Center Street Commerce Building

Noise Study

February 2016 (13432)

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February 2016

City of Riverside, California

Table of Contents

Tables

Figures

Exhibits

Appendix

Construction-related and operational noise impacts were modeled and analyzed for the proposed building located at 3667 Placentia Lane in the City of Riverside, California. This noise impact analysis contains documentation of existing noise levels as well as analysis of the impacts generated by project operation and traffic and analysis of vibration impacts. This report analyzes the project's consistency with applicable federal, State, and local regulations. The results of this report find construction-related and operational noise levels are consistent with applicable regulations.

1.1 Project Description

The project includes the development of a 308,000-square foot building located at 3667 Placentia Lane in the City of Riverside, California. The project includes 382 parking stalls, 62 trailer docks, and 110,591 square feet of landscaping.

1.2 Construction-Related Noise

Temporary noise increases will be greatest during the demolition phase. The model indicates that the use of construction equipment such as excavators, dozers, and concrete saws could expose the use located approximately 421 feet to the south of the center of the project site to a combined noise level of 71.1 dBA $L_{max.}$ Construction equipment could expose the use located 640 feet south, the industrial use located 510 feet east, and the park located 544 feet from the center of the project site to a combined noise level of 67.4 dBA L_{max}, 69.4 dBA L_{max}, and 68.8 dBA L_{max}, respectively. A noise level of 70 dBA is allowable at surrounding industrial uses and a noise level of 65 dBA is allowable at public recreation facilities. Construction activity could result in noise levels in excess of the allowable noise levels at the industrial use to the south and the public recreation use to the south of the project site. With incorporation of the Mitigation Measures N-1 and N-2, described herein, no substantial impacts will occur.

1.3 Operational Noise

The increase in vehicular traffic on area roadways will not result in noise levels exceeding the 65 dBA exterior noise standard established by the City of Colton to the north. The exterior noise levels under the Without and With project scenarios exceed allowable exterior noise levels at the residential uses to the northwest, northeast, and southeast of the project site. However, the project does not cause the exterior noise levels to exceed the 55 dBA residential threshold for receptors that are currently below the allowable noise levels. In addition, the proposed project will not result in a noticeable increase in noise levels. Therefore, no substantial impacts will occur.

1.4 Vibration

Based on the threshold criteria established by the Federal Transit Administration (FTA) and the California Department of Transportation (Caltrans), vibration from use of heavy construction equipment to construct the proposed project would be below the thresholds to cause damage to nearby structures and result in less than *barely perceptible* vibration at the receptors analyzed in the report. Therefore, no substantial impacts will occur.

1.5 Airport Noise

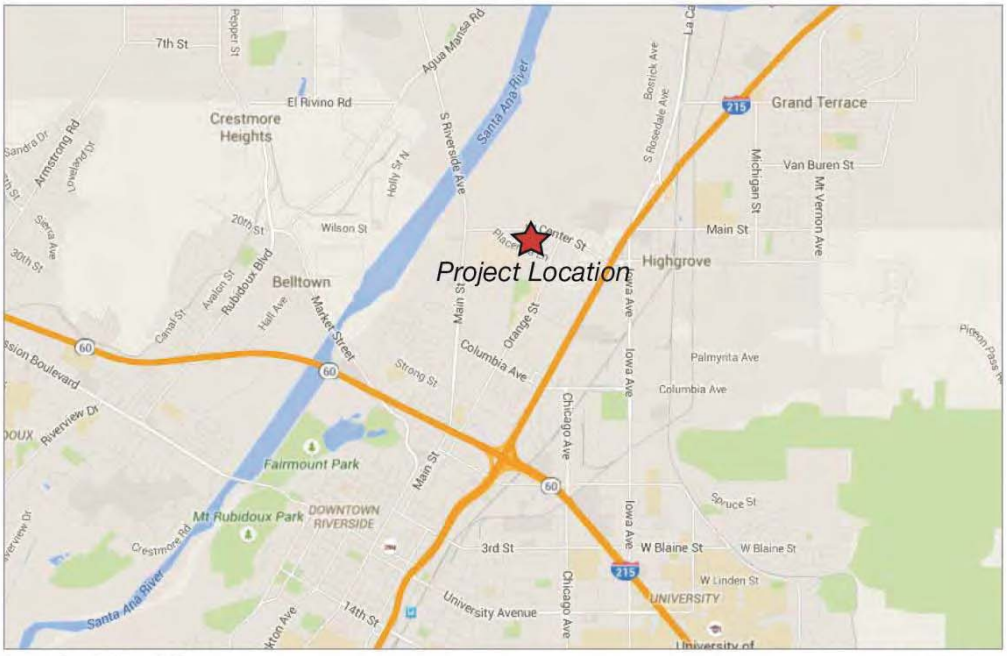
The project site is not located with two miles of a public or private use airport or helipad. Therefore, no substantial impacts will occur.

1.6 Mitigation Measures

The following mitigation measures are required to ensure that project-related short- and long-term noise levels are consistent with applicable federal, State, and local regulations.

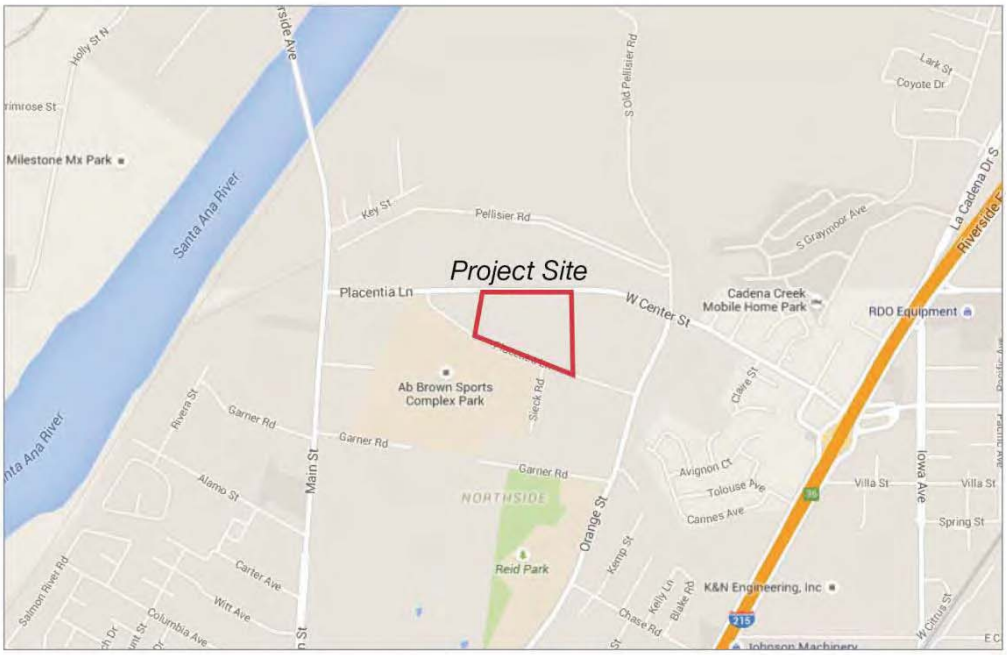
N-1 Limit construction activities to the hours of 7:00 AM to 7:00 PM Monday through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. Construction activity shall be prohibited on Sundays and federal holidays. This mitigation measure must be implemented throughout construction and may be periodically monitored by the Planning Director or designee during routine inspections.

N-2 Prior to issuance of grading permits, the Applicant shall submit a mitigation plan prepared by a qualified engineer or other acoustical expert for review and approval by the Planning Division that identifies noise control measures that achieve a minimum 10 dBA reduction in construction-related noise levels. The mitigation plan may include use of sound curtains, engineered equipment controls, or other methods. Noise control requirements shall be noted on project construction drawings and verified by the Building Department during standard inspection procedures.



Source: Google Maps, 2015

Regional



Source: Google Maps, 2015

Vicinity

Not to Scale

Exhibit 1 Regional and Vicinity Map

Center Street Commerce Building Project
6550 Center Street, Riverside, California

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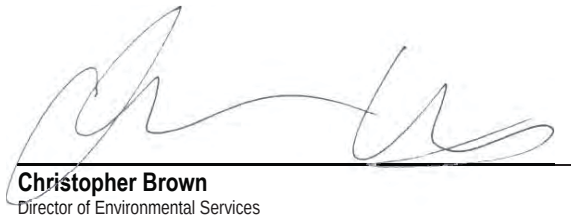
This report includes modeling and analysis of construction- and operation-related noise generated from the proposed project on surrounding land uses. Vibration effects and airport noise are also discussed herein. The project includes construction of a 308,000-square foot building on 15.63 acres in the City of Riverside, California.

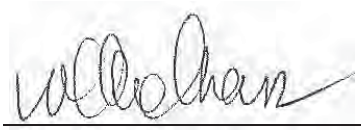
This report has been prepared utilizing project-specific characteristics where available. In those instances where project-specific data is not available, the analysis has been supplemented by model defaults or other standardized sources of comparable data. In any case where non-project defaults or other data have been used, a "worst-case" scenario was developed to ensure a conservative estimate of noise impacts.

This report has been prepared for use by the Lead Agency to assess potential project-related noise impacts to the environment in compliance with federal, State, or local guidelines, particularly with respect to the noise issues identified in Appendix G of the State CEQA Guidelines. This report does not make determinations of significance pursuant to CEQA because such determinations are required to be made solely in the purview of the Lead Agency.

This report has been prepared by Christopher Brown (Director of Environmental Services) and Olivia Chan (Associate Analyst II) of MIG, Inc. under contract to Transition Properties, LP.



Christopher Brown
Director of Environmental Services



Olivia Chan
Associate Analyst II

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3.1 Defining Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment.

THE PRODUCTION OF SOUND

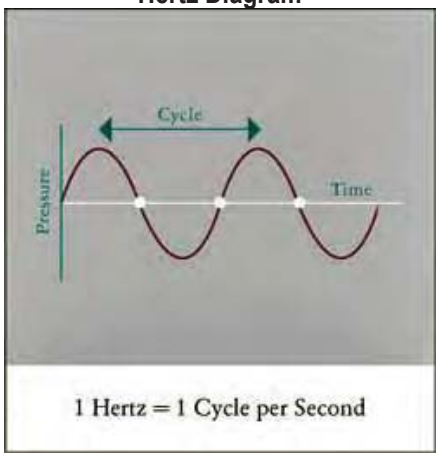
Sound has three properties: amplitude and amplitude variation of the acoustical wave (loudness), frequency (pitch), and duration of the noise. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

MEASURING SOUND

Sound pressure levels are described in logarithmic units of ratios of sound pressures to a reference pressure, squared. These units are called bels. To provide a finer description of sound, a bel is subdivided into 10 decibels, abbreviated dB. Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB. In fact, they would combine to produce 73 dB. This same principle can be applied to other traffic quantities as well. In other words, doubling the traffic volume on a street or the speed of the traffic will increase the traffic noise level by three dB. Conversely, halving the traffic volume or speed will reduce the traffic noise level by three dB. A three dB change in sound is the beginning at which humans generally notice a *barely perceptible* change in sound and a five dB change is generally *readily perceptible.*[1]

Sound pressure level alone is not a reliable indicator of loudness. The frequency or pitch of a sound also has a substantial effect on how humans will respond. While the intensity of the sound is a purely physical quantity, the loudness or human response depends on the characteristics of the human ear. Human hearing is limited not only to the range of audible frequencies but also in the way it perceives the sound pressure level in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hertz (Hz) and 5,000 Hz, and perceives both higher and lower frequency sounds of the same magnitude with less intensity. Hertz is a unit of frequency that defines any periodic event. In the case of sound pressure, a Hertz defines one cycle of a sound wave per second (see Figure 1, Hertz Diagram). To approximate the frequency response of the human ear, a series of sound pressure level adjustments is usually applied to the sound measured by a sound level meter.

Figure 1
Hertz Diagram



STANDARDS FOR NOISE EQUIVALENT

Noise consists of pitch, loudness, and duration; therefore, a variety of methods for measuring noise have been developed. According to the California General Plan Guidelines for Noise Elements, the following are common metrics for measuring noise:[2]

L_{eq} (Equivalent Energy Noise Level): The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over given sample periods. L_{eq} is typically computed over 1-, 8-, and 24-hour sample periods.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 PM to 10:00 PM and after addition of ten decibels to sound levels in the night from 10:00 PM to 7:00 AM.

L_{dn} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of ten decibels to sound levels in the night after 10:00 PM and before 7:00 AM.

CNEL and L_{dn} are utilized for describing ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. L_{eq} is better utilized for describing specific and consistent sources because of the shorter reference period.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the community noise equivalent level (CNEL).

3.2 Vibration and Groundborne Noise

Vibration is the movement of mass over time. It is described in terms of frequency and amplitude and unlike sound; there is no standard way of measuring and reporting amplitude. Vibration can be described in units of velocity (inches per second) or discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts to buildings are generally discussed in terms of peak particle velocity (PPV) that describes particle movement over time (in terms of physical displacement of mass). For purposes of this analysis, PPV will be used to describe all vibration for ease of reading and comparison. Vibration can impact people, structures, and sensitive equipment.[3] The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Groundborne vibration can also disrupt the use of sensitive medical and scientific instruments such as electron microscopes. Common sources of vibration within communities include construction activities and railroads.

Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used.

4.1 Sensitive Receptors

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, and residential uses make up the majority of these areas. The proposed facility is located in a generally industrial area with industrial uses to the north and east, vacant land to the west, and open space/park use to the south. There are residential uses approximately 0.14 miles to the southeast of the project site. There are no schools located within a quarter mile of the project site. Exhibit 2 (Radius Map) identifies existing development in the project vicinity based on assessor's parcel data.

4.2 Existing Noise Levels

Short-term noise measurements at the project site were conducted to identify the ambient noise in the project vicinity. An American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to monitor existing ambient noise levels in the project area. The noise meter was programmed in "slow" mode to record noise levels in A-weighted form. The microphone height was set at five feet. Two 10-minute daytime noise measurements were taken between 9.48 AM and 10:12 AM on Tuesday, April 7, 2015.

Ambient noise levels ranged from 58.7 to 66.9 dBA CNEL. Ambient noise levels are a composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location. Measurement locations are shown in Exhibit 3 (Noise Measurement Locations). Ambient noise levels are presented in Table 1 (Ambient Noise Levels) and measurement output data is included as Appendix A.

Vehicular traffic along Center Street and Placentia Lane was the dominant noise source at measurement location 001 and truck traffic entering and exiting the industrial use at the south end of Sieck Road was the dominant noise source at measurement location 002.

Table 1
Ambient Noise Levels

Location	Time Period	Measurement Period	Description	Existing Ambient Noise Levels (dBA CNEL)
001	9:48 AM – 9:58 AM	10 Minutes	Northern property boundary on the south side of Center Street	66.9
002	10:02 AM – 10:12 AM	10 Minutes	Southwestern corner of Placentia Lane and Sieck Road	58.7

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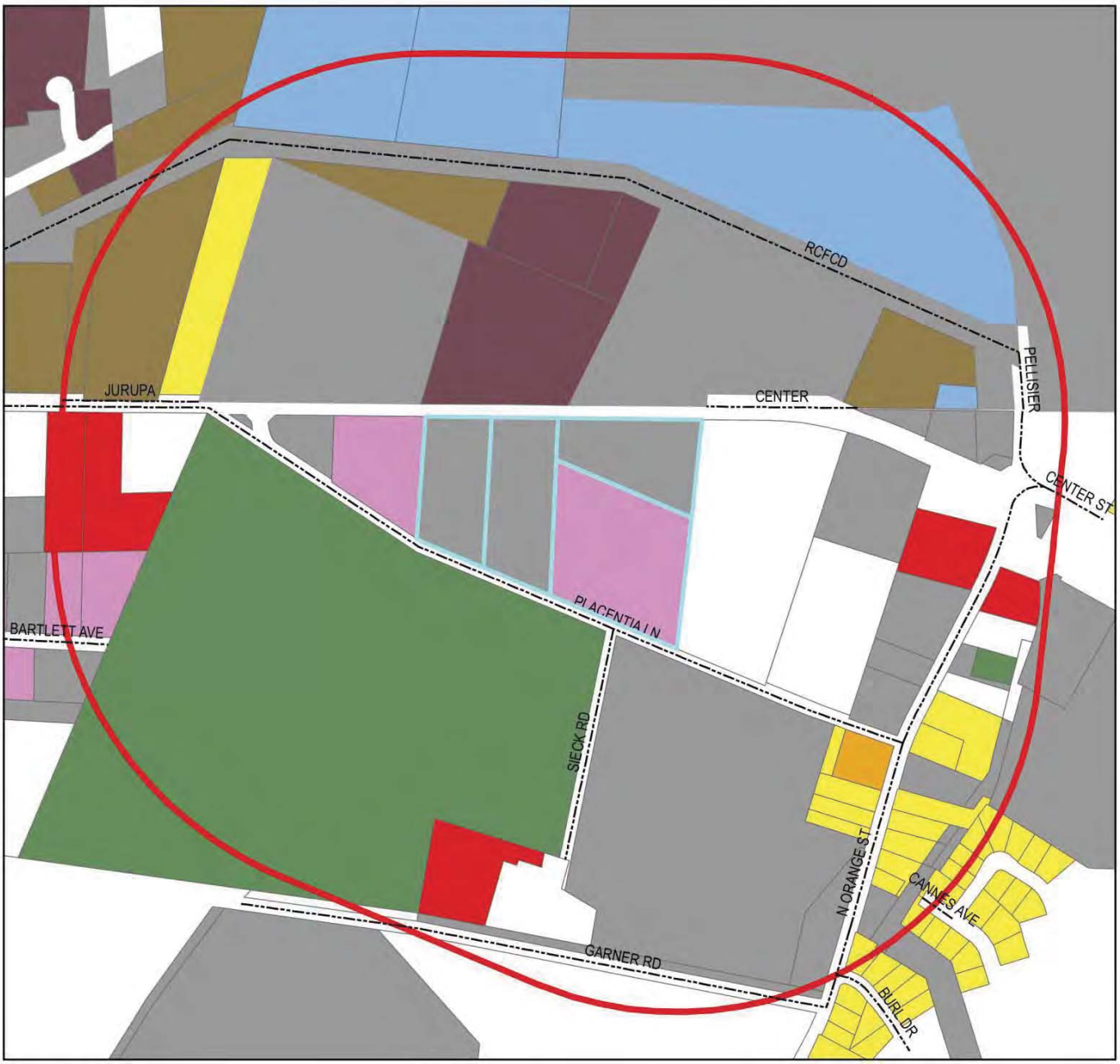

Legend

Project Site

0.25 Mile Radius

0 0.03 0.06 0.12 0.18 0.24 Miles

Land Uses

- Unknown
- Vacant
- Commercial
- Storage
- Light Industrial
- Residential Use in Commercial Zone
- Single Family Residential
- Multi-Family Residential
- Miscellaneous Structures
- Electric Power Transmissions

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Exhibit 2 Radius Map

Center Street Commerce Building Project

6550 Center Street, Riverside, California

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Source: Google Earth, 2015

Exhibit 3 Noise Measurement Locations

Center Street Commerce Building Project
6550 Center Street, Riverside, California

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5.1 Federal Regulations

FEDERAL NOISE CONTROL ACT OF 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the L_{dn} should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA L_{dn} (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more localized levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies, allowing more individualized control for specific issues by designated federal, State, and local government agencies.

FEDERAL TRANSIT ADMINISTRATION

The Federal Transit Administration (FTA) has developed methodology and significance criteria to evaluate incremental noise impacts from surface transportation modes (i.e., on road motor vehicles and trains) as presented in Transit Noise Impact and Vibration Assessment (FTA Guidelines). These incremental noise impact criteria are based on EPA findings and subsequent studies of annoyance in communities affected by transportation noise. The FTA extended the EPA's five dBA incremental impact criterion to higher ambient levels. As baseline ambient levels increase, smaller and smaller increments are allowed to limit expected increases in community annoyance. For example, in residential areas with a baseline ambient noise level of 50 dBA CNEL, a less-than-five dBA increase in noise levels would produce a minimal increase in community annoyance levels, while at 70 dBA CNEL, only one dBA increase could be accommodated before a significant annoyance increase would occur.

VIBRATION STANDARDS

The FTA provides guidelines for maximum-acceptable vibration criteria for different types of land uses. Groundborne vibration and noise levels associated with various types of construction equipment and activities are summarized in Table 2 (Reference Vibration Source Amplitudes for Construction Equipment). Table 3 (Groundborne Vibration and Noise Impact Criteria) shows the Federal Transit Administration's maximum acceptable vibration standard for human annoyance in residences where people normally sleep is 80 VdB (less than 70 vibration events per day).

Table 2
Reference Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV at 25 ft (in/sec) at 25 Feet	Approximate Vibration Level (VL) at 25 Feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 (upper range)	105
	0.170 (typical)	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
Slurry wall	0.017 in rock	75
Vibratory roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Notes: PPV is the peak particle velocity. Pile driver amplitude varies greatly based on equipment type and size.
Source: Federal Transit Administration. Transit Noise and Vibration Impact Assessment. 2006.

Table 3
Groundborne Vibration and Noise Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB)		Groundborne Noise Impact Levels (dBA)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior vibrations	65 VdB[3]	65 VdB[3]	N/A	N/A
Category 2: Residences and buildings where people normally sleep	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	83 VdB	40 dBA	48 dBA

[1] *Frequent Events – more than 70 vibration events per day*
[2] *Infrequent Events – fewer than 70 vibration events per day*
[3] *This criterion limit is based on levels that are acceptable for more moderately sensitive equipment such as optical microscopes.*
Source: United States Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Assessment, 1995

The FTA and Caltrans have compiled the data from numerous studies related to vibration and have developed standards for human perception and building damage. The FTA's maximum acceptable vibration standard for human annoyance is 78 VdB at nearby vibration-sensitive land uses.[4] The Caltrans maximum vibration level standard is 0.2 in/sec PPV for the prevention of structural damage to typical residential buildings.[5]

5.2 State Regulations

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA requires lead agencies to consider noise impacts. Under CEQA, lead agencies are directed to assess conformance to locally established noise standards or other agencies' noise standards; measure and identify the potentially significant exposure of people to or generation of excessive noise levels; measure and identify potentially significant permanent or temporary increase in ambient noise levels; and measure and identify potentially significant impacts associated with air traffic.

CALIFORNIA NOISE CONTROL ACT OF 1973

Sections 46000-46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, find that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

CALIFORNIA NOISE INSULATION STANDARDS (CCR TITLE 24)

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a residential building or structure is proposed to be located near an existing or adopted freeway route, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source, and where such noise source or sources create an exterior CNEL (or L_{dn}) of 60 dBA or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or L_{dn}) of 45 dBA or below [California's Title 24 Noise Standards, Chap. 2-35].

STATE OF CALIFORNIA GENERAL PLAN GUIDELINES 2003

Though not adopted by law, the State of California General Plan Guidelines 2003, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of development relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., L_{dn} or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally acceptable" ranges include conditions calling for detailed acoustical study or construction mitigation to reduce interior exposure levels prior to the construction or operation of the building under the listed exposure levels.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

According to the Caltrans vibration manual, large bulldozers, vibratory rollers (used to compact earth), and loaded trucks utilized during grading activities can produce vibration, and depending on the level of vibration, could cause annoyance at uses within the project vicinity or damage structures. Caltrans has developed a screening tool to determine of vibration from construction equipment is substantial enough to impact surrounding uses.

The Caltrans vibration manual establishes thresholds for vibration impacts on buildings and humans. These thresholds are summarized in Tables 4 (Vibration Damage Potential Threshold Criteria) and 5 (Vibration Annoyance Potential Threshold Criteria).

Table 4
Vibration Damage Potential Threshold Criteria

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans 2013		

Table 5
Vibration Annoyance Potential Threshold Criteria

Human Response	PPV Threshold (in/sec)	
	Transient	Continuous
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severely perceptible	2.00	0.40
Source: Caltrans 2013		

5.3 Local Regulations

CITY OF RIVERSIDE MUNICIPAL CODE

The City of Riverside Municipal Code, under Chapter 4.25 (Nuisance Exterior Sound Level limits) Section 7.25.010 (Exterior Sound Level Limits), provides the local government ordinance relative to community noise level exposure, guidelines, and regulations.

Exterior Noise Standards

Table 7.25.010A (Exterior Noise Standards) of the Municipal Code includes exterior noise standards for daytime and nighttime noise levels for each land use category. Exterior noise levels shall not exceed 55 dBA between the hours of 7:00 AM and 10:00 PM for residential use or 70 dBA for surrounding industrial uses and 65 dBA for public recreation facilities and commercial use at any time of day.

Construction Noise Levels

Pursuant to Section 7.35.010 (General Noise Regulations), the operation or causing of any tools or equipment used in construction, drilling, repair, alteration, grading, or demolition work between the hours of 7:00 PM and 7:00 AM on Monday through Friday, between 5:00 PM and 8:00 AM on Saturdays, or any time on Sundays and federal holidays that creates a noise disturbance across residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category is prohibited.

CITY OF COLTON MUNICIPAL CODE

Pursuant to Section 18.42.040 (Noise) of the Colton Municipal Code, the maximum sound level radiated by any use, when measured at the boundary line of the property of which is sound is generated, shall not be obnoxious and shall not exceed 65 dBA.

Vibration

Pursuant to Section 18.42.050 (Vibration) of the Colton Municipal Code, ground vibration shall not be generated by equipment other than motor vehicles, trains, or by temporary construction or demolition, which is perceptible by the average person at or beyond the lot line of the property containing such activities.

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The thresholds identified in Appendix G of the State CEQA Guidelines, as implemented by the City of Riverside, have been utilized to assess the significance of the potential environmental effects of the project.

6.1 Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the proposed project could result in potentially significant impacts related to noise if it results in:

A. Exposure of persons 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 groundborne vibration or groundborne noise levels.
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the 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, exposure of people residing or working in the project area to excessive noise levels.
F. For a project within a vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

To assess construction impacts, a worst-case construction scenario was modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM). Modeling parameters and output are provided in Appendix B. RCNM utilizes standard noise emission levels for different types of equipment and includes utilization percentage, impact, and shielding parameters.

To assess current and opening year traffic noise levels, vehicle trips associated with surrounding roadways were modeled utilizing the SoundPLAN software. SoundPLAN is a three-dimensional noise modeling software that accounts for the shielding and reflective effects associated with intervening topography and nearby buildings.

6.2 Consistency with Applicable Standards

CONSTRUCTION NOISE LEVELS

Construction noise levels were estimated for nearby receptors using the FHWA Roadway Construction Noise Model (RCNM). See Exhibit 4 (Receptors - Construction) for receptor locations. Temporary noise increases will be greatest during the demolition phase. The model indicates that the use of construction equipment such as excavators, dozers, and concrete saws could expose the industrial use located approximately 421 feet to the south of the center of the project site to a combined noise level of 71.1 dBA $L_{max.}$ Construction equipment could expose the industrial use located 640 feet south, the industrial use located 510 feet east, and the park located 544 feet from the center of the project site to a combined noise level of 67.4 dBA L_{max}, 69.4 dBA L_{max}, and 68.8 dBA L_{max}, respectively. Within the City of Riverside, a noise level of 70 dBA is allowable at surrounding industrial uses and a noise level of 65 dBA is allowable at public recreation facilities. To the north of the project site is the City of Colton. Within the City of Colton, the maximum allowable noise level is 65 dBA. Construction activity could result in noise levels in excess of the allowable noise levels at the industrial use to the south, the public recreation use to the south, and the industrial use to the north of the project site. Therefore, Mitigation Measures N-1 and N-2 have been incorporated to reduce the impact to neighboring uses during construction.

Per Section 7.35.10 (General Noise Regulations) of the Riverside Municipal Code, construction activities occurring between the hours of 7:00 PM and 7:00 AM on Mondays through Fridays, between 5:00 PM and 8:00 AM on Saturdays, and any time on Sundays and federal holidays are prohibited. Mitigation Measure N-1 limits construction activity to the hours of 7:00 AM and 7:00 PM Monday through Friday and the hours of 8:00 AM and 5:00 PM on Saturdays. Due to the

time limitations on construction activity, surrounding employees and park users will be exposed to limited construction noise. Because noise levels during construction activities are anticipated to exceed the City's exterior noise standards, mitigation measures will be necessary to minimize noise levels at nearby receptors. Mitigation Measure N-2 will be incorporated to minimize noise associated with general construction activities. Mitigation Measure N-2 requires preparation of a construction noise reduction plan to reduce temporary noise impacts by a minimum of 10 dBA which is a feasible performance standard based on available technology. Engineered controls include retrofitting equipment with improved exhaust and intake muffling, disengaging equipment fans, and installation of sound panels around equipment engines. These types of controls can achieve noise level reductions of approximately 10 dBA.[6] [7] Implementation of Mitigation Measure N-2 will reduce temporary noise impacts by a minimum of 10 dBA, resulting in a maximum construction noise level of 61.1 dBA at the project site and 58.8 dBA at the park located to the south of the project site. Therefore, with implementation of Mitigation Measures N-1 and N-2, construction noise will feasibly be reduced to unsubstantial levels.

OPERATIONAL NOISE LEVELS

The City of Riverside Municipal Code sets an allowable exterior noise level for industrial uses at 70 dBA CNEL, 65 dBA CNEL for public recreational facilities and office/commercial use, 60 dBA for community support uses, and 55 dBA for residential use. The City of Colton sets an allowable noise level of 65 dBA CNEL. Ambient noise at the project site would generally be defined by traffic on Center Street, Placentia Lane, and operational noise from neighboring industrial uses. A substantial increase in ambient noise is an increase that is *barely perceptible* (3 dBA). Operationally, the proposed project will result in periodic landscaping and other occasional noise generating activities. These activities are common in urban uses and do not represent a substantial increase in periodic noise in consideration that the project site is located in an industrialized area. Traffic noise from vehicular traffic generated by the proposed project was projected using SoundPLAN software was based on estimated trip generation and distribution provided by Kunzman Associates, Inc.[8]

Noise levels at the single family homes to the east and west, the industrial uses to the north and east, and the commercial use to the east were calculated (see Appendix C for output data) and projected at the ground floor (see Exhibit 6 (Receptors – Traffic Noise). The 2017 Opening Year Without and With Project traffic noise levels during the peak hour at neighboring uses are summarized in Table 6 (Opening Year 2017 Peak Hour Roadway Noise Levels). Opening Year Without and With Project exterior noise levels will be within the allowable exterior noise levels established by the City of Colton for the northern industrial use and within the established City of Riverside exterior noise standard for the industrial and commercial uses to the east and the residential use to the southeast of the project site on the east side of Orange Street. The exterior noise levels under the Without and With Project scenarios exceed allowable exterior noise levels at the residential uses to the northeast, southeast, and northwest of the project site. However, the project does not cause the exterior noise levels to exceed the 55 dBA residential threshold for receptors that are currently below the allowable noise levels. In addition, traffic noise levels will not increase more than 3 dBA as a result of the proposed project as shown in Table 6. Therefore, no significant impacts will result.

Table 6
Opening Year 2017 Peak Hour Roadway Noise Levels

Receptors	Without Project dBA CNEL		With Project dBA CNEL		Difference (AM / PM)	Significant? (AM / PM)
	AM	PM	AM	PM		
1 – Industrial (N)	57.0	57.8	58.2	58.8	+1.2 / +1.0	No / No
2 – Industrial (E)	61.3	62.3	63.3	64.1	+2.0 / +1.8	No / No
3 – Single Family Residential (NE)	**57.9**	**59.4**	**59.7**	**60.8**	+1.8 / +1.4	No / No
4 – Commercial (E)	57.4	58.2	58.2	59.0	+0.8 / +0.8	No / No
5 – Single Family Residential (SE)	53.3	54.0	53.6	54.4	+0.3 / +0.4	No / No
6 – Single Family Residential (SE)	**60.7**	**61.4**	**60.9**	**61.8**	+0.2 / +0.4	No / No
7 – Single Family Residential (NW)	**60.2**	**61.1**	**60.9**	**61.8**	+0.7 / +0.7	No / No
Bolded *noise levels exceed 55 dBA exterior threshold for residential uses.*						

6.3 Vibration Impacts

CONSTRUCTION VIBRATION

Construction activities that use vibratory rollers and bulldozers are repetitive sources of vibration; therefore, the *continuous* threshold is used. Industrial uses are located to the north and east of the project site. As a worst case scenario, the *historic and some older buildings* threshold is used. Based on the threshold criteria summarized in Tables 4 and 5, vibration from use of heavy construction equipment for the proposed project would be below the thresholds to cause damage to nearby structures and result in less than *barely perceptible* vibration at the four receptors shown in Table 7 (Distances to Vibration Receptors) and Table 8 (Construction Vibration Impacts).

Table 7
Distances to Vibration Receptors

Receptors	Distance from Center of Project Site (ft)
1 – Industrial (N)	640
2 – Industrial (E)	510
3 – Industrial (S)	421
4 – Park (S)	544

Construction of the project does not require rock blasting, pile driving, or the use of a jack hammer, but will use a vibratory roller, and large bulldozer, and loaded trucks. All of the receptors will experience less than *barely perceptible* vibration from construction of the proposed project. Furthermore, these construction activities will be limited to the hours of 7:00 AM to 7:00 PM Mondays through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. With regard to long-term operational impacts, activities associated with the project will not result in any vibration-related impacts to adjacent or on-site properties.

Table 8
Construction Vibration Impacts

Receptors	Equipment	PPVref	Distance (feet)	PPV
1 – Single Family Home (NE)	Vibratory Roller	0.21	640	0.0031
2 – Storage Facility (N)	Vibratory Roller	0.21	510	0.0042
3 – Single Family Home (E)	Vibratory Roller	0.21	421	0.0053
4 – Single Family Home (E)	Vibratory Roller	0.21	544	0.0038
1 – Single Family Home (NE)	Large Bulldozer	0.089	640	0.0013
2 – Storage Facility (N)	Large Bulldozer	0.089	510	0.0018
3 – Single Family Home (E)	Large Bulldozer	0.089	421	0.0023
4 – Single Family Home (E)	Large Bulldozer	0.089	544	0.0016
1 – Single Family Home (NE)	Loaded Truck	0.076	640	0.0011
2 – Storage Facility (N)	Loaded Truck	0.076	510	0.0015
3 – Single Family Home (E)	Loaded Truck	0.076	421	0.0019
4 – Single Family Home (E)	Loaded Truck	0.076	544	0.0014

OPERATIONAL VIBRATION

Operation of the proposed project will include heavy-duty truck traffic along Center Street. According to the Federal Transit Administration, it is unusual for vibration from sources such as trucks to be perceptible.[9] However, according to Caltrans heavy trucks can impart groundborne vibration when the pavement is not smooth.[10] Therefore, to provide a worst case analysis, potential building damage due to project operation has been analyzed. Currently, there is concern regarding impacts to the Adobe structure located north of Center Street to the west of Orange Street (APN 246-082-002) due to heavy trucks traveling along Center Street.

The structure is located approximately 88 feet from the centerline of the nearest lane on Center Street. According to Caltrans, the highest truck traffic vibrations generated on freeway shoulders is 2.0 PPV mm/sec (0.079 PPV in/sec). At 88 feet, the vibration level reaching the Adobe structure is 0.015 PPV. According to project trip generation as estimated by Kunzman Associates, the proposed project is anticipated to generate 64 heavy-duty trucks per day, with a maximum of five heavy-duty trucks during the PM peak hour. Although truck trips will occur periodically, the *continuous* threshold has been utilized to provide a worst case analysis. Based on the Caltrans threshold for *historic and some old buildings* as summarized in Table 4, heavy truck traffic on Center Street will not result in structure damage due to operation-related groundborne vibration. The Caltrans Transportation and Construction Vibration Guidance Manual also provides alternative thresholds, as summarized in Table 9 (Vibration Criteria for Buildings).

Table 9
Vibration Criteria for Buildings

Criteria	Building Type	Continuous Threshold PPV (in/sec)
Swiss Association of Standardization	Class IV: Construction very sensitive to vibration; objects of historic interest	0.12
Konan	Historic and Sensitive Buildings	0.12
AASHTO	Historic Sites or other critical locations	0.10
Source: Caltrans 2013		

As shown in Table 9, periodic heavy truck traffic occurring along Center Street will not exceed vibration criteria for structural damage to historic and sensitive buildings. In addition, According to the Whiffen vibration criteria for continuous vibration, vibration levels of 0.006 – 0.019 are unlikely to cause damage to buildings of any type. The 0.015 PPV resulting from heavy truck traffic will be within this continuous threshold. Therefore, no substantial impact will result.

6.4 Airport Noise

The project site is located with two miles of a public or private use airport or helipad. Therefore, no substantial impacts will occur.

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018

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Exhibit 5 Receptors - Traffic Noise
Center Street Commerce Building Project
6550 Center Street, Riverside, California
M I G
Hogle-Ireland
http://www.migcom.com • 951-787-9222
Source: Google Earth, 2015
© 2015 Google
S Old Pellisier Rd
Pellisier Rd
W Center St
Orange St
La Ciotat
Sieck Rd
Placentia Ln
Key St
Bend Ave
Trade Ave
1
2
3
4
5
6
7

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The following mitigation measures are required to ensure that project-related noise levels will not exceed established thresholds.

N-1 Limit construction activities to the hours of 7:00 AM to 7:00 PM Monday through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. Construction activity shall be prohibited on Sundays and federal holidays. This mitigation measure must be implemented throughout construction and may be periodically monitored by the Planning Director or designee during routine inspections.

N-2 Prior to issuance of grading permits, the Applicant shall submit a mitigation plan prepared by a qualified engineer or other acoustical expert for review and approval by the Planning Division that identifies noise control measures that achieve a minimum 10 dBA reduction in construction-related noise levels. The mitigation plan may include use of sound curtains, engineered equipment controls, or other methods. Noise control requirements shall be noted on project construction drawings and verified by the Building Department during standard inspection procedures.

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1 California Department of Transportation. Basics of Highway Noise: Technical Noise Supplement. November 2009.
2 California Governor's Office of Planning and Research. General Plan Guidelines. 2003
3 California Department of Transportation. Transportation- and Construction-Induced Vibration Guidance Manual. June 2004
4 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment.* 2006
5 California Department of Transportation. *Transportation and Construction Vibration Guidance Manual. Division of Environmental Analysis. September 2013*
6 United States Bureau of Mines. Mining Machinery Noise Control Guidelines. 1983
7 United States Bureau of Mines. Noise Abatement Techniques for Construction Equipment. August 1979
8 Kunzman Associates, Inc. Center Street Warehouse Project Traffic Impact Analysis. January 19, 2016
9 Federal Transit Administration. Transit Noise and Vibration Impact Assessment. May 2006
10 California Department of Transportation, Transportation and Construction Vibration Guidance Manual, September 2013

Appendix A Noise Measurement Data

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Appendix B Construction Noise and Vibration Output Data

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Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 1 Demolition

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0
Concrete Saw	No	20		89.6	640	0

				Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
				Day		Evening		Night		Day		Evening		Night			
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Concrete Saw		67.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Total	67.4	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0
Concrete Saw	No	20		89.6	510	0

				Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
				Day		Evening		Night		Day		Evening		Night			
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Concrete Saw		69.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Total	69.4	66.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	421	0
Excavator	No	40		80.7	421	0
Excavator	No	40		80.7	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0
Concrete Saw	No	20		89.6	421	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		71.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	71.1	67.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	544	0
Excavator	No	40		80.7	544	0
Excavator	No	40		80.7	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0
Concrete Saw	No	20		89.6	544	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		68.8	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68.8	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 2 Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Backhoe	No	40		77.6	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.9	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Backhoe	No	40		77.6	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.8	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40		84	421	0
Tractor	No	40		84	421	0
Backhoe	No	40		77.6	421	0
Backhoe	No	40		77.6	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.5	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40		84	544	0
Tractor	No	40		84	544	0
Backhoe	No	40		77.6	544	0
Backhoe	No	40		77.6	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.3	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 3 Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Grader	No	40	85		640	0
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Scraper	No	40		83.6	640	0
Scraper	No	40		83.6	640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.4	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.4	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Grader	No	40	85		510	0
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Scraper	No	40		83.6	510	0
Scraper	No	40		83.6	510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer		No	40		81.7	421	0
Tractor		No	40	84		421	0
Backhoe		No	40		77.6	421	0
Grader		No	40	85		421	0
Excavator		No	40		80.7	421	0
Excavator		No	40		80.7	421	0
Scraper		No	40		83.6	421	0
Scraper		No	40		83.6	421	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		66.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		65.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		65.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.5	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Park (S)	Industrial	65	65	65

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer		No	40		81.7	544	0
Tractor		No	40	84		544	0
Backhoe		No	40		77.6	544	0
Grader		No	40	85		544	0
Excavator		No	40		80.7	544	0
Excavator		No	40		80.7	544	0
Scraper		No	40		83.6	544	0
Scraper		No	40		83.6	544	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		64.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		62.8	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		62.8	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.3	66.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Report date: 6/4/2015
Case Description: 4 Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Backhoe	No	40		77.6	640	0
Welder / Torch	No	40		74	640	0
Generator	No	50		80.6	640	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		58.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		51.9	47.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		58.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	66.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Backhoe	No	40		77.6	510	0
Welder / Torch	No	40		74	510	0
Generator	No	50		80.6	510	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		60.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		60.5	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0
Tractor	No	40	84		421	0
Backhoe	No	40		77.6	421	0
Backhoe	No	40		77.6	421	0
Welder / Torch	No	40		74	421	0
Generator	No	50		80.6	421	0

Results

Equipment	Land Use	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane		62	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.5	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0
Tractor	No	40	84		544	0
Backhoe	No	40		77.6	544	0
Backhoe	No	40		77.6	544	0
Welder / Torch	No	40		74	544	0
Generator	No	50		80.6	544	0

Results

Equipment	Land Use	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane		59.8	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		53.3	49.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		59.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.3	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 5 Architectural Coating

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	421	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	544	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Compressor (air)	56.9	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.9	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 6 Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	640	0
Paver	No	50		77.2	640	0
Roller	No	20		80	640	0
Roller	No	20		80	640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	510	0
Paver	No	50		77.2	510	0
Roller	No	20		80	510	0
Roller	No	20		80	510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		60.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	421	0
Paver	No	50		77.2	421	0
Roller	No	20		80	421	0
Roller	No	20		80	421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	62	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.5	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	544	0
Paver	No	50		77.2	544	0
Roller	No	20		80	544	0
Roller	No	20		80	544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	59.8	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.3	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Center Street Warehouse

Receptors	Distance (ft)
1 – Industrial (N)	640
2 – Industrial (E)	510
3 – Industrial (S)	421
4 – Park (S)	544

Equipment	PPVref	D	n	Eref	Eequip	PPV
Vibratory Roller	0.21	640	1.3			0.0031
Vibratory Roller	0.21	510	1.3			0.0042
Vibratory Roller	0.21	421	1.3			0.0053
Vibratory Roller	0.21	544	1.3			0.0038
Large Bulldozer	0.089	640	1.3			0.0013
Large Bulldozer	0.089	510	1.3			0.0018
Large Bulldozer	0.089	421	1.3			0.0023
Large Bulldozer	0.089	544	1.3			0.0016
Loaded Truck	0.076	640	1.3			0.0011
Loaded Truck	0.076	510	1.3			0.0015
Loaded Truck	0.076	421	1.3			0.0019
Loaded Truck	0.076	544	1.3			0.0014

Table

Equipment	PPVref	Distance	PPV
Vibratory Roller	0.21	640	0.0031
Vibratory Roller	0.21	510	0.0042
Vibratory Roller	0.21	421	0.0053
Vibratory Roller	0.21	544	0.0038
Large Bulldozer	0.089	640	0.0013
Large Bulldozer	0.089	510	0.0018
Large Bulldozer	0.089	421	0.0023
Large Bulldozer	0.089	544	0.0016
Loaded Truck	0.076	640	0.0011
Loaded Truck	0.076	510	0.0015
Loaded Truck	0.076	421	0.0019
Loaded Truck	0.076	544	0.0014

Appendix C SoundPLAN Output Data

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Center Street
Opening Year 2017 Without Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Center Street (EB)		Traffic direction:	In entry direction								
0+000	4288	Total	-	132	272	-	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Automobiles	-	90	187	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Medium trucks	-	34	70	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Heavy trucks	-	7	13	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+184	6720	Total	-	206	428	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Automobiles	-	141	294	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Medium trucks	-	53	110	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Heavy trucks	-	10	21	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Motorcycles	-	2	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+253	6720	Total	-	206	428	-	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Automobiles	-	141	294	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Medium trucks	-	53	110	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Heavy trucks	-	10	21	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+516	-						-	-	-	-	-
Orange Street SB		Traffic direction:	In entry direction								
0+893	1904	Total	-	74	90	-	none	-	-	Average (of DGAC and PCC)	0

0+893	1904	Automobiles	-	50	61	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Medium trucks	-	19	23	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Total	-	74	90	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Automobiles	-	50	61	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Medium trucks	-	19	23	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+450	-						-	-	-	-	-	
Center Street WB		Traffic direction:	In entry direction									
0+893	4192	Total	-	190	144	-	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Automobiles	-	130	99	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Medium trucks	-	49	37	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+228	4192	Total	-	190	144	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Automobiles	-	130	99	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Medium trucks	-	49	37	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Heavy trucks	-	10	7	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+427	4192	Total	-	190	144	-	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Automobiles	-	130	99	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Medium trucks	-	49	37	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Total	-	190	146	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Automobiles	-	130	100	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Medium trucks	-	49	38	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Total	-	190	146	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Automobiles	-	130	100	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Medium trucks	-	49	38	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
2+414	-						-	-	-	-	-	
0+000	4208	Total	-	190	146	-	Stop sign	0	-	Average (of DGAC and PCC)		0
0+000	4208	Automobiles	-	130	100	56	Stop sign	0	-	Average (of DGAC and PCC)		0

0+000	4208	Medium trucks	-	49	38	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Heavy trucks	-	10	7	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
Orange Street NB	Traffic direction:	In entry direction											
0+893	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+331	360	Total	-	16	13	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Automobiles	-	10	8	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Medium trucks	-	4	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Heavy trucks	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+450	-						-	-	-	-	-		
0+000	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
Main Street NB	Traffic direction:	In entry direction											
1+023	21400	Total	-	877	921	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Automobiles	-	604	634	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Medium trucks	-	226	237	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Heavy trucks	-	42	45	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+559	-						-	-	-	-	-		
0+000	21400	Total	-	877	921	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Automobiles	-	604	634	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Medium trucks	-	226	237	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Heavy trucks	-	42	45	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
Main Street NB1	Traffic direction:	In entry direction											
1+023	19608	Total	-	740	971	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Automobiles	-	509	669	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Medium trucks	-	191	250	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Heavy trucks	-	36	47	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Motorcycles	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+560	-						-	-	-	-	-		

Center Street
Opening Year 2017 Without Project
Receivers

No.	Receiver name	Floor	Level AM	Level PM
			dB(A)	
1	1 Industrial (N)	GF	57.0	57.8
2	2 Industrial (E)	GF	61.3	62.3
3	3 Single Family Residential (NE)	GF	57.9	59.4
4	4 Commercial (EE)	GF	57.4	58.2
5	5 Single Family Home (SE)	GF	53.3	54.0
6	6 Single Family Home (SE)	GF	60.7	61.4
7	7 Single Family Home (NW)	GF	60.2	61.1

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Center Street
Opening Year 2017 Without Project
Contributions

Source name			Level AM	Level PM
			dB(A)	
1 Industrial (N)	GF		57.0	57.8
Center Street (EB)			53.5	55.8
Center Street WB			54.4	53.2
Main Street NB			34.8	35.0
Main Street NB1			34.0	35.2
Orange Street NB			23.7	23.3
Orange Street SB			29.8	30.7
2 Industrial (E)	GF		61.3	62.3
Center Street (EB)			58.4	60.8
Center Street WB			58.1	56.8
Main Street NB			33.1	33.3
Main Street NB1			32.3	33.5
Orange Street NB			27.7	27.4
Orange Street SB			33.9	34.8
3 Single Family Residential (NE)		GF	57.9	59.4
Center Street (EB)			54.8	58.0
Center Street WB			54.8	53.5
Main Street NB			29.0	29.2
Main Street NB1			28.2	29.4
Orange Street NB			34.6	34.1
Orange Street SB			40.6	41.4
4 Commercial (EE)	GF		57.4	58.2
Center Street (EB)			49.6	52.4
Center Street WB			49.8	48.4
Main Street NB			30.0	30.2
Main Street NB1			29.2	30.4
Orange Street NB			48.3	47.6
Orange Street SB			54.7	55.6
5 Single Family Home (SE)		GF	53.3	54.0
Center Street (EB)			39.0	41.8
Center Street WB			39.3	37.9
Main Street NB			30.1	30.3
Main Street NB1			29.3	30.5
Orange Street NB			46.3	45.7
Orange Street SB			51.9	52.7
6 Single Family Home (SE)		GF	60.7	61.4

Center Street (EB)		38.3	41.1
Center Street WB		38.7	37.3
Main Street NB		30.4	30.6
Main Street NB1		29.6	30.8
Orange Street NB		51.8	51.1
Orange Street SB		60.1	60.9
7 Single Family Home (NW)	GF	60.2	61.1
Center Street (EB)		55.9	58.9
Center Street WB		57.6	56.4
Main Street NB		45.8	46.0
Main Street NB1		45.0	46.2
Orange Street NB		17.8	17.2
Orange Street SB		23.7	24.6

Center Street
Opening Year 2017 Without Project
Receiver Spectra

No.	Name	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 Industrial (N)	AM	30.3	35.8	39.4	41.5	42.9	44.2	45	45	44.5	44.2	45.1	46.2	45.9	46.6	45.3	44.9	43.4	42.9	42.9	41.4	39.6	36.7	34	30.3
1	1 Industrial (N)	PM	30.9	36.5	40	42.1	43.5	44.8	45.7	45.7	45.3	45	45.9	46.9	46.6	47.2	46	45.8	44.3	43.7	43.7	42.2	40.4	37.6	34.8	31.2
2	2 Industrial (E)	AM	32.6	38.2	41.8	43.9	45.3	46.7	47.7	48	48.7	48.9	50.1	51.5	50.9	51.3	50	49.6	48.7	47.8	46.8	44.8	42.2	40.3	37.7	34.3
2	2 Industrial (E)	PM	33.7	39.3	42.8	44.9	46.4	47.8	48.8	49.1	49.9	49.8	51.1	52.9	52.1	52.2	50.7	50.3	49.4	48.5	47.6	45.7	43.1	41.2	38.6	35.1
3	3 Single Family Residential (NE)	AM	30.9	36.5	40	42.1	43.6	44.9	45.8	45.8	45.5	45.2	46.2	47.2	46.8	47.6	46.4	45.8	44.4	43.8	43.7	41.9	40.4	37.5	34.8	31.2
3	3 Single Family Residential (NE)	PM	32.2	37.8	41.3	43.4	44.9	46.2	47.1	47.3	46.9	46.8	47.7	48.5	48.3	49	47.9	47.5	46.1	45.3	45.2	43.3	41.8	39.1	36.4	32.8
4	4 Commercial (EE)	AM	30.2	35.7	39.3	41.4	42.8	44.2	45.1	45.1	45.2	44.6	45.6	47.4	46.7	46.9	45.4	45.1	44.1	43.6	42.9	41.3	39.1	36.5	33.7	30.2
4	4 Commercial (EE)	PM	31.1	36.6	40.2	42.3	43.7	45.1	46	46	46	45.4	46.4	48.1	47.5	47.7	46.1	45.9	44.9	44.4	43.7	42.1	40.1	37.4	34.6	31
5	5 Single Family Home (SE)	AM	26.4	31.8	35.3	37.5	38.9	40.3	41.2	40.8	40.6	40.6	41.7	42.3	41.9	42.7	41.6	40.9	40.1	39.8	39.8	38.3	36.5	33.8	31.1	27.5
5	5 Single Family Home (SE)	PM	27	32.5	36	38.1	39.6	41	41.8	41.3	41.1	41.2	42.3	42.8	42.5	43.3	42.3	41.6	40.8	40.5	40.6	39	37.2	34.6	31.8	28.2
6	6 Single Family Home (SE)	AM	30.4	35.9	39.4	41.6	43.1	44.7	46	47.5	47.7	49.3	51.2	51.5	50.7	51.1	49.9	48.8	47.7	45.7	44.3	42.1	41.1	38.5	35.8	32.4
6	6 Single Family Home (SE)	PM	31.1	36.6	40.2	42.3	43.8	45.4	46.7	48.2	48.4	50	51.9	52.2	51.4	51.8	50.6	49.5	48.4	46.4	45	42.9	41.9	39.2	36.6	33.1
7	7 Single Family Home (NW)	AM	32.5	38	41.6	43.7	45.1	46.4	47.3	47	47.5	47.6	48.8	49.9	49.5	50.1	48.4	47.7	47.2	46.5	46.4	44.7	42.3	39.9	37.2	33.7
7	7 Single Family Home (NW)	PM	33.3	38.8	42.4	44.5	45.9	47.2	48.1	48	48.3	48.6	49.8	50.6	50.2	51.1	49.6	49	48.4	47.7	47.5	45.7	43.3	40.9	38.2	34.7

Center Street
Opening Year With Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Center Street (EB)		Traffic direction:	In entry direction								
0+000	5360	Total	-	186	298	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Automobiles	-	128	205	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Medium trucks	-	48	77	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Heavy trucks	-	9	14	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Total	-	201	344	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Automobiles	-	138	236	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Medium trucks	-	52	89	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Heavy trucks	-	10	17	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Total	-	217	431	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Automobiles	-	148	296	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Medium trucks	-	56	111	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Heavy trucks	-	11	21	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Total	-	217	431	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Automobiles	-	148	296	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Medium trucks	-	56	111	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Heavy trucks	-	11	21	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+184	8536	Total	-	252	563	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Automobiles	-	173	388	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Medium trucks	-	65	145	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Heavy trucks	-	12	27	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Motorcycles	-	2	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+253	8536	Total	-	252	563	-	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Automobiles	-	173	388	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Medium trucks	-	65	145	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Heavy trucks	-	12	27	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+516	-						-	-	-	-	-
Orange Street SB		Traffic direction:	In entry direction								
0+893	2048	Total	-	78	100	-	none	-	-	Average (of DGAC and PCC)	0

0+893	2048	Automobiles	-	53	68	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Medium trucks	-	20	26	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+017	2048	Total	-	78	100	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Automobiles	-	53	68	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Medium trucks	-	20	26	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Heavy trucks	-	4	5	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+072	2048	Total	-	78	100	-	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Automobiles	-	53	68	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Medium trucks	-	20	26	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+450	-						-	-	-	-	-		
Center Street WB		Traffic direction:	In entry direction										
0+893	6128	Total	-	269	228	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Automobiles	-	154	156	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Medium trucks	-	95	59	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Heavy trucks	-	18	11	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Motorcycles	-	2	2	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+228	7728	Total	-	369	228	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Automobiles	-	254	156	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Medium trucks	-	95	59	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Heavy trucks	-	18	11	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Motorcycles	-	2	2	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+427	7728	Total	-	369	228	-	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Automobiles	-	254	156	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Medium trucks	-	95	59	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Heavy trucks	-	18	11	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Motorcycles	-	2	2	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Total	-	260	191	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Automobiles	-	178	131	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Medium trucks	-	67	49	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Heavy trucks	-	13	10	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Motorcycles	-	2	1	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Total	-	206	193	-	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Automobiles	-	141	132	56	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Medium trucks	-	53	50	56	none	-	-	Average (of DGAC and PCC)	0		

1+873	4840	Heavy trucks	-	10	10	56	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Motorcycles	-	2	1	56	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
2+414	-						-	-	-	-	-	
0+000	4840	Total	-	206	193	-	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Automobiles	-	141	132	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Medium trucks	-	53	50	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Heavy trucks	-	10	10	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Motorcycles	-	2	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
Orange Street NB		Traffic direction:	In entry direction								
0+893	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+331	360	Total	-	16	13	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Automobiles	-	10	8	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Medium trucks	-	4	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Heavy trucks	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+450	-						-	-	-	-	-	
0+000	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
Main Street NB		Traffic direction:	In entry direction								
1+023	21728	Total	-	885	946	-	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Automobiles	-	609	651	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Medium trucks	-	228	244	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Heavy trucks	-	43	46	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+559	-						-	-	-	-	-	
0+000	21728	Total	-	885	946	-	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Automobiles	-	609	651	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Medium trucks	-	228	244	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Heavy trucks	-	43	46	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
Main Street NB1		Traffic direction:	In entry direction								
1+023	19880	Total	-	746	993	-	none	-	-	Average (of DGAC and PCC)	0

1+023		19880	Automobiles	-		514	684	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Medium trucks	-		192	256	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Heavy trucks	-		36	48	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Buses	-	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Motorcycles	-		4	5	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Auxiliary Vehicle	-	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+560	-								-	-	-	-	-

Center Street
Opening Year 2017 With Project
Receivers

No.	Receiver name	Floor	Level AM	Level PM
			dB(A)	
1	1 Industrial (N)	GF	58.2	58.8
2	2 Industrial (E)	GF	63.3	64.1
3	3 Single Family Residential (NE)	GF	59.7	60.8
4	4 Commercial (EE)	GF	58.2	59.0
5	5 Single Family Home (SE)	GF	53.6	54.4
6	6 Single Family Home (SE)	GF	60.9	61.8
7	7 Single Family Home (NW)	GF	60.9	61.8

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Center Street
Opening Year 2017 With Project
Contributions

Source name			Level AM	Level PM
			dB(A)	
1 Industrial (N)	GF		58.2	58.8
Center Street (EB)			54.4	56.8
Center Street WB			55.8	54.5
Main Street NB			34.9	35.2
Main Street NB1			34.1	35.3
Orange Street NB			23.7	23.3
Orange Street SB			29.9	30.9
2 Industrial (E)	GF		63.3	64.1
Center Street (EB)			59.7	62.6
Center Street WB			60.8	58.7
Main Street NB			33.1	33.4
Main Street NB1			32.3	33.6
Orange Street NB			27.7	27.4
Orange Street SB			34.0	35.0
3 Single Family Residential (NE)		GF	59.7	60.8
Center Street (EB)			55.7	59.1
Center Street WB			57.3	55.5
Main Street NB			29.0	29.3
Main Street NB1			28.3	29.5
Orange Street NB			34.6	34.1
Orange Street SB			40.7	41.7
4 Commercial (EE)	GF		58.2	59.0
Center Street (EB)			50.7	53.9
Center Street WB			52.4	50.4
Main Street NB			30.0	30.3
Main Street NB1			29.2	30.5
Orange Street NB			48.3	47.6
Orange Street SB			54.9	55.9
5 Single Family Home (SE)		GF	53.6	54.4
Center Street (EB)			40.0	43.1
Center Street WB			41.7	39.8
Main Street NB			30.1	30.4
Main Street NB1			29.3	30.6
Orange Street NB			46.3	45.7
Orange Street SB			52.0	53.1
6 Single Family Home (SE)		GF	60.9	61.8

Center Street (EB)		39.4	42.4
Center Street WB		41.0	39.2
Main Street NB		30.4	30.7
Main Street NB1		29.6	30.9
Orange Street NB		51.8	51.1
Orange Street SB		60.2	61.3
7 Single Family Home (NW)	GF	60.9	61.8
Center Street (EB)		57.2	59.3
Center Street WB		57.9	57.7
Main Street NB		45.8	46.1
Main Street NB1		45.0	46.3
Orange Street NB		17.8	17.2
Orange Street SB		23.9	24.9

Center Street
Opening Year 2017 With Project
Receiver Spectra

No.	Name	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 Industrial (N)	AM	31.5	37	40.6	42.7	44.1	45.4	46.3	46.2	45.7	45.4	46.3	47.4	47	47.8	46.5	46.1	44.6	44	44	42.6	40.7	37.8	35.1	31.5
1	1 Industrial (N)	PM	32	37.5	41.1	43.2	44.6	45.9	46.8	46.8	46.3	46	47	47.9	47.6	48.2	47.1	46.8	45.4	44.7	44.8	43.3	41.4	38.6	35.9	32.2
2	2 Industrial (E)	AM	34.5	40.1	43.6	45.8	47.2	48.6	49.6	50	50.7	50.9	52.1	53.3	52.8	53.4	52.1	51.7	50.9	49.9	48.9	46.8	44.2	42.3	39.7	36.3
2	2 Industrial (E)	PM	35.5	41	44.6	46.7	48.2	49.5	50.6	50.9	51.7	51.7	52.9	54.7	53.9	54.1	52.5	52.2	51.2	50.3	49.4	47.4	44.9	43	40.3	37
3	3 Single Family Residential (NE)	AM	32.7	38.2	41.7	43.8	45.3	46.6	47.6	47.6	47.2	47	47.9	49	48.5	49.3	48	47.4	46	45.5	45.3	43.6	42.1	39.1	36.4	32.8
3	3 Single Family Residential (NE)	PM	33.6	39.2	42.7	44.8	46.3	47.6	48.5	48.6	48.3	48.2	49.1	50	49.7	50.4	49.3	48.8	47.5	46.7	46.5	44.7	43.2	40.4	37.7	34.2
4	4 Commercial (EE)	AM	31.3	36.8	40.3	42.4	43.9	45.2	46.1	46.1	45.9	45.3	46.2	48	47.3	47.7	46.2	46	45	44.5	43.8	42.2	40	37.3	34.5	30.9
4	4 Commercial (EE)	PM	32.1	37.7	41.2	43.3	44.7	46.1	46.9	46.9	46.7	46.1	47	48.8	48.1	48.5	47	46.8	45.8	45.3	44.5	43	40.9	38.2	35.4	31.8
5	5 Single Family Home (SE)	AM	26.9	32.3	35.8	37.9	39.4	40.7	41.5	41	40.8	40.8	41.9	42.4	42.1	42.9	41.8	41.1	40.4	40.1	40.2	38.8	37	34.3	31.6	27.9
5	5 Single Family Home (SE)	PM	27.6	33.1	36.6	38.7	40.2	41.5	42.3	41.7	41.5	41.5	42.6	43.1	42.8	43.6	42.6	42	41.2	41	41.1	39.6	37.7	35.1	32.3	28.7
6	6 Single Family Home (SE)	AM	30.6	36.1	39.7	41.8	43.4	44.9	46.2	47.6	47.8	49.4	51.4	51.7	50.9	51.3	50.1	49	47.9	45.9	44.5	42.4	41.4	38.7	36.1	32.6
6	6 Single Family Home (SE)	PM	31.5	37	40.6	42.7	44.3	45.8	47	48.4	48.6	50.3	52.3	52.6	51.8	52.2	51	49.9	48.7	46.8	45.3	43.2	42.3	39.6	36.9	33.5
7	7 Single Family Home (NW)	AM	33.1	38.7	42.2	44.3	45.7	47	47.9	47.8	48.2	48.4	49.5	50.5	50.2	50.9	49.2	48.5	47.9	47.2	47	45.3	42.9	40.5	37.8	34.4
7	7 Single Family Home (NW)	PM	33.9	39.5	43.1	45.1	46.6	47.9	48.8	48.7	49.1	49.3	50.5	51.3	51	51.8	50.3	49.6	49	48.3	48.1	46.3	43.9	41.5	38.9	35.4

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Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents