: -90.0 degrees REMEL Traffic Flow Distance 66.51 - 4.12 3.26 77.72 - 13.85 3.33 82.99 - 16.27 3.32 e Levels (without Topo and barrier attenu Leq Peak Hour Leq Day Leq Eve 66.0 64.1 68.9 67.3	io: Existing Without Project ie: Avenida Barbosa nt: n/o Buena Vista St. SPECIFIC INPUT DATA Site Con Traffic (Adt): 6,136 vehicles Percentage: 10% four Volume: 614 vehicles Percentage: 10% Men four Volume: 614 vehicles thicle Speed: 40 mph ine Distance: 12 feet Vehicle I rrier Height: 0.0 feet rrier Height: 0.0 feet to Observer: 30.0 feet to Observer: 30.0 feet to Observer: 30.0 feet de Elevation: 0.0 feet ad Elevation: 0.0 feet de Elevation: 0.0 feet de Elevation: 0.0 feet Ad Elevation: 0.0 feet de Elevation: 0.0 feet Heav de Elevation: 0.0 feet RedL Traffic Flow Distance Finite 66.51 - 4.12 3.26 T7.72 - 13.85 3.33 82.99 - 16.27 3.32 e Levels (without Topo and barrier attenuation) Leg Peak Hour Leg Day Leg Evening 64.5 62.3 59.3 66.0 64.1 58.0 68.9 67.3 58.4	io: Existing Without Project Project N re: Avenida Barbosa Job Nur nt. n/o Buena Vista St. SPECIFIC INPUT DATA Site Conditions (F Traffic (Adt): 6,136 vehicles Percentage: 10% Garvolume: 614 vehicles Heavy Truck thicle Speed: 40 mph ne Distance: 12 feet Vehicle Mix mer Distance: 12 feet Vehicle Mix Traffic (Adt): 0.0 feet Heavy Truck Autos: 0 Observer: 30.0 feet Heavy Truck Autos: 0 Observer: 30.0 feet Heavy Truck Autos: 0 Observer: 30.0 feet Heavy Truck Autos: 0 Observer: 0.0 feet Heavy Trucks: Ad Elevation: 0.0 feet Heavy Trucks: Autos: 120 Medium Trucks: Heavy Trucks: 120 Medium Trucks: Ad Elevation: 0.0 feet Heavy Trucks: Ad Elevation: 0.0 feet He	in: Existing Without Project Project Name: The Project Name: The Job Number: 111 nt: n/o Buena Vista St. Job Number: 111 SPECIFIC INPUT DATA Site Conditions (Hard = 10, Site Conditions (Hard = 10, Site Conditions (Hard = 10, Site Conditions (Parcel = 10, Parcentage: NOISE MO Parcentage: 10% Medium Trucks (2 Axle Heavy Trucks (3 + Axle Heavy Trucks: Nutos: four Volume: 614 vehicles Vehicle Mix Natos: rrier Height: 0.0 feet Medium Trucks: 77. Heavy Trucks: 84. rob Observer: 0.0 feet Medium Trucks: 2.237 Above Pad): 5.0 feet Autos: 0.00 ad Elevation: 0.0 feet Autos: 0.00 ad Elevation: 0.0 feet Autos: 2.947 Right View: -90.0 degrees Medium Trucks: 2.9518 Right View: -90.0 degrees Finite Road Fresnell 66.5 -4.12 3.26 -1.20 -4. 77.72 -13.85 3.33 -1.20 -4. 77.72 -13.85 <t< td=""><td>Initial methods Job Number: 11112 strict of Buena Vista St. Job Number: 11112 SPECIFIC INPUT DATA NOISE MODEL INPUT: Site Conditions (Hard = 10, Soft = 13) Traffic (Adt): 6,136 vehicles Percentage: 10% Iour Volume: 614 vehicles Heavy Trucks (2 Axles): 15 Heavy Trucks (2 Axles): 15 Heavy Trucks (3 Axles): 15 Vehicle Mix Autos: 72.4% rrier Height: 0.0 feet Medium Trucks: 74.4% rrier Height: 0.0 feet Medium Trucks: 9.2% Autos: 72.4% 9.2% Medium Trucks: 71.7% Autos: 73.0 feet Medium Trucks: 8.3% 2.7% Autos: 30.0 feet Autos: 0.00 Medium Trucks: 2.29 Above Pad): 5.0 feet Autos: 2.29 4.48% Autos: 2.98 Ad Elevation: 0.0 feet Medium Trucks: 2.954 Autos: 2.9.54 Iof Weiw: 90.0 degrees <</td><td>Description Existing Without Project Project Name: The Park & Live Oak m: no Buena Vista St. Job Number: 11112 SPECIFIC INPUT DATA NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15) Site Conditions (Hard = 10, Soft = 15) Traffic (Adt): 6,136 vehicles Autos: 15 Percentage: 10% Medium Trucks (2 Axles): 15 four Volume: 614 vehicles Heavy Trucks (2 Axles): 15 hicle Speed: 40 mph Vehicle Mix 15 referentage: 10% Medium Trucks: 77.7% 4.8% 17.5% fall, r-Berm): 0.0 feet Mutos: 77.7% 4.8% 17.5% fall, r-Berm): 0.0 feet Mutos: 0.0 18.4% to Observer: 30.0 feet Mutos: 0.0 Medium Trucks: 2.2% 18.4% dad Elevation: 0.0 feet Mutos: 2.297 18.4% Medium Trucks: 2.2% 18.4% Laft View: 90.0 degrees Heavy Trucks: 8.004</td></t<>	Initial methods Job Number: 11112 strict of Buena Vista St. Job Number: 11112 SPECIFIC INPUT DATA NOISE MODEL INPUT: Site Conditions (Hard = 10, Soft = 13) Traffic (Adt): 6,136 vehicles Percentage: 10% Iour Volume: 614 vehicles Heavy Trucks (2 Axles): 15 Heavy Trucks (2 Axles): 15 Heavy Trucks (3 Axles): 15 Vehicle Mix Autos: 72.4% rrier Height: 0.0 feet Medium Trucks: 74.4% rrier Height: 0.0 feet Medium Trucks: 9.2% Autos: 72.4% 9.2% Medium Trucks: 71.7% Autos: 73.0 feet Medium Trucks: 8.3% 2.7% Autos: 30.0 feet Autos: 0.00 Medium Trucks: 2.29 Above Pad): 5.0 feet Autos: 2.29 4.48% Autos: 2.98 Ad Elevation: 0.0 feet Medium Trucks: 2.954 Autos: 2.9.54 Iof Weiw: 90.0 degrees <	Description Existing Without Project Project Name: The Park & Live Oak m: no Buena Vista St. Job Number: 11112 SPECIFIC INPUT DATA NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15) Site Conditions (Hard = 10, Soft = 15) Traffic (Adt): 6,136 vehicles Autos: 15 Percentage: 10% Medium Trucks (2 Axles): 15 four Volume: 614 vehicles Heavy Trucks (2 Axles): 15 hicle Speed: 40 mph Vehicle Mix 15 referentage: 10% Medium Trucks: 77.7% 4.8% 17.5% fall, r-Berm): 0.0 feet Mutos: 77.7% 4.8% 17.5% fall, r-Berm): 0.0 feet Mutos: 0.0 18.4% to Observer: 30.0 feet Mutos: 0.0 Medium Trucks: 2.2% 18.4% dad Elevation: 0.0 feet Mutos: 2.297 18.4% Medium Trucks: 2.2% 18.4% Laft View: 90.0 degrees Heavy Trucks: 8.004

	FH	WA-RD-77-108	HIGHW	AY NO	OISE PI	REDICT	ION MO	DEL			
Road Nam	io: Existing W e: Avenida Ba nt: s/o Buena	arbosa					t Name: lumber:		ark @ Live	Oak	
SITE	SPECIFIC IN	NPUT DATA				r	NOISE N	/ODE	L INPUT	S	
Highway Data				S	ite Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily	Traffic (Adt):	15,611 vehicle	s					Autos:	15		
Peak Hour	Percentage:	10%			Me	dium Tr	ucks (2 A	Axles):	15		
Peak H	our Volume:	1,561 vehicles	\$		He	avy Tru	cks (3+ A	(xles)	15		
Ve	hicle Speed:	40 mph		V	ehicle	Mix					
Near/Far La	ne Distance:	12 feet		Ē		icleType	9	Dav	Evening	Night	Daily
Site Data					1011			72.4%	~	18.4%	
	rier Heiaht:	0.0 feet			М			77.7%		17.5%	
Barrier Type (0-W		0.0 feet				Heavy T		84.3%		13.0%	
Centerline Dis	. ,	30.0 feet									
Centerline Dist.		30.0 feet		N	loise So		levation		eet)		
Barrier Distance		0.0 feet				Auto		000			
Observer Height (5.0 feet				m Truck		297			
	ad Flevation:	0.0 feet			Heav	ry Truck	:s: 8.0	004	Grade Adj	ustment	: 0.0
Roa	ad Elevation:	0.0 feet		L	ane Eq	uivalen	t Distan	ce (in i	feet)		
	Road Grade:	0.0%				Auto	s: 29.	816			
	Left View:	-90.0 degree	s		Mediu	m Truck	s: 29.	518			
	Right View:	90.0 degree			Heav	ry Truck	is: 29.	547			
FHWA Noise Mode	el Calculation	IS									
VehicleType	REMEL	Traffic Flow	Distar	nce	Finite	Road	Fresh	iel	Barrier Att	en Bei	rm Atten
Autos:	66.51	-0.06		3.26		-1.20		-4.49	0.0	000	0.000
Medium Trucks:	77.72	-9.79		3.33		-1.20		-4.86	0.0	000	0.000
Heavy Trucks:	82.99	-12.21		3.32		-1.20		-5.77	0.0	000	0.000
Unmitigated Noise	e Levels (with	out Topo and	barrier a	attenu	uation)						
VehicleType	Leq Peak Ho	ur Leq Day	L	eq Eve	ening	Leq	Night		Ldn	-	NEL
Autos:			66.3		63.4		61.6		69.0		69.3
Medium Trucks:	70		68.2		62.1		62.9		70.4		70.5
Heavy Trucks:			71.4		62.4		64.5		72.5		72.6
Vehicle Noise:	75	5.7	73.9		67.4		68.0)	75.6	6	75.8
Centerline Distant	ce to Noise C	ontour (in feet))								
				70 dl			dBA	6	60 dBA		dBA
			Ldn:	71			53		329		710
		CI	IEL:	73		1	57		338	7	729

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH	WA-RD-77-108	HIGH	NAY N	DISE PI	REDICI	ION MO	DEL					
	o: Existing W e: Rivergrade	ithout Project					t Name: lumber:		ark @ Live	Oak			
Road Segmen						JUD I	umper.	11112					
SITE S	PECIFIC I	VPUT DATA			NOISE MODEL INPUTS								
Highway Data				S	ite Cor	ditions	(Hard =	10, So	oft = 15)				
Average Daily	raffic (Adt):	5,363 vehicl	es				,	Autos:	15				
Peak Hour I	Percentage:	10%			Me	dium Ti	rucks (2 A	(xles)	15				
Peak Ho	our Volume:	536 vehicle	s		He	avy Tru	icks (3+ A	(xles)	15				
Vel	icle Speed:	40 mph		v	ehicle	Mix							
Near/Far Lar	e Distance:	12 feet		-		icleTyp	е	Day	Evening	Night	Daily		
Site Data							Autos:	72.4%	9.2%	18.4%	85.65%		
Bar	rier Heiaht:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	9.129		
Barrier Type (0-Wa		0.0			1	Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%		
Centerline Dis		30.0 feet		٨	loise S	ource E	levation	s (in fe	eet)				
Centerline Dist. t		30.0 feet				Auto	os: 0.0	000	í				
Barrier Distance t	o Observer:	0.0 feet			Mediu	m Truck	(s: 2.2	297					
Observer Height (/	,	5.0 feet			Heav	/y Truck	(s: 8.0	004	Grade Ad	iustmen	t: 0.0		
	d Elevation:	0.0 feet		-									
	d Elevation:	0.0 feet		L	ane Eq		t Distan		feet)				
F	load Grade:	0.0%				Auto							
	Left View:	-90.0 degre				m Truci							
	Right View:	90.0 degre	es		Heav	/y Trucl	(s: 29.	547					
FHWA Noise Mode													
VehicleType	REMEL	Traffic Flow	Dist	ance		Road	Fresn	-	Barrier Att		rm Atten		
Autos:	66.51			3.26		-1.20		-4.49		000	0.00		
Medium Trucks:	77.72			3.33		-1.20		-4.86		000	0.00		
Heavy Trucks:	82.99			3.32		-1.20		-5.77	0.0	000	0.00		
Unmitigated Noise VehicleType	Levels (with Leg Peak Ho			r attenu Leg Ev		1.00	Night		Ldn	0	NEL		
Autos:	,	ui Ley Daj 3.9	61.7	LeyLV	58.7	Ley	57.0		64.3		64.		
Medium Trucks:		5.4	63.5		57.4		58.3		65.7	-	65.		
Heavy Trucks:		3.3	66.7		57.8		59.9		67.8		67.		
Vehicle Noise:			69.3		62.8		63.3		71.0		71.		
Centerline Distanc	e to Noise C	ontour (in feet)										
			L	70 d	BA	65	dBA	e	60 dBA	55	i dBA		
			Ldn:	35			75		162		348		
			NFL:	36			77		166				

F	HWA-	RD-77-108	HIGI	HWAY I	NOISE PF	REDICT	TION MO	DEL			
Scenario: Existing									ark @ Live	Oak	
Road Name: Rivergra Road Segment: s/o Stew						JOD I	lumber:	11112			
SITE SPECIFIC	INPU	IT DATA							L INPUT	s	
Highway Data					Site Con	ditions	(Hard =	10, Se	oft = 15)		
Average Daily Traffic (Adt)	: 2,	535 vehicle	es					Autos:	15		
Peak Hour Percentage	e .	10%			Me	dium Ti	rucks (2 A	(xles)	15		
Peak Hour Volume	: 2	54 vehicles	5		He	avy Tru	icks (3+ A	(xles)	15		
Vehicle Speed	t	40 mph		ŀ	Vehicle I	Mix					
Near/Far Lane Distance	e -	12 feet		-		icleTyp	9	Day	Evening	Night	Daily
Site Data								72.4%	•		85.65
Barrier Height		0.0 feet			Me	edium 1	rucks:	77.7%	4.8%	17.5%	
Barrier Type (0-Wall, 1-Berm)		0.0			F	leavy 1	rucks:	84.3%	5 2.7%	13.0%	
Centerline Dist. to Barrier		30.0 feet		-							
Centerline Dist. to Observer		30.0 feet		-	Noise So				eet)		
Barrier Distance to Observer		0.0 feet				Auto		000			
Observer Height (Above Pad)		5.0 feet			Mediur			297	~ · · ·		
Pad Elevation		0.0 feet			Heav	y Truck	(S: 8.0	004	Grade Ad	justment	0.0
Road Elevation		0.0 feet		ŀ	Lane Eq	uivalen	t Distan	ce (in	feet)		
Road Grade	e	0.0%				Auto	os: 29.	816			
Left View	r: -9	90.0 degree	es		Mediur	n Truck	ks: 29.	518			
Right View	r: 9	90.0 degree	es		Heav	y Truck	(s: 29.	547			
FHWA Noise Model Calculati		1			Т					Т	
VehicleType REMEL		affic Flow	Di	stance	Finite		Fresh		Barrier Att		m Atter
Autos: 66.		-7.96		3.2		-1.20		-4.49		000	0.00
Medium Trucks: 77.		-17.68		3.3		-1.20		-4.86		000	0.00
Heavy Trucks: 82.	99	-20.10		3.3	2	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Levels (w					í ,					Т	
VehicleType Leq Peak H		Leq Day		Leq E	vening	Leq	Night		Ldn		VEL
	60.6		58.4		55.5		53.7		61.1		61
	62.2		60.3		54.2		55.1		62.5		62
	65.0		63.5		54.5		56.6		64.6		64
Vehicle Noise:	67.8		66.0		59.5		60.1		67.3	7	67
Centerline Distance to Noise	Conto	our (in feet)								10.4
			l		dBA		dBA	6	60 dBA		dBA
			Ldn:		21		46		98		11
		C1	VEL:	2	2		47		101	2	17

â		WA-RD-77-108		_				
	io: Existing Wi					Name: The umber: 1111	Park @ Live C	Jak
	ne: Rivergrade nt: s/o Live Oa				JOD N	umber: 1111	2	
Road Segine	nii. s/o Live Oa	ik Av.						
	SPECIFIC IN	IPUT DATA					EL INPUTS	
Highway Data				Site Col	nditions	(Hard = 10, 3	Soft = 15)	
Average Daily	Traffic (Adt):	11,042 vehicle	s			Auto	s: 15	
Peak Hour	Percentage:	10%		Me	edium Tr	ucks (2 Axles): 15	
Peak H	lour Volume:	1,104 vehicles	6	He	eavy Tru	cks (3+ Axles): 15	
Ve	hicle Speed:	50 mph		Vehicle	Mix			
Near/Far La	ne Distance:	12 feet			nicleType	Dav	Evening	Night Daily
Site Data				101		Autos: 72.4	•	18.4% 85.65
		0.0 ()		N	, Iedium T			17.5% 9.129
Barrier Type (0-W	rrier Height:	0.0 feet 0.0			Heavy T			13.0% 5.23
Centerline Di		30.0 feet						
Centerline Dist.		30.0 feet		Noise S	ource E	evations (in	feet)	
Barrier Distance		0.0 feet			Auto	s: 0.000		
Observer Height		5.0 feet		Mediu	m Truck	s: 2.297		
	ad Flevation:	0.0 feet		Hea	vy Truck	s: 8.004	Grade Adju	stment: 0.0
	ad Elevation: ad Elevation:	0.0 feet		Lane Fo	wivalen	t Distance (ii	1 feet)	
	Road Grade:	0.0%		Earro Ec	Auto		11000	
	Left View:	-90.0 degree		Modiu	m Truck			
	Right View:	90.0 degree			vy Truck			
	rught view.	50.0 degree	5	1100	iy maon	20.041		
FHWA Noise Mod	lel Calculation	s						
VehicleType	REMEL	Traffic Flow	Distan	ce Finite	Road	Fresnel	Barrier Atter	n Berm Atten
Autos:	70.20	-2.54		3.26	-1.20	-4.49	9 0.00	0.00
Medium Trucks:	81.00	-12.26		3.33	-1.20	-4.80	6 0.00	0.00
Heavy Trucks:	85.38	-14.68		3.32	-1.20	-5.7	7 0.00	0.00
Unmitigated Nois	e Levels (with	out Topo and	harrier a	ttenuation)				
VehicleType	Leg Peak Hou			q Evening	Lea	Night	Ldn	CNEL
Autos:	69		67.5	64.6	,	62.8	70.2	70
Medium Trucks:	70	.9	59.0	62.9		63.8	71.2	71.
Heavy Trucks:	72	.8	71.3	62.3		64.4	72.4	72
Vehicle Noise:		5.1	74.3	68.1		68.5	76.1	76
Oranta dina Distan	ce to Noise Ci	ontour (in feet						
	00 10 10030 00	entear (mileet)		70 dBA	65	dBA	60 dBA	55 dBA
Centerline Distan								
Centerine Distan			Ldn:	77	1	65	356	766

	FH	WA-RD-77-108	B HIGH	NAY NC	DISE P	REDICT	ION MO	DEL			
	e: Stewart Av						Name: lumber:		ark @ Live	Oak	
SITE	SPECIFIC II	VPUT DATA				I	NOISE N	/IODE	L INPUT	s	
Highway Data				Si	ite Cor	nditions	(Hard =	10, Sc	oft = 15)		
Average Daily	Traffic (Adt):	5,755 vehicl	es				,	Autos:	15		
Peak Hour	Percentage:	10%			Me	edium Tr	ucks (2 A	(xles):	15		
Peak H	our Volume:	576 vehicle	s		He	eavy Tru	cks (3+ A	(xles):	15		
Vel	hicle Speed:	30 mph		V	ehicle	Mix					-
Near/Far Lar	ne Distance:	12 feet				nicleType		Dav	Evening	Night	Daily
Site Data								72.4%	~	18.4%	
Bar	rier Heiaht:	0.0 feet			M	ledium T	rucks:	77.7%	4.8%	17.5%	6 9.12%
Barrier Type (0-W		0.0				Heavy T	rucks:	84.3%	2.7%	13.0%	6 5.23%
Centerline Dis	t. to Barrier:	40.0 feet		N	oise S	ource E	levation	s (in fe	et)		
Centerline Dist.	to Observer:	40.0 feet				Auto		000			-
Barrier Distance	to Observer:	0.0 feet			Mediu	m Truck		297			
Observer Height (J	Above Pad):	5.0 feet				vy Truck		004	Grade Ad	iustmen	t: 0.0
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		La	ane Eq		t Distand		feet)		
F	Road Grade:	0.0%				Auto					
	Left View:	-90.0 degre				m Truck					
	Right View:	90.0 degre	es		Hea	vy Truck	s: 39.6	561			
FHWA Noise Mode	el Calculation	15									
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresn	el	Barrier Att	en Be	erm Atten
Autos:	61.75	-3.15		1.37		-1.20		-4.59	0.0	000	0.000
Medium Trucks:	73.48			1.41		-1.20		-4.87	0.0		0.000
Heavy Trucks:	79.92	-15.29		1.41		-1.20		-5.56	0.0	000	0.000
Unmitigated Noise	Levels (with	out Topo and	barrier	r attenu	ation)						
VehicleType	Leq Peak Ho	ur Leq Daj	y .	Leq Eve	ening	Leq	Night		Ldn	0	ONEL
Autos:	58	3.8	56.6		53.6		51.9		59.2	2	59.5
Medium Trucks:	60	0.8	58.9		52.8		53.7		61.1		61.3
Heavy Trucks:	64	4.8	63.3		54.3		56.4		64.4	ŀ	64.5
Vehicle Noise:	6	7.0	65.3		58.4		59.2		66.9)	67.0
Centerline Distance	e to Noise C	ontour (in fee	t)								
			L	70 dE	ЗA		dBA	6	60 dBA		5 dBA
		-	Ldn:	25			53		115		248
		С	NEL:	25		5	55		118		254

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	HIGHV	VAY NO	DISE P	REDICI	FION MO	DEL			
Road Nam	io: Existing W ne: Baldwin Pa nt: s/o Live Oa	ırk Bl.					t Name: Number:		ark @ Live	Oak	
	SPECIFIC IN	IPUT DATA							L INPUT	S	
Peak H	Percentage: lour Volume:	11,684 vehicle 10% 1,168 vehicle		3	Me	edium Ti	rucks (2) icks (3+)	Autos: Axles):	15 15		
	hicle Speed: ne Distance:	40 mph 48 feet		V	ehicle						
	ne Distance.	40 1001			Veh	nicleTyp		Day	Evening	Night	Daily
Site Data Barrier Type (0-W	rrier Height: /all, 1-Berm):	0.0 feet 0.0				ledium 1 Heavy 1		72.4% 77.7% 84.3%	4.8%	18.4% 17.5% 13.0%	6 9.129
Centerline Di	st. to Barrier:	50.0 feet		N	oise S	ource E	levation	s (in f	eet)		
Centerline Dist. Barrier Distance Observer Height (Pa	to Observer:	50.0 feet 0.0 feet 5.0 feet 0.0 feet			Mediu	Auto m Truck vy Truck	os: 0. ks: 2.	000 297 004	Grade Ad	ljustmen	t: 0.0
Ro	ad Elevation:	0.0 feet		L	ane Eq	uivaler	nt Distan	ce (in	feet)		
	Road Grade: Left View: Right View:	0.0% -90.0 degree 90.0 degree				Auto m Truck vy Truck	ks: 43.	147 947 966			
FHWA Noise Mod	el Calculation	s									
VehicleType	REMEL	Traffic Flow	Dista		Finite	Road	Fresi	-	Barrier Att		erm Atten
Autos:	66.51	-1.32		0.71		-1.20		-4.65		000	0.00
Medium Trucks: Heavy Trucks:	77.72 82.99			0.74		-1.20		-4.87 -5.43		000 000	0.00
						-1.20		-0.40	0.0	500	0.00
Unmitigated Nois VehicleType	Leg Peak Hou			Leg Ev		1.00	Night		Ldn		NEL
Autos:	64		62.5	LOYLN	59.5		57.8	3	65.1	_	65
Medium Trucks:	66	.2	64.3		58.2		59.		66.5	5	66.
Heavy Trucks:	69	.1	67.5		58.6		60.	7	68.6	6	68.
Vehicle Noise:	71	.8	70.1		63.6		64.	1	71.8	В	71.
Centerline Distan	ce to Noise C	ontour (in feet)								
				70 di			i dBA	e	60 dBA		5 dBA
			Ldn:	66			141		304		656
		Ci	NEL:	67		1	145		313		674

	FHW	A-RD-77-108 H	IGHWA	Y NOISE P	REDICT	ION MO	DEL			
Road Name	 D: Existing With Maine Av. s/o Arrow Hyperbolic 	,				t Name: lumber:		ark @ Live	Oak	
SITE S	SPECIFIC INF	PUT DATA						L INPUT	s	
Highway Data				Site Col	nditions	(Hard =	10, Se	oft = 15)		
Average Daily 1	Traffic (Adt): 1	10,106 vehicles					Autos:	15		
Peak Hour I	Percentage:	10%		Me	edium Tr	ucks (2 A	(xles)	15		
Peak Ho	our Volume:	1,011 vehicles		He	avy Tru	cks (3+ A	(xles)	15		
Veh	nicle Speed:	35 mph		Vehicle	Mix					
Near/Far Lan	ne Distance:	12 feet			nicleType	a	Dav	Evening	Night	Daily
Site Data							72.4%	•	18.4%	
	rier Height:	0.0 feet		M	edium T		77.7%		17.5%	
Barrier Type (0-Wa		0.0 1001			Heavy T		84.3%		13.0%	
Centerline Dis	. ,	40.0 feet								
Centerline Dist. t		40.0 feet		Noise S		levation		eet)		
Barrier Distance t		0.0 feet			Auto		000			
Observer Height (A		5.0 feet			m Truck		297			
	d Elevation:	0.0 feet		Hea	vy Truck	s: 8.0	004	Grade Ad	lustment	: 0.0
Roa	d Elevation:	0.0 feet		Lane Ec	uivalen	t Distan	ce (in	feet)		
F	Road Grade:	0.0%			Auto	is: 39.	862			
	Left View:	-90.0 degrees		Mediu	m Truck	s: 39.	640			
	Right View:	90.0 degrees		Hea	vy Truck	:s: 39.	661			
FHWA Noise Mode	l Calculations			1						
VehicleType		Traffic Flow	Distanc		Road	Fresh		Barrier Att		m Atten
Autos:	64.30	-1.37		1.37	-1.20		-4.59		000	0.00
Medium Trucks:	75.75	-11.10		1.41	-1.20		-4.87		000	0.00
Heavy Trucks:	81.57	-13.52		1.41	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise			-	,						
	Leq Peak Hour			Evening		Night		Ldn	-	NEL
Autos: Medium Trucks:	63.1 64.9			57.9 56.9		56.2 57.8		63.5 65.2		63. 65.
Heavy Trucks:	68.3			56.9		57.8		67.8		67.
Vehicle Noise:	70.7			62.3		63.0		70.6		70.
Centerline Distanc			.0	02.3		03.0	,	70.0	,	70.
Centennie Distanc	e to moise Coi	nour (in leel)		70 dBA	65	dBA	6	60 dBA	55	dBA
		La		44		95	· `	205		42
			L:	45		98		210		53

FHWA-RD-77-108 HIC	SHWATNU						_	
Scenario: Existing Without Project			Project Na			ark @ Live	Oak	
Road Name: Longden Av.			Job Num	iber: 1	1112			
Road Segment: w/o Myrtle Av.								
SITE SPECIFIC INPUT DATA						L INPUT	S	
Highway Data	S	ite Con	ditions (H	ard =	10, Sc	oft = 15)		
Average Daily Traffic (Adt): 13,381 vehicles					lutos:	15		
Peak Hour Percentage: 10%			lium Truck			15		
Peak Hour Volume: 1,338 vehicles		Hea	avy Trucks	(3+ A	xles):	15		
Vehicle Speed: 40 mph	V	ehicle N	lix					
Near/Far Lane Distance: 12 feet	-	Vehi	cleType		Day	Evening	Night	Daily
Site Data			Aut	os:	, 72.4%	9.2%	18.4%	85.65
Barrier Height: 0.0 feet		Me	dium Truc	ks:	77.7%	4.8%	17.5%	9.12
Barrier Type (0-Wall, 1-Berm): 0.0		H	leavy Truc	ks:	34.3%	2.7%	13.0%	5.23
Centerline Dist. to Barrier: 30.0 feet	N	oise So	urce Elev	ations	; (in fe	et)		
Centerline Dist. to Observer: 30.0 feet			Autos:	0.0	00	,		
Barrier Distance to Observer: 0.0 feet		Mediun	n Trucks:	2.2	97			
Observer Height (Above Pad): 5.0 feet			v Trucks:	8.0	04	Grade Ad	justment	: 0.0
Pad Elevation: 0.0 feet	_							
Road Elevation: 0.0 feet	Li	ane Equ	ivalent D			eet)		
Road Grade: 0.0%			Autos:	29.8				
Left View: -90.0 degrees			n Trucks:	29.5				
Right View: 90.0 degrees		Heav	Y Trucks:	29.5	47			
FHWA Noise Model Calculations		E 1 1		_				
VehicleType REMEL Traffic Flow D Autos: 66.51 -0.73	Distance 3.26	Finite	-1.20	Fresn	ei 4.49	Barrier Att	en Ber 000	m Atter
Autos: 66.51 -0.73 Medium Trucks: 77.72 -10.46	3.26		-1.20		-4.49 -4.86		000	0.00
Heavy Trucks: 82.99 -12.88	3.32		-1.20		-4.00		000	0.00
Unmitigated Noise Levels (without Topo and bar		- 41 1	-1.20		5.77	0.0	500	0.00
VehicleType Leg Peak Hour Leg Day	Leg Eve		Leg Nig	tht		Ldn	0	NEL
Autos: 67.8 65.7		62.7	Loging	60.9		68.3		68
Medium Trucks: 69.4 67.5		61.4		62.3		69.3	-	69
Heavy Trucks: 72.2 70.7	-	61.7		63.8		71.4		71
Vehicle Noise: 75.0 73.2		66.8		67.3		74.	-	75
Centerline Distance to Noise Contour (in feet)								
· · ·	70 dE	BA	65 dB	A	6	0 dBA	55	dBA
Ldn	64		138			297	F	640
Edit			100					

FH	IWA-RD-77-108 HIG	HWAY	NOISE P	REDICT	ION MOI	DEL			
Scenario: Existing V Road Name: Longden Road Segment: e/o Myrtle	Av.				Name: 1 lumber: 1		ırk @ Live	Oak	
SITE SPECIFIC I	NPUT DATA						L INPUTS	s	
Highway Data			Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (Adt):	16,851 vehicles					Autos:	15		
Peak Hour Percentage:	10%		Me	edium Tri	ucks (2 A	xles):	15		
Peak Hour Volume:	1,685 vehicles		He	eavy True	cks (3+ A	xles):	15		
Vehicle Speed:	40 mph	-	Vehicle	Mix					
Near/Far Lane Distance:	12 feet	-		nicleType		Day	Evening	Night	Daily
Site Data			101			72.4%	•	18.4%	
Barrier Height:	0.0 feet		M	ledium Ti	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wall, 1-Berm):	0.0			Heavy Ti	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dist. to Barrier:	30.0 feet	-	Noise O	- 		. () f.	- 41		
Centerline Dist, to Observer:	30.0 feet	-	Noise S		levations		et)		
Barrier Distance to Observer:	0.0 feet			Auto	0.0				
Observer Height (Above Pad):	5.0 feet			m Truck			Grade Adj	i un ten ne t	0.0
Pad Elevation:	0.0 feet		Hea	vy Truck	s: 8.0	004	Grade Adj	usuneni.	0.0
Road Elevation:	0.0 feet	Ī	Lane Eq	uivalen	t Distand	e (in t	'eet)		
Road Grade:	0.0%	ſ		Auto	s: 29.8	316			
Left View:	-90.0 degrees		Mediu	m Truck	s: 29.5	518			
Right View:	90.0 degrees		Hea	vy Truck	s: 29.5	547			
FHWA Noise Model Calculatio	ns								
VehicleType REMEL	Traffic Flow D	istance	Finite	Road	Fresn	el	Barrier Atte	en Ber	m Atten
Autos: 66.5	1 0.27	3.2	26	-1.20		-4.49	0.0	000	0.000
Medium Trucks: 77.7	2 -9.46	3.3	33	-1.20		-4.86	0.0	000	0.000
Heavy Trucks: 82.9	9 -11.88	3.3	32	-1.20		-5.77	0.0	000	0.000
Unmitigated Noise Levels (wit	hout Topo and barr	rier attei	nuation)						
VehicleType Leq Peak Ho	bur Leq Day	Leq E	evening	Leq	Night		Ldn	CI	VEL
Autos: 6	8.8 66.7		63.7		61.9		69.3	5	69.6
	0.4 68.5		62.4		63.3		70.7		70.9
,	3.2 71.7		62.7		64.8		72.8		72.9
Vehicle Noise: 7	6.0 74.2		67.8		68.3		75.9)	76.1
Centerline Distance to Noise (Contour (in feet)								
			dBA		dBA	6	0 dBA		dBA
	Ldn:		75		61		347	-	47
	CNEL:	- 7	77	1	65		356	7	67

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH	WA-RD-77-108	HIGH	WAY NO	DISE PF	REDICTION		DEL			
Scenario	: Existing W	ithout Project				Project Na	me: 1	The Pa	ark @ Live	Oak	
Road Name	e: Live Oak A	w.				Job Num	ber: 1	1112			
Road Segmen	t: w/o Peck F	Rd.									
	PECIFIC I	NPUT DATA							L INPUT	s	
Highway Data				S	ite Con	ditions (H	ard =	10, So	oft = 15)		
Average Daily 1	raffic (Adt):	25,108 vehicl	es				A	Autos:	15		
Peak Hour F	Percentage:	10%			Me	dium Truck	's (2 A	xles):	15		
Peak Ho	our Volume:	2,511 vehicle	s		He	avy Trucks	(3+ A	xles):	15		
Veh	icle Speed:	40 mph		v	ehicle I	Mix					
Near/Far Lan	e Distance:	48 feet		-		cleType		Dav	Evening	Night	Daily
Site Data						Aut	os:	72.4%	0	18.4%	
Bari	rier Height:	0.0 feet			Me	edium Truc	ks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0			ŀ	łeavy Truc	ks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis		48.0 feet		N	oise Sc	ource Eleva	ations	s (in fe	et)		
Centerline Dist. t		48.0 feet				Autos:	0.0	000			
Barrier Distance t		0.0 feet			Mediur	n Trucks:	2.2	97			
Observer Height (A	,	5.0 feet			Heav	y Trucks:	8.0	04	Grade Ad	iustment	: 0.0
	d Elevation:	0.0 feet		_							
	d Elevation:	0.0 feet		L	ane Eq	uivalent Di			'eet)		
F	load Grade:	0.0%				Autos:	41.8				
	Left View:	-90.0 degre				n Trucks:	41.6				
	Right View:	90.0 degre	es		Heav	y Trucks:	41.6	578			
FHWA Noise Mode		-									
VehicleType	REMEL	Traffic Flow		tance	Finite		Fresn		Barrier Att		m Atten
Autos:	66.51			1.05		-1.20		-4.64		000	0.00
Medium Trucks:	77.72			1.09		-1.20		-4.87		000	0.00
Heavy Trucks:	82.99			1.08		-1.20		-5.45	0.0	000	0.00
Unmitigated Noise			1								
	Leq Peak Ho			Leq Ev	· ·	Leq Nig			Ldn		NEL
Autos:		3.4	66.2		63.2		61.5		68.8	-	69.
Medium Trucks:		9.9	68.0 71.2		61.9 62.2		62.8		70.2	-	70
Heavy Trucks:		2.7					64.3				72.
Vehicle Noise:		5.5	73.7		67.3		67.8		75.4	ł	75.
Centerline Distanc	e to Noise C	ontour (in fee	t)	70 di	BA	65 dB	4	6	0 dBA	55	dBA
			Ldn:	111		238			513		106
		С	NEL:	114		245			527		136
		0				2.10				.,	

	FHV	/A-RD-77-108 H	IGHWA	Y NOISE P	REDICTIO	N MOD	DEL			
Road Nam	io: Existing Wi ne: Arrow Hwy. nt: e/o Peck Ro				Project N Job Nur			ark @ Live	Oak	
SITE	SPECIFIC IN	PUT DATA			NO	ISE M	ODE	L INPUT	s	
Highway Data				Site Cor	ditions (H	lard = 1	10, So	oft = 15)		
Average Daily	Traffic (Adt):	23,789 vehicles				A	utos:	15		
Peak Hour	Percentage:	10%		Me	dium Truc	ks (2 A)	xles):	15		
Peak H	lour Volume:	2,379 vehicles		He	avy Truck	s (3+ A)	xles):	15		
Ve	hicle Speed:	45 mph		Vehicle	Mix					
Near/Far La	ne Distance:	48 feet			icleType	1	Dav	Evening	Night	Daily
Site Data				Ven			72.4%		18.4%	
					edium Tru		2.4%		17.5%	
	rrier Height:	0.0 feet			Heavy True		4.3%		13.0%	
Barrier Type (0-W	. ,	0.0			loary ma	. c	H.0 /0	2.170	10.070	0.20
Centerline Di Centerline Dist.		40.0 feet 40.0 feet		Noise Se	ource Elev	ations	(in fe	et)		
Barrier Distance		40.0 feet			Autos:	0.0	00			
Observer Height		5.0 feet		Mediu	m Trucks:	2.2	97			
	ad Elevation:	0.0 feet		Heav	/y Trucks:	8.0	04	Grade Ad	justment	: 0.0
	ad Elevation: ad Elevation:	0.0 feet		Lane Fo	uivalent D	istanc	e (in	feet)		
	Road Grade:	0.0%			Autos:	32.3				
	Left View:	-90.0 degrees		Mediu	m Trucks:	32.1				
	Right View:	90.0 degrees		Hear	/y Trucks:	32.1	41			
FHWA Noise Mod										
VehicleType	REMEL	Traffic Flow	Distanc		Road	Fresne		Barrier Att		m Atten
Autos:	68.46	1.25		2.73	-1.20		4.59		000	0.00
Medium Trucks:	79.45	-8.47		2.78	-1.20		4.87		000	0.00
Heavy Trucks:	84.25	-10.89		2.78	-1.20	-	5.56	0.0	000	0.00
Unmitigated Nois										
VehicleType	Leq Peak Hou			Evening	Leq Ni	·		Ldn		NEL
Autos:	71. 72.		.0	66.1 64.6		64.3		71.7		72.
Medium Trucks:	72. 74.		1.7 1.4	64.6 64.4		65.5 66.5		72.9		73. 74.
Heavy Trucks: Vehicle Noise:										
	78		5.2	69.9		70.3		77.9	9	78.
Centerline Distan	ce to Noise Co	ntour (in teet)	-	70 dBA	65 dE	A 1	4	0 dBA	FF	dBA
			in:	135	65 dE 292		e	628		ава 354
					292			020	1,	JJ4

Scenario: Existing Without Project			Drojoot M	mo. The f	Park @ Live	Oak	
Road Name: Arrow Hwy.				ame: The P bber: 1111		Oak	
Road Segment: e/o Longden Av.			JOD MUN	iber. IIII.	2		
		-					
SITE SPECIFIC INPUT DATA		011 0			EL INPUT	S	
Highway Data		Site Co	onditions (H				
Average Daily Traffic (Adt): 41,218 vehicles				Autos			
Peak Hour Percentage: 10%			ledium Truck				
Peak Hour Volume: 4,122 vehicles		ŀ	leavy Trucks	(3+ Axles): 15		
Vehicle Speed: 45 mph		Vehicle	Mix				
Near/Far Lane Distance: 48 feet		Ve	hicleType	Day	Evening	Night	Daily
Site Data			Aut	os: 72.4	% 9.2%	18.4%	85.65
Barrier Height: 0.0 feet			Medium Truc	ks: 77.7	% 4.8%	17.5%	9.12
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.3	% 2.7%	13.0%	5.23
Centerline Dist. to Barrier: 40.0 feet		Noise	Source Elev	ations (in	feet)		
Centerline Dist. to Observer: 40.0 feet			Autos:	0.000	1		
Barrier Distance to Observer: 0.0 feet		Med	um Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet		He	avy Trucks:	8.004	Grade Ad	justment.	0.0
Pad Elevation: 0.0 feet			,				
Road Elevation: 0.0 feet		Lane E	quivalent D		(feet)		
Road Grade: 0.0%			Autos:	32.388			
Left View: -90.0 degrees			um Trucks:	32.114			
Right View: 90.0 degrees		He	avy Trucks:	32.141			
FHWA Noise Model Calculations					r		
VehicleType REMEL Traffic Flow	Distan			Fresnel	Barrier Att		m Atter
Autos: 68.46 3.64		2.73	-1.20	-4.59		000	0.00
Medium Trucks: 79.45 -6.09		2.78	-1.20	-4.87		000	0.00
Heavy Trucks: 84.25 -8.50		2.78	-1.20	-5.56	0.0	000	0.00
Unmitigated Noise Levels (without Topo and b		t tenuation g Evening) Leq Nie	whit	l dn	0	NFI
VohioloTupo Log Pook Hour Log Dov		4 L vening 68.		66.7	74.1		74
VehicleType Leq Peak Hour Leq Day			-	67.8	74.1		75
Autos: 73.6 7	1.4				76.9	-	77
Autos: 73.6 7 Medium Trucks: 74.9 7	3.1	67. 66	8	68.0			
Autos: 73.6 7 Medium Trucks: 74.9 7: Heavy Trucks: 77.3 7:	3.1 5.8	66.	-	68.9 72.7		3	80
Autos: 73.6 7 Medium Trucks: 74.9 7 Heavy Trucks: 77.3 7 Vehicle Noise: 80.3 7	3.1		-	68.9 72.7	80.3	3	80
Autos: 73.6 7 Medium Trucks: 74.9 7: Heavy Trucks: 77.3 7:	3.1 5.8 3.6	66.	-	72.7			80 dBA
Autos: 73.6 7 Medium Trucks: 74.9 7 Heavy Trucks: 77.3 7 Vehicle Noise: 80.3 7 Centerline Distance to Noise Contour (in feet)	3.1 5.8 3.6	66. 72.	3	72.7	80.3	55	

	FHV	VA-RD-77-108 HI	GHWAY	NOISE P	REDICT	ION MOI	DEL				
	2: Existing Wir 2: Arrow Hwy. 1: e/o I-605 Fv	,		Project Name: The Park @ Live Oak Job Number: 11112							
SITE S	PECIFIC IN	PUT DATA			r	NOISE N	IODE	L INPUTS	S		
Highway Data				Site Cor	nditions	(Hard =	10, Sc	oft = 15)			
Average Daily 1 Peak Hour I	· · ·	27,508 vehicles 10%		140	diuma Te	/ ucks (2 A	Autos:	15 15			
	Percentage: our Volume:	2.751 vehicles				ucks (2 A cks (3+ A					
	our volume: hicle Speed:	,		пе	avy nu	CKS (3+ A	xies).	15			
Near/Far Lan		45 mph		Vehicle	Mix						
ivear/Far Lan	le Distance:	48 feet		Veh	icleType	e .	Day	Evening	Night	Daily	
Site Data						Autos:	72.4%	9.2%	18.4%	85.65%	
Bar	rier Height:	0.0 feet		М	edium T	rucks:	77.7%	4.8%	17.5%	9.12%	
Barrier Type (0-Wa	. ,	0.0			Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%	
Centerline Dis		40.0 feet		Noise Se	ource E	levations	s (in fe	eet)			
Centerline Dist. t		40.0 feet			Auto	s: 0.0	000				
Barrier Distance t		0.0 feet		Mediu	m Truck	s: 2.2	297				
Observer Height (A	,	5.0 feet		Heav	/y Truck	s: 8.0	004	Grade Adj	iustment	0.0	
	d Elevation:	0.0 feet			·						
	d Elevation:	0.0 feet		Lane Eq		t Distand		feet)			
F	load Grade:	0.0%			Auto						
	Left View:	-90.0 degrees			m Truck						
	Right View:	90.0 degrees		Heav	/y Truck	is: 32.1	141				
FHWA Noise Mode	I Calculation:	5		1							
VehicleType	REMEL		Distance		Road	Fresn		Barrier Atte		m Atten	
Autos:	68.46	1.88		73	-1.20		-4.59	0.0		0.000	
Medium Trucks:	79.45	-7.84		78	-1.20		-4.87	0.0		0.000	
Heavy Trucks:	84.25	-10.26	2.	78	-1.20		-5.56	0.0	000	0.000	
Unmitigated Noise			rrier atte	nuation)							
VehicleType	Leq Peak Hou			Evening	Leq	Night		Ldn		NEL	
Autos:	71.			66.7		65.0		72.3		72.6	
Medium Trucks:	73.			65.2		66.1		73.5		73.7	
Heavy Trucks:	75.	.6 74	.0	65.1		67.2		75.1		75.2	
Vehicle Noise:	78	.6 76	.8	70.5		70.9	_	78.6	6	78.8	
Centerline Distanc	e to Noise Co	ontour (in feet)									
			70) dBA	65	dBA	6	60 dBA	55	dBA	
		Ld	n: ·	149	3	21		692		491	
		CNE	L: '	153	3	30		711	1,	533	

Wednesday, May 02, 2018

Wednesday, May 02, 2018

Road Name: Arrow Hwy. Jo Road Segment: wio Rivergrade Rd. Site Sondition SITE SPECIFIC INPUT DATA Image: Site Condition Highway Data Site Condition Average Daily Traffic (Adt): 24,194 vehicles Medium Peak Hour Percentage: 10% Peak Hour Vehicles Medium Peak Hour Vehicle 45 mph Vehicle Speed: 45 mph Vehicle Data Vehicle IMIX Site Data Medium Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist to Desrier: 40.0 feet Noise Source: Noise Source:	n Trucks (2 Trucks (3+ Type Autos: m Trucks: ry Trucks: e Elevation Autos: 0	11112 MODE = 10, So Autos: Axles): Axles): Day 72.4% 77.7% 84.3%	L INPUT: ft = 15) 15 15 15 Evening 9.2% 4.8% 2.7%		9.12%	
Road Segment: w/o Rivergrade Rd. SITE SPECIFIC INPUT DATA Highway Data Site Condition Average Daily Traffic (Adt): 24,194 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 2,419 vehicles Peak Hour Volume: 2,419 vehicles Peak Hour Volume: 2,419 vehicles Vehicle Speed: 45 mph Vehicle Mix Vehicle Mix Vehicle Speed: 45 mph Vehicle Mix Vehicle Mix Site Data Mediur Barrier Height: 0.0 feet Barrier Height: 0.0 leet Centerline Dist. to Barrier: 40.0 leet Noise Source 0.0 teet	NOISE ons (Hard = n Trucks (2 Trucks (3+ Type Autos: m Trucks: y Trucks: y Trucks: e Elevation Autos: 0	MODE = 10, So Autos: Axles): Axles): Day 72.4% 77.7% 84.3%	oft = 15) 15 15 15 Evening 9.2% 4.8% 2.7%	Night 18.4% 17.5%	85.65% 9.12%	
SITE SPECIFIC INPUT DATA Site Condition Average Daily Traffic (Adt): 24,194 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 2,419 vehicles Vehicle Speed: 45 mph Vehicle Mix Vehicle Speed: 45 mph Vehicle Mix Site Data Barrier Height: 0.0 feet Barrier Height: 0.0 feet Centerline Dist. to Barrier: 40.0 feet Centerline Dist. to Barrier: 40.0 feet Review Contention for the Mix Centerline Dist. to Districe: 0.0 feet Noise Source Centerline Dist. to Districe: 40.0 feet Review Contention for the Mix Centerline Dist. to Districe: 0.0 feet Review Centerline Dist. to Districe: 40.0 feet Review Centerline Dist. to Districe: 0.0 feet Review Centerline Dist. to Distr	n Trucks (2 Trucks (3+ Type Autos: m Trucks: ry Trucks: e Elevation Autos: 0	= 10, So Autos: Axles): Axles): Day 72.4% 77.7% 84.3%	oft = 15) 15 15 15 Evening 9.2% 4.8% 2.7%	Night 18.4% 17.5%	85.65% 9.12%	
Highway Data Site Condition Average Daily Traffic (Adt): 24,194 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 2,419 vehicles Peak Hour Volume: 2,419 vehicles Vehicle Speed: 45 mph Vehicle Speed: 45 mph Vehicle Mix Vehicle Mix Site Data Mediur Barrier Height: 0.0 teet Centerline Dist. to Barrier: 40.0 teet Partier Direne to Disenore: 0.0 teet Noise Source: 0.0 teet	n Trucks (2 Trucks (3+ Type Autos: m Trucks: ry Trucks: e Elevation Autos: 0	= 10, So Autos: Axles): Axles): Day 72.4% 77.7% 84.3%	oft = 15) 15 15 15 Evening 9.2% 4.8% 2.7%	Night 18.4% 17.5%	85.65% 9.12%	
Average Daily Traffic (Adt): 24,194 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 2,419 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Vehicle Mix Vehicle Mix <td co<="" td=""><td>n Trucks (2 Trucks (3+ Type Autos: m Trucks: ny Trucks: e Elevation Autos: 0</td><td>Autos: Axles): Axles): Day 72.4% 77.7% 84.3%</td><td>15 15 15 <i>Evening</i> 9.2% 4.8% 2.7%</td><td>18.4% 17.5%</td><td>85.65% 9.12%</td></td>	<td>n Trucks (2 Trucks (3+ Type Autos: m Trucks: ny Trucks: e Elevation Autos: 0</td> <td>Autos: Axles): Axles): Day 72.4% 77.7% 84.3%</td> <td>15 15 15 <i>Evening</i> 9.2% 4.8% 2.7%</td> <td>18.4% 17.5%</td> <td>85.65% 9.12%</td>	n Trucks (2 Trucks (3+ Type Autos: m Trucks: ny Trucks: e Elevation Autos: 0	Autos: Axles): Axles): Day 72.4% 77.7% 84.3%	15 15 15 <i>Evening</i> 9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%
Peak Hour Percentage: 10% Medium Peak Hour Volume: 2,419 vehicles Heavy Vehicle Speed: 45 mph Vehicle Mix Vehicle Speed: 45 mph Vehicle Mix Site Data Barrier Height: 0.0 feet Medium Barrier Height: 0.0 feet Medium Heavy Centerline Dist: 0.5 leet Noise Source Noise Source Centerline Dist: 0.0 feet Noise Source Noise Source	Trucks (3+ Type Autos: m Trucks: ny Trucks: e Elevatior Autos: 0	Axles): Axles): Day 72.4% 77.7% 84.3%	15 15 <i>Evening</i> 9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%	
Peak Hour Volume: 2,419 vehicles Heavy Vehicle Speed: 45 mph Vehicle Mix Near/Far Lane Distance: 48 feet Vehicle Mix Site Data Medium Medium Barrier Height: 0.0 feet Medium Barrier Type (0-Wall, 1-Berrn): 0.0 Noise Source Centerline Dist. to Barrier: 40.0 feet Noise Source Perrore Directore to Observer: 0.0 text A	Trucks (3+ Type Autos: m Trucks: ny Trucks: e Elevatior Autos: 0	Axles): Day 72.4% 77.7% 84.3%	15 Evening 9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%	
Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Site Data Barrier Height: 0.0 feet Barrier Type (0-Walt, 1-Berm): 0.0 Centerline Dist. to Barrier: 40.0 feet Parrier Director to Deserver: 40.0 feet Parrier Director to Deserver: 0.0 feet Noise Source Centerline Dist. to Observer: 40.0 feet AD.0 feet Noise Source AD.0 feet Noise Source AD.0 feet Noise Source AD.0 feet Noise Source AD.0 feet AD.0 feet AD	Type Autos: m Trucks: ry Trucks: ee Elevation Autos: 0	Day 72.4% 77.7% 84.3%	Evening 9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%	
Near/Far Lane Distance: 48 feet Venicle Mix Site Data Venice Mix Venice Mix Barrier Height: 0.0 feet Mediur Barrier Type (0-Wall, 1-Berrin): 0.0 Heav Centerline Dist. to Darrier: 40.0 feet Noise Source Centerline Dist. to Observer: 40.0 feet Noise Source	Autos: m Trucks: ry Trucks: e Elevatior Autos: 0.	72.4% 77.7% 84.3%	9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%	
Site Data Venice I Barrier Height: 0.0 feet Medium Barrier Type (0-Wall, 1-Berri): 0.0 1 Centerline Dist. to Barrier: 40.0 feet Noise Source Parrier Director to Observer: 40.0 feet A	Autos: m Trucks: ry Trucks: e Elevatior Autos: 0.	72.4% 77.7% 84.3%	9.2% 4.8% 2.7%	18.4% 17.5%	85.65% 9.12%	
Barrier Height: 0.0 feet Mediur Barrier Type (0-Wall, 1-Berm): 0.0 1 Centerline Dist. to Barrier: 40.0 feet Noise Source Parrier Director to Observer: 40.0 feet Noise Source	m Trucks: /y Trucks: : e Elevatior Autos: 0	77.7% 84.3% ns (in fe	4.8% 2.7%	17.5%	9.129	
Barrier Type (O-Wall, 1-Berrn): 0.0 Centerline Dist. to Barrier: 40.0 feet Noise Source Centerline Dist. to Observer: 40.0 feet A Parrier Directore to Observer: 0.0 tot	vy Trucks: e Elevatior Autos: 0	84.3% ns (in fe	2.7%			
Barrier Type (0-Wall, 1-Berm): 0.0 Heav Centerline Dist. to Barrier: 40.0 feet Noise Source Centerline Dist. to Observer: 40.0 feet A	e Elevation Autos: 0	ns (in fe		13.0%	5.23%	
Centerline Dist. to Observer: 40.0 feet	Autos: 0		eet)			
Parrier Distance to Observer: 0.0 feet		.000				
Barrier Distance to Observer: 0.0 feet Medium Tr	ucks: 2					
		.297				
Observer Height (Above Pad): 5.0 feet Heavy Tr	rucks: 8	.004	Grade Ad	justment	t: 0.0	
Pad Elevation: 0.0 feet						
Road Elevation: 0.0 feet Lane Equiva			teet)			
		.388				
Left View: -90.0 degrees Medium Tr		.114				
Right View: 90.0 degrees Heavy Tr	ucks: 32	.141				
FHWA Noise Model Calculations						
VehicleType REMEL Traffic Flow Distance Finite Roa			Barrier Att		rm Atten	
	.20	-4.59		000	0.00	
	.20	-4.87		000	0.000	
	.20	-5.56	0.0	000	0.000	
Unmitigated Noise Levels (without Topo and barrier attenuation)		-		-		
,, , , , , , , , , , , , , , , , , , , ,	Leq Night		Ldn	-	NEL	
Autos: 71.3 69.1 66.2	64.		71.8	-	72.	
Medium Trucks: 72.6 70.7 64.7	65.	-	72.9	-	73.	
Heavy Trucks: 75.0 73.5 64.5	66.	-	74.6	-	74.	
Vehicle Noise: 78.0 76.3 69.9	70.	4	78.0	J	78.2	
Centerline Distance to Noise Contour (in feet) 70 dBA	65 dBA	6	0 dBA	55	i dBA	
Ldn: 137	295	0	635		.369	
CNFL: 141	295		653		,369 ,407	
CIVEL. 141	303		000	1,	,407	

F	HWA-	RD-77-108 H	IGHWA	Y NOISI	PREDIC		IODEL			
Scenario: Existing		ut Project						ark @ Live	Oak	
Road Name: Arrow H					Job	Numbe	r: 11112	2		
Road Segment: e/o Rive	rgrade	Rd.								
SITE SPECIFIC	INPU	T DATA						EL INPUT	s	
Highway Data				Site 0	Condition	s (Hard	= 10, S	oft = 15)		
Average Daily Traffic (Adt)	: 21,	137 vehicles					Autos			
Peak Hour Percentage	:	10%			Medium 7	Frucks (2	2 Axles)	: 15		
Peak Hour Volume	: 2,1	14 vehicles			Heavy Tr	ucks (3-	+ Axles)	: 15		
Vehicle Speed		45 mph		Vehic	le Mix					
Near/Far Lane Distance	:	48 feet			/ehicleTyp	ре	Day	Evening	Night	Daily
Site Data				-		Autos:	72.49	6 9.2%	18.4%	85.65
Barrier Height		0.0 feet		7	Medium	Trucks:	77.79	4.8%	17.5%	9.12
Barrier Type (0-Wall, 1-Berm)		0.0			Heavy	Trucks:	84.3%	6 2.7%	13.0%	5.23
Centerline Dist. to Barrier		10.0 feet		Nois	Source	Elovatio	one (in f	(aat)		
Centerline Dist. to Observer	: 4	10.0 feet		NOISE	Aut		0.000	eel)		
Barrier Distance to Observer	-	0.0 feet		Ma	dium Truc		2.297			
Observer Height (Above Pad)	:	5.0 feet			leavy Truc		8.004	Grade Ad	iustment	.00
Pad Elevation	:	0.0 feet			cavy mac		0.004	onddo ma	Juoumoni	. 0.0
Road Elevation	:	0.0 feet		Lane	Equivale	nt Dista	ance (in	feet)		
Road Grade	:	0.0%			Aut		2.388			
Left View		0.0 degrees			dium Truc		2.114			
Right View	: 9	0.0 degrees		h	eavy Truc	:ks: 3	2.141			
FHWA Noise Model Calculati		1				T			T	
VehicleType REMEL		affic Flow	Distanc		nite Road		snel	Barrier Att		m Atter
Autos: 68.4		0.74		2.73	-1.20		-4.59		000	0.00
Medium Trucks: 79.		-8.99		2.78	-1.20	-	-4.87		000	0.00
Heavy Trucks: 84.	-	-11.41		2.78	-1.20)	-5.56	0.0	000	0.00
Unmitigated Noise Levels (w										
VehicleType Leq Peak H		Leq Day		q Evenin		q Night		Ldn		NEL
	70.7 72.0	68 70			5.6 4.1		3.8 4.9	71.2 72.4		71 72
	72.0 74.4	70		-	4.1 3.9		4.9 6.0	72.4		72
	74.4	72	-	-	3.9 9.4		5.U 9.8	74.0		74
			./	0	9.4	0:	9.0	11.4	+	
Centerline Distance to Noise	Conto	our (in feet)		70 dBA	6	5 dBA		60 dBA	55	dBA
		La		125		270		581		251
		Lu	и. Т.:	129		277		597		286

	FH\	NA-RD-77-108	HIGH	WAYN	IOISE PE	REDICTIC	N MOD	EL			
Road Nan	rio: Existing W ne: Arrow Hwy nt: w/o Maine					Project N Job Nur			ırk @ Live	Oak	
	SPECIFIC IN	IPUT DATA								S	
Highway Data					Site Con	ditions (F	lard = 1	0, So	oft = 15)		
Average Daily	, ,	44,296 vehicle	es					utos:	15		
	Percentage:	10%				dium Truc			15		
	lour Volume:	4,430 vehicles	5		He	avy Truck	s (3+ Ax	(les):	15		
	hicle Speed:	45 mph			Vehicle I	Nix					
Near/Far La	ne Distance:	48 feet		F	Veh	cleType	E	ay	Evening	Night	Daily
Site Data				-		Au	tos: 7	2.4%	9.2%	18.4%	85.659
Ba	rrier Heiaht:	0.0 feet			Me	edium Tru	cks: 7	7.7%	4.8%	17.5%	9.129
Barrier Type (0-V		0.0			ŀ	leavy Tru	cks: 8	4.3%	2.7%	13.0%	5.23%
Centerline Di	ist. to Barrier:	40.0 feet			Noise So	urce Ele	ations	(in fe	et)		
Centerline Dist.	to Observer:	40.0 feet		F		Autos:	0.00				
Barrier Distance	to Observer:	0.0 feet			Modiu	n Trucks:	2.29				
Observer Height	(Above Pad):	5.0 feet				v Trucks:	8.00		Grade Ad	ustmen	t: 0.0
P	ad Elevation:	0.0 feet				· · · ·					
	ad Elevation:	0.0 feet		1	Lane Eq	uivalent I			eet)		
	Road Grade:	0.0%				Autos:	32.38				
	Left View:	-90.0 degree	es			n Trucks:	32.11				
	Right View:	90.0 degree	es		Heav	y Trucks:	32.14	11			
FHWA Noise Mod	lel Calculation	S									
VehicleType	REMEL	Traffic Flow	Dist	tance	Finite		Fresne		Barrier Atte		rm Atten
Autos:	68.46	3.95		2.73	-	-1.20		1.59	0.0		0.00
Medium Trucks:				2.78	-	-1.20		1.87	0.0		0.00
Heavy Trucks:		-8.19		2.78	-	-1.20	-{	5.56	0.0	00	0.00
Unmitigated Nois											
VehicleType	Leq Peak Hou		71 7	Leq E	vening	Leq N			Ldn	-	NEL
Autos:					68.8		67.0		74.4		74.
Medium Trucks:			73.4		67.3		68.2		75.6		75.
Heavy Trucks:			76.1		67.1		69.2		77.2	-	77.
Vehicle Noise:	00		78.9		72.6		73.0		80.6	5	80.
Centerline Distan	ce to Noise C	ontour (in feet,)	=0	10.4						
			L		dBA	65 dE		6	0 dBA		5 dBA
			Ldn: VFL:	20 21		441 454			951 977		,049 .106

	FH	WA-RD-77-108	B HIGHV	VAY NC	ISE P	REDICI		DEL			
Road Nam	io: Existing W ne: Arrow Hwy nt: e/o Maine						t Name: Number:		ark @ Live	Oak	
SITE	SPECIFIC II	VPUT DATA							L INPUT	s	
Highway Data				Si	te Cor	nditions	6 (Hard =	10, Sc	oft = 15)		
Average Daily	Traffic (Adt):	32,875 vehic	es				,	Autos:	15		
Peak Hour	Percentage:	10%			Me	dium T	rucks (2 A	xles):	15		
Peak H	lour Volume:	3,288 vehicle	s		He	avy Tru	icks (3+ A	(xles):	15		
Ve	hicle Speed:	45 mph		14	hicle	Mix					
Near/Far La	ne Distance:	48 feet		Ve		nicleTyp	e	Day	Evening	Night	Daily
Site Data					101			72.4%	•	18.4%	
Pa	rrier Height:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	
Barrier Type (0-W	•	0.0				Heavy 1	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Di	. ,	40.0 feet		AL	Nee C		levation	o (in fe	a4)		
Centerline Dist.	to Observer:	40.0 feet		/44	JI3E 3	Auto		000	el)		
Barrier Distance	to Observer:	0.0 feet			Madiu	m Truci		297			
Observer Height ((Above Pad):	5.0 feet				m Truci vy Truci		297 004	Grade Ad	iustmon	t: 0.0
Pa	ad Elevation:	0.0 feet			пеа	vy muci	(8. 0.0	JU4	Olduc Au	usunion	. 0.0
Roa	ad Elevation:	0.0 feet		Lá	ne Eq	uivaler	nt Distand	ce (in i	feet)		
	Road Grade:	0.0%				Auto	os: 32.3	388			
	Left View:	-90.0 degre	es		Mediu	m Trucl	ks: 32.1	114			
	Right View:	90.0 degre	es		Hea	vy Trucl	ks: 32.1	141			
FHWA Noise Mod	el Calculatior	ıs									
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresn	el	Barrier Att	en Be	rm Atten
Autos:	68.46	2.66		2.73		-1.20		-4.59	0.0	000	0.000
Medium Trucks:	79.45	-7.07		2.78		-1.20		-4.87	0.0	000	0.000
Heavy Trucks:	84.25	-9.49		2.78		-1.20		-5.56	0.0	000	0.000
Unmitigated Noise	e Levels (with	nout Topo and	barrier	attenu	ation)						
VehicleType	Leq Peak Ho	ur Leq Da	V I	Leq Eve	ening	Leq	Night		Ldn	C	NEL
Autos:	72	2.6	70.5		67.5		65.7		73.1		73.4
Medium Trucks:	-	4.0	72.1		66.0		66.9		74.3	-	74.4
Heavy Trucks:		6.3	74.8		65.8		67.9		75.9		76.0
Vehicle Noise:	79	9.4	77.6		71.3		71.7		79.3	3	79.5
Centerline Distant	ce to Noise C	ontour (in fee	t)								
				70 dE			i dBA	6	i0 dBA		5 dBA
			Ldn:	168			362		779		,679
		C	NEL:	173		3	372		801	1	,726

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	FHV	VA-RD-77-108	HIGHW	VAY NC	DISE PI	REDICTIO	N MOD	EL			
	: Existing Wi								rk @ Live	Oak	
	: Live Oak A					Job Nun	nber: 11	1112			
Road Segmen	t: w/o Rivergr	ade Rd.									
	PECIFIC IN	IPUT DATA							L INPUT	S	
Highway Data				Si	te Cor	nditions (H	ard = 1	0, So	ft = 15)		
Average Daily T	raffic (Adt):	27,508 vehicle	es				Au	utos:	15		
Peak Hour F	Percentage:	10%			Me	dium Truck	(2 Ax	des):	15		
Peak Ho	our Volume:	2,751 vehicle	s		He	avy Trucks	; (3+ Ax	des):	15		
Veh	icle Speed:	45 mph		V	hicle	Mix					
Near/Far Lan	e Distance:	80 feet				icleType	D)av	Evening	Night	Daily
Site Data						Aut		2.4%	9.2%	18.4%	,
Barr	ier Height:	0.0 feet			М	edium Truc	ks: 7	7.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0			I	Heavy Truc	:ks: 8	4.3%	2.7%	13.0%	5.23%
Centerline Dist		50.0 feet		N	oise Se	ource Elev	ations	(in fe	et)		
Centerline Dist. to		50.0 feet				Autos:	0.00	00			
Barrier Distance to		0.0 feet			Mediu	m Trucks:	2.29	97			
Observer Height (A	,	5.0 feet			Heav	v Trucks:	8.00)4	Grade Adj	ustment	: 0.0
	d Elevation:	0.0 feet		_							
	d Elevation:	0.0 feet		Lá	ane Eq	uivalent D			eet)		
R	oad Grade:	0.0%				Autos:	30.41				
	Left View:	-90.0 degre				m Trucks:	30.12				
	Right View:	90.0 degre	es		Heav	/y Trucks:	30.15	50			
FHWA Noise Mode	I Calculation	s									
VehicleType	REMEL	Traffic Flow	Dista		Finite		Fresne		Barrier Atte		rm Atten
Autos:	68.46	1.88		3.14		-1.20		1.65	0.0		0.00
Medium Trucks:	79.45	-7.84		3.20		-1.20		1.87		00	0.000
Heavy Trucks:	84.25	-10.26		3.19		-1.20	-8	5.43	0.0	00	0.000
Unmitigated Noise			-								
	eq Peak Hou			eq Eve		Leq Nig			Ldn		NEL
Autos:	72		70.1		67.1		65.4		72.7		73.
Medium Trucks:	73	.0	71.7		65.6		66.5		73.9		74.
Heavy Trucks:	76		74.5		65.5		67.6		75.5		75.
Vehicle Noise:	79		77.2		70.9		71.4		79.0)	79.2
Centerline Distance	e to Noise Co	ontour (in feet)	70 dF	RA .	65 dB	Δ	6	0 dBA	55	dBA
			I dn:	199		428			922		987
			NFL:	204		440			948		042
			VLL.	204		440			540	Ζ,	0-12

	FHWA-	RD-77-108 HIG	HWAY I	NOISE PR	EDICTIO		EL			
Scenario: Existin Road Name: Live O Road Segment: e/o Riv	ak Av.	,			Project Na Job Nun			@ Live	Oak	
SITE SPECIFI	C INPL	JT DATA			NO	ISE M	DDEL	INPUT	S	
Highway Data				Site Con	ditions (H	ard = 1	0, Soft	= 15)		
Average Daily Traffic (Ad	t): 30.	406 vehicles				AL	itos:	15		
Peak Hour Percentac	· · · ·	10%		Med	dium Truck	ks (2 Ax	les):	15		
Peak Hour Volum)41 vehicles		Hea	avy Trucks	3 (3+ Ax	les):	15		
Vehicle Spee	d:	45 mph	-	Vehiele A			,			
, Near/Far Lane Distand	e:	80 feet	-	Vehicle N	n ix cleTvpe				Allented	Deite
0/4- D-4-				veni	cie i ype Aut		ay E 2.4%	vening 9.2%	Night 18,4%	Daily 85.65%
Site Data				Ma	Aut dium Truc		2.4% 7.7%	9.2% 4.8%		
Barrier Heigl		0.0 feet			leavy Truc		4.3%	4.8% 2.7%	17.5% 13.0%	9.129
Barrier Type (0-Wall, 1-Berr	·	0.0			eavy mu	KS. 84	4.3%	2.1%	13.0%	5.23%
Centerline Dist. to Barri		50.0 feet		Noise So	urce Elev	ations	(in feet)		
Centerline Dist. to Observ		50.0 feet			Autos:	0.00	0			
Barrier Distance to Observ		0.0 feet		Mediun	n Trucks:	2.29	7			
Observer Height (Above Pa	·	5.0 feet		Heav	y Trucks:	8.00	4 G	rade Adj	ustment:	0.0
Pad Elevation		0.0 feet	-							
Road Elevation		0.0 feet	-	Lane Equ	ivalent D			et)		
Road Grad		0.0%			Autos:	30.41				
Left Vie		90.0 degrees			n Trucks:	30.12				
Right Vie	W: 9	90.0 degrees		Heav	y Trucks:	30.15	0			
FHWA Noise Model Calcula				1	T					
VehicleType REMEL			istance	Finite		Fresne		arrier Atte		m Atten
	1.46	2.32	3.1		-1.20		1.65	0.0		0.00
	.45	-7.41	3.2		-1.20		1.87	0.0		0.00
Heavy Trucks: 84	.25	-9.83	3.1	9	-1.20	-5	5.43	0.0	00	0.00
Unmitigated Noise Levels (<u> </u>						
VehicleType Leq Peak		Leq Day		vening	Leq Ni	/	L	dn		VEL
Autos:	72.7	70.5		67.6		65.8		73.2		73.
Medium Trucks:	74.0	72.2		66.1		66.9		74.3		74.
Heavy Trucks:	76.4	74.9		65.9		68.0		76.0		76.
Vehicle Noise:	79.4	77.7		71.4		71.8		79.4		79.
Centerline Distance to Nois	e Conte	our (in feet)								
				dBA	65 dB	А		dBA		dBA
		Ldn:		12	458			36	,	124
		CNEL:	2	18	470		1.0)13	2.1	183

	FH\	VA-RD-77-108	HIGH	VAY N	IOISE PR	EDICTIO	N MODE			
Road Nam	o: Existing Wi e: Live Oak A nt: e/o Stewar	v. ,					ame: The nber: 111	Park @ Live 12	e Oak	
	SPECIFIC IN	IPUT DATA						DEL INPUT	'S	
Highway Data					Site Con	ditions (H	lard = 10,	Soft = 15)		
Average Daily	Traffic (Adt):	29,466 vehicl	es				Aut	os: 15		
Peak Hour	Percentage:	10%			Med	dium Truc	ks (2 Axle	s): 15		
Peak H	our Volume:	2,947 vehicle	s		Hea	avy Truck	s (3+ Axle	s): 15		
Ve	hicle Speed:	45 mph			Vehicle I	<i>lix</i>				
Near/Far La	ne Distance:	80 feet		F		cleType	Da	y Evening	Night	Daily
Site Data						Au	tos: 72.	4% 9.2%	18.4%	6 85.65%
Ba	rier Heiaht:	0.0 feet			Me	dium Tru	cks: 77.	7% 4.8%	17.5%	6 9.129
Barrier Type (0-W		0.0			H	leavy Tru	cks: 84.	3% 2.7%	13.0%	6 5.23%
Centerline Di	st. to Barrier:	50.0 feet			Noise So	urce Elev	ations (i	n feet)		
Centerline Dist.	to Observer:	50.0 feet		E E	10/30 00	Autos:	0.000			
Barrier Distance	to Observer:	0.0 feet			Madium	n Trucks:	2.297			
Observer Height (Above Pad):	5.0 feet				v Trucks:	8.004		liustmon	
P	ad Elevation:	0.0 feet			neav	y mucks.	0.004	Oldde Ad	gusunen	1. 0.0
Ro	ad Elevation:	0.0 feet		1	Lane Equ	ivalent E)istance ('in feet)		
	Road Grade:	0.0%				Autos:	30.414			
	Left View:	-90.0 degre	es		Mediur	n Trucks:	30.122			
	Right View:	90.0 degre	es		Heav	y Trucks:	30.150			
FHWA Noise Mod	el Calculation	s								
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresnel	Barrier At	ten Be	erm Atten
Autos:	68.46	2.18		3.14	4	-1.20	-4.0	65 0.	000	0.00
Medium Trucks:	79.45	-7.54		3.20	0	-1.20	-4.8	37 0.	000	0.00
Heavy Trucks:	84.25	-9.96		3.19	9	-1.20	-5.4	43 0.	000	0.00
Unmitigated Nois	e Levels (with	out Topo and	barrier	atten	uation)					
VehicleType	Leq Peak Hou	ır Leq Day	/ ·	Leq E	vening	Leq Ni		Ldn		ONEL
Autos:	72		70.4		67.4		65.7	73.		73.
Medium Trucks:	73	.9	72.0		65.9		66.8	74.	2	74.
Heavy Trucks:	76	.3	74.7		65.8		67.9	75.	8	76.
Vehicle Noise:	79	.3	77.5		71.2		71.7	79.	3	79.
Contorlino Distan	e to Noise C	ontour (in feet)							
Ochicinine Distant		·		70 0	dBA	65 dE	BA	60 dBA	5	5 dBA
Centennie Distan										
Genterine Distan			Ldn:	20)8	448		965	2	2,080

	FHV	NA-RD-77-108	3 HIGH	WAY N	NOISE PF	REDICTIO	N MOD	EL			
	e: Live Oak A					Project Na Job Nun			k @ Live	Oak	
SITE S	PECIFIC IN	IPUT DATA							INPUT	s	
Highway Data					Site Con	ditions (H	lard = 1	0, Sof	t = 15)		
Average Daily T	raffic (Adt):	25,119 vehic	les				A	utos:	15		
Peak Hour F	Percentage:	10%			Me	dium Truci	ks (2 A)	des):	15		
Peak Ho	our Volume:	2,512 vehicle	s		He	avy Trucks	s (3+ A)	des):	15		
Veh	icle Speed:	45 mph		ŀ	Vehicle I	Nix					
Near/Far Lan	e Distance:	80 feet		-		icleType	L	Day I	Evening	Night	Daily
Site Data								2.4%	9.2%	18.4%	
Barr	ier Heiaht:	0.0 feet			Me	edium Truc	cks: 7	7.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa		0.0			ŀ	leavy Truc	:ks: 8	4.3%	2.7%	13.0%	5.23%
Centerline Dist	. ,	50.0 feet		-	Noiso Se	ource Elev	ations	(in for	<i>(</i> 4)		
Centerline Dist. to	o Observer:	50.0 feet		-	110136 30	Autos:	0.00	•	ii)		
Barrier Distance to	o Observer:	0.0 feet			Madiu	n Trucks:	2.29				
Observer Height (A	bove Pad):	5.0 feet				y Trucks:	8.00		Grade Ad	iustment	0.0
Pad	d Elevation:	0.0 feet				·				dourioni	0.0
Road	d Elevation:	0.0 feet			Lane Eq	uivalent D			et)		
R	oad Grade:	0.0%				Autos:	30.4	14			
	Left View:	-90.0 degre	es			n Trucks:	30.1				
	Right View:	90.0 degre	es		Heav	y Trucks:	30.1	50			
FHWA Noise Mode	I Calculation	s									
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite	Road	Fresne	el B	arrier Att	en Ber	m Atten
Autos:	68.46	1.49		3.1	4	-1.20		4.65	0.0	000	0.000
Medium Trucks:	79.45	-8.24		3.2	0	-1.20	-	4.87	0.0	000	0.000
Heavy Trucks:	84.25	-10.66		3.1	9	-1.20	-	5.43	0.0	000	0.000
Unmitigated Noise	Levels (with	out Topo and	l barrie	er atter	nuation)						
VehicleType I	Leq Peak Hou	ur Leq Da	у	Leq E	vening	Leq Ni	ght	L	dn	-	VEL
Autos:	71	.9	69.7		66.7		65.0		72.3	5	72.6
Medium Trucks:	73		71.3		65.2		66.1		73.5		73.7
Heavy Trucks:	75	.6	74.1		65.1		67.2		75.2	2	75.3
Vehicle Noise:	78	.6	76.8		70.5		71.0		78.6	6	78.8
Centerline Distance	e to Noise Co	ontour (in fee	t)								
					dBA	65 dE			dBA		dBA
			Ldn:		87	403			368		870
		C	NEL:	19	92	414		8	392	1,	922

Wednesday, May 02, 2018

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FH	WA-RD-77-108	HIGHWA	Y NOISE P	REDICTIC	N MOD	EL			
Scenario: Existing W Road Name: Myrtle Av. Road Segment: n/o Longde	,				lame: Ti mber: 1		k @ Live	Oak	
SITE SPECIFIC I	NPUT DATA			NC	DISE M	ODEL	INPUT	s	
Highway Data			Site Co	nditions (I	lard = 1	0, Sof	t = 15)		
Average Daily Traffic (Adt):	26.527 vehicle	s			A	utos:	15		
Peak Hour Percentage:	10%		Me	edium Truc	ks (2 Ax	des):	15		
Peak Hour Volume:	2.653 vehicles		He	eavy Truck	s (3+ Ax	des):	15		
Vehicle Speed:	40 mph			-	•				
Near/Far Lane Distance:	12 feet		Vehicle	nicleType		Dav I	Evening	Night	Dailv
Site Data			ver			2.4%	9.2%	18.4%	
				AL Iedium Tru		2.4% 7.7%	9.2%	17.5%	
Barrier Height:	0.0 feet			Heavy Tru		4.3%	4.0%	13.0%	
Barrier Type (0-Wall, 1-Berm):	0.0			neavy na	043. 0	4.370	2.170	13.076	5.057
Centerline Dist. to Barrier:	30.0 feet		Noise S	ource Ele	vations	(in fee	et)		
Centerline Dist. to Observer:	30.0 feet			Autos:	0.00	00			
Barrier Distance to Observer:	0.0 feet		Mediu	ım Trucks:	2.29	97			
Observer Height (Above Pad):	5.0 feet		Hea	vy Trucks:	8.00	04 0	Grade Adj	ustment	: 0.0
Pad Elevation:	0.0 feet		Long Ed	uivalent l	Diotonos	in fa	c .4)		
Road Elevation: Road Grade:	0.0 feet		Lane Eu	Autos:			el)		
Road Grade:	0.0%	-	Madi	m Trucks:					
	-90.0 degree			vy Trucks:					
Right View:	90.0 degree	S	пеа	vy mucks.	29.54	+/			
FHWA Noise Model Calculation									
VehicleType REMEL	Traffic Flow	Distance		e Road	Fresne		arrier Atte		m Atten
Autos: 66.51			3.26	-1.20		4.49	0.0		0.00
Medium Trucks: 77.72			3.33	-1.20		4.86	0.0		0.00
Heavy Trucks: 82.99			3.32	-1.20	~	5.77	0.0	00	0.000
Unmitigated Noise Levels (with			,	1					
VehicleType Leq Peak Ho Autos: 70		Leq 38.6	Evening 65.7	Leq N	ight 63.9	L	.dn 71.3		NEL 71.6
		70.4	64.3		65.1		71.3		71.
		73.6	64.6		66.7		72.0		74.8
		76.1	69.7		70.2		74.7		74.0
Centerline Distance to Noise C	ontour (in feet)								
			0 dBA	65 dl	BA	60	dBA	55	dBA
	-	Ldn: IEL:	100	215	5	4	63	g	98

Scenari										
	io: Existing With e: Peck Rd. nt: s/o Arrow Hw	,				Vame: Imber:		ark @ Live	Oak	
SITE	SPECIFIC INP	UT DATA			N	OISE N	IODE	L INPUT	S	
Highway Data				Site Con	ditions ('Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt): 2	2,165 vehicles				,	Autos:	15		
Peak Hour	Percentage:	10%		Me	dium Tru	cks (2 A	(xles):	15		
Peak H	our Volume: 2	,216 vehicles		He	avy Truc	ks (3+ A	xles):	15		
Ve	hicle Speed:	40 mph		Vehicle I	Mise					
Near/Far La	ne Distance:	56 feet			icleType		Dav	Evening	Night	Daily
Site Data				ven			72.4%		18.4%	
				M	edium Tri		77.7%		17.5%	8.849
	rier Height:	0.0 feet			leavy Tri		84.3%		13.0%	5.06%
Barrier Type (0-W Centerline Dis	. ,	0.0 60.0 feet					0 1.0 /0	2.170	10.070	0.00
Centerline Dis Centerline Dist.		60.0 feet		Noise So	ource Ele	evation	s (in fe	eet)		
Barrier Distance		0.0 feet			Autos	: 0.0	000			
Observer Height (5.0 feet			m Trucks		297			
	ad Elevation:	0.0 feet		Heav	ry Trucks	: 8.0	004	Grade Adj	iustment.	0.0
	d Elevation:	0.0 feet		Lane Eq	uivalent	Distand	e (in	feet)		
	Road Grade:	0.0%			Autos					
		-90.0 degrees		Mediu	n Trucks					
	Right View:	90.0 degrees		Heav	y Trucks	: 53.	151			
FHWA Noise Mode	el Calculations									
VehicleType			listance		Road	Fresn		Barrier Att		m Atten
Autos:	66.51	1.48		52	-1.20		-4.69	0.0		0.00
Medium Trucks:	77.72	-8.41		.50	-1.20		-4.88	0.0		0.00
Heavy Trucks:	82.99	-10.82	-	.50	-1.20		-5.34	0.0	000	0.00
Unmitigated Noise										
	Leq Peak Hour	Leq Day		Evening	Leq N	·		Ldn		VEL
Autos:	66.3			61.1		59.4		66.7		67.
Medium Trucks:	67.6 70.5			59.6 60.0		60.5 62.1		67.9 70.0		68. 70.
Heavy Trucks: Vehicle Noise:										70.
	73.3			65.1		65.6		73.2	2	73.
Centerline Distant	ce to Noise Con	tour (in feet)	70) dBA	65 0	IDΛ	6	0 dBA	55	dBA
		Ldn.		98	21			456		идд 83
		CNEL		90 101	21	-		450		os 009

		A-RD-77-108 HIG								
Scenario: Exi								ark @ Live	Oak	
Road Name: Ave					Job Nu	mber:	11112			
Road Segment: n/o	Buena Vi	sta St.								
SITE SPEC	IFIC INP	UT DATA						L INPUT	s	
Highway Data				Site Con	ditions (Hard =	10, Sc	oft = 15)		
Average Daily Traffic	(Adt):	6,826 vehicles					Autos:	15		
Peak Hour Perce	ntage:	10%		Me	dium Tru	cks (2 A	(xles)	15		
Peak Hour Vo	olume:	683 vehicles		He	avy Truci	(3+ A	(xles)	15		
Vehicle S	Speed:	40 mph	F	Vehicle	Mix					
Near/Far Lane Dis	tance:	12 feet	ŀ	Veh	icleType		Dav	Evening	Night	Daily
Site Data						utos:	72.4%		·	87.10
Barrier H	oiaht.	0.0 feet		M	edium Tru	icks:	77.7%	4.8%	17.5%	8.20
Barrier Type (0-Wall, 1-L		0.0		ŀ	Heavy Tru	icks:	84.3%	2.7%	13.0%	4.70
Centerline Dist. to E		30.0 feet	ŀ	Noise So	ource Ele	vation	s (in fe	et)		
Centerline Dist. to Obs	server:	30.0 feet	ŀ		Autos		000	,		
Barrier Distance to Obs		0.0 feet		Mediu	m Trucks		297			
Observer Height (Above	,	5.0 feet		Heav	v Trucks	8.0	004	Grade Ad	iustment.	0.0
Pad Eler		0.0 feet	-							
Road Ele		0.0 feet	-	Lane Eq				eet)		
Road (0.0%		Martin	Autos.					
		-90.0 degrees			m Trucks. vy Trucks.					
Right	View:	90.0 degrees		neav	y mucks.	29.	547			
FHWA Noise Model Cal		Traffic Flow	Distance	Fields	Deed	Fresr	-1	De mie e Au		
VehicleType RE Autos:	66.51	-3.58	istance 3.2		-1.20		-4.49	Barrier Att	en Ber	m Atter 0.00
Medium Trucks:	77 72	-3.56	3.2		-1.20		-4.49		000	0.00
Heavy Trucks:	82.99	-16.27	3.3		-1.20		-4.00		000	0.00
Unmitigated Noise Leve					-1.20		0.77	0.0		0.00
	eak Hour	Leq Day	1	vening	Leg N	light		Ldn	CI	VEL
Autos:	65.0	62.8	3	59.8		58.1		65.4	Ļ	65
Medium Trucks:	66.0	64.1	I	58.0		58.9)	66.3	3	66.
Heavy Trucks:	68.9	67.3	3	58.4		60.4		68.4	L I	68
meavy mucks.	71.7	69.9)	63.6		64.0)	71.7	7	71.
Vehicle Noise:										
Vehicle Noise:	loise Con	tour (in feet)								
Vehicle Noise:	loise Con			dBA	65 d		6	0 dBA		dBA
	loise Con	tour (in feet) Ldn CNFI	: :	<i>dBA</i> 39 40	65 d 84		6	0 dBA 180 185	3	<i>dBA</i> 88

	FHV	/A-RD-77-108 HI	GHWAY	NOISE P	REDICT		DEL			
Road Nam	io: Existing Wit le: Avenida Ba nt: s/o Buena \	rbosa				Name: T lumber: 1		ırk @ Live	Oak	
SITE	SPECIFIC IN	PUT DATA						L INPUTS	5	
Highway Data				Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	16,301 vehicles				A	utos:	15		
Peak Hour	Percentage:	10%				ucks (2 A		15		
Peak H	lour Volume:	1,630 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Ve	hicle Speed:	40 mph		Vehicle	Mix					
Near/Far La	ne Distance:	12 feet			icleType	e l	Day	Evening	Night	Daily
Site Data							72.4%	-	•	86.26%
Ba	rrier Height:	0.0 feet		М	edium T	rucks:	7.7%	4.8%	17.5%	8.74%
Barrier Type (0-W		0.0			Heavy T	rucks: 8	34.3%	2.7%	13.0%	5.00%
Centerline Di	. ,	30.0 feet		Noine C	ouroo E	levations	lin fe	a41		
Centerline Dist.	to Observer:	30.0 feet		NOISe 3	Auto			el)		
Barrier Distance	to Observer:	0.0 feet			m Truck	0.0				
Observer Height	Above Pad):	5.0 feet			/y Truck			Grade Adj	ustmont	. 0.0
P	ad Elevation:	0.0 feet		near	у писк	8. 0.0	04	Grade Adj	usuncin	0.0
Ro	ad Elevation:	0.0 feet		Lane Eq	uivalen	t Distanc	e (in f	leet)		
	Road Grade:	0.0%			Auto	s: 29.8	16			
	Left View:	-90.0 degrees		Mediu	m Truck	s: 29.5	18			
	Right View:	90.0 degrees		Heav	/y Truck	s: 29.5	47			
FHWA Noise Mod	el Calculations	5								
VehicleType	REMEL	Traffic Flow	Distance	Finite	Road	Fresne	e/	Barrier Atte	en Ber	m Atten
Autos:	66.51	0.15	3.	26	-1.20	-	4.49	0.0	00	0.000
Medium Trucks:	77.72	-9.79		33	-1.20		4.86	0.0	00	0.000
Heavy Trucks:	82.99	-12.21	3.	32	-1.20	-	5.77	0.0	00	0.000
Unmitigated Nois	e Levels (with	out Topo and ba	rrier atte	nuation)						
VehicleType	Leq Peak Hou	r Leq Day	Leq	Evening	Leq	Night		Ldn	CI	NEL
Autos:	68.		-	63.6		61.8		69.2		69.5
Medium Trucks:	70.		-	62.1		62.9		70.4		70.5
Heavy Trucks:	72.	-		62.4		64.5		72.5		72.6
Vehicle Noise:	75.	7 73.	9	67.5		68.0		75.7		75.8
Centerline Distan	ce to Noise Co	ntour (in feet)								
) dBA		dBA	6	0 dBA		dBA
		Ld		72		54		332		15
		CNE	L:	73	1	58		341	7	35

Wednesday, May 02, 2018

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Fł	IWA-RD-77-108	HIGHWA	Y NOISE	PREDICT	ION MOI	DEL					
Scenario: Existing V Road Name: Rivergrad Road Segment: s/o Arrow	e Rd.		Project Name: The Park @ Live Oak Job Number: 11112								
SITE SPECIFIC I	NPUT DATA		011 0	N nditions				s			
Highway Data Average Daily Traffic (Adt): Peak Hour Percentage: Peak Hour Volume:	8,399 vehicl 10% 840 vehicle		٨	ledium Tr leavy Tru	ucks (2 A	Autos: (xles):	15 15 15 15				
Vehicle Speed:	40 mph		Vehicle	Mix							
Near/Far Lane Distance:	12 feet		Ve	hicleType		Day	Evening	Night	Daily		
Site Data						72.4%		18.4%			
Barrier Height: Barrier Type (0-Wall, 1-Berm):	0.0 feet 0.0			Medium T Heavy T		77.7% 84.3%		17.5% 13.0%			
Centerline Dist. to Barrier:	30.0 feet		Noise	Source E	levation	s (in fe	et)				
Centerline Dist. to Observer: Barrier Distance to Observer: Observer Height (Above Pad): Pad Elevation:	30.0 feet 0.0 feet 5.0 feet 0.0 feet		Med	Auto um Truck avy Truck	s: 0.0 s: 2.2	000 297 004	Grade Adj	iustmen	: 0.0		
Road Elevation:	0.0 feet		Lane E	quivalen	t Distand	e (in t	feet)				
Road Grade: Left View: Right View:	0.0% -90.0 degre 90.0 degre			Auto um Truck avy Truck	s: 29.5	518					
FHWA Noise Model Calculatio	ns										
VehicleType REMEL	Traffic Flow	Distan	ce Fini	e Road	Fresn	el	Barrier Atte	en Be	rm Atten		
Autos: 66.5	1 -2.50		3.26	-1.20		-4.49	0.0	000	0.00		
Medium Trucks: 77.7			3.33	-1.20		-4.86	0.0		0.00		
Heavy Trucks: 82.9	9 -16.85		3.32	-1.20		-5.77	0.0	000	0.00		
Unmitigated Noise Levels (wit				· · · · · · · · · · · · · · · · · · ·							
VehicleType Leq Peak He			q Evening	<u> </u>	Night		Ldn		NEL		
	6.1	63.9	60.	-	59.2		66.5		66.		
	5.4	63.5	57.		58.3		65.7		65.		
		66.7	57.	-	59.9		67.8		67.		
	8.3	69.7	63.	8	63.9		71.5				
Vehicle Noise: 7	1.5		63.	8	63.9		/1.5)	71.		
	1.5		63. 70 dBA		63.9 dBA		71.5 0 dBA		dBA		
Vehicle Noise: 7	1.5			65				55			

	FHW	/A-RD-77-108	IIGHWA	Y NOISE P	REDICT		DEL				
Road Nam	o: Existing Wit e: Rivergrade nt: s/o Stewart	Rd.				t Name: Number:		ark @ Live	Oak		
SITE	SPECIFIC IN	PUT DATA			1	NOISE	/ODE		s		
Highway Data				Site Cor	ditions	; (Hard =	10, S	oft = 15)			
Average Daily	Traffic (Adt):	5,571 vehicles		Autos: 15							
Peak Hour	Percentage:	10%		Me	dium Ti	rucks (2 A	(xles)	15			
Peak H	our Volume:	557 vehicles		Heavy Trucks (3+ Axles): 15							
Ve	hicle Speed:	40 mph		Vehicle	Mix						
Near/Far La	ne Distance:	12 feet			icleTyp	e	Dav	Evening	Night	Daily	
Site Data							72.4%		18.4%		
	rier Height:	0.0 feet		М	edium 1		77.7%		17.5%		
Barrier Type (0-W	•	0.0			Heavy 1	rucks:	84.3%	2.7%	13.0%	2.389	
Centerline Dis	. ,	30.0 feet									
Centerline Dist.		30.0 feet		Noise S		levation		eet)			
Barrier Distance		0.0 feet			Auto		000				
Observer Height (5.0 feet			m Truck		297	0			
Pad Elevation: 0.0 feet				Hea	/y Truck	(S: 8.0	004	Grade Ad	ustment	. 0.0	
Roa		Lane Eq	uivalen	t Distan	ce (in	feet)					
1	Road Elevation: 0.0 feet Road Grade: 0.0%				Auto	os: 29.	816				
	Left View:	-90.0 degrees		Mediu	m Truck	ks: 29.	518				
	Right View:	90.0 degrees		Hea	/y Trucł	(s: 29.	547				
FHWA Noise Mode	el Calculations										
VehicleType	REMEL	Traffic Flow	Distanc		Road	Fresh		Barrier Att		m Atter	
Autos:	66.51	-4.16		3.26	-1.20		-4.49		000	0.00	
Medium Trucks:	77.72	-17.68		3.33	-1.20		-4.86		000	0.00	
Heavy Trucks:	82.99	-20.10		3.32	-1.20		-5.77	0.0	000	0.00	
Unmitigated Noise				,			1				
VehicleType Autos:	Leq Peak Hou 64		2.2	q Evening 59.3		Night 57.5		Ldn 64.9		NEL 65	
Medium Trucks:	64.		2.2	59.3 54.2		57.5		64.5		62	
Heavy Trucks:	62.		J.3 3.5	54.2 54.5		56.6		64.6		64	
Vehicle Noise:	68.		7.0	61.4		61.3		68.9		69	
Centerline Distand	e to Noise Co	ntour (in feet)		•							
2ormic 2.stan				70 dBA	65	dBA		60 dBA	55	dBA	
		L	dn:	25		54		117	2	252	

FHWA-RD-77-108	HIGHW	AY NO	ISE PR	EDICTIC	ON MC	DEL				
Scenario: Existing With Project Road Name: Rivergrade Rd. Road Segment: s/o Live Oak Av.		Project Name: The Park @ Live Oak Job Number: 11112								
SITE SPECIFIC INPUT DATA							L INPUT	s		
Highway Data		Si	te Cond	litions (l	lard =	: 10, So	oft = 15)			
Average Daily Traffic (Adt): 11,594 vehicle	es					Autos:	15			
Peak Hour Percentage: 10%			Mea	lium Truc	:ks (2	Axles):	15			
Peak Hour Volume: 1,159 vehicle	6		Hea	vy Truck	's (3+	Axles):	15			
Vehicle Speed: 50 mph		Ve	hicle N	lix						
Near/Far Lane Distance: 12 feet		-		leType		Day	Evening	Night	Daily	
Site Data				AL	itos:	72.4%	9.2%	18.4%	86.33	
Barrier Height: 0.0 feet			Me	dium Tru	cks:	77.7%	4.8%	17.5%	8.69	
Barrier Type (0-Wall, 1-Berm): 0.0			Н	eavy Tru	cks:	84.3%	2.7%	13.0%	4.98	
Centerline Dist. to Barrier: 30.0 feet		No	ise So	urce Ele	vatior	is (in f	eet)			
Centerline Dist. to Observer: 30.0 feet				Autos:		000	,			
Barrier Distance to Observer: 0.0 feet			Medium	Trucks:	-	297				
Observer Height (Above Pad): 5.0 feet				Trucks:		004	Grade Ad	liustmen	: 0.0	
Pad Elevation: 0.0 feet										
Road Elevation: 0.0 feet		La	ne Equ	ivalent l			feet)			
Road Grade: 0.0%				Autos:		.816				
Left View: -90.0 degree				1 Trucks: 7 Trucks:		.518 .547				
Right View: 90.0 degree	es		neavy	TTUCKS.	29	.547				
FHWA Noise Model Calculations										
VehicleType REMEL Traffic Flow Autos: 70.20 -2.29	Distan	3.26	Finite F	-1.20	Fres	-4.49	Barrier At		rm Atte	
Autos: 70.20 -2.29 Medium Trucks: 81.00 -12.26		3.26		-1.20		-4.49		000	0.0	
Heavy Trucks: 85.38 -14.68		3.32		-1.20		-4.00		000	0.0	
Unmitigated Noise Levels (without Topo and	harrior a	ottonu	tion)							
VehicleType Leg Peak Hour Leg Day		eq Eve		Leg N	ight		Ldn	С	NEL	
	67.8		64.8		63.	1	70.	4	70	
Medium Trucks: 70.9	69.0		62.9		63.	в	71.	2	71	
Heavy Trucks: 72.8	71.3		62.3		64.	4	72.	4	72	
Vehicle Noise: 76.2	74.4		68.3		68.	6	76.	2	76	
Centerline Distance to Noise Contour (in feet)									
		70 dB	A	65 dl		6	60 dBA		dBA	
	Ldn:	77		167	-		359		74	
	VEL:	80		172			370		96	

	FH	WA-RD-77-108	HIGHV	VAY NO	DISE PR	EDICTIO	N MOI	DEL			
Road Nam	io: Existing W ne: Stewart Av nt: s/o Live Oa	. ⁻				Project N Job Nur			rk @ Live	Oak	
SITE	SPECIFIC IN	NPUT DATA								5	
Highway Data				S	ite Con	ditions (H	lard =	10, So	ft = 15)		
Average Daily	Traffic (Adt):	6,445 vehicle	es				A	Autos:	15		
Peak Hour	Percentage:	10%			Med	dium Truc	ks (2 A	xles):	15		
Peak H	lour Volume:	644 vehicle	s		Hea	avy Truck	s (3+ A	xles):	15		
Ve	hicle Speed:	30 mph		V	ehicle N	<i>liv</i>					
Near/Far La	ne Distance:	12 feet				cleType		Day	Evening	Night	Daily
Site Data								72.4%	9.2%	18.4%	
Ba	rrier Heiaht:	0.0 feet			Ме	dium Tru	cks:	77.7%	4.8%	17.5%	8.15%
Barrier Type (0-W		0.0			H	leavy Tru	cks: I	84.3%	2.7%	13.0%	4.67%
Centerline Di		40.0 feet		A	oiso So	urce Elev	ations	(in fo	ot		
Centerline Dist.	to Observer:	40.0 feet		//	use su	Autos:			el)		
Barrier Distance	to Observer:	0.0 feet			1 4 m all 1 m	n Trucks:	0.0				
Observer Height (Above Pad):	5.0 feet					2.2		Grade Adj	ustmont	0.0
Pa	ad Elevation:	0.0 feet			neav	y Trucks:	0.0	104	Olduc Auj	usuncin	0.0
Roa	ad Elevation:	0.0 feet		L	ane Equ	uivalent E	Distanc	e (in f	eet)		
	Road Grade:	0.0%				Autos:	39.8	362			
	Left View:	-90.0 degre	es		Mediun	n Trucks:	39.6	640			
	Right View:	90.0 degre	es		Heav	y Trucks:	39.6	61			
FHWA Noise Mod	el Calculation	IS									
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresn	el I	Barrier Atte	en Ber	m Atten
Autos:	61.75	-2.58		1.37		-1.20		4.59	0.0	00	0.000
Medium Trucks:	73.48	-12.87		1.41		-1.20		4.87	0.0	00	0.000
Heavy Trucks:	79.92	-15.29		1.41		-1.20		-5.56	0.0	00	0.000
Unmitigated Noise	e Levels (with	out Topo and	barrier	attenu	ation)						
VehicleType	Leq Peak Ho	ur Leq Day	' L	Leq Eve	ening	Leq N	ight		Ldn	CI	VEL
Autos:			57.2		54.2		52.4		59.8		60.1
Medium Trucks:			58.9		52.8		53.7		61.1		61.3
Heavy Trucks:			63.3		54.3		56.4		64.4		64.5
Vehicle Noise:	67	7.1	65.4		58.6		59.3		67.0)	67.2
Centerline Distant	ce to Noise C	ontour (in feet)								
				70 dl	BA	65 dE	BA		0 dBA		dBA
			Ldn:	25		54			117		52
		Ci	VEL:	26		56			120	2	58

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	VA-RD-77-108	HIGHV	NAY NO	DISE P	REDICT	ION MO	DEL			
	: Existing Wi								ark @ Live	Oak	
	e: Baldwin Pa					Job N	lumber:	11112			
Road Segmen	t: s/o Live Oa	k Av.									
SITE S	SPECIFIC IN	IPUT DATA				I	NOISE I	NODE	L INPUT	s	
Highway Data				S	ite Cor	ditions	(Hard =	10, S	oft = 15)		
Average Daily	Fraffic (Adt):	12,374 vehicle	es					Autos:	15		
Peak Hour I	Percentage:	10%			Me	dium Ti	ucks (2)	Axles):	15		
Peak Ho	our Volume:	1,237 vehicles	S		He	avy Tru	cks (3+)	Axles):	15		
Vel	nicle Speed:	40 mph		14	ehicle	Mis					
Near/Far Lar	e Distance:	48 feet				icleType	9	Dav	Evening	Night	Dailv
Site Data							Autos:	72.4%	Ű	18.4%	
Par	rier Heiaht:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	8.61%
Barrier Type (0-Wa		0.0				Heavy T	rucks:	84.3%	2.7%	13.0%	4.93%
Centerline Dis	t. to Barrier:	50.0 feet		N	oise S	ource E	levation	s (in f	eet)		
Centerline Dist. t	o Observer:	50.0 feet				Auto		000			
Barrier Distance t	o Observer:	0.0 feet			Mediu	m Truck		297			
Observer Height (/	,	5.0 feet				/y Truck		004	Grade Ad	justmen	t: 0.0
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		La	ane Eq		t Distan		feet)		
F	Road Grade:	0.0%				Auto		147			
	Left View:	-90.0 degree				m Truck		947			
	Right View:	90.0 degree	es		Hear	/y Truck	(s: 43.	966			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresr		Barrier Att		rm Atten
Autos:	66.51	-1.03		0.71		-1.20		-4.65		000	0.000
Medium Trucks:	77.72	-11.05		0.74		-1.20		-4.87		000	0.000
Heavy Trucks:	82.99	-13.47		0.73		-1.20		-5.43	0.0	000	0.000
Unmitigated Noise			-					1			
	Leq Peak Hou			Leq Eve	<u> </u>		Night		Ldn		NEL
Autos: Medium Trucks:	65 66		62.8 64.3		59.8 58.2		58.1 59.1		65.4 66.f		65. 66.
			64.3 67.5		58.2		59.1 60.7			-	
Heavy Trucks: Vehicle Noise:	69		67.5 70.1		58.6 63.7		60.7		68.6 71.8		68.
					63.7		64.2	2	71.8	5	72.
Centerline Distanc	e to Noise Co	ontour (in feet)	70 dF	RA	65	dBA		60 dBA	55	i dBA
			I dn:	66			43		307		362
			VFL:	68			47		316		502 581
		01		50					2.0		

FHWA-RD-77-10	08 HIGHWA	Y NOISE PR	REDICTION	NODEL			
Scenario: Existing With Project Road Name: Maine Av. Road Segment: s/o Arrow Hwy.			Project Nam Job Numbe		ark @ Live	Oak	
SITE SPECIFIC INPUT DATA	l l		NOIS	E MODE	L INPUT	s	
Highway Data		Site Con	ditions (Har	d = 10, So	oft = 15)		
Average Daily Traffic (Adt): 10,796 vehi	cles			Autos:	15		
Peak Hour Percentage: 10%		Me	dium Trucks	(2 Axles):	15		
Peak Hour Volume: 1,080 vehic	les	He	avy Trucks (3	+ Axles):	15		
Vehicle Speed: 35 mph		Vehicle		,			
Near/Far Lane Distance: 12 feet			viix icleTvpe	Dav	Evening	Night	Dailv
Site Data		ven	Autos		•	18.4%	
			edium Trucks			17.5%	8.549
Barrier Height: 0.0 feet			leavy Trucks			13.0%	4.89%
Barrier Type (0-Wall, 1-Berm): 0.0		,	ieavy muchs	. 04.3%	2.170	13.0%	4.097
Centerline Dist. to Barrier: 40.0 feet		Noise So	ource Elevati	ons (in fe	eet)		
Centerline Dist. to Observer: 40.0 feet			Autos:	0.000			
Barrier Distance to Observer: 0.0 feet		Mediur	m Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet		Heav	y Trucks:	8.004	Grade Adj	ustment.	0.0
Pad Elevation: 0.0 feet		Long Eg	uivalent Dist	onee (in	fact)		
Road Elevation: 0.0 feet Road Grade: 0.0%		Lane Eq		39.862	ieel)		
Left View: -90.0 degr		Modiu		39.640			
Right View: 90.0 degr				39.661			
FHWA Noise Model Calculations	1						
VehicleType REMEL Traffic Flow					Barrier Atte		m Atten
Autos: 64.30 -1.0		1.37	-1.20	-4.59	0.0		0.00
Medium Trucks: 75.75 -11.1	-	1.41	-1.20	-4.87	0.0		0.00
Heavy Trucks: 81.57 -13.5	2	1.41	-1.20	-5.56	0.0	00	0.00
Unmitigated Noise Levels (without Topo an	d barrier a	ttenuation)					
VehicleType Leq Peak Hour Leq D	ay Le	q Evening	Leq Night		Ldn	CI	VEL
Autos: 63.4	61.2	58.3	5	6.5	63.9		64.
Medium Trucks: 64.9	63.0	56.9	5	7.8	65.2		65.
Heavy Trucks: 68.3	66.7	57.8	5	9.9	67.8		67.
Vehicle Noise: 70.8	69.0	62.4	6	3.0	70.7	,	70.
Centerline Distance to Noise Contour (in fe	et)						
		70 dBA	65 dBA	6	60 dBA		dBA
	Ldn:	45	96		207		46
	CNFL:	46	99		213	4	58

-						REDICTIO							
Scenario: Exi						Project N			rk @ Live	Oak			
Road Name: Lor						Job Nur	nber: 11	112					
Road Segment: w/c	Myrtie /	ΑV.											
SITE SPEC	IFIC IN	PUT DATA							INPUT	s			
Highway Data				5	Site Conditions (Hard = 10, Soft = 15)								
Average Daily Traffic	(Adt):	14,071 vehicle	s		Autos: 15								
Peak Hour Percei	ntage:	10%			Me	dium Truc	ks (2 Axi	es):	15				
Peak Hour Vo	lume:	1,407 vehicles	6		He	avy Truck	s (3+ Axi	es):	15				
Vehicle S	peed:	40 mph		1	Vehicle I	Nix							
Near/Far Lane Dis	ance:	12 feet		F		cleType	Di	av	Evening	Night	Daily		
Site Data							tos: 72	.4%	9.2%	18.4%			
Barrier H	aiaht.	0.0 feet			Me	edium Truc	cks: 77	.7%	4.8%	17.5%	8.68		
Barrier Type (0-Wall, 1-E	Berm):	0.0			ŀ	leavy Truc	cks: 84	.3%	2.7%	13.0%	4.979		
Centerline Dist. to B		30.0 feet		1	Voise Sc	ource Elev	ations (in fe	et)				
Centerline Dist. to Obs		30.0 feet				Autos:	0.00	0	,				
Barrier Distance to Obs	erver:	0.0 feet			Mediur	n Trucks:	2.29						
Observer Height (Above		5.0 feet				y Trucks:	8.00	4	Grade Ad	justment	: 0.0		
Pad Elev		0.0 feet				·							
Road Elev		0.0 feet		1	ane Equ	uivalent D			eet)				
Road C		0.0%				Autos:	29.81	-					
	View:	-90.0 degree	s			n Trucks:	29.51	-					
Right	View:	90.0 degree	es		Heav	y Trucks:	29.54	7					
FHWA Noise Model Cald		-											
	MEL	Traffic Flow	Dista		Finite		Fresnel		Barrier Att		rm Atten		
Autos:	66.51	-0.48		3.26	-	-1.20		.49		000	0.00		
Medium Trucks:	77.72	-10.46		3.33	-	-1.20		.86		000	0.00		
Heavy Trucks:	82.99	-12.88		3.32	-	-1.20	-5	.77	0.0	000	0.00		
Unmitigated Noise Leve			-										
	eak Hou	1 1		Leq Ev	/ening	Leq Ni	~		Ldn	-	NEL		
Autos:	68		35.9		62.9		61.2		68.5	-	68		
Medium Trucks:	69		67.5		61.4		62.3		69.7		69		
Heavy Trucks:	72	-	70.7		61.7		63.8		71.8		71.		
Vehicle Noise:	75		73.3		66.9		67.3		75.0)	75.		
Centerline Distance to N	loise Co	ontour (in feet))	70 c	10.4	65 dF			0 dBA		i dBA		
				70 C	IBA	05 dE	\$A	60	авА	55	авА		
			L alar	~	-	400			000				
			Ldn: JFI :	65	-	139 143			300 308		646 664		

	FH1	WA-RD-77-108	HIGHW	AY NO	DISE P	REDICTIO	N MOD	EL			
	 Existing W Longden A e/o Myrtle A 	v.				Project N Job Nur			k @ Live	Oak	
SITE S	SPECIFIC IN	IPUT DATA							INPUT	s	
Highway Data				S	ite Cor	nditions (H	lard = 1	0, Soft	t = 15)		
Average Daily	Traffic (Adt):	18,231 vehicle	s				A	utos:	15		
Peak Hour	Percentage:	10%			Me	edium Truc	ks (2 Ax	des):	15		
Peak He	our Volume:	1,823 vehicles			He	avy Truck	s (3+ Ax	des):	15		
Vel	nicle Speed:	40 mph		V	ehicle	Miy					
Near/Far Lar	ne Distance:	12 feet				nicleType	ſ	Day E	vening	Night	Daily
Site Data				_	VCI			2.4%	9.2%	18.4%	
	rier Heiaht:	0.0 feet			М	edium True		7.7%	4.8%	17.5%	8.43%
Barrier Type (0-Wa		0.0				Heavy True	cks: 8	4.3%	2.7%	13.0%	4.83%
Centerline Dis	. ,	30.0 feet									
Centerline Dist. t		30.0 feet		N	oise S	ource Elev			t)		
Barrier Distance t		0.0 feet				Autos:	0.00				
Observer Height (/		5.0 feet				m Trucks:	2.29				
0 1	d Flevation:	0.0 feet			Hea	vy Trucks:	8.00)4 G	Grade Adj	ustment.	0.0
	d Elevation:	0.0 feet		L	ane Eq	uivalent D	listance	e (in fe	et)		
	Road Grade:	0.0%				Autos:	29.8	16			
	Left View:	-90.0 degree	s		Mediu	m Trucks:	29.5	18			
	Right View:	90.0 degree			Hear	vy Trucks:	29.54	47			
FHWA Noise Mode	Calculation	s									
VehicleType	REMEL	Traffic Flow	Distar	псе	Finite	Road	Fresne	l B	arrier Atte	en Ber	m Atten
Autos:	66.51	0.66		3.26		-1.20	-4	4.49	0.0	000	0.000
Medium Trucks:	77.72	-9.46		3.33		-1.20	-4	4.86	0.0	000	0.000
Heavy Trucks:	82.99	-11.88		3.32		-1.20	-{	5.77	0.0	000	0.000
Unmitigated Noise	Levels (with	out Topo and I	barrier a	attenu	ation)						
VehicleType	Leq Peak Ho	ur Leq Day	L	eq Eve	ening	Leq Ni	ght	L	dn	-	VEL
Autos:	69	9.2 6	67.0		64.1		62.3		69.7	,	70.0
Medium Trucks:	70).4 6	8.5		62.4		63.3		70.7	,	70.9
Heavy Trucks:	73		1.7		62.7		64.8		72.8	3	72.9
Vehicle Noise:	76	6.1 7	4.3		67.9		68.4		76.0)	76.2
Centerline Distance	e to Noise C	ontour (in feet)			_			_			
				70 dl		65 dE			dBA		dBA
			dn:	76		163			151		57
		CA	IEL:	78		168		3	61	7	78

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	HIGHWA	Y NC	DISE PR	EDICTIO	N MOI	DEL				
	o: Existing Wi e: Live Oak A ht: w/o Peck R	<i>N</i> .				Project Na Job Nun			ark @ Live	Oak		
SITE S	SPECIFIC IN	IPUT DATA		NOISE MODEL INPUTS								
Highway Data				S	ite Con	ditions (H	lard =	10, Sc	oft = 15)			
Average Daily	Traffic (Adt):	25,822 vehicle	S					Autos:	15			
Peak Hour	Percentage:	10%			Med	dium Truck	ks (2 A	(xles):	15			
Peak H	our Volume:	2,582 vehicles			Hea	avy Trucks	s (3+ A	xles):	15			
Vel	nicle Speed:	40 mph		14	ehicle N							
Near/Far Lar	ne Distance:	48 feet		V		nix cleType	1	Dav	Evening	Night	Dailv	
Site Data				-	veni			Day 72.4%	•	18.4%		
					Me	dium Truc		77.7%		17.5%		
	rier Height:	0.0 feet				leavy Truc		84.3%		13.0%		
Barrier Type (0-W		0.0				ioury muo		04.070	2.170	10.070	5.107	
Centerline Dis Centerline Dist. 1		48.0 feet 48.0 feet		N	oise So	urce Elev	ation	s (in fe	eet)			
Barrier Distance t		48.0 feet				Autos:	0.0	000				
		5.0 feet			Mediun	n Trucks:	2.2	297				
Observer Height (d Elevation:	0.0 feet			Heav	y Trucks:	8.0	004	Grade Ad	iustment	: 0.0	
	d Elevation:	0.0 feet		1	ano Fau	ivalent D	istan	o (in	foot)			
	Road Grade:	0.0%			ine Lqu	Autos:	41.8					
r	Left View:	-90.0 degree			Modium	n Trucks:	41.6					
	Right View:	90.0 degree				y Trucks:	41.6					
FHWA Noise Mode	el Calculation	s										
VehicleType	REMEL	Traffic Flow	Distanc	e	Finite	Road	Fresn	el	Barrier Att	en Bei	rm Atten	
Autos:	66.51	2.14		1.05		-1.20		-4.64	0.0	000	0.00	
Medium Trucks:	77.72	-7.72		1.09		-1.20		-4.87	0.0	000	0.00	
Heavy Trucks:	82.99			1.08		-1.20		-5.45	0.0	000	0.00	
Unmitigated Noise								r				
	Leq Peak Hou	1.7		q Eve	ening	Leq Ni	,		Ldn	-	NEL	
Autos:	68		6.3		63.3		61.6		68.9		69.	
Medium Trucks:	69		8.0		61.9		62.8		70.2	-	70.	
Heavy Trucks:	72		1.3		62.3		64.4		72.4		72.	
Vehicle Noise:	75		3.8		67.3		67.8		75.5	5	75.	
Centerline Distanc	e to Noise Co	ontour (in feet)		70 dF	BA	65 dB	A	F	0 dBA	55	dBA	
		1	dn:	112		241		<u>ــــــــــــــــــــــــــــــــــــ</u>	518		117	
		CN		115		247			533		148	
										.,	-	

	: Existing With	Project										
	e: Arrow Hwy. t: e/o Peck Rd.		Project Name: The Park @ Live Oak Job Number: 11112									
SITE S	PECIFIC INP	UT DATA			NO	ISE M	ODE		s			
Highway Data		-		Site Con	ditions (H							
Average Daily T	raffic (Adt): 2	5,193 vehicles				A	utos:	15				
Peak Hour F	. ,	10%		Me	dium Truci	ks (2 A)	xles):	15				
		.519 vehicles		He	avy Trucks	s (3+ A)	xles):	15				
Veh	icle Speed:	45 mph										
Near/Far Lan	e Distance:	48 feet		Vehicle Mix Vehicle Type Day Evening Night								
Site Data			ven			72.4%	Evening 9.2%	Night 18.4%	Daily 86.369			
				14	edium Truc		2.4% 7.7%		17.5%	8.63%		
	ier Height:	0.0 feet			leavy Truc		7.7% 34.3%		17.5%			
Barrier Type (0-Wa		0.0		,	.cavy mu		4.3%	2.170	13.0%	0.017		
Centerline Dist		40.0 feet		Noise So	ource Elev	ations	(in fe	et)				
Centerline Dist. to Barrier Distance to		40.0 feet			Autos:	0.0	00					
Observer Height (A		0.0 feet 5.0 feet		Mediur	m Trucks:	2.2	97					
		0.0 feet		Heav	y Trucks:	8.0	04	Grade Adj	iustment.	0.0		
	Pad Elevation: 0.0 feet Road Elevation: 0.0 feet					istanc	e (in	feet)				
	load Grade:	0.0%		Lano Ly	Autos:	32.3		000				
		-90.0 degrees		Mediu	n Trucks:	32.1						
	Right View:	90.0 degrees			y Trucks:	32.1	41					
FHWA Noise Mode	I Calculations											
VehicleType	REMEL	Traffic Flow	Distance		Road	Fresne	e/	Barrier Att	en Ber	m Atten		
Autos:	68.46	1.54	-	.73	-1.20		4.59		000	0.00		
Medium Trucks:	79.45	-8.46	-	.78	-1.20		4.87		000	0.00		
Heavy Trucks:	84.25	-10.82		.78	-1.20	-	5.56	0.0	000	0.00		
Unmitigated Noise			1	,								
	Leq Peak Hour	Leq Day		Evening	Leq Ni	·		Ldn		VEL		
Autos:	71.5			66.4		64.6		72.0		72.		
Medium Trucks:	72.6		-	64.6		65.5		72.9		73.		
Heavy Trucks:	75.0	-	-	64.5		66.6		74.6		74.		
Vehicle Noise:	78.1		.3	70.0		70.4		78.0)	78.		
Centerline Distance	e to Noise Con	tour (in feet)	~		6E -15				57	dD A		
		Ld		0 dBA 137	65 dE 296		e	638		dBA 375		
		La. CNE		137 141	296			638		375 414		

FHWA-RD-77-108 HIC	WAY NOISE PREDICTION MODEL	
Scenario: Existing With Project	Project Name: The Park @ Live Oak	
Road Name: Arrow Hwy.	Job Number: 11112	
Road Segment: e/o Longden Av.		
SITE SPECIFIC INPUT DATA	NOISE MODEL INPUTS	
Highway Data	Site Conditions (Hard = 10, Soft = 15)	
Average Daily Traffic (Adt): 44,002 vehicles	Autos: 15	
Peak Hour Percentage: 10%	Medium Trucks (2 Axles): 15	
Peak Hour Volume: 4,400 vehicles	Heavy Trucks (3+ Axles): 15	
Vehicle Speed: 45 mph	Vehicle Mix	
Near/Far Lane Distance: 48 feet	VehicleType Day Evening Night	Daily
Site Data	Autos: 72.4% 9.2% 18.4%	6 86.50
Barrier Height: 0.0 feet	Medium Trucks: 77.7% 4.8% 17.5%	6 8.55
Barrier Type (0-Wall, 1-Berm): 0.0	Heavy Trucks: 84.3% 2.7% 13.0%	6 4.94
Centerline Dist. to Barrier: 40.0 feet	Noise Source Elevations (in feet)	
Centerline Dist. to Observer: 40.0 feet	Autos: 0.000	
Barrier Distance to Observer: 0.0 feet	Medium Trucks: 2.297	
Observer Height (Above Pad): 5.0 feet	Heavy Trucks: 8,004 Grade Adjustmer	nt: 0.0
Pad Elevation: 0.0 feet		
Road Elevation: 0.0 feet	Lane Equivalent Distance (in feet)	
Road Grade: 0.0%	Autos: 32.388	
Left View: -90.0 degrees	Medium Trucks: 32.114 Heavy Trucks: 32.141	
Right View: 90.0 degrees	Heavy Trucks: 32.141	
FHWA Noise Model Calculations		
VehicleType REMEL Traffic Flow D	tance Finite Road Fresnel Barrier Atten Be 2.73 -1.20 -4.59 0.000	erm Atter 0.00
Medium Trucks: 79.45 -6.08	2.78 -1.20 -4.89 0.000	0.00
Heavy Trucks: 79.45 -0.08	2.78 -1.20 -4.87 0.000	0.00
		0.00
Unmitigated Noise Levels (without Topo and bar VehicleType Leg Peak Hour Leg Day		ONEL
Autos: 74.0 71.8	68.8 67.1 74.4	74
Medium Trucks: 74.9 73.1	67.0 67.8 75.3	75
Heavy Trucks: 77.4 75.8	66.9 69.0 76.9	77
Vehicle Noise: 80.4 78.7	72.4 72.8 80.4	80
Centerline Distance to Noise Contour (in feet)		
	70 dBA 65 dBA 60 dBA 5	5 dBA
		0.00
Ldn	198 427 920	,982

	FHW	A-RD-77-108 HIG	HWAY I	NOISE PF	EDICTIC	N MODI	EL				
Road Name	 Existing With Arrow Hwy. e/o I-605 Fw 					lame: Th mber: 11	ne Park @ Liv 112	e Oak			
SITE S	SPECIFIC INI	PUT DATA			NC	DISE MO	DDEL INPU	TS			
Highway Data				Site Con	ditions (l	Hard = 1	0, Soft = 15)				
Average Daily	Traffic (Adt):	31,924 vehicles				AL	itos: 15				
Peak Hour	Percentage:	10%		Me	dium Truc	ks (2 Ax	les): 15				
Peak He	our Volume:	3,192 vehicles		Hea	avy Truck	s (3+ Ax	les): 15				
Vel	nicle Speed:	45 mph	ŀ	Vehicle I	liv						
Near/Far Lar	e Distance:	48 feet	ł		cleType	D	ay Evening	Nigh	t Daily		
Site Data				veni			2.4% 9.2%	-			
				Me	edium Tru		1.4% 5.2% 7.7% 4.8%				
	rier Height:	0.0 feet 0.0			leavy Tru		1.3% 2.7%				
Barrier Type (0-Wa Centerline Dis	. ,	40.0 feet						, 10.0			
Centerline Dist. t		40.0 feet		Noise So	urce Ele	vations	(in feet)				
Barrier Distance t		40.0 feet			Autos:	0.00	0				
Observer Height (/		5.0 feet		Mediur	n Trucks:	2.29					
	d Elevation:	0.0 feet		Heav	y Trucks:	8.00	4 Grade A	djustm	ent: 0.0		
	d Elevation:	0.0 feet	ŀ	Lane Equ	uivalent l	Distance	(in feet)				
	oad Grade:	0.0%	ŀ	Lano Lq	Autos:	32.38	, ,				
	Left View:	-90.0 degrees		Mediur	n Trucks:		-				
	Right View:	90.0 degrees			y Trucks:						
FHWA Noise Mode	l Calculations										
VehicleType	REMEL	Traffic Flow Di	istance	Finite	Road	Fresnel	Barrier A	tten l	Berm Atten		
Autos:	68.46	2.63	2.7	'3	-1.20	-4	.59 0	.000	0.000		
Medium Trucks:	79.45	-7.84	2.7	'8	-1.20	-4	.87 0	.000	0.000		
Heavy Trucks:	84.25	-10.26	2.7	'8	-1.20	-5	.56 0	0.000	0.000		
Unmitigated Noise			ier atter	nuation)							
, ·	Leq Peak Hour		Leq E	vening	Leq N	•	Ldn		CNEL		
Autos:	72.0			67.5		65.7	73		73.4		
Medium Trucks:	73.2			65.2		66.1		.5	73.7		
Heavy Trucks:	75.6			65.1		67.2		i.1	75.2		
Vehicle Noise:	78.8			70.8		71.1	78	3.8	78.9		
Centerline Distance	e to Noise Co	ntour (in feet)	=0	10.4	05.0			1	55 10.4		
				dBA	65 di		60 dBA		55 dBA		
		Ldn:		53	331		712		1,535		
	CNEL:					158 340 733 1,579					

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	FH\	WA-RD-77-108	HIGH	WAY N	OISE P	REDICT	ION MO	DEL					
	p: Existing W				Project Name: The Park @ Live Oak								
	e: Arrow Hwy					Job N	lumber:	11112					
Road Segmen	t: w/o Riverg	rade Rd.											
	SPECIFIC IN	IPUT DATA			NOISE MODEL INPUTS								
Highway Data				s	lite Cor	nditions	(Hard =	10, Sc	oft = 15)				
Average Daily 1	Fraffic (Adt):	28,610 vehicle	es				,	Autos:	15				
Peak Hour I	Percentage:	10%			Me	edium Tr	rucks (2 A	(xles)	15				
Peak Ho	our Volume:	2,861 vehicle	s		He	eavy Tru	cks (3+ A	(xles)	15				
Vet	nicle Speed:	45 mph		v	ehicle	Mix							
Near/Far Lar	e Distance:	48 feet		-		nicleType	e	Dav	Evening	Night	Daily		
Site Data								72.4%		18.4%			
Bar	rier Height:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	5 7.719		
Barrier Type (0-Wa	all, 1-Berm):	0.0				Heavy T	rucks:	84.3%	2.7%	13.0%	4.42%		
Centerline Dis		40.0 feet		٨	loise S	ource E	levation	s (in fe	eet)				
Centerline Dist. t		40.0 feet				Auto	os: 0.0	000					
Barrier Distance t		0.0 feet			Mediu	m Truck	(S: 2.2	297					
Observer Height (/	,	5.0 feet			Hear	vy Truck	(s: 8.0	004	Grade Ad	iustmen	t: 0.0		
	d Elevation:	0.0 feet		-									
	d Elevation:	0.0 feet		L	ane Eq		t Distan		feet)				
F	Road Grade:	0.0%				Auto							
	Left View:	-90.0 degre				m Truck							
	Right View:	90.0 degre	es		Hear	vy Truck	(s: 32.)	141					
FHWA Noise Mode		-											
VehicleType	REMEL	Traffic Flow	Dist	tance		Road	Fresn		Barrier Att		rm Atten		
Autos:	68.46			2.73		-1.20		-4.59	0.0		0.00		
Medium Trucks:	79.45	-8.40		2.78		-1.20		-4.87	0.0		0.00		
Heavy Trucks:	84.25			2.78		-1.20		-5.56	0.0	000	0.00		
Unmitigated Noise													
,,	Leq Peak Hou			Leq Ev	· ·		Night		Ldn	-	NEL		
Autos:	72		70.0		67.0		65.3		72.6		72.		
Medium Trucks:	72		70.7		64.7		65.5		72.9		73.		
Heavy Trucks:	75	-	73.5		64.5		66.6		74.6		74.		
Vehicle Noise:	78		76.4		70.3		70.6)	78.2	2	78.		
Centerline Distanc	e to Noise C	ontour (in feet)	70 d	DA.	65	dBA	4	0 dBA	E	5 dBA		
			Ldn:	14			06A 805		657		.414		
			NFL:	14			805 814		676		,414 ,455		
		Ci	VEL.	141	U	3	14		070	1	,400		

FHWA-RD-	77-108 HIGH	WAY N	IOISE PREDICT	ION MODEL								
Scenario: Existing With Proje Road Name: Arrow Hwy. Road Segment: e/o Rivergrade Rd.	ct		Project Name: The Park @ Live Oak Job Number: 11112									
SITE SPECIFIC INPUT D	АТА		NOISE MODEL INPUTS									
Highway Data		5	Site Conditions	(Hard = 10, S	oft = 15)							
	vehicles		Autos: 15									
Peak Hour Percentage: 10%				ucks (2 Axles)								
Peak Hour Volume: 2,252			Heavy Tru	cks (3+ Axles)	: 15							
Vehicle Speed: 45 r Near/Far Lane Distance: 48 f		1	Vehicle Mix									
Near/Far Lane Distance: 48 1	eet		VehicleType	e Day	Evening	Night	Daily					
Site Data				Autos: 72.49	6 9.2%	18.4%	86.53%					
Barrier Height: 0.0	feet		Medium T		6 4.8%	17.5%	8.56%					
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy T	rucks: 84.39	6 2.7%	13.0%	4.91%					
Centerline Dist. to Barrier: 40.0	feet	-	Voise Source E	levations (in	foot)							
Centerline Dist. to Observer: 40.0	feet	ť	Auto		001/							
Barrier Distance to Observer: 0.0	feet		Medium Truck									
Observer Height (Above Pad): 5.0	feet		Heavy Truck		Grade Adj	ustment [.]	0.0					
Pad Elevation: 0.0	feet		neavy nuch	3. 0.004	ondo maj	dournoint.	0.0					
Road Elevation: 0.0	feet	1	Lane Equivalen	t Distance (in	feet)							
Road Grade: 0.09	6		Auto									
	degrees		Medium Truck									
Right View: 90.0	degrees		Heavy Truck	s: 32.141								
FHWA Noise Model Calculations	1				r							
VehicleType REMEL Traffic		tance	Finite Road	Fresnel	Barrier Atte		n Atten					
Autos: 68.46	1.06	2.73		-4.59			0.00					
Medium Trucks: 79.45	-8.99	2.78		-4.87			0.00					
Heavy Trucks: 84.25	11.41	2.78	3 -1.20	-5.56	0.0	00	0.00					
Unmitigated Noise Levels (without Top			<i></i>			r						
	eq Day	Leq E		Night	Ldn		IEL					
Autos: 71.0	68.9		65.9	64.2	71.5		71.					
Medium Trucks: 72.0	70.2		64.1	64.9	72.4		72.					
Heavy Trucks: 74.4	72.9		63.9	66.0	74.0		74.					
Vehicle Noise: 77.5	75.7		69.5	69.9	77.5		77.					
Centerline Distance to Noise Contour (in feet)											
	L	70 c		-	60 dBA		dBA					
	Ldn:	12		73	588		266					
	CNEL:	13	0 2	80	604	1.3	302					

		VA-RD-77-108	IGHW	AT N	OISE PH				_	
	io: Existing Wi							Park @ Live	Oak	
	ne: Arrow Hwy.					Job Nur	nber: 111	12		
Road Segme	nt: w/o Maine	Av.								
	SPECIFIC IN	IPUT DATA						DEL INPUT	S	
Highway Data				s	lite Con	ditions (H	lard = 10,	Soft = 15)		
Average Daily	Traffic (Adt):	45,676 vehicle	S				Aut			
Peak Hour	Percentage:	10%				dium Truc	· ·	,		
Peak H	lour Volume:	4,568 vehicles			He	avy Truck	s (3+ Axle	s): 15		
Ve	ehicle Speed:	45 mph		v	ehicle l	Nix				
Near/Far La	ne Distance:	48 feet		-		cleType	Da	y Evening	Night	Daily
Site Data						Au	tos: 72.	4% 9.2%	18.4%	86.089
Ra	rrier Height:	0.0 feet			Me	edium Tru	cks: 77.	7% 4.8%	17.5%	8.85%
Barrier Type (0-V		0.0			ŀ	łeavy Tru	cks: 84.	3% 2.7%	13.0%	5.07%
Centerline D	ist. to Barrier:	40.0 feet			loise Sc	urce Ele	ations (i	n foot)		
Centerline Dist.	to Observer:	40.0 feet		-	10/30 00	Autos:	0.000	,		
Barrier Distance	to Observer:	0.0 feet			Madiu	n Trucks:	2.297			
Observer Height	(Above Pad):	5.0 feet				y Trucks:	8.004		iustmont	0.0
P	ad Elevation:	0.0 feet			neav	y muchs.	0.004	endde maj	dourioni	0.0
Ro	ad Elevation:	0.0 feet		L	ane Equ	uivalent L	Distance ('in feet)		
	Road Grade:	0.0%				Autos:	32.388			
	Left View:	-90.0 degree	S		Mediur	n Trucks:	32.114			
	Right View:	90.0 degree	S		Heav	y Trucks:	32.141			
FHWA Noise Mod	lel Calculation	s								
VehicleType	REMEL	Traffic Flow	Dista	nce	Finite	Road	Fresnel	Barrier Att	en Ber	m Atten
Autos:	68.46	4.11		2.73		-1.20	-4.	59 0.0	000	0.00
Medium Trucks:	79.45	-5.77		2.78		-1.20	-4.	37 0.0	000	0.00
Heavy Trucks:	84.25	-8.19		2.78		-1.20	-5.	56 0.0	000	0.00
Unmitigated Nois	e Levels (with	out Topo and L	arrier	attenı	uation)					
VehicleType	Leq Peak Hou			.eq Ev	v	Leq N	•	Ldn		VEL
Autos:			1.9		68.9		67.2	74.5		74.
Medium Trucks:			3.4		67.3		68.2	75.6		75.
Heavy Trucks:		.6 7	6.1		67.1		69.2	77.2	2	77.
Vehicle Noise:	80	.7 7	8.9		72.6		73.0	80.7	7	80
Centerline Distan	ce to Noise Co	ontour (in feet)								
				70 d		65 dE		60 dBA		dBA
			dn: FL:	200	-	444 456		956 983	2,	060

FH	WA-RD-77-108 H	IGHWA	Y NOISE	PREDICTI	ON MODI	EL					
Scenario: Existing W Road Name: Arrow Hw Road Segment: e/o Maine	y.				Vame: Th Imber: 11	ne Park @ Live C 112	Dak				
SITE SPECIFIC I	NPUT DATA		NOISE MODEL INPUTS								
Highway Data			Site Conditions (Hard = 10, Soft = 15)								
Average Daily Traffic (Adt):	33,719 vehicles				AL	itos: 15					
Peak Hour Percentage:	10%		٨	ledium Tru	cks (2 Ax	les): 15					
Peak Hour Volume:	3,372 vehicles		ŀ	leavy Truc	ks (3+ Ax	les): 15					
Vehicle Speed:	45 mph		Vehicl	Mix							
Near/Far Lane Distance:	48 feet			ehicleType	D	ay Evening	Night Daily				
Site Data						, 0	18.4% 85.96%				
Barrier Height:	0.0 feet			Medium Tr	ucks: 71	7.7% 4.8%	17.5% 8.90%				
Barrier Type (0-Wall, 1-Berm):	0.0			Heavy Tr	ucks: 84	4.3% 2.7%	13.0% 5.13%				
Centerline Dist. to Barrier:	40.0 feet		Noise	Source Ele	vations	(in feet)					
Centerline Dist. to Observer:	40.0 feet			Autos		. ,					
Barrier Distance to Observer:	0.0 feet		Med	ium Trucks							
Observer Height (Above Pad):	5.0 feet			avv Trucks			stment: 0.0				
Pad Elevation:	0.0 feet										
Road Elevation:	0.0 feet		Lane E	quivalent		, ,					
Road Grade:	0.0%			Autos		8					
Left View:	-90.0 degrees			ium Trucks							
Right View:	90.0 degrees		He	avy Trucks	: 32.14	1					
FHWA Noise Model Calculatio	ns		1								
VehicleType REMEL	Traffic Flow	Distand	e Fini	te Road	Fresnel	Barrier Atter	n Berm Atten				
Autos: 68.46	6 2.78		2.73	-1.20	-4	.59 0.00	0 0.000				
Medium Trucks: 79.4			2.78	-1.20		.87 0.00					
Heavy Trucks: 84.25	5 -9.45		2.78	-1.20	-5	0.00	0 0.000				
Unmitigated Noise Levels (with	hout Topo and b	arrier at	tenuation)							
VehicleType Leq Peak Ho			q Evening	Leq I	•	Ldn	CNEL				
).6	67		65.9	73.2	73.5				
Medium Trucks: 7	4.0 72	2.1	66		66.9	74.3	74.4				
			65	0	68.0	75.9	76.1				
	6.4 74	-					-				
Vehicle Noise: 7	9.4 77	r.8 7.6	71		71.8	79.4	-				
	9.4 77	7.6	71	3	71.8	79.4	79.6				
Vehicle Noise: 7	9.4 77 Contour (in feet)	7.6			71.8 IBA						

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	HIGH	WAY NO	DISE PI	REDICT	ION MO	DEL					
	p: Existing W				Project Name: The Park @ Live Oak								
	e: Live Oak A					Job N	lumber:	11112					
Road Segmen	t: w/o Riverg	rade Rd.											
	SPECIFIC IN	IPUT DATA			NOISE MODEL INPUTS								
Highway Data				S	ite Cor	nditions	(Hard =	10, So	oft = 15)				
Average Daily 1	Fraffic (Adt):	29,456 vehicle	es					Autos:	15				
Peak Hour I	Percentage:	10%			Me	dium Tr	ucks (2 /	(xles)	15				
Peak Ho	our Volume:	2,946 vehicle	s		He	avy Tru	icks (3+ A	(xles)	15				
Vet	nicle Speed:	45 mph		v	ehicle	Mix							
Near/Far Lar	e Distance:	80 feet		-		icleType	e	Dav	Evening	Night	Daily		
Site Data								72.4%		18.4%			
Bar	rier Height:	0.0 feet			М	edium T	rucks:	77.7%	4.8%	17.5%	8.53%		
Barrier Type (0-Wa	all, 1-Berm):	0.0			1	Heavy T	rucks:	84.3%	2.7%	13.0%	4.92%		
Centerline Dis		50.0 feet		N	oise Se	ource E	levation	s (in fe	eet)				
Centerline Dist. t		50.0 feet				Auto	os: 0.0	000					
Barrier Distance t		0.0 feet			Mediu	m Truck	(S: 2.)	297					
Observer Height (/	,	5.0 feet			Heav	/v Truck	(s: 8.0	004	Grade Ad	justmen	t: 0.0		
	d Elevation:	0.0 feet		_		·							
	d Elevation:	0.0 feet		L	ane Eq		t Distan		feet)				
F	Road Grade:	0.0%				Auto							
	Left View:	-90.0 degre				m Truck							
	Right View:	90.0 degre	es		Heav	/y Truck	(s: 30.	150					
FHWA Noise Mode		-											
VehicleType	REMEL	Traffic Flow	Dist	ance	Finite	Road	Fresr	-	Barrier Att		rm Atten		
Autos:	68.46			3.14		-1.20		-4.65		000	0.00		
Medium Trucks:	79.45			3.20		-1.20		-4.87		000	0.00		
Heavy Trucks:	84.25			3.19		-1.20		-5.43	0.0	000	0.00		
Unmitigated Noise										1			
,,	Leq Peak Hou			Leq Ev	· ·		Night		Ldn		NEL		
Autos:	72		70.4		67.5		65.7		73.1		73.4		
Medium Trucks:	73		71.7		65.6		66.5		73.9	-	74.1		
Heavy Trucks:	76	-	74.5		65.5		67.6		75.6		75.		
Vehicle Noise:	79		77.3		71.1		71.5)	79.1	1	79.		
Centerline Distanc	e to Noise C	ontour (in feet)	70 d	DA.	65	dBA	6	0 dBA	56	i dBA		
			Ldn:	202			35		937		,018		
			NFL:	202			147		963		,018		
		C.	v	200	,	4			505	2	,073		

Fi	IWA-RD-77-10	8 HIGH	NAY NO	DISE PRE	DICTION	MODEL							
Scenario: Existing V Road Name: Live Oak Road Segment: e/o River	Av.			Project Name: The Park @ Live Oak Job Number: 11112									
SITE SPECIFIC	NPUT DATA			NOISE MODEL INPUTS									
Highway Data			S	ite Condi	tions (Ha	rd = 10, So	oft = 15)						
Average Daily Traffic (Adt):	31,802 vehi	cles				Autos:	15						
Peak Hour Percentage:	10%			Mediu	ım Trucks	(2 Axles):	15						
Peak Hour Volume:	3,180 vehicl	es		Heav	y Trucks (3+ Axles):	15						
Vehicle Speed:	45 mph			ehicle Mix									
Near/Far Lane Distance:	80 feet		-	Vehicle		Dav	Evening	Night	Dailv				
Site Data				Vernore	Auto		•	18.4%					
	0.0 feet			Medi	um Truck			17.5%	8.739				
Barrier Height: Barrier Type (0-Wall, 1-Berm):					avy Truck			13.0%	5.049				
Centerline Dist, to Barrier:	50.0 feet												
Centerline Dist. to Observer:	50.0 feet		Ν	loise Sour		tions (in fe	eet)						
Barrier Distance to Observer:	0.0 feet				Autos:	0.000							
Observer Height (Above Pad):				Medium		2.297							
Pad Elevation:	0.0 feet			Heavy	Trucks:	8.004	Grade Adj	iustment.	0.0				
Road Elevation:			L	ane Equiv	alent Dis	tance (in	feet)						
Road Grade:			F		Autos:	30.414							
Left View:	-90.0 degr	ees		Medium	Trucks:	30.122							
Right View:	90.0 degr			Heavy	Trucks:	30.150							
FHWA Noise Model Calculatio													
VehicleType REMEL	Traffic Flow		ance	Finite Ro			Barrier Att		m Atten				
Autos: 68.4			3.14		1.20	-4.65	0.0		0.00				
Medium Trucks: 79.4	• • • •	-	3.20		1.20	-4.87	0.0		0.00				
Heavy Trucks: 84.2	5 -9.7	9	3.19	-	1.20	-5.43	0.0	000	0.00				
Unmitigated Noise Levels (with	hout Topo an	d barriei	r attenu	lation)									
VehicleType Leq Peak H		-	Leq Ev	•	Leq Nigh		Ldn		VEL				
	2.9	70.7		67.8		66.0	73.4		73.				
	4.0	72.2		66.1		66.9	74.4		74.				
,	6.5	74.9		66.0		68.1	76.0		76.				
Vehicle Noise:	9.5	77.7		71.5		71.9	79.5	5	79.				
Centerline Distance to Noise	Contour (in fee	et)											
			70 di		65 dBA	6	60 dBA		dBA				
		Ldn:	215		463		997		147				
	(CNFL:	22'		476		1.025	2	208				

_		VA-RD-77-108										
	io: Existing W				Project Name: The Park @ Live Oak Job Number: 11112							
	e: Live Oak A					JOD NUN	<i>iber:</i> 11	1112				
Road Segme	nt: e/o Stewar	AV.										
	SPECIFIC IN	IPUT DATA							INPUT:	5		
Highway Data				S	Site Con	ditions (H	ard = 1	0, So	ft = 15)			
Average Daily	Traffic (Adt):	30,172 vehicl	es				A	utos:	15			
Peak Hour	Percentage:	10%				dium Truck			15			
Peak H	lour Volume:	3,017 vehicle	s		Hea	avy Trucks	s (3+ Ax	les):	15			
Ve	hicle Speed:	45 mph		v	/ehicle I	<i>lix</i>						
Near/Far La	ne Distance:	80 feet		F		cleType	D	av	Evening	Night	Daily	
Site Data						Au	os: 7	2.4%	9.2%	18.4%		
Ba	rier Heiaht:	0.0 feet			Me	dium Truc	ks: 7	7.7%	4.8%	17.5%	8.92	
Barrier Type (0-W		0.0			H	leavy Truc	ks: 8	4.3%	2.7%	13.0%	5.15	
Centerline Di	st. to Barrier:	50.0 feet			loise So	urce Elev	ations	(in fo	of)			
Centerline Dist.	to Observer:	50.0 feet			10/30 00	Autos:	0.00		01/			
Barrier Distance	to Observer:	0.0 feet			Modiur	n Trucks:	2.29					
Observer Height (Above Pad):	5.0 feet				v Trucks:	8.00		Grade Adj	ustment	· 0.0	
Pa	ad Elevation:	0.0 feet			neav	y muchs.	0.00	/4	erade ridj	doumon	. 0.0	
Roi	ad Elevation:	0.0 feet		L	ane Equ	ivalent D	istance	e (in fe	eet)			
	Road Grade:	0.0%				Autos:	30.41	4				
	Left View:	-90.0 degre	es		Mediur	n Trucks:	30.12	22				
	Right View:	90.0 degre	es		Heav	y Trucks:	30.15	50				
FHWA Noise Mod	el Calculation	s										
VehicleType	REMEL	Traffic Flow	Distar	псе	Finite	Road	Fresne	I E	Barrier Atte	en Ber	m Atter	
Autos:	68.46	2.30		3.14		-1.20	-4	1.65	0.0	00	0.00	
Medium Trucks:	79.45	-7.54		3.20		-1.20	-4	1.87	0.0	00	0.00	
Heavy Trucks:	84.25	-9.93		3.19		-1.20	-8	5.43	0.0	00	0.00	
Unmitigated Nois	e Levels (with	out Topo and	barrier a	atteni	uation)							
VehicleType	Leq Peak Hou	ir Leq Day	/ L(eq Ev	ening	Leq Ni	ght		Ldn	-	NEL	
	72	.7	70.5		67.5		65.8		73.1		73	
Autos:		.9	72.0		65.9		66.8		74.2		74	
Autos: Medium Trucks:			74.8		65.8		67.9		75.9)	76	
Autos: Medium Trucks: Heavy Trucks:	73 76	.3	74.8				71.7		79.3	3	79	
Autos: Medium Trucks:			74.8 77.6		71.3				10.0			
Autos: Medium Trucks: Heavy Trucks:	76	.3	77.6		71.3				10.0			
Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	76	.3 ontour (in feet	77.6	70 d	IBA	65 dE			0 dBA		dBA	
Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	76	.3 ontour (in feet	77.6	70 d	IBA	65 dE 451					<i>dBA</i> 094	

Scenario: Existing With Project Project Name: The Park @ Live Oal Road Name: Live Oak Av. Job Number: 11112 Stress Stress Stress Stress Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 25,825 vehicles Preak Hour Percentage: 10% Medium Trucks (2 Akels): 15	<
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 25,825 vehicles Autos: 15	
Average Daily Traffic (Adt): 25,825 vehicles Autos: 15	
Peak Hour Volume: 2,582 vehicles Heavy Trucks (3+ Axles): 15	
Vehicle Speed: 45 mph Vehicle Mix	
Noar/Far Lano Distanco: 80 foot	ght Daily
	3.4% 85.98%
Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17	.5% 8.89%
	3.0% 5.13%
Centerline Dist. to Barrier: 50.0 feet Noise Source Elevations (in feet)	
Centerline Dist. to Observer: 50.0 feet Autos: 0,000	
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297	
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjust	nent: 0.0
Pad Elevation: 0.0 feet	
Road Elevation: 0.0 feet Lane Equivalent Distance (in feet)	
Road Grade: 0.0% Autos: 30.414	
Left View: -90.0 degrees Medium Trucks: 30.122	
Right View: 90.0 degrees Heavy Trucks: 30.150	
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten	Berm Atten
Autos: 68.46 1.63 3.14 -1.20 -4.65 0.000	0.000
Medium Trucks: 79.45 -8.23 3.20 -1.20 -4.87 0.000	0.000
Heavy Trucks: 84.25 -10.61 3.19 -1.20 -5.43 0.000	0.000
Unmitigated Noise Levels (without Topo and barrier attenuation)	
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn	CNEL
Autos: 72.0 69.8 66.9 65.1 72.5	72.8
Medium Trucks: 73.2 71.3 65.2 66.1 73.5	73.7
Heavy Trucks: 75.6 74.1 65.1 67.2 75.2	75.3
Vehicle Noise: 78.7 76.9 70.6 71.0 78.6	78.8
Centerline Distance to Noise Contour (in feet)	
70 dBA 65 dBA 60 dBA	55 dBA
Ldn: 189 406 875	1,885
CNEL: 194 418 900	1,938

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Wednesday, May 02, 2018

	FH\	VA-RD-77-10	B HIGHW	VAY NO	DISE PI	REDICTIO		DEL					
		/ithout Project							ark @ Live	Oak			
Road Name					Job Number: 11112								
Road Segment	: n/o Longde	n Av.											
	PECIFIC IN	IPUT DATA							L INPUT	s			
Highway Data				S	ite Cor	nditions (Hard =	10, So	oft = 15)				
Average Daily T	raffic (Adt):	27,774 vehic	les					Autos:	15				
Peak Hour F	Percentage:	10%			Me	edium Tru	cks (2 A	(xles):	15				
Peak Ho	ur Volume:	2,777 vehicle	es		He	avy Truci	ks (3+ A	(xles):	15				
Veh	icle Speed:	40 mph		V	ehicle	Mix							
Near/Far Lan	e Distance:	12 feet		-		nicleType		Dav	Evening	Night	Dailv		
Site Data						A	utos:	72.4%	9.2%	18.4%	85.65%		
Barr	ier Heiaht:	0.0 feet			М	edium Tru	icks:	77.7%	4.8%	17.5%	9.129		
Barrier Type (0-Wa	II, 1-Berm):	0.0			1	Heavy Tru	icks:	84.3%	2.7%	13.0%	5.23%		
Centerline Dist		30.0 feet		N	oise S	ource Ele	vation	s (in fe	eet)				
Centerline Dist. to		30.0 feet				Autos.	: 0.0	000					
Barrier Distance to		0.0 feet			Mediu	m Trucks.	2.2	297					
Observer Height (A	,	5.0 feet			Heav	vy Trucks.	8.0	004	Grade Ad	justment	: 0.0		
	d Elevation:	0.0 feet											
	d Elevation:	0.0 feet		L	ane Eq	uivalent			teet)				
R	oad Grade:	0.0%				Autos.							
	Left View:	-90.0 degre				m Trucks.							
	Right View:	90.0 degre	es		Heav	vy Trucks.	29.5	547					
FHWA Noise Model													
VehicleType	REMEL	Traffic Flow	Dista		Finite	Road	Fresn	-	Barrier Att		rm Atten		
Autos:	66.51	2.44		3.26		-1.20		-4.49		000	0.00		
Medium Trucks:	77.72	-7.29		3.33		-1.20		-4.86		000	0.00		
Heavy Trucks:	82.99	-9.71		3.32		-1.20		-5.77	0.0	000	0.00		
Unmitigated Noise								1					
VehicleType L Autos:	eq Peak Hou 71		y L 68.8	Leq Eve	ening 65.9	Leq N	light 64.1		Ldn 71.5		NEL 71.		
Autos: Medium Trucks:	71		70.7		64.6		65.4		71.	-	71.		
Heavy Trucks:	72		70.7		64.9		67.0		72.5	-	73. 75.		
Vehicle Noise:	75		76.4		69.9		70.5		78.		75.		
Centerline Distance	e to Noise Cu	ontour (in fee	<i>t</i>)										
Contonine Distance		intea (milee	·/	70 dł	BA	65 d	BA	6	0 dBA	55	dBA		
								1		1			
			Ldn:	104	Ļ	22	5		484	1.	042		

	FHW	/A-RD-77-108 HIC	GHWAY	NOISE PI	REDICTIO	N MODE	L						
Road Nan	rio: OY 2020 W ne: Peck Rd. ent: s/o Arrow H			Project Name: The Park @ Live Oak Job Number: 11112									
SITE	SPECIFIC IN	PUT DATA		NOISE MODEL INPUTS									
Highway Data			-	Site Conditions (Hard = 10, Soft = 15)									
Average Daily	Traffic (Adt):	23,235 vehicles				Aut	os: 15						
Peak Hour	Percentage:	10%		Me	dium Truc	ks (2 Axle	es): 15						
Peak H	our Volume:	2,324 vehicles		He	avy Truck	s (3+ Axle	es): 15						
Ve	hicle Speed:	40 mph		Vehicle	Mix								
Near/Far La	ane Distance:	56 feet			icleType	Da	v Evening	Night	Daily				
Site Data						tos: 72.	•	18.4%					
	rrier Height:	0.0 feet	-	M	edium Truc		7% 4.8%	17.5%					
Barrier Type (0-V	•	0.0			Heavy True	cks: 84.	3% 2.7%						
<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ist. to Barrier:	60.0 feet											
Centerline Dist.		60.0 feet		Noise So	ource Elev		,						
Barrier Distance		0.0 feet			Autos:	0.000							
Observer Height		5.0 feet			m Trucks:	2.297							
	ad Elevation:	0.0 feet		Heav	y Trucks:	8.004	Grade Ad	ljustment	: 0.0				
Ro	ad Elevation:	0.0 feet		Lane Eq	uivalent D)istance ('in feet)						
	Road Grade:	0.0%			Autos:	53.301							
	Left View:	-90.0 degrees		Mediu	m Trucks:	53.135							
	Right View:	90.0 degrees		Heav	y Trucks:	53.151							
FHWA Noise Mod							T.						
VehicleType	REMEL		Distance		Road	Fresnel	Barrier At		m Atten				
Autos:		1.66	-0.		-1.20	-4.0		000	0.00				
Medium Trucks:		-8.06	-0.		-1.20	-4.6		000	0.00				
Heavy Trucks:		-10.48		.50	-1.20	-5.3	34 0.	000	0.00				
Unmitigated Nois				,									
VehicleType	Leq Peak Hou			Evening	Leq Ni	·	Ldn		NEL				
Autos:				61.3		59.6	66.		67.				
Medium Trucks:				60.0		60.8	68.		68. 70.				
Heavy Trucks:			-	60.3		62.4	70.						
Vehicle Noise:			5	65.3		65.9	73.	5	73.				
Centerline Distan	ce to Noise Co	ntour (in feet)	7/		05 -15		00 -10 4		-10.4				
		Ldr		0 dBA 103	65 dE 222		60 dBA 478		dBA 030				

0			REDICTIO						
Scenario: OY 2020 Without Project Road Name: Avenida Barbosa		Project Name: The Park @ Live Oak Job Number: 11112							
Road Segment: n/o Buena Vista St.			JOD INUN	10er: 11112	<u> </u>				
ě.									
SITE SPECIFIC INPUT DATA					EL INPUT	S			
Highway Data		Site Co	nditions (H	ard = 10, S	oft = 15)				
Average Daily Traffic (Adt): 6,857 vehicl	es			Autos					
Peak Hour Percentage: 10%		M	edium Trucl	(s (2 Axles)	: 15				
Peak Hour Volume: 686 vehicle	s	н	eavy Trucks	(3+ Axles)	: 15				
Vehicle Speed: 40 mph		Vehicle	Mix						
Near/Far Lane Distance: 12 feet			hicleType	Day	Evening	Night Da			
Site Data				os: 72.49	•	18.4% 85.6			
Barrier Height: 0.0 feet		٨	Aedium Truc	ks: 77.7%	6 4.8%	17.5% 9.1			
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.3%	6 2.7%	13.0% 5.2			
Centerline Dist. to Barrier: 30.0 feet		Noise	Source Elev	ations (in	foot)				
Centerline Dist. to Observer: 30.0 feet			Autos:	0.000	000)				
Barrier Distance to Observer: 0.0 feet		Modi	im Trucks:	2.297					
Observer Height (Above Pad): 5.0 feet			vv Trucks:	8.004	Grade Ad	justment: 0.0			
Pad Elevation: 0.0 feet		1100	ivy mucho.	0.004					
Road Elevation: 0.0 feet		Lane E	quivalent D		feet)				
Road Grade: 0.0%			Autos:	29.816					
Left View: -90.0 degre	es		um Trucks:	29.518					
Right View: 90.0 degre	es	Hea	vy Trucks:	29.547					
FHWA Noise Model Calculations		1							
VehicleType REMEL Traffic Flow	Distan	ce Finit	e Road	Fresnel	Barrier Att	en Berm Att			
Autos: 66.51 -3.64		3.26	-1.20	-4.49	0.0	000 0.			
Medium Trucks: 77.72 -13.36		3.33	-1.20	-4.86	0.0	000 0.			
Heavy Trucks: 82.99 -15.78		3.32	-1.20	-5.77	0.0	000 0.			
Unmitigated Noise Levels (without Topo and	barrier a	ttenuation	1						
VehicleType Leq Peak Hour Leq Day		q Evening	Leq Ni	,	Ldn	CNEL			
Autos: 64.9	62.7	59.	-	58.0	65.4				
Medium Trucks: 66.5	64.6	58.	-	59.4	66.8	-			
Heavy Trucks: 69.3	67.8	58.		60.9	68.9				
Vehicle Noise: 72.1	70.3	63.	3	64.4	72.0) 7			
Centerline Distance to Noise Contour (in fee)		1			1			
Contentine Distance to Noise Contour (in lee		70 dBA	65 dF	4	60 dBA	55 dBA			
Contenine Distance to Noise Contour (in lee				~					
· ·	Ldn: NFL :	41 42	88		190	410			

	FHV	VA-RD-77-108	HIGHW	AY N	OISE PF	REDICTIO	N MODEL					
Road Nam	io: OY 2020 W ne: Avenida Ba nt: s/o Buena V	rbosa					ame: The I nber: 1111	Park @ Live 2	Oak			
SITE	SPECIFIC IN	PUT DATA		NOISE MODEL INPUTS								
Highway Data				S	Site Con	ditions (H	lard = 10, \$	Soft = 15)				
Average Daily	Traffic (Adt):	17,446 vehicle	es				Autos	s: 15				
Peak Hour	Percentage:	10%			Me	dium Truc	ks (2 Axles): 15				
Peak H	lour Volume:	1,745 vehicle	s		He	avy Truck	s (3+ Axles): 15				
Ve	hicle Speed:	40 mph		L	/ehicle l	Mix						
Near/Far La	ne Distance:	12 feet		F		icleType	Dav	Evening	Night	Daily		
Site Data							tos: 72.4	•	18.4%			
Ba	rrier Height:	0.0 feet			Me	edium Tru	cks: 77.7	% 4.8%	17.5%	9.12%		
Barrier Type (0-W		0.0			ŀ	leavy Tru	cks: 84.3	% 2.7%	13.0%	5.23%		
Centerline Di	. ,	30.0 feet			Vaina Ca	uree Eler	vations (in	faat)				
Centerline Dist.	to Observer:	30.0 feet		-	10/36 30	Autos:	0.000	ieel)				
Barrier Distance	to Observer:	0.0 feet			1 4 m all 1 m	n Trucks:	2.297					
Observer Height	(Above Pad):	5.0 feet				y Trucks:	8.004	Grade Adj	ustmont	. 0.0		
P	ad Elevation:	0.0 feet			neav	y mucks.	0.004	Orade Haj	usuncin	0.0		
Ro	ad Elevation:	0.0 feet		L	ane Eq	uivalent E	Distance (in	n feet)				
	Road Grade:	0.0%				Autos:	29.816					
	Left View:	-90.0 degre	es		Mediur	n Trucks:	29.518					
	Right View:	90.0 degre	es		Heav	y Trucks:	29.547					
FHWA Noise Mod	el Calculation	s										
VehicleType	REMEL	Traffic Flow	Distar	ice	Finite	Road	Fresnel	Barrier Atte	en Ber	m Atten		
Autos:	66.51	0.42		3.26	6	-1.20	-4.49	9 0.0	00	0.000		
Medium Trucks:	77.72	-9.31		3.33	3	-1.20	-4.86	6 0.0	00	0.000		
Heavy Trucks:	82.99	-11.73		3.32	2	-1.20	-5.77	· 0.0	00	0.000		
Unmitigated Nois	e Levels (with	out Topo and	barrier a	atteni	uation)							
VehicleType	Leq Peak Hou			eq Ev	rening	Leq N	0	Ldn		NEL		
Autos:	69		66.8		63.8		62.1	69.4		69.7		
Medium Trucks:	70		68.7		62.6		63.4	70.8		71.0		
Heavy Trucks:	73		71.9		62.9		65.0	73.0		73.1		
Vehicle Noise:	76		74.4		67.9		68.4	76.1		76.3		
Centerline Distan	ce to Noise Co	ontour (in feet)									
			L	70 d		65 dE		60 dBA		dBA		
			Ldn:	76		165		355		64		
		Ci	VEL:	79	9	169	1	364	7	85		

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH	NA-RD-77-108	HIGH	IWAY N	IOISE PI	REDICT		DEL			
		/ithout Project							ark @ Live	Oak	
	e: Rivergrade					Job I	lumber:	11112			
Road Segmen	t: s/o Arrow I	Hwy.									
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				4	Site Cor	ditions	(Hard =	10, So	oft = 15)		
Average Daily	raffic (Adt):	8,112 vehicl	es					Autos:	15		
Peak Hour I	Percentage:	10%			Me	dium Ti	rucks (2 A	(xles)	15		
Peak Ho	our Volume:	811 vehicle	s		He	avy Tru	cks (3+ A	(xles)	15		
Veh	icle Speed:	40 mph			Vehicle	Mix					
Near/Far Lar	e Distance:	12 feet		-		icleTyp	e	Dav	Evening	Night	Daily
Site Data								72.4%	Ű		85.65%
Par	rier Heiaht:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	9,129
Barrier Type (0-Wa	all, 1-Berm):	0.0			I	Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis		30.0 feet		7	Noise Se	ource E	levation	s (in fe	eet)		
Centerline Dist. t		30.0 feet				Auto	os: 0.0	000	í		
Barrier Distance t	o Observer:	0.0 feet			Mediu	m Truck	(s: 2.2	297			
Observer Height (/	,	5.0 feet			Heav	/y Truck	(s: 8.0	004	Grade Ad	iustmen	t: 0.0
	d Elevation:	0.0 feet		L							
	d Elevation:	0.0 feet		1	Lane Eq		t Distan		feet)		
F	load Grade:	0.0%				Auto					
	Left View:	-90.0 degre				m Truci					
	Right View:	90.0 degre	es		Heav	/y Truck	(s: 29.	547			
FHWA Noise Mode		-									
VehicleType	REMEL	Traffic Flow	Dis	tance		Road	Fresn	-	Barrier Att		rm Atten
Autos:	66.51	-2.91		3.20		-1.20		-4.49		000	0.00
Medium Trucks:	77.72			3.3	-	-1.20		-4.86		000	0.00
Heavy Trucks:	82.99			3.3	-	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise	Levels (with Leg Peak Ho					1.00	Minht	1	Ldn		NEL
VehicleType Autos:	Leq Peak Hol 65		63.5	Leq E	60.5	Leq	Night 58.8	<u> </u>	Lan 66.1		IVEL 66.
Medium Trucks:	67		65.3		59.2		60.1		67.5		67.
Heavy Trucks:	70		68.5		59.6		61.7		69.6		69.
Vehicle Noise:	72		71.1		64.6		65.1		72.8		72
Centerline Distanc	e to Noise C	ontour (in feet)								
				70 0	/BA	65	dBA	6	60 dBA	55	dBA
								•	0.4.0		159
			Ldn:	4	6		99		213	4	159

	FHWA	-RD-77-108 H	IIGHW <i>I</i>	AY NOISE	PREDIC		DEL			
Scenario: O Road Name: Ri Road Segment: s/	ivergrade Ro	ł.				t Name: Number:		ark @ Live	Oak	
SITE SPEC	CIFIC INP	JT DATA				NOISE N	/ODE	L INPUT	s	
Highway Data				Site C	Conditions	6 (Hard =	10, Se	oft = 15)		
Average Daily Traffi	c (Adt): 2	690 vehicles					Autos:	15		
Peak Hour Perce	entage:	10%			Medium T	rucks (2 A	(xles)	15		
Peak Hour V	olume:	269 vehicles			Heavy Tru	icks (3+ A	(xles)	15		
Vehicle	Speed:	40 mph		Vehic	le Mix					
Near/Far Lane Di	stance:	12 feet			/ehicleTyp	e	Dav	Evening	Night	Daily
Site Data				-			72.4%			85.65%
Barrier I	Hoight:	0.0 feet		-	Medium		77.7%		17.5%	
Barrier Type (0-Wall, 1-		0.0 reet					84.3%		13.0%	
Centerline Dist, to	,	30.0 feet								
Centerline Dist. to Ob		30.0 feet		Noise	Source E			eet)		
Barrier Distance to Ob		0.0 feet			Auto		000			
Observer Height (Abov		5.0 feet			dium Truc		297	Our de Ad		
	evation:	0.0 feet		н	eavy Truci	KS: 8.0	004	Grade Ad	ustment	0.0
Road Ele	evation:	0.0 feet		Lane	Equivaler	nt Distan	ce (in	feet)		
Road	Grade:	0.0%			Auto	os: 29.	816			
Le	ft View:	90.0 degrees		Me	dium Truc	ks: 29.	518			
Righ	nt View:	90.0 degrees		н	eavy Truci	ks: 29.	547			
FHWA Noise Model Ca										
		raffic Flow	Distan		ite Road	Fresr		Barrier Att		m Atter
Autos:	66.51	-7.70		3.26	-1.20		-4.49		000	0.00
Medium Trucks:	77.72	-17.43		3.33	-1.20		-4.86		000	0.00
Heavy Trucks:	82.99	-19.85		3.32	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Lev							1			
, , , ,	Peak Hour	Leq Day		q Evening		Night		Ldn	-	NEL
Autos: Medium Trucks:	60.9 62.4		3.7).5		5.7 4.4	54.0 55.3		61.3 62.7		61 62
Heavy Trucks:	65.3		3.5 3.7		+.4 4.8	56.9		64.8		64
Vehicle Noise:	68.0	-	5.3		+.o 9.8	60.3		68.0		68
			5.5	5	9.0	00.3)	00.0	,	00
Centerline Distance to	NUISE COM	our (in leet)		70 dBA	6F	dBA	1	60 dBA	55	dBA
		1	dn:	22		47	L	102		20
									-	

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL Project Name: The Park @ Live Oak Job Number: 11112 Scenario: OY 2020 Without Project Road Name: Rivergrade Rd. Road Segment: s/o Live Oak Av. SITE SPECIFIC INPUT DATA NOISE MODEL INPUTS Site Conditions (Hard = 10, Soft = 15) Highway Data Average Daily Traffic (Adt): Peak Hour Percentage: 14.673 vehicles Autos: 15 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1,467 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 50 mph Vehicle Mix Near/Far Lane Distance: 12 feet Day Evening Night Daily VehicleType Site Data Autos: 72.4% 9.2% 18.4% 85.65% Medium Trucks: 77.7% 4.8% 17.5% 9.12% Barrier Height: Barrier Type (0-Wall, 1-Berm): 0.0 feet Heavy Trucks: 84.3% 2.7% 13.0% 5.23% 0.0 Centerline Dist. to Barrier: Centerline Dist. to Observer: 30.0 feet Noise Source Elevations (in feet) 30.0 feet Autos: 0.000 Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Grade Adjustment: 0.0 Heavy Trucks: 8.004 Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Road Elevation: 0.0 feet Autos: 29.816 Medium Trucks: 29.518 Road Grade: 0.0% Left View: -90.0 degrees Heavy Trucks: Right View: 29.547 90.0 degrees FHWA Noise Model Calculation VehicleType REMEL Autos: 70. Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten 70.20 -1.30 3.26 -1.20 -4.49 0.000 0.000 -11.03 -1.20 Medium Trucks: 81.00 3.33 -4.86 0.000 0.000 Heavy Trucks: 85.38 -13.45 3.32 -1.20 -5.77 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour CNEL Leq Day Leq Evening 68.8 65.8 Leq Night Ldn 71.4 71.7 Autos 71.0 64.1 Medium Trucks: 72.1 70.2 64.1 65.0 72.4 72.6 Heavy Trucks: 74.1 72.5 63.6 65.7 73.6 73.7 Vehicle Noise: 77.3 75.6 69.4 69.7 77.3 77.5 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 93 200 430 926 CNEL: 95 205 442 953

	FHV	VA-RD-77-108 HIG	HWAY N	IOISE PREDIC	TION MO	DEL			
Road Nam	io: OY 2020 W ne: Stewart Av. nt: s/o Live Oa				ct Name: Number:	The Park @ 11112	Live Oa	k	
	SPECIFIC IN	IPUT DATA				NODEL IN			
Highway Data				Site Condition	s (Hard =	10, Soft =	15)		
Average Daily	Traffic (Adt):	6,771 vehicles				Autos: 15	5		
Peak Hour	Percentage:	10%		Medium T	rucks (2 /	Axles): 15	5		
Peak H	lour Volume:	677 vehicles		Heavy Tr	ucks (3+ /	Axles): 15	5		
	hicle Speed:	30 mph	-	Vehicle Mix					-
Near/Far La	ne Distance:	12 feet	F	VehicleTyp)e	Day Eve	ning N	ight	Daily
Site Data			-		Autos:	72.4% 9	9.2% 1	8.4%	85.65%
Ba	rrier Heiaht:	0.0 feet		Medium	Trucks:	77.7% 4	4.8% 1	7.5%	9.12%
Barrier Type (0-W		0.0		Heavy	Trucks:	84.3% 2	2.7% 1	3.0%	5.23%
Centerline Di	. ,	40.0 feet	H	Noise Source I	Elovation	c (in foot)			
Centerline Dist.	to Observer:	40.0 feet	1	Aut		000			
Barrier Distance	to Observer:	0.0 feet		Medium Truc		297			
Observer Height	Above Pad):	5.0 feet		Heavy Truc			de Adjust	ment	0.0
P	ad Elevation:	0.0 feet		,					
Ro	ad Elevation:	0.0 feet	1	Lane Equivale	nt Distan	ce (in feet)			
	Road Grade:	0.0%		Aut		862			
	Left View:	-90.0 degrees		Medium Truc		640			
	Right View:	90.0 degrees		Heavy Truc	ks: 39.	661			
FHWA Noise Mod	el Calculation	s							
VehicleType	REMEL	Traffic Flow Di	istance	Finite Road	Fresr	nel Barri	er Atten	Berm	n Atten
Autos:	61.75	-2.44	1.3	7 -1.20)	-4.59	0.000		0.000
Medium Trucks:	73.48	-12.17	1.4	1 -1.20)	-4.87	0.000		0.000
Heavy Trucks:	79.92	-14.59	1.4	1 -1.20)	-5.56	0.000		0.000
Unmitigated Nois	e Levels (with	out Topo and barr	rier atten	uation)					
VehicleType	Leq Peak Hou	r Leq Day	Leq E	vening Lee	q Night	Ldn		CN	EL
Autos:	59			54.3	52.6		59.9		60.2
Medium Trucks:	61			53.5	54.4		61.8		62.0
Heavy Trucks:	65			55.0	57.1		65.1		65.2
Vehicle Noise:	67	.7 66.0		59.1	59.9	9	67.6		67.8
Centerline Distan	ce to Noise Co	ontour (in feet)							
					5 dBA	60 dB		55 d	
		Ldn:			60	128		27	
		CNEL:	2	8	61	132		28	3

EHWA-PD-77-108 HIGHWAY NOISE PREDICTION MODEL

Wednesday, May 02, 2018

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	VA-RD-77-108	HIGHWA	AY NOI	SE PI	REDICT	ION MO	DEL			
	Baldwin Pa						Name: umber:		ark @ Live	Oak	
	PECIFIC IN	IPUT DATA							l input	s	
Highway Data				Site	e Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Tr	raffic (Adt):	13,419 vehicle	es					Autos:	15		
Peak Hour P	ercentage:	10%					ucks (2 A		15		
	ur Volume:	1,342 vehicle	S		He	avy Tru	cks (3+ A	Axles):	15		
	icle Speed:	40 mph		Vel	hicle	Mix					
Near/Far Lane	e Distance:	48 feet			Veh	icleType	,	Day	Evening	Night	Daily
Site Data							Autos:	72.4%	9.2%	18.4%	85.65%
Barri	ier Heiaht:	0.0 feet			M	edium T	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	II, 1-Berm):	0.0			ŀ	Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dist.		50.0 feet		No	ise So	ource E	levation	s (in f	eet)		
Centerline Dist. to		50.0 feet				Auto	s: 0.0	000	,		
Barrier Distance to		0.0 feet		/	Mediu	m Truck	s: 2.:	297			
Observer Height (A	,	5.0 feet			Heav	y Truck	s: 8.	004	Grade Ad	iustment	t: 0.0
	Elevation:	0.0 feet		-							
	Elevation:	0.0 feet		Lai	ne Eq		t Distan		teet)		
Ro	oad Grade:	0.0%				Auto					
	Left View:	-90.0 degre		1		m Truck					
ŀ	Right View:	90.0 degre	es		Heav	ry Truck	s: 43.	966			
FHWA Noise Model											
VehicleType	REMEL	Traffic Flow	Distan		Finite	Road	Fresr	-	Barrier Att		rm Atten
Autos:	66.51	-0.72		0.71		-1.20		-4.65		000	0.00
Medium Trucks:	77.72	-10.45		0.74		-1.20		-4.87		000	0.000
Heavy Trucks:	82.99	-12.87		0.73		-1.20		-5.43	0.0	000	0.000
Unmitigated Noise			-					1		-	
	eq Peak Hou			q Ever	·	Leq	Night		Ldn	-	NEL
Autos: Medium Trucks:	65 66		63.1 64.9		60.1 58.8		58.4 59.7		65.7 67.1		66.0 67.3
			64.9 68.1		58.8		59.7 61.3		67.1		
Heavy Trucks: Vehicle Noise:	69 72		68.1 70.7		59.2 64.2		61.3		69.2 72.4	-	69.3 72.5
			-				2		. 2.		
Contorlino Diotonoo	to Noine C										
Centerline Distance	to Noise Co	ontour (in feet	,	70 dB/	4	65	dBA	6	0 dBA	55	dBA
Centerline Distance	to Noise Co) Ldn:	70 dBA 72	4		dBA 55	e	0 dBA 334		i dBA 719

	FHWA-	RD-77-108 HIG	HWAY	NOISE PI	REDICT		DEL			
Scenario:	OY 2020 Witho	ut Project			Projec	t Name:	The P	ark @ Live	Oak	
Road Name: I	Maine Av.				Job N	lumber: `	11112			
Road Segment:	s/o Arrow Hwy.									
	ECIFIC INPU	T DATA						L INPUT	s	
Highway Data				Site Con	ditions	(Hard =	10, S	oft = 15)		
Average Daily Trai	fic (Adt): 11,	725 vehicles				,	Autos.	15		
Peak Hour Per	centage:	10%		Me	dium Tr	ucks (2 A	xles).	15		
Peak Hour	Volume: 1,1	73 vehicles		He	avy Tru	cks (3+ A	xles).	15		
Vehicle	e Speed:	35 mph		Vehicle	Mix					
Near/Far Lane I	Distance:	12 feet			icleType	9	Dav	Evening	Night	Daily
Site Data							72.4%	•	18.4%	
Barrio	Height:	0.0 feet		M	edium T	rucks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall,		0.0		1	leavy T	rucks:	84.3%	2.7%	13.0%	5.239
Centerline Dist. to		0.0 feet								
Centerline Dist. to C		0.0 feet		Noise So				eet)		
Barrier Distance to C		0.0 feet			Auto		000			
Observer Height (Abo	ve Pad):	5.0 feet			m Truck		297	Crada Ad	instrant	
Pad E	levation:	0.0 feet		Heav	ry Truck	S: 8.0	04	Grade Ad	usunem	0.0
Road E	levation:	0.0 feet		Lane Eq	uivalen	t Distand	e (in	feet)		
Roa	d Grade:	0.0%			Auto	is: 39.8	362			
L	eft View: -9	0.0 degrees		Mediu	m Truck	is: 39.6	640			
Rig	ght View: 9	0.0 degrees		Heav	y Truck	:s: 39.0	61			
FHWA Noise Model C	alculations									
VehicleType F	REMEL Tra	affic Flow D	istance	Finite	Road	Fresn	el	Barrier Att	en Ber	m Atten
Autos:	64.30	-0.73	1.3	37	-1.20		-4.59	0.0	000	0.00
Medium Trucks:	75.75	-10.45	1.4		-1.20		-4.87		000	0.00
Heavy Trucks:	81.57	-12.87	1.4	41	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise Le										
	g Peak Hour	Leq Day		vening	Leq	Night		Ldn		NEL
Autos:	63.7	61.6		58.6		56.9		64.2		64.
Medium Trucks:	65.5	63.6		57.5		58.4		65.8		66.
Heavy Trucks:	68.9	67.4		58.4		60.5		68.5		68.
Vehicle Noise:	71.4	69.6		63.0		63.6		71.3	3	71.
Centerline Distance to	o Noise Conto	our (in feet)	70							10.4
		I also		dBA		dBA		60 dBA		dBA
		Ldn: CNEL:		49 50		05 08		226 232		88 00

	G INIA		REDICTION				
Scenario: OY 2020 Without Project					ark @ Live	Oak	
Road Name: Longden Av.			Job Num	ber: 11112			
Road Segment: w/o Myrtle Av.							
SITE SPECIFIC INPUT DATA					L INPUT	s	
Highway Data		Site Cor	nditions (Ha	ard = 10, S	oft = 15)		
Average Daily Traffic (Adt): 14,556 vehicles				Autos:	15		
Peak Hour Percentage: 10%		Me	edium Truck	s (2 Axles):	15		
Peak Hour Volume: 1,456 vehicles		He	avy Trucks	(3+ Axles):	15		
Vehicle Speed: 40 mph		Vehicle	Mix				
Near/Far Lane Distance: 12 feet		Veh	icleType	Day	Evening	Night	Daily
Site Data			Auto	os: 72.4%	6 9.2%	18.4%	85.65
Barrier Height: 0.0 feet		М	edium Truc	ks: 77.7%	4.8%	17.5%	9.12
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.3%	2.7%	13.0%	5.23
Centerline Dist. to Barrier: 30.0 feet		Noise S	ource Eleva	ations (in f	eet)		
Centerline Dist. to Observer: 30.0 feet			Autos:	0.000	,		
Barrier Distance to Observer: 0.0 feet		Mediu	m Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet		Hear	v Trucks:	8.004	Grade Ad	justment	: 0.0
Pad Elevation: 0.0 feet		-					
Road Elevation: 0.0 feet		Lane Eq	uivalent Di	<u> </u>	feet)		
Road Grade: 0.0%			Autos:	29.816			
Left View: -90.0 degrees			m Trucks:	29.518			
Right View: 90.0 degrees		Hear	vy Trucks:	29.547			
FHWA Noise Model Calculations							
	Distance			resnel	Barrier Att		m Atter
Autos: 66.51 -0.37		.26	-1.20	-4.49		000	0.00
Medium Trucks: 77.72 -10.09		.33	-1.20	-4.86		000	0.00
Heavy Trucks: 82.99 -12.51		.32	-1.20	-5.77	0.0	000	0.00
Unmitigated Noise Levels (without Topo and ba		,					
VehicleType Leq Peak Hour Leq Day	,	Evening	Leq Nig		Ldn		NEL
		63.1		61.3	68.6		69
Autos: 68.2 66		61.8		62.6 64.2	70.1 72.2		70
Medium Trucks: 69.8 67						2	72
Medium Trucks: 69.8 67 Heavy Trucks: 72.6 71	.1	62.1				-	
Medium Trucks: 69.8 67 Heavy Trucks: 72.6 71 Vehicle Noise: 75.3 73	.1	62.1 67.1		67.7	75.3	3	75
Medium Trucks: 69.8 67 Heavy Trucks: 72.6 71 Vehicle Noise: 75.3 73	.1 .6	67.1	1	67.7		-	
Medium Trucks: 69.8 67 Heavy Trucks: 72.6 71	.1 .6 7			67.7	75.3 60 dBA 314	- 55	75 dBA

FI	HWA-RD-77-108 HIG	HWAY	NOISE P	REDICT		DEL			
Scenario: OY 2020 Road Name: Longden Road Segment: e/o Myrtle	Av.				Name: 1 lumber: 1		rk @ Live	Oak	
SITE SPECIFIC	INPUT DATA						INPUTS	5	
Highway Data			Site Cor	nditions	(Hard =	10, So	ft = 15)		
Average Daily Traffic (Adt):	18,595 vehicles					Autos:	15		
Peak Hour Percentage:	10%		Me	edium Tri	ucks (2 A	xles):	15		
Peak Hour Volume:	1,860 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Vehicle Speed:	40 mph		Vehicle	Mix					
Near/Far Lane Distance:	12 feet			nicleType		Day	Evening	Night	Daily
Site Data			101			72.4%	9.2%	18.4%	85.65%
Barrier Height:	0.0 feet		M	ledium Ti	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wall, 1-Berm):				Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dist. to Barrier:				-					
Centerline Dist. to Observer:			Noise S		levations		et)		
Barrier Distance to Observer:				Auto	0.0				
Observer Height (Above Pad):	5.0 feet			m Truck			O		0.0
Pad Elevation:			Hea	vy Truck	s: 8.0	004	Grade Adj	ustment:	0.0
Road Elevation:	0.0 feet		Lane Eq	uivalen	t Distand	e (in f	eet)		
Road Grade:	0.0%			Auto	s: 29.8	316			
Left View:	-90.0 degrees		Mediu	m Truck	s: 29.5	518			
Right View:	90.0 degrees		Hea	vy Truck	s: 29.5	547			
FHWA Noise Model Calculatio	ons								
VehicleType REMEL	Traffic Flow D	istance	Finite	Road	Fresn	el E	Barrier Atte	en Berr	n Atten
Autos: 66.5	1 0.70	3.2	26	-1.20		-4.49	0.0		0.000
Medium Trucks: 77.7	2 -9.03	3.3	33	-1.20		-4.86	0.0	00	0.000
Heavy Trucks: 82.9	9 -11.45	3.3	32	-1.20		-5.77	0.0	00	0.000
Unmitigated Noise Levels (wi	thout Topo and barr	rier atte	nuation)						
VehicleType Leq Peak H		Leq E	vening		Night		Ldn		IEL
	69.3 67.1		64.1		62.4		69.7		70.0
	70.8 68.9		62.8		63.7		71.1		71.3
	73.7 72.1		63.2		65.3		73.2		73.3
Vehicle Noise:	76.4 74.7		68.2		68.7		76.4		76.5
Centerline Distance to Noise	Contour (in feet)								
			dBA		dBA		0 dBA		dBA
	Ldn:		30		72		370		98
	CNEL:	. 1	32	1	76		380	8	19

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	FH\	WA-RD-77-108	HIGH	IWAY N	OISE P	REDICT	ION MO	DEL			
	e: Live Oak A						t Name: lumber:		ark @ Live	Oak	
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				5	Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily 1	. ,	27,883 vehicl	es					Autos:			
Peak Hour F	0	10%					ucks (2 /				
	our Volume:	2,788 vehicle	s		He	eavy Tru	cks (3+)	Axles):	15		
	icle Speed:	40 mph		١	/ehicle	Mix					
Near/Far Lan	e Distance:	48 feet			Veh	icleType	Э	Day	Evening	Night	Daily
Site Data							Autos:	72.4%	9.2%	18.4%	85.65%
Bari	rier Height:	0.0 feet			М	edium T	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0			1	Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis	t. to Barrier:	48.0 feet			Voise S	ource E	levation	s (in f	eet)		
Centerline Dist. t	o Observer:	48.0 feet		-		Auto		000	,		
Barrier Distance t	o Observer:	0.0 feet			Mediu	m Truck		297			
Observer Height (A	Above Pad):	5.0 feet				vy Truck		004	Grade Ad	iustmen	t: 0.0
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		L	.ane Eq		t Distan		feet)		
F	load Grade:	0.0%				Auto		869			
	Left View:	-90.0 degre				m Truck		657			
	Right View:	90.0 degre	es		Hear	vy Truck	:s: 41.	678			
FHWA Noise Mode	I Calculation	S									
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite	Road	Fresr	nel	Barrier Att	en Be	rm Atten
Autos:	66.51	2.45		1.05		-1.20		-4.64		000	0.00
Medium Trucks:	77.72			1.09		-1.20		-4.87		000	0.00
Heavy Trucks:	82.99	-9.69		1.08	3	-1.20		-5.45	0.0	000	0.00
Unmitigated Noise	Levels (with	out Topo and	barrie	er atten	uation)						
	Leq Peak Hou	ur Leq Da		Leg Ev	· ·		Night		Ldn		NEL
Autos:	68		66.6		63.7		61.9		69.3		69.
Medium Trucks:	70		68.4		62.3		63.2	-	70.6	-	70.
Heavy Trucks:	73		71.7		62.7		64.8	-	72.7		72.
Vehicle Noise:	75	i.9	74.2		67.7		68.2	2	75.9	Э	76.
Centerline Distanc	e to Noise C	ontour (in fee	t)							1	
			L	70 a			dBA	6	60 dBA		dBA
		-	Ldn:	11	-	_	56		551		186
		С	NEL:	12	2	2	63		566	1	,218

Road Name.	: OY 2020 Wit	hout Project										
noud obginom	: Arrow Hwy. : e/o Peck Rd.			Project Name: The Park @ Live Oak Job Number: 11112								
SITE S	PECIFIC INP	UT DATA			N	DISE N	IODE		s			
Highway Data				Site Cor	ditions (Hard =	10, So	oft = 15)				
Average Daily Ti	raffic (Adt): 2	6,917 vehicles				/	Autos:	15				
Peak Hour P	ercentage:	10%		Me	dium Tru	cks (2 A	xles):	15				
Peak Ho	ur Volume: 2	,692 vehicles		He	avy Truci	ks (3+ A	xles):	15				
Vehi	icle Speed:	45 mph		Vehicle	Mix							
Near/Far Lane	e Distance:	48 feet			icleType		Dav	Evening	Night	Daily		
Site Data							72.4%	•	18.4%			
	ior Hoight	0.0 feet		М	edium Tru		77.7%		17.5%			
Barrier Type (0-Wa	ier Height:	0.0 reet			leavy Tru		84.3%		13.0%			
Centerline Dist.	. ,	40.0 feet										
Centerline Dist. to		40.0 feet		Noise Se	ource Ele			eet)				
Barrier Distance to		0.0 feet			Autos		000					
Observer Height (A		5.0 feet			m Trucks		297					
	d Elevation:	0.0 feet		Heav	y Trucks	8.0	004	Grade Ad	justment.	: 0.0		
	d Elevation:	0.0 feet		Lane Eq	uivalent	Distand	e (in	feet)				
Re	oad Grade:	0.0%			Autos	32.3	388					
	Left View:	-90.0 degrees		Mediu	m Trucks	32.1	114					
1	Right View:	90.0 degrees		Heav	y Trucks	32.1	141					
FHWA Noise Model				1								
VehicleType		Traffic Flow	Distanc		Road	Fresn		Barrier Att		m Atter		
Autos:	68.46	1.79		2.73	-1.20		-4.59		000	0.00		
Medium Trucks:	79.45	-7.94		2.78	-1.20		-4.87		000	0.00		
Heavy Trucks:	84.25	-10.36		2.78	-1.20		-5.56	0.0	000	0.00		
Unmitigated Noise			- T	,								
<i>,</i> ,	eq Peak Hour	Leq Day		q Evening	Leq N	•		Ldn		NEL		
Autos:	71.8).6 .2	66.6		64.9		72.2		72		
Medium Trucks:	73.1 75.5		.2 3.9	65.1 65.0		66.0 67.1		73.4		73 75		
Heavy Trucks: Vehicle Noise:	75.5		3.9 3.7	65.0 70.4		67.1 70.8		75.0		75		
).7	70.4		70.8		78.5)	78		
Centerline Distance	to Noise Con	tour (in feet)		70 dBA	65 d	DA		60 dBA	57	dBA		
		1.	dn:	147	65 d 31		e	682		ава 470		
		CNF		147	31			701		470 511		

	-			MODEL			
Scenario: OY 2020 Without Project					Park @ Live	Oak	
Road Name: Arrow Hwy.			Job Num	ber: 1111	2		
Road Segment: e/o Longden Av.							
SITE SPECIFIC INPUT DATA					EL INPUT	S	
Highway Data		Site Cor	ditions (Ha		,		
Average Daily Traffic (Adt): 46,253 vehicles				Autos			
Peak Hour Percentage: 10%			dium Truck				
Peak Hour Volume: 4,625 vehicles		He	avy Trucks	(3+ Axles): 15		
Vehicle Speed: 45 mph		Vehicle	Mix				
Near/Far Lane Distance: 48 feet		Veh	icleType	Day	Evening	Night	Daily
Site Data			Auto	os: 72.4	% 9.2%	18.4%	85.65
Barrier Height: 0.0 feet		M	edium Truc	ks: 77.7	% 4.8%	17.5%	9.129
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.3	% 2.7%	13.0%	5.23
Centerline Dist. to Barrier: 40.0 feet		Noise Se	ource Eleva	ations (in	feet)		
Centerline Dist. to Observer: 40.0 feet			Autos:	0.000	,		
Barrier Distance to Observer: 0.0 feet		Mediu	m Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet			/v Trucks:	8.004	Grade Ad	justment	: 0.0
Pad Elevation: 0.0 feet			,				
Road Elevation: 0.0 feet		Lane Eq	uivalent Di		n feet)		
Road Grade: 0.0%			Autos:	32.388			
Left View: -90.0 degrees			m Trucks:	32.114			
Right View: 90.0 degrees		Heav	y Trucks:	32.141			
FHWA Noise Model Calculations							
VehicleType REMEL Traffic Flow	Distanc	e Finite	Road	Fresnel	Barrier Att	ten Ber	m Atter
Autos: 68.46 4.14	-	2.73	-1.20	-4.59		000	0.00
Medium Trucks: 79.45 -5.58	-	2.78	-1.20	-4.87		000	0.00
Heavy Trucks: 84.25 -8.00	2	2.78	-1.20	-5.56	6 0.0	000	0.00
Unmitigated Noise Levels (without Topo and ba	_	,	1	-			
VehicleType Leq Peak Hour Leq Day		Evening	Leq Nig		Ldn		NEL
Autos: 74.1 71.	-	69.0		67.2	74.0	-	74
Medium Trucks: 75.4 73.	-	67.5		68.3	75.	-	75
Heavy Trucks: 77.8 76.	-	67.3		69.4	77.4	-	77.
Vehicle Noise: 80.8 79.	1	72.8		73.2	80.8	В	81.
Centerline Distance to Noise Contour (in feet)	_						
		70 dBA	65 dB/	4	60 dBA		dBA
	. .	211	454		979	2.	108
Ldı CNF		217	467		1.006		167

	FH\	VA-RD-77-108 H	IGHWAY	NOISE P	REDICT	ION MOI	DEL			
Road Nam	io: OY 2020 W ie: Arrow Hwy. nt: e/o I-605 F					Name: 1 lumber: 1		ark @ Live	Oak	
SITE	SPECIFIC IN	IPUT DATA			P	NOISE N	IODE	L INPUTS	5	
Highway Data				Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	31,969 vehicles					Autos:	15		
Peak Hour	Percentage:	10%		Me	dium Tr	ucks (2 A	xles):	15		
Peak H	lour Volume:	3,197 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Ve	hicle Speed:	45 mph		Vehicle	Mix					
Near/Far La	ne Distance:	48 feet			icleType	,	Day	Evening	Night	Daily
Site Data							72.4%	•	18.4%	
Ba	rrier Height:	0.0 feet		М	edium T	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-W		0.0			Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Di	. ,	40.0 feet		Noice C	ouroo E	levations	in f	2041		
Centerline Dist.	to Observer:	40.0 feet		NOISE 3	Auto		000	el)		
Barrier Distance	to Observer:	0.0 feet		11-1-1	m Truck	0.0				
Observer Height	Above Pad):	5.0 feet			/v Truck		.97)04	Grade Adj	ustment	0.0
P	ad Elevation:	0.0 feet		Tiean	ly much	3. 0.0	/04	onddo maj	uoumonia	0.0
Ro	ad Elevation:	0.0 feet		Lane Eq	uivalen	t Distand	e (in :	feet)		
	Road Grade:	0.0%			Auto		388			
	Left View:	-90.0 degrees			m Truck					
	Right View:	90.0 degrees		Heav	/y Truck	s: 32.1	141			
FHWA Noise Mod	el Calculation	s		1						
VehicleType	REMEL	Traffic Flow	Distance	Finite	Road	Fresn	el	Barrier Atte	en Ber	m Atten
Autos:	68.46	2.54	2.	73	-1.20		-4.59	0.0	00	0.000
Medium Trucks:	79.45	-7.19	2.	78	-1.20		-4.87	0.0	00	0.000
Heavy Trucks:	84.25	-9.61	2.	78	-1.20		-5.56	0.0	00	0.000
Unmitigated Nois	e Levels (with	out Topo and ba	arrier atte	enuation)						
VehicleType	Leq Peak Hou	ır Leq Day	Leq	Evening	Leq	Night		Ldn		VEL
Autos:	72			67.4		65.6		73.0		73.3
Medium Trucks:	73			65.9		66.7		74.1		74.3
Heavy Trucks:	76			65.7		67.8		75.8		75.9
Vehicle Noise:	79	.2 77	.5	71.2		71.6		79.2		79.4
Centerline Distan	ce to Noise Co	ontour (in feet)								
) dBA		dBA	6	60 dBA	55	dBA
		La		165		55		765		648
		CNE	EL:	169	3	65		786	1,	694

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	FH\	VA-RD-77-108	HIGH	NAY NO	DISE P	REDICTIO	ON MO	DEL			
Scenario	: OY 2020 W	/ithout Project				Project I	Vame:	The Pa	ark @ Live	Oak	
Road Name	e: Arrow Hwy					Job NL	ımber:	11112			
Road Segment	t: w/o Rivergi	ade Rd.									
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				S	ite Cor	nditions (Hard =	10, Sc	oft = 15)		
Average Daily T	raffic (Adt):	26,801 vehicle	es					Autos:	15		
Peak Hour F	Percentage:	10%				edium Tru	•		15		
Peak Ho	our Volume:	2,680 vehicle	S		He	eavy Truc	ks (3+ A	Axles):	15		
	icle Speed:	45 mph		V	ehicle	Mix					
Near/Far Lan	e Distance:	48 feet		Ē		icleType		Day	Evening	Night	Daily
Site Data						A	utos:	72.4%	9.2%	18.4%	85.65%
Barr	ier Heiaht:	0.0 feet			М	edium Tru	ucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0				Heavy Tru	ucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dist		40.0 feet		N	oise S	ource Ele	vation	s (in fe	eet)		
Centerline Dist. to		40.0 feet				Autos	: 0.0	000			
Barrier Distance to		0.0 feet			Mediu	m Trucks	: 2.:	297			
Observer Height (A	,	5.0 feet			Hear	vy Trucks	: 8.0	004	Grade Ad	justment	: 0.0
	d Elevation:	0.0 feet				·					
	d Elevation:	0.0 feet		L	ane Eq	uivalent			feet)		
R	oad Grade:	0.0%				Autos					
	Left View:	-90.0 degre	es			m Trucks		114			
	Right View:	90.0 degre	es		Hear	vy Trucks	: 32.	141			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Dist	ance	Finite	Road	Fresr		Barrier Att		rm Atten
Autos:	68.46	1.77		2.73		-1.20		-4.59		000	0.00
Medium Trucks:	79.45	-7.95		2.78		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-10.37		2.78		-1.20		-5.56	0.0	000	0.00
Unmitigated Noise								1		-	
	Leq Peak Hou			Leq Eve		Leq N	· ·		Ldn		NEL
Autos:	71		69.6		66.6		64.9		72.2	-	72.
Medium Trucks:	73		71.2		65.1		66.0		73.4		73.
Heavy Trucks:	75		73.9		65.0		67.1		75.0		75.
Vehicle Noise:			76.7		70.4		70.8	5	78.5	0	78.
Centerline Distance	e to Noise Co	ontour (in feet)	70 dł	24	65 0	ID A	6	0 dBA	55	dBA
			I dn:	147		31		1 0	680		465
			Lan: VFL:	147		31	-		699		506
		Ci	VEL:	151		32	5		099	1,	500

Average Daily Traffic (Ad!): 25,978 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 2,598 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Stre Data Autos: 15 Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Observer: 40.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Observer: 0.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: 90.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees FHWA Noise Model Calculations	% 85.65 % 9.12
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 25,978 vehicles Autos: 15 Peak Hour Volume: 2,598 vehicles Medium Trucks (2 Axles): 15 Vehicle Speed: 45 mph Heavy Trucks (34 Axles): 15 Vehicle Speed: 45 mph Vehicle Type Day [Evening] Night Site Data Dot feet Autos: 72.4% 9.2% 18.4 Barrier Heightt: 0.0 feet Medium Trucks: 2.1% 18.4 Barrier Type (0-Wall, 1-Berm): 0.0 Noise Source Elevations (in feet) 13.0 Centerline Dist. to Observer: 0.0 feet Medium Trucks: 2.97 13.0 Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 0.000 Medium Trucks: 2.97 Observer Height (Above Pad): 5.0 feet Medium Trucks: 8.004 Grade Adjustme Road Elevation: 0.0 feet Autos: 32.388 Medium Trucks: 32.388 Medium Trucks: 32.14 Right View: 90.0 degrees Heavy Trucks: 32.14 FHWA Noise Model Calculations Vehicle Type RefMEL Traffic Flow Distance Finite Road Ferseel Barrier Attern B </td <td>% 85.65 % 9.12</td>	% 85.65 % 9.12
Average Daily Traffic (Adt): 25,978 vehicles Autos: 15 Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 2,598 vehicles Heavy Trucks (3 + Axles): 15 Vehicle Speed: 48 feet Vehicle Type Day Evening Night Site Data Autos: 77.7% 4.8% 17.5 Barrier Type (O-Wall, 1-Berm): 0.0 Medium Trucks: 77.7% 4.8% 17.5 Barrier Type (O-Wall, 1-Berm): 0.0 Noise Source Elevations (in feet) Noise Source Elevations (in feet) Centerline Dist. to Barrier: 40.0 feet Autos: 0.00 Barrier Type (Awall, 1-Berm): 0.0 feet Noise Source Elevations (in feet) Observer Height (Above Pad): 5.0 feet Autos: 0.00 Road Elevation: 0.0 feet Autos: 32.388 Road Elevation: 0.0 feet Autos: 32.388 Right View: 90.0 degrees Medium Trucks: 32.114 FHWA Noise Model Calculations Vehicle Type ReMEL Traffic Flow Distance Finite Road Fresnel Barrier Attern B	% 85.65 % 9.12
Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 2,598 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 45 mph Vehicle Mix Vehicle Type Day Evening Night Site Data Autos: 72.4% 9.2% 18.4 Barrier Height: 0.0 feet Medium Trucks: 72.4% 9.2% 18.4 Barrier Type (O-Walt, 1-Berm): 0.0 Noise Source Elevations: 13.0 Centerline Dist. to Barrier: 40.0 feet Autos: 0.000 Barrier Type (O-Walt, 1-Berm): 0.0 feet Noise Source Elevations: (in feet) Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Pad Elevation: 0.0 feet Left View: -90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 32.14 Heavy Trucks: 32.14 Heavy Trucks: 32.14 Heavy Trucks: 32.14 FHMA Noise Model Calculations VehicleType RetL Traffic Flow Distance Finite Road Fersnel Barrier Attern B	% 85.65 % 9.12
Peak Hour Volume: 2,598 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Desrever: 0.0 feet Barrier Distance to Observer: 0.0 feet Barrier Distance to Observer: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Medium Trucks: 2.297 Heavy Trucks: 8.040 Grade Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Medium Trucks: 32.141 FHWA Noise Model Calculations Traffic Flow	% 85.65 % 9.12
Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Vehicle Mix Vehicle Type Site Data Autos: Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Bern): 0.0 Centerline Dist. to Diserver: 40.0 feet Barrier Type (0-Wall, 1-Bern): 0.0 Centerline Dist. to Diserver: 40.0 feet Barrier Type (1-Wall, 1-Bern): 0.0 Centerline Dist. to Diserver: 40.0 feet Barrier Type (1-Wall, 1-Bern): 0.0 Centerline Dist. to Diserver: 0.0 feet Barrier Type (1-Wall, 1-Bern): 0.0 Centerline Dist. to Observer: 0.0 feet Barrier Type (1-Wall, 1-Bern): 0.0 Centerline Dist. to Observer: 0.0 feet Rodd Grade: 0.0 feet Road Grade: 0.0% Autos: 32.388 Medium Trucks: 32.14 Heavy Trucks: 32.14 Heavy Trucks: 32.14 FHWA Noise Model Calculations Distance Finite Road Fresnel	% 85.65 % 9.12
Near/Far Lane Distance: 48 feet Venicle Mix Day Evening Night Site Data Venicle Type Day Evening Night Barrier Height: 0.0 feet Autos: 72.4% 9.2% 18.4 Barrier Type (I-Walt, 1-Berm): 0.0 Centerline Dist. to Barrier: 40.0 feet Medium Trucks: 77.7% 4.8% 13.0 Centerline Dist. to Diserver: 40.0 feet Noise Source Elevations (in feet) Noise Source Elevations (in feet) Noise Source Elevations (in feet) Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Pad Elevation: 0.0 feet Left View: 90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 32.14 Heavy Trucks: 32.14 FHVA Noise Model Calculations VenicleType Traffic Flow Distance Finite Road Fersnel Barrier Attern B	% 85.65 % 9.12
Near/Far Lane Distance: 48 feet Site Data Autos: 72.4% 9.2% 18.4 Sate Data Autos: 72.4% 9.2% 18.4 Barrier Height: 0.0 feet Modium Trucks: 77.7% 4.8% 17.5% Barrier Type (0-Wall, 1-Berm): 0.0 Feet Heavy Trucks: 84.3% 2.7% 13.0 Centerline Dist. to Diserver: 40.0 feet Noise Source Elevations (in feet) Autos: 0.000 Barrier Tistance to Observer: 0.0 feet Autos: 0.000 Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Road Elevation: 0.0 feet Autos: 32.388 Medium Trucks: 32.14 Heavy Trucks: 32.14 Heavy Trucks: 32.14 Heavy Trucks: 32.14 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Attern B	% 85.65 % 9.12
Site Data Autos: 72.4% 9.2% 18.4 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5 Barrier Type (0-Wall, 1-Berm): 0.0 0 18.4 Medium Trucks: 77.7% 4.8% 17.5 Centerline Dist. to Diserver: 40.0 feet Noise Source Elevations (in feet) 13.0 Deserver Height (Above Pad): 5.0 feet Autos: 0.000 Medium Trucks: 2.297 Observer: 0.0 feet Medium Trucks: 2.297 Medium Trucks: 2.297 Observer: 0.0 feet Heavy Trucks: 8.004 Grade Adjustme Pad Elevation: 0.0 feet Left View: 90.0 degrees Medium Trucks: 32.114 Right View: 90.0 degrees Meavy Trucks: 32.114 Heavy Trucks: 32.114 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fersnel Barrier Attern B	% 9.12
Barrier Type (IV-Wall, 1-Berm): 0.0 Barrier Type (IV-Wall, 1-Berm): 0.0 Centerline Dist. to Diserver: 40.0 feet Centerline Dist. to Observer: 40.0 feet Barrier Type (IV-Wall, 1-Berm): 0.0 Barrier Type (IV-Wall, 1-Berm): 0.0 Barrier Type (IV-Wall, 1-Berm): 0.0 feet Barrier Type (IV-Wall, 1-Berm): 0.0 feet Centerline Dist. to Observer: 0.0 feet Barrier Type (IV-Wall, 1-Berm): 0.0 feet Road Grade: 0.0 feet Right View: -90.0 degrees Right View: 90.0 degrees VehicleType REMEL Traffic Flow VehicleType REMEL Traffic Flow	
Barrier Type (0-Wall, 1-Bern): 0.0 Heavy Trucks: 84.3% 2.7% 13.0 Centerline Dist. to Deserver: 40.0 feet Noise Source Elevations (in feet) Noise Source Elevations (in feet) Barrier Distance to Observer: 0.0 feet Autos: 0.000 Deserver: 0.0 feet Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Road Elevation: 0.0 feet Left View: 90.0 degrees Autos: 32.388 Medium Trucks: 32.14 Heavy Trucks: 32.14 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	% 5.23
Centerline Dist. to Barrier: 40.0 feet Centerline Dist. to Observer: 40.0 feet Autos:: 0.000 Barrier Distance to Observer: 0.0 feet Barrier Distance to Observer: 0.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: 90.0 degrees Right View: 90.0 degrees VehicleType REMEL VehicleType REMEL	
Centerline Dist. to Observer: 40.0 feet Barrier Distance to Observer: 0.0 feet Barrier Distance to Observer: 0.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: 90.0 degrees Right View: 90.0 degrees VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Attern B	
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Pad Elevation: 0.0 feet Let view: 90.0 feet Latt View: 90.0 degrees Right View: -90.0 degrees Medium Trucks: 32.114 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustme Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Road Elevation: 0.0 feet Autos: 32.388 Left View: -90.0 degrees Medium Trucks: 32.14 Right View: 90.0 degrees Heavy Trucks: 32.14 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	
Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Autos: 32.388 Left View: 90.0 degrees Right View: 90.0 degrees Heavy Trucks: 32.14 FHWA Noise Model Calculations Distance Finite Road VehicleType REMEL Traffic Flow Distance Finite Road	nt: 0.0
Road Grade: 0.0% Autos: 32.388 Left View: -90.0 degrees Medium Trucks: 32.114 Right View: 90.0 degrees Heavy Trucks: 32.141 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	. 0.0
Left View: -90.0 degrees Medium Trucks: 32.114 Right View: 90.0 degrees Heavy Trucks: 32.141 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	
Right View: 90.0 degrees Heavy Trucks: 32.141 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Berrier Atten B	
FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten B	
Autos: 68.46 1.64 2.73 -1.20 4.50 0.000	lerm Atter
	0.00
Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000	0.00
Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000	0.00
Unmitigated Noise Levels (without Topo and barrier attenuation)	
	CNEL
Autos: 71.6 69.4 66.5 64.7 72.1	
Medium Trucks: 72.9 71.1 65.0 65.8 73.2	72
Heavy Trucks: 75.3 73.8 64.8 66.9 74.9	73
Vehicle Noise: 78.3 76.6 70.3 70.7 78.3	73 75
Centerline Distance to Noise Contour (in feet)	73
	73 75 78
Ldn: 144 309 666 CNEL: 148 318 685	73 75

FHWA-RD-77-108 HIG	HWAY NOIS	= PREDICTIO	MODEL							
Scenario: OY 2020 Without Project Road Name: Arrow Hwy. Road Segment: w/o Maine Av.		Project Name: The Park @ Live Oak Job Number: 11112								
SITE SPECIFIC INPUT DATA			ISE MODE		s					
Highway Data	Site	Conditions (H	ard = 10, S	oft = 15)						
Average Daily Traffic (Adt): 50,172 vehicles			Autos:	15						
Peak Hour Percentage: 10%		Medium Truck	, ,							
Peak Hour Volume: 5,017 vehicles		Heavy Trucks	(3+ Axles):	15						
Vehicle Speed: 45 mph	Vehi	cle Mix								
Near/Far Lane Distance: 48 feet		VehicleType	Day	Evening	Night	Daily				
Site Data		Aut	os: 72.4%	9.2%	18.4%	85.65				
Barrier Height: 0.0 feet		Medium Truc	ks: 77.7%	4.8%	17.5%	9.12				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Truc	ks: 84.3%	2.7%	13.0%	5.23				
Centerline Dist. to Barrier: 40.0 feet	Nois	e Source Elev	ations (in f	eet)						
Centerline Dist. to Observer: 40.0 feet		Autos:	0.000							
Barrier Distance to Observer: 0.0 feet	Me	dium Trucks:	2.297							
Observer Height (Above Pad): 5.0 feet	F	leavy Trucks:	8.004	Grade Ad	justment.	: 0.0				
Pad Elevation: 0.0 feet	Long	Equivalant D	iotonoo (in	fa a fi						
Road Elevation: 0.0 feet Road Grade: 0.0%	Lane	Equivalent D Autos:	32.388	leel)						
0.070	14	dium Trucks:	32.300							
Left View: -90.0 degrees Right View: 90.0 degrees		leavy Trucks:	32.114							
FHWA Noise Model Calculations										
VehicleType REMEL Traffic Flow D	stance Fi	nite Road	Fresnel	Barrier Att	en Ber	m Atte				
Autos: 68.46 4.49	2.73	-1.20	-4.59	0.0	000	0.0				
Medium Trucks: 79.45 -5.23	2.78	-1.20	-4.87	0.0	000	0.0				
Heavy Trucks: 84.25 -7.65	2.78	-1.20	-5.56	0.0	000	0.0				
Unmitigated Noise Levels (without Topo and barr										
VehicleType Leq Peak Hour Leq Day Autos: 74.5 72.3	Leq Evenin	g Leq Nig 9.3	9nt 67.6	Ldn 74.9		NEL				
Autos: 74.5 72.3 Medium Trucks: 75.8 73.9	-	9.3 7.8	67.6 68.7	74.9	-	75 76				
Heavy Trucks: 75.8 73.9 Heavy Trucks: 78.2 76.6	-	7.7	68.7 69.8	76.		76				
Vehicle Noise: 81.2 79.4		3.1	73.5	81.3		81				
Centerline Distance to Noise Contour (in feet)	,	0.1		01.	-	01				
	70 dBA	65 dB	A	60 dBA	55	dBA				
		00 000				-				
Ldn:	223	480		1.033	2	226				

	FH\	WA-RD-77-108	HIGHWA	Y NO	ISE PRI	EDICTIO	N MODE	EL			
Road Nan	rio: OY 2020 W ne: Arrow Hwy nt: e/o Maine /	. ,			F	Project Ni Job Nun			k @ Live	Oak	
	SPECIFIC IN	IPUT DATA							INPUTS	5	
Highway Data				Si	te Cond	itions (H	lard = 10), Soft	t = 15)		
Average Daily	Traffic (Adt):	37,273 vehicle	s				Au	tos:	15		
Peak Hour	Percentage:	10%			Medi	ium Truci	ks (2 Axi	les):	15		
Peak H	lour Volume:	3,727 vehicles	5		Hear	vy Trucks	s (3+ Axi	les):	15		
Ve	hicle Speed:	45 mph		Ve	hicle M	ix					
Near/Far La	ne Distance:	48 feet				leType	Di	ay E	vening	Night	Daily
Site Data						Au	tos: 72	2.4%	9.2%	18.4%	85.65%
Ba	rrier Heiaht:	0.0 feet			Med	dium Truc	cks: 77	7.7%	4.8%	17.5%	9.12%
Barrier Type (0-W		0.0			He	eavy Truc	cks: 84	1.3%	2.7%	13.0%	5.23%
Centerline Di	st. to Barrier:	40.0 feet		No	ise Sou	Irce Elev	ations	in foo	đ)		
Centerline Dist.	to Observer:	40.0 feet		/**	130 000	Autos:	0.00		9		
Barrier Distance	to Observer:	0.0 feet			Medium		2.29	-			
Observer Height	(Above Pad):	5.0 feet				Trucks:	8.00		Grade Adj	ustment	0.0
P	ad Elevation:	0.0 feet						·			
	ad Elevation:	0.0 feet		La	ne Equi	ivalent D			et)		
	Road Grade:	0.0%				Autos:	32.38				
	Left View:	-90.0 degree			Medium		32.11				
	Right View:	90.0 degree	s		Heavy	Trucks:	32.14	1			
FHWA Noise Mod	el Calculation	s									
VehicleType	REMEL	Traffic Flow	Distanc	е	Finite R	Road	Fresnel	B	arrier Atte	en Ber	m Atten
Autos:	68.46	3.20		2.73		-1.20	-4	.59	0.0	00	0.000
Medium Trucks:	79.45	-6.52		2.78		-1.20	-4	.87	0.0	00	0.000
Heavy Trucks:	84.25	-8.94		2.78		-1.20	-5	.56	0.0	00	0.000
Unmitigated Nois	e Levels (with	out Topo and	barrier at	tenua	ation)						
VehicleType	Leg Peak Hou	ır Leq Day	Le	q Eve	ning	Leq Ni	ght	L	.dn	C	VEL
Autos:	73	.2	71.0		68.0		66.3		73.6		73.9
Medium Trucks:			72.6		66.5		67.4		74.8		75.0
Heavy Trucks:		.9	75.4		66.4		68.5		76.4		76.6
Vehicle Noise:	79	.9	78.1		71.8		72.3		79.9		80.1
Centerline Distan	ce to Noise C	ontour (in feet)									
				70 dB	A	65 dE			dBA		dBA
			dn:	183		393		-	48	1,	826
		Cl	IEL:	188		404		8	571	1,	877

Wednesday, May 02, 2018

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	B HIGH	WAY NO	DISE PI	REDICTIO	ON MO	DEL			
Scenario	: OY 2020 W	/ithout Project				Project I	Vame:	The Pa	ark @ Live	Oak	
Road Name	: Live Oak A	v.				Job Nu	ımber:	11112			
Road Segmen	t: w/o Rivergi	ade Rd.									
	PECIFIC IN	IPUT DATA								S	
Highway Data				S	ite Cor	ditions (Hard =	10, SC	oft = 15)		
Average Daily T	raffic (Adt):	31,971 vehicl	es					Autos:	15		
Peak Hour F	Percentage:	10%				dium Tru	•		15		
	our Volume:	3,197 vehicle	s		He	avy Truci	ks (3+ A	(xles)	15		
	icle Speed:	45 mph		V	ehicle	Mix					
Near/Far Lan	e Distance:	80 feet			Veh	icleType		Day	Evening	Night	Daily
Site Data						A	utos:	72.4%	9.2%	18.4%	85.65%
Barı	ier Heiaht:	0.0 feet			М	edium Tru	ucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0			1	Heavy Tru	ucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis		50.0 feet		N	oise Se	ource Ele	evation	s (in fe	et)		
Centerline Dist. to		50.0 feet				Autos.	: 0.0	000			
Barrier Distance te		0.0 feet			Mediu	m Trucks.	: 2.:	297			
Observer Height (A	,	5.0 feet			Heav	v Trucks.	: 8.0	004	Grade Ad	justment	: 0.0
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		L	ane Eq	uivalent			'eet)		
R	oad Grade:	0.0%				Autos.					
	Left View:	-90.0 degre				m Trucks.		122			
	Right View:	90.0 degre	es		Heav	/y Trucks.	: 30.	150			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow		ance	Finite	Road	Fresr		Barrier Att		m Atten
Autos:	68.46	2.54		3.14		-1.20		-4.65		000	0.00
Medium Trucks:	79.45	-7.19		3.20		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-9.61		3.19		-1.20		-5.43	0.0	000	0.00
Unmitigated Noise										-	
,1	Leq Peak Hou			Leq Ev	· ·	Leq N	· ·		Ldn 73.4		NEL 73.
Autos:	72		70.7		67.8		66.0				
Medium Trucks:	74		72.4		66.3		67.2		74.6	-	74.
Heavy Trucks:	76	-	75.1		66.1		68.2		76.2		76.
Vehicle Noise:			77.9		71.6		72.0	1	79.6	0	79.
Centerline Distance	e to Noise Co	ontour (in fee	t)	70 di	RA	65 d	IRΔ	6	0 dBA	55	dBA
			I dn:	220		47		-	1.019		196
		0	NFL:	220	-	48	-		1,019		257
		C	IVEL.	220	,	40	0		1,040	2,	201

	FHWA-	RD-77-108 HI	GHWAY	NOISE PI	REDICT		DEL			
	DY 2020 Witho	out Project						ark @ Live	Oak	
Road Name: L Road Segment: e		Rd.			JOD IN	lumber: '	11112			
	ECIFIC INPU	T DATA						L INPUT	s	
Highway Data				Site Con	ditions	(Hard =	10, S	oft = 15)		
Average Daily Traf	fic (Adt): 34,	512 vehicles				,	Autos:	15		
Peak Hour Pere	centage:	10%		Me	dium Tr	ucks (2 A	(xles):	15		
Peak Hour	Volume: 3,4	51 vehicles		He	avy Tru	cks (3+ A	(xles):	15		
		45 mph		Vehicle	Mix					
Near/Far Lane D	Distance:	80 feet		Veh	icleType	,	Day	Evening	Night	Daily
Site Data						Autos:	72.4%	9.2%	18.4%	85.65%
Barrier	Height:	0.0 feet		M	edium T	rucks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall,		0.0		1	Heavy T	rucks:	84.3%	5 2.7%	13.0%	5.23%
Centerline Dist. to	,	0.0 feet		Noise So	ourco E	lovation	c (in f	oot)		
Centerline Dist. to O	bserver: 5	60.0 feet		110/30 00	Auto		000			
Barrier Distance to O	bserver:	0.0 feet		Modiu	m Truck		297			
Observer Height (Abo	ve Pad):	5.0 feet			v Truck		004	Grade Ad	iustment	· 0.0
Pad E	levation:	0.0 feet							uoumoni	0.0
Road E	levation:	0.0 feet		Lane Eq				feet)		
	d Grade:	0.0%			Auto					
-		0.0 degrees			m Truck					
Rig	ght View: 9	0.0 degrees		Heav	ry Truck	s: 30.1	150			
FHWA Noise Model C										
			Distance		Road	Fresn		Barrier Att		m Atten
Autos:	68.46	2.87	3.		-1.20		-4.65		000	0.00
Medium Trucks:	79.45	-6.86	3.3		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-9.28	3.	-	-1.20		-5.43	0.0	000	0.00
Unmitigated Noise Le							1			
VehicleType Leq Autos:	Peak Hour 73.3	Leq Day 71.		Evening 68.1	Leq	Night 66.4		Ldn 73.7		NEL 74.
Autos: Medium Trucks:	73.3	71.		66.6		67.5		73.7		74. 75.
Heavy Trucks:	74.6	72.		66.5		68.6		74.5		75.
Vehicle Noise:	80.0	78.		71.9		72.3		80.0		80.
Centerline Distance to			-	7.1.0		72.0		00.0	·	00.
Centernine Distance It	ritorae Come	an (mileet)	70	dBA	65	dBA		60 dBA	55	dBA
		Ldr	1: 2	231	4	98	1	1,073	2,	311
		CNFI		238	-	12		1.103		375

	FRV	NA-RD-77-108	HIGHWA	AT N	UISE PR	EDICTIO		:L-			
	e: Live Oak A					Project Na Job Nun			@ Live	Oak	
	SPECIFIC IN	IPUT DATA					ISE MC			S	
Highway Data				S	Site Con	ditions (H	ard = 10), Soft	= 15)		
Average Daily	Traffic (Adt):	33,071 vehicle	es				Au	tos:	15		
Peak Hour	Percentage:	10%			Med	dium Truck	ks (2 Axl	es):	15		
Peak H	our Volume:	3,307 vehicles	S		Hea	avy Trucks	; (3+ Axl	es):	15		
Vei	nicle Speed:	45 mph		v	/ehicle I	<i>lix</i>					
Near/Far Lai	ne Distance:	80 feet		F		cleType	Da	ay E	vening	Night	Daily
Site Data						Au	os: 72	.4%	9.2%	18.4%	85.65
Bar	rier Heiaht:	0.0 feet			Me	dium Truc	ks: 77	.7%	4.8%	17.5%	9.129
Barrier Type (0-W		0.0			H	leavy Truc	ks: 84	.3%	2.7%	13.0%	5.23
Centerline Dis	t. to Barrier:	50.0 feet			loise So	urce Elev	ations (in feet)		
Centerline Dist.	o Observer:	50.0 feet		-		Autos:	0.00		/		
Barrier Distance	o Observer:	0.0 feet			Modiur	n Trucks:	2.29	-			
Observer Height (.	Above Pad):	5.0 feet				v Trucks:	8.004		ade Adi	ustment.	0.0
Pa	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		L	ane Equ	ivalent D			t)		
F	Road Grade:	0.0%				Autos:	30.41				
	Left View:	-90.0 degree				n Trucks:	30.12	-			
	Right View:	90.0 degree	es		Heav	y Trucks:	30.15	0			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Distan	се	Finite	Road	Fresnel	Ba	rrier Atte	en Ber	m Atten
Autos:	68.46	2.68		3.14		-1.20		.65	0.0		0.00
Medium Trucks:	79.45	-7.04		3.20		-1.20		.87	0.0		0.00
Heavy Trucks:	84.25	-9.46		3.19		-1.20	-5	.43	0.0	00	0.00
Unmitigated Noise	Levels (with	out Topo and	barrier a	ttenu	uation)						
VehicleType	Leq Peak Hou			eq Ev	ening	Leq Ni		Lo	In		NEL
, ,		.1	70.9		67.9		66.2		73.5		73.
Autos:	73				66.4		67.3		74.7		74.
Autos: Medium Trucks:	74		72.5				68.4		76.3	5	76.
Autos: Medium Trucks: Heavy Trucks:	74 76	.8	75.3		66.3						
Autos: Medium Trucks:	74	.8			66.3 71.7		72.2		79.8	3	80.
Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	74 76 79	.8	75.3 78.0		71.7		72.2				
Autos: Medium Trucks: Heavy Trucks:	74 76 79	.8 0.8 ontour (in feet	75.3 78.0	70 d	71.7 BA	65 dE	72.2	60 0	1BA	55	dBA
Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	74 76 79	.8 1.8 ontour (in feet	75.3 78.0	70 d 225	71.7 /BA 5	65 dE 484 497	72.2	60 c 1,0 1.0	1BA 43	55	80. <i>dBA</i> 246 309

	FH	WA-RD-77-108	HIGH	IWAY N	IOISE PF	REDICTIO	ON MOD	EL			
Road Nam	io: OY 2020 V ne: Live Oak A nt: w/o Arrow						Vame: T mber: 1	he Park @ 1112	Live Oa	ık	
	SPECIFIC I	NPUT DATA						ODEL IN			
Highway Data				3	Site Con	ditions (Hard = 1	0, Soft =	15)		
Average Daily	Traffic (Adt):	29,041 vehicl	es				A	utos: 18	5		
Peak Hour	Percentage:	10%				dium True		,	5		
Peak H	lour Volume:	2,904 vehicle	s		He	avy Truck	ks (3+ A)	des): 15	5		
Ve	hicle Speed:	45 mph		1	Vehicle I	Nix					
Near/Far La	ne Distance:	80 feet				icleType	Ĺ	Day Eve	ning N	ight Da	aily
Site Data						A	utos: 7	2.4% 9	9.2% 1	8.4% 85.	.65%
Ba	rrier Height:	0.0 feet			Me	edium Tru	icks: 7	7.7% 4	1.8% 1	7.5% 9.	.12%
Barrier Type (0-W		0.0			F	leavy Tru	icks: 8	4.3% 2	2.7% 1	3.0% 5.	.23%
Centerline Di	st. to Barrier:	50.0 feet		7	Noise Sc	ource Ele	vations	(in feet)			
Centerline Dist.	to Observer:	50.0 feet		É		Autos					
Barrier Distance	to Observer:	0.0 feet			Mediur	n Trucks:					
Observer Height	(Above Pad):	5.0 feet				y Trucks:			le Adiusi	tment: 0.0)
	ad Elevation:	0.0 feet		-		,			,		
	ad Elevation:	0.0 feet		1	Lane Eq			e (in feet)			
	Road Grade:	0.0%				Autos:					
	Left View:	-90.0 degre				n Trucks:					
	Right View:	90.0 degre	es		Heav	y Trucks.	30.1	50			
FHWA Noise Mod	el Calculation	15									
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite	Road	Fresne	el Barri	er Atten	Berm At	tten
Autos:	68.46	2.12		3.14	1	-1.20	-	4.65	0.000	C	0.000
Medium Trucks:	79.45			3.20	-	-1.20		4.87	0.000		0.000
Heavy Trucks:	84.25	-10.03		3.19	9	-1.20	-	5.43	0.000	C	0.000
Unmitigated Nois	e Levels (with	nout Topo and	barri	er atten	uation)						
VehicleType	Leq Peak Ho			Leq Ev		Leq N	•	Ldn		CNEL	
Autos:		2.5	70.3		67.4		65.6		73.0		73.3
Medium Trucks:		3.8	72.0		65.9		66.7		74.2		74.3
Heavy Trucks:		6.2	74.7		65.7		67.8		75.8		75.9
Vehicle Noise:	79	9.2	77.5		71.2		71.6		79.2		79.4
Centerline Distan	ce to Noise C	ontour (in fee	t)								
				70 c		65 d		60 dB	A	55 dBA	1
			Ldn:	20		44		956		2,060	
		C	NEL:	21	2	45	6	983		2,117	

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH	WA-RD-77-108	HIGHW	AY NO	ISE PI	REDICT		DEL			
	: OY 2020 V	Vith Project							ark @ Live	Oak	
	e: Myrtle Av.					Job N	lumber: 1	1112			
Road Segmen	t: n/o Longde	en Av.									
	PECIFIC IN	NPUT DATA							L INPUT	s	
Highway Data				Sit	e Cor	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily 7	raffic (Adt):	28,464 vehicl	es				A	Autos:	15		
Peak Hour F	Percentage:	10%			Me	dium Tr	ucks (2 A	xles):	15		
Peak Ho	our Volume:	2,846 vehicle	s		He	avy Tru	cks (3+ A	xles):	15		
Veh	icle Speed:	40 mph		Ve	hicle	Mix					
Near/Far Lan	e Distance:	12 feet				icleType	2	Dav	Evening	Night	Daily
Site Data								72.4%		18.4%	
Bar	rier Height:	0.0 feet			М	edium T	rucks:	77.7%	4.8%	17.5%	8.90%
Barrier Type (0-Wa	all, 1-Berm):	0.0			I	Heavy T	rucks:	84.3%	2.7%	13.0%	5.10%
Centerline Dis		30.0 feet		No	ise Se	ource E	levations	s (in fe	et)		
Centerline Dist. t		30.0 feet				Auto	s: 0.0	000			
Barrier Distance t		0.0 feet			Mediu	m Truck	s: 2.2	97			
Observer Height (A	,	5.0 feet			Heav	/y Truck	s: 8.0	04	Grade Ad	iustmen	t: 0.0
	d Elevation:	0.0 feet			_						
	d Elevation:	0.0 feet		La	ne Eq		t Distand		eet)		
F	load Grade:	0.0%				Auto m Truck					
	Left View:	-90.0 degre									
	Right View:	90.0 degre	es		Heav	/y Truck	s: 29.t	947			
FHWA Noise Mode		-									
VehicleType	REMEL	Traffic Flow	Distar		Finite	Road	Fresn		Barrier Att		rm Atten
Autos:	66.51			3.26		-1.20		-4.49	0.0		0.00
Medium Trucks:	77.72			3.33		-1.20		-4.86	0.0		0.00
Heavy Trucks:	82.99			3.32		-1.20		-5.77	0.0	000	0.00
Unmitigated Noise						1	Marter		Lala		A 11-1
VehicleType Autos:	Leq Peak Ho 71		68.9 Le	eq Evel	ning 66.0		Night 64.2		Ldn 71.6		NEL 71.
Autos: Medium Trucks:		2.6	70.7		64.6		65.4		71.6		71.
Heavy Trucks:		2.6 5.4	70.7		64.9		67.0		72.9		73.
Vehicle Noise:			76.4		70.0		70.5		75.0		78.
Conterline Distance	e to Noise C	ontour (in feel	4)								
			/								
Centernine Distanc	e to Molae o			70 dB.	A	65	dBA	6	i0 dBA	55	i dBA
Centernine Distanc			Ldn:	70 dB. 105	A		dBA 25	6	0 dBA 486		046

FHV	/A-RD-77-108 H	IGHWA	Y NOISE PI	REDICTI	ON MO	DEL			
Scenario: OY 2020 W Road Name: Peck Rd. Road Segment: s/o Arrow H	,				Name: umber:		ark @ Live	Oak	
SITE SPECIFIC IN	PUT DATA			N	IOISE N	IODE	L INPUT	s	
Highway Data			Site Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily Traffic (Adt):	23,925 vehicles					Autos:	15		
Peak Hour Percentage:	10%		Me	dium Tru	icks (2 A	(xles):	15		
Peak Hour Volume:	2.392 vehicles				cks (3+ A				
Vehicle Speed:	40 mph				- 1-	,			
Near/Far Lane Distance:	56 feet		Vehicle			_			
010 0 0			ven	icleType		Day 72.4%	Evening 9.2%	Night 18.4%	Daily
Site Data				ء edium Ti					
Barrier Height:	0.0 feet			leavy Ti		77.7% 84.3%		17.5%	8.86% 5.08%
Barrier Type (0-Wall, 1-Berm):	0.0			leavy II	ucks.	84.3%	2.7%	13.0%	5.08%
Centerline Dist. to Barrier:	60.0 feet		Noise So	ource El	evation	s (in fe	et)		
Centerline Dist. to Observer:	60.0 feet			Autos	s: 0.0	000			
Barrier Distance to Observer:	0.0 feet		Mediu	n Trucks	s: 2.1	297			
Observer Height (Above Pad):	5.0 feet		Heav	v Trucks	s: 8.0	004	Grade Ad	iustment.	0.0
Pad Elevation:	0.0 feet		-						
Road Elevation:	0.0 feet		Lane Eq				leet)		
Road Grade:	0.0%			Autos					
Left View:	-90.0 degrees			m Trucks					
Right View:	90.0 degrees		Heav	y Trucks	s: 53.	151			
FHWA Noise Model Calculation									
VehicleType REMEL	Traffic Flow	Distanc		Road	Fresh		Barrier Att		m Atten
Autos: 66.51	1.81		0.52	-1.20		-4.69	0.0		0.00
Medium Trucks: 77.72	-8.06		0.50	-1.20		-4.88	0.0		0.00
Heavy Trucks: 82.99	-10.48	-	0.50	-1.20		-5.34	0.0	000	0.00
Unmitigated Noise Levels (with		-	,						
VehicleType Leq Peak Hou			q Evening	Leq	Night		Ldn		VEL
Autos: 66			61.4		59.7		67.0		67.
Medium Trucks: 68			60.0		60.8		68.3		68.
Heavy Trucks: 70			60.3		62.4		70.4		70.
Vehicle Noise: 73		.8	65.4		65.9)	73.6	6	73.
Centerline Distance to Noise Co	ntour (in feet)								
			70 dBA		dBA	6	0 dBA		dBA
	La		104		23		480		035
	CNF	L:	106	21	29		494	11	063

			REDICTIO			
Scenario: OY 2020 With Project					Park @ Live	Oak
Road Name: Avenida Barbosa			Job Num	ber: 1111	2	
Road Segment: n/o Buena Vista St.						
SITE SPECIFIC INPUT DATA					EL INPUTS	S
Highway Data		Site Col	nditions (H	ard = 10, S	Soft = 15)	
Average Daily Traffic (Adt): 7,547 vehicles	5			Autos	: 15	
Peak Hour Percentage: 10%		Me	edium Truck	s (2 Axles)	: 15	
Peak Hour Volume: 755 vehicles		He	eavy Trucks	(3+ Axles)	: 15	
Vehicle Speed: 40 mph		Vehicle	Mix			
Near/Far Lane Distance: 12 feet			nicleType	Dav	Evening	Night Da
Site Data			Aut		Ű	18.4% 86.9
Barrier Height: 0.0 feet		N	ledium Truc	ks: 77.79		17.5% 8.2
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.39	% 2.7%	13.0% 4.7
Centerline Dist. to Barrier: 30.0 feet		Noise S	ource Elev	ations (in	foot)	
Centerline Dist. to Observer: 30.0 feet		NOISE 3	Autos:	0.000	leel)	
Barrier Distance to Observer: 0.0 feet		Madi	m Trucks:	2.297		
Observer Height (Above Pad): 5.0 feet			vv Trucks:	8.004	Grada Adi	ustment: 0.0
Pad Elevation: 0.0 feet		пеа	vy mucks.	8.004	Olduc Auj	usanichi. 0.0
Road Elevation: 0.0 feet		Lane Ec	uivalent D	istance (in	feet)	
Road Grade: 0.0%			Autos:	29.816		
Left View: -90.0 degrees	ŝ	Mediu	m Trucks:	29.518		
Right View: 90.0 degrees	i	Hea	vy Trucks:	29.547		
FHWA Noise Model Calculations						
VehicleType REMEL Traffic Flow	Distanc	e Finite	Road	Fresnel	Barrier Atte	en Berm Att
Autos: 66.51 -3.15	:	3.26	-1.20	-4.49	0.0	00 0.
Medium Trucks: 77.72 -13.36	:	3.33	-1.20	-4.86	0.0	00 0.
Heavy Trucks: 82.99 -15.78	:	3.32	-1.20	-5.77	0.0	00 0.
Unmitigated Noise Levels (without Topo and L	arrier at	tenuation)				
VehicleType Leq Peak Hour Leq Day	Leo	q Evening	Leq Nig	pht	Ldn	CNEL
	3.2	60.3		58.5	65.9) (
	4.6	58.5		59.4	66.8	; (
		58.8		60.9	68.9) (
Medium Trucks: 66.5 6	7.8	0.00				
Medium Trucks: 66.5 6 Heavy Trucks: 69.3 6		64.0	1	64.5	72.1	
Medium Trucks: 66.5 6 Heavy Trucks: 69.3 6 Vehicle Noise: 72.2 7	7.8			64.5	72.1	
Medium Trucks: 66.5 6 Heavy Trucks: 69.3 6	7.8 0.4		65 dB		72.1 60 dBA	55 dBA
Medium Trucks: 66.5 6 Heavy Trucks: 69.3 6 Vehicle Noise: 72.2 7 Centerline Distance to Noise Contour (in feet) 8	7.8 0.4	64.0				

	FH	WA-RD-77-108	IOISE PF	REDICTIO	ON MOI	DEL					
	io: OY 2020 V e: Avenida Ba nt: s/o Buena	arbosa				Project N Job Nu			rk @ Live	Oak	
SITE	SPECIFIC II	NPUT DATA								s	
Highway Data					Site Con	ditions (l	Hard =	10, So	ft = 15)		
Average Daily	Traffic (Adt):	18,136 vehicl	es				/	Autos:	15		
Peak Hour	Percentage:	10%			Me	dium Truc	cks (2 A	xles):	15		
Peak H	our Volume:	1,814 vehicle	s		He	avy Truck	(3+ A	xles):	15		
Vei	hicle Speed:	40 mph		-	Vehicle I	Mix					
Near/Far La	ne Distance:	12 feet		H		icleType		Day	Evening	Night	Daily
Site Data								72.4%	9.2%	18.4%	
Bar	rier Heiaht:	0.0 feet			Me	edium Tru	icks:	77.7%	4.8%	17.5%	8.78%
Barrier Type (0-W		0.0			ŀ	leavy Tru	icks:	84.3%	2.7%	13.0%	5.03%
Centerline Dis	. ,	30.0 feet		H	Noiso Sa	ource Ele	vation	in fo	of)		
Centerline Dist.	to Observer:	30.0 feet		Ľ	140/36 30	Autos:			ei)		
Barrier Distance	to Observer:	0.0 feet			Madiuu	n Trucks:					
Observer Height (Above Pad):	5.0 feet				y Trucks:			Grade Ad	iustment	. 0.0
Pa	ad Elevation:	0.0 feet			Tieav	y mucks.	0.0	104	0/440 / 14	uoumoni	. 0.0
Roa	ad Elevation:	0.0 feet		1	Lane Eq	uivalent l	Distand	e (in f	eet)		
F	Road Grade:	0.0%				Autos:		316			
	Left View:	-90.0 degre	es			n Trucks:					
	Right View:	90.0 degre	es		Heav	y Trucks:	29.5	547			
FHWA Noise Mode	el Calculation	ıs									
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite	Road	Fresn	el i	Barrier Att	en Ber	m Atten
Autos:	66.51	0.61		3.2	6	-1.20		4.49	0.0	000	0.000
Medium Trucks:	77.72	-9.31		3.3	3	-1.20		-4.86	0.0	000	0.000
Heavy Trucks:	82.99	-11.73		3.3	2	-1.20		-5.77	0.0	000	0.000
Unmitigated Noise	e Levels (with	nout Topo and	barrie	er atten	uation)						
VehicleType	Leq Peak Ho	ur Leq Da	/	Leq E	vening	Leq N	light		Ldn	C	NEL
Autos:	69	9.2	67.0		64.0		62.3		69.6	6	69.9
Medium Trucks:	70	0.5	68.7		62.6		63.4		70.8	3	71.0
Heavy Trucks:	73	3.4	71.9		62.9		65.0		73.0)	73.1
Vehicle Noise:	76	6.2	74.4		68.0		68.5		76.1	I	76.3
Centerline Distance	ce to Noise C	ontour (in fee	t)								
				70 0	dBA	65 d	BA	6	0 dBA	55	dBA
			Ldn:	7		160			357		'69
		С	NEL:	7	9	170	D		367	7	'90

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	HIGH	WAY N	OISE P	REDICT	ION MO	DEL			
	o: OY 2020 V	,							ark @ Live	Oak	
	e: Rivergrade					Job N	lumber:	11112			
Road Segmen	t: s/o Arrow H	Hwy.									
	SPECIFIC IN	IPUT DATA							L INPUT	S	
Highway Data				S	Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily	Fraffic (Adt):	11,148 vehicl	es					Autos:	15		
Peak Hour I	Percentage:	10%			Me	edium Tr	ucks (2 /	Axles):	15		
Peak Ho	our Volume:	1,115 vehicle	s		He	eavy Tru	cks (3+ /	Axles):	15		
Vel	nicle Speed:	40 mph			/ehicle	Mix					
Near/Far Lar	e Distance:	12 feet		- F		nicleType	9	Dav	Evening	Night	Dailv
Site Data							Autos:	72.4%	0	18.4%	
Bar	rier Heiaht:	0.0 feet			Μ	edium T	rucks:	77.7%	4.8%	17.5%	6.64%
Barrier Type (0-Wa		0.0				Heavy T	rucks:	84.3%	2.7%	13.0%	3.80%
Centerline Dis		30.0 feet			loise S	ource E	levation	s (in f	eet)		
Centerline Dist. t		30.0 feet				Auto	s: 0.	000	1		
Barrier Distance t		0.0 feet			Mediu	m Truck	(s: 2.	297			
Observer Height (/	,	5.0 feet			Hea	vy Truck	(s: 8.	004	Grade Ad	justmen	t: 0.0
	d Elevation:	0.0 feet		H							
	d Elevation:	0.0 feet		L	ane Eq		t Distan		feet)		
F	Road Grade:	0.0%				Auto		816			
	Left View:	-90.0 degre				m Truck		518			
	Right View:	90.0 degre	es		Hea	vy Truck	(s: 29.	547			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow		tance		Road	Fresr		Barrier Att		rm Atten
Autos:	66.51	-1.33		3.26		-1.20		-4.49		000	0.00
Medium Trucks:	77.72			3.33		-1.20		-4.86		000	0.000
Heavy Trucks:	82.99			3.32	-	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise			-					1		-	
	Leq Peak Hou			Leq Ev	<u> </u>	, ,	Night		Ldn		NEL
Autos:	67		65.1		62.1		60.3		67.7		68.
Medium Trucks:	67 70		65.3 68.5		59.2 59.6		60.1 61.7		67.5	-	67.
Heavy Trucks: Vehicle Noise:	70		68.5 71.4		59.6 65.3		61.		69.6 73.2		69. 73.
					65.3		65.5)	73.2	2	73.
Centerline Distanc	e to Noise C	ontour (in feel	2	70 d	BA	65	dBA	6	60 dBA	55	i dBA
			Ldn:	49			05	- `	226		187
		C	NEL:	50			08		233		501
		0.		50	-						

FHWA-	RD-77-108 HIGH	WAY I	NOISE PF	REDICT	ION MO	DEL			
Scenario: OY 2020 With Road Name: Rivergrade Rd. Road Segment: s/o Stewart Av.					t Name: lumber:		ark @ Live	Oak	
SITE SPECIFIC INPU	T DATA			1	NOISE N	IODE	L INPUTS	s	
Highway Data			Site Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily Traffic (Adt): 5.	726 vehicles					Autos:	15		
Peak Hour Percentage:	10%		Me	dium Tr	ucks (2 A	xles):	15		
	73 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Vehicle Speed:	40 mph	+	Vehicle I						
Near/Far Lane Distance:	12 feet	+		viix icleType		Dav	Evening	Night	Daily
Site Data			ven			Day 72.4%	•	18.4%	
			14	edium T		77.7%		17.5%	4.29%
Barrier Height:	0.0 feet					84.3%		13.0%	2.46%
Barrier Type (0-Wall, 1-Berm):	0.0		'	icavy i	ruchs.	04.3%	2.170	13.0%	2.407
	30.0 feet		Noise Sc	ource E	levation	s (in fe	eet)		
	30.0 feet			Auto	s: 0.0	000			
Barrier Distance to Observer:	0.0 feet		Mediur	n Truck	is: 2.2	297			
Observer Height (Above Pad):	5.0 feet		Heav	y Truck	s: 8.0	004	Grade Adj	iustment.	0.0
Pad Elevation:	0.0 feet	+	Lane Eq	ulualan	4 Diatan	no (in	fact)		
Road Elevation: Road Grade:	0.0 feet	-	Lane Eq	Auto			ieel)		
	0.0%		Madiuu	Auto n Truck					
	90.0 degrees 90.0 degrees			y Truck					
FHWA Noise Model Calculations									
VehicleType REMEL Tr	affic Flow Dist	ance	Finite	Road	Fresh	el	Barrier Atte	en Ber	m Atten
Autos: 66.51	-4.05	3.2	-	-1.20		-4.49	0.0		0.00
Medium Trucks: 77.72	-17.43	3.3		-1.20		-4.86	0.0		0.00
Heavy Trucks: 82.99	-19.85	3.3	-	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Levels (without						r			
VehicleType Leq Peak Hour		Leq E	vening	Leq	Night		Ldn		VEL
Autos: 64.5	62.3		59.4		57.6		65.0		65.
Medium Trucks: 62.4	60.5		54.4		55.3		62.7		62.
Heavy Trucks: 65.3	63.7		54.8		56.9		64.8		64.
Vehicle Noise: 69.0	67.2		61.6		61.5		69.1		69.
Centerline Distance to Noise Conte	our (in feet)					r			
			dBA		dBA	6	60 dBA		dBA
	Ldn:	_	6		56		121		60
	CNEL:	2	7	4	58		124	2	68

	FHW	/A-RD-77-108 I	liGHV	NAY N	IOISE PR	EDICTIO		DEL			
Scenario: OY Road Name: Rive Road Segment: s/o l	rgrade	Rd.				Project N Job Nur			ırk @ Live	Oak	
SITE SPECI	FIC IN	PUT DATA								s	
Highway Data				5	Site Con	ditions (H			,		
Average Daily Traffic (15,225 vehicles	3					utos:	15		
Peak Hour Percen		10%				dium Truc			15		
Peak Hour Vol		1,522 vehicles			Hea	avy Truck	s (3+ A	xles):	15		
Vehicle Sp		50 mph		١	Vehicle I	/lix					
Near/Far Lane Dista	ance:	12 feet			Vehi	cleType	1	Day	Evening	Night	Daily
Site Data						Au	tos: T	72.4%	9.2%	18.4%	86.179
Barrier He	iaht.	0.0 feet			Me	dium Tru	cks: 7	7.7%	4.8%	17.5%	8.79%
Barrier Type (0-Wall, 1-B	erm):	0.0			H	leavy Tru	cks: 8	34.3%	2.7%	13.0%	5.04%
Centerline Dist. to Ba		30.0 feet		1	Noise So	urce Elev	ations	(in fe	et)		
Centerline Dist. to Obse		30.0 feet				Autos:	0.0	00			
Barrier Distance to Obse		0.0 feet			Mediur	n Trucks:	2.2	97			
Observer Height (Above		5.0 feet			Heav	v Trucks:	8.0	04	Grade Ad	iustment	t: 0.0
Pad Eleva		0.0 feet		-				- () (
Road Eleva		0.0 feet		1	Lane Equ	ivalent E			eet)		
Road G		0.0%				Autos:	29.8				
Left Right	View: View:	-90.0 degrees 90.0 degrees				n Trucks: y Trucks:	29.5 29.5				
FHWA Noise Model Calc	ulations										
VehicleType REN		Traffic Flow	Dista	ance	Finite	Road	Fresne	e/	Barrier Att	en Bei	rm Atten
Autos:	70.20	-1.12		3.26	6	-1.20	-	4.49	0.0	000	0.00
Medium Trucks:	81.00	-11.03		3.33	3	-1.20	-	4.86	0.0	000	0.00
Heavy Trucks:	85.38	-13.45		3.32	2	-1.20	-	5.77	0.0	000	0.00
Unmitigated Noise Level											
71	ak Hou	1 1		Leq Ev	~	Leq Ni	·		Ldn		NEL
Autos:	71.		9.0		66.0		64.3		71.6		71.
Medium Trucks:	72.		0.2		64.1		65.0		72.4		72.
Heavy Trucks:	74.		2.5		63.6		65.7		73.6		73.
Vehicle Noise:	77.	4 7	5.6		69.5		69.8		77.4	1	77.
Centerline Distance to N	oise Co	ntour (in feet)									
			1	70 c	звA	65 dE	\$A	6	0 dBA	55	i dBA
			. –		-						
		L	dn:	93	-	201 207			433 446		933 960

	FH\	NA-RD-77-108	HIGHV	VAY NC	ISE PI	REDICTIO	N MODE	L		
	: OY 2020 W : Stewart Av : s/o Live Oa						ame: The nber: 11	e Park @ Live 112	Oak	
SITE S	PECIFIC IN	IPUT DATA				NO	ISE MO	DEL INPUT	s	
Highway Data				Si	te Con	ditions (H	lard = 10	, Soft = 15)		
Average Daily Ti	raffic (Adt):	7,461 vehicle	es				Au	os: 15		
Peak Hour P	Percentage:	10%			Me	dium Truc	ks (2 Axle	es): 15		
Peak Ho	ur Volume:	746 vehicle	6		He	avy Truck	s (3+ Axle	es): 15		
Vehi	icle Speed:	30 mph		14	ehicle	Mix				
Near/Far Lane	e Distance:	12 feet		Ve		icleType	Da	v Evening	Night	Daily
Site Data								.4% 9.2%	18.4%	
Bow	ier Heiaht:	0.0 feet			M	edium Truc		.7% 4.8%	17.5%	
Barrier Type (0-Wa		0.0			1	Heavy True	cks: 84	.3% 2.7%	13.0%	4.74%
Centerline Dist.	. ,	40.0 feet								
Centerline Dist. to		40.0 feet		N	oise So	ource Elev		,		
Barrier Distance to		0.0 feet				Autos:	0.000			
Observer Height (A	bove Pad):	5.0 feet				m Trucks:	2.297			
0 1	d Elevation:	0.0 feet			Heav	y Trucks:	8.004	Grade Ad	justment	: 0.0
Road	d Elevation:	0.0 feet		Lá	ne Eq	uivalent D)istance	(in feet)		
Re	oad Grade:	0.0%				Autos:	39.862	2		
	Left View:	-90.0 degree	es		Mediu	m Trucks:	39.640)		
1	Right View:	90.0 degree	es		Heav	y Trucks:	39.66	I		
FHWA Noise Model	Calculation	s								
VehicleType	REMEL	Traffic Flow	Dista	ance	Finite	Road	Fresnel	Barrier At	en Ber	m Atten
Autos:	61.75	-1.95		1.37		-1.20	-4.	59 0.0	000	0.000
Medium Trucks:	73.48	-12.17		1.41		-1.20	-4.	87 0.	000	0.000
Heavy Trucks:	79.92	-14.59		1.41		-1.20	-5.	56 0.	000	0.000
Unmitigated Noise			barrier	attenu	ation)					
	.eq Peak Hou			Leq Eve	•	Leq Ni	~	Ldn		NEL
Autos:	60		57.8		54.8		53.1	60.4		60.7
Medium Trucks:	61		59.6		53.5		54.4	61.		62.0
Heavy Trucks:	65	-	64.0		55.0		57.1	65.		65.2
Vehicle Noise:	67		66.1		59.3		60.0	67.	7	67.8
Centerline Distance	e to Noise C	ontour (in feet)							
			L	70 dE	BA	65 dE	BA	60 dBA		dBA
			Ldn:	28		60		130		280
		CI	VEL:	29		62		133	2	287

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH\	VA-RD-77-10	3 HÌGH	WAY NO	DISE P	REDICTIO	N MOI	DEL			
	: OY 2020 W								ark @ Live	Oak	
Road Name Road Segmen	Baldwin Pa					Job Nur	nber:	11112			
÷											
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				s	ite Cor	ditions (H	ard =	10, So	oft = 15)		
Average Daily T	raffic (Adt):	14,109 vehic	les					Autos:	15		
Peak Hour F	Percentage:	10%				dium Truc	•		15		
Peak Ho	ur Volume:	1,411 vehicle	es		He	avy Truck	s (3+ A	xles):	15		
Veh	icle Speed:	40 mph		v	ehicle	Mix					
Near/Far Lan	e Distance:	48 feet		-		icleType		Dav	Evening	Night	Dailv
Site Data							tos:	72.4%		18.4%	86.35%
Bari	ier Height:	0.0 feet			М	edium Truc	:ks:	77.7%	4.8%	17.5%	8.68%
Barrier Type (0-Wa	II, 1-Berm):	0.0				Heavy Truc	:ks:	84.3%	2.7%	13.0%	4.97%
Centerline Dis		50.0 feet		N	oise S	ource Elev	ation	s (in fe	et)		
Centerline Dist. to		50.0 feet				Autos:	0.0	000			
Barrier Distance te		0.0 feet			Mediu	m Trucks:	2.2	97			
Observer Height (A	,	5.0 feet			Hear	v Trucks:	8.0	04	Grade Ad	iustment	: 0.0
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		L	ane Eq	uivalent D			reet)		
R	oad Grade:	0.0%				Autos:	44.1				
	Left View:	-90.0 degre				m Trucks:	43.9				
	Right View:	90.0 degre	es		Hear	/y Trucks:	43.9	966			
FHWA Noise Mode						T					
VehicleType	REMEL	Traffic Flow		tance	Finite	Road	Fresn		Barrier Att		m Atten
Autos:	66.51	-0.47		0.71		-1.20		-4.65		000	0.00
Medium Trucks:	77.72	-10.45		0.74		-1.20		-4.87		000	0.00
Heavy Trucks:	82.99	-12.87		0.73		-1.20		-5.43	0.0	000	0.00
Unmitigated Noise	Levels (with ea Peak Hou					1 10	- h t		l dn	0	NFI
VehicleType I Autos:	eq Peak Hol. 65		y 63.4	Leq Ev	ening 60.4	Leq Ni	9nt 58.7		Lan 66.0		NEL 66.
Autos: Medium Trucks:	66		64.9		58.8		58.7		67.1		67.
Heavy Trucks:	69		68.1		59.2		61.3		69.2		69.
Vehicle Noise:	72		70.7		64.3		64.8		72.4	-	72.
Centerline Distance	e to Noise Co	ontour (in fee	<i>t</i>)								
2 Distante			~	70 di	BA	65 dE	A	6	0 dBA	55	dBA
			I dn:	73		150			337		26
			Lun.	73		156			337		20

	FHW	/A-RD-77-108 H	IIGHWA	Y NOISE P	REDICT		DEL			
	o: OY 2020 Wi	th Project						ark @ Live	Oak	
	e: Maine Av.				Job I	Vumber:	11112			
-	nt: s/o Arrow H	,								
	SPECIFIC IN	PUT DATA						L INPUT	s	
Highway Data				Site Cor	iditions	6 (Hard =	10, Se	,		
Average Daily	Traffic (Adt):	12,415 vehicles					Autos:			
Peak Hour	Percentage:	10%				rucks (2 A				
		1,241 vehicles		He	avy Tru	icks (3+ A	ixles):	15		
	hicle Speed:	35 mph		Vehicle	Mix					
Near/Far La	ne Distance:	12 feet		Veh	nicleTyp	е	Day	Evening	Night	Daily
Site Data						Autos:	72.4%	9.2%	18.4%	86.45
Bar	rier Height:	0.0 feet	-	M	ledium 1	rucks:	77.7%	4.8%	17.5%	8.62
Barrier Type (0-W		0.0			Heavy 1	Frucks:	84.3%	2.7%	13.0%	4.94
Centerline Dis	. ,	40.0 feet		Noioc C		lovotic -	o (in f	0.041		
Centerline Dist.		40.0 feet		Noise S	ource E Auto	levation	s (in t 200	eet)		
Barrier Distance	to Observer:	0.0 feet		Madiu	Auto m Truck		297			
Observer Height (Above Pad):	5.0 feet			vy Truck		297	Grade Ad	iustmont	. 0.0
Pa	d Elevation:	0.0 feet		i ica	vy mucr	13. 0.1	/04	Grade Haj	usuncia	0.0
Roa	d Elevation:	0.0 feet		Lane Eq	uivalen	nt Distand	e (in:	feet)		
ŀ	Road Grade:	0.0%			Auto	os: 39.8	362			
	Left View:	-90.0 degrees		Mediu	m Truck	ks: 39.6	ò40			
	Right View:	90.0 degrees		Hear	vy Truck	ks: 39.6	361			
FHWA Noise Mode										
VehicleType	REMEL	Traffic Flow	Distanc		Road	Fresn		Barrier Att		m Atter
Autos:	64.30	-0.44		1.37	-1.20		-4.59		000	0.00
Medium Trucks:	75.75	-10.45		1.41	-1.20		-4.87		000	0.00
Heavy Trucks:	81.57	-12.87		1.41	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise VehicleType	Levels (without Leg Peak Hour			tenuation) g Evening	100	Night	-	Ldn	0	NEL
Autos:	Leg Peak Hour 64.		1.8	<u>4 Evening</u> 58.9		57.1		LUN 64.5		64
Medium Trucks:	65.		3.6	57.5		58.4		65.8		66
Heavy Trucks:	68.		5.0 7.4	58.4		60.5		68.5		68
Vehicle Noise:	71.		9.7	63.1		63.7		71.3		71
Centerline Distand	e to Noise Co	ntour (in feet)								
				70 dBA	65	dBA	6	60 dBA	55	dBA
		Le	dn:	49	1	106		228	4	92
			EL:	50		109		234		05

					_		0.1	
Scenario: OY 2020 With Project			Project Na			rk @ Live	Oak	
Road Name: Longden Av. Road Segment: w/o Myrtle Av.			Job Num	ber: 11	112			
Road Segment. W/o Wyfile Av.		1						
SITE SPECIFIC INPUT DATA						INPUT	S	
Highway Data		Site Cor	ditions (Ha		-			
Average Daily Traffic (Adt): 15,246 vehicles					tos:	15		
Peak Hour Percentage: 10%			dium Truck			15		
Peak Hour Volume: 1,525 vehicles		He	avy Trucks	(3+ Axl	les):	15		
Vehicle Speed: 40 mph		Vehicle	Mix					
Near/Far Lane Distance: 12 feet		Veh	icleType	Da	ay	Evening	Night	Daily
Site Data			Auto	os: 72	.4%	9.2%	18.4%	86.30
Barrier Height: 0.0 feet		М	edium Truci	ks: 77	.7%	4.8%	17.5%	8.71
Barrier Type (0-Wall, 1-Berm): 0.0		1	Heavy Truck	ks: 84	1.3%	2.7%	13.0%	4.99
Centerline Dist. to Barrier: 30.0 feet		Noise Se	ource Eleva	ations ('in fe	et)		
Centerline Dist. to Observer: 30.0 feet			Autos:	0.00		.,		
Barrier Distance to Observer: 0.0 feet		Mediu	m Trucks:	2.29	7			
Observer Height (Above Pad): 5.0 feet		Heav	v Trucks:	8.00	4	Grade Ad	iustment.	0.0
Pad Elevation: 0.0 feet			,					
Road Elevation: 0.0 feet		Lane Eq	uivalent Di			eet)		
Road Grade: 0.0%			Autos:	29.81	-			
Left View: -90.0 degrees			m Trucks:	29.51	-			
Right View: 90.0 degrees		Heav	/y Trucks:	29.54	7			
FHWA Noise Model Calculations								
	Distance			Fresnel		Barrier Atte		m Atte
Autos: 66.51 -0.13	-	.26	-1.20		.49	0.0		0.0
		.33	-1.20	-4	.86	0.0		0.00
Medium Trucks: 77.72 -10.09	-					0.0	000	0.0
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51	3	.32	-1.20	-5	.,,			
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bai	3 rrier atte	enuation)				l de		
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bai VehicleType Leq Peak Hour Leq Day	3 rrier atte Leq	enuation) Evening	Leq Nig	ht		Ldn		NEL
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bail VehicleType Leq Peak Hour Leq Day Autos: 68.4 66.4 66.4	3 rrier atte Leq 3	enuation) Evening 63.3	Leq Nig	ht 61.5		68.9)	69
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bat VehicleType Leg Peak Hour Leg Day Autos: 68.4 66. Medium Trucks: 69.8 67.	3 rrier atte Leq 3 9	enuation) Evening 63.3 61.8	Leq Nig	ht 61.5 62.6		68.9 70.1)	69 70
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bar VehicleType Leg Peak Hour Leg Day Autos: 68.4 66. Medium Trucks: 69.8 67. Heavy Trucks: 72.6 71.	3 <i>rrier atto</i> <i>Leq</i> 3 9 1	enuation) Evening 63.3 61.8 62.1	Leq Nig	ht 61.5 62.6 64.2		68.9 70.1 72.2) 2	69 70 72
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bat VehicleType Leq Peak Hour Leq Day Autos: 68.4 66. Medium Trucks: 69.8 67. Heavy Trucks: 72.6 71. Vehicle Noise: 75.4 73.	3 <i>rrier atto</i> <i>Leq</i> 3 9 1	enuation) Evening 63.3 61.8	Leq Nig	ht 61.5 62.6		68.9 70.1) 2	69 70 72
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bar VehicleType Leq Peak Hour Leq Day Autos: 68.4 66. Medium Trucks: 69.8 67. Heavy Trucks: 72.6 71.	3 rrier atte Leq 3 9 1 6	enuation) Evening 63.3 61.8 62.1 67.2	Leq Nig	ht 61.5 62.6 64.2 67.7		68.9 70.1 72.2 75.4) 2 1	69 70 72 75
Medium Trucks: 77.72 -10.09 Heavy Trucks: 82.99 -12.51 Unmitigated Noise Levels (without Topo and bat VehicleType Leq Peak Hour Leq Day Autos: 68.4 66. Medium Trucks: 69.8 67. Heavy Trucks: 72.6 71. Vehicle Noise: 75.4 73.	3 <i>rrier atte</i> <i>Leq</i> 3 9 1 6 7	enuation) Evening 63.3 61.8 62.1	Leq Nig	ht 61.5 62.6 64.2 67.7	60	68.9 70.1 72.2	1 55	NEL 69 70 72 75 dBA 83

	FH/	VA-RD-77-108 HIC	GHWAY	NOISE PI	REDICT		DEL			
Road Nam	io: OY 2020 W le: Longden A nt: e/o Myrtle A	v. ,				Name: 1 lumber: 1		ark @ Live	Oak	
SITE	SPECIFIC IN	IPUT DATA			r	NOISE N	IODE	L INPUT	s	
Highway Data				Site Con	ditions	(Hard =	10, S	oft = 15)		
Average Daily	Traffic (Adt):	19,975 vehicles				/	Autos:	15		
Peak Hour	Percentage:	10%		Me	dium Tr	ucks (2 A	xles):	15		
Peak H	lour Volume:	1,997 vehicles		He	avy Tru	cks (3+ A	xles):	15		
Ve	hicle Speed:	40 mph	-	Vehicle			-			
Near/Far La	, ne Distance:	12 feet	-			_	0	Constant	Allenter	D-#
<u></u>				ven	icleType		Day	Evening	Night	Daily
Site Data							72.4%		18.4%	
	rrier Height:	0.0 feet			edium T		77.7%		17.5%	
Barrier Type (0-W	'all, 1-Berm):	0.0			Heavy T	rucks:	84.3%	2.7%	13.0%	4.86%
Centerline Dis	st. to Barrier:	30.0 feet		Noise So	ource E	levations	s (in f	eet)		
Centerline Dist.		30.0 feet			Auto	s: 0.0	000	,		
Barrier Distance	to Observer:	0.0 feet		Mediu	m Truck					
Observer Height (Above Pad):	5.0 feet			v Truck			Grade Ad	iustment	: 0.0
	ad Elevation:	0.0 feet								
Roa	ad Elevation:	0.0 feet		Lane Eq	uivalen			feet)		
1	Road Grade:	0.0%			Auto					
	Left View:	-90.0 degrees			m Truck					
	Right View:	90.0 degrees		Heav	ry Truck	s: 29.5	547			
FHWA Noise Mode		-								
VehicleType	REMEL		Distance		Road	Fresn		Barrier Att		m Atten
Autos:	66.51	1.06	3.2		-1.20		-4.49		000	0.000
Medium Trucks:	77.72	-9.03	3.3		-1.20		-4.86		000	0.000
Heavy Trucks:	82.99	-11.45	3.3	32	-1.20		-5.77	0.0	000	0.000
Unmitigated Noise										
VehicleType	Leq Peak Hou			vening	Leq	Night		Ldn		NEL
Autos:	69			64.5		62.7		70.1		70.4
Medium Trucks:	70		-	62.8		63.7		71.1		71.3
Heavy Trucks:	73			63.2		65.3		73.2		73.3
Vehicle Noise:	76		7	68.3		68.8		76.5	5	76.6
Centerline Distant	ce to Noise Co	ontour (in feet)	70			10.4				10.4
				dBA		dBA		60 dBA		dBA
		Ldr		31		74		375		07
		CNEL	.: 8	33	1	79		385	8	30

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FHW	A-RD-77-108	HIGH	WAY N	DISE PI	REDICTIO	N MOE	DEL			
Scenario: OY Road Name: Live Road Segment: w/o	e Oak Av.					Project N Job Nur			ırk @ Live	Oak	
SITE SPEC	IFIC INF	PUT DATA				NC	ISE M	IODE		s	
Highway Data				S	ite Cor	nditions (H	lard = '	10, So	oft = 15)		
Average Daily Traffic	(Adt): 2	8,597 vehicle	es				A	utos:	15		
Peak Hour Percer	ntage:	10%			Me	dium Truc	ks (2 A	xles):	15		
Peak Hour Vo	olume: 2	2,860 vehicle	s		He	avy Truck	s (3+ A	xles):	15		
Vehicle S	peed:	40 mph			ehicle	Mix					
Near/Far Lane Dist	tance:	48 feet		-		nicleType		Dav	Evening	Night	Daily
Site Data					Ven			72.4%	9.2%	18.4%	
	- laste to	0.0 feet			М	edium Tru		7.7%		17.5%	
Barrier He		0.0 feet				Heavy Tru		34.3%		13.0%	
Barrier Type (0-Wall, 1-E Centerline Dist. to B		0.0 48.0 feet								10.0 /	0.117
Centerline Dist. to Obs		48.0 feet		Λ	loise Se	ource Elev	ations/	; (in fe	et)		
Barrier Distance to Obs		40.0 feet				Autos:	0.0	00			
		5.0 feet			Mediu	m Trucks:	2.2	97			
Observer Height (Above Pad Elev		0.0 feet			Heav	vy Trucks:	8.0	04	Grade Adj	iustmen	t: 0.0
Road Elev		0.0 feet		1	ano Fo	uivalent D	listanc	o (in f	(aat)		
Road G		0.0%		-	ane Ly	Autos:	41.8		001/		
	View:	-90.0 degre	~~		Modiu	m Trucks:	41.6				
	View: View:	90.0 degree				vy Trucks:	41.6				
FHWA Noise Model Cald	ulations										
VehicleType REI	MEL	Traffic Flow	Dist	tance	Finite	Road	Fresne	el i	Barrier Att	en Be	rm Atten
Autos:	66.51	2.58		1.05		-1.20	-	4.64	0.0	000	0.000
Medium Trucks:	77.72	-7.26		1.09		-1.20	-	4.87	0.0	000	0.000
Heavy Trucks:	82.99	-9.63		1.08		-1.20	-	5.45	0.0	000	0.000
Unmitigated Noise Leve	ls (witho	ut Topo and	barrie	r attenı	uation)						
VehicleType Leq P	eak Hour	Leq Day	/	Leq Ev	ening	Leq Ni	ight		Ldn	C	NEL
Autos:	68.9		66.8		63.8		62.0		69.4		69.
Medium Trucks:	70.3		68.4		62.4		63.2		70.6		70.8
Heavy Trucks:	73.2		71.7		62.8		64.8		72.8		72.9
Vehicle Noise:	76.0		74.2		67.8		68.3		76.0)	76.
Centerline Distance to N	loise Cor	ntour (in feet)	70 d	DA.	65 dE	24	0	0 dBA	=	5 dBA
			I dn:	120		258		0	555		.197
			Lan: NFL:	120	-	258			571		,197 .229
		Ci	VEL.	12.	S	265			571	1	,229

FH	WA-RD-77-108	B HIGHW	AY NOISE	PREDICT	ION MC	DEL			
Scenario: OY 2020 Road Name: Arrow Hw Road Segment: e/o Peck I	у.				Name: lumber:		ark @ Live	Oak	
SITE SPECIFIC I	NPUT DATA			r	IOISE I	NODE	L INPUT	s	
Highway Data			Site Co	onditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (Adt):	28.321 vehic	les				Autos:	15		
Peak Hour Percentage:	10%		٨	1edium Tr	ucks (2	Axles):	15		
Peak Hour Volume:	2,832 vehicle	es	ŀ	leavy Tru	cks (3+)	Axles):	15		
Vehicle Speed:	45 mph		Vehicle	Mix					
Near/Far Lane Distance:	48 feet			hicleType		Dav	Evening	Night	Dailv
Site Data			ve		, Autos:	72.4%		18.4%	
			-	Medium T		77.7%		17.5%	8.689
Barrier Height:	0.0 feet 0.0			Heavy T		84.3%		13.0%	5.049
Barrier Type (0-Wall, 1-Berm): Centerline Dist, to Barrier:	0.0 40.0 feet							10.070	0.017
Centerline Dist. to Barrier: Centerline Dist. to Observer:	40.0 feet 40.0 feet		Noise	Source E	levation	s (in fe	eet)		
Barrier Distance to Observer:	40.0 feet			Auto	s: 0.	000			
Observer Height (Above Pad):	5.0 feet			ium Truck		297			
Pad Elevation:	0.0 feet		He	avy Truck	s: 8.	004	Grade Adj	iustment.	0.0
Road Elevation:	0.0 feet		Lane E	quivalen	t Distan	ce (in	feet)		
Road Grade:	0.0%			Auto		388			
Left View:	-90.0 degre	es	Med	um Truck	s: 32	114			
Right View:	90.0 degre		He	avy Truck	s: 32.	141			
FHWA Noise Model Calculatio	-								
VehicleType REMEL	Traffic Flow	Distan		te Road	Fresi		Barrier Att		m Atten
Autos: 68.46			2.73	-1.20		-4.59		000	0.00
Medium Trucks: 79.45			2.78	-1.20		-4.87		000	0.00
Heavy Trucks: 84.25	-10.29)	2.78	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise Levels (wit	hout Topo and	l barrier a	ttenuation)					
VehicleType Leq Peak Ho	ur Leq Da		eq Evening	Leq	Night		Ldn		VEL
	2.0	69.8	66.		65.		72.5		72.
	3.1	71.2	65.		66.0		73.4		73.
	5.5	74.0	65.	-	67.		75.1		75.
Vehicle Noise: 7	8.6	76.8	70.	5	70.9	9	78.6	6	78.
Centerline Distance to Noise C	contour (in fee	t)		1		-		T	
			70 dBA		dBA	6	60 dBA		dBA
	-	Ldn:	149		21		692		490
	C	NEL:	153	3	30		711	1.	532

-						EDICTIO			
	o: OY 2020 V							Park @ Live	Oak
	e: Arrow Hwy					Job Nun	ber: 111	12	
Road Segmer	nt: e/o Longde	n Av.							
	SPECIFIC IN	IPUT DATA						DEL INPUT	s
Highway Data				1	Site Con	ditions (H	ard = 10,	Soft = 15)	
Average Daily	Traffic (Adt):	49,037 vehic	les				Aut	os: 15	
Peak Hour	Percentage:	10%			Med	lium Trucl	is (2 Axle	s): 15	
Peak H	our Volume:	4,904 vehicle	es		Hea	avy Trucks	(3+ Axle	s): 15	
Ve	hicle Speed:	45 mph			Vehicle I	lix			
Near/Far La	ne Distance:	48 feet				cleType	Da	v Evening	Night Daily
Site Data						Au	os: 72.		18.4% 86.42
Pa	rier Heiaht:	0.0 feet			Ме	dium Truc	ks: 77.	7% 4.8%	17.5% 8.61
Barrier Type (0-W		0.0 1001			H	leavy Truc	ks: 84.	3% 2.7%	13.0% 4.97
Centerline Dis	st. to Barrier:	40.0 feet		-	Noise So	urce Elev	ations (i	n foot)	
Centerline Dist.	to Observer:	40.0 feet		- F	10.00 00	Autos:	0.000	,	
Barrier Distance	to Observer:	0.0 feet			Modiur	n Trucks:	2.297		
Observer Height (Above Pad):	5.0 feet				v Trucks:	8.004		justment: 0.0
Pa	ad Elevation:	0.0 feet							
	ad Elevation:	0.0 feet		1	Lane Equ	ivalent D			
1	Road Grade:	0.0%				Autos:	32.388		
	Left View:	-90.0 degre				n Trucks:	32.114		
	Right View:	90.0 degre	es		Heav	Y Trucks:	32.141		
FHWA Noise Mode	el Calculation	s							
VehicleType	REMEL	Traffic Flow	Dista	nce	Finite	Road	Fresnel	Barrier Att	en Berm Atte
Autos:	68.46	4.43	1	2.73	3	-1.20	-4.3	59 0.0	0.0 000
Medium Trucks:	79.45	-5.58		2.78	3	-1.20	-4.8	37 0.0	0.0 0.0
Heavy Trucks:	84.25	-7.97		2.78	3	-1.20	-5.3	56 0.0	0.0 0.0
Unmitigated Noise	e Levels (with	out Topo and	l barrier	atten	uation)				
Sumagated Noise	Leg Peak Hou	ır Leq Da	y L	.eq E	vening	Leq Ni	ght	Ldn	CNEL
VehicleType	Logicalino				69.3		67.5	74.9	
VehicleType Autos:	. 74		72.2				68.3	75.8	
VehicleType Autos: Medium Trucks:	74 75	.4	73.6		67.5				
VehicleType Autos: Medium Trucks: Heavy Trucks:	. 74	.4			67.5 67.4		69.5	77.4	1 77
VehicleType Autos: Medium Trucks:	74 75	.4 .9	73.6				69.5 73.3	77.4 80.9	
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	74 75 77 80	.4 .9 .9	73.6 76.3 79.2		67.4				
VehicleType Autos: Medium Trucks: Heavy Trucks:	74 75 77 80	.4 .9 .9	73.6 76.3 79.2 t)	70 c	67.4 72.9	65 dE	73.3	80.9 60 dBA	55 dBA
VehicleType Autos: Medium Trucks: Heavy Trucks: Vehicle Noise:	74 75 77 80	.4 .9 .9	73.6 76.3 79.2	70 c 21	67.4 72.9	65 dE 460	73.3	80.9	9 81

	FHV	VA-RD-77-108 H	IIGHW.	AY N	IOISE PR	EDICT	ION MO	DEL			
Scenario: C Road Name: A Road Segment: e	Arrow Hwy.						Name: lumber:		ark @ Live	Oak	
SITE SPE	CIFIC IN	PUT DATA				N	IOISE N	IODE	L INPUT	s	
Highway Data					Site Cond	ditions	(Hard =	10, S	oft = 15)		
Average Daily Traf	fic (Adt):	36,385 vehicles					,	Autos:	15		
Peak Hour Pere	centage:	10%			Med	dium Tri	ucks (2 A	xles):	15		
Peak Hour	Volume:	3,638 vehicles			Hea	avy Truo	cks (3+ A	(xles):	15		
Vehicle	e Speed:	45 mph			Vehicle N	Ai y					
Near/Far Lane D	Distance:	48 feet		-		cleType		Day	Evening	Night	Daily
Site Data				-	VCIII			72.4%	•	18.4%	
Parrior	Height:	0.0 feet			Me	dium Ti		77.7%		17.5%	
Barrier Type (0-Wall,		0.0			H	leavy Ti	rucks:	84.3%	2.7%	13.0%	4.59%
Centerline Dist. to	,	40.0 feet									
Centerline Dist. to O		40.0 feet		4	Noise So				eet)		
Barrier Distance to O	bserver:	0.0 feet				Auto		000			
Observer Height (Abo	ve Pad):	5.0 feet			Mediun			297	Out de Ad		
	levation:	0.0 feet			Heavy	y Truck	s: 8.0	004	Grade Adj	ustmen	£ 0.0
Road E	levation:	0.0 feet		1	Lane Equ	iivalen	t Distand	ce (in	feet)		
Road	d Grade:	0.0%				Auto	s: 32.3	388			
Le	eft View:	-90.0 degrees			Mediun	n Truck	s: 32.	114			
Rig	ght View:	90.0 degrees			Heavy	y Truck	s: 32.	141			
FHWA Noise Model Ca	alculations	s									
VehicleType F	REMEL	Traffic Flow	Distar	nce	Finite I	Road	Fresn	el	Barrier Att	en Be	rm Atten
Autos:	68.46	3.19		2.73	3	-1.20		-4.59	0.0	000	0.000
Medium Trucks:	79.45	-7.19		2.7	8	-1.20		-4.87	0.0	000	0.000
Heavy Trucks:	84.25	-9.61		2.7	8	-1.20		-5.56	0.0	000	0.000
Unmitigated Noise Le			arrier a	atten	uation)						
	y Peak Hou			eq E	vening	Leq	Night		Ldn		NEL
Autos:	73.	- ·	1.0		68.0		66.3		73.6		73.9
Medium Trucks:	73.		2.0		65.9		66.7		74.1		74.3
Heavy Trucks:	76.		4.7		65.7		67.8		75.8		75.9
Vehicle Noise:	79.	.4 7	7.6		71.4		71.8		79.4	ļ	79.6
Centerline Distance to	o Noise Co	ontour (in feet)				-			-		
					dBA		dBA	(60 dBA		5 dBA
		_	dn:	16		-	64		784		,690
		CNI	±L:	17	74	3	75		807	1	,738

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FHWA	A-RD-77-108	B HIG	HWAY N	NOISE P	REDICTIO	N MOD	EL			
Scenario: OY 202	0 With	h Project				Project Na	ame: T	he Pa	ark @ Live	Oak	
Road Name: Arrow H	łwy.					Job Nun	nber: 1	1112			
Road Segment: w/o Riv	ergrad	de Rd.									
SITE SPECIFIC	; INP	UT DATA							L INPUT	s	
Highway Data					Site Cor	nditions (H	lard = 1	10, So	oft = 15)		
Average Daily Traffic (Ad): 3	1,217 vehicl	es				A	utos:	15		
Peak Hour Percentag	e:	10%			Me	dium Truck	ks (2 A)	des):	15		
Peak Hour Volum	e: 3	,122 vehicle	s		He	avy Trucks	s (3+ A)	des):	15		
Vehicle Spee	d:	45 mph		-	Vehicle	Mix					
Near/Far Lane Distanc	e:	48 feet		-		icleType	L	Dav	Evening	Night	Dailv
Site Data						Au	tos: 7	2.4%		18.4%	87.68%
Barrier Heigh	<i>t</i> .	0.0 feet			М	edium Truc	ks: 7	7.7%	4.8%	17.5%	7.83%
Barrier Type (0-Wall, 1-Bern	<i>):</i>	0.0				Heavy Truc	:ks: 8	4.3%	2.7%	13.0%	4.49%
Centerline Dist. to Barrie		40.0 feet			Noise S	ource Elev	ations	(in fe	et)		
Centerline Dist. to Observe		40.0 feet				Autos:	0.0	00			
Barrier Distance to Observe		0.0 feet			Mediu	m Trucks:	2.2	97			
Observer Height (Above Pac	/	5.0 feet			Hear	v Trucks:	8.0	04	Grade Ad	iustment	: 0.0
Pad Elevatio		0.0 feet		-							
Road Elevatio		0.0 feet		-	Lane Eq	uivalent D			'eet)		
Road Grad		0.0%				Autos:	32.3				
Left Vie		-90.0 degre				m Trucks:	32.1				
Right Vie	V:	90.0 degre	es		Hear	/y Trucks:	32.1	41			
FHWA Noise Model Calcula	ions										
VehicleType REMEL		Traffic Flow		istance		Road	Fresne		Barrier Att		rm Atten
	.46	2.54		2.7		-1.20		4.59	0.0		0.00
	.45	-7.95		2.7	-	-1.20		4.87		000	0.00
	.25	-10.37		2.7	-	-1.20	-	5.56	0.0	000	0.00
Unmitigated Noise Levels (
VehicleType Leq Peak		Leq Day		Leq E	vening	Leq Ni	·		Ldn	-	NEL
Autos:	72.5		70.3 71.2		67.4 65.1		65.6 66.0		73.0 73.4		73.
Medium Trucks:	73.1										73.
Heavy Trucks:	75.5		73.9		65.0		67.1		75.0		75.
Vehicle Noise:	78.6		76.9		70.7		71.0		78.7	r	78.
Centerline Distance to Nois	e Con	tour (in feet	t)	70	dBA	65 dE		6	0 dBA	55	dBA
			Ldn:		ивя 51	325	~	0	701		510
						325					
		0	NFI :	1/	55	335			721	1	553

Average Daily Traffic (Adt): 27,358 vehicles Autos: 15 Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 2,736 vehicles Medium Trucks (2 Axles): 15 Vehicle Speed: 45 mph Medium Trucks (2 Axles): 15 Near/Far Lane Distance: 48 feet Vehicle Type Day Evening Night Daily Sthe Data Barrier Height: 0.0 feet Medium Trucks: 77,7% 4,8% 17,5% 8,66 Barrier Dist. to Dserver: 0.0 feet Modium Trucks: 0.00 Medium Trucks: 2,297 13.0% 4,96' Centerline Dist. to Observer: 0.0 feet Medium Trucks: 0.00 Medium Trucks: 2,297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Autos: 32.388 Medium Trucks: 32.388 Left View: 90.0 degrees Right View: 90.0 degrees Finite Road Fresnel Barrier Atten <t< th=""><th>F</th><th>HWA-</th><th>RD-77-108 HIG</th><th>HWAY</th><th>NOISE PI</th><th>REDICTI</th><th>ION MO</th><th>DEL</th><th></th><th></th><th></th></t<>	F	HWA-	RD-77-108 HIG	HWAY	NOISE PI	REDICTI	ION MO	DEL							
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 27,358 vehicles Autos: 15 Peak Hour Percentage: 10% Autos: 15 Peak Hour Volume: 2,736 vehicles Autos: 15 Vehicle Speed: 45 mph Medium Trucks (24 Axles): 15 Near/Far Lane Distance: 48 feet Vehicle Mix Vehicle Mix Site Data Autos: 72.4% 9.2% 18.4% 86.37 Barrier Height: 0.0 feet Heavy Trucks: 84.3% 2.7% 18.4% 86.37 Barrier Jpic (-Wall, I-Berm): 0.0 feet Heavy Trucks: 84.3% 2.7% 18.4% 86.37 Centerline Dist. to Dbserver: 40.0 feet Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.104 Grade Adjustment: 0.0 Road Grade: 0.0% Left View: -90.0 degrees Medium Trucks: 3.214 Heavy Trucks: 3.214 FtWA Noise Model Calculations Traffic Flow Distance Finite Road	Road Name: Arrow H	wy.													
Average Daily Traffic (Adt): 27,358 vehicles Autos: 15 Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 2,736 vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Vehicle Type Day Evening Night Daily Site Data Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.6% Barrier Type (0-Wall, 1-Berm): 0.0 feet Modium Trucks: 7.7% 4.8% 17.5% 8.6% Barrier Dist. to Dserver: 0.0 feet Modium Trucks: 2.97% 13.0% 4.9% Centerline Dist. to Dserver: 0.0 feet Autos: 8.004 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Autos: 32.388 Medium Trucks: 32.388 Left View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atter Autos: 79.45 -8.09 2.78 -1.20 -4.67	SITE SPECIFIC	INPL	IT DATA			N	IOISE N	/IODE	L INPUT	s					
Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 2,738 vehicle Medium Trucks (3 + Axles): 15 Near/Far Lane Distance: 48 feet Vehicle Type Day Evening Night Daily Site Data Autos: 72.4% 9.2% 18.4% 86.37 Barrier Type (0-Wall, 1-Bemr): 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.66 Centerline Dist. to Barrier: 40.0 feet Autos: 0.000 Medium Trucks: 2.297 Observer: 0.0 feet Autos: 0.000 Medium Trucks: 2.297 Observer: 0.0 feet Autos: 3.238 Autos: 3.238 Left View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atter Right View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atter Right View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atter Medium Tru	Highway Data	lighway Data													
Beak Hour Volume: 2,736 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Site Data Autos: 72,4% 9.2% 18.4% 86.37 Barrier Height: 0.0 feet Heavy Trucks: 77.7% 4.8% 17.5% 8.66 Barrier Type (0-Wail, 1-Berm): 0.0 feet Heavy Trucks: 84.3% 2.7% 13.0% 4.96 Centerline Dist. to Dbserver: 40.0 feet Autos: 0.000 Medium Trucks: 2.297 13.0% 4.96 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Left View: -90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 8.20 Grade Adjustment: 0.0 0.00 Medium Trucks: 71.20 -4.59 0.000 0.00 Medium Trucks: 72.48 -10.51 2.78 -1.20 -4.59 0.000 0.00	Average Daily Traffic (Adt)	: 27,	358 vehicles					Autos:	15						
Vehicle Speed: Near/Far Lane Distance: 45 mph 48 feet Vehicle Mx Site Data Autos: 72.4% 9.2% 18.4% 86.37 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.637 Barrier Type (0-Wall, 1-Berm): 0.0 10.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.667 Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 4.8% 17.5% 8.667 Centerline Dist. to Dserver: 0.0 feet Moles Source Elevations (In feet) 13.0% 4.967 Deserver Height: (Move Pad): 5.0 feet Autos: 32.388 Medium Trucks: 2.297 Heavy Trucks: 32.381 Road Grade: 0.0% Autos: 32.388 Medium Trucks: 32.114 Heavy Trucks: 32.314 FHWA Noise Model Calculations 90.0 degrees Finite Road Fresnel Barrier Atten Bern Atter WebiceType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atter Autos: 79.45 -8.09 2.78	Peak Hour Percentage	:	10%		Me	dium Tru	ucks (2 A	(xles):	15						
Near/Far Lane Distance: 48 feet Vehicle Ype Day Evening Night Daily Site Data Autos: 72.4% 9.2% 18.4% 86.37 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.9% 18.4% 86.37 Barrier Type (V-Wall, 1-Bern): 0.0 Medium Trucks: 77.7% 4.9%	Peak Hour Volume	: 2,7	'36 vehicles		He	avy Truc	cks (3+ A	(xles):	15						
Near/Far Lane Distance: 48 feet VehicleType Day Evening Night Daily Site Data Autos: 72.4% 9.2% 18.4% 86.3% Barrier Neight: 0.0 feet Medium Trucks: 77.9% 4.8% 17.5% 8.66 Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Diserver: 40.0 feet Medium Trucks: 77.9% 4.8% 17.5% 4.8% 17.5% 8.66 Barrier Tipo (0-Wall, 1-Berm): 0.0 feet Autos: 0.00 Medium Trucks: 2.7% 13.0% 4.96' Centerline Dist. to Diserver: 0.0 feet Autos: 0.00 Medium Trucks: 2.97 Pad Elevation: 0.0 feet Autos: 32.388 Medium Trucks: 32.388 Left View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atten VehicleType REMAL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 79.45 -8.09 2.78	Vehicle Speed	2	45 mph		Vehicle	Mix									
Site Data Autos: 72.4% 9.2% 18.4% 86.37 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.66 Barrier Type (0-Wall, 1-Berm): 0.0 Feed Intervention 13.0% 4.96' Centerline Dist. to Barrier: 40.0 feet Noise Source Elevations (in feet) Noise Source Elevations (in feet) Deserver Height (Above Pad): 5.0 feet Noise Source Elevations (in feet) Autos: 2.297 Road Elevation: 0.0 feet Autos: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Autos: 3.000 Medium Trucks: 32.114 Heavy Trucks: 32.00 Gegrees Finite Road Fresnel Barrier Atten Berrier Atten Medium Trucks: 32.114 Heavy Trucks: 32.141 Heavy Trucks: 32.141 Heavy Trucks: 32.141 Heavy Trucks: 84.25 -10.51 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: <t< td=""><td>Near/Far Lane Distance</td><td><i>c</i></td><td>48 feet</td><td></td><td></td><td></td><td></td><td>Dav</td><td>Evenina</td><td>Niaht</td><td>Dailv</td></t<>	Near/Far Lane Distance	<i>c</i>	48 feet					Dav	Evenina	Niaht	Dailv				
Barrier Type (b) Wall, 1-Berm): 0.0 Heavy Trucks: 84.3% 2.7% 13.0% 4.96 Centerline Dist. to Diserver: 40.0 feet Autos: 0.00 0.00 4.96 0.00	Site Data								•						
Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 84.3% 2.7% 13.0% 4.96' Centerline Dist. to Desriver: 40.0 feet Noise Source Elevations (in feet) Noise Source In f	Barrier Height		0.0 feet		M	edium Ti	rucks:	77.7%	4.8%	17.5%	8.66%				
Centerline Dist. to Barrier: 40.0 feet Noise Source Elevations (in feet) Centerline Dist. to Observer: 40.0 feet Autos: 0.000 Barrier Distance to Observer: 0.0 feet Autos: 0.000 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 2.297 Pad Elevation: 0.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Autos: 32.388 Medium Trucks: 32.114 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berner Atter Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -5.56 0.000 0.00 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 7	•				1	Heavy Tr	rucks:	84.3%	2.7%	13.0%	4.96%				
Centerline Dist. to Observer: 40.0 feet Autos: 0.000 Barrier Distance to Observer: 0.0 feet Autos: 0.000 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 2.297 Pad Elevation: 0.0 feet Left View: 90.0 feet Road Grade: 0.0% Autos: 32.388 Left View: -90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 82.04 Fersnel Barrier Atten Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.59 0.000 0.00 Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Umitigated Noise Levels (without Topo and barrier attenatuation) VehicleType Leq Paek Hour Leq Day Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72.3 72.3 72	, , , , , , , , , , , , , , , , , , ,				Nolas O				41						
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297 Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Late Equivalent Distance (in feet) Late Equivalent Distance (in feet) Road Grade 0.0% Late Equivalent Distance (in feet) Autos: 32.114 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atter Autos: 88.46 1.90 2.78 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -5.56 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Evening Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 72.9 71.1 66.50 65.8 73.2 73 Medium Trucks: 72.9 71.1 66.50	Centerline Dist. to Observer		Noise So				eet)								
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.04 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Lett View: 90.0 degrees Autos: 32.388 Lett View: 90.0 degrees Autos: 32.381 Heavy Trucks: 32.14 FHWA Noise Model Calculations: VehicleType REIMEL Traffic Flow Distance Finite Road Fersnel Barrier Attem Berm Attern Autos: 79.45 -8.09 2.78 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -80.9 2.78 -1.20 -5.56 0.000 0.00 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 72.3 73.8 64.8 66.9 74.9 73 Vehicle/Pyee Leq Peak Hour Leq Evening Leq Reinfight Mark 78.4 76.6	Barrier Distance to Observer	-	0.0 feet		Madiu										
Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Road Glevation: 0.0 feet Lane Equivalent Distance (in feet) Road Grade: 0.0% Autos: 32.388 Left View: -90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 32.114 Heavy Trucks: 32.114 FHWA Noise Model Calculations Entite Road Fresnel Barrier Atten Bern Atter VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atter Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -5.56 0.000 0.00 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72.3 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72.3 Medium Trucks: 71.9 69.7 66.7 65.0 72.3 72.3	Observer Height (Above Pad)	:	5.0 feet						Grado Ad	iustmont					
Road Grade: 0.0% Autos: 32.388 Left View: -90.0 degrees Medium Trucks: 32.114 Heavy Trucks: 32.114 Heavy Trucks: 32.114 Heavy Trucks: 32.114 Heavy Trucks: 32.114 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atter VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atter Autos: 68.46 1.90 2.73 -1.20 -4.69 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -5.56 0.000 0.00 Medium Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) UencleType Leg Peak Hour Leg Day Leg Evening Leg Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3	Pad Elevation	c	0.0 feet		neav	y muck	5. 0.0	JU4	Grade Adj	Justinent	0.0				
Left View: -90.0 degrees Medium Trucks: 32.114 Right View: 90.0 degrees Medium Trucks: 32.141 FHWA Noise Model Calculations Free Nether Barrier Atten Berner Atten VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.67 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Medium Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Cent	Road Elevation	Road Elevation: 0.0 feet					t Distan	ce (in	feet)						
Right View: 90.0 degrees Heavy Trucks: 32.141 FHWA Noise Model Calculations Environmentation Distance Finite Road Fresnel Barrier Atten Bern Atten VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) Vehicle/pvp Leq Deak Hour Leq Den Leq Den CNEL VehicleType Lag Peak Hour Leq Den Leq Den 65.0 72.3 72 Medium Trucks: 71.9 61.7 65.0 73.2 73 Medium Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet)	Road Grade	e .	0.0%			Autos	s: 32.	388							
FHWA Noise Model Calculations Free Number of Status Finite Road Freshel Barrier Atten Berm Atter VehicleType REMEL Traffic Flow Distance Finite Road Freshel Barrier Atten Berm Atter Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000 0.00 Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leg Peak Hour Leg Day Leg Evening Leg Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.2 73 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 </td <td>Left View</td> <td>r -9</td> <td>90.0 degrees</td> <td></td> <td>Mediu</td> <td>m Trucks</td> <td>s: 32.</td> <td>114</td> <td></td> <td></td> <td></td>	Left View	r -9	90.0 degrees		Mediu	m Trucks	s: 32.	114							
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atter Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.69 0.000 0.00 Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72. Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 72.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet)	Right View	. 6	90.0 degrees		Heav	y Trucks	s: 32.	141							
Autos: 68.46 1.90 2.73 -1.20 -4.59 0.000 0.00 Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000 0.00 Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Umitigated Moise Levels (without Topo and barrier attenuation) Use (without Topo and barrier attenuation) Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72.3 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Medium Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet)	FHWA Noise Model Calculati	ons			1										
Medium Trucks: 79.45 -8.09 2.78 -1.20 -4.87 0.000 0.00 Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.00 Unnitigated Noise Levels (without Topo and barrier attenuation) -1.20 -5.56 0.000 0.00 VehiceType Leq Deak Hour Leq Deving Leq Right Ldn CNEL Autos: 71.9 68.7 66.0 72.3 72 Medium Trucks: 72.9 71.1 66.0 65.8 73.2 73 Heavy Truck: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet) 270 dBA 65 dBA 60 dBA 55 dBA Ldn: 145 312 673 1,449	VehicleType REMEL	Tr	affic Flow D)istance	Finite	Road	Fresh	el	Barrier Att	en Ber	m Atten				
Heavy Trucks: 84.25 -10.51 2.78 -1.20 -5.56 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Day Leq Evening Leq Night Ldn CNEL VehicleType Leg Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Medium Trucks: 71.9 69.7 66.7 65.0 72.3 73 Heavy Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 72.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (in feet)		46									0.00				
Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72.3 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet)											0.00				
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Autos: 71.9 69.7 66.7 65.0 72.3 72.3 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet)	Heavy Trucks: 84.	25	-10.51	2.	78	-1.20		-5.56	0.0	000	0.00				
Autos: 71.9 69.7 66.7 65.0 72.3 72 Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73.2 Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (In feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 145 312 673 1,449		-			,					Т					
Medium Trucks: 72.9 71.1 65.0 65.8 73.2 73 Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (in feet) Lan: 145 312 673 1,449	,, , ,				•	Leq	<u> </u>								
Heavy Trucks: 75.3 73.8 64.8 66.9 74.9 75 Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 145 312 673 1,449															
Vehicle Noise: 78.4 76.6 70.4 70.8 78.4 78 Centerline Distance to Noise Contour (in feet)										-					
Zenterline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 145 312 673 1,449										-					
T0 dBA 65 dBA 60 dBA 55 dBA Ldn: 145 312 673 1,449				i	70.4		70.8		78.4	4	78.				
Ldn: 145 312 673 1,449	Centerline Distance to Noise	Conte	our (in feet)		10.4	05	10.1				10.4				
			1					6							

Scenario: C	V 2020 M	lith Droject				Drojoot A	lama, The	Park @ Live	Oak	
Road Name: A		ith Project					nber: 1111		Оак	
Road Segment: w	. ,	Av				300 1101		2		
ě										
	SITE SPECIFIC INPUT DATA							EL INPUT	S	
Highway Data				S	Site Con	ditions (F	lard = 10,	,		
Average Daily Traff	. ,	51,552 vehicle	S				Auto			
Peak Hour Perc	0	10%					ks (2 Axles	,		
Peak Hour		5,155 vehicles			He	avy Truck	s (3+ Axles): 15		
Vehicle		45 mph		V	/ehicle I	Mix				
Near/Far Lane D	istance:	48 feet			Vehi	icleType	Day	Evening	Night	Daily
Site Data						Au	tos: 72.4	% 9.2%	18.4%	86.049
Barrier	Hoight:	0.0 feet			Me	edium Tru	cks: 77.7	% 4.8%	17.5%	8.88
Barrier Type (0-Wall, 1		0.0			F	leavy Tru	cks: 84.3	% 2.7%	13.0%	5.099
Centerline Dist. to	,	40.0 feet		-		-				
Centerline Dist. to O	bserver:	40.0 feet		^	loise Sc		vations (in	feet)		
Barrier Distance to O	bserver:	0.0 feet				Autos:				
Observer Height (Abov	/e Pad);	5.0 feet				n Trucks:	2.297	Grade Ad	E	
Pad El	evation:	0.0 feet			Heav	y Trucks:	8.004	Grade Ad	ijusuneni	. 0.0
Road El	evation:	0.0 feet		L	ane Equ	uivalent L	Distance (i	n feet)		
Road	Grade:	0.0%				Autos:	32.388			
Le	eft View:	-90.0 degree	s		Mediur	n Trucks:	32.114			
Rig	ht View:	90.0 degree	S		Heav	y Trucks:	32.141			
FHWA Noise Model Ca	lculation	S								
VehicleType R	EMEL	Traffic Flow	Distar	ice	Finite		Fresnel	Barrier At	ten Bei	rm Atter
Autos:	68.46	4.63		2.73		-1.20	-4.5		000	0.00
Medium Trucks:	79.45	-5.23		2.78		-1.20	-4.8		000	0.00
Heavy Trucks:	84.25	-7.65		2.78		-1.20	-5.5	6 0.	000	0.00
Unmitigated Noise Lev										
	Peak Hou			eq Ev	ening	Leq N	•	Ldn		NEL
Autos:	74		2.4		69.5		67.7	75.		75.
Medium Trucks:	75		3.9		67.8		68.7	76.		76
Heavy Trucks:	78		6.6		67.7		69.8	77.	-	77.
Vehicle Noise:	81		9.5		73.2		73.6	81.	2	81.
		ntour (in feet)								
Centerline Distance to	Noise Co	intear (in feet)		70 ~		65 4	24	60 dPA	EE	: dDA
Centerline Distance to	Noise Co		.dn:	70 d		65 dE 482		60 dBA 1.038		5 dBA .237

	FHW	A-RD-77-108	HIGHV	VAY N	IOISE PI	REDICT		DDEL					
Road Nam	o: OY 2020 Wi e: Arrow Hwy. nt: e/o Maine Av	,			Project Name: The Park @ Live Oak Job Number: 11112								
	SPECIFIC INF	PUT DATA							L INPUT	s			
Highway Data				:	Site Cor	nditions	(Hard :	= 10, Se	oft = 15)				
Average Daily	Traffic (Adt): 3	88,117 vehicle	s					Autos:	15				
Peak Hour	Percentage:	10%			Me	dium Tr	ucks (2	Axles):	15				
Peak H	our Volume: 3	3,812 vehicles	5		He	avy Tru	cks (3+	Axles):	15				
Vel	hicle Speed:	45 mph			Vehicle	Mix							
Near/Far Lar	ne Distance:	48 feet		H		icleType		Day	Evening	Night	Daily		
Site Data							Autos:	72.4%	9.2%	18.4%	85.93		
Bar	rier Height:	0.0 feet			М	edium T	rucks:	77.7%	4.8%	17.5%	8.93		
Barrier Type (0-Wall, 1-Berm): 0.0					1	Heavy T	rucks:	84.3%	2.7%	13.0%	5.14		
Centerline Dis		40.0 feet		1	Noise S	ource E	levatio	ns (in f	eet)				
Centerline Dist.	to Observer:	40.0 feet			Autos: 0.000								
Barrier Distance to Observer: 0.0 feet					Medium Trucks: 2.297								
Observer Height (J	Above Pad):	5.0 feet				/y Truck		.004	Grade Ad	iustment	0.0		
Pa	ad Elevation:	0.0 feet				·							
Road Elevation: 0.0 feet					Lane Eq				feet)				
Road Grade: 0.0%						Auto		.388					
Left View: -90.0 degrees					Medium Trucks: 32.114 Heavy Trucks: 32.141								
	Right View:	90.0 degree	!S		Heav	/y Truck	s: 32	2.141					
FHWA Noise Mode													
VehicleType		Traffic Flow	Dista			Road	Fres		Barrier Att		m Atter		
Autos:	68.46	3.31		2.73	-	-1.20		-4.59		000			
Medium Trucks:	79.45	-6.52		2.78	-	-1.20		-4.87		000	0.00		
Heavy Trucks:	84.25	-8.91		2.78	-	-1.20		-5.56	0.0	000	0.00		
Unmitigated Noise VehicleType	Levels (witho Leg Peak Hour				,	1.00	Night	1	l dn	0			
Autos:	23.3		71.1	LOYEI	Evening Leq Ni 68.1		66	4	73.7		CNEL 74		
Medium Trucks:	74.5				66.5	67.4					74		
Heavy Trucks: 76.9 75.4			66.4 68.5										
Vehicle Noise:	70.5		78.2		71.9		72	-	70.		76 80		
Centerline Distanc	e to Noise Co	ntour (in feet)											
					:IBA		dBA	e	60 dBA		dBA		
			dn:	18			96		853		837		
			IFL :	18			07		877		889		

Wednesday, May 02, 2018

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FH	WA-RD-77-	108 HIG	HWAY	NOISE F	REDICTIO	MODE	ΞL				
	o: OY 2020 V e: Live Oak A				Project Name: The Park @ Live Oak Job Number: 11112							
Road Segmen	t: w/o Riverg	rade Rd.										
SITE S	SPECIFIC IN	VPUT DAT	ГА			NO	SE MO	DEL INPU	тs			
Highway Data					Site Co.	nditions (H	ard = 10), Soft = 15)				
Average Daily	Traffic (Adt):	33,919 ve	hicles				Au	tos: 15				
Peak Hour I	Percentage:	10%			M	edium Truck	s (2 Axi	les): 15				
Peak Ho	our Volume:	3,392 veh	icles		H	eavy Trucks	(3+ Axi	les): 15				
Vet	nicle Speed:	45 mp	h	-	Vehicle	Mix						
Near/Far Lar	e Distance:	80 fee	t	F		hicleType	Di	ay Evening	Night	Daily		
Site Data						Aut		2.4% 9.2%	· ·	,		
Bar	rier Height:	0.0 fe	ot		٨	1edium Truc	ks: 77	.7% 4.8%	17.5%	% 8.61%		
Barrier Type (0-Wa	•	0.0				Heavy Truc	ks: 84	1.3% 2.7%	13.0%	% 4.96%		
Centerline Dis		50.0 fe	et	Ē	Noise S	ource Elev	ations ((in feet)		-		
Centerline Dist. t		50.0 fe		1		Autos:	0.00	0				
Barrier Distance t		0.0 fe			Mediu	ım Trucks:	2.29	7				
Observer Height (/	,	5.0 fe			Hea	vy Trucks:	8.00	4 Grade A	djustmer	nt: 0.0		
	d Elevation:	0.0 fe		-	1 F		- 4	(1 64)				
	d Elevation:	0.0 fe	et	-	Lane E	quivalent D Autos:	30.41	. ,				
F	Road Grade:	0.0%			Madi	im Trucks:	30.41	-				
	Right View:	-90.0 de 90.0 de	•			vy Trucks:	30.12	-				
FHWA Noise Mode	l Calculation	15										
VehicleType	REMEL	Traffic Flo	ow D	istance	Finite	e Road	Fresnel	Barrier A	tten Be	erm Atten		
Autos:	68.46	2	.83	3.1	4	-1.20	-4	.65 0	.000	0.00		
Medium Trucks:	79.45		.18	3.2		-1.20			.000	0.00		
Heavy Trucks:	84.25		.57	3.1	-	-1.20	-5	.43 0	.000	0.00		
Unmitigated Noise						1						
,,	Leq Peak Ho				vening	Leq Nig		Ldn		CNEL		
Autos:		3.2	71.0		68.1		66.3	73		74.		
Medium Trucks:	-	4.3	72.4		66.3		67.2			74.		
Heavy Trucks:		6.7	75.1		66.2		68.3	76		76.		
Vehicle Noise:		9.7	78.0		71.7	r	72.1	79	.7	79.		
Centerline Distanc	e to Noise C	ontour (in	feet)	70	dBA	65 dB	4	60 dBA	5	5 dBA		
			Ldn:		23	480		1.033		2.226		
			CNEL:		29	493		1,062		2,289		
				_		100		.,562	-	-,====		

	FHWA	-RD-77-108 HIC	GHWAY	NOISE PR	REDICTI		DEL				
	: OY 2020 With	Project		Project Name: The Park @ Live Oak							
Road Name.		Job Number: 11112									
Road Segment.	e/o Rivergrade	e Rd.									
	PECIFIC INP	JT DATA						L INPUT	s		
Highway Data				Site Con	ditions	(Hard =	10, S	oft = 15)			
Average Daily Ti	raffic (Adt): 35	,908 vehicles					Autos:	15			
Peak Hour P	ercentage:	10%		Me	dium Tru	icks (2 A	(xles):	15			
Peak Ho	ur Volume: 3,	591 vehicles		He	avy Truc	ks (3+ A	(xles):	15			
	icle Speed:	45 mph		Vehicle I	Mix						
Near/Far Lane	e Distance:	80 feet			icleType		Dav	Evening	Night	Daily	
Site Data						utos:	72.4%	•	18.4%		
Barri	ier Height:	0.0 feet		Me	edium Tr	ucks:	77.7%	4.8%	17.5%	8.789	
Barrier Type (0-Wa	•	0.0		ŀ	leavy Tr	ucks:	84.3%	2.7%	13.0%	5.069	
Centerline Dist.	. ,	50.0 feet									
Centerline Dist. to		50.0 feet		Noise So				eet)			
Barrier Distance to	Observer:	0.0 feet		14-16-1	Autos n Trucks		000 297				
Observer Height (A	bove Pad):	5.0 feet			n Trucks v Trucks		297 004	Grade Ad	iustmont	0.0	
Pad	Elevation:	0.0 feet		neav	y mucks	. 0.0	JU4	Grade Au	usuneni	0.0	
Road	Road Elevation: 0.0 feet					Distand	ce (in	feet)			
R	oad Grade:	0.0%			Autos	: 30.4	414				
	Left View:	90.0 degrees		Mediur	m Trucks	: 30.1	122				
1	Right View:	90.0 degrees		Heav	ry Trucks	: 30.1	150				
FHWA Noise Model	Calculations										
VehicleType	REMEL T	raffic Flow	Distance	Finite	Road	Fresn	el	Barrier Att	en Ber	m Atter	
Autos:	68.46	3.07	3.		-1.20		-4.65		000	0.00	
Medium Trucks:	79.45	-6.85	3.:		-1.20		-4.87		000	0.00	
Heavy Trucks:	84.25	-9.24	3.	19	-1.20		-5.43	0.0	000	0.00	
Unmitigated Noise											
<i>,</i> ,	eq Peak Hour	Leq Day		vening	Leq I	· ·		Ldn	-	VEL	
Autos:	73.5	71.3		68.3		66.6		73.9		74	
Medium Trucks:	74.6	72.7		66.6		67.5		74.9		75	
Heavy Trucks:	77.0	75.5		66.5		68.6		76.6		76	
Vehicle Noise:	80.0	78.3	3	72.0		72.4		80.0)	80	
Centerline Distance	to Noise Cont	our (in feet)	70	dDA 1	67	JDA		C dBA		dD A	
		Ldn		dBA 233	65 d 50		L (60 dBA 1.083		dBA 333	
					50	13		1.003	Ζ.	ఎఎఎ	

		VA-RD-77-108											
	Scenario: OY 2020 With Project Road Name: Live Oak Av.					Project Name: The Park @ Live Oak Job Number: 11112							
						JOD NUN	nber: 1111	2					
Road Segme	nt: e/o Stewar	AV.											
	SPECIFIC IN	IPUT DATA						EL INPUTS					
Highway Data				S	ite Con	ditions (H	ard = 10, 3	Soft = 15)					
Average Daily	Traffic (Adt):	33,777 vehicle	s				Autos	s: 15					
Peak Hour	Percentage:	10%			Med	lium Truck	ks (2 Axles): 15					
Peak F	lour Volume:	3,378 vehicles			Hea	avy Trucks	(3+ Axles): 15					
Ve	hicle Speed:	45 mph		V	ehicle N	<i>Ni</i> v							
Near/Far La	ne Distance:	80 feet		-		cleType	Dav	Evening	Night Daily				
Site Data						Aut		•	18.4% 85.90				
Ba	rrier Height:	0.0 feet			Ме	dium Truc			17.5% 8.949				
ва Barrier Type (0-И		0.0 feet			н	leavy Truc	ks: 84.3	% 2.7%	13.0% 5.16				
Centerline Di	. ,	50.0 feet											
Centerline Dist.		50.0 feet		N	oise So		ations (in	feet)					
Barrier Distance		0.0 feet				Autos:	0.000						
Observer Height		5.0 feet				n Trucks:	2.297						
	ad Flevation:	0.0 feet			Heav	y Trucks:	8.004	Grade Adji	istment: 0.0				
	ad Elevation:	0.0 feet		L	ane Equ	ivalent D	istance (ir	1 feet)					
	Road Grade:	0.0%			,	Autos:	30.414	,					
	Left View:	-90.0 degree	9		Mediun	n Trucks:	30.122						
	Right View:	90.0 degree			Heav	Y Trucks:	30.150						
FHWA Noise Mod	el Calculation	s											
VehicleType	REMEL	Traffic Flow	Distar	се	Finite	Road	Fresnel	Barrier Atte	n Berm Atter				
Autos:	68.46	2.79		3.14		-1.20	-4.65	5 0.00	0.00				
Medium Trucks:	79.45	-7.04		3.20		-1.20	-4.87	۶ 0.00	0.00				
Heavy Trucks:	84.25	-9.43		3.19		-1.20	-5.43	3 0.00	0.00				
Unmitigated Nois													
VehicleType	Leg Peak Hou			eq Eve	~	Leq Ni		Ldn	CNEL				
Autos:	73		1.0		68.0		66.3	73.6	73				
Medium Trucks:	74		2.5		66.4		67.3	74.7	74				
Heavy Trucks:	76		5.3		66.3		68.4	76.4	76				
Vehicle Noise:	79	.8 7	8.1		71.8		72.2	79.8	80				
Centerline Distan	ce to Noise C	ontour (in feet)											
				70 dł		65 dB	A	60 dBA	55 dBA				
			.dn: IFI :	226		487 501		1,049 1,078	2,260 2,324				

	FHV	VA-RD-77-108 H	IIGHWA	Y N	OISE PF	REDICTI	ON MO	DEL					
Road Nam	Scenario: OY 2020 With Project Road Name: Live Oak Av. Road Segment: w/o Arrow Hwy.					Project Name: The Park @ Live Oak Job Number: 11112							
	SPECIFIC IN	IPUT DATA							L INPUTS	5			
Highway Data				S	Site Con	ditions ((Hard =	10, S	oft = 15)				
Average Daily	Traffic (Adt):	29,747 vehicles					,	Autos.	15				
Peak Hour	Percentage:	10%			Me	dium Tru	cks (2 A	Axles).	15				
Peak H	lour Volume:	2,975 vehicles			He	avy Truc	ks (3+ A	Axles).	15				
Ve	hicle Speed:	45 mph		V	ehicle l	Mix							
Near/Far La	ne Distance:	80 feet		F		icleType		Day	Evening	Night	Daily		
Site Data				+		A	utos:	72.4%	6 9.2%	18.4%	85.94%		
Ba	rrier Height:	0.0 feet			Me	edium Tru	ucks:	77.7%	4.8%	17.5%	8.92%		
Barrier Type (0-W		0.0			ŀ	Heavy Tru	ucks:	84.3%	6 2.7%	13.0%	5.15%		
Centerline Di	st. to Barrier:	50.0 feet		A	loise So	ource Ele	evation	s (in f	eet)				
Centerline Dist.	to Observer:	50.0 feet		F		Autos		200	,				
Barrier Distance	to Observer:	0.0 feet			Modiu	m Trucks		297					
Observer Height (Observer Height (Above Pad): 5.0 fee				Heavy Trucks: 8.004 Grade Adjustme					ustment	0.0		
Pa	ad Elevation:	0.0 feet		L	near	y mucho	. 0.	504	,				
Roa	Road Elevation: 0.0 feet			L	ane Eq	uivalent			feet)				
	Road Grade:					Autos		414					
	Left View:	-90.0 degrees	;		Mediui	m Trucks	: 30.	122					
	Right View:	90.0 degrees	;		Heav	ry Trucks	30.	150					
FHWA Noise Mod	el Calculation	s											
VehicleType	REMEL	Traffic Flow	Distanc	e	Finite	Road	Fresn	el	Barrier Atte	en Ber	rm Atten		
Autos:	68.46	2.24		3.14		-1.20		-4.65	0.0	00	0.000		
Medium Trucks:	79.45	-7.60	:	3.20		-1.20		-4.87	0.0	00	0.000		
Heavy Trucks:	84.25	-9.99	:	3.19		-1.20		-5.43	0.0	00	0.000		
Unmitigated Noise	e Levels (with	out Topo and b	arrier at	tenı	uation)								
VehicleType	Leq Peak Hou	r Leq Day	Lee	q Ev	ening	Leq I	Vight		Ldn	C	NEL		
Autos:	72	.6 7	0.4		67.5		65.7	,	73.1		73.4		
Medium Trucks:	73		2.0		65.9		66.7		74.2		74.3		
Heavy Trucks:	76	-	4.7		65.8		67.9		75.8		75.9		
Vehicle Noise:	79	.3 7	7.5		71.2		71.6	6	79.3		79.4		
Centerline Distant	ce to Noise Co	ontour (in feet)											
				70 di		65 a			60 dBA		dBA		
		-	dn:	207		44			963		074		
		CN	EL:	213	3	45	9		990	2,	133		

Wednesday, May 02, 2018

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	FH	WA-RD-77-10	8 HIGH	IWAY N	OISE PI	REDICTIO	N MODE	L			
Scenario	: HY 2040 V	/ithout Project				Project Na	ame: Th	e Par	k @ Live	Oak	
Road Name	e: Myrtle Av.					Job Nun	nber: 11	112			
Road Segmen	t: n/o Longde	en Av.									
	PECIFIC IN	NPUT DATA							INPUT	S	
Highway Data				5	lite Cor	nditions (H	ard = 10), Sof	t = 15)		
Average Daily 1	raffic (Adt):	29,493 vehic	les				Au	tos:	15		
Peak Hour F	Percentage:	10%			Me	edium Truck	ks (2 Axl	es):	15		
Peak Ho	our Volume:	2,949 vehicle	es		He	eavy Trucks	; (3+ Axl	es):	15		
Veh	icle Speed:	40 mph		1	ehicle/	Mix					
Near/Far Lan	e Distance:	12 feet		F		nicleType	Da	ay I	Evening	Night	Daily
Site Data						Aut	os: 72	.4%	9.2%	18.4%	85.65%
Bari	rier Height:	0.0 feet			М	edium Truc	ks: 77	.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0			1	Heavy Truc	:ks: 84	.3%	2.7%	13.0%	5.23%
Centerline Dis		30.0 feet		Λ	loise Se	ource Elev	ations (in fee	et)		
Centerline Dist. t		30.0 feet				Autos:	0.00)			
Barrier Distance t		0.0 feet			Mediu	m Trucks:	2.29	7			
Observer Height (A	,	5.0 feet			Heav	vy Trucks:	8.00	4 6	Grade Adj	ustment	: 0.0
	d Elevation:	0.0 feet		-							
	d Elevation:	0.0 feet		1	ane Eq	uivalent D			eet)		
F	oad Grade:	0.0%				Autos:	29.81				
	Left View:	-90.0 degre				m Trucks:	29.51	-			
	Right View:	90.0 degre	ees		Heav	vy Trucks:	29.54	/			
FHWA Noise Mode		-									
VehicleType	REMEL	Traffic Flow		stance			Fresnel		Barrier Atte		rm Atten
Autos:	66.51			3.26		-1.20		.49	0.0		0.000
Medium Trucks:	77.72		-	3.33		-1.20		.86		00	0.000
Heavy Trucks:	82.99		-	3.32		-1.20	-5	.77	0.0	00	0.000
Unmitigated Noise			-								
VehicleType Autos:	Leq Peak Ho	ur Leq Da	69.1	Leq Ev	ening 66.1	Leq Nig	gnt 64.4	L	Ldn 71.7	-	NEL 72.0
Medium Trucks:		2.8	70.9		64.8		65.7		73.1		72.0
		5.7	70.9		65.2		67.3		75.2		75.3
Heavy Trucks: Vehicle Noise:		3.4	74.1		70.2		70.7		75.2		75.
					70.2		10.1		78.4	•	78.
Centerline Distanc	e to Noise C	ontour (in fee	et)	70 a	BA	65 dB	A	60) dBA	55	dBA
			Ldn:	10		234			503		085
		C	NEL:	11		240			517		114
						_ 10				.,	

	FHWA-	RD-77-108 HIGI	HWAY	NOISE PR	REDICTIO		DEL			
Scenario: H Road Name: Pe Road Segment: s/						Vame: 1 mber: 1		ark @ Live	Oak	
SITE SPE	CIFIC INPU	T DATA			N	DISE N	IODE	L INPUT	s	
Highway Data				Site Con	ditions (Hard =	10, So	oft = 15)		
Average Daily Traffi	c (Adt): 23,	383 vehicles				/	Autos:	15		
Peak Hour Perc	entage:	10%		Me	dium Tru	cks (2 A	xles):	15		
Peak Hour V	olume: 2,3	38 vehicles		He	avy Truci	ks (3+ A	xles):	15		
Vehicle	Speed:	40 mph		Vehicle I	Mix					
Near/Far Lane Di	stance:	56 feet			icleType		Dav	Evening	Night	Daily
Site Data						utos:	72.4%	•	18.4%	
Barrier I	Heiaht:	0.0 feet		Me	edium Tru	icks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall, 1	•	0.0		ŀ	leavy Tru	icks:	84.3%	2.7%	13.0%	5.239
Centerline Dist. to	,	i0.0 feet		Noise So	uree Ele	votion	in f	0.041		
Centerline Dist. to Ot	server: 6	i0.0 feet		NOISe St	Autos			eel)		
Barrier Distance to Ot	server:	0.0 feet		Modiu	n Trucks		297			
Observer Height (Abov	e Pad):	5.0 feet			v Trucks		04	Grade Ad	iustment	0.0
Pad Ele	evation:	0.0 feet								
Road Ele		0.0 feet		Lane Eq				feet)		
		0.0%			Autos					
=+		0.0 degrees			m Trucks					
Rigi	nt View: 9	0.0 degrees		Heav	y Trucks	53.	151			
FHWA Noise Model Ca	lculations									
VehicleType RI	EMEL Tra	affic Flow Di	stance	Finite	Road	Fresn	el	Barrier Att	en Ber	m Atter
Autos:	66.51	1.69	-0.5	52	-1.20		-4.69	0.0	000	0.00
Medium Trucks:	77.72	-8.04	-0.5		-1.20		-4.88		000	0.00
Heavy Trucks:	82.99	-10.46	-0.5	50	-1.20		-5.34	0.0	000	0.00
Unmitigated Noise Lev	els (without	Topo and barri	ier atte	nuation)						
VehicleType Leq	Peak Hour	Leq Day	Leq E	evning	Leq N	light		Ldn	C	VEL
Autos:	66.5	64.3		61.3		59.6		66.9		67.
Medium Trucks:	68.0	66.1		60.0		60.9		68.3		68
Heavy Trucks:	70.8	69.3		60.3		62.4		70.4		70.
Vehicle Noise:	73.6	71.8		65.4		65.9		73.5	5	73.
Centerline Distance to	Noise Conto	our (in feet)				-				
				dBA	65 d		6	60 dBA		dBA
		Ldn:		03	22			480		034
		CNEL:	1	06	22	9		493	1,	062

	FHW	A-RD-77-108 H	IGHV	VAY N	IOISE PI	EDICTI	ON MC	DEL			
Scenario: HY 204 Road Name: Avenid Road Segment: n/o Bu	a Bar	bosa				Project I Job Ni			ark @ Live	Oak	
SITE SPECIFI	C INI	PUT DATA								s	
Highway Data				1	Site Con	ditions (Hard =	: 10, Sc	oft = 15)		
Average Daily Traffic (Ac	(t):	7,265 vehicles						Autos:	15		
Peak Hour Percentag	ie:	10%			Me	dium Tru	cks (2 .	Axles):	15		
Peak Hour Volum	ie:	727 vehicles			He	avy Truc	ks (3+ .	Axles):	15		
Vehicle Spee	ed:	40 mph		h	Vehicle I	Mix					
Near/Far Lane Distand	e:	12 feet		-		icleType		Dav	Evening	Night	Daily
Site Data					-		utos:	72.4%	•	18.4%	
Barrier Heig	ht.	0.0 feet			Me	edium Tri	ucks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall, 1-Berr		0.0			ŀ	leavy Tr	ucks:	84.3%	2.7%	13.0%	5.239
Centerline Dist. to Barri	er:	30.0 feet		-	Noise So	ource Ele	vatior	s (in fe	et)		
Centerline Dist. to Observ	er:	30.0 feet			10/30 00	Autos		000			
Barrier Distance to Observ	er:	0.0 feet			Modiu	n Trucks	. 0.	297			
Observer Height (Above Pa	d):	5.0 feet				v Trucks		004	Grade Ad	iustment	· 0.0
Pad Elevation	on:	0.0 feet			Tieav	y mucks	. 0.	004	0/000 / 10	dourion	. 0.0
Road Elevation	on:	0.0 feet		1	Lane Eq	uivalent	Distan	ce (in i	feet)		
Road Grad	le:	0.0%				Autos	: 29	816			
Left Vie	W:	-90.0 degrees			Mediur	n Trucks	: 29	518			
Right Vie	W:	90.0 degrees			Heav	y Trucks	: 29	547			
FHWA Noise Model Calcula	tions										
VehicleType REME	-	Traffic Flow	Dista	nce	Finite	Road	Fres	nel	Barrier Att	en Ber	m Atten
	6.51	-3.39		3.26	-	-1.20		-4.49	0.0	000	0.00
Medium Trucks: 7	7.72	-13.11		3.33	3	-1.20		-4.86	0.0	000	0.00
Heavy Trucks: 82	2.99	-15.53		3.32	2	-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Levels (witho	ut Topo and b	arrier	atten	uation)						
VehicleType Leq Peak				Leq E	vening	Leq I	· ·		Ldn		NEL
Autos:	65.2		3.0		60.0		58.	-	65.6		65.
Medium Trucks:	66.7	-	1.8		58.8		59.	-	67.0		67.
	69.6	6 68	3.1		59.1		61.	2	69.1		69.
Heavy Trucks:		3 70	0.6		64.1		64.	6	72.3	3	72.
Heavy Trucks: Vehicle Noise:	72.3										
Vehicle Noise:											
		ntour (in feet)		70 c		65 c		6	0 dBA		dBA
Vehicle Noise:		ntour (in feet)	dn:	70 c 4:	3	65 c 92 94	2	6	0 dBA 198 203	4	dBA 26

	FHV	VA-RD-77-108 H	IGHWAY	NOISE P	REDICT		-		
Road Nam	io: HY 2040 W ne: Avenida Ba nt: s/o Buena \	rbosa				Name: The lumber: 111	Park @ Live 12	Oak	
SITE	SPECIFIC IN	IPUT DATA			N	NOISE MOI	DEL INPUT	S	
Highway Data				Site Col	nditions	(Hard = 10,	Soft = 15)		
Average Daily	Traffic (Adt):	18,485 vehicles				Auto	os: 15		
Peak Hour	Percentage:	10%		Me	edium Tr	ucks (2 Axle	s): 15		
Peak H	lour Volume:	1,849 vehicles		He	eavy Tru	cks (3+ Axle	s): 15		
Ve	hicle Speed:	40 mph		Vehicle	Mix				
Near/Far La	ne Distance:	12 feet			nicleType	e Day	/ Evening	Night	Daily
Site Data						Autos: 72.4	4% 9.2%	18.4%	85.65%
Ba	rrier Heiaht:	0.0 feet		M	edium T	rucks: 77.	7% 4.8%	17.5%	9.12%
Barrier Type (0-W		0.0			Heavy T	rucks: 84.	3% 2.7%	13.0%	5.23%
Centerline Di	. ,	30.0 feet		Noice C	ouroo E	levations (ii	a faat)		
Centerline Dist.	to Observer:	30.0 feet		NOISE 3	Auto		Tieel)		
Barrier Distance	to Observer:	0.0 feet				0.000			
Observer Height	Above Pad):	5.0 feet			m Truck		Grade Ac	liustmont	
P	ad Elevation:	0.0 feet		неа	vy Truck	S: 8.004	Grade Ad	ijusunem	. 0.0
Ro	ad Elevation:	0.0 feet		Lane Eq	uivalen	t Distance (in feet)		
	Road Grade:	0.0%			Auto	s: 29.816			
	Left View:	-90.0 degrees		Mediu	m Truck	s: 29.518			
	Right View:	90.0 degrees		Hea	vy Truck	s: 29.547			
FHWA Noise Mod	el Calculation	s							
VehicleType	REMEL	Traffic Flow	Distance	Finite	Road	Fresnel	Barrier At	ten Ber	m Atten
Autos:	66.51	0.67	3.	26	-1.20	-4.4	19 0.	000	0.000
Medium Trucks:	77.72	-9.06	3.	33	-1.20	-4.8	36 0.	000	0.000
Heavy Trucks:	82.99	-11.48	3.	32	-1.20	-5.7	7 0.	000	0.000
Unmitigated Nois	e Levels (with	out Topo and ba	arrier atte	enuation)					
VehicleType	Leq Peak Hou	r Leq Day	Leq	Evening	Leq	Night	Ldn	C	NEL
Autos:	69			64.1		62.4	69.		70.0
Medium Trucks:	70			62.8		63.7	71.		71.3
Heavy Trucks:	73	.6 72	.1	63.1		65.2	73.	2	73.3
Vehicle Noise:	76	.4 74	.6	68.2		68.7	76.	3	76.5
Centerline Distan	ce to Noise Co	ontour (in feet)				÷			
) dBA		dBA	60 dBA		dBA
		La		79		71	369		'94
		CNE	EL:	82	1	76	379	ε	816

Wednesday, May 02, 2018

Wednesday, May 02, 2018

	FHV	VA-RD-77-108	HIGH	WAY NO	DISE P	REDICT	ION MO	DEL			
	e: Rivergrade						t Name: lumber:		ark @ Live	Oak	
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				S	ite Cor	nditions	(Hard =	10, S	oft = 15)		
Average Daily 1	raffic (Adt):	8,469 vehicle	es					Autos:			
Peak Hour F		10%					ucks (2)				
	our Volume:	847 vehicle	s		He	eavy Tru	cks (3+)	Axles):	15		
	icle Speed:	40 mph		v	ehicle	Mix					
Near/Far Lan	e Distance:	12 feet			Veh	icleTyp	e	Day	Evening	Night	Daily
Site Data							Autos:	72.4%	9.2%	18.4%	85.65%
Bari	rier Heiaht:	0.0 feet			М	edium 1	rucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa		0.0				Heavy T	rucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis		30.0 feet		N	loise S	ource E	levation	s (in f	eet)		
Centerline Dist. to		30.0 feet				Auto	os: 0.	000			
Barrier Distance t		0.0 feet			Mediu	m Truck	(s: 2.	297			
Observer Height (A	,	5.0 feet			Hear	vy Truck	(s: 8.	004	Grade Ad	ljustmen	t: 0.0
	d Elevation:	0.0 feet					1 Distan	//	6		
	d Elevation:	0.0 feet		L	ane Eq		t Distan		reet)		
F	load Grade:	0.0%			Martin	Auto m Truck		816 518			
	Left View: Right View:	-90.0 degre 90.0 degre				m Truck vy Truck		518 547			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Dist	ance	Finite	Road	Fresi	nel	Barrier Att	en Be	rm Atten
Autos:	66.51	-2.72		3.26		-1.20		-4.49	0.0	000	0.00
Medium Trucks:	77.72	-12.45		3.33		-1.20		-4.86	0.0	000	0.00
Heavy Trucks:	82.99	-14.87		3.32		-1.20		-5.77	0.0	000	0.00
Unmitigated Noise	Levels (with	out Topo and	barrie	r attenu	uation)						
	Leq Peak Hou			Leq Eve	· ·		Night		Ldn	-	NEL
Autos:	65		63.7		60.7		59.0	-	66.3		66.
Medium Trucks:	67		65.5		59.4		60.3	-	67.7		67.
Heavy Trucks:	70		68.7		59.8		61.8		69.8	-	69.
Vehicle Noise:	73		71.2		64.8		65.3	3	73.0	0	73.
Centerline Distanc	e to Noise Co	ontour (in feet)	70 di	DA.	65	dBA		50 dBA	54	5 dBA
			I dn:	47			02		219		472
			NFL:	47			02		219		472 485
			v	40			0-1		220		100

	FHW/	A-RD-77-108	HIGH	IWAY I	NOISE PR	REDICT	TION MO	DEL			
Scenario: HY 204 Road Name: Rivergr Road Segment: s/o Ster	ade R	d.					t Name: Number:		ark @ Live	Oak	
SITE SPECIFIC	INP	UT DATA				1	NOISE	/IODE		s	
Highway Data					Site Con	ditions	; (Hard =	10, S	oft = 15)		
Average Daily Traffic (Ad	t): :	2,859 vehicle	s					Autos:	15		
Peak Hour Percentag	e:	10%			Me	dium Ti	rucks (2 A	(xles)	15		
Peak Hour Volum	e:	286 vehicles	5		He	avy Tru	icks (3+ A	(xles	15		
Vehicle Spee	d:	40 mph		-	Vehicle I	Mix					
Near/Far Lane Distanc	e:	12 feet		ŀ		icleTyp	0	Dav	Evening	Night	Daily
Site Data					1011			72.4%		18.4%	
		0.0 feet			Me	edium 1		77.7%		17.5%	
Barrier Heigh Barrier Type (0-Wall, 1-Bern		0.0 feet						84.3%		13.0%	
Centerline Dist. to Barrie	·	30.0 feet									0.20
Centerline Dist. to Observe		30.0 feet		-	Noise So				eet)		
Barrier Distance to Observe		0.0 feet				Auto		000			
Observer Height (Above Pad		5.0 feet				m Truck		297			
Pad Elevatio		0.0 feet			Heav	y Truck	(s: 8.0	004	Grade Ad	justment	: 0.0
Road Elevatio		0.0 feet		ŀ	Lane Eq	uivalen	t Distan	ce (in	feet)		
Road Grad		0.0%				Auto					
Left Vie		-90.0 degree	s		Mediui	m Truck	(s: 29.	518			
Right Vie		90.0 degree			Heav	y Truck	(s: 29.	547			
FHWA Noise Model Calcula											
VehicleType REMEL		Traffic Flow	Dis	tance		Road	Fresh		Barrier Att		m Atter
	.51	-7.44		3.2		-1.20		-4.49		000	0.00
	.72	-17.16		3.3		-1.20		-4.86		000	0.00
	.99	-19.58		3.3		-1.20		-5.77	0.0	000	0.00
Unmitigated Noise Levels (v			-					1			
VehicleType Leq Peak		Leq Day		Leq E	vening	Leq	Night		Ldn		NEL
Autos:	61.1		58.9 50.8		56.0		54.2		61.6		61
Medium Trucks: Heavy Trucks:	62.7 65.5		50.8 54.0		54.7 55.0		55.6 57.1		63.0 65.1		63 65
Vehicle Noise:	68.3		6.5		55.0 60.0		57.1 60.6		68.2		68
					60.0		60.6)	00.2	2	00
Centerline Distance to Nois	e con	nour (in ieet)		70	dBA	65	dBA		60 dBA	55	dBA
			dn:		23		49		106		29
			IFI :	-	24		-5 51		109		35

	FHV	VA-RD-77-108	HIGH	IWAY N	IOISE PH	REDICTIC	IN MC	IDEL			
	o: HY 2040 W e: Rivergrade nt: s/o Live Oa	Rd.				Project N Job Nur			ark @ Live	Oak	
	SPECIFIC IN	PUT DATA							l input	s	
Highway Data					Site Con	ditions (H	lard =	: 10, So	oft = 15)		
	Traffic (Adt): Percentage: our Volume:	15,407 vehicl 10% 1,541 vehicle				dium Truc avy Truck	ks (2		15 15 15		
Vei	hicle Speed:	50 mph		-	Vehicle I	Mix					
Near/Far Lai	ne Distance:	12 feet		F		icleTvpe		Dav	Evening	Night	Daily
Site Data					-	Au	tos:	72.4%	Ů	18.4%	
Bar	rier Heiaht:	0.0 feet			Me	edium Tru	cks:	77.7%	4.8%	17.5%	9.12
Barrier Type (0-W	all, 1-Berm):	0.0			ŀ	leavy Tru	cks:	84.3%	2.7%	13.0%	5.23
Centerline Dis		30.0 feet			Noise So	ource Ele	vation	ns (in fe	et)		
Centerline Dist.		30.0 feet				Autos:	0.	000	-		
Barrier Distance		0.0 feet			Mediur	n Trucks:	2.	297			
Observer Height (,	5.0 feet			Heav	v Trucks:	8.	004	Grade Ad	justment.	0.0
	d Elevation:	0.0 feet		-			N-4	(!	(4)		
	d Elevation:	0.0 feet		Ľ	Lane Eq	uivalent L			eet)		
,	Road Grade:	0.0%			1.4 m all	Autos: n Trucks:		.816			
	Left View: Right View:	-90.0 degre 90.0 degre				n Trucks: y Trucks:		.518 .547			
FHWA Noise Mode	el Calculation	s									
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite	Road	Fres	nel	Barrier Att	en Ber	m Atter
Autos:	70.20	-1.09		3.2	6	-1.20		-4.49	0.0	000	0.0
Medium Trucks:	81.00	-10.82		3.3	3	-1.20		-4.86	0.0	000	0.0
Heavy Trucks:	85.38	-13.24		3.3	2	-1.20		-5.77	0.0	000	0.0
Unmitigated Noise										1	
, ,	Leq Peak Hou			Leq E	~	Leq N	<u> </u>		Ldn		NEL
Autos:	71	-	69.0		66.0		64.	-	71.0	-	71
Medium Trucks:	72		70.4		64.3		65.	-	72.0	-	72
Heavy Trucks:	74		72.7		63.8		65.	-	73.		73
Vehicle Noise:	77		75.8		69.6		69.	9	77.	ö	77
Centerline Distand	e to Noise Co	ontour (in fee	<i>t)</i>	70	-104	05."	24		0.104		-10.4
			Later		dBA	65 dE		6	0 dBA		dBA
		~	Ldn: NEL:	9	-	206			444 457	-	57 84
		0	IVEL:	9	0	212			407	g	04

FH\	VA-RD-77-108 HIGI	HWAY N	NOISE PR	EDICTIO	N MOD	EL		
Scenario: HY 2040 W Road Name: Stewart Av. Road Segment: s/o Live Oa					ame: Th nber: 11	ne Park @ L 112	ive Oak	
SITE SPECIFIC IN	IPUT DATA			NO	ISE MO	DDEL INPU	JTS	
Highway Data			Site Cond	ditions (H	lard = 1	0, Soft = 15)	
Average Daily Traffic (Adt):	7,154 vehicles				AL	itos: 15		
Peak Hour Percentage:	10%		Med	lium Truc	ks (2 Ax	les): 15		
Peak Hour Volume:	715 vehicles		Hea	vy Truck	s (3+ Ax	les): 15		
Vehicle Speed:	30 mph	ŀ	Vehicle N	liv				
Near/Far Lane Distance:	12 feet	ŀ		cleType	0	ay Evenir	g Nigl	ht Daily
Site Data			venio			2.4% 9.2	· ·	4% 85.65%
			Mo	dium Tru		2.4% 9.2 7.7% 4.8		
Barrier Height: Barrier Type (0-Wall, 1-Berm):	0.0 feet 0.0			leavy Truc		4.3% 2.7		
Centerline Dist. to Barrier:	40.0 feet						/0 10.	0.2070
Centerline Dist. to Observer:	40.0 feet		Noise So	urce Elev	ations/	(in feet)		
Barrier Distance to Observer:	0.0 feet			Autos:	0.00	-		
Observer Height (Above Pad):	5.0 feet		Medium	n Trucks:	2.29			
Pad Elevation:	0.0 feet		Heavy	/ Trucks:	8.00	4 Grade	Adjustm	ent: 0.0
Road Elevation:	0.0 feet	-	Lane Equ	ivalent D	Distance	(in feet)		
Road Grade:	0.0%	F		Autos:	39.86	, ,		
l eft View:	-90.0 degrees		Medium	1 Trucks:	39.64	0		
Right View:	90.0 degrees		Heavy	/ Trucks:	39.66	51		
FHWA Noise Model Calculation	s							
VehicleType REMEL	Traffic Flow Di	istance	Finite I	Road	Fresne	Barrier	Atten	Berm Atten
Autos: 61.75	-2.20	1.3		-1.20		1.59	0.000	0.000
Medium Trucks: 73.48	-11.93	1.4		-1.20		1.87	0.000	0.000
Heavy Trucks: 79.92	-14.35	1.4		-1.20	-5	5.56	0.000	0.000
Unmitigated Noise Levels (with			,					
VehicleType Leq Peak Hou		Leq E	vening	Leq Ni	•	Ldn		CNEL
Autos: 59			54.6		52.8		60.2	60.5
Medium Trucks: 61			53.8		54.7		2.1	62.2
Heavy Trucks: 65			55.3		57.4		5.3	65.5
Vehicle Noise: 67			59.4		60.1	e	57.8	68.0
Centerline Distance to Noise Co	ontour (in feet)		T					
	l		dBA	65 dE	BA	60 dBA		55 dBA
	Ldn:	_	29	62		133		287
	CNEL:	2	9	63		136		294

Wednesday, May 02, 2018

Wednesday, May 02, 2018

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			HWAY	NOISE P	REDICTIO		DEL			
Scenario: HY 2040 Road Name: Baldwin F Road Segment: s/o Live (Park Bl.	t				Vame: *		ark @ Live	Oak	
SITE SPECIFIC	INPUT DATA	1			N	DISE N	IODE	L INPUT	s	
Highway Data				Site Cor	nditions (Hard =	10, Sc	oft = 15)		
Average Daily Traffic (Adt):	14.196 vehi	cles					Autos:	15		
Peak Hour Percentage:	10%			Me	dium Tru	cks (2 A	(xles):	15		
Peak Hour Volume:	1,420 vehic	les		He	avy Truck	ks (3+ A	xles):	15		
Vehicle Speed:	40 mph		-	Vehicle						
Near/Far Lane Distance:	48 feet		-				Dav	C	Marchat	Delle
<u></u>				ver	nicleType		Day 72.4%	Evening 9.2%	Night 18.4%	Daily 85.65%
Site Data					Al edium Tri		72.4% 77.7%		18.4%	
Barrier Height:										
Barrier Type (0-Wall, 1-Berm):					Heavy Tru	ICKS.	84.3%	2.7%	13.0%	5.23%
Centerline Dist. to Barrier.			ľ	Noise S	ource Ele	vation	s (in fe	et)		
Centerline Dist. to Observer.			Ī		Autos.	. 0.0	000			
Barrier Distance to Observer:				Mediu	m Trucks.	2.2	297			
Observer Height (Above Pad):				Hea	vy Trucks.	8.0	004	Grade Ad	iustmen	t: 0.0
Pad Elevation:			-							
Road Elevation:			-	Lane Eq	uivalent			eet)		
Road Grade:					Autos.					
Left View:					m Trucks.					
Right View:	90.0 degi	ees		Hea	vy Trucks.	43.9	966			
FHWA Noise Model Calculation	-									
VehicleType REMEL	Traffic Flow	_	istance		Road	Fresn	-	Barrier Att		rm Atten
Autos: 66.5			0.7		-1.20		-4.65		000	0.000
Medium Trucks: 77.7		-	0.7		-1.20		-4.87		000	0.000
Heavy Trucks: 82.9		-	0.7	-	-1.20		-5.43	0.0	000	0.000
Unmitigated Noise Levels (wi				,	r.					
VehicleType Leq Peak H		<i>,</i>	Leq E	vening	Leq N	·		Ldn	-	NEL
	65.5	63.4		60.4		58.6		66.0		66.3
	67.0	65.2		59.1		59.9		67.4		67.
	69.9	68.4		59.4		61.5		69.5		69.6
	72.7	70.9		64.4		65.0		72.6	6	72.8
Centerline Distance to Noise	Contour (in fe	et)	70	dBA	65 d	0.4		0 dBA		i dBA
		I dn:		dBA 75	65 d		e e	347		0 dBA 747
		Lan: CNFL :		(5 77	16 16			347 356		(47 767

	FHWA-I	RD-77-108 HIGH	WAY	NOISE PF	REDICTI		DEL			
Road Name	: HY 2040 Witho : Maine Av. : s/o Arrow Hwy.	ut Project				Name: umber:		ark @ Live	Oak	
SITE S	PECIFIC INPU	T DATA			N	OISE N	IODE	L INPUT	s	
Highway Data				Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily T	raffic (Adt): 12.3	397 vehicles				,	Autos:	15		
Peak Hour F	ercentage:	10%		Me	dium Tru	icks (2 A	(xles):	15		
Peak Ho	ur Volume: 1,2	40 vehicles		He	avy Truc	ks (3+ A	(xles):	15		
Veh	icle Speed:	35 mph		Vehicle I	Mix					
Near/Far Lan	e Distance:	12 feet			icleType		Dav	Evening	Night	Daily
Site Data				10/1			72.4%		18.4%	
	ier Heiaht:	0.0 feet		Me	edium Tr		77.7%		17.5%	9.129
Barrier Type (0-Wa		0.0 1001		F	leavy Tr	ucks:	84.3%	2.7%	13.0%	
Centerline Dist	. ,	0.0 feet			,					
Centerline Dist. to		0.0 feet		Noise Sc				eet)		
Barrier Distance to		0.0 feet			Autos		000			
Observer Height (A		5.0 feet			n Trucks		297	Our de Ad		
	,	0.0 feet		Heav	y Trucks	.: 8.0	004	Grade Adj	ustment.	0.0
Road	d Elevation:	0.0 feet		Lane Eq	uivalent	Distand	ce (in i	feet)		
R	oad Grade:	0.0%	[Autos	: 39.8	362			
	Left View: -9	0.0 degrees		Mediur	n Trucks	: 39.0	640			
	Right View: 9	0.0 degrees		Heav	y Trucks	: 39.0	661			
FHWA Noise Model	Calculations									
VehicleType		affic Flow Dis	tance	Finite		Fresn		Barrier Att		m Atten
Autos:	64.30	-0.49	1.3		-1.20		-4.59	0.0		0.00
Medium Trucks:	75.75	-10.21	1.4		-1.20		-4.87	0.0		0.00
Heavy Trucks:	81.57	-12.63	1.4		-1.20		-5.56	0.0	000	0.00
Unmitigated Noise				,			r			
	eq Peak Hour	Leq Day	Leq E	vening	Leq	Vight		Ldn		VEL
Autos:	64.0 65.7	61.8		58.8		57.1		64.4		64.
Medium Trucks: Heavy Trucks:	69.1	63.9 67.6		57.8 58.6		58.6 60.7		66.1 68.7		66. 68.
Vehicle Noise:	71.6	69.9		63.2		63.9		71.5		71.
				63.2		63.8		71.5)	71.
Centerline Distance	e to Noise Conto	ur (in reet)	70	dBA	65 (IRA	F	0 dBA	55	dBA
		Ldn:		51)9		235		06
								200		

		NOISE PREDI		_	
Scenario: HY 2040 Without Pro Road Name: Longden Av.	ject		ject Name: The P b Number: 11112		ik
Road Segment: w/o Myrtle Av.		00	britaniber. 11112		
SITE SPECIFIC INPUT DA	ТА		NOISE MODE		
Highway Data		Site Conditio	ons (Hard = 10, S	oft = 15)	
Average Daily Traffic (Adt): 15,446 v	ehicles		Autos	: 15	
Peak Hour Percentage: 10%		Medium	n Trucks (2 Axles).	: 15	
Peak Hour Volume: 1,545 ve	hicles	Heavy	Trucks (3+ Axles)	: 15	
Vehicle Speed: 40 m	bh	Vehicle Mix			
Near/Far Lane Distance: 12 fee	et	VehicleT	ype Day	Evening N	ight Daily
Site Data			Autos: 72.4%	6 9.2% 1	8.4% 85.65%
Barrier Height: 0.0 fe	et	Mediur	n Trucks: 77.7%	6 4.8% 1 [°]	7.5% 9.12%
Barrier Type (0-Wall, 1-Berm): 0.0		Heav	y Trucks: 84.3%	6 2.7% 1	3.0% 5.23%
Centerline Dist. to Barrier: 30.0 fe	eet	Noise Source	e Elevations (in f	eet)	
Centerline Dist. to Observer: 30.0 fe	eet		utos: 0,000		
Barrier Distance to Observer: 0.0 fe	et	Medium Tri			
Observer Height (Above Pad): 5.0 fe	et	Heavy Tr		Grade Adjust	ment: 0.0
Pad Elevation: 0.0 fe	eet				
Road Elevation: 0.0 fe	eet		lent Distance (in	feet)	
Road Grade: 0.0%			utos: 29.816		
Left View: -90.0 d		Medium Tri			
Right View: 90.0 d	egrees	Heavy Tri	ucks: 29.547		
FHWA Noise Model Calculations					
VehicleType REMEL Traffic F				Barrier Atten	Berm Atten
		.26 -1.		0.000	
		.33 -1.:		0.000	
Heavy Trucks: 82.99 -1	2.26 3	.32 -1.	20 -5.77	0.000	0.00
Unmitigated Noise Levels (without Topo		,			
		v	.eq Night	Ldn	CNEL
Autos: 68.5	66.3	63.3	61.6	68.9	69.
Medium Trucks: 70.0	68.1	62.0	62.9	70.3	70.
Heavy Trucks: 72.9	71.3	62.4	64.5	72.4	72.
Vehicle Noise: 75.6	73.9	67.4	67.9	75.6	75.
Centerline Distance to Noise Contour (in	,	0.004	05 104	00-104	66 - ID A
	1 7	0 dBA	65 dBA	60 dBA	55 dBA
		70	150	0.07	705
	Ldn: CNFL :	70 72	152 156	327 336	705 724

FI	HWA-RD-77-108 HIG	GHWAY N	OISE PR	EDICTIO	N MODEL			
Scenario: HY 2040 Road Name: Longden Road Segment: e/o Myrtle	Av.				ame: The F aber: 11112	ark @ Live	Oak	
SITE SPECIFIC	INPUT DATA			NO	ISE MOD	EL INPUTS	s	
Highway Data		s	Site Cond	litions (H	ard = 10, S	oft = 15)		
Average Daily Traffic (Adt):	19,716 vehicles				Autos	: 15		
Peak Hour Percentage:	10%		Med	ium Trucl	(2 Axles)	: 15		
Peak Hour Volume:	1,972 vehicles		Hea	vy Trucks	(3+ Axles)	: 15		
Vehicle Speed:	40 mph	v	ehicle M	ix				
Near/Far Lane Distance:	12 feet	-		leType	Day	Evening	Night	Daily
Site Data				Aut	os: 72.4	•	18.4%	
Barrier Height:	0.0 feet		Mee	dium Truc	ks: 77.79	6 4.8%	17.5%	9.12%
Barrier Type (0-Wall, 1-Berm):			He	eavy Truc	ks: 84.3	6 2.7%	13.0%	5.23%
Centerline Dist. to Barrier:		Δ	loise Sou	Irce Elev	ations (in	feet)		
Centerline Dist. to Observer:				Autos:	0.000	,		
Barrier Distance to Observer:			Medium	Trucks:	2.297			
Observer Height (Above Pad):			Heavy	Trucks:	8.004	Grade Adj	ustment:	0.0
Pad Elevation:	0.0 1001	-						
Road Elevation:	0.0 feet	L	ane Equ		istance (in	feet)		
Road Grade:	0.070			Autos:	29.816			
Left View:	00.0 009.000			Trucks: Trucks:	29.518 29.547			
Right View:	90.0 degrees		neavy	TTUCKS.	29.547			
FHWA Noise Model Calculatio		Neteres	Einite F	2 (Energy (Damian Att		A
VehicleType REMEL Autos: 66.5		Distance 3.26	Finite F	-1.20	Fresnel -4.49	Barrier Atte		m Atten 0.00
Medium Trucks: 77.7		3.33		-1.20	-4.49			0.00
Heavy Trucks: 82.9		3.33		-1.20	-4.00			0.00
Unmitigated Noise Levels (wi	thout Topo and bar	rier attenu	uation)					
VehicleType Leq Peak H	our Leq Day	Leq Ev	ening	Leq Ni	ght	Ldn	Cl	VEL
Autos:	67.3	3	64.4		62.6	70.0		70.3
Medium Trucks:	71.1 69.2	2	63.1		64.0	71.4		71.
	73.9 72.4	1	63.4		65.5	73.5		73.6
Vehicle Noise:	76.7 74.9)	68.4		69.0	76.6		76.
Centerline Distance to Noise	Contour (in feet)							
		70 d		65 dB	A	60 dBA		dBA
	Ldn CNFI			179 184		385 395	-	29 52

Wednesday, May 02, 2018

	FH\	WA-RD-77-108	HIGH	WAY N	OISE PF	REDICTIO	ON MO	DEL			
	: Live Oak A					Project N Job Nu			ark @ Live	Oak	
SITE S	PECIFIC IN	IPUT DATA				N	DISE N	/IODE	L INPUTS	5	
Highway Data				~	Site Con	ditions (Hard =	10, So	oft = 15)		
Average Daily T	raffic (Adt):	29,553 vehicle	es				,	Autos:	15		
Peak Hour F	Percentage:	10%			Me	dium Truo	cks (2 A	(xles)	15		
Peak Ho	our Volume:	2,955 vehicle	s		He	avy Truck	ks (3+ A	(xles):	15		
Veh	icle Speed:	40 mph			/ehicle	Mix					
Near/Far Lan	e Distance:	48 feet		Ľ		icleType		Dav	Evening	Night	Daily
Site Data					ven			72.4%	0	18.4%	
	der Height.	0.0 feet			Me	edium Tru	icks:	77.7%	4.8%	17.5%	
Barrier Type (0-Wa	ier Height:	0.0 reet			ŀ	leavy Tru		84.3%		13.0%	
Centerline Dis	. ,	48.0 feet									
Centerline Dist. to		48.0 feet		/	Voise So	ource Ele			eet)		
Barrier Distance to		40.0 feet				Autos:		000			
Observer Height (A		5.0 feet				n Trucks:		297			
	d Elevation:	0.0 feet			Heav	y Trucks:	8.0	004	Grade Adj	ustment	: 0.0
	d Elevation:	0.0 feet		1	ane Eq	uivalent	Distan	ce (in	feet)		
	oad Grade:	0.0%		-		Autos			,		
	Left View:	-90.0 degre	es		Mediur	n Trucks:	41.0	657			
	Right View:	90.0 degre			Heav	y Trucks:	41.	678			
FHWA Noise Mode	I Calculation	IS									
VehicleType	REMEL	Traffic Flow	Dist	tance	Finite	Road	Fresn	el	Barrier Atte	en Bei	m Atten
Autos:	66.51	2.71		1.05	5	-1.20		-4.64	0.0	00	0.00
Medium Trucks:	77.72	-7.02		1.09)	-1.20		-4.87	0.0	00	0.00
Heavy Trucks:	82.99	-9.44		1.08	3	-1.20		-5.45	0.0	00	0.00
Unmitigated Noise	Levels (with	out Topo and	barrie	r atten	uation)						
	Leq Peak Hou	1 1		Leq Ev	~	Leq N	·		Ldn		NEL
Autos:	69		66.9		63.9		62.2		69.5		69.
Medium Trucks:	70		68.7		62.6		63.5		70.9		71.
Heavy Trucks:	73		71.9		62.9		65.0		73.0		73.
Vehicle Noise:	76	=	74.4		68.0		68.5		76.1		76.
Centerline Distance	e to Noise C	ontour (in feet)	70 0	ID A	65 d	DA	4	50 dBA	FF	dBA
			I dn:	12		65 a			572		ава 233
			Lan: NFL:	12		20	-		572		233 267
		C.	VLL.	12		21.			300	1,	201

Fł	IWA-RD-77-	108 HIGH	HWAY	NOISE PF	EDICT	ION MO	DEL			
Scenario: HY 2040 Road Name: Arrow Hw Road Segment: e/o Peck	y.	ect				Name: umber:		ark @ Live	Oak	
SITE SPECIFIC I	NPUT DAT	A			N	IOISE N	NODE		s	
Highway Data				Site Con	ditions	(Hard =	10, Se	oft = 15)		
Average Daily Traffic (Adt):	28,500 ve	hicles					Autos:	15		
Peak Hour Percentage:	10%			Me	dium Tri	ucks (2 A	Axles):	15		
Peak Hour Volume:	2,850 veh	icles		Hea	avy Truo	cks (3+ A	Axles):	15		
Vehicle Speed:	45 mpl	n		Vehicle I	Niv					
Near/Far Lane Distance:	48 feet				leType		Dav	Evening	Night	Daily
Site Data				Veni			72.4%	•	18.4%	
	<i>.</i>			Me	dium Ti		77.7%		17.5%	9.129
Barrier Height:	0.0 fee	et			leavy Ti		84.3%		13.0%	
Barrier Type (0-Wall, 1-Berm): Centerline Dist, to Barrier:	0.0 40.0 fee								.0.070	0.20
Centerline Dist. to Barrier: Centerline Dist. to Observer:	40.0 fee			Noise So				eet)		
Barrier Distance to Observer:	40.0 fee				Auto		000			
Observer Height (Above Pad):					n Truck		297			
Pad Elevation:	0.0 fee			Heav	y Truck	s: 8.0	004	Grade Ad	justment	0.0
Road Elevation:	0.0 fee			Lane Equ	iivalen	t Distan	ce (in	feet)		
Road Grade:	0.0%	~			Auto					
Left View:	-90.0 de	arees		Mediur	n Truck	s: 32.	114			
Right View:	90.0 de	~		Heav	y Truck	s: 32.	141			
FHWA Noise Model Calculatio	ns									
VehicleType REMEL	Traffic Flo		stance	Finite		Fresr		Barrier Att		m Atter
Autos: 68.4		.04	2.1	-	-1.20		-4.59		000	0.00
Medium Trucks: 79.4		.69	2.1	-	-1.20		-4.87		000	0.00
Heavy Trucks: 84.2			2.7	-	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise Levels (wit							1			
VehicleType Leq Peak He		-	Leq E	vening	Leq	Night		Ldn		VEL
	2.0	69.8 71.5		66.9 65.4		65.1 66.2		72.5		72
	3.3 5.7	71.5 74.2		65.4 65.2		66.2		73.7		73
	5.7 '8.7	74.2		70.7		71.1		75.3		75.
				70.7		/1.1		70.1		10
Centerline Distance to Noise	ontour (in i	eet)	70	dBA	65	dBA		60 dBA	55	dBA
		Ldn:		ивд 53		ивм 29		709		06A 527
		Lun.		57		25 38		703	1,	569

	FHV	VA-RD-77-10	BHIGH	IWAY N	IOISE PI	REDICTIO	NMO	DEL			
	 b: HY 2040 W c: Arrow Hwy. c: e/o Longde 	,				Project Na Job Nun			ırk @ Live	Oak	
	SPECIFIC IN	PUT DATA							L INPUT	s	
Highway Data					Site Con	ditions (H	lard =	10, Sc	oft = 15)		
Average Daily 1	, ,	48,995 vehic	les					Autos:	15		
Peak Hour F		10%				dium Truci	•		15		
	our Volume:	4,900 vehicl	es		He	avy Trucks	s (3+ A	(xles):	15		
	nicle Speed:	45 mph			Vehicle I	Mix					
Near/Far Lan	e Distance:	48 feet			Veh	icleType		Day	Evening	Night	Daily
Site Data						Au	tos:	72.4%	9.2%	18.4%	85.65
Bari	rier Height:	0.0 feet			Me	edium Truc	cks:	77.7%	4.8%	17.5%	9.12
Barrier Type (0-Wa	all, 1-Berm):	0.0			ŀ	leavy Truc	cks:	84.3%	2.7%	13.0%	5.23
Centerline Dis	t. to Barrier:	40.0 feet		F	Noise So	ource Elev	ation	s (in fe	et)		
Centerline Dist. t		40.0 feet				Autos:		000			
Barrier Distance t		0.0 feet			Mediur	n Trucks:	2.2	297			
Observer Height (A	,	5.0 feet			Heav	y Trucks:	8.0	004	Grade Ad	justment.	: 0.0
	d Elevation:	0.0 feet		-				(!)	41		
	d Elevation:	0.0 feet		-	Lane Eq	uivalent D Autos:	32.3		eet)		
H	Road Grade: Left View:	0.0%			Modiu	n Trucks:	32.				
	Right View:	-90.0 degre 90.0 degre				y Trucks:	32.				
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite	Road	Fresn	el	Barrier Att	en Ber	m Atte
Autos:	68.46	4.39)	2.7	3	-1.20		-4.59	0.0	000	0.0
Medium Trucks:	79.45	-5.33	-	2.7	-	-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-7.75	-	2.7	-	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise VehicleType	Levels (with Lea Peak Hou					1 N	- let		Ldn	0	NEL
Autos:	Leq Реак ног 74		y 72.2	Leq E	vening 69.2	Leq Ni	9nt 67.5		Lan 74.8		NEL 75
Medium Trucks:	74		73.8		67.7		68.6		74.0	-	76
Heavy Trucks:	78		76.5		67.6		69.7		77.6	-	77
Vehicle Noise:	81		79.3		73.0		73.4		81.1		81
Centerline Distanc	e to Noise Co	ontour (in fee	t)								
				70	dBA	65 dE	BA	6	0 dBA	55	dBA
			Ldn:	2	19	472			1,017	2,	191
			NEL:		25	485			1.045		252

	FH	WA-RD-77-10	8 HIGH	IWAY I	NOISE PR	EDICTIC	ON MOD	DEL			
	e: Arrow Hwy		t			Project N Job Nu			rk @ Live	Oak	
	SPECIFIC II	VPUT DATA								s	
Highway Data					Site Con	ditions (l	lard =	10, So	ft = 15)		
Average Daily	Traffic (Adt):	33,799 vehi	cles				A	Autos:	15		
Peak Hour	Percentage:	10%				dium Truc			15		
Peak H	our Volume:	3,380 vehicl	es		Hea	avy Truck	is (3+ A	xles):	15		
	hicle Speed:	45 mph		-	Vehicle I	Nix					
Near/Far Lar	ne Distance:	48 feet		-	Vehi	cleType	1	Day	Evening	Night	Daily
Site Data						AL	itos: 1	72.4%	9.2%	18.4%	85.65%
Bar	rier Heiaht:	0.0 feet			Me	edium Tru	cks: 1	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-W		0.0			F	leavy Tru	cks: 8	34.3%	2.7%	13.0%	5.23%
Centerline Dis	st. to Barrier:	40.0 feet		-	Noise So	urco Elo	vations	(in fo	of)		
Centerline Dist.	to Observer:	40.0 feet		-	140/36 30	Autos:			ei)		
Barrier Distance	to Observer:	0.0 feet			Modiur	n Trucks:	0.0				
Observer Height (J	Above Pad):	5.0 feet				v Trucks:			Grade Ad	iustment	0.0
Pa	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		L	Lane Equ				eet)		
F	Road Grade:	0.0%				Autos:					
	Left View:	-90.0 degr				n Trucks:					
	Right View:	90.0 degr	ees		Heav	y Trucks:	32.1	41			
FHWA Noise Mode	el Calculation	15									
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite	Road	Fresne	el i	Barrier Att	en Ber	m Atten
Autos:	68.46		-	2.7	-	-1.20		4.59	0.0		0.000
Medium Trucks:	79.45		-	2.7	-	-1.20		4.87	0.0		0.000
Heavy Trucks:	84.25	-9.3	7	2.7	8	-1.20	-	-5.56	0.0	000	0.000
Unmitigated Noise	e Levels (with	nout Topo an	d barrie	er atter	nuation)						
VehicleType	Leq Peak Ho	ur Leq Da	ay	Leq E	vening	Leq N	ïght		Ldn	C	VEL
Autos:		2.8	70.6		67.6		65.9		73.2		73.5
Medium Trucks:	-	4.1	72.2		66.1		67.0		74.4		74.6
Heavy Trucks:		6.5	74.9		66.0		68.1		76.0		76.1
Vehicle Noise:	79	9.5	77.7		71.4		71.8		79.5	5	79.6
Centerline Distance	e to Noise C	ontour (in fee	et)								
					dBA	65 di		6	0 dBA		dBA
			Ldn:		71	369			794		711
		(CNEL:	1	76	379	9		816	1,	758

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	FH\	WA-RD-77-108	HIGH	WAY NO	DISE P	REDICTIO	ON MO	DEL			
Scenario	: HY 2040 W	/ithout Project				Project I	Vame:	The Pa	ark @ Live	Oak	
Road Name	e: Arrow Hwy					Job NL	ımber:	11112			
Road Segmen	t: w/o Rivergi	rade Rd.									
	PECIFIC IN	IPUT DATA							L INPUT	s	
Highway Data				S	ite Cor	nditions (Hard =	10, Sc	oft = 15)		
Average Daily T	raffic (Adt):	28,411 vehicle	es					Autos:	15		
Peak Hour F	Percentage:	10%				edium Tru			15		
Peak Ho	our Volume:	2,841 vehicle	s		He	eavy Truc	ks (3+ /	Axles):	15		
	icle Speed:	45 mph		V	ehicle	Mix					
Near/Far Lan	e Distance:	48 feet		Ē		icleType		Day	Evening	Night	Daily
Site Data						A	utos:	72.4%	9.2%	18.4%	85.65%
Bari	ier Heiaht:	0.0 feet			М	edium Tru	ucks:	77.7%	4.8%	17.5%	9.12%
Barrier Type (0-Wa	all, 1-Berm):	0.0				Heavy Tru	ucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dis		40.0 feet		N	oise S	ource Ele	vation	s (in fe	eet)		
Centerline Dist. to		40.0 feet				Autos	: 0.	000			
Barrier Distance te		0.0 feet			Mediu	m Trucks	2.	297			
Observer Height (A	,	5.0 feet			Hear	vy Trucks	: 8.	004	Grade Ad	justment	: 0.0
	d Elevation:	0.0 feet				·					
	d Elevation:	0.0 feet		L	ane Eq	uivalent			feet)		
R	oad Grade:	0.0%				Autos		388			
	Left View:	-90.0 degre	es			m Trucks		114			
	Right View:	90.0 degre	es		Hear	vy Trucks	: 32.	141			
FHWA Noise Mode	l Calculation	s									
VehicleType	REMEL	Traffic Flow	Dist	ance	Finite	Road	Fresr		Barrier Att		rm Atten
Autos:	68.46	2.02		2.73		-1.20		-4.59		000	0.00
Medium Trucks:	79.45	-7.70		2.78		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25			2.78		-1.20		-5.56	0.0	000	0.00
Unmitigated Noise			-					-			
,1	eq Peak Hou			Leq Eve		Leq N	· ·		Ldn		NEL
Autos:	72		69.8		66.9		65.1		72.5	-	72.
Medium Trucks:	73		71.4		65.3		66.2	-	73.6	-	73.
Heavy Trucks:	75		74.2		65.2		67.3		75.3		75
Vehicle Noise:	78		77.0		70.6		71.1	1	78.7	(78.
Centerline Distance	e to Noise Co	ontour (in feet)	70 dł	24	65 0	ID A	6	0 dBA	55	dBA
			I dn:	152		32			707		524
			NFL:	152		33	-		707		524 566
		C.	VLL.	157			'		121	1,	300

FH	WA-RD-77-10	8 HIGH	WAY		EDIC		DEL			
Scenario: HY 2040 V Road Name: Arrow Hw Road Segment: e/o Riverg	<i>.</i>	t				t Name: Number:		ark @ Live	Oak	
SITE SPECIFIC I	NPUT DATA							L INPUT	S	
Highway Data				Site Con	ditions	; (Hard =	10, So	oft = 15)		
Average Daily Traffic (Adt):	27,384 vehic	les					Autos:	15		
Peak Hour Percentage:	10%			Med	dium T	rucks (2 A	(xles):	15		
Peak Hour Volume:	2,738 vehicl	es		Hea	avy Tru	icks (3+ A	(xles):	15		
Vehicle Speed:	45 mph			Vehicle N	lix					
Near/Far Lane Distance:	48 feet		Ē	Vehi	cleTyp	е	Day	Evening	Night	Daily
Site Data						Autos:	72.4%	9.2%	18.4%	85.65
Barrier Height:	0.0 feet			Me	dium T	rucks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall, 1-Berm):	0.0			H	leavy T	rucks:	84.3%	2.7%	13.0%	5.23
Centerline Dist. to Barrier:	40.0 feet		-	Noise So	urco F	lovation	s (in fi	oot)		
Centerline Dist. to Observer:	40.0 feet		ŀ	110/30 00	Auto		000			
Barrier Distance to Observer:	0.0 feet			Mediun			297			
Observer Height (Above Pad):	5.0 feet				y Truck		004	Grade Ad	liustment	: 0.0
Pad Elevation:	0.0 feet									
Road Elevation:	0.0 feet			Lane Equ				feet)		
Road Grade:	0.0%				Auto					
Left View:	-90.0 degr			Mediun						
Right View:	90.0 degr	ees		Heav	y Trucl	(s: 32.1	141			
FHWA Noise Model Calculation	าร									
VehicleType REMEL	Traffic Flow		tance	Finite		Fresn		Barrier At		m Atter
Autos: 68.46			2.7	-	-1.20		-4.59		000	0.00
Medium Trucks: 79.45			2.7	-	-1.20		-4.87		000	0.00
Heavy Trucks: 84.25	-10.2	8	2.7	78	-1.20		-5.56	0.0	000	0.00
Unmitigated Noise Levels (with				<u> </u>						
VehicleType Leq Peak Ho			Leq E	vening	Leq	Night		Ldn		NEL
	1.9	69.7		66.7		65.0		72.	-	72
	3.2	71.3		65.2		66.1		73.	-	73
	5.5 8.6	74.0 76.8		65.1 70.5		67.1		75.		75 78
				70.5		70.9		78.	D	78
Centerline Distance to Noise C	ontour (in fee	et)	70	dBA	65	dBA		60 dBA	55	dBA
		Ldn:		49		ава 320		690		ава 487
		Lun.				320		709	Ι,	-01

· · · · · · · · · · · · · · · · · · ·			REDICTION			
Scenario: HY 2040 Without	Project				ark @ Live Oa	ak
Road Name: Arrow Hwy.			JOD NUM	ber: 11112		
Road Segment: w/o Maine Av.						
SITE SPECIFIC INPUT	DATA		NOI	SE MODE	L INPUTS	
Highway Data		Site Co.	nditions (Ha	ard = 10, S	oft = 15)	
Average Daily Traffic (Adt): 53,119	vehicles			Autos:	15	
Peak Hour Percentage: 10	%	M	edium Truck:	s (2 Axles):	15	
Peak Hour Volume: 5,312	vehicles	H	eavy Trucks	(3+ Axles)	15	
Vehicle Speed: 45	mph	Vehicle	Mix			
Near/Far Lane Distance: 48	feet		hicleType	Day	Evening N	light Daily
Site Data		101	Auto		0	8.4% 85.65
		٨	ledium Truck			7.5% 9.129
) feet		Heavy Truck			3.0% 5.239
)) feet					0.070 0.20
) feet	Noise S	ource Eleva	tions (in f	eet)	
) feet		Autos:	0.000		
) feet	Mediu	ım Trucks:	2.297		
) feet	Hea	vy Trucks:	8.004	Grade Adjus	tment: 0.0
) feet	Lane Fo	quivalent Di	stance (in	feet)	
Road Grade: 0.0		Lane Le	Autos:	32,388	1001/	
) dearees	Modiu	im Trucks:	32.114		
) degrees		vy Trucks:	32.114		
FHWA Noise Model Calculations	-					
	Flow Distan	ce Finite	e Road I	resnel	Barrier Atten	Berm Atten
Autos: 68.46	4.74	2.73	-1.20	-4.59	0.000	0.00
Medium Trucks: 79.45	-4.98	2.78	-1.20	-4.87	0.000	0.00
Heavy Trucks: 84.25	-7.40	2.78	-1.20	-5.56	0.000	0.00
Unmitigated Noise Levels (without To	·	,				
		eq Evening	Leq Nig		Ldn	CNEL
Autos: 74.7	72.5	69.6		67.8	75.2	75.
Medium Trucks: 76.0	74.2	68.1		68.9	76.4	76
Heavy Trucks: 78.4	76.9	67.9)	70.0	78.0	78.
Vehicle Noise: 81.4	79.7	73.4	1	73.8	81.4	81.
	(in feet)		T	I	1	
Centerline Distance to Noise Contour						
Centerline Distance to Noise Contour	·	70 dBA	65 dBA	4 1	60 dBA	55 dBA
Centerline Distance to Noise Contour	Ldn:	70 dBA 231 238	65 dBA 498 512	4 1	1,073 1.103	2,312 2,377

	FH	WA-RD-77-108	HIGHWA	Y NO	ISE PI	REDICTI	ON MO	DEL			
Road Nar	rio: HY 2040 V me: Arrow Hwy ent: e/o Maine						Name: umber:		ark @ Live	Oak	
SITE	SPECIFIC I	NPUT DATA				N	OISE N	IODE	L INPUTS	5	
Highway Data				Si	te Con	ditions	(Hard =	10, S	oft = 15)		
Average Daily	/ Traffic (Adt):	39,460 vehicle	es					Autos	15		
Peak Hou	r Percentage:	10%			Me	dium Tru	icks (2 A	(xles)	15		
Peak	Hour Volume:	3,946 vehicles	5		He	avy Truc	:ks (3+ A	(xles)	15		
V	ehicle Speed:	45 mph		Ve	ehicle	Mix					
Near/Far La	ane Distance:	48 feet		ve		icleType		Dav	Evening	Night	Daily
Site Data					1011			72.49	•	18.49	
D	arrier Height:	0.0 feet			М	edium Tr	ucks:	77.79	4.8%	17.59	% 9.12%
Barrier Type (0-V		0.0 1001			1	leavy Tr	ucks:	84.3%	6 2.7%	13.09	% 5.23%
	ist. to Barrier:	40.0 feet									
Centerline Dist	to Observer:	40.0 feet		NO	orse so	ource El			eet)		
Barrier Distance	to Observer:	0.0 feet				Autos		000			
Observer Height	(Above Pad):	5.0 feet				m Trucks		297	Grade Adj		nt 0.0
F	Pad Elevation:	0.0 feet			Heav	y Trucks	s: 8.0	004	Grade Adj	usunei	11. 0.0
Ro	ad Elevation:	0.0 feet		La	ane Eq	uivalent	Distand	ce (in	feet)		
	Road Grade:	0.0%				Autos	s: 32.3	388			
	Left View:	-90.0 degree	es		Mediu	n Trucks	32.	114			
	Right View:	90.0 degree	es		Heav	y Trucks	32.1	141			
FHWA Noise Mod	del Calculation	IS									
VehicleType	REMEL	Traffic Flow	Distanc	e	Finite	Road	Fresn	el	Barrier Atte	en B	erm Atten
Autos.	68.46	3.45		2.73		-1.20		-4.59	0.0	00	0.000
Medium Trucks		-6.27		2.78		-1.20		-4.87	0.0	00	0.000
Heavy Trucks.	84.25	-8.69		2.78		-1.20		-5.56	0.0	00	0.000
Unmitigated Nois	e Levels (with			tenua	ation)						
VehicleType	Leq Peak Ho			q Eve	•	Leq	Night		Ldn		CNEL
Autos.			71.2		68.3		66.5		73.9		74.2
Medium Trucks			72.9		66.8		67.6		75.1		75.2
Heavy Trucks.			75.6		66.6		68.7		76.7		76.8
Vehicle Noise			78.4		72.1		72.5		80.1		80.3
Centerline Distar	nce to Noise C	ontour (in feet,	-								
				70 dB		65 (60 dBA	-	5 dBA
			Ldn:	190		4(880		1,897
		CI	VEL:	195		42	20		905		1,950

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	FH	WA-RD-77-10	08 HIG	HWAY N	OISE PF	REDICTIO	N MOE	EL			
	: Live Oak A		t			Project Na Job Nurr			rk @ Live	Oak	
SITE S	PECIFIC IN	VPUT DATA	1			NO	ISE M	ODEI	INPUT	s	
Highway Data				1	Site Con	ditions (H	ard = 1	10, So	ft = 15)		
Average Daily T Peak Hour F Peak Ho	. ,	33,801 vehi 10% 3,380 vehic				dium Truck avy Trucks	(2 A		15 15 15		
Veh	icle Speed:	45 mph			/ehicle	Mix					
Near/Far Lan	e Distance:	80 feet		- F		icleType	1	Dav	Evening	Night	Daily
Site Data					10/1	Aut		2.4%	9.2%	18.4%	
	ier Height:	0.0 feet			Me	edium Truc	ks: 7	7.7%	4.8%	17.5%	
Barrier Type (0-Wa	all, 1-Berm):	0.0			ŀ	leavy Truc		34.3%	2.7%	13.0%	
Centerline Dis		50.0 feet		7	Voise So	ource Elev	ations	(in fe	et)		
Centerline Dist. to Barrier Distance to		50.0 feet 0.0 feet		-		Autos:	0.0	00			
Observer Height (A	bove Pad):	5.0 feet				n Trucks:	2.2				
U (d Elevation:	0.0 feet			Heav	y Trucks:	8.0	04	Grade Adj	ustment	: 0.0
Roa	d Elevation:	0.0 feet		1	ane Eq	uivalent D	istanc	e (in f	eet)		
R	oad Grade:	0.0%				Autos:	30.4	14			
	Left View:	-90.0 degr	ees		Mediur	n Trucks:	30.1	22			
	Right View:	90.0 degr			Heav	y Trucks:	30.1	50			
FHWA Noise Mode	I Calculation	15									
VehicleType	REMEL	Traffic Flow	/ Di	istance	Finite	Road	Fresne	el l	Barrier Atte	en Bei	m Atten
Autos:	68.46	2.7	8	3.14	ŀ	-1.20	-	4.65	0.0	00	0.00
Medium Trucks:	79.45	-6.9	5	3.20)	-1.20	-	4.87	0.0	00	0.00
Heavy Trucks:	84.25	-9.3	7	3.19	9	-1.20	-	5.43	0.0	00	0.00
Unmitigated Noise			d barr	ier atten	uation)						
,,	Leq Peak Ho			Leq Ev	~	Leq Nig	,		Ldn		NEL
Autos:		3.2	71.0		68.0		66.3		73.6		73.
Medium Trucks:		4.5	72.6		66.5		67.4		74.8		75.
Heavy Trucks:	76	6.9	75.3		66.4		68.5		76.4	ł	76.
Vehicle Noise:	79	9.9	78.1		71.8		72.2	_	79.9)	80.
Centerline Distance	e to Noise C	ontour (in fe	et)	70 -	ID A	65 -10		~	0 dBA		dD A
			1.4	70 0		65 dB	А		0 dBA		dBA
			Ldn:	22		491			,058		279
			CNEL:	23	4	505		1	,087	2,	343

	FHWA-	RD-77-108 HIG	SHWAY	NOISE PR	REDICT	ON MO	DEL			
	HY 2040 Witho	ut Project						ark @ Live	Oak	
Road Name: Road Segment:		Rd.			Job N	umber:	11112			
SITE SPI	ECIFIC INPU	T DATA							s	
Highway Data				Site Con	ditions	(Hard =	10, S	oft = 15)		
Average Daily Tra	ffic (Adt): 36,	535 vehicles				,	Autos:	15		
Peak Hour Per	centage:	10%		Me	dium Tri	icks (2 A	(xles):	15		
Peak Hour	Volume: 3,6	54 vehicles		He	avy Truc	cks (3+ A	(xles):	15		
		45 mph		Vehicle I	Mix					
Near/Far Lane I	Distance:	80 feet			icleType		Dav	Evening	Night	Daily
Site Data						Autos:	72.4%	9.2%	18.4%	85.65%
Barrio	r Height:	0.0 feet		Me	edium Ti	ucks:	77.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall,	•	0.0		ŀ	leavy Ti	ucks:	84.3%	2.7%	13.0%	5.23%
Centerline Dist. to	,	0.0 feet		Noise So	urco E	ovation	c (in f	oot)		
Centerline Dist. to C	Observer: 5	60.0 feet		140/36 30	Auto		000	eel)		
Barrier Distance to C	Observer:	0.0 feet		Modiu	n Truck		297			
Observer Height (Abo	ove Pad):	5.0 feet			v Truck		004	Grade Ad	iustment	· 0.0
Pad E	levation:	0.0 feet							dourion	0.0
Road E	levation:	0.0 feet		Lane Eq				feet)		
	d Grade:	0.0%			Auto					
		0.0 degrees			m Truck					
Ri	ght View: 9	0.0 degrees		Heav	y Truck	s: 30. ⁻	150			
FHWA Noise Model C	alculations									
			Distance		Road	Fresn		Barrier Att		m Atten
Autos:	68.46	3.12	3.1		-1.20		-4.65		000	0.00
Medium Trucks:	79.45	-6.61	3.2		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-9.03	3.1	-	-1.20		-5.43	0.0	000	0.00
Unmitigated Noise Le							1			
,,	g Peak Hour	Leq Day		Evening	Leq	Night		Ldn		NEL
Autos:	73.5	71.3		68.4		66.6		74.0		74.
Medium Trucks: Heavy Trucks:	74.8 77.2	73.0 75.7		66.9 66.7		67.7 68.8		75.1 76.8		75. 76.
Vehicle Noise:	80.2	75.7		72.1		72.6		76.8		76.
)	72.1		72.6		80.2	2	80.
Centerline Distance t	o Noise Conto	our (in feet)	70	dBA	65	dBA		60 dBA	55	dBA
		Ldn		240		ава 17		1.114		ава 400
		Lun	. 4	240		32		1,114		400 467

Scenario: HY 20	140 W	ithout Project				Project N	ama [,] Th	Park (lak	
Road Name: Live C							nber: 11		s Live O	an	
Road Segment: e/o SI						000 1101					
SITE SPECIF						NO	ISE MO				
Highway Data					Site Con	ditions (H					
Average Daily Traffic (A	dt);	35.031 vehicle	s				Au	tos: 1	5		
Peak Hour Percenta	ige:	10%			Me	dium Truc	ks (2 Axl	es): 1	5		
Peak Hour Volu	me:	3,503 vehicles			He	avy Truck	s (3+ Axl	əs): 1	5		
Vehicle Spe	ed:	45 mph		-	Vehicle I	liv					
Near/Far Lane Distar	nce:	80 feet		-		cleType	Da	V Eve	ening I	Vight	Daily
Site Data									•	18.4%	85.65
Barrier Heid	wht.	0.0 feet			Me	edium Truc	ks: 77	.7%	4.8%	17.5%	9.129
Barrier Type (0-Wall, 1-Be		0.0 1001			ŀ	leavy Truc	:ks: 84	.3%	2.7%	13.0%	5.239
Centerline Dist. to Bar		50.0 feet			Noiso Sa	ource Elev	ations (in foot)			
Centerline Dist. to Obser	ver:	50.0 feet		Ľ	140/36 30	Autos:	0.000				
Barrier Distance to Obser	ver:	0.0 feet			Madium	n Trucks:	2.29				
Observer Height (Above P	ad):	5.0 feet				v Trucks:	8.004		de Adjus	etmont.	0.0
Pad Elevat	ion:	0.0 feet			Tieav	y muchs.	0.004	. 0/4	uo najat	Sumonia.	0.0
Road Elevat	ion:	0.0 feet			Lane Equ	uivalent D	istance	(in feet)			
Road Gra	nde:	0.0%				Autos:	30.41				
Left Vi		-90.0 degree	s			n Trucks:	30.12				
Right Vi	ew:	90.0 degree	S		Heav	y Trucks:	30.15)			
FHWA Noise Model Calcul	ations	5									
VehicleType REME	EL	Traffic Flow	Dist	ance	Finite	Road	Fresnel	Barr	ier Atter	Berr	n Atten
Autos: 6	68.46	2.93		3.1	4	-1.20	-4.	65	0.00	0	0.00
Medium Trucks:	79.45	-6.79		3.2	0	-1.20	-4.	87	0.00	0	0.00
Heavy Trucks: 8	34.25	-9.21		3.1	9	-1.20	-5.	43	0.00	0	0.00
Unmitigated Noise Levels	(with	out Topo and	barrie	r atter	uation)						
VehicleType Leq Pea	k Hou	r Leq Day		Leq E	vening	Leq Ni	ght	Ldr		CN	IEL
Autos:	73.	.3 7	71.1		68.2		66.4		73.8		74.
Medium Trucks:	74.		2.8		66.7		67.5		75.0		75.
	77.	.0 7	75.5		66.5		68.6		76.6		76.
Heavy Trucks:					72.0		72.4		80.0		80
	80.	.1 7	78.3								
Heavy Trucks:	80.										
Heavy Trucks: Vehicle Noise:	80.			70 (dBA	65 dE	A	60 dE	BA	55 0	1BA
Heavy Trucks: Vehicle Noise:	80.	ontour (in feet)		23	dBA 33 40	65 dE 503 517	A	60 dE 1,08	3	55 c 2,3 2.3	34

	FHW	A-RD-77-108	HIGHWA	AY NO	ISE PI	REDICT	ON MOI	DEL			
Scenario: H	HY 2040 Wi	thout Project				Project	Name: 1	The Pa	ark @ Live	Oak	
Road Name: L						Job N	umber: 1	11112			
Road Segment: v	w/o Arrow H	wy.									
	ECIFIC INI	PUT DATA							L INPUT	s	
Highway Data				Sit	te Con	nditions	(Hard =	10, So	oft = 15)		
Average Daily Traf	fic (Adt):	30,712 vehicle	s				/	Autos:	15		
Peak Hour Pere	centage:	10%			Me	dium Tri	ıcks (2 A	xles):	15		
Peak Hour	Volume:	3,071 vehicles	5		He	avy Tru	cks (3+ A	xles):	15		
Vehicle	e Speed:	45 mph		Ve	hicle	Mix					
Near/Far Lane D	Distance:	80 feet				icleType		Dav	Evening	Night	Daily
Site Data								72.4%	~	· ·	85.65
Barrier	Height:	0.0 feet			М	edium Ti	ucks:	77.7%	4.8%	17.5%	9.12
Barrier Type (0-Wall,		0.0			1	Heavy Ti	ucks:	84.3%	2.7%	13.0%	5.23
Centerline Dist. to	,	50.0 feet		No	lee C	ouroo E	evations	in f	a		
Centerline Dist. to O	bserver:	50.0 feet		NC	orse So				eet)		
Barrier Distance to O	bserver:	0.0 feet				Auto					
Observer Height (Abo	ve Pad):	5.0 feet				m Truck			Grade Ad	iuntranu	
Pad E	levation:	0.0 feet			Heat	/y Truck	5. 8.0	04	Glaue Auj	usunen	. 0.0
Road E	levation:	0.0 feet		La	ne Eq	uivalen	Distanc	e (in :	feet)		
Road	d Grade:	0.0%				Auto	s: 30.4	414			
L	eft View:	-90.0 degree	s		Mediu	m Truck	s: 30.1	122			
Rig	ght View:	90.0 degree	S		Heav	/y Truck	s: 30.1	150			
FHWA Noise Model C	alculations										
VehicleType F	REMEL	Traffic Flow	Distan	се	Finite	Road	Fresn	el	Barrier Att	en Bei	rm Atter
Autos:	68.46	2.36		3.14		-1.20		4.65	0.0	000	0.00
Medium Trucks:	79.45	-7.36		3.20		-1.20		-4.87	0.0	000	0.00
Heavy Trucks:	84.25	-9.78		3.19		-1.20		-5.43	0.0	000	0.00
Unmitigated Noise Le	vels (witho	ut Topo and	barrier a	ttenua	ation)						
VehicleType Leq	y Peak Hour	Leg Day	Le	eq Eve	ning	Leq	Night		Ldn	С	NEL
	1 i can i loui										73
Autos:	72.8	3	70.6		67.6		65.9		73.2		
Medium Trucks:	72.8 74.1	3	72.2		66.1		67.0		74.4	1	74
Medium Trucks: Heavy Trucks:	72.8	3								1	74
Medium Trucks:	72.8 74.1	3 1 5	72.2		66.1		67.0		74.4	1)	74 76
Medium Trucks: Heavy Trucks:	72.8 74. 76.9 79.9	3 1 5 5	72.2 74.9 77.7		66.1 66.0 71.4		67.0 68.1 71.8		74.4 76.0 79.5	1) 5	74 76 79
Medium Trucks: Heavy Trucks: Vehicle Noise:	72.8 74. 76.9 79.9	3 1 5 5 <i>ntour (in feet)</i>	72.2 74.9 77.7	70 dB	66.1 66.0 71.4	65	67.0 68.1 71.8 dBA		74.4 76.0 79.5 60 dBA	1) 5 55	74 76 79 dBA
Medium Trucks: Heavy Trucks: Vehicle Noise:	72.8 74. 76.9 79.9	3 1 5 5 <i>ntour (in feet)</i>	72.2 74.9 77.7	70 dB 214 220	66.1 66.0 71.4	65 4	67.0 68.1 71.8	6	74.4 76.0 79.5	4 5 55 2,	74 76 79

Wednesday, May 02, 2018

Wednesday, May 02, 2018

		VA-RD-77-108	HIGH	IWAY N	OISE PF	REDICTIC	ON MO	DEL			
Scenario:	HY 2040 W	ith Project				Project N	lame:	The Pa	ark @ Live	Oak	
Road Name:	Myrtle Av.					Job Nu	mber:	11112			
Road Segment:	n/o Longde	n Av.									
SITE SP	PECIFIC IN	IPUT DATA							L INPUTS	5	
Highway Data				5	Site Con	ditions (l	Hard =	10, Sc	oft = 15)		
Average Daily Tra	affic (Adt):	30,183 vehicl	es				,	Autos:	15		
Peak Hour Pe	ercentage:	10%			Me	dium Truc	cks (2 A	xles):	15		
Peak Hou	ir Volume:	3,018 vehicle	s		He	avy Truck	is (3+ A	xles):	15		
Vehic	le Speed:	40 mph			/ehicle	Mix					
Near/Far Lane	Distance:	12 feet		F		icleType		Dav	Evening	Night	Daily
Site Data								72.4%	0	18.4%	
Barrie	er Height:	0.0 feet			Me	edium Tru	cks:	77.7%	4.8%	17.5%	8.91%
Barrier Type (0-Wall,	l, 1-Berm):	0.0			ŀ	leavy Tru	cks:	84.3%	2.7%	13.0%	5.11%
Centerline Dist.		30.0 feet		1	Voise Sc	ource Ele	vation	s (in fe	et)		
Centerline Dist. to		30.0 feet				Autos:	0.0	000	1		
Barrier Distance to		0.0 feet			Mediur	n Trucks:	2.2	297			
Observer Height (Ab	,	5.0 feet			Heav	v Trucks:	8.0	004	Grade Adj	ustment	: 0.0
	Elevation:	0.0 feet									
	Elevation:	0.0 feet		1	ane Equ	uivalent l			feet)		
	ad Grade:	0.0%				Autos:					
	Left View:	-90.0 degre				n Trucks:					
R	light View:	90.0 degre	es		Heav	y Trucks:	29.	547			
FHWA Noise Model 0		s									
	REMEL	Traffic Flow		tance		Road	Fresn		Barrier Atte		rm Atten
Autos:	66.51	2.82		3.26		-1.20		-4.49	0.0		0.00
Medium Trucks:	77.72	-7.03		3.33		-1.20		-4.86	0.0		0.00
Heavy Trucks:	82.99	-9.45		3.32		-1.20		-5.77	0.0	00	0.00
Unmitigated Noise L										r	
	eq Peak Hou			Leq Ev	· ·	Leq N	·		Ldn		NEL
Autos:	71		69.2		66.2		64.5		71.8		72.
Medium Trucks:	72		70.9		64.8		65.7		73.1		73.
Heavy Trucks:	75		74.1		65.2		67.3		75.2		75.
Vehicle Noise:	78		76.7		70.2		70.7		78.4		78.
Centerline Distance	to Noise Co	ontour (in feet)	70 0	IDΛ	65 d	DA.	6	0 dBA	55	dBA
			I dn:	10		235			505		089
		C	NEL:	11	-	23:	-		505		119
		C.	V		~	24			010	1,	115

F	HWA-F	RD-77-108 HIG	HWAY	NOISE PR	REDICTI	ION MO	DEL			
Scenario: HY 2040 Road Name: Peck Rd Road Segment: s/o Arrov		Project				Name: umber:		ark @ Live	Oak	
SITE SPECIFIC	INPU	T DATA							s	
Highway Data				Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (Adt)	: 24,0	73 vehicles					Autos:	15		
Peak Hour Percentage	: •	10%		Me	dium Tru	icks (2 A	Axles):	15		
Peak Hour Volume	: 2,40	07 vehicles		He	avy Truc	cks (3+ A	(xles)	15		
Vehicle Speed		40 mph		Vehicle I	Mix					
Near/Far Lane Distance	: !	56 feet		Veh	icleType		Day	Evening	Night	Daily
Site Data					A	lutos:	72.4%	9.2%	18.4%	86.069
Barrier Height		0.0 feet		Me	edium Ti	ucks:	77.7%	4.8%	17.5%	8.869
Barrier Type (0-Wall, 1-Berm)		0.0		F	leavy Ti	ucks:	84.3%	2.7%	13.0%	5.089
Centerline Dist. to Barrier	: 6	0.0 feet		Noise So	ource El	evation	s (in fi	eet)		
Centerline Dist. to Observer	: 6	0.0 feet			Autos		200			
Barrier Distance to Observer		0.0 feet		Mediui	n Truck		297			
Observer Height (Above Pad)		5.0 feet		Heav	y Trucks	s: 8.0	004	Grade Ad	justment	0.0
Pad Elevation		0.0 feet								
Road Elevation		0.0 feet		Lane Eq				feet)		
Road Grade		0.0%		Modiu	Auto: n Truck:					
Right View		0.0 degrees 0.0 degrees			y Truck					
FHWA Noise Model Calculati	ons									
VehicleType REMEL	Tra	affic Flow D	istance	Finite	Road	Fresh	el	Barrier Att	en Ber	m Atter
Autos: 66.	51	1.84	-0.	52	-1.20		-4.69	0.0	000	0.00
Medium Trucks: 77.3		-8.04	-0.		-1.20		-4.88		000	0.00
Heavy Trucks: 82.9	99	-10.46	-0.	50	-1.20		-5.34	0.0	000	0.00
Unmitigated Noise Levels (w	-			,						
VehicleType Leq Peak H		Leq Day		Evening	Leq	Night		Ldn		NEL
	66.6	64.4		61.5		59.7		67.1		67.
	68.0 70.8	66.1 69.3		60.0 60.3		60.9 62.4		68.3 70.4	-	68. 70.
	70.8	71.9		65.4		65.9		70.2		70.
			,	65.4		65.5	,	73.6	2	73.
Centerline Distance to Noise	conto	ur (in teet)	70	dBA	65	dBA	6	60 dBA	55	dBA
		Ldn		104		24		482		039
		Zun		107		30		496		068

0		/A-RD-77-108								<u> </u>	
Scenario: HY 2 Road Name: Aver		,				Job Nun			rk @ Live	Оак	
Road Segment: n/o E						JOD MUN	ider. I	1112			
5											
SITE SPECI	FIC IN	PUT DATA							INPUTS	5	
Highway Data					Site Con	ditions (H		· ·			
Average Daily Traffic (7,955 vehicle	s					itos:	15		
Peak Hour Percent		10%				dium Truci			15		
Peak Hour Vol		795 vehicles			Hea	avy Trucks	; (3+ Ax	les):	15		
Vehicle Sp		40 mph			Vehicle I	Nix					
Near/Far Lane Dista	nce:	12 feet			Vehi	cleType	D	ay	Evening	Night	Daily
Site Data						Au	os: 7	2.4%	9.2%	18.4%	86.90
Barrier He	iaht [.]	0.0 feet			Me	edium Truc	ks: 7	7.7%	4.8%	17.5%	8.339
Barrier Type (0-Wall, 1-Be		0.0			H	leavy Truc	:ks: 8	4.3%	2.7%	13.0%	4.77
Centerline Dist. to Ba	rrier:	30.0 feet			Noise So	ource Elev	ations	(in fe	et)		
Centerline Dist. to Obse	rver:	30.0 feet				Autos:	0.00				
Barrier Distance to Obse	rver:	0.0 feet			Modiur	n Trucks:	2.29				
Observer Height (Above I	Pad):	5.0 feet				v Trucks:	8.00		Grade Adj	ustment	0.0
Pad Eleva	ation:	0.0 feet				· · · ·					
Road Eleva	ation:	0.0 feet		1	Lane Equ	uivalent D			eet)		
Road Gi		0.0%				Autos:	29.81	-			
Left		-90.0 degree	s			n Trucks:	29.51				
Right \	/iew:	90.0 degree	s		Heav	y Trucks:	29.54	17			
FHWA Noise Model Calcu	lations	;									
VehicleType REM	IEL	Traffic Flow	Dista	nce	Finite	Road	Fresne	1 1	Barrier Atte	en Ber	m Atter
Autos:	66.51	-2.93		3.26	6	-1.20	-4	1.49	0.0	00	0.00
Medium Trucks:	77.72	-13.11		3.3	-	-1.20		1.86	0.0		0.00
Heavy Trucks:	82.99	-15.53		3.32	2	-1.20	-5	5.77	0.0	00	0.00
Unmitigated Noise Levels											
VehicleType Leq Pe				.eq E	vening	Leq Ni			Ldn		NEL
Autos:	65.		3.5		60.5		58.8		66.1		66.
Medium Trucks:	66.		i4.8		58.8		59.6		67.0		67.
	69.	66	i8.1		59.1		61.2		69.1		69.
Heavy Trucks:			0.7		64.3		64.7		72.4		72
	72.	4 7	0.7								
Heavy Trucks:			0.7								
Heavy Trucks: Vehicle Noise:		ntour (in feet)		70 0		65 dE	A		0 dBA		dBA
Heavy Trucks: Vehicle Noise:		ntour (in feet)	.dn:	70 d 4	3	65 dE 93 96	A		0 dBA 201 207	4	dBA 33 45

	FHV	VA-RD-77-108 H	HIGHWA	NOIS	E PREDIC		DEL			
Road Nam	io: HY 2040 W le: Avenida Ba nt: s/o Buena \	rbosa				ct Name: Number:		Park @ Live	Oak	
SITE	SPECIFIC IN	IPUT DATA				NOISE	MOD	EL INPUTS	5	
Highway Data				Site	Condition	s (Hard =	= 10, S	oft = 15)		
Average Daily	Traffic (Adt):	19,175 vehicles	6				Autos	: 15		
Peak Hour	Percentage:	10%			Medium 7	rucks (2	Axles)	: 15		
Peak H	lour Volume:	1,917 vehicles			Heavy Tr	ucks (3+	Axles)	: 15		
Ve	hicle Speed:	40 mph		Veh	icle Mix					
Near/Far La	ne Distance:	12 feet		ven	VehicleTy	e	Dav	Evening	Night	Daily
Site Data				-	,	Autos:	72.49	•	18.4%	
Ba	rrier Heiaht:	0.0 feet			Medium	Trucks:	77.79	6 4.8%	17.5%	6 8.79%
Barrier Type (0-W		0.0			Heavy	Trucks:	84.3%	6 2.7%	13.0%	6 5.04%
Centerline Di	st. to Barrier:	30.0 feet		Noi	se Source	Elovation	e (in i	foot)		
Centerline Dist.	to Observer:	30.0 feet		110/.	Aut		.000			
Barrier Distance	to Observer:	0.0 feet			ledium Truc		.000			
Observer Height (Above Pad):	5.0 feet			Heavy Truc		.004	Grade Adj	iustmor	pt: 0.0
Pa	ad Elevation:	0.0 feet			neavy mu	кз. о	.004	Orade Auj	usunen	12. 0.0
Roa	ad Elevation:	0.0 feet		Lan	e Equivale	nt Distar	ce (in	feet)		
1	Road Grade:	0.0%			Aut	os: 29	.816			
	Left View:	-90.0 degrees	6	M	ledium Truc	ks: 29	.518			
	Right View:	90.0 degrees	6		Heavy Truc	ks: 29	.547			
FHWA Noise Mod	el Calculation:	s								
VehicleType	REMEL	Traffic Flow	Distance	e F	inite Road	Fres	nel	Barrier Atte	en Be	erm Atten
Autos:	66.51	0.85	3	.26	-1.20)	-4.49	0.0	00	0.000
Medium Trucks:	77.72	-9.06	3	.33	-1.20)	-4.86	0.0	00	0.000
Heavy Trucks:	82.99	-11.48	3	.32	-1.20)	-5.77	0.0	00	0.000
Unmitigated Noise	e Levels (with	out Topo and b	arrier att	enuat	ion)				-	
VehicleType	Leq Peak Hou	r Leq Day	Leq	Eveni	ing Le	q Night		Ldn	C	CNEL
Autos:	69		7.2		64.3	62.		69.9		70.2
Medium Trucks:	70.		8.9		62.8	63.		71.1		71.3
Heavy Trucks:	73.	.6 7	2.1		63.1	65.	2	73.2	:	73.3
Vehicle Noise:	76	.4 7	4.7		68.2	68.	7	76.4	÷	76.6
Centerline Distant	ce to Noise Co	ontour (in feet)								
			7	'0 dBA	6	5 dBA		60 dBA	55	5 dBA
			dn:	80		172		371		799
		CN	EL:	82		177		381		821

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	FH	WA-RD-77-108	HIGHW	AY NO	DISE PF	REDICTIO	и моі	DEL			
	o: HY 2040 V e: Rivergrade at: s/o Arrow I	Rd.				Project Na Job Nun			ark @ Live	Oak	
SITE S	SPECIFIC IN	IPUT DATA				NO	ISE N	IODE	L INPUT	s	
Highway Data				S	ite Con	ditions (H	lard =	10, So	oft = 15)		
	Traffic (Adt): Percentage: our Volume:	11,505 vehicle 10% 1,150 vehicles				dium Truck avy Trucks	ks (2 A	/	15 15 15		
Vel	hicle Speed:	40 mph		V	ehicle l	Mix					
Near/Far Lar	ne Distance:	12 feet				icleType		Dav	Evening	Night	Daily
Site Data					VCII	Aut		72.4%	0	18.4%	
	rier Height:	0.0 feet			Me	edium Truc	ks:	77.7%	4.8%	17.5%	
Barrier Type (0-Wa	•	0.0 1001			ŀ	Heavy Truc	:ks:	84.3%	2.7%	13.0%	
Centerline Dis		30.0 feet		N	oise So	ource Elev	ations	s (in fe	et)		
Centerline Dist. t	to Observer:	30.0 feet				Autos:	0.0		.,		
Barrier Distance t	to Observer:	0.0 feet			Mediu	m Trucks:	2.2	97			
Observer Height (,	5.0 feet			Heav	v Trucks:	8.0	04	Grade Ad	iustmen	t: 0.0
	d Elevation:	0.0 feet						-			
	d Elevation:	0.0 feet		L	ane Eq	uivalent D			feet)		
F	Road Grade:	0.0%				Autos:	29.8				
	Left View: Right View:	-90.0 degree 90.0 degree				m Trucks: ry Trucks:	29.5 29.5				
FHWA Noise Mode	el Calculation	IS									
VehicleType	REMEL	Traffic Flow	Distar	ice	Finite	Road	Fresn	el .	Barrier Att	en Be	rm Atten
Autos:	66.51	-1.20		3.26		-1.20		4.49	0.0	000	0.00
Medium Trucks:	77.72	-12.45		3.33		-1.20		-4.86	0.0	000	0.00
Heavy Trucks:	82.99	-14.87		3.32		-1.20		-5.77	0.0	000	0.00
Unmitigated Noise	e Levels (with	out Topo and	barrier a	attenu	ation)						
VehicleType	Leq Peak Ho	ur Leq Day	L	eq Eve	ening	Leq Nię	ght		Ldn	С	NEL
Autos:			65.2		62.2		60.5		67.8	-	68.
Medium Trucks:			65.5		59.4		60.3		67.7		67.9
Heavy Trucks:			68.7		59.8		61.8		69.8		69.9
Vehicle Noise:			71.6		65.4		65.7		73.3	3	73.
Centerline Distanc	e to Noise C	ontour (in feet))	70 dł	84	65 dB	A	6	0 dBA	55	dBA
			Ldn:	50	<i>/</i> ^	108	~	0	232		500
			JEL:	51		100			232		515
		Ch	¥ 6 - 6 - 1	51					200		/10

	FHW	A-RD-77-108	HIGH	WAY	NOISE PR	REDICT	TION MO	DEL						
Scenario: HY 20 Road Name: Riverg	rade F	Rd.					t Name: Number:		ark @ Live	Oak				
Road Segment: s/o Ste	ewart	Av.												
SITE SPECIFI	C INI	PUT DATA							L INPUT	s				
Highway Data					Site Conditions (Hard = 10, Soft = 15)									
Average Daily Traffic (Ad	dt):	5,895 vehicle	es					Autos:						
Peak Hour Percentag	ge:	10%					rucks (2 A							
Peak Hour Volun		589 vehicles	5		He	avy Tri	icks (3+ A	(xles):	15					
Vehicle Spee		40 mph			Vehicle I	Mix								
Near/Far Lane Distant	ce:	12 feet			Veh	icleTyp	е	Day	Evening	Night	Daily			
Site Data							Autos:	72.4%	9.2%	18.4%	93.04%			
Barrier Heig	ht:	0.0 feet			Me	edium T	rucks:	77.7%	4.8%	17.5%	4.429			
Barrier Type (0-Wall, 1-Berr		0.0			ŀ	leavy T	rucks:	84.3%	2.7%	13.0%	2.53%			
Centerline Dist. to Barri		30.0 feet			Noise So		lovation	c (in f	oot)					
Centerline Dist. to Observ	er:	30.0 feet			NOISe St	Auto		000	eel)					
Barrier Distance to Observ	er:	0.0 feet			Modiu	n Truci		297						
Observer Height (Above Pa	d):	5.0 feet				v Truck		004	Grade Ad	iustment	· 0.0			
Pad Elevation	on:	0.0 feet			near	y maoi		704	orado maj	Juoumoin	0.0			
Road Elevation	on:	0.0 feet			Lane Eq	uivaler	t Distan	ce (in	feet)					
Road Grad	de:	0.0%				Auto	os: 29.	316						
Left Vie	ew:	-90.0 degree	es			m Truci								
Right Vie	ew:	90.0 degree	es		Heav	y Trucl	(s: 29.	547						
FHWA Noise Model Calcula														
VehicleType REME		Traffic Flow	Dis	tance		Road	Fresh		Barrier Att		m Atten			
	6.51	-3.93		3.2		-1.20		-4.49		000	0.00			
	7.72	-17.16		3.3		-1.20		-4.86		000	0.00			
	2.99	-19.58		3.3		-1.20		-5.77	0.0	000	0.00			
Unmitigated Noise Levels (1						
VehicleType Leq Peak Autos:			62.5	Leq E	vening	Leq	Night		Ldn 65.1		NEL 65.			
Autos: Medium Trucks:	64.0 62.3	-	62.5 60.8		59.5 54.7		57.7 55.6		65.1		65.			
Heavy Trucks:	65.		64.0		54.7 55.0		55.0 57.1		65.1	-	63. 65.			
Vehicle Noise:	69.3	-	67.4		61.8		61.7		69.3		69.			
Centerline Distance to Nois					01.0		0111		00.0	, ,	00.			
Contentine Distance to Nois		nour (mieer	,	70	dBA	65	dBA		60 dBA	55	dBA			
			Ldn:		27		58	·	124		68			
			VEL:		28		60		128		77			

	-			MODEL			_
Scenario: HY 2040 With Project					ark @ Live	Oak	
Road Name: Rivergrade Rd.			Job Num	ber: 11112			
Road Segment: s/o Live Oak Av.							
SITE SPECIFIC INPUT DATA					EL INPUT	s	
Highway Data		Site Cor	ditions (H	ard = 10, S	oft = 15)		
Average Daily Traffic (Adt): 15,959 vehicles				Autos	: 15		
Peak Hour Percentage: 10%		Me	dium Truck	s (2 Axles)	: 15		
Peak Hour Volume: 1,596 vehicles		He	avy Trucks	(3+ Axles)	: 15		
Vehicle Speed: 50 mph		Vehicle	Mix				
Near/Far Lane Distance: 12 feet		Veh	icleType	Day	Evening	Night	Daily
Site Data			Aut	os: 72.49	6 9.2%	18.4%	86.159
Barrier Height: 0.0 feet		М	edium Truc	ks: 77.7%	6 4.8%	17.5%	8.819
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy Truc	ks: 84.3%	6 2.7%	13.0%	5.05
Centerline Dist. to Barrier: 30.0 feet		Noise S	ource Elev	ations (in i	eet)		
Centerline Dist. to Observer: 30.0 feet			Autos:	0.000	,		
Barrier Distance to Observer: 0.0 feet		Mediu	m Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet		Hear	v Trucks:	8.004	Grade Ad	justment	: 0.0
Pad Elevation: 0.0 feet		1 5	·		64		
Road Elevation: 0.0 feet		Lane Eq	uivalent D	29.816	teet)		
Road Grade: 0.0%		Mark	Autos: m Trucks:				
			/y Trucks:	29.518 29.547			
Right View: 90.0 degrees		i ica	ly mucks.	29.547			
FHWA Noise Model Calculations VehicleType REMEL Traffic Flow	Distance	Finite	Road	Fresnel	Barrier Att	0	m Atter
VehicleType REMEL Traffic Flow Autos: 70.20 -0.91		26	-1.20	-4.49		200	0.00
Medium Trucks: 81.00 -10.82		.20	-1.20	-4.86		000	0.00
Heavy Trucks: 85.38 -13.24		.32	-1.20	-4.00		000	0.00
Unmitigated Noise Levels (without Topo and ba	rrier atte	enuation)					
VehicleType Leq Peak Hour Leq Day	Leq	Evening	Leq Nig	pht	Ldn	C	NEL
Autos: 71.4 69	.2	66.2		64.5	71.8	8	72
Medium Trucks: 72.3 70	.4	64.3		65.2	72.6	6	72
Heavy Trucks: 74.3 72	.7	63.8		65.9	73.8	3	73
Vehicle Noise: 77.6 75	.8	69.7		70.0	77.6	6	77
Centerline Distance to Noise Contour (in feet)				1		Т	
) dBA	65 dB	4	60 dBA		dBA
Ld	n:	96	208		447	g	64
CNE		99	214		460		91

	FHV	VA-RD-77-108 HI	GHWAY	NOISE P	REDICTI		DEL			
Road Nam	io: HY 2040 W e: Stewart Av. nt: s/o Live Oa					Name: 1 umber: 1		rk @ Live	Oak	
SITE	SPECIFIC IN	IPUT DATA			N	IOISE N	IODEI		S	
Highway Data				Site Cor	nditions	(Hard =	10, So	ft = 15)		
Average Daily	Traffic (Adt):	7,844 vehicles				A	Autos:	15		
Peak Hour	Percentage:	10%		Me	dium Tru	icks (2 A	xles):	15		
Peak H	our Volume:	784 vehicles		He	avy Truc	cks (3+ A	xles):	15		
Vei	hicle Speed:	30 mph		Vehicle	Mix					
Near/Far La	ne Distance:	12 feet			icleType		Day	Evening	Night	Daily
Site Data				ver			72.4%	9.2%	18.4%	
					, edium Ti		77.7%	5.2 % 4.8%	17.5%	8.32%
	rier Height:	0.0 feet			Heavy Tr		34.3%	2.7%	13.0%	4.77%
Barrier Type (0-W	. ,	0.0			leavy II	uchs.	54.576	2.1 /0	13.078	4.11 /0
Centerline Dis		40.0 feet		Noise S	ource El	evations	s (in fe	et)		
Centerline Dist.		40.0 feet			Autos	s: 0.0	00			
Barrier Distance		0.0 feet		Mediu	m Trucks	s: 2.2	97			
Observer Height (Above Pad): ad Elevation:	5.0 feet		Hear	/y Trucks	s: 8.0	04	Grade Adj	ustment:	0.0
	ad Elevation: ad Elevation:	0.0 feet		Lane Eq	uivalon	Distanc	o (in f	oot)		
	ad Elevation: Road Grade:	0.0 feet		LaneLy	Autos			eel)		
,	Road Grade:	0.0%		Modiu	m Truck					
	Right View:	-90.0 degrees 90.0 degrees			/y Trucks					
	rugin view.	50.0 degrees		nou	iy maona	. 00.0	.01			
FHWA Noise Mode		-								
VehicleType	REMEL		Distance		Road	Fresn		Barrier Atte		m Atten
Autos:	61.75	-1.74	1.3		-1.20		4.59	0.0		0.000
Medium Trucks:	73.48	-11.93	1.4		-1.20		4.87	0.0		0.000
Heavy Trucks:	79.92	-14.35	1.4	11	-1.20		-5.56	0.0	00	0.000
Unmitigated Noise										
	Leq Peak Hou		,	vening	Leq	Night		Ldn		VEL
Autos:	60			55.0		53.3		60.6		60.9
Medium Trucks:	61		-	53.8		54.7		62.1		62.2
Heavy Trucks:	65	.8 64.	2	55.3		57.4		65.3		65.5
Vehicle Noise:	68	.0 66.	3	59.5		60.2		67.9		68.1
Centerline Distance	ce to Noise Co	ontour (in feet)								
			70	dBA	65	dBA	6	0 dBA	55	dBA
		Ldi	n: :	29	6	3		135	2	90
		CNE	<u> </u>	30	6	4		138	2	98

Wednesday, May 02, 2018

Wednesday, May 02, 2018

Wednesday, May 02, 2018

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Scenario: HY 2040 With Project Project Name: The Park @ Live Oak Road Name: Baldwin Park Bl. Job Number: 11112 Road Segment: 'so Live Oak Av. NOISE MODEL INPUTS SITE SPECIFIC INPUT DATA NOISE MODEL INPUTS Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 14,886 vehicles Autos: Peak Hour Volume: 1,489 vehicles Medium Trucks (2 Axles): 15 Vehicle Speed: 40 mph Vehicle Mix Near/Far Lane Distance: 48 fet	
Road Segment: s/o Live Oak Av. SITE SPECIFIC INPUT DATA NOISE MODEL INPUTS Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 14,886 vehicles Peak Hour Percentage: 10% Vehicle Speed: 40 mph Vehicle Gap Detrom: 14,810	
SITE SPECIFIC INPUT DATA NOISE MODEL INPUTS Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 14,886 vehicles Peak Hour Percentage: 10% Peak Hour Volume: 1,489 vehicles Vehicle Speed: 40 mph Vehicle I app Diction: 16 Vehicle Mix Vehicle Mix	
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 14,886 vehicles Autos: 15 Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1,489 vehicles Heavy Trucks (4 Axles): 15 Vehicle Speed: 40 mph Vehicle Mix Vehicle Mix	
Average Daily Traffic (Adt): 14,886 vehicles Autos: 15 Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1,489 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 40 mph Vehicle Mix	
Peak Hour Percentage: 10% Medium Trucks (2 Axles): 15 Peak Hour Volume: 1,489 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 40 mph Vehicle Mix	
Peak Hour Volume: 1,489 vehicles Heavy Trucks (3+ Axles): 15 Vehicle Speed: 40 mph Vencie Jaco Dictrogram 48 (or 100 mph	
Vehicle Speed: 40 mph Vehicle Mix Vehicle Mix	
Venicle Mix	
Noar/For Lana Distance: 48 foot	
VehicleType Day Evening Night	Daily
Site Data Autos: 72.4% 9.2% 18.4%	6 86.32%
Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5%	6 8.70%
Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 84.3% 2.7% 13.0%	6 4.98%
Centerline Dist. to Barrier: 50.0 feet Noise Source Elevations (in feet)	-
Centerline Dist. to Observer: 50.0 feet Autos: 0.000	
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297	
Observer Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment	t: 0.0
Pad Elevation: 0.0 feet	
Road Elevation: 0.0 feet Lane Equivalent Distance (in feet)	
Road Grade: 0.0% Autos: 44.147	
Left View: -90.0 degrees Medium Trucks: 43.947	
Right View: 90.0 degrees Heavy Trucks: 43.966	
FHWA Noise Model Calculations	
	erm Atten
Autos: 66.51 -0.24 0.71 -1.20 -4.65 0.000	0.000
Medium Trucks: 77.72 -10.20 0.74 -1.20 -4.87 0.000	0.000
Heavy Trucks: 82.99 -12.62 0.73 -1.20 -5.43 0.000	0.000
Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Lea Peak Hour Lea Day Lea Evening Lea Night Ldn (
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn C Autos: 65.8 63.6 60.6 58.9 66.2	ONEL 66.5
Autos: 65.8 63.6 60.6 58.9 66.2 Medium Trucks: 67.0 65.2 59.1 59.9 67.4	67.
Medium Trucks: 61.0 65.2 59.1 59.9 67.4 Heavy Trucks: 69.9 68.4 59.4 61.5 69.5	69.6
Vehicle Noise: 72.7 70.9 64.5 65.0 72.7	72.
Centerline Distance to Noise Contour (in feet)	
	5 dBA
Ldn: 75 162 350	753
	774

FHWA-RD-77-108 HIGH	WAY N	IOISE PR	EDICTIO	N MOE	EL			
Scenario: HY 2040 With Project Road Name: Maine Av. Road Segment: s/o Arrow Hwy.			Project Na Job Nun			ırk @ Live	Oak	
SITE SPECIFIC INPUT DATA			NO	ISE M	ODE	L INPUT	s	
Highway Data	:	Site Cond	ditions (H	ard =	10, So	oft = 15)		
Average Daily Traffic (Adt): 13,087 vehicles				A	utos:	15		
Peak Hour Percentage: 10%		Med	dium Truck	ks (2 A.	kles):	15		
Peak Hour Volume: 1,309 vehicles		Hea	avy Trucks	6 (3+ A	kles):	15		
Vehicle Speed: 35 mph	H	Vehicle N	Niv					
Near/Far Lane Distance: 12 feet	H		cleType	1	Dav	Evening	Night	Daily
Site Data		Vern			2.4%	•	18.4%	
		Mo	dium Truc		2.4 %		17.5%	
Barrier Height: 0.0 feet			leavy Truc		4.3%		13.0%	
Barrier Type (0-Wall, 1-Berm): 0.0			cuvy muc	.no. (4.3 /0	2.1 /0	13.078	4.557
Centerline Dist. to Barrier: 40.0 feet Centerline Dist. to Observer: 40.0 feet	1	Noise So	urce Elev	ations	(in fe	et)		
Centerline Dist. to Observer: 40.0 feet Barrier Distance to Observer: 0.0 feet			Autos:	0.0	00			
Observer Height (Above Pad): 5.0 feet		Mediun	n Trucks:	2.2				
Pad Elevation: 0.0 feet		Heavy	y Trucks:	8.0	04	Grade Adj	iustment.	0.0
Road Elevation: 0.0 feet	-	l ane Fou	ivalent D	istanc	e (in f	eet)		
Road Grade: 0.0%	F	Lano Lqu	Autos:	39.8		000		
Left View: -90.0 degrees		Mediun	n Trucks:	39.6				
Right View: 90.0 degrees			y Trucks:	39.6				
FHWA Noise Model Calculations								
	tance	Finite I		Fresne		Barrier Att		m Atten
Autos: 64.30 -0.21	1.37		-1.20		4.59	0.0		0.00
Medium Trucks: 75.75 -10.21	1.41		-1.20		4.87	0.0		0.00
Heavy Trucks: 81.57 -12.63	1.41	-	-1.20	-	5.56	0.0	000	0.00
Unmitigated Noise Levels (without Topo and barrie							T	
VehicleType Leq Peak Hour Leq Day	Leq E	· ·	Leq Ni			Ldn		VEL
Autos: 64.3 62.1		59.1		57.4		64.7		65.
Medium Trucks: 65.7 63.9		57.8		58.6		66.1		66.
Heavy Trucks: 69.1 67.6		58.6		60.7		68.7		68.
Vehicle Noise: 71.7 69.9		63.3		63.9		71.6	6	71.
Centerline Distance to Noise Contour (in feet)								
	70 c		65 dB	A	6	0 dBA		dBA
Ldn:	5		110			237		10
CNFL:	5	2	113			243	5	24

FHWA-RD-77-108 H	IGHWAY	7 NOISE P	REDICTIO	N MODEL			
Scenario: HY 2040 With Project Road Name: Longden Av. Road Segment: w/o Myrtle Av.				ame: The nber: 1111	Park @ Live 2	Oak	
SITE SPECIFIC INPUT DATA					EL INPUT	s	
Highway Data		Site Cor	nditions (H	lard = 10,	Soft = 15)		
Average Daily Traffic (Adt): 16,136 vehicles				Auto	s: 15		
Peak Hour Percentage: 10%		Me	edium Truc	ks (2 Axles): 15		
Peak Hour Volume: 1,614 vehicles		He	avy Truck	s (3+ Axles): 15		
Vehicle Speed: 40 mph		Vehicle	Mix				
Near/Far Lane Distance: 12 feet			nicleType	Day	Evening	Night	Daily
Site Data				tos: 72.4	•	18.4%	86.26%
Barrier Height: 0.0 feet		M	ledium Trud	cks: 77.7	% 4.8%	17.5%	8.73%
Barrier Type (0-Wall, 1-Berm): 0.0			Heavy True	cks: 84.3	% 2.7%	13.0%	5.00%
Centerline Dist. to Barrier: 30.0 feet		Noise S	ource Elev	ations (in	feet)		
Centerline Dist. to Observer: 30.0 feet			Autos:	0.000	1000		
Barrier Distance to Observer: 0.0 feet		Madiu	m Trucks:	2.297			
Observer Height (Above Pad): 5.0 feet			vv Trucks:	8.004	Grade Ad	iustmont.	0.0
Pad Elevation: 0.0 feet		пеа	vy mucks.	0.004	Orade Hu	usunen.	0.0
Road Elevation: 0.0 feet		Lane Eq	uivalent D	istance (i	n feet)		
Road Grade: 0.0%			Autos:	29.816			
Left View: -90.0 degrees		Mediu	m Trucks:	29.518			
Right View: 90.0 degrees		Hea	vy Trucks:	29.547			
FHWA Noise Model Calculations							
VehicleType REMEL Traffic Flow	Distance	e Finite	Road	Fresnel	Barrier Att	en Berr	n Atten
Autos: 66.51 0.11	3	3.26	-1.20	-4.4	9 0.0	000	0.00
Medium Trucks: 77.72 -9.84	3	3.33	-1.20	-4.8	6 0.0	000	0.00
Heavy Trucks: 82.99 -12.26	3	3.32	-1.20	-5.7	7 0.0	000	0.00
Unmitigated Noise Levels (without Topo and be	arrier att	enuation)					
VehicleType Leq Peak Hour Leq Day		Evening	Leq Ni	•	Ldn		IEL
Autos: 68.7 66		63.5		61.8	69.1		69.
Medium Trucks: 70.0 68		62.0		62.9	70.3	-	70.
Heavy Trucks: 72.9 71		62.4		64.5	72.4		72.
Vehicle Noise: 75.7 73	.9	67.5		68.0	75.6	6	75.
10.1							
Centerline Distance to Noise Contour (in feet)							
Centerline Distance to Noise Contour (in feet)		'0 dBA	65 dE		60 dBA		dBA
	in:	0 dBA 71 73	65 dE 153 157		60 dBA 330 339	7	dBA 10 29

	FH	WA-RD-77-108	HIGHW	AY N	OISE P	REDICT	ION MO	DEL			
	o: HY 2040 W e: Longden A nt: e/o Myrtle	.v.					Name: lumber:		ark @ Live	Oak	
SITE S	SPECIFIC IN	NPUT DATA				r	NOISE N	/ODE	L INPUT	s	
Highway Data				S	Site Cor	nditions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	21,096 vehicle	es					Autos:	15		
Peak Hour	Percentage:	10%			Me	dium Tr	ucks (2 /	Axles):	15		
Peak He	our Volume:	2,110 vehicle	s		He	avy Tru	cks (3+ /	(xles)	15		
Vel	hicle Speed:	40 mph		1	/ehicle	Mix					
Near/Far Lar	ne Distance:	12 feet				icleType	,	Day	Evening	Night	Daily
Site Data							Autos:	72.4%	~	18.4%	
	rier Height:	0.0 feet			М	edium T		77.7%		17.5%	
Barrier Type (0-Wa		0.0 1001				Heavy T	rucks:	84.3%	2.7%	13.0%	4.88%
Centerline Dis	. ,	30.0 feet		-							
Centerline Dist. t		30.0 feet		,	voise Si		levation		eet)		
Barrier Distance t	to Observer:	0.0 feet				Auto		000 297			
Observer Height ()	Above Pad):	5.0 feet				m Truck	0		Grade Ad	iuntenant	
Pa	d Elevation:	0.0 feet			Heal	/y Truck	S: 8.	004	Glade Auj	usuneni	. 0.0
Roa	d Elevation:	0.0 feet		L	ane Eq	uivalen	t Distan	ce (in i	feet)		
F	Road Grade:	0.0%				Auto	s: 29.	816			
	Left View:	-90.0 degre	es		Mediu	m Truck	s: 29.	518			
	Right View:	90.0 degre	es		Heav	/y Truck	s: 29.	547			
FHWA Noise Mode	el Calculation	IS									
VehicleType	REMEL	Traffic Flow	Distar	псе	Finite	Road	Fresr	iel	Barrier Att	en Ber	m Atten
Autos:	66.51	1.29		3.26	6	-1.20		-4.49	0.0	000	0.000
Medium Trucks:	77.72			3.33	3	-1.20		-4.86	0.0	000	0.000
Heavy Trucks:	82.99	-11.20		3.32	2	-1.20		-5.77	0.0	000	0.000
Unmitigated Noise	Levels (with	out Topo and	barrier a	atten	uation)						
	Leq Peak Ho			eq Ev	/ening	Leq	Night		Ldn		NEL
Autos:	69		67.7		64.7		63.0		70.3		70.6
Medium Trucks:			69.2		63.1		64.0		71.4		71.5
Heavy Trucks:			72.4		63.4		65.5	;	73.5		73.6
Vehicle Noise:	76	6.7	75.0		68.6		69.1		76.7	7	76.9
Centerline Distanc	e to Noise C	ontour (in feet)								
				70 a			dBA	6	60 dBA		dBA
			Ldn:	84			81		389		39
		C	NEL:	86	õ	1	86		400	8	62

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	FHV	VA-RD-77-108 H	HIGHWA	Y NOI	SE PR	REDICTIO	N MO	DEL					
	: HY 2040 W : Live Oak A : w/o Peck R	v. ,		Project Name: The Park @ Live Oak Job Number: 11112									
SITE S	PECIFIC IN	IPUT DATA				NC	ISE N	/ODE	L INPUT	s			
Highway Data				Site Conditions (Hard = 10, Soft = 15)									
Average Daily Ti Peak Hour P Peak Hou	, ,	30,267 vehicles 10% 3,027 vehicles	5			dium Truc avy Truck	ks (2 A	/	15 15 15				
Vehi	icle Speed:	40 mph		Vet	nicle I	Nix							
Near/Far Lane	e Distance:	48 feet				cleType	1	Dav	Evening	Night	Daily		
Site Data						1		72.4%	9.2%	18.4%			
Parri	ier Height:	0.0 feet			Me	dium Tru	cks:	77.7%	4.8%	17.5%	8.92%		
Barrier Type (0-Wa	ll, 1-Berm):	0.0			H	leavy Tru	cks:	84.3%	2.7%	13.0%	5.17%		
Centerline Dist.		48.0 feet		Noi	se So	ource Elev	ation	s (in fe	et)				
Centerline Dist. to		48.0 feet				Autos:	0.0	000	,				
Barrier Distance to		0.0 feet		٨	lediur	n Trucks:	2.2	297					
Observer Height (A	bove Pad):	5.0 feet			Heav	v Trucks:	8.0	004	Grade Ad	liustmen	t: 0.0		
	l Elevation:	0.0 feet				,							
	Elevation:	0.0 feet		Lan	ie Equ	uivalent E			feet)				
Re	oad Grade:	0.0%				Autos:	41.8						
ŀ	Left View: Right View:	-90.0 degrees 90.0 degrees				n Trucks: y Trucks:	41.0 41.0						
FHWA Noise Model	Calculation	s											
VehicleType	REMEL	Traffic Flow	Distanc	e I	Finite	Road	Fresn	el	Barrier Att	en Be	rm Atten		
Autos:	66.51	2.82		1.05		-1.20		-4.64	0.0	000	0.00		
Medium Trucks:	77.72	-7.01		1.09		-1.20		-4.87	0.0	000	0.00		
Heavy Trucks:	82.99	-9.38		1.08		-1.20		-5.45	0.0	000	0.00		
Unmitigated Noise	Levels (with	out Topo and b	arrier at	tenuat	tion)								
VehicleType L	eq Peak Hou	ır Leq Day	Leo	q Even	ing	Leq Ni	ight		Ldn		NEL		
Autos:	69	.2 6	7.0		64.0		62.3		69.6	6	69.		
Medium Trucks:	70		8.7		62.6		63.5		70.9	-	71.		
Heavy Trucks:	73		2.0		63.0		65.1		73.1	1	73.		
Vehicle Noise:	76	.2 7	4.5		68.0		68.5		76.2	2	76.		
Centerline Distance	to Noise Co	ontour (in feet)		70 dBA		65 dE	24	6	0 dBA	5	5 dBA		
		,	dn:	124		268		0	577		.243		
		CN		124		268			593		,243 ,277		
		CN	LL.	120		2/5			333	1	,211		

	FHW	/A-RD-77-108 F	IIGHWA	Y NOISE P	REDICTIO		DEL							
Road Nam	o: HY 2040 Wi e: Arrow Hwy.	,			Project N Job Nu			ark @ Live	Oak					
Road Segmer	nt: e/o Peck Rd	l.												
	SPECIFIC IN	PUT DATA						L INPUT	s					
Highway Data				Site Conditions (Hard = 10, Soft = 15)										
Average Daily	Traffic (Adt):	29,904 vehicles				/	Autos:	15						
Peak Hour	Percentage:	10%		Me	dium Truc	cks (2 A	xles):	15						
Peak H	our Volume:	2,990 vehicles		He	avy Truck	(3+ A	xles):	15						
	hicle Speed:	45 mph		Vehicle	Mix									
Near/Far La	ne Distance:	48 feet		Veh	icleType		Day	Evening	Night	Daily				
Site Data						itos:	72.4%	•	18.4%					
Ra	rier Height:	0.0 feet		М	edium Tru	icks:	77.7%	4.8%	17.5%	8.719				
Barrier Type (0-W	•	0.0			Heavy Tru	icks:	84.3%	2.7%	13.0%	5.05				
Centerline Dis	. ,	40.0 feet		Nolas A				41						
Centerline Dist.		40.0 feet		Noise S	ource Ele			eet)						
Barrier Distance	to Observer:	0.0 feet		1. de - 15-	Autos: m Trucks:		97 100							
Observer Height (Above Pad):	5.0 feet			m Trucks: /y Trucks:		.97)04	Grade Ad	iustmont					
Pa	ad Elevation:	0.0 feet		пеа	ly mucks.	0.0	104	Grade Au	Jusuneni	0.0				
Roa	ad Elevation:	0.0 feet		Lane Eq	uivalent l	Distand	e (in	feet)						
ŀ	Road Grade:	0.0%			Autos:	32.3	388							
	Left View:	-90.0 degrees		Mediu	m Trucks:	32.1	114							
	Right View:	90.0 degrees		Hear	/y Trucks:	32.1	141							
FHWA Noise Mode	el Calculations													
VehicleType	REMEL	Traffic Flow	Distanc		Road	Fresn		Barrier Att		m Atter				
Autos:	68.46	2.28		2.73	-1.20		-4.59		000	0.00				
Medium Trucks:	79.45	-7.68		2.78	-1.20		-4.87		000	0.00				
Heavy Trucks:	84.25	-10.05		2.78	-1.20		-5.56	0.0	000	0.00				
Unmitigated Noise														
	Leq Peak Hour			g Evening	Leq N	·		Ldn		NEL				
Autos:	72.		0.1 1.5	67.1		65.4		72.7		73				
Medium Trucks:	73. 75.		1.5 4.2	65.4 65.3		66.2 67.4		73.7 75.3		73 75				
Heavy Trucks: Vehicle Noise:	75.	-	4.Z 7.1	65.3 70.8		71.2		75.0		75.				
			51	70.8		71.2		78.8	5	79				
Centerline Distance	ce to Noise Co	ntour (in feet)		70 dBA	65 d	DA	4	60 dBA	FF	dBA				
		1.	dn:	155	333			718		ава 547				
						ر د		/10	,	J+1				

		/A-RD-77-108 I								
Scenario: HY 2		ith Project						Park @ Live	Oak	
Road Name: Arrow						Job Nun	nber: 1111	2		
Road Segment: e/o L	ongaer	h AV.								
SITE SPECI	FIC IN	PUT DATA						EL INPUT	S	
Highway Data				S	Site Con	ditions (H	ard = 10,	Soft = 15)		
Average Daily Traffic (J	Adt):	51,779 vehicles	6				Auto	s: 15		
Peak Hour Percent	age:	10%			Med	dium Trucl	ks (2 Axles	<i>:):</i> 15		
Peak Hour Volu	ume:	5,178 vehicles			Hea	avy Trucks	s (3+ Axles	<i>:):</i> 15		
Vehicle Sp	eed:	45 mph		v	/ehicle I	<i>lix</i>				
Near/Far Lane Dista	nce:	48 feet		-	Vehi	cleType	Dav	Evening	Night	Daily
Site Data						Au	os: 72.4	% 9.2%	18.4%	86.38
Barrier He	iaht [.]	0.0 feet			Me	dium Truc	ks: 77.7	% 4.8%	17.5%	8.64
Barrier Type (0-Wall, 1-Be		0.0			H	leavy Truc	ks: 84.3	% 2.7%	13.0%	4.98
Centerline Dist. to Ba	rrier:	40.0 feet			loise So	urce Elev	ations (in	feet)		
Centerline Dist. to Obse	rver:	40.0 feet		-		Autos:	0.000	1000		
Barrier Distance to Obse	rver:	0.0 feet			Modiur	n Trucks:	2.297			
Observer Height (Above F	Pad):	5.0 feet				v Trucks:	8.004	Grade Ad	liustment:	0.0
Pad Eleva	ation:	0.0 feet								
Road Eleva		0.0 feet		L	ane Equ		istance (i	n feet)		
Road Gr		0.0%				Autos:	32.388			
Left V		-90.0 degrees				n Trucks:	32.114			
Right V	/iew:	90.0 degree	6		Heav	y Trucks:	32.141			
FHWA Noise Model Calcu	lations	6								-
VehicleType REM	IEL	Traffic Flow	Dista		Finite		Fresnel	Barrier Att		m Atter
	68.46	4.67		2.73		-1.20	-4.5		000	0.00
	79.45	-5.33		2.78		-1.20	-4.8		000	0.00
Heavy Trucks:	84.25	-7.72		2.78		-1.20	-5.5	6 0.0	000	0.00
Unmitigated Noise Levels										
VehicleType Leq Pe				.eq Ev	~	Leq Ni		Ldn		VEL
Autos:	74.		2.5		69.5		67.8	75.		75
Medium Trucks:	75.		3.8		67.7		68.6	76.0	-	76
Heavy Trucks:	78.		6.6		67.6		69.7	77.		77
	81.		9.4		73.1		73.5	81.:	2	81
Vehicle Noise:										
Vehicle Noise: Centerline Distance to No	oise Co	ntour (in feet)								
	oise Co			70 d		65 dE	A	60 dBA		dBA
	oise Co		dn:	70 d 22: 22:	2	65 dE 478 492	A	60 dBA 1,030 1.059	2,2	dBA 219 282

	FH1	WA-RD-77-108	HIGH	IWAY N	IOISE PF	REDICTIO	N MOD	EL						
	io: HY 2040 W e: Arrow Hwy nt: e/o I-605 F	. , ,			Project Name: The Park @ Live Oak Job Number: 11112									
SITE	SPECIFIC IN	NPUT DATA							INPUT	5				
Highway Data					Site Conditions (Hard = 10, Soft = 15)									
Average Daily	Traffic (Adt):	38,215 vehicl	es				A	utos:	15					
Peak Hour	Percentage:	10%			Me	dium Truci	ks (2 A)	kles):	15					
Peak H	our Volume:	3,821 vehicle	s		He	avy Trucks	s (3+ A)	kles):	15					
Vei	hicle Speed:	45 mph		-	Vehicle I	Niv								
Near/Far La	ne Distance:	48 feet		F		icleType	L	Day E	vening	Night	Daily			
Site Data								2.4%	9.2%	18.4%				
Bar	rier Heiaht:	0.0 feet			Me	edium Truc	cks: 7	7.7%	4.8%	17.5%	8.07%			
Barrier Type (0-W		0.0			ŀ	leavy Truc	cks: 8	4.3%	2.7%	13.0%	4.62%			
Centerline Dis	. ,	40.0 feet		H	Noiso Se	ource Elev	ations	(in foo	<i>4</i>)					
Centerline Dist.	to Observer:	40.0 feet		H	voise sc	Autos:	0.0	•	9					
Barrier Distance	to Observer:	0.0 feet			1.4 m all a se	n Trucks:	2.2							
Observer Height (Above Pad):	5.0 feet				y Trucks:	8.0		irade Adj	ustmont	0.0			
Pa	ad Elevation:	0.0 feet			neav	y mucks.	0.0	04 0	nade Auj	usuncin	0.0			
Roa	ad Elevation:	0.0 feet		1	Lane Eq	uivalent D)istanc	e (in fe	et)					
ŀ	Road Grade:	0.0%				Autos:	32.3	88						
	Left View:	-90.0 degre	es		Mediur	n Trucks:	32.1	14						
	Right View:	90.0 degre	es		Heav	y Trucks:	32.1	41						
FHWA Noise Mode	el Calculation	IS												
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite	Road	Fresne	el Ba	arrier Atte	en Ber	m Atten			
Autos:	68.46	3.40		2.73	3	-1.20	-	4.59	0.0	00	0.000			
Medium Trucks:	79.45	-6.95		2.7	В	-1.20	-	4.87	0.0	00	0.000			
Heavy Trucks:	84.25	-9.37		2.7	В	-1.20	-	5.56	0.0	00	0.000			
Unmitigated Noise	e Levels (with	out Topo and	barrie	er atten	uation)									
VehicleType	Leq Peak Ho	ur Leq Daj	/	Leq E	vening	Leq Ni	ght	L	.dn	CI	VEL			
Autos:	73	3.4	71.2		68.2		66.5		73.8		74.1			
Medium Trucks:	74	1.1	72.2		66.1		67.0		74.4		74.6			
Heavy Trucks:	76	6.5	74.9		66.0		68.1		76.0		76.1			
Vehicle Noise:	79	9.6	77.8		71.7		72.0		79.6		79.8			
Centerline Distance	ce to Noise C	ontour (in feet	t)											
				70 0	:BA	65 dE	3A	60	dBA	55	dBA			
			Ldn:	17	'5	377		8	13	1,	751			
		С	NEL:	18	30	388		8	36	1,	802			

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	FHV	VA-RD-77-108	HIGH	IWAY N	IOISE P	REDICT	ION MO	DEL						
Scenario:	HY 2040 W	ith Project				Projec	t Name:	The P	ark @ Live	Oak				
Road Name:	Arrow Hwy.					Job N	lumber:	11112						
Road Segment:	w/o Rivergr	ade Rd.												
	PECIFIC IN	PUT DATA							L INPUT	s				
Highway Data					Site Conditions (Hard = 10, Soft = 15)									
Average Daily Tr	affic (Adt):	32,827 vehicle	es					Autos:	15					
Peak Hour Pe	ercentage:	10%					ucks (2)							
Peak Hou	ur Volume:	3,283 vehicle	s		He	eavy Tru	cks (3+)	Axles):	15					
Vehi	cle Speed:	45 mph			Vehicle	Mix								
Near/Far Lane	Distance:	48 feet		-		nicleType	е	Day	Evening	Night	Daily			
Site Data							Autos:	72.4%	9.2%	18.4%	6 87.58%			
Barri	er Heiaht:	0.0 feet			M	ledium 1	rucks:	77.7%	4.8%	17.5%	6 7.90%			
Barrier Type (0-Wal	I, 1-Berm):	0.0				Heavy 7	rucks:	84.3%	2.7%	13.0%	6 4.52%			
Centerline Dist.		40.0 feet		1	Noise S	ource E	levation	s (in f	eet)					
Centerline Dist. to		40.0 feet				Auto	os: 0.	000						
Barrier Distance to		0.0 feet			Mediu	m Truck	(s: 2.	297						
Observer Height (Al	,	5.0 feet			Hea	vy Truck	(s: 8.	004	Grade Ad	justmen	t: 0.0			
	Elevation:	0.0 feet		-						·				
	Elevation:	0.0 feet		1	Lane Eq		t Distan		feet)					
Ro	ad Grade:	0.0%				Auto		388						
	Left View:	-90.0 degre	es			m Truck		114						
F	Right View:	90.0 degre	es		Hea	vy Truck	(s: 32.	141						
FHWA Noise Model	Calculation	5												
VehicleType	REMEL	Traffic Flow	Dis	stance		Road	Fresi	-	Barrier Att		erm Atten			
Autos:	68.46	2.75		2.73		-1.20		-4.59		000	0.000			
Medium Trucks:	79.45	-7.70		2.78	-	-1.20		-4.87		000	0.000			
Heavy Trucks:	84.25	-10.12		2.78	-	-1.20		-5.56	0.0	000	0.000			
Unmitigated Noise L								-						
,,	eq Peak Hou			Leq E	· ·		Night		Ldn		NEL			
Autos:	72		70.5		67.6		65.8		73.2	-	73.			
Medium Trucks:	73	-	71.4		65.3		66.2	-	73.6	-	73.8			
Heavy Trucks:	75		74.2		65.2		67.3	-	75.3	-	75.4			
Vehicle Noise:	78		77.1		71.0		71.3	3	78.9	9	79.1			
Centerline Distance	to Noise Co	ntour (in feet)	70 (6F	dBA		50 dBA	5	5 dBA			
			I dn:	15			UDA 38	1 0	727		.567			
			Lan: NFL :	16		-	38 147		727		,567 .612			
		Ci	VEL.	16	,,	3	p++ /		140	1	,012			

	FHW	A-RD-77-108 H	IIGHWA	Y NOISE F	REDIC		DEL							
	HY 2040 Wit Arrow Hwy. e/o Rivergrad	,				t Name: Number:		ark @ Live	Oak					
SITE S	PECIFIC INF	PUT DATA			1	NOISE N	IODE	L INPUT	s					
Highway Data				Site Conditions (Hard = 10, Soft = 15)										
Average Daily Ti	raffic (Adt): 2	8,764 vehicles	5	Autos: 15										
Peak Hour P	ercentage:	10%		М	edium T	rucks (2 A	(xles):	15						
Peak Ho	ur Volume: 2	2,876 vehicles		н	eavy Tri	icks (3+ A	(xles):	15						
	cle Speed:	45 mph		Vehicle	Mix									
Near/Far Lane	e Distance:	48 feet		Ve	hicleTyp	e	Day	Evening	Night	Daily				
Site Data						Autos:	72.4%		18.4%	86.349				
Barri	er Height:	0.0 feet		٨	1edium T	Frucks:	77.7%	4.8%	17.5%	8.69%				
Barrier Type (0-Wa		0.0			Heavy T	rucks:	84.3%	2.7%	13.0%	4.98%				
Centerline Dist.	to Barrier:	40.0 feet		Noise	ource F	levation	s (in f	oot)						
Centerline Dist. to	Observer:	40.0 feet		110/30 0	Auto		000							
Barrier Distance to	Observer:	0.0 feet		Medii	Im Truci		297							
Observer Height (A	bove Pad):	5.0 feet			vy Truck		004	Grade Ad	iustment	: 0.0				
	Elevation:	0.0 feet												
	Elevation:	0.0 feet		Lane E		nt Distan		feet)						
Ro	oad Grade:	0.0%			Auto									
	Left View:	-90.0 degrees			Im Truci									
,	Right View:	90.0 degrees	•	nea	vy Truck	(8. 32.	141							
FHWA Noise Model	Calculations													
VehicleType	REMEL	Traffic Flow	Distanc	ce Finite	e Road	Fresh	el	Barrier Att	en Ber	m Atter				
Autos:	68.46	2.11		2.73	-1.20		-4.59	0.0	000	0.00				
Medium Trucks:	79.45	-7.86		2.78	-1.20		-4.87		000	0.00				
Heavy Trucks:	84.25	-10.28		2.78	-1.20		-5.56	0.0	000	0.00				
Unmitigated Noise	Levels (witho	ut Topo and b	arrier at	tenuation)										
VehicleType L	eq Peak Hour	Leq Day	Lee	q Evening	Leq	Night		Ldn	C	NEL				
Autos:	72.1	I 6	9.9	66.9	9	65.2		72.5	5	72.				
Medium Trucks:	73.2		1.3	65.2		66.1		73.5		73.				
Heavy Trucks:	75.5		4.0	65.1		67.1		75.1		75.				
Vehicle Noise:	78.6	6 7	6.9	70.0	6	71.0		78.0	6	78.				
Centerline Distance	to Noise Cor	ntour (in feet)												
				70 dBA		dBA	0	60 dBA		dBA				
			dn:	150		323		696		500				
		CN	H ·	154		332		716	1	543				

		/A-RD-77-108 I								
Scenario: HY 2		ith Project						Park @ Live	e Oak	
Road Name: Arro						Job Nun	nber: 111	12		
Road Segment: w/o	viaine A	w.								
SITE SPECI	FIC IN	PUT DATA						DEL INPUT	'S	
Highway Data				S	Site Con	ditions (H	ard = 10,	Soft = 15)		
Average Daily Traffic (Adt):	54,499 vehicles	3				Auto	os: 15		
Peak Hour Percent	age:	10%			Med	lium Truck	ks (2 Axle	s): 15		
Peak Hour Vol	ume:	5,450 vehicles			Hea	avy Trucks	; (3+ Axle	s <i>):</i> 15		
Vehicle Sp	eed:	45 mph		V	/ehicle I	lix				
Near/Far Lane Dista	nce:	48 feet		F		cleType	Dav	/ Evening	Night	Daily
Site Data						Au	os: 72.	•	18.4%	
Barrier He	iaht:	0.0 feet			Me	dium Truc	ks: 77.	7% 4.8%	17.5%	8.899
Barrier Type (0-Wall, 1-Be		0.0			H	leavy Truc	ks: 84.	3% 2.7%	13.0%	5.09%
Centerline Dist. to Ba	rrier:	40.0 feet			Voise So	urce Elev	ations (ii	1 feet)		
Centerline Dist. to Obse	rver:	40.0 feet			10/30 00	Autos:	0.000	meety		
Barrier Distance to Obse	rver:	0.0 feet			Modiur	n Trucks:	2.297			
Observer Height (Above H	Pad):	5.0 feet				v Trucks:	8.004	Grade Ad	liustment	+ 0.0
Pad Eleva	tion:	0.0 feet			neav	y mucks.	0.004	0/000/10	juounon	. 0.0
Road Eleva	ation:	0.0 feet		L	.ane Equ	ivalent D	istance (in feet)		
Road Gi	ade:	0.0%				Autos:	32.388			
Left \	/iew:	-90.0 degrees	6			n Trucks:	32.114			
Right \	/iew:	90.0 degrees	8		Heav	/ Trucks:	32.141			
FHWA Noise Model Calcu	Ilations	6								
VehicleType REM	IEL	Traffic Flow	Dista	nce	Finite	Road	Fresnel	Barrier At	ten Ber	rm Atten
Autos:	68.46	4.87		2.73	3	-1.20	-4.5	59 0.	000	0.00
Medium Trucks:	79.45	-4.98		2.78	3	-1.20	-4.8	37 0.	000	0.00
Heavy Trucks:	84.25	-7.40		2.78	3	-1.20	-5.5	<i>6</i> 6 0.	000	0.00
Unmitigated Noise Levels			-							
VehicleType Leq Pe				.eq Ev	~	Leq Ni	·	Ldn		NEL
Autos:	74.	• ·	2.7		69.7		68.0	75.	-	75.
Medium Trucks:	76.	• ·	4.2		68.1		68.9	76.		76.
Heavy Trucks:	78.	· ·	6.9		67.9		70.0	78.	-	78.
Vehicle Noise:	81.	• •	9.7		73.4		73.8	81.	5	81.
venicie noise.		ntour (in foot)							-	
	oise Co	niour (in ieei)	1							
Centerline Distance to No	oise Co			70 d		65 dE	A	60 dBA		i dBA
	oise Co		dn:	70 d 23	2	65 dE 501 515	A	60 dBA 1,078 1,109	2,	,323 ,389

Scenaric: HY 2040 With Project Road Name: Arrow Hwy. Project Name: The Park @ Live Oak Job Number: 11112 Road Segment: elo Naine Av. Noise Model Inputs Sitte SPECIFIC INPUT DATA NOISE MODEL INPUTS Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 40,304 vehicles Peak Hour Percentage: 10% Vehicle Speed: 45 mph Vehicle Speed: 45 mph Site Data Autos: Barrier Height: 0.0 feet Centerline Dist. to Dsarrier: 40.0 feet Dearrier Ibistance to Observer: 40.0 feet Barrier Ibist to Dsarrier: 40.0 feet Observer Height (Above Pad): 5.0 feet
Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 40,304 vehicles Autos: 15 Peak Hour Porcentage: 10% Medium Trucks (2 Aves): 15 Peak Hour Volume: 4,030 vehicles Heavy Trucks (3 + Avles): 15 Vehicle Speed: 45 mph Vehicle Mix Vehicle Mix Vehicle Mix Value Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.94 Centerline Dist. to Observer: 40.0 feet Noise Source Elevations (in feet) Vehice: Autos: 0.00 Barrier Distance to Observer: 0.0 feet Mutos: 0.000 Medium Trucks: 2.297
Average Daily Traffic (Adt): 40,304 vehicles Autos: 15 Peak Hour Volume: 4,030 vehicles Medium Trucks (2 Avles): 15 Vehicle Speed: 45 mph Heavy Trucks (3+ Avles): 15 Vehicle Speed: 45 mph Vehicle Type Day Evening Night Daily Site Data Autos: 72.4% 9.2% 18.4% 85.91 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.94 Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 13.0% 5.15 Centerline Dist. to Observer: 40.0 feet Noise Source Elevations (in feet) Values: 0.000 Barrier Distance to Observer: 0.0 feet Mutos: 2.297
Break Hour Percentage: 10% Peak Hour Volume: 4,030 vehicles Vehicle Speed: 45 mph Neat/Far Lane Distance: 48 feet Site Data Autos: Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 feet Centerline Dist. to Dserver: 40.0 feet Barrier Distance to Observer: 40.0 feet Barrier bistance to Observer: 0.0 feet Barrier bistance to Observer: 0.0 feet Barrier bistance to Observer: 0.0 feet
Peak Hour Volume: 4,030 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Vehicle Mix Vehicle Mix Vehicle Mix Vehicle Mix Site Data Autos: Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 feet Centerline Dist. to Observer: 40.0 feet Barrier Distance to Observer: 40.0 feet Moise Source Elevations (in feet) Obsenver Heidth (Abrue Part): 0.0 feet Medium Trucks: 2.297
Vehicle Speed: 45 mph Near/Far Lane Distance: 48 feet Vehicle Mix Site Data Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berrin): 0.0 feet Centerline Dist. to Barrier: 40.0 feet Barrier Distance to Observer: 40.0 feet Noise Source Elevations (in feet) Opensore Height (blogs Park) 0.0 feet Molies Data Noise Source Clevations (in feet) Obsensore Height (blogs Park) 0.0 feet Medium Trucks: 2.297
Near/Far Lane Distance: 48 feet Venicle Mix Day Evening Night Dail Site Data Autos: 72.4% 9.2% 18.4% 85.91 Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.94 Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 74.7% 13.0% 5.15 Centerline Dist. to Observer: 40.0 feet Noise Source Elevations (in feet) 0.000 Barrier Distance to Observer: 0.0 feet Autos: 2.297 14.0%
Site Data Venicle type Day Evening Night Dail Barrier Height: 0.0 feet Marrier Justa Autos: 7.24% 9.2% 18.4% 85.91 Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 87.3% 2.7% 13.0% 5.15 Centerline Dist. to Dserver: 40.0 feet Noise Source Elevations (in feet) Venice: 0.000 Barrier Distance to Observer: 0.0 feet Autos: 0.000 Medium Trucks: 2.297
Barrier Height: 0.0 feet Medium Trucks: 77.7% 4.8% 17.5% 8.94 Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 84.3% 2.7% 13.0% 5.15 Centerline Dist. to Dserver: 40.0 feet Noise Source Elevations (in feet) Noise Source Elevations (in feet) Desamer Height (Abrus Perl): 0.0 feet Autos: 0.000 Medium Trucks: 2.297 Medium Trucks: 2.297
Barrier Type (I/Wall, 1-5 left) Content regime Content Barrier Type (I/Wall, 1-54 left) 40.0 feet Heavy Trucks: 84.3% 2.7% 13.0% 5.15 Centerline Dist. to Barrier: 40.0 feet Noise Source Elevations (in feet) Centerline Dist. to Observer: 40.0 feet Autos: Barrier Distance to Observer: 0.0 feet Autos: Obsenser Height (Abrue Part) 5.0 feet
Barrier Type (0-Wall, 1-Berm): 0.0 Heavy Trucks: 84.3% 2.7% 13.0% 5.15 Centerline Dist. to Barrier: 40.0 feet Noise Source Elevations (in feet) Centerline Dist. to Observer: 40.0 feet Autos: 0.000 Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297
Centerline Dist. to Observer: 40.0 feet Barrier Distance to Observer: 0.0 feet Observer Hacht (Abrue Part) = 0.1 feet Medium Trucks: 2.297
Centerline Dist. to Observer: 40.0 feet Autos: 0.000 Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297 Observer Liebrich (Abrue Part): 5.0 feet
Barrier Distance to Observer: 0.0 feet Medium Trucks: 2.297
Observer Height (Above Pad): 5.0 feet
Pad Elevation: 0.0 feet
Road Elevation: 0.0 feet Lane Equivalent Distance (in feet)
Road Grade: 0.0% Autos: 32.388
Left View: -90.0 degrees Medium Trucks: 32.114
Right View: 90.0 degrees Heavy Trucks: 32.141
FHWA Noise Model Calculations
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atte
Autos: 68.46 3.56 2.73 -1.20 -4.59 0.000 0.0
Medium Trucks: 79.45 -6.27 2.78 -1.20 -4.87 0.000 0.0
Heavy Trucks: 84.25 -8.67 2.78 -1.20 -5.56 0.000 0.0
Unmitigated Noise Levels (without Topo and barrier attenuation)
VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL
Autos: 73.5 71.4 68.4 66.6 74.0 74
Medium Trucks: 74.8 72.9 66.8 67.7 75.1 75
Heavy Trucks: 77.2 75.6 66.7 68.8 76.7 76
Vehicle Noise: 80.2 78.4 72.1 72.5 80.2 80
Centerline Distance to Noise Contour (in feet)
70 dBA 65 dBA 60 dBA 55 dBA
Ldn: 191 411 886 1,908
CNEL: 196 423 910 1,961

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	FH\	WA-RD-7	77-108 H	IGHWA		SE PREDIO	TION M	ODEL			
Scenario	p: HY 2040 W	/ith Proje	ect			Proje	ct Name	The P	ark @ Live	Oak	
Road Name	e: Live Oak A					Job	Number	11112	2		
Road Segmen	t: w/o Riverg	rade Rd.									
	SPECIFIC IN	NPUT D	ATA						EL INPUT	s	
Highway Data					Site	e Conditio	ns (Hard	= 10, S	oft = 15)		
Average Daily	Traffic (Adt):	35,749	vehicles	5				Autos	: 15		
Peak Hour I	Percentage:	10%	,			Medium	Trucks (2	Axles)	: 15		
Peak Ho	our Volume:	3,575 \	/ehicles			Heavy T	rucks (3+	Axles)	: 15		
Vel	nicle Speed:	45 r	nph		Vot	nicle Mix					
Near/Far Lar	e Distance:	80 f	eet		Ven	VehicleTy	ne	Dav	Evening	Night	Daily
Site Data						,	Autos:	72.49	•	18.4%	,
Bar	rier Height:	0.0	feet			Medium	Trucks:	77.79	6 4.8%	17.5%	8.63%
Barrier Type (0-Wa	•	0.0	1001			Heavy	Trucks:	84.3%	6 2.7%	13.0%	4.98%
Centerline Dis	t. to Barrier:	50.0	feet		Noi	se Source	Elevatio	ns (in i	feet)		
Centerline Dist. t	o Observer:	50.0	feet					0.000	000		
Barrier Distance t	o Observer:	0.0	feet		٨	/edium Tru		297			
Observer Height (/	Above Pad):	5.0	feet			Heavy Tru		3.004	Grade Ad	iustment	0.0
Pa	d Elevation:	0.0	feet								
	d Elevation:	0.0			Lan	e Equival			feet)		
F	Road Grade:	0.09	-).414			
	Left View:		degrees			ledium Tru).122			
	Right View:	90.0	degrees	6		Heavy Tru	cks: 30	0.150			
FHWA Noise Mode	l Calculation	IS			1						
VehicleType	REMEL	Traffic		Distance	_	Finite Road			Barrier Att		rm Atten
Autos:	68.46		3.06		.14	-1.2	-	-4.65		000	0.000
Medium Trucks:	79.45		-6.94		.20	-1.2	-	-4.87		000	0.000
Heavy Trucks:	84.25		-9.33	3	.19	-1.2	0	-5.43	0.0	000	0.00
Unmitigated Noise		- · ·		1		<u> </u>				1	
	Leq Peak Ho		eq Day		Even		eq Night		Ldn		NEL
Autos:		3.5	-	1.3		68.3	66		73.9	-	74.2
Medium Trucks:		1.5		2.6		66.5	67		74.8	-	75.0
Heavy Trucks:		6.9		5.4		66.4	68		76.5	-	76.0
		0.0	78	8.2		71.9	72	.3	80.0)	80.1
Vehicle Noise:	0										
Vehicle Noise: Centerline Distanc			in feet)	1						1	
			1		0 dBA		i5 dBA		60 dBA		dBA
			1	dn:	0 dBA 231 237		65 dBA 497 511		60 dBA 1,071 1,102	2,	dBA 308 374

	FHW	/A-RD-77-108	HIG	HWAY N	OISE PRI	EDICT		DDEL							
Scenario: HY 20 Road Name: Live O Road Segment: e/o Riv	ak Av	. '			I		t Name: lumber:		ark @ Live	Oak					
SITE SPECIFI	C IN	PUT DATA				ľ	NOISE	MODE		s					
Highway Data				S	Site Conditions (Hard = 10, Soft = 15)										
Average Daily Traffic (Ad		37,931 vehicle	es		Autos: 15										
Peak Hour Percentag		10%					ucks (2								
Peak Hour Volun		3,793 vehicle	s		Hea	vy Tru	cks (3+	Axles):	15						
Vehicle Spee		45 mph		V	ehicle M	ix									
Near/Far Lane Distan	ce:	80 feet				leType	e	Day	Evening	Night	Daily				
Site Data							Autos:	72.4%	6 9.2%	18.4%	86.149				
Barrier Heig	ht.	0.0 feet			Med	dium T	rucks:	77.7%	4.8%	17.5%	8.80%				
Barrier Type (0-Wall, 1-Ben		0.0			He	eavy T	rucks:	84.3%	6 2.7%	13.0%	5.07%				
Centerline Dist. to Barn	·	50.0 feet		-		_									
Centerline Dist. to Observ		50.0 feet		^	loise Sou				eet)						
Barrier Distance to Observ	er:	0.0 feet				Auto		.000							
Observer Height (Above Pa	d):	5.0 feet			Medium			.297	Our de Ad						
Pad Elevati	·	0.0 feet			Heavy	Truck	:s: 8	.004	Grade Ad	ustment	0.0				
Road Elevati	on:	0.0 feet		L	ane Equ	ivalen	t Dista	nce (in	feet)						
Road Gra	de:	0.0%				Auto	is: 30).414							
Left Vie	w:	-90.0 degree	es		Medium	Truck	is: 30	.122							
Right Vie	W:	90.0 degree	es		Heavy	Truck	:s: 30	.150							
FHWA Noise Model Calcula															
VehicleType REME		Traffic Flow	Di	istance	Finite F		Fres		Barrier Att		m Atten				
	8.46	3.30		3.14		-1.20		-4.65		000	0.00				
	9.45	-6.61		3.20		-1.20		-4.87		000	0.00				
Heavy Trucks: 8	4.25	-9.00		3.19		-1.20		-5.43	0.0	000	0.00				
Unmitigated Noise Levels (barr	ier attenu	uation)										
VehicleType Leq Peak				Leq Ev		Leq	Night		Ldn		NEL				
Autos:	73.	-	71.5		68.5		66		74.1		74.				
Medium Trucks:	74.		73.0		66.9		67		75.2		75.				
Heavy Trucks:	77.:		75.7 78.5		66.8		68		76.8		76.				
Vehicle Noise:		72.2		72	.6	80.3	3	80.							
Centerline Distance to Nois	ie Co	ntour (in feet)												
			l	70 d			dBA		60 dBA		dBA				
			Ldn:	24			22		1,124		422				
			VFI :	249	2	5	37		1,156	2	490				

	FHV	A-RD-77-108	HIGH	WAYN	IOISE PH	EDICTIO	N MOD	EL						
	: HY 2040 W : Live Oak Av : e/o Stewart	<i>.</i>			Project Name: The Park @ Live Oak Job Number: 11112									
	PECIFIC IN	PUT DATA								s				
Highway Data				:	Site Con	ditions (H		· ·						
Average Daily T	, ,	35,737 vehicle	es					utos:	15					
Peak Hour F	0	10%				dium Truc			15					
		3,574 vehicles	6		He	avy Truck	s (3+ Ax	des):	15					
	icle Speed:	45 mph		1	Vehicle I	/lix								
Near/Far Lan	e Distance:	80 feet			Vehi	cleType	D)ay	Evening	Night	Daily			
Site Data						Au	tos: 7	2.4%	9.2%	18.4%	85.89			
Barr	ier Heiaht:	0.0 feet			Me	dium Tru	cks: 7	7.7%	4.8%	17.5%	8.95			
Barrier Type (0-Wa		0.0			ŀ	leavy Tru	cks: 8	4.3%	2.7%	13.0%	5.169			
Centerline Dist		50.0 feet		1	Noise So	urce Ele	vations	(in fe	et)					
Centerline Dist. to		50.0 feet				Autos:								
Barrier Distance to	Observer:	0.0 feet			Mediur	n Trucks:	2.29	97						
Observer Height (A	,	5.0 feet			Heav	v Trucks:	8.00)4	Grade Ad	iustmen	t: 0.0			
	d Elevation:	0.0 feet		H		·								
	d Elevation:	0.0 feet		1	Lane Equ	uivalent L			eet)					
R	oad Grade:	0.0%				Autos:	30.4							
	Left View: Right View:	-90.0 degree 90.0 degree				n Trucks: v Trucks:	30.12							
FHWA Noise Mode	•	0												
VehicleType	REMEL	Traffic Flow	Dis	tance	Finite	Road	Fresne	1 1	Barrier Att	en Be	rm Atter			
Autos:	68.46	3.03		3.14	4	-1.20	-4	1.65	0.0	000	0.00			
Medium Trucks:	79.45	-6.79		3.20	D	-1.20	-4	1.87	0.0	000	0.00			
Heavy Trucks:	84.25	-9.18		3.19	Э	-1.20	-{	5.43	0.0	000	0.00			
Unmitigated Noise														
21	.eq Peak Hou			Leg Ev	~	Leq N	•		Ldn	-	NEL			
Autos:	73.		71.2		68.3		66.5		73.9		74.			
Medium Trucks:	74.		72.8		66.7		67.6		75.0		75.			
Heavy Trucks:	77.		75.5		66.6		68.7		76.6		76			
Vehicle Noise:	80.		78.3		72.0		72.4		80.1	I	80.			
Centerline Distance	e to Noise Co	ontour (in feet,)	70 -	104	05 -11		0	0.404		-10.4			
			Ldn:	70 0		65 dE 506			0 dBA		dBA			
									1.090		348			
			VFL:	24		520			1,120		.414			

	FH	WA-RD-77-108	HIGHW	AY NO	ISE PF	REDICTIO	ON MOD	DEL						
	io: HY 2040 V e: Live Oak A nt: w/o Arrow	v.		Project Name: The Park @ Live Oak Job Number: 11112										
SITE	SPECIFIC II	NPUT DATA							INPUT	5				
Highway Data				Si	Site Conditions (Hard = 10, Soft = 15)									
Average Daily	Traffic (Adt):	31,418 vehicle	s		Autos: 15									
Peak Hour	Percentage:	10%			Me	dium Truc	cks (2 A	xles):	15					
Peak H	our Volume:	3,142 vehicles	5		He	avy Truck	(S (3+ A	xles):	15					
Vei	hicle Speed:	45 mph		V	ehicle I	Mix								
Near/Far La	ne Distance:	80 feet				icleType	Ĺ	Day E	Evening	Night	Daily			
Site Data						AL	itos: ī	2.4%	9.2%	18.4%	85.92%			
Bar	rier Height:	0.0 feet			Me	edium Tru	icks: 7	7.7%	4.8%	17.5%	8.93%			
Barrier Type (0-W		0.0			ŀ	leavy Tru	icks: 8	34.3%	2.7%	13.0%	5.15%			
Centerline Dis	st. to Barrier:	50.0 feet		N	oise Sc	ource Ele	vations	(in fee	t)					
Centerline Dist.	to Observer:	50.0 feet				Autos			/					
Barrier Distance	to Observer:	0.0 feet			Mediur	n Trucks:								
Observer Height (Above Pad):	5.0 feet				v Trucks:			Grade Adj	ustment	: 0.0			
Pa					•••									
	ad Elevation:	0.0 feet		La	ane Eq	uivalent			et)					
F	Road Grade:	0.0%				Autos:								
	Left View:	-90.0 degree	es			m Trucks:								
	Right View:	90.0 degree	es		Heav	y Trucks:	30.1	50						
FHWA Noise Mode	el Calculation	IS												
VehicleType	REMEL	Traffic Flow	Distar	nce	Finite	Road	Fresne	el B	arrier Atte	en Ber	m Atten			
Autos:	68.46	2.48		3.14		-1.20	-	4.65	0.0	00	0.000			
Medium Trucks:	79.45	-7.36		3.20		-1.20	-	4.87	0.0	00	0.000			
Heavy Trucks:	84.25	-9.75		3.19		-1.20	-	5.43	0.0	00	0.000			
Unmitigated Noise			barrier a	attenu	ation)									
	Leq Peak Ho			eq Eve	·	Leq N	•	L	dn		NEL			
Autos:			70.7		67.7		66.0		73.3		73.6			
Medium Trucks:			72.2		66.1		67.0		74.4		74.6			
Heavy Trucks:			75.0		66.0		68.1		76.1		76.2			
Vehicle Noise:	79	9.5	77.8		71.5		71.9		79.5		79.7			
Centerline Distance	ce to Noise C	ontour (in feet))											
				70 dE		65 d			dBA		dBA			
			Ldn:	215		464			999		152			
		Cl	VEL:	221		477	7	1,	027	2,	213			

Wednesday, May 02, 2018

Wednesday, May 02, 2018

APPENDIX 9.1:

OPERATIONAL NOISE LEVEL CALCULATIONS



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Observer Location: R1 Source: Truck Idle/ Condition: Operationa	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe
	NOISE M	IODEL INPUTS
Noise Distance to Observer	4,983.0 feet	Barrier Height:
Noise Distance to Barrier:	4,983.0 feet	Noise Source Height:
Barrier Distance to Observer:	0.0 feet	Observer Height:
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):

Noise Source Elevation:0.0 feetBarrier Elevation:0.0 feet

20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

Drop Off Coefficient:

6/20/2018

0.0 feet8.0 feet5.0 feet

0

20.0

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,983.0	-44.4	-44.4	-44.4	-44.4	-44.4	-44.4	
Shielding (Barrier Attenuation)	4,983.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		25.7	-44.4	-44.4	-44.4	-44.4	-44.4	
60 Minute Hourly Adjustmer	nt	25.7	-44.4	-44.4	-44.4	-44.4	-44.4	

STATIONARY SOURCE NOISE PREDICTION MODEL					
Observer Location: R1 Source: Roof-Top A Condition: Operationa	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe			
	NOISE MO	DEL INPUTS			
Noise Distance to Observer 4	,375.0 feet	Barrier Height:	0.0 feet		
Noise Distance to Barrier: 4	,375.0 feet	Noise Source Height:	5.0 feet		
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet		
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0		
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0		
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of distant 15 = 4.5 dBA per doubling of distant			

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,375.0	-58.8	-58.8	-58.8	-58.8	-58.8	-58.8	
Shielding (Barrier Attenuation)	4,375.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		18.4	-58.8	-58.8	-58.8	-58.8	-58.8	
39 Minute Hourly Adjustmer	nt	16.5	-60.7	-60.7	-60.7	-60.7	-60.7	

Observer Location: R1 Source: Drive-Through Speakerphone Condition: Operational			Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
		NOISE	MODEL INPUTS	
Noise Distance to Observer	4,443.0	feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	4,443.0	feet	Noise Source Height:	3.0 feet
Barrier Distance to Observer:	0.0	feet	Observer Height:	5.0 feet
Observer Elevation:	0.0	feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0	feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0	feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,443.0	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Shielding (Barrier Attenuation)	4,443.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		12.6	-49.4	-49.4	-49.4	-49.4	-49.4	
60 Minute Hourly Adjustmen	nt	12.6	-49.4	-49.4	-49.4	-49.4	-49.4	

S	TATIONARY SOURCE NO	DISE PREDICTION MODEL	6/20/2018	
Observer Location: R1 Source: Parking Lo Condition: Operation	ot Vehicle Movements al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe		
	NOISE MOD	EL INPUTS		
Noise Distance to Observer	4,336.0 feet	Barrier Height:	0.0 feet	
Noise Distance to Barrier:	4,336.0 feet	Noise Source Height:	5.0 feet	
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet	
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0	
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0	
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance		

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,336.0	-39.6	-39.6	-39.6	-39.6	-39.6	-39.6	
Shielding (Barrier Attenuation)	4,336.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		12.6	-39.6	-39.6	-39.6	-39.6	-39.6	
60 Minute Hourly Adjustmer	nt	12.6	-39.6	-39.6	-39.6	-39.6	-39.6	

Observer Location: R1 Project Name: The Park Source: Gas Station Activity Job Number: 11112 Condition: Operational Analyst: A. Wolfe **NOISE MODEL INPUTS** Barrier Height: Noise Distance to Observer 4,336.0 feet 0.0 feet Noise Source Height: 5.0 feet Noise Distance to Barrier: 4,336.0 feet **Observer Height:** 5.0 feet Barrier Distance to Observer: 0.0 feet Barrier Type (0-Wall, 1-Berm): Observer Elevation: 0.0 feet

Noise Source Elevation: 0.0 feet Barrier Elevation: 0.0 feet Drop Off Coefficient: 20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

6/20/2018

0

20.0

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,336.0	-58.8	-58.8	-58.8	-58.8	-58.8	-58.8	
Shielding (Barrier Attenuation)	4,336.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		9.4	-58.8	-58.8	-58.8	-58.8	-58.8	
60 Minute Hourly Adjustmen	t	9.4	-58.8	-58.8	-58.8	-58.8	-58.8	

S	TATIONARY SOURCE	NOISE PREDICTION MODEL	6/20/2018					
Observer Location: R2 Source: Truck Idle/Reefer Activity Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe						
NOISE MODEL INPUTS								
Noise Distance to Observer	2,264.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	2,264.0 feet	Noise Source Height:	8.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	2,264.0	-37.6	-37.6	-37.6	-37.6	-37.6	-37.6		
Shielding (Barrier Attenuation)	2,264.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		32.5	-37.6	-37.6	-37.6	-37.6	-37.6		
60 Minute Hourly Adjustmen	nt	32.5	-37.6	-37.6	-37.6	-37.6	-37.6		

Observer	Location:	R2
0.000.10.		1\2

Source: Roof-Top Air Conditioning Unit Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	1,950.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	1,950.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,950.0	-51.8	-51.8	-51.8	-51.8	-51.8	-51.8
Shielding (Barrier Attenuation)	1,950.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		25.4	-51.8	-51.8	-51.8	-51.8	-51.8
39 Minute Hourly Adjustmer	nt	23.5	-53.7	-53.7	-53.7	-53.7	-53.7

S	TATIONARY SOURCE N	OISE PREDICTION MODEL	6/20/2018
Observer Location: R2 Source: Drive-Thro Condition: Operationa	• • •	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MO	DEL INPUTS	
Noise Distance to Observer	2,018.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 2	2,018.0 feet	Noise Source Height:	3.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	2,018.0	-42.6	-42.6	-42.6	-42.6	-42.6	-42.6
Shielding (Barrier Attenuation)	2,018.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		19.4	-42.6	-42.6	-42.6	-42.6	-42.6
60 Minute Hourly Adjustmer	nt	19.4	-42.6	-42.6	-42.6	-42.6	-42.6

Observer Location: R2

Source: Parking Lot Vehicle Movements Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	1,945.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	1,945.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,945.0	-34.3	-34.3	-34.3	-34.3	-34.3	-34.3
Shielding (Barrier Attenuation)	1,945.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		17.9	-34.3	-34.3	-34.3	-34.3	-34.3
60 Minute Hourly Adjustmen	nt	17.9	-34.3	-34.3	-34.3	-34.3	-34.3

S	TATIONARY SOURCE	E NOISE PREDICTION MODEL	6/20/2018
Observer Location: R2 Source: Gas Statio Condition: Operationa	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE M	IODEL INPUTS	
Noise Distance to Observer	1,945.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	1,945.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,945.0	-51.8	-51.8	-51.8	-51.8	-51.8	-51.8
Shielding (Barrier Attenuation)	1,945.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		16.4	-51.8	-51.8	-51.8	-51.8	-51.8
60 Minute Hourly Adjustmer	nt	16.4	-51.8	-51.8	-51.8	-51.8	-51.8

Observer	Location:	R3
0.000.101	Loounon	n .J

Source: Truck Idle/Reefer Activity Condition: Operational

Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

	NO	ISE MODEL INPUTS		
Noise Distance to Observer	5,009.0 feet	Barrier Height:	0.0 feet	
Noise Distance to Barrier:	5,009.0 feet	Noise Source Height:	8.0 feet	
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet	
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0	
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0	
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling c 15 = 4.5 dBA per doubling		

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	5,009.0	-44.5	-44.5	-44.5	-44.5	-44.5	-44.5
Shielding (Barrier Attenuation)	5,009.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		25.6	-44.5	-44.5	-44.5	-44.5	-44.5
60 Minute Hourly Adjustmer	nt	25.6	-44.5	-44.5	-44.5	-44.5	-44.5

S	TATIONARY SOURCE N	OISE PREDICTION MODEL	6/20/2018				
Observer Location: R3 Source: Roof-Top <i>Condition:</i> Operationa	Air Conditioning Unit al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe					
	NOISE MODEL INPUTS						
Noise Distance to Observer	4,811.0 feet	Barrier Height:	0.0 feet				
Noise Distance to Barrier:	4,811.0 feet	Noise Source Height:	5.0 feet				
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet				
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0				
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0				
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling					

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,811.0	-59.7	-59.7	-59.7	-59.7	-59.7	-59.7	
Shielding (Barrier Attenuation)	4,811.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		17.5	-59.7	-59.7	-59.7	-59.7	-59.7	
39 Minute Hourly Adjustmer	nt	15.6	-61.6	-61.6	-61.6	-61.6	-61.6	

Observer Location: R3	Project Name: The Park
Source: Drive-Through Speakerp	hone Job Number: 11112
Condition: Operational	Analyst: A. Wolfe
Ν	OISE MODEL INPUTS
Noise Distance to Observer 4,806.0 feet	OISE MODEL INPUTS Barrier

0.0 feet

Observer Elevation: 0.0 feet Noise Source Elevation: 0.0 feet Barrier Elevation: 0.0 feet

Barrier Distance to Observer:

Barrier Height:	0.0 feet
Noise Source Height:	3.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	0
Drop Off Coefficient:	20.0

20.0

20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,806.0	-50.1	-50.1	-50.1	-50.1	-50.1	-50.1	
Shielding (Barrier Attenuation)	4,806.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		11.9	-50.1	-50.1	-50.1	-50.1	-50.1	
60 Minute Hourly Adjustmer	nt	11.9	-50.1	-50.1	-50.1	-50.1	-50.1	

S	TATIONARY SOURCE NO	DISE PREDICTION MODEL	6/20/2018					
Observer Location: R3 Source: Parking Lo Condition: Operationa	t Vehicle Movements al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe						
NOISE MODEL INPUTS								
Noise Distance to Observer	4,616.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	4,616.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,616.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	
Shielding (Barrier Attenuation)	4,616.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		12.2	-40.0	-40.0	-40.0	-40.0	-40.0	
60 Minute Hourly Adjustmer	nt	12.2	-40.0	-40.0	-40.0	-40.0	-40.0	

Observer Location: R3 Source: Gas Station Activity		Project Name: The Park Job Number: 11112			
Condition: Operational		Analyst: A. Wolfe			
	NOISE M	IODEL INPUTS			
Noise Distance to Observer 4	,616.0 feet	Barrier Height:	0.0 feet		
Noise Distance to Barrier: 4	,616.0 feet	Noise Source Height:	5.0 feet		
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet		
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0		
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0		
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling			

20 = 6 dBA per doubling of distance15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	4,616.0	-59.3	-59.3	-59.3	-59.3	-59.3	-59.3	
Shielding (Barrier Attenuation)	4,616.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		8.9	-59.3	-59.3	-59.3	-59.3	-59.3	
60 Minute Hourly Adjustmer	nt	8.9	-59.3	-59.3	-59.3	-59.3	-59.3	

S	TATIONARY SOURCE	NOISE PREDICTION MODEL	6/20/2018				
Observer Location: R4 Source: Truck Idle/Reefer Activity Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe					
NOISE MODEL INPUTS							
Noise Distance to Observer	6,684.0 feet	Barrier Height:	0.0 feet				
Noise Distance to Barrier:	6,684.0 feet	Noise Source Height:	8.0 feet				
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet				
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0				
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0				
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling					

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	6,684.0	-47.0	-47.0	-47.0	-47.0	-47.0	-47.0	
Shielding (Barrier Attenuation)	6,684.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		23.1	-47.0	-47.0	-47.0	-47.0	-47.0	
60 Minute Hourly Adjustmer	nt	23.1	-47.0	-47.0	-47.0	-47.0	-47.0	

Observer Location: R4

Source: Roof-Top Air Conditioning Unit Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS							
Noise Distance to Observer		Barrier Height:	0.0 feet				
Noise Distance to Barrier:	6,449.0 feet	Noise Source Height:	5.0 feet				
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet				
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm): Drop Off Coefficient:	0 20.0				
Noise Source Elevation:	20.0 feet	•					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling					

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	6,449.0	-62.2	-62.2	-62.2	-62.2	-62.2	-62.2	
Shielding (Barrier Attenuation)	6,449.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		15.0	-62.2	-62.2	-62.2	-62.2	-62.2	
39 Minute Hourly Adjustmer	nt	13.1	-64.1	-64.1	-64.1	-64.1	-64.1	

STATIONARY SOURCE NOISE PREDICTION MODEL				
Observer Location: R4 Source: Drive-Through Speakerphone Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe		
	NOISE MOI	DEL INPUTS		
Noise Distance to Observer	6,525.0 feet	Barrier Height:	0.0 feet	
Noise Distance to Barrier:	6,525.0 feet	Noise Source Height:	3.0 feet	
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet	
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0	
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0	
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling		

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	6,525.0	-52.8	-52.8	-52.8	-52.8	-52.8	-52.8
Shielding (Barrier Attenuation)	6,525.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		9.2	-52.8	-52.8	-52.8	-52.8	-52.8
60 Minute Hourly Adjustmer	nt	9.2	-52.8	-52.8	-52.8	-52.8	-52.8

Observer Location: R4 Source: Parking Lot Vehicle Movements Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS						
Noise Distance to Observer	6,434.0 feet	Barrier Height:	0.0 feet			
Noise Distance to Barrier:	6,434.0 feet	Noise Source Height:	5.0 feet			
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet			
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0			
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0			
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of dista 15 = 4.5 dBA per doubling of dista				

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	6,434.0	-42.1	-42.1	-42.1	-42.1	-42.1	-42.1
Shielding (Barrier Attenuation)	6,434.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		10.1	-42.1	-42.1	-42.1	-42.1	-42.1
60 Minute Hourly Adjustmer	nt	10.1	-42.1	-42.1	-42.1	-42.1	-42.1

STATIONARY SOURCE NOISE PREDICTION MODEL					
Observer Location: R4 Source: Gas Station Activity Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe			
	NOISE N	NODEL INPUTS			
Noise Distance to Observer	6,434.0 feet	Barrier Height:	0.0 feet		
Noise Distance to Barrier:	6,434.0 feet	Noise Source Height:	5.0 feet		
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet		
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0		
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0		
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling			

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	6,434.0	-62.2	-62.2	-62.2	-62.2	-62.2	-62.2
Shielding (Barrier Attenuation)	6,434.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		6.0	-62.2	-62.2	-62.2	-62.2	-62.2
60 Minute Hourly Adjustmer	nt	6.0	-62.2	-62.2	-62.2	-62.2	-62.2

Observer	Location:	R5

Source: Truck Idle/Reefer Activity Condition: Operational

Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS						
Noise Distance to Observer	4,425.0 feet	Barrier Height:	0.0 feet			
Noise Distance to Barrier:	4,425.0 feet	Noise Source Height:	8.0 feet			
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet			
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0			
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0			
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling				

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	4,425.0	-43.4	-43.4	-43.4	-43.4	-43.4	-43.4
Shielding (Barrier Attenuation)	4,425.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		26.7	-43.4	-43.4	-43.4	-43.4	-43.4
60 Minute Hourly Adjustmer	nt	26.7	-43.4	-43.4	-43.4	-43.4	-43.4

ST	ATIONARY SOURCE N	OISE PREDICTION MODEL	6/20/2018
Observer Location: R5 Source: Roof-Top A Condition: Operational	v	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOI	DEL INPUTS	
Noise Distance to Observer 4,	609.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 4,	609.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

	NOISE MODEL PROJECTIONS						
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	4,609.0	-59.3	-59.3	-59.3	-59.3	-59.3	-59.3
Shielding (Barrier Attenuation)	4,609.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		17.9	-59.3	-59.3	-59.3	-59.3	-59.3
39 Minute Hourly Adjustmer	nt	16.0	-61.2	-61.2	-61.2	-61.2	-61.2

Observer Location: R5

Source: Drive-Through Speakerphone *Condition:* Operational

Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS							
Noise Distance to Observer	4,598.0 feet	Barrier Height:	0.0 feet				
Noise Distance to Barrier:	4,598.0 feet	Noise Source Height:	3.0 feet				
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet				
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0				
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0				
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling					

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	4,598.0	-49.7	-49.7	-49.7	-49.7	-49.7	-49.7		
Shielding (Barrier Attenuation)	4,598.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		12.3	-49.7	-49.7	-49.7	-49.7	-49.7		
60 Minute Hourly Adjustmer	nt	12.3	-49.7	-49.7	-49.7	-49.7	-49.7		

STATIONARY SC	6/20/2018	
Observer Location: R5 Source: Parking Lot Vehicle Moven Condition: Operational	Project Name: The Park nents Job Number: 11112 Analyst: A. Wolfe	
NO	ISE MODEL INPUTS	
Noise Distance to Observer 4,537.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 4,537.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer: 0.0 feet	Observer Height:	5.0 feet
Observer Elevation: 0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation: 0.0 feet	Drop Off Coefficient:	15.0
Barrier Elevation: 0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	4,537.0	-39.9	-39.9	-39.9	-39.9	-39.9	-39.9		
Shielding (Barrier Attenuation)	4,537.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		12.3	-39.9	-39.9	-39.9	-39.9	-39.9		
60 Minute Hourly Adjustmer	nt	12.3	-39.9	-39.9	-39.9	-39.9	-39.9		

Observer Location: R5 Source: Gas Station Activity Job Number: 11112 Condition: Operational Analyst: A. Wolfe **NOISE MODEL INPUTS** Barrier Height: Noise Distance to Observer 4,537.0 feet 0.0 feet Noise Source Height: 5.0 feet Noise Distance to Barrier: 4,537.0 feet **Observer Height:** Barrier Distance to Observer: 0.0 feet Barrier Type (0-Wall, 1-Berm): Observer Elevation: 0.0 feet Drop Off Coefficient:

Noise Source Elevation: 0.0 feet Barrier Elevation: 0.0 feet Project Name: The Park

5.0 feet 0 20.0

20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	4,537.0	-59.2	-59.2	-59.2	-59.2	-59.2	-59.2		
Shielding (Barrier Attenuation)	4,537.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		9.0	-59.2	-59.2	-59.2	-59.2	-59.2		
60 Minute Hourly Adjustmer	nt	9.0	-59.2	-59.2	-59.2	-59.2	-59.2		

ST	ATIONARY SOURCE	NOISE PREDICTION MODEL	6/20/2018
Observer Location: R6 Source: Truck Idle/F Condition: Operationa		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE M	IODEL INPUTS	
Noise Distance to Observer 3	,758.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 3	,758.0 feet	Noise Source Height:	8.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	3,758.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0		
Shielding (Barrier Attenuation)	3,758.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		28.1	-42.0	-42.0	-42.0	-42.0	-42.0		
60 Minute Hourly Adjustmer	nt	28.1	-42.0	-42.0	-42.0	-42.0	-42.0		

Observer Location: R6

Source: Roof-Top Air Conditioning Unit Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	3,789.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	3,789.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet		20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance					

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	3,789.0	-57.6	-57.6	-57.6	-57.6	-57.6	-57.6		
Shielding (Barrier Attenuation)	3,789.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		19.6	-57.6	-57.6	-57.6	-57.6	-57.6		
39 Minute Hourly Adjustmen	nt	17.7	-59.5	-59.5	-59.5	-59.5	-59.5		

S	STATIONARY SOURCE NOISE PREDICTION MODEL				
Observer Location: R6 Source: Drive-Thro Condition: Operation	ough Speakerphone al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe			
	NOISE MOI	DEL INPUTS			
Noise Distance to Observer	4,858.0 feet	Barrier Height:	0.0 feet		
Noise Distance to Barrier:	4,858.0 feet	Noise Source Height:	3.0 feet		
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet		
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0		
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0		
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling			

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	4,858.0	-50.2	-50.2	-50.2	-50.2	-50.2	-50.2		
Shielding (Barrier Attenuation)	4,858.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		11.8	-50.2	-50.2	-50.2	-50.2	-50.2		
60 Minute Hourly Adjustmer	nt	11.8	-50.2	-50.2	-50.2	-50.2	-50.2		

Observer Location: R6

Source: Parking Lot Vehicle Movements Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

	NOISI	E MODEL INPUTS	
Noise Distance to Observer	3,628.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	3,628.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm): Drop Off Coefficient:	0 15.0
Noise Source Elevation: Barrier Elevation:	0.0 feet 0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	3,628.0	-38.4	-38.4	-38.4	-38.4	-38.4	-38.4		
Shielding (Barrier Attenuation)	3,628.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		13.8	-38.4	-38.4	-38.4	-38.4	-38.4		
60 Minute Hourly Adjustmer	nt	13.8	-38.4	-38.4	-38.4	-38.4	-38.4		

ST	ATIONARY SOURCE	E NOISE PREDICTION MODEL	6/20/2018
Observer Location: R6 Source: Gas Statior Condition: Operationa	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE N	IODEL INPUTS	
Noise Distance to Observer 4	,758.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 4	,758.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	4,758.0	-59.6	-59.6	-59.6	-59.6	-59.6	-59.6
Shielding (Barrier Attenuation)	4,758.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		8.6	-59.6	-59.6	-59.6	-59.6	-59.6
60 Minute Hourly Adjustmer	nt	8.6	-59.6	-59.6	-59.6	-59.6	-59.6

Observer Location:	R7
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Source: Truck Idle/Reefer Activity Condition: Operational

0.0 feet

Barrier Elevation:

Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS Barrier Height: Noise Distance to Observer 5,721.0 feet 0.0 feet Noise Source Height: Noise Distance to Barrier: 5,721.0 feet 8.0 feet **Observer Height:** 5.0 feet Barrier Distance to Observer: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0 Observer Elevation: 0.0 feet Drop Off Coefficient: 20.0 Noise Source Elevation: 0.0 feet

20 = 6 dBA per doubling of distance15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	5,721.0	-45.6	-45.6	-45.6	-45.6	-45.6	-45.6
Shielding (Barrier Attenuation)	5,721.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		24.5	-45.6	-45.6	-45.6	-45.6	-45.6
60 Minute Hourly Adjustmer	nt	24.5	-45.6	-45.6	-45.6	-45.6	-45.6

S	TATIONARY SOURCE NO	DISE PREDICTION MODEL	6/20/2018
Observer Location: R7 Source: Roof-Top Condition: Operation	Air Conditioning Unit al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOD	EL INPUTS	
Noise Distance to Observer	5,688.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	5,688.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	5,688.0	-61.1	-61.1	-61.1	-61.1	-61.1	-61.1
Shielding (Barrier Attenuation)	5,688.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		16.1	-61.1	-61.1	-61.1	-61.1	-61.1
39 Minute Hourly Adjustmer	nt	14.2	-63.0	-63.0	-63.0	-63.0	-63.0

 Observer Location:
 R7
 Project Nation in the second se

Noise Distance to Observer	5,671.0 feet
Noise Distance to Barrier:	5,671.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Elevation:	0.0 feet
Noise Source Elevation:	0.0 feet
Barrier Elevation:	0.0 feet

Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

JIS	
Barrier Height:	0.0 feet
Noise Source Height:	3.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	0
Drop Off Coefficient:	20.0

20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	5,671.0	-51.6	-51.6	-51.6	-51.6	-51.6	-51.6
Shielding (Barrier Attenuation)	5,671.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		10.4	-51.6	-51.6	-51.6	-51.6	-51.6
60 Minute Hourly Adjustmer	nt	10.4	-51.6	-51.6	-51.6	-51.6	-51.6

SI	TATIONARY SOURCE NO	DISE PREDICTION MODEL	6/20/2018
Observer Location: R7 Source: Parking Lo Condition: Operationa	t Vehicle Movements I	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOD	EL INPUTS	
Noise Distance to Observer 5	6,637.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier: 5	637.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	5,637.0	-41.3	-41.3	-41.3	-41.3	-41.3	-41.3
Shielding (Barrier Attenuation)	5,637.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		10.9	-41.3	-41.3	-41.3	-41.3	-41.3
60 Minute Hourly Adjustmer	nt	10.9	-41.3	-41.3	-41.3	-41.3	-41.3

Observer Location: R7	Project Name: The Park		
Source: Gas Station	on Activity	Job Number: 11112	
Condition: Operational		Analyst: A. Wolfe	
	NOISE	MODEL INPUTS	
Noise Distance to Observer	5,637.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	5,637.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling	

20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	5,637.0	-61.0	-61.0	-61.0	-61.0	-61.0	-61.0		
Shielding (Barrier Attenuation)	5,637.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		7.2	-61.0	-61.0	-61.0	-61.0	-61.0		
60 Minute Hourly Adjustmer	nt	7.2	-61.0	-61.0	-61.0	-61.0	-61.0		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R8 Source: Truck Idle Condition: Operation	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE M	ODEL INPUTS	
Noise Distance to Observer	386.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	386.0 feet	Noise Source Height:	8.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	386.0	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2	
Shielding (Barrier Attenuation)	386.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		47.9	-22.2	-22.2	-22.2	-22.2	-22.2	
60 Minute Hourly Adjustmer	nt	47.9	-22.2	-22.2	-22.2	-22.2	-22.2	

Observer Location: R8

Source: Roof-Top Air Conditioning Unit Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS									
Noise Distance to Observer	313.0 feet	Barrier Height:	0.0 feet						
Noise Distance to Barrier:	313.0 feet	Noise Source Height:	5.0 feet						
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet						
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0						
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0						
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling							

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	313.0	-35.9	-35.9	-35.9	-35.9	-35.9	-35.9	
Shielding (Barrier Attenuation)	313.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		41.3	-35.9	-35.9	-35.9	-35.9	-35.9	
39 Minute Hourly Adjustmer	nt	39.4	-37.8	-37.8	-37.8	-37.8	-37.8	

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R8 Source: Drive-Thre Condition: Operation	ough Speakerphone al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MO	DEL INPUTS	
Noise Distance to Observer	205.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	205.0 feet	Noise Source Height:	3.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

	NOISE MODEL PROJECTIONS											
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax					
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0					
Distance Attenuation	205.0	-22.7	-22.7	-22.7	-22.7	-22.7	-22.7					
Shielding (Barrier Attenuation)	205.0	0.0	0.0	0.0	0.0	0.0	0.0					
Raw (Distance + Barrier)		39.3	-22.7	-22.7	-22.7	-22.7	-22.7					
60 Minute Hourly Adjustmer	nt	39.3	-22.7	-22.7	-22.7	60 Minute Hourly Adjustment 39.3 -22.7 -22.7 -22.7 -22.7 -22.7 -22.7						

Observer Location: R8

Source: Parking Lot Vehicle Movements Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS									
Noise Distance to Observer	176.0 feet	Barrier Height:	0.0 feet						
Noise Distance to Barrier:	176.0 feet	Noise Source Height:	5.0 feet						
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet						
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0						
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0						
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling							

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	176.0	-18.7	-18.7	-18.7	-18.7	-18.7	-18.7	
Shielding (Barrier Attenuation)	176.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		33.5	-18.7	-18.7	-18.7	-18.7	-18.7	
60 Minute Hourly Adjustmen	nt	33.5	-18.7	-18.7	-18.7	-18.7	-18.7	

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R8 Source: Gas Station Activity Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE N	NODEL INPUTS	
Noise Distance to Observer	176.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	176.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	176.0	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9		
Shielding (Barrier Attenuation)	176.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		37.3	-30.9	-30.9	-30.9	-30.9	-30.9		
60 Minute Hourly Adjustmer	nt	37.3	-30.9	-30.9	-30.9	-30.9	-30.9		

Observer Location: R9

Source: Truck Idle/Reefer Activity Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	493.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	493.0 feet	Noise Source Height:	8.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	493.0	-24.3	-24.3	-24.3	-24.3	-24.3	-24.3		
Shielding (Barrier Attenuation)	493.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		45.8	-24.3	-24.3	-24.3	-24.3	-24.3		
60 Minute Hourly Adjustmer	nt	45.8	-24.3	-24.3	-24.3	-24.3	-24.3		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R9 Source: Roof-Top Condition: Operation	Air Conditioning Unit al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOD	DEL INPUTS	
Noise Distance to Observer	397.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	397.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	397.0	-38.0	-38.0	-38.0	-38.0	-38.0	-38.0
Shielding (Barrier Attenuation)	397.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		39.2	-38.0	-38.0	-38.0	-38.0	-38.0
39 Minute Hourly Adjustmer	t	37.3	-39.9	-39.9	-39.9	-39.9	-39.9

Observer Location: R9

Source: Drive-Through Speakerphone Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	383.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	383.0 feet	Noise Source Height:	3.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	383.0	-28.1	-28.1	-28.1	-28.1	-28.1	-28.1		
Shielding (Barrier Attenuation)	383.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		33.9	-28.1	-28.1	-28.1	-28.1	-28.1		
60 Minute Hourly Adjustmen	t	33.9	-28.1	-28.1	-28.1	-28.1	-28.1		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R9 Source: Parking Lo Condition: Operation	ot Vehicle Movements al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOD	EL INPUTS	
Noise Distance to Observer	346.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	346.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	346.0	-23.1	-23.1	-23.1	-23.1	-23.1	-23.1	
Shielding (Barrier Attenuation)	346.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		29.1	-23.1	-23.1	-23.1	-23.1	-23.1	
60 Minute Hourly Adjustmer	nt	29.1	-23.1	-23.1	-23.1	-23.1	-23.1	

Observer Location: R9

Source: Gas Station Activity Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	346.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	346.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	346.0	-36.8	-36.8	-36.8	-36.8	-36.8	-36.8		
Shielding (Barrier Attenuation)	346.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		31.4	-36.8	-36.8	-36.8	-36.8	-36.8		
60 Minute Hourly Adjustmen	nt	31.4	-36.8	-36.8	-36.8	-36.8	-36.8		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R10 Source: Truck Idle Condition: Operation	•	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE M	ODEL INPUTS	
Noise Distance to Observer	599.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	599.0 feet	Noise Source Height:	8.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

	NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	599.0	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0	
Shielding (Barrier Attenuation)	599.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		44.1	-26.0	-26.0	-26.0	-26.0	-26.0	
60 Minute Hourly Adjustmer	t	44.1	-26.0	-26.0	-26.0	-26.0	-26.0	

Observer Location: R10

Source: Roof-Top Air Conditioning Unit Condition: Operational Project Name: The Park Job Number: 11112 Analyst: A. Wolfe

NOISE MODEL INPUTS								
Noise Distance to Observer	363.0 feet	Barrier Height:	0.0 feet					
Noise Distance to Barrier:	363.0 feet	Noise Source Height:	5.0 feet					
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet					
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0					
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0					
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling						

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	363.0	-37.2	-37.2	-37.2	-37.2	-37.2	-37.2		
Shielding (Barrier Attenuation)	363.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		40.0	-37.2	-37.2	-37.2	-37.2	-37.2		
39 Minute Hourly Adjustmen	nt	38.1	-39.1	-39.1	-39.1	-39.1	-39.1		

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Observer Location: R10 Source: Drive-Thro Condition: Operation	ough Speakerphone al	Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOI	DEL INPUTS	
Noise Distance to Observer	657.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	657.0 feet	Noise Source Height:	3.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	657.0	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	
Shielding (Barrier Attenuation)	657.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		29.2	-32.8	-32.8	-32.8	-32.8	-32.8	
60 Minute Hourly Adjustmer	nt	29.2	-32.8	-32.8	-32.8	-32.8	-32.8	

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Observer Location: R10 Source: Parking Lot Vehicle Movements Condition: Operational

NOISE MODEL INPUTS									
Noise Distance to Observer	305.0 feet	Barrier Height:	0.0 feet						
Noise Distance to Barrier:	305.0 feet	Noise Source Height:	5.0 feet						
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet						
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0						
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0						
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling							

	NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	305.0	-22.3	-22.3	-22.3	-22.3	-22.3	-22.3		
Shielding (Barrier Attenuation)	305.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		29.9	-22.3	-22.3	-22.3	-22.3	-22.3		
60 Minute Hourly Adjustmen	nt	29.9	-22.3	-22.3	-22.3	-22.3	-22.3		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R10 Source: Gas Station Activity Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE N	NODEL INPUTS	
Noise Distance to Observer	599.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	599.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doubling	

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	599.0	-41.6	-41.6	-41.6	-41.6	-41.6	-41.6	
Shielding (Barrier Attenuation)	599.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		26.6	-41.6	-41.6	-41.6	-41.6	-41.6	
60 Minute Hourly Adjustmer	nt	26.6	-41.6	-41.6	-41.6	-41.6	-41.6	

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Observer Location: R11 Source: Truck Idle/Reefer Activity Condition: Operational

NOISE MODEL INPUTS									
Noise Distance to Observer	876.0 feet	Barrier Height:	0.0 feet						
Noise Distance to Barrier:	876.0 feet	Noise Source Height:	8.0 feet						
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet						
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0						
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0						
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling o 15 = 4.5 dBA per doubling							

NOISE MODEL PROJECTIONS									
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax		
Reference (Sample)	30.0	70.1	0.0	0.0	0.0	0.0	0.0		
Distance Attenuation	876.0	-29.3	-29.3	-29.3	-29.3	-29.3	-29.3		
Shielding (Barrier Attenuation)	876.0	0.0	0.0	0.0	0.0	0.0	0.0		
Raw (Distance + Barrier)		40.8	-29.3	-29.3	-29.3	-29.3	-29.3		
60 Minute Hourly Adjustmer	nt	40.8	-29.3	-29.3	-29.3	-29.3	-29.3		

STATIONARY SOURCE NOISE PREDICTION MODEL			
Observer Location: R11 Source: Roof-Top Air Conditioning Unit Condition: Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe	
	NOISE MOD	DEL INPUTS	
Noise Distance to Observer	314.0 feet	Barrier Height:	0.0 feet
Noise Distance to Barrier:	314.0 feet	Noise Source Height:	5.0 feet
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0
Noise Source Elevation:	20.0 feet	Drop Off Coefficient:	20.0
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling 15 = 4.5 dBA per doublin	

NOISE MODEL PROJECTIONS								
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax	
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0	
Distance Attenuation	314.0	-36.0	-36.0	-36.0	-36.0	-36.0	-36.0	
Shielding (Barrier Attenuation)	314.0	0.0	0.0	0.0	0.0	0.0	0.0	
Raw (Distance + Barrier)		41.2	-36.0	-36.0	-36.0	-36.0	-36.0	
39 Minute Hourly Adjustmer	t	39.3	-37.9	-37.9	-37.9	-37.9	-37.9	

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Observer Location: R11 Source: Drive-Through Speakerphone Condition: Operational

NOISE MODEL INPUTS									
Noise Distance to Observer	348.0 feet	Barrier Height:	0.0 feet						
Noise Distance to Barrier:	348.0 feet	Noise Source Height:	3.0 feet						
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet						
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0						
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0						
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of 15 = 4.5 dBA per doubling							

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	15.0	62.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	348.0	-27.3	-27.3	-27.3	-27.3	-27.3	-27.3
Shielding (Barrier Attenuation)	348.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		34.7	-27.3	-27.3	-27.3	-27.3	-27.3
60 Minute Hourly Adjustmen	nt	34.7	-27.3	-27.3	-27.3	-27.3	-27.3

S	TATIONARY SOURCE NO	DISE PREDICTION MODEL	6/20/2018				
Observer Location: R11 Source: Parking Lot Vehicle Movements <i>Condition:</i> Operational		Project Name: The Park Job Number: 11112 Analyst: A. Wolfe					
NOISE MODEL INPUTS							
Noise Distance to Observer	272.0 feet	Barrier Height:	0.0 feet				
Noise Distance to Barrier:	272.0 feet	Noise Source Height:	5.0 feet				
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet				
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0				
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	15.0				
Barrier Elevation:	0.0 feet	20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance					

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	272.0	-21.5	-21.5	-21.5	-21.5	-21.5	-21.5
Shielding (Barrier Attenuation)	272.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		30.7	-21.5	-21.5	-21.5	-21.5	-21.5
60 Minute Hourly Adjustmer	nt	30.7	-21.5	-21.5	-21.5	-21.5	-21.5

6/20/2018

Observer Location: R11 Source: Gas Station Activity Condition: Operational

NOISE MODEL INPUTS						
Noise Distance to Observer	272.0 feet	Barrier Height:	0.0 feet			
Noise Distance to Barrier:	272.0 feet	Noise Source Height:	5.0 feet			
Barrier Distance to Observer:	0.0 feet	Observer Height:	5.0 feet			
Observer Elevation:	0.0 feet	Barrier Type (0-Wall, 1-Berm):	0			
Noise Source Elevation:	0.0 feet	Drop Off Coefficient:	20.0			
Barrier Elevation:	0.0 feet		20 = 6 dBA per doubling of distance 15 = 4.5 dBA per doubling of distance			

NOISE MODEL PROJECTIONS							
Noise Level	Distance (feet)	Leq	L50	L25	L8	L2	Lmax
Reference (Sample)	5.0	68.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	272.0	-34.7	-34.7	-34.7	-34.7	-34.7	-34.7
Shielding (Barrier Attenuation)	272.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		33.5	-34.7	-34.7	-34.7	-34.7	-34.7
60 Minute Hourly Adjustmer	nt	33.5	-34.7	-34.7	-34.7	-34.7	-34.7