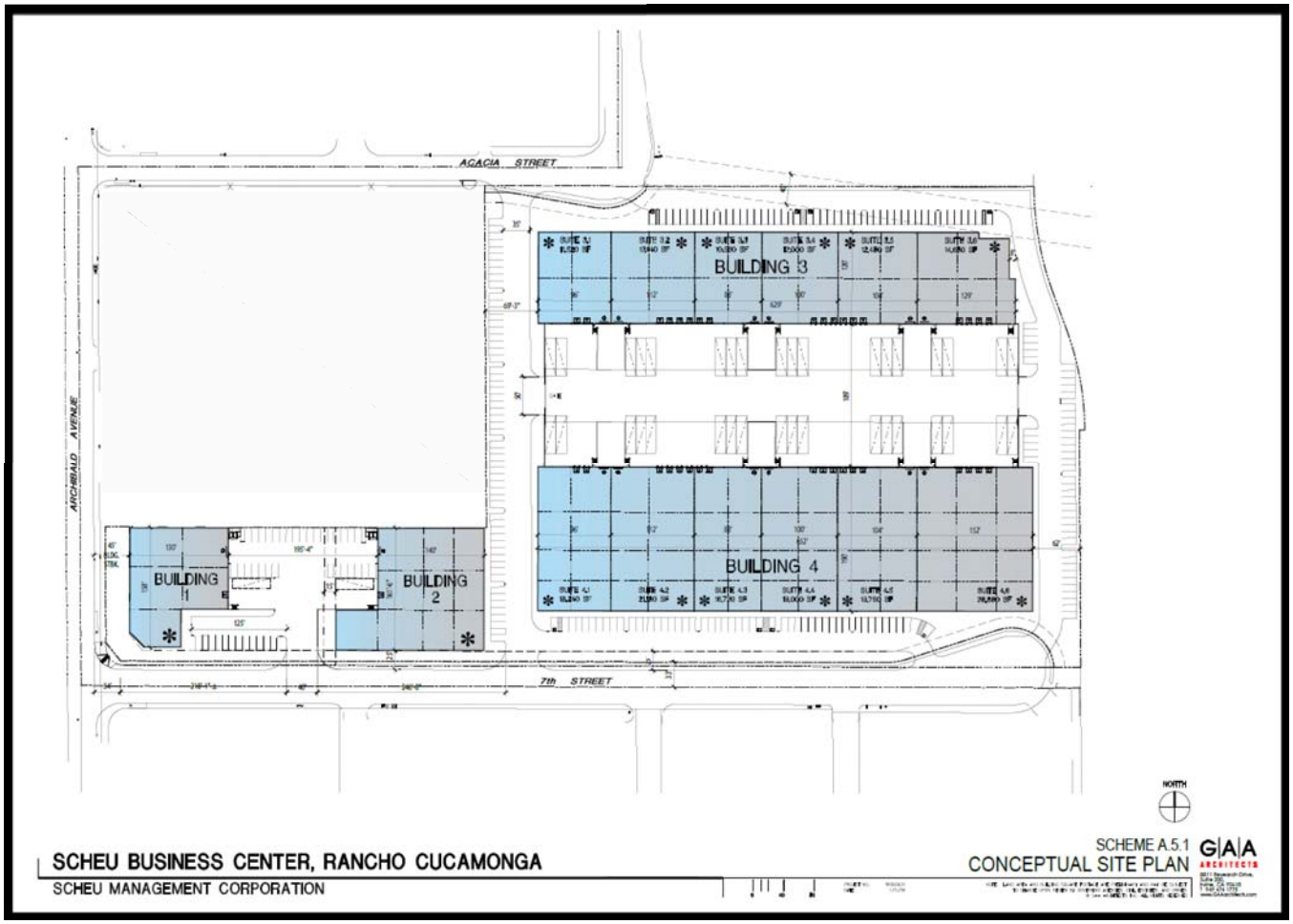
SCHEU BUSINESS CENTER
ACOUSTIC STUDY
CITY OF RANCHO CUCAMONGA



SCHEU BUSINESS CENTER
NOISE IMPACT STUDY
City of Rancho Cucamonga

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

The purpose of this report is to evaluate the potential noise impacts from the proposed Scheu Business Center Development (project) and recommend mitigation measures, if necessary, to minimize any project noise impacts. The assessment was conducted within the context of the California Environmental Quality Act (CEQA) and utilizes the noise standards set forth by the Federal, State, and local agencies.

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- Identification of the regulatory setting and applicable noise standards
- Analysis of the existing noise environment
- Analysis of the project's noise/land use compatibility
- Analysis of the project's operational noise impact to adjacent sensitive receptors
- Analysis of the project's construction noise and vibration impact to adjacent sensitive receptors
- Summary of recommended mitigation measures and project design features to reduce noise level impacts.

1.2 Site Location

The proposed project is located at the northeast corner of Archibald Avenue and 7th Street, in the City of Rancho Cucamonga, California. The project site is bounded by Acacia Street to the north, 7th Street to the south, existing industrial land uses to the east, and Archibald Ave to the west. The Cucamonga Valley Water District operates a public utilities/well site at the southeast corner of Archibald Avenue and Acacia Street, adjacent to the site.

The project site is located approximately 1,092 feet above sea level and the topography is relatively flat, sloping downward at approximately 1% from north to south.

The project site is currently vacant and is zoned for General Industrial (GI) uses in the Rancho Cucamonga Zoning Map and designated for General Industrial uses in the Rancho Cucamonga General Plan Land Use Plan.

Existing land uses surrounding the proposed project site include; residential units to the north and southwest, and industrial to the south, east, and west. The nearest noise-sensitive land uses is considered the residential property located approximately 56 feet north-northwest of the site, as measured from property line to property line. The residential home is set back approximately another 50 feet further from the project site.

The project site location map is provided in Exhibit A.

1.3 Project Description

The project consists of constructing and operating four (4) warehouse and light industrial use buildings, totaling approximately 240,060 square feet.

The site plan used for this analysis, provided by GAA Architects., is illustrated in Exhibit B.

Project construction and operational activities are analyzed for both short-term and long-term noise impacts. Short-term noise impacts may occur from construction activities, including; site preparation, grading, building construction, paving, and architectural coating. The primary sources of long-term noise impacts would be associated with vehicular traffic along surrounding roadways, truck loading, delivery, and trash pickup activities, and stationary HVAC mechanical equipment.

1.4 Summary of Analysis Results

Table 1 provides a summary of the noise analysis results, per the CEQA impact criteria checklist.

Table 1
CEQA Noise Impact Criteria

Noise Impact Criteria	Potentially Significant	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
Would the project result in?				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.		X		
b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.			X	

Table 1
CEQA Noise Impact Criteria

Noise Impact Criteria	Potentially Significant	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
Would the project result in?				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.		X		
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, would the project expose the people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose the people residing or working in the project area to excessive noise levels?				X

1.5 Recommended Mitigation Measures (MM)

The following recommended mitigation measures are provided to reduce potential project impacts identified in the CEQA Noise Impact Criteria Checklist to be less than significant.

MM-1 A noise monitoring program shall be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the residential noise threshold (65 dBA) near the northwest property line. Construction activity will cease prior to noise levels exceeding the residential threshold.

MM-2 A temporary noise barrier should be installed along the northwest corner of the property to shield the residential units from the line of sight of the construction activity. Minimum barrier height should be approximately eight (8) feet.

1.6 Recommended Project Design Features (DF)

The following recommended project design features include standard rules and requirements, best practices and recognized design guidelines for reducing noise levels. Design features are assumed to be part of the conditions of the project and integrated into its design.

DF-1 Provide an eight (8) foot high CMU block or tilt-up concrete wall along both ends of the loading docks/back of building area for buildings 3 and 4.

DF-2 Provide an eight (8) foot high CMU block or tilt-up concrete wall along the southern edge of the loading docks area for building 1.

DF-3 All rooftop mounted HVAC equipment should be fully shielded or enclosed from the line of sight of adjacent residential uses. Shielding/parapet wall should be at least as high as the equipment.

DF-4 Truck deliveries, loading/unloading activity, and trash pick-up should be limited to daytime (7 a.m. – 10 p.m.) hours only.

DF-5 Limit engine idling time for all trucks to 5 minutes or less.

DF-6 Construction-related noise activities shall comply with the requirements set forth in the City of Rancho Cucamonga Municipal Code Section 17.66.050(D)(4).

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

DF-7 No impact pile driving activities shall be allowed on the project site.

DF-8 During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices and equipment shall be maintained so that vehicles and their loads are secured from rattling and banging. Idling equipment should be turned off when not in use.

DF-9 Locate staging area, generators and stationary construction equipment as far from the northwest property line, as reasonably feasible.

DF-10 Obtain a construction work permit from the City of Rancho Cucamonga prior to starting construction.

2.0 Fundamentals of Noise and Vibration

This section of the report provides basic information about noise and vibration and presents some of the terms used in the report.

2.1 Sound, Noise, and Acoustics

The sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. The sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases, as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels and abbreviated as dB.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two (2) sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3dB increase.

If two (2) sounds differ by approximately 10 dB the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighing is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in the noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway), would result in a barely perceptible change in sound level.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant, while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels. Following are the most commonly used noise descriptors along with brief definitions.

A-Weighted Sound Level

The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level

The 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.

Community Noise Equivalent Level (CNEL)

The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB)

A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A)

A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ)

The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room

Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n)

The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90, and L99, etc.

Noise

Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area

Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels

See L(n).

Sound Level (Noise Level)

The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter

An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL)

The dBA level which, if it lasted for one (1) second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2 – 6 wheels) and heavy truck percentage (3 axles and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume of noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.8 Sound Propagation

As sound propagates from a source it spreads geometrically. The sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

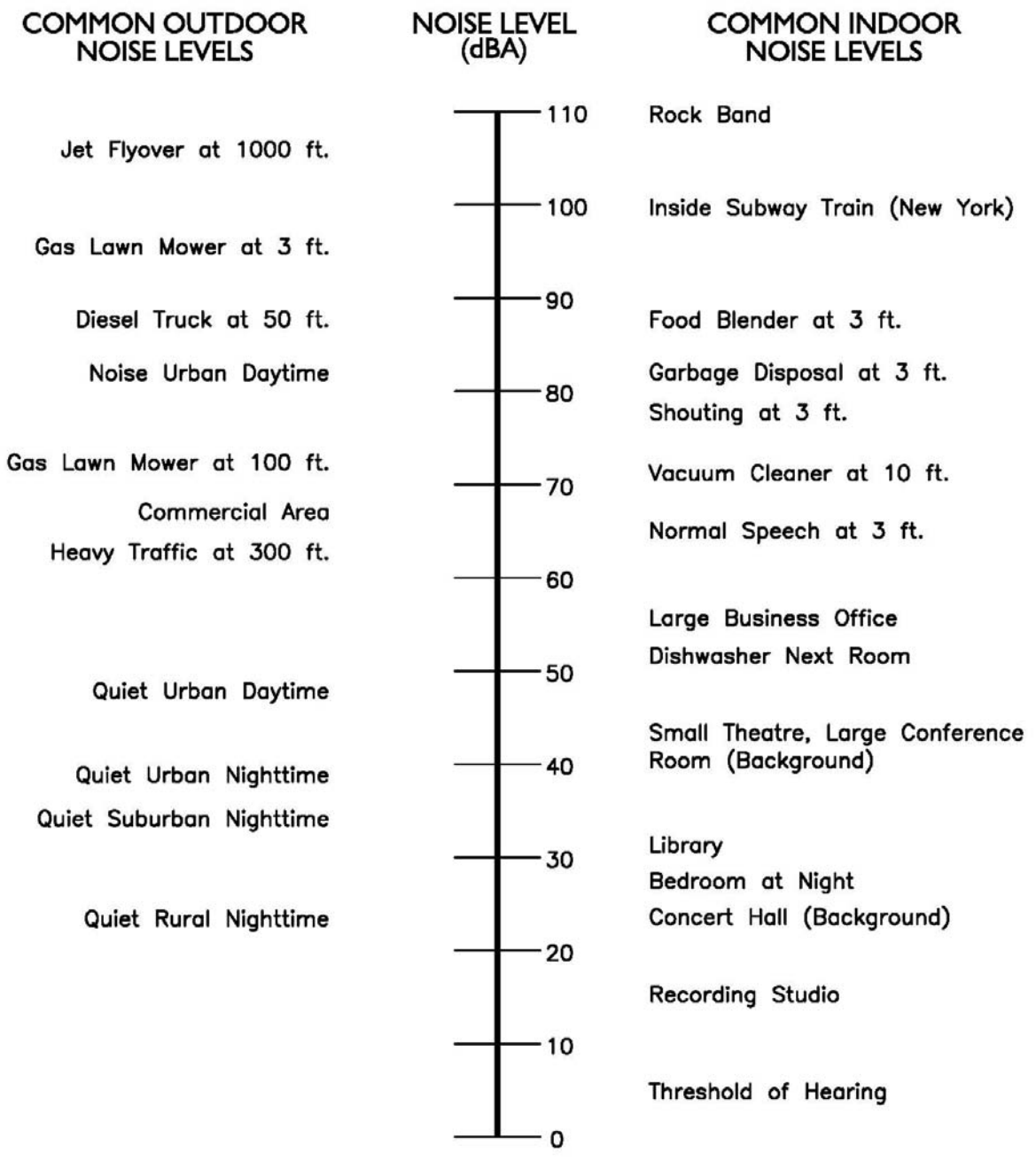
As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use the hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at an additional rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 6.0 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact how far sound can travel.

Figure 1 shows typical sound levels from indoor and outdoor noise sources.

Figure 1

TYPICAL SOUND LEVELS FROM
INDOOR AND OUTDOOR NOISE SOURCES



2.9 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV

Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS

Known as the root mean squared (RMS) can be used to denote vibration amplitude.

VdB

A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

2.10 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

2.11 Vibration Propagation

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wavefront, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wavefront. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wavefront. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

2.12 Construction Related Vibration Level Prediction

Operational activities are separated into two different categories. The vibration can be transient or continuous in nature. Each category can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the project area site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. The thresholds from Caltrans Transportation and Construction Induced Vibration Guidance Manual in the table below provide general guidelines as to the maximum vibration limits for when vibration becomes potentially annoying.

Table 2
Vibration Annoyance Potential Criteria

Human Response	PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

The Caltrans Transportation and Construction Induced Vibration Guidance Manual provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts. The table below provides general vibration damage potential thresholds:

Table 3
Vibration Damage Potential Threshold Criteria

Structure and Condition	PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings ruin ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Soil conditions have an impact on how vibration propagates through the ground. The Caltrans Transportation and Construction Induced Vibration Guidance Manual provides suggested "n" values based on soil class. The table below outlines the manual's suggested values and description.

Table 4
Suggested "n" Values Based on Soil Classes

Soil Class	Description of Soil Material	Suggested Value of "n"
I	Weak or soft soils: loose soils, dry or partially saturated peat and muck, mud, loose beach sand, and dune sand.	1.4
II	Most sands, sandy clays, silty clays, gravel, silts, weathered rock.	1.3
III	Hard soils: densely compacted sand, dry consolidated clay, consolidated glacial till, some exposed rock.	1.1
IV	Hard, component rock: bedrock, freshly exposed hard rock.	1.0

3.0 Regulatory Setting

The proposed project is located in the City of Rancho Cucamonga and noise regulations are addressed through the various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

3.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three (3) purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was originally tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible to regulate noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible to regulate noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers.

The Federal government and the State advocate that local jurisdiction use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being constructed adjacent to a highway or, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the Federal government and the State have preempted the setting of standards for noise levels that can be emitted by the transportation source, the County is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

3.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix." The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

3.3 City of Rancho Cucamonga Noise Regulations

The City of Rancho Cucamonga outlines their noise regulations and standards within the General Plan Public Health and Safety Element and Section 17.66 of the Municipal Code. The noise standards from the General Plan and Municipal code are provided in Appendix A.

Noise/Land Use Compatibility

The City of Rancho Cucamonga establishes planning criteria for determining a development's noise/land use compatibility based on the community noise equivalent level (CNEL). Table 5 summarizes the City's Noise/Land Use Compatibility guidelines for land uses applicable to this project:

Table 5
Noise/Land Use Compatibility Guidelines

Land Use	Noise Limit (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential	<50 – 60	55 – 65	65 – 75	>75
Industrial	<75	70 - 80	- -	75 to 85

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice. The outdoor environment will seem noisy.

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

Clearly Unacceptable: New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Municipal Code Residential Noise Standards

The Rancho Cucamonga Municipal Code Chapter 17.66.050 -- Noise Standards describes the noise regulations for controlling unnecessary, excessive and annoying sounds in residential areas. The project must not exceed the residential noise limit at the nearest adjacent residential property line.

Table 6 shows the Rancho Cucamonga Residential Noise Limits.

Table 6
City of Rancho Cucamonga
Residential Noise Limits

Location	Time Period	Noise Standard	L_{25} (15-min)	L_{17} (10-min)	L_{8} (5-min)	L_{MAX} (any time)
Residential	Daytime (7am - 10pm)	65 dBA	65 dBA	70 dBA	79 dBA	80 dBA
	Nighttime (10pm – 7am)	60 dBA	60 dBA	65 dBA	74 dBA	75 dBA

Municipal Code Industrial Noise Standards

The Rancho Cucamonga Municipal Code Chapter 17.66.110 -- Special Industrial Performance Standards establishes noise standards to allow industrial uses to operate consistent with the overall characteristics of the land use category. The project is zoned for General Industrial (GI) uses and is therefore required to follow the Class B performance standards.

Table 7 shows the General Industrial (GI) Zoning District Class B performance standards in the City of Rancho Cucamonga.

Table 7
City of Rancho Cucamonga
Industrial Performance Standards

Land Use	Noise Standard[1]
General Industrial (Class B)	80 dBA

[1] Noise level anywhere on the lot. Noise caused by motor vehicles and trains is exempted from this standard.

Construction Noise Regulation

Section 17.66.050(D)(4) of the City's municipal code states that the following activities shall be exempted from the provisions of the noise code;

Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities:

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

4.0 Study Method and Procedures

The following section describes the measurement procedures, measurement locations, and noise modeling procedures and assumptions used in the noise analysis.

4.1 Measurement Procedures and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

RK conducted the sound level measurements in accordance with Caltrans technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

A Larson Davis 712 Type 2 sound level meter was used to conduct short-term (10-minute) noise measurement.

The Leq, Lmin, Lmax, L2, L8, L25, and L50 statistical data were recorded over the measurement time period intervals and the information was utilized to define the noise characteristics for the project. L17 statistical data was interpolated using a linear trendline analysis. The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed five (5) feet above the ground for all short-term noise measurements
- Sound level meters were calibrated before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on "A" and slow response
- Results of the short-term noise measurements were recorded on field data sheets

- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawn mowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

Appendix B includes photos, field sheets, and measured noise data.

4.2 Traffic Noise Modeling

Traffic noise from vehicular traffic was projected using a version of the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the key input parameters. The following outlines the key adjustments made to the computer model for the roadway inputs:

- Roadway classification – (e.g. freeway, major arterial, arterial, secondary, collector, etc),
- Roadway Active Width – (distance between the center of the outer most travel lanes on each side of the roadway)
- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks, and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g. soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period

The following outlines key adjustments to the computer model for the project site parameter inputs:

- Vertical and horizontal distances (Sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (Noise barrier distance from sound source and receptor).
- Traffic noise source spectra
- Topography

Traffic noise levels are projected at 100 feet from the centerline of the roadway. The noise levels were calculated using traffic volumes presented in Scheu Business Center Traffic Impact Study. The traffic noise levels do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels.

Table 8 indicates the roadway parameters utilized for this study.

Table 8
Roadway Parameters[1]

No.	Class.	Lanes	Site Condition	Average Daily Traffic (ADT)				
				Existing	Project Only	Existing Plus Project	Opening Year Without Project	Opening Year With Project
1.	**Archibald Avenue: 8th Street to 6th Street**							
	Major Arterial	4	Soft	29,523	302	29,825	32,213	32,515
2.	**Acacia Street: East of Archibald Avenue**							
	Local	2	Soft	253	529	782	259	788
3.	**7th Street: East of Archibald Avenue**							
	Collector	2	Soft	1,137	982	2,119	1,160	2,142

[1] Roadway parameters based on Scheu Business Center Traffic Impact Study, July 2018.

Table 9 indicates the vehicle distribution and truck mix utilized for all surface streets in the study area. The vehicle distribution is based on the Noise Assessment for the Rancho Cucamonga General Plan Update (2010).

Table 9
Vehicle Distribution (Truck Mix)[1]

Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

[1] Vehicle distribution based on the Noise Assessment for the Rancho Cucamonga General Plan Update (2010).

4.3 Stationary Noise Modeling

The stationary noise was projected using a computer program that replicates the FHWA Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the reference energy noise level. For each stationary source, the referenced noise level was applied to the model. The model outputs the projected noise level based on the following key parameters:

- Measured referenced noise level – (e.g. how loud a source is at a specific distance)
- Vertical and horizontal distances (sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (noise barrier distance from sound source and receptor).
- Typical noise source spectra
- Topography

Table 10 indicates the measured referenced noise level measurements conducted by RK. The noise measurement data indicates the distance the microphone was placed from the noise source and the statistical data. Measurements were taken over a 10-minute interval.

Table 10
Reference Stationary Noise Level Measurements

Source[1]	Distance from Source (feet)	Noise Levels (dBA)					
		L_{eq}	L_{max}	L_2	L_8	L_{25}	L_{50}
Loading Dock Activity	6.0	79.3	97.0	91.5	81.0	74.5	71.5
Parking Lot Noise	6.0	63.8	79.5	68.5	65.5	64.5	63.0
HVAC Condenser Unit	3.0	88.5	88.5	88.5	88.5	88.5	88.5

[1] Referenced noise levels measured by RK over a 10-minute period.

To estimate the future noise levels during typical conditions, RK adjusted the reference noise levels to the nearest sensitive receptor location property line (south and west of the project site). Adjusted noise levels are based on the distance of the receptor location relative to the noise source, local topography and the recommended parapet wall shielding wall for the equipment. The noise levels assume that the stationary sources are operating continuously when in reality all noise sources will operate intermittently throughout the daily operation.

4.4 Construction Noise Modeling

The construction noise analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model Version 1.1, together with several key construction parameters, to estimate future construction noise impacts. Key inputs include distance to the sensitive receiver, equipment usage, and baseline parameters for the project site.

Construction noise impacts are analyzed for each phase of construction anticipated for the project. Noise levels are calculated based on the average distance of equipment over an 8-hour period to the property line.

4.5 Construction Vibration Modeling

The construction vibration assessment utilizes referenced worst-case vibration levels and methodology set-forth within the Caltrans Transportation and Construction Induced Vibration Guidance Manual.

The main sources of vibration impacts during construction of the project would be from bulldozer activity during site preparation, loading trucks during excavation, and vibratory rollers during paving. The vibratory activity required to comply with the applicable guidance thresholds criteria.

Vibration impacts are assessed from the property line to the nearest adjacent structures to the south and west of the site. Residential structures are located approximately 56 feet north of the property line and industrial structures are located approximately 130 feet south of the property line and 100 feet east of the property line. All buildings within the study area are considered to be new residential structures and/or modern commercial buildings.

Vibratory impacts were calculated using the reference vibration levels, soil conditions and the reference equation *PPV= PPV ref (25/D)^n (in/sec)* (from Caltrans Manual) where:

PPV = reference measurement at 25 feet from the vibration source
D = distance from equipment to the property line
n= vibration attenuation rate through the ground (n=1.0 was utilized for this study)

5.0 Existing Noise Environment

The existing noise environment for the project site and surrounding areas has been established based on noise measurement data collected by RK. Existing roadway noise has also been modeled based on existing roadway characteristics and traffic volume. Noise measurement data indicates that traffic noise propagating from the adjacent roadways, as well as activities from the surrounding commercial land uses, are the main sources of ambient noise at the project site and surrounding area.

5.1 Short-Term (10-Minute) Noise Measurement Results

Using a Larson Davis 712 Type 2 sound level meter, two (2) short-term 10-minute noise measurements were recorded at the adjacent property lines. The noise monitoring locations were selected based on locations that are representative of the existing noise environment and exposure to sensitive noise areas. Short term noise measurements are conducted during normal daytime hours and considered samples of typical ambient conditions. The Leq, Lmin, Lmax, L8, L17, and L25, statistical data were reported over the 10-minute period. The information was utilized to define the noise characteristics for the project.

The following details and observations are provided for the short-term noise measurements. The results of the short-term (ST) measurements are presented in Table 11.

Table 11
Short-Term Noise Measurement Results[1]

Site No.	Time Started	Leq	Lmax	Lmin	L_8	L_{17} [2]	L_{25}
ST-1	11:51 AM	56.0	72.5	46.1	60.0	58.2	52.0
ST-2	12:09 PM	55.7	73.0	43.3	58.6	57.7	51.7

[1] Noise measurements conducted for 10-minute intervals during normal daytime conditions.
[2] L17 statistical data has been interpolated using a linear trend line analysis.

ST-1 Measurement taken along the sidewalk of Acacia Street and adjacent to the nearest residential property to the project site, approximately 50 feet from the site. Ambient noise includes traffic noise from Archibald Avenue and Acacia Street, pedestrians and barking dogs.

ST-2 Measurement taken at the nearest industrial P/L to the south of 7th Street. Ambient noise includes traffic noise from Archibald Avenue, 7th street and the commercial property parking lot and operational activities.

Exhibit C shows the noise measurement locations. Appendix B includes photos, field sheets, and measured noise data.

5.2 Existing Roadway Noise Levels

Table 12 shows the modeled existing traffic related CNEL noise levels calculated at 100 feet from the centerline of roadway segments adjacent to the site. The distances to the 55, 60, 65, and 70 dBA CNEL noise contours are also shown. The noise levels were calculated using traffic volumes presented in Scheu Business Center Traffic Impact Study. The traffic noise levels do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels. The existing roadway noise levels provide a baseline of the existing traffic noise environment.

Table 12
Existing Roadway Noise Levels (dBA CNEL)[1]

Roadway[2]	Segment	CNEL at 100 ft.	Distance to Contour (Ft)[3]			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Archibald Avenue	8th Street to 6th Street	72.0	136	293	632	1,362
Acacia Street	East of Archibald Avenue	47.8	3	7	15	33
7th Street	East of Archibald Avenue	57.0	14	29	63	136

6.0 Operational Noise Impacts

This assessment analyzes the change in the ambient environment as a result of operational noise impacts generated by the project. The main sources of noise generated by the project would include increases in auto/truck traffic along adjacent roadways and on-site operational activities. Noise level impacts are compared to the City of Rancho Cucamonga noise standards in the General Plan Noise Element and Municipal Code. Mitigation measures are provided, as needed, to ensure the project's noise impact is less than significant.

6.1 Traffic Source Noise

The potential off-site noise impacts caused by the increase in vehicular traffic from the operation of the proposed project on the nearby roadways were calculated for direct and cumulative project conditions.

6.1.1 Existing Plus Project Conditions

The direct impact of project traffic added to the surrounding roadway network is shown in Table 13 for existing plus project conditions. See Appendix C for roadway noise calculation worksheets.

Tables 13 shows that the project has the potential to increase traffic noise along Acacia Street by 4.9 dBA CNEL. Typically, a noise level increase of 3 dBA or more is perceptible to the human ear and the change as a result of the project would be considered a noticeable increase. However, because the noise levels along Acacia Street would still be within the normally acceptable residential noise limits, the project impact is less than significant.

Table 13
Roadway Noise Impact Analysis - Existing Plus Project Conditions

Roadway	Segment	CNEL at 100 Feet (dBA)			Does Project Generate a Significant Impact?
		Existing Conditions	Existing Plus Project Conditions	Change as a Result of Project	
Archibald Avenue	8th Street to 6th Street	72.0	72.1	0.1	NO
Acacia Street	East of Archibald Avenue	47.8	52.7	4.9	NO
7th Street	East of Archibald Avenue	57.0	59.7	2.7	NO

6.1.2 Project Opening Year Conditions

The cumulative impact of project traffic added to the surrounding roadway network with the addition of other potential cumulative development projects and area-wide growth is shown in Table 14 for project opening year conditions. See Appendix C for roadway noise calculation worksheets.

Tables 14 shows that the project has the potential to increase traffic noise along Acacia Street by 4.9 dBA CNEL. Typically, a noise level increase of 3 dBA or more is perceptible to the human ear and the change as a result of the project would be considered a noticeable increase. However, because the noise levels along Acacia Street would still be within the normally acceptable residential noise limits, the project impact is less than significant.

Table 14
Roadway Noise Impact Analysis – Project Opening Year Conditions

Roadway[2]	Segment	CNEL at 100 Feet (dBA)			Does Project Generate a Significant Impact?
		Opening Year Without Project Conditions	Opening Year With Project Conditions	Change as a Result of Project	
Archibald Avenue	8th Street to 6th Street	72.4	72.4	0	NO
Acacia Street	East of Archibald Avenue	47.9	52.8	4.9	NO
7th Street	East of Archibald Avenue	57.1	59.8	2.7	NO

Roadway noise calculation worksheets are provided in Appendix C.

6.2 Stationary Source Noise

The main sources of potential on-site stationary noise impacts to adjacent land uses would be noise from the truck loading areas, parking lot noise, and rooftop HVAC units.

Loading and delivery activities are expected to take place in the designated loading dock areas of the project site. The nearest loading docks to the adjacent residential homes to the north would be located approximately 260 feet away. The nearest loading docks to the adjacent industrial properties to the south are approximately 330 feet away. Loading dock activities would include noise from the tractor-trailers, truck idling, lift gates, backup alarms, forklifts and other mechanical equipment.

Parking lot noise would occur from vehicle engine idling and exhaust, doors slamming, tires screeching, people talking, and the occasional horn honking. Parking lot noise would

occur throughout the site and is conservatively assessed from the first parking space to adjacent uses; approximately 70 feet from the nearest adjacent residential property and 158 feet from the industrial uses to the south.

HVAC equipment will be located on the roof of each building. Building-1 and building-2 are expected to have one (1) five-ton HVAC unit each. Building-3 and building-4 are expected to have (six) 6 five-ton HVAC units each. The closest HVAC units will be located approximately 415 feet from the nearest residential property line and approximately 280 feet to the industrial property line to the south.

6.2.1 Residential Land Use to the North - Daytime

Table 15 shows the stationary noise impact analysis results for all sources operating simultaneously during daytime hours (7 a.m. to 10 p.m.) at the nearest residential homes to the north of the site.

As shown in Table 15, the noise level impacts from the project would be below the City's daytime noise standard for residential uses. The project impact is considered less than significant.

Table 15
Stationary Noise Impact Analysis – Daytime Residential

	Source	Noise Level (dBA)				
		L_{eq}	L_{max} (max)	L_8 (5 min)	L_{17} (10 min)	L_{25} (15 min)
Daytime (7:00 AM - 10:00 PM)	Building 3 - Loading Dock	35.4	53.1	47.6	37.4	30.6
	Building 4 - Loading Dock	42.7	60.4	54.9	44.7	37.9
	Parking Lot Noise	42.8	58.5	47.5	44.8	43.5
	Building 3 - HVAC	52.4	52.4	52.4	52.4	52.4
	Building 4 - HVAC	43.3	43.3	43.3	43.3	43.3
	Existing Ambient Measurement	56.0	72.5	60.0	58.2	52.0
	Total Combined Exterior Noise Impact	56.5	73.0	65.7	58.7	52.8
	City of Rancho Cucamonga Noise Level Criteria	65.0	80.0	79.0	70.0	65.0
	Noise Level Exceeds Standard (?)	No	No	No	No	No

6.2.2 Residential Land Use to the North - Nighttime

Table 16 shows the stationary noise impact analysis results for all sources operating simultaneously during nighttime hours (10 p.m. to 7 a.m.) at the nearest residential homes to the north of the site.

As shown in Table 16, the noise level impacts from the project would be below the City's nighttime noise standard for residential uses.

Table 16
Stationary Noise Impact Analysis - Nighttime Residential

	Source	Noise Level (dBA)				
		L_{eq}	L_{max} (max)	L_8 (5 min)	L_8 (10 min)	L_{25} (15 min)
Nighttime (10:00 PM - 7:00 AM)	Building 3 - Loading Dock	35.4	53.1	47.6	37.4	30.6
	Building 4 - Loading Dock	42.7	60.4	54.9	44.7	37.9
	Parking Lot Noise	42.8	58.5	47.5	44.8	43.5
	Building 3 - HVAC	52.4	52.4	52.4	52.4	52.4
	Building 4 - HVAC	43.3	43.3	43.3	43.3	43.3
	Existing Ambient Measurement	51.0	67.5	55.0	53.2	47.0
	Total Combined Exterior Noise Impact	52.3	68.8	55.8	54.8	49.2
	City of Rancho Cucamonga Noise Level Criteria	60.0	75.0	74.0	65.0	60.0
	Noise Level Exceeds Standard (?)	No	No	No	No	No

6.2.3 Industrial Land Use to the South

Table 17 shows the stationary noise impact analysis results for all sources operating simultaneously during daytime hours (7 a.m. to 10 p.m.) at the adjacent industrial property line to the south of the site.

The noise level impact from the project would be below the City's industrial noise standard for Class B industrial uses.

Table 17
Stationary Noise Impact Analysis - Industrial

	Source	Noise Level (dBA)				
		L_{eq}	L_{max} (max)	L_8 (5 min)	L_{17} (10 min)	L_{25} (15 min)
Daytime (7:00 AM - 10:00 PM)	Building 1 - HVAC	34.4	34.4	34.4	34.4	34.4
	Building 2 - HVAC	47.7	47.7	47.7	47.7	47.7
	Building 3 - HVAC	50.9	50.9	50.9	50.9	50.9
	Building 4 - HVAC	47.8	47.8	47.8	47.8	47.8
	Building 3 - Loading Dock	33.1	50.8	45.3	35.1	28.3
	Building 4 - Loading Dock	36.2	53.9	48.4	38.2	31.4
	Parking Lot Noise	37.2	52.9	41.9	39.2	37.9
	Existing Ambient Measurement	55.7	73.0	58.6	57.7	51.7
	Total Combined Exterior Noise Impact	55.9	73.1	65.7	57.9	52.0
	City of Rancho Cucamonga Noise Level Criteria	80.0	80.0	80.0	80.0	80.0
	Noise Level Exceeds Standard (?)	No	No	No	No	No

Stationary noise calculation worksheets are provided in Appendix D.

6.3 Operational Project Design Features (DF)

DF-1 Provide an eight (8) foot high CMU block or tilt-up concrete wall along both ends of the loading docks/back of building area for buildings 3 and 4.

DF-2 Provide an eight (8) foot high CMU block or tilt-up concrete wall along the southern edge of the loading docks area for building 1.

DF-3 All rooftop mounted HVAC equipment should be fully shielded or enclosed from the line of sight of adjacent residential uses. Shielding/parapet wall should be at least as high as the equipment.

DF-4 Truck deliveries, loading/unloading activity, and trash pick-up should be limited to daytime (7 a.m. – 10 p.m.) hours only.

DF-5 Limit engine idling time for all trucks to 5 minutes or less.

7.0 Construction Noise and Vibration Impacts

Temporary construction noise and vibration impacts have been assessed from the project site to the surrounding adjacent land uses.

7.1 Construction Noise

Table 18 shows typical construction noise levels for different types of equipment. This data was compiled by the Environmental Protection Agency (EPA).

Table 18
Typical Construction Noise Levels[1]

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Rollers)	73 - 76
Front Loaders	73 - 84
Backhoes	73 - 92
Tractors	75 - 95
Scrapers, Graders	78 - 92
Pavers	85 - 87
Trucks	81 - 94
Materials Handling	
Concrete Mixers	72 - 87
Concrete Pumps	81 - 83
Cranes (Movable)	72 - 86
Cranes (Derrick)	85 - 87
Stationary	
Pumps	68 - 71
Generators	71 - 83
Compressors	75 - 86
Impact Equipment	
Pneumatic Wrenches	82 - 87
Jack Hammers, Rock Drills	80 - 99
Pile Drivers (Peak)	95-105
Other	
Vibrators	68 - 82
Saws	71 - 82

[1] Referenced Noise Levels from the Environmental Protection Agency (EPA)

The degree of construction noise will vary for different areas of the project site and also vary depending on the construction activities. This assessment analyzes potential noise impacts during site preparation, grading, building construction, paving, and architectural coating. Noise levels are calculated based on a minimum average distance of equipment over an 8-hour period at 100 feet from property line.

During the construction period, the contractors would be required to comply with the Rancho Cucamonga noise standards in the municipal code. Section 17.66.050(D)(4) of the Rancho Cucamonga municipal code states that the following activities shall be exempted from the provisions of the noise code;

Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities:

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

Table 19 shows the estimated construction noise levels calculated using the Federal Highway Administration Roadway Construction Noise Model Version 1.1.

As shown in Table 19, the project has the potential to exceed the residential and industrial noise standards for construction activities. In order to mitigate the short-term construction noise levels, a noise monitoring program shall be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the 8-hour Leq exceedance threshold (65 dBA) along the adjacent residential uses and 70 dBA at the adjacent industrial uses. Construction activity should cease prior to noise levels exceeding the 8-hour threshold.

A temporary noise barrier is recommended to be installed along the northwest corner of the property to shield the residential units from the line of sight of the construction activity. See Exhibit D for the general location of the temporary noise barrier.

Table 19
Construction Noise Impact Analysis

Phase	Equipment	Quantity	Calculated Noise Level at 100 ft (dBA)		Combined 8-hr Noise Level (dBA)
			Lmax	Leq	Leq
Site Preparation	Rubber Tired Dozers	3	75.6	71.7	81.6
	Tractors/Loaders/Backhoes	4	78.0	74.0	
Grading	Excavators	2	74.7	70.7	82.2
	Graders	1	79.0	75.0	
	Rubber Tired Dozers	1	75.6	71.7	
	Scrapers	2	77.6	73.6	
	Tractors/Loaders/Backhoes	2	78.0	74.0	
Building Construction	Cranes	1	74.5	66.6	80.3
	Forklifts	3	69.0	65.0	
	Generator Sets	1	74.0	71.6	
	Tractors/Loaders/Backhoes	3	78.0	74.0	
	Welders	1	68.0	64.0	
Paving	Pavers	2	71.2	68.2	78.7
	Paving Equipment	2	78.0	74.0	
	Rollers	2	74.0	67.0	
Architectural Coating	Air Compressors	1	71.6	67.7	67.7
Maximum Construction Phase Noise Level - Leq (dBA)					82.2
City of Rancho Cucamonga Construction Noise Standards – Residential					65
City of Rancho Cucamonga Construction Noise Standards – Industrial					70
Potentially Significant Short-Term Noise Impact (Yes/No?)					Yes

See Section 7.3 for recommended noise control mitigation measures. Construction noise calculation worksheets are provided in Appendix E.

7.2 Construction Vibration

To determine the vibratory impacts during construction, reference construction equipment vibration levels were utilized and then extrapolated to the façade of the nearest adjacent structure. For this project, the nearest sensitive receptors are residential homes located approximately fifty-six (56) feet north of the site. For purposes of assessing structural impacts from vibration, the nearest sensitive receptors are considered "new residential structures". No historical or fragile buildings are known to be located within the vicinity of the site.

The construction of the proposed project would not require the use of substantial vibration inducing equipment or activities, such as pile drivers or blasting. The main sources of vibration impacts during construction of the project would be from bulldozer activity during site preparation and grading, loading trucks during excavation, and vibratory rollers during paving.

The construction vibration assessment utilizes the referenced vibration levels and methodology set-forth within the Caltrans Transportation and Construction Induced Vibration Guidance Manual. Table 20 shows the referenced vibration levels.

Table 20
Typical Construction Vibration Levels[1]

Equipment	Peak Particle Velocity (PPV) (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Piledriver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Piledriver (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

[1] Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

Table 21 shows the project's construction-related vibration analysis at the residential structures to the north.

Table 21
Construction Vibration Impact Analysis

Construction Activity	Distance to Nearest Structure (ft)	Duration	Calculated Vibration Level - PPV (in/sec)	Damage Potential Level	Annoyance Criteria Level
Vibratory Roller	56 ft.	Continuous/Frequent	0.086	Ruins and Ancient Monuments	Distinctly Perceptible
Large Bulldozer	56 ft.	Continuous/Frequent	0.037	No Impact	Barely Perceptible
Loaded Trucks	56 ft.	Continuous/Frequent	0.031	No Impact	Barely Perceptible

The estimated vibration noise levels at the nearest sensitive receptors are compared to the Caltrans Vibration Manual thresholds. The worst case vibratory impact from the site is estimated to be 0.086 PPV (in/sec) at the residential structures to the north. The annoyance potential of vibration from construction activities would range from "barely perceptible" to "distinctly perceptible" and the damage potential to the nearest structures would be "ruins and ancient monuments" category. No potential damage would be expected to the newer residential structures and modern commercial/industrial buildings in the nearby vicinity.

Construction vibration calculation worksheets are shown in Appendix E.

7.3 Construction Mitigations Measures (MM)

MM-1 A noise monitoring program shall be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the residential noise threshold (65 dBA) near the northwest property line. Construction activity will cease prior to noise levels exceeding the residential threshold.

MM-2 A temporary noise barrier should be installed along the northwest corner of the property to shield the residential units from the line of sight of the construction activity. Minimum barrier height should be approximately eight (8) feet.

7.4 Construction Project Design Features (DF)

DF-6 Construction-related noise activities shall comply with the requirements set forth in the City of Rancho Cucamonga Municipal Code Section 17.66.050(D)(4).

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

DF-7 No impact pile driving activities shall be allowed on the project site.

DF-8 During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices and equipment shall be maintained so that vehicles and their loads are secured from rattling and banging. Idling equipment should be turned off when not in use.

DF-9 Locate staging area, generators and stationary construction equipment as far from the northwest property line, as reasonably feasible.

DF-10 Obtain a construction work permit from the City of Rancho Cucamonga prior to starting construction.

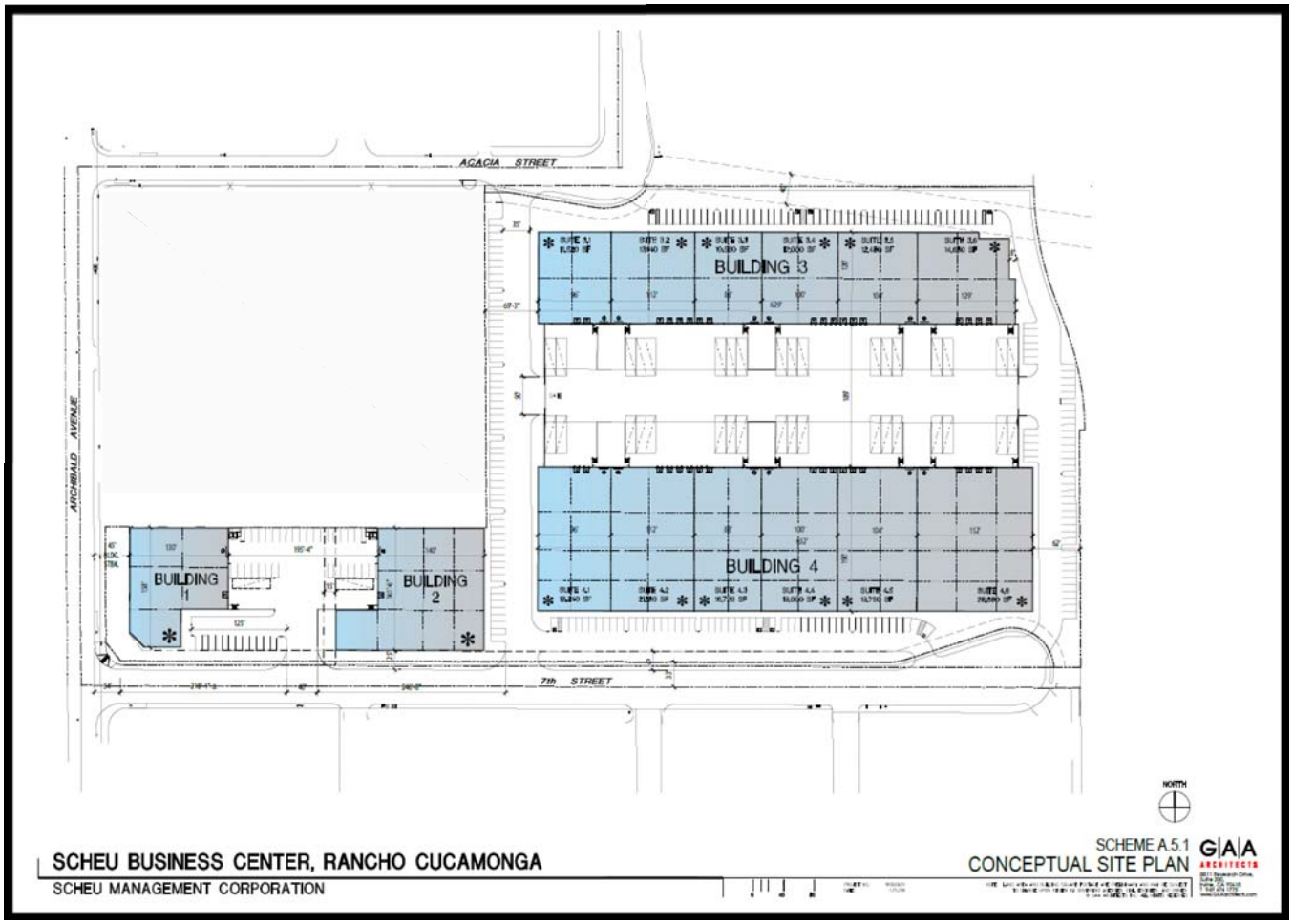
Exhibits

Exhibit A

Location Map

N

Exhibit B
SITE PLAN



N

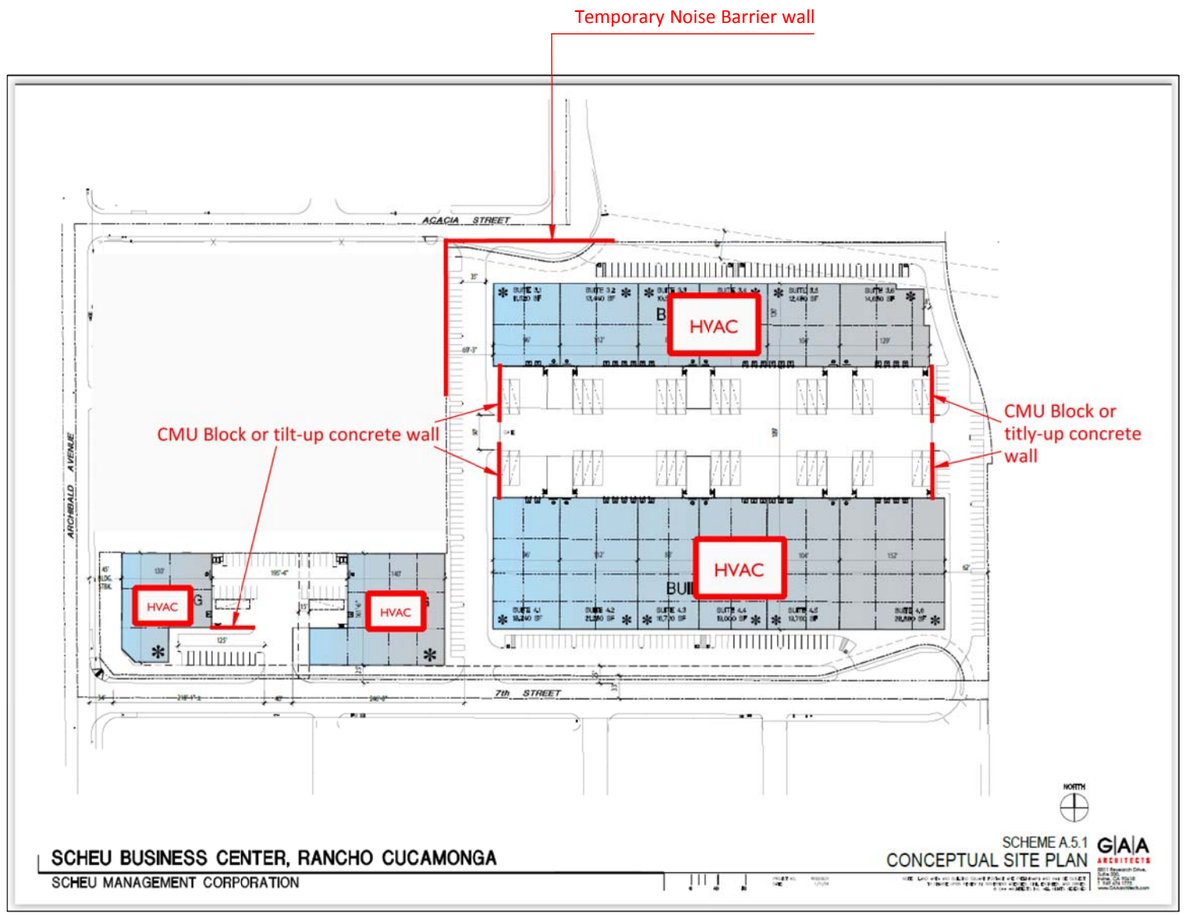
Exhibit C
Location Map

Legend:

(1) = Short Term (10-min) Noise Monitoring Location

N

Recommendations



Legend:

HVAC = Rooftop HVAC equipment should be shielded by parapet wall

= Noise Barrier Wall

N

OPERATIONAL MITIGATIONS MEASURES (MM):

MM-1 A noise monitoring program shall be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the residential noise threshold (65 dBA) near the northwest property line. Construction activity will cease prior to noise levels exceeding the residential threshold.

MM-2 A temporary noise barrier should be installed along the northwest corner of the property to shield the residential units from the line of sight of the construction activity.

OPERATIONAL PROJECT DESIGN FEATURES (DF):

DF-1 Provide an eight (8) foot high CMU block or tilt-up concrete wall along both ends of the loading docks/back of building area for buildings 3 and 4.

DF-2 Provide an eight (8) foot high CMU block or titlt-up concrete wall along the southern edge of the loading docks area for building 1.

DF-3 All rooftop mounted HVAC equipment should be fully shielded or enclosed from the line of sight of adjacent residential uses. Shielding/parapet wall should be at least as high as the equipment.

DF-4 Delivery, loading/unloading activity, and trash pick-up hours should be limited to daytime (7 a.m. – 10 p.m.) hours only.

DF-5 Limit engine idling time for all trucks to 5 minutes or less.

DF-6 Construction-related noise activities shall comply with the requirements set forth in the City of Rancho Cucamonga Municipal Code Section 17.66.050(D)(4).

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

DF-7 No impact pile driving activities shall be allowed on the project site.

DF-8 During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices and equipment shall be maintained so that vehicles and their loads are secured from rattling and banging. Idling equipment should be turned off when not in use.

DF-9 Locate staging area, generators and stationary construction equipment as far from the northwest property line, as reasonably feasible.

DF-10 Obtain a construction work permit from the City of Rancho Cucamonga prior to starting construction.

Appendices

Appendix A

City of Rancho Cucamonga
General Plan and
Municipal Code Noise Control

In response to these concerns, California enacted legislation in 2006 and 2008 that requires jurisdictions to comprehensively address how long-range plans will begin to reduce greenhouse gas emissions and help achieve statewide air quality goals. AB 32, the Global Warming Solutions Act of 2006, established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law aims to reduce carbon emissions in California to 1990 levels by 2020.

SB 375, Redesigning Communities to Reduce Greenhouse Gases, passed into law in 2008, is implementing legislation for AB 32. This legislation endeavors to control greenhouse gas emissions by curbing sprawl (the unplanned, uncontrolled spread of urban development). The legislation encourages compact development patterns that reduce the need to drive, thereby reducing air pollution from car exhaust, conserving water, and protecting habitat, among other benefits. To achieve these goals, this law is designed to align regional land use, housing, and transportation plans with greenhouse gas reduction targets.

Without a reduction in greenhouse gas emissions, global changes affecting Rancho Cucamonga in the future could include:

- More frequent heat waves
- More extreme weather events
- More frequent and increased severity droughts
- Increased potential for tropical insect-borne diseases

Rancho Cucamonga recognizes the importance of reducing greenhouse gas emissions to preserve a high quality of life and safety for generations to come. Many actions undertaken by the City directly or indirectly improve air quality. These include building residential units near the Metrolink station, pursuing Mixed Use development, supporting transit use, development of bicycle routes and trails, and supporting the use of alternative fuel vehicles (AFVs) in the City's fleet and in the community. Considering air quality issues in the decision-making process will ensure that new development results in limited emission levels to the extent feasible. Rancho Cucamonga also leads by example, with sustainable building and operation processes for City government.

Transportation and energy production are among the leading activities associated with greenhouse gas emissions. As such, it is important to understand how the long-range planning decisions as well as daily activities can have implications on local air quality. As SB 375 indicates, air quality issues are intricately related to policies in the Managing Land Use, Community Design, and Historic Resources Chapter and the Community Mobility Chapter of the General Plan that reduce use of and dependence on automobiles. Implementation of sustainability policies throughout this General Plan will help minimize the City's contribution to global climate change.

Noise

Noise is commonly defined as intrusive or undesired sound. Excessive noise can be disruptive, be it from the continuous thrum of trucks traveling along a busy roadway or the whine of gasoline-powered leaf blowers on an otherwise quiet morning. Noise may interfere with communication, work, rest, recreation, and sleep, and can impact residents' quality of life. In extreme cases, excessive noise may produce

physiological or psychological damage. For all of these reasons, the City evaluates noise-generating sources and ambient noise conditions in land use planning and decision making.

This section provides policy direction for minimizing noise impacts on the community and for coordinating with surrounding jurisdictions and other entities regarding noise control. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noise, noise considerations will influence the general distribution, location, and intensity of future land use. The result is that effective land use planning and mitigation can alleviate the majority of noise problems.

Noise Metrics

Sound intensity is measured and expressed by decibels (dB), with an adjustment referred to as the A-weighted measure (dBA) to correct for the relative frequency response of the human ear. Decibels are measured on a logarithmic scale, representing points on a sharply rising curve. For example, a noise level of 10 decibels is 10 times more intense than one decibel, 20 decibels represents a noise 100 times more intense, and 30 decibels reflects a noise condition 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than a zero decibel level.

The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-decibel increase in sound level is perceived by the human ear as only doubling of the loudness of the sound. Ambient sounds in the urban environment generally range from 30 dBA (very quiet) to 100 dBA (very loud), as indicated in Table PS-4: Typical Sound Levels.

Because people generally are more sensitive to noise intrusions during the evening and night hours, State law requires, for planning purposes, use of such metrics as the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (Ldn). These metrics add an artificial decibel increment to quiet time noise levels in a 24-hour noise descriptor to account for increased sensitivity during late hours. The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 a.m. to 10:00 p.m., and 10 dBA for the 10:00 p.m. to 7:00 a.m. period. The Ldn descriptor uses the same methodology, except that no artificial increment is added to the hours between 7:00 a.m. and 10:00 p.m. Both descriptors yield roughly the same 24-hour level, with the CNEL being only slightly more restrictive (that is, higher).

Table PS-4: Typical Sound Levels

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Example Noise Environment	Perception
Shotgun (at shooter's ear)	140	Aircraft carrier flight deck	Painfully Loud
Civil defense siren (100 ft)	130		
Jet takeoff (200 ft)	120		Threshold of Pain

Table PS-4: Typical Sound Levels

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Example Noise Environment	Perception
Loud rock music	110	Rock music concert	
Pile driver (50 ft)	100		Very Loud
Ambulance siren (100 ft)	90	Boiler room	
Pneumatic drill (50 ft)	80	Noisy restaurant	
Busy traffic; hair dryer	70		Moderately Loud
Normal conversation (5 ft)	60	Data processing center	
Light traffic (100 ft); rainfall	50	Private business office	
Bird calls (distant)	40	Average living room/library	Quiet
Soft whisper (5 ft); rustling leaves	30	Quiet bedroom	Very Quiet
Normal breathing	20	Recording studio	
	10		Threshold of Hearing

Source: Beranek, L.L. 1998. Noise and Vibration Control. Institute of Noise Control Engineering.

Effects of Noise

At 60 dBA, noise can impair a person's ability to understand what someone else is saying, and sound levels over 40 to 45 dBA can disturb sleep. A person's likelihood of hearing loss strongly increases at prolonged exposure to sound levels over 85 dBA.

The level of background (ambient) noise is the key factor used to determine whether a particular land use should locate in a particular location. In Rancho Cucamonga's neighborhoods, residents expect to experience ambient noise conditions that allow them to conduct their day-to-day activities without interference from noise. Face-to-face conversations at a distance of about five feet can be conducted with relative ease where A-weighted noise levels are as high as 66 dBA. In conversations involving groups of people, the level of background noise needs to be between 50 and 60 dBA to allow people to hear each other.

With regard to sleep disturbance and noise, sleep generally follows similar patterns in people of all ages, from falling asleep, to deep sleep, to waking states, to in-between. The time spent in each state varies, but sound can interfere with any sleep stage. Although people can acclimate themselves to certain noises and sleep through them, quieter night-time noise levels generally are more conducive to restful sleep patterns, and as noted, residents expect their neighborhoods to be quiet at night.

Because of the ways that different people perceive noise, in any given noise environment a variety of reactions can be expected, ranging from serious annoyance to no awareness. As a general observation, studies have shown that if a noise problem is allowed to occur, a greater reduction in the noise level (ranging from five dBA to 10 dBA) is often necessary to appease complaints than would have been necessary if the noise had instead been addressed at the design stage. For this reason, the preferred approach regarding noise control is to address it early in the development process.

Noise Standards

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. These noise standards are applied to new construction for the purpose of providing suitable interior noise environments. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that structures have been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

City noise standards are included in the Development Code for each land use district. In addition, the City has adopted a Noise Abatement section of the Development Code (Section 17.02.120) that has special provisions for determining and addressing noise issues. Noise complaints are addressed on an individual basis.

Figure PS-8: Noise Compatibility Matrix generally reflects guidelines promulgated by the California Office of Noise Control. This matrix provides the City with an integral tool to gauge the compatibility of land uses relative to existing and future noise levels.

The Noise Compatibility Matrix allows for higher ambient noise levels for residential development within areas designated for higher density residential uses and Mixed Use. However, where Mixed Use is allowed in Rancho Cucamonga, and where residential neighborhoods directly interface with commercial development, such as along Foothill Boulevard, careful review of site design and operational characteristics of individual commercial uses will allow the City to address any site-specific noise concerns through design and operational conditions applied to individual projects.

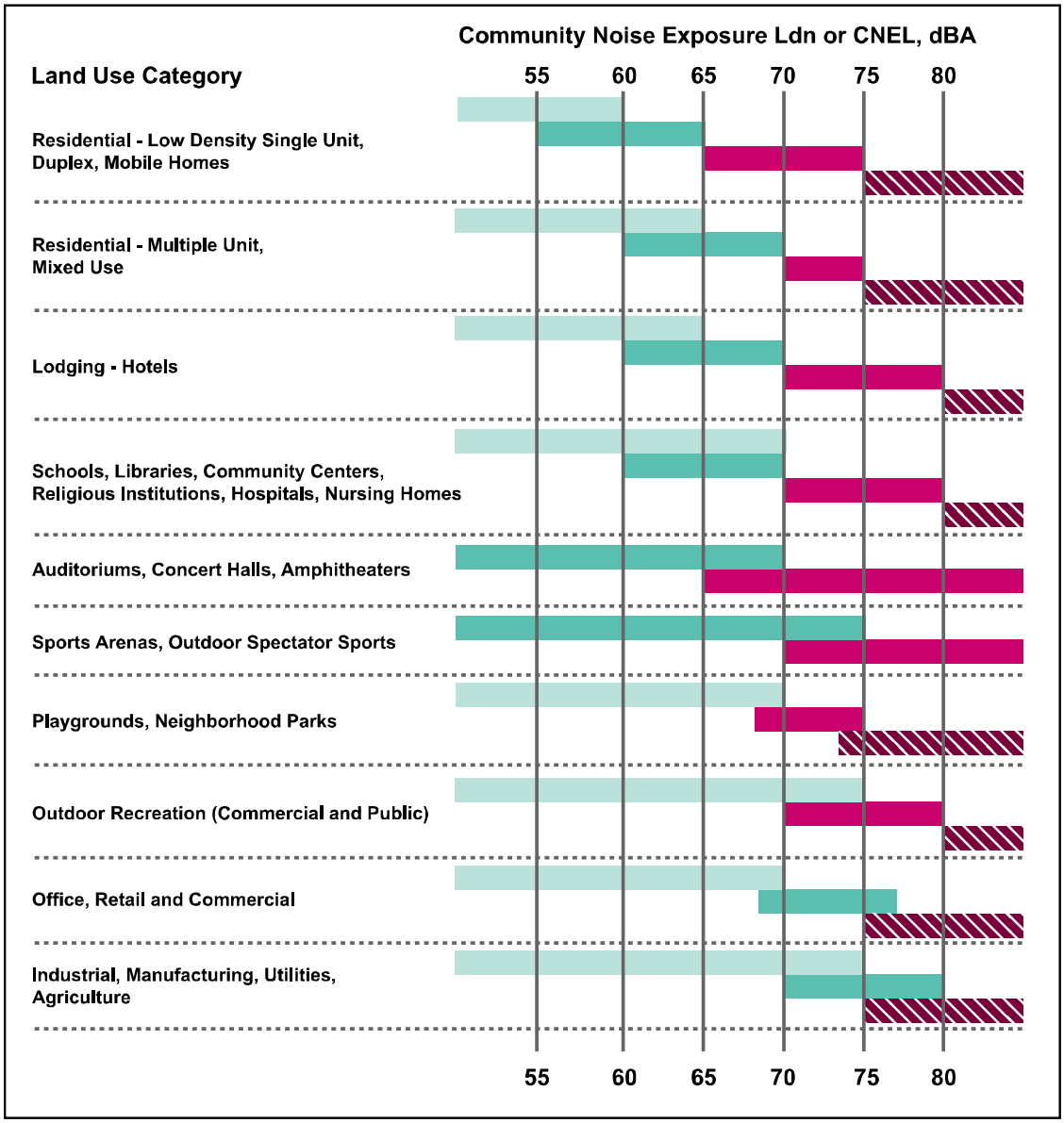
The Noise Environment

Noise Conditions - 2009

Noise surveys conducted in 2009 revealed that the ambient noise environment in Rancho Cucamonga largely is influenced by roadway noise (Figure PS-9: Existing Noise Contours - 2009). To a lesser degree, aircraft operations at LA/Ontario International Airport and trains contribute to noise conditions in the areas near these activities. Distinct truck, railroad, and aircraft noise are notable in the southern portion of the City.

Two types of noise sources are considered in the community noise inventory: stationary sources and mobile sources. Stationary sources include industrial and construction activities (including truck loading), playgrounds, outdoor sports facilities,

Figure PS-8: Noise Compatibility Matrix



Normally Acceptable
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

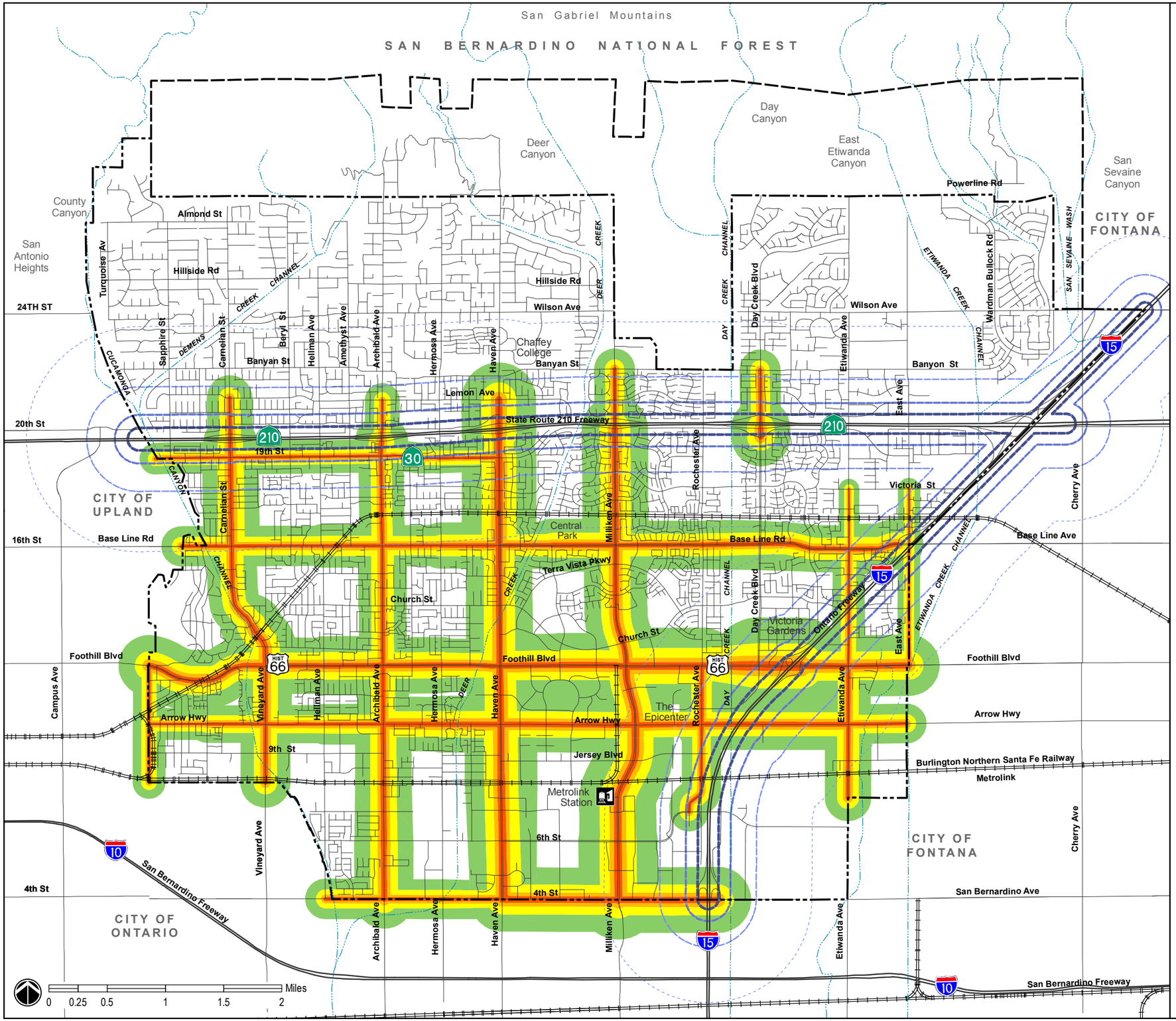
Clearly Unacceptable
New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

landscape maintenance equipment, construction activities, and the typical sounds heard in a residential neighborhood (power tools, barking dogs, etc.). Mobile noise sources refer to cars, trucks, motorcycles, buses, aircraft, and trains.

In Rancho Cucamonga, the key transportation corridors that contribute to ambient noise levels are I-15, SR-210, and the Metrolink rail line. Areas adjacent to freeways experience noise levels approximately 70 to 75 dBA CNEL. Sound walls along I-15 and SR-210 help alleviate some of the noise impacts from the freeways. Areas adjacent to the Metrolink railroad can experience levels of noise up to 71 dBA when trains are passing through. There are residential uses adjacent to the railroad immediately west of Haven Avenue. Land uses east of Haven Avenue generally consist of industrial uses, so train noise is not a major concern.

Vehicles traveling on Haven Avenue can generate noise levels up to 75 CNEL along the edge of the roadway.

Foothill Boulevard, Base Line Road, Haven Avenue, Milliken Avenue, Day Creek Boulevard, 19th Street, Archibald Avenue, Arrow Highway, and Vineyard Avenue/Carnelian Street are roadways in the City that carry significant vehicle volumes. Measurements taken in residential neighborhoods near these roadways in 2009 indicated that noise levels typically range from 60 to 70 dBA CNEL. Local traffic contributes considerably to noise levels throughout the City.



Noise Contours
- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

Freeway Noise Contours
- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

Base Map
- City Boundary
- Sphere of Influence
- Waterways
- Freeway
- Roads
- Railroads

Note: The CNEL contours on this map do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Source: Mestre Greve Associates, 2009.

Figure PS-9:
Existing Noise Contours: 2009

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With regard to aircraft noise, the jet landing patterns at LA/Ontario International Airport are oriented east-west. Occasional aircraft noise can be heard in southern areas of Rancho Cucamonga. No noise contours over 60 dBA CNEL extend into Rancho Cucamonga. Jurisdictions that experience the brunt of airplane departure and arrival noise levels are Ontario, Fontana, and Montclair.

Future Noise Environment (2030)

The projected noise exposure contours for year 2030 are indicated in Figure PS-10: Future Noise Contours - 2030. The future noise contours should be considered as a guide to identifying potential land use/noise compatibility issues and will be used to determine the requirement for project specific noise studies and mitigation. In comparison to the 2009 noise contours presented in Figure PS-9, future noise levels will increase, but not significantly. Noise level increases are projected to occur along Haven Avenue, Milliken Avenue, and Foothill Boulevard due to increased traffic volumes.

Public Health and Safety Issues

Key issues relative to public health and safety are:

- **Wildland Urban Interface Fires.** Rancho Cucamonga's location adjacent to the San Bernardino National Forest and San Gabriel Mountains puts it at high risk for Wildland Urban Interface (WUI) fires. This type of fire begins in the chaparral north of the City and can spread to structures in those areas and on the perimeter of the City.

- **Emergency Medical Services.** Rancho Cucamonga Fire Protection District (RCFPD) is the first responder to medical emergencies. EMS responses are the most common response made by RCFPD, and service demands have been steadily increasing. As the Rancho Cucamonga population ages, and new residents and employees locate here, the EMS program will continue to be impacted.

- **Emergency Management.** In the event of an emergency or natural disaster, it is important to have clear, up-to-date plans to expedite response. Public outreach and education regarding emergency preparedness is also crucial.

- **Hazardous Materials.** Releases of explosive, reactive, corrosive, toxic, and flammable materials can cause injury, life loss, and property damage and may necessitate evacuations. Emergency plans and trained personnel are necessary to adequately respond to hazardous materials emergencies.

- **Crime Prevention.** Rancho Cucamonga has set high standards for public safety and protection, and as a result is one of the safest cities of its size in the nation. To maintain these high levels of public safety, it will be important to continue to evaluate existing programs, meet response time goals, and support crime prevention through environmental design. In addition, involving the community in crime prevention programs is integral to the City's public safety success.

Title 17 DEVELOPMENT CODE
ARTICLE IV. SITE DEVELOPMENT PROVISIONS
Chapter 17.66 PERFORMANCE STANDARDS

17.66.050 Noise standards.

A. *Purpose*. In order to control unnecessary, excessive, and annoying noise and vibration in the city, it is hereby declared to be the policy of the city to prohibit such noise generated from or by all sources as specified in this section. The provisions apply within all jurisdictions within all zoning districts. Provisions apply based on the designated noise zones:

Noise Zone I: All single- and multiple-family residential properties.

Noise Zone II: All commercial properties.

B. *Decibel measurement criteria*. Any decibel measurement made pursuant to the provisions of this section shall be based on a reference sound pressure of 20 micropascals as measured with a sound level meter using the A-weighted network (scale) at slow response.

C. *Exterior noise standards*.

1. It shall be unlawful for any person at any location within the city to create any noise or allow the creation of any noise on the property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on the property line of any other property to exceed the basic noise level as adjusted below:

a. Basic noise level for a cumulative period of not more than 15 minutes in any one hour; or

b. Basic noise level plus five dBA for a cumulative period of not more than ten minutes in any one hour; or

c. Basic noise level plus 14 dBA for a cumulative period of not more than five minutes in any one hour; or

d. Basic noise level plus 15 dBA at any time.

2. If the measurement location is a boundary between two different noise zones, the lower noise level standard shall apply.

3. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the noise is in operation shall be compared directly to the allowable noise level standards as specified respective to the measurement's location, designated land use, and for the time of day the noise level is measured. The reasonableness of temporarily discontinuing the noise generation by an intruding noise source shall be determined by the planning director for the purpose of establishing the existing ambient noise level at the measurement location.

D. *Special exclusions*. The following activities shall be exempted from the provisions of this section:

1. City- or school-approved activities conducted on public parks, public playgrounds, and public or private school grounds including, but not limited to, athletic and school entertainment events between the hours of 7:00 a.m. and 10:00 p.m.

2. Occasional outdoor gatherings, dances, shows, and sporting and entertainment events, provided said events are conducted pursuant to the approval of a temporary use permit issued by the city.

3. Any mechanical device, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, work, or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within 30 minutes in any hour of its being activated.

4. Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities:

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

5. All devices, apparatus, or equipment associated with agricultural operations, provided:

a. Operations do not take place between 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday.

b. Such operations and equipment are utilized for protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

c. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by, or regulations enforced by, the state department of agriculture.

6. Noise sources associated with the maintenance of real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day.

7. Any activity to the extent regulation thereof has been preempted by state or federal law.

E. *Schools, churches, libraries, health care institutions*. It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or similar health care institution, church, or library while the same is in use, to exceed the noise standards specified in this section and prescribed for the assigned noise zone in which the school, hospital, church, or library is located.

F. *Residential noise standards*.

1. Table 17.66.050-1 (Residential Noise Limits) includes the maximum noise limits in residential zones. These are the noise limits when measured at the adjacent residential property line (exterior) or within a neighboring home (interior).

TABLE 17.66.050-1 RESIDENTIAL NOISE LIMITS

Location of Measurement	*Maximum Allowable*	
	10:00 p.m. to 7:00 a.m.	*7:00 a.m. to 10:00 p.m.*
Exterior	60 dBA	65dBA
Interior	45 dBA	50dBA

Additional:

(A) It shall be unlawful for any person at any location within the city to create any noise or to allow the creation of any noise which causes the noise level when measured within any other fully enclosed (windows and doors shut) residential dwelling unit to exceed the interior noise standard in the manner described herein.

(B) If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, each of the noise limits above shall be reduced five dBA for noise consisting of impulse or simple tone noise.

2. *Other residential noise limitations*.

a. *Peddlers; use of loud noise, etc., to advertise goods, etc*. No peddler or mobile vendor or any person in their behalf shall shout, cry out, or use any device or instrument to make sounds for the purpose of advertising in such a manner as to create a noise disturbance.

b. *Animal noises*. No person owning or having the charge, care, custody, or control of any dog or other animal or fowl shall allow or permit the same to habitually howl, bark, yelp, or make other noises, in such a manner as to create a noise disturbance.

c. *Radios, television sets, musical instruments, and similar devices*. No person shall operate or permit the operation or playing of any device which reproduces, produces, or amplifies sound, such as a radio, musical instrument, phonograph, or sound amplifier, in such a manner as to create a noise disturbance.

i. Across any real property boundary or within Noise Zone I, between the hours of 10:00 p.m. and 7:00 a.m. on the following day (except for activities for which a temporary use permit has been issued).

ii. At 50 feet from any such device, if operated on or over any public right-of-way.

G. *Commercial and office noise provisions*. All operations and businesses shall be conducted to comply with the following standards:

1. All commercial and office activities shall not create any noise that would exceed an exterior noise level of 65 dBA during the hours of 10:00 p.m. to 7:00 a.m. and 70 dBA during the hours of 7:00 a.m. to 10:00 p.m. when measured at the adjacent property line.

2. *Loading and unloading*. No person shall cause the loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m., in a manner which would cause a noise disturbance to a residential area.

3. *Vehicle repairs and testing*. No person shall cause or permit the repairing, rebuilding, modifying, or testing of any motor vehicle, motorcycle, or motorboat in such a manner as to increase a noise disturbance between the hours of 10:00 p.m. and 8:00 a.m. adjacent to a residential area.

H. Industrial noise provision included in Table 17.66.110-1 (Industrial Performance Standards). (Code 1980, § 17.66.050; Ord. No. 855 § 4, 2012)

View the mobile version.

17.66.110 Special industrial performance standards.

A. *Purpose*. The performance standards allow industrial uses to operate consistent with the overall characteristics of the land use category to provide for a healthy, safe, and pleasing environment in keeping with the nature and level of surrounding industrial activity. The performance standards contained in Table 17.66.110-1 (Industrial Performance Standards) are applied based on the zoning district as follows:

1. *Industrial Park (IP) Zoning District; Class A performance standards*. The most restrictive of the performance standards to ensure a high quality working environment and available sites for industrial and business firms whose functional and economic needs require protection from the adverse affects of **noise**, odors, vibration, glare, or high-intensity illumination, and other nuisances.

2. *General Industrial (GI) Zoning District; Class B performance standards*. These standards are intended to provide for the broadest range of industrial activity while assuring a basic level environmental protection. It is the intent of the standards of this section to provide for uses whose operational needs may produce **noise**, vibration, particulate matter and air contaminants, odors, or humidity, heat, and glare which cannot be mitigated sufficiently to meet the Class A standards. The standards are so designed to protect uses on adjoining sites from effects which could adversely affect their functional and economic viability.

3. *Medium Impact/High Impact (MI/HI) and Heavy Industrial (HI) Zoning Districts; Class C performance standards*. It is the intent of the standards of this section to make allowances for industrial uses whose associated processes produce **noise**, particulate matter and air contaminants, vibration, odor, humidity, heat, glare, or high-intensity illumination which would adversely affect the functional and economic viability of other uses. The standards, when combined with standards imposed by other governmental agencies, serve to provide basic health and safety protection for persons employed within or visiting the area.

TABLE 17.66.110-1 INDUSTRIAL PERFORMANCE STANDARDS

Class A	Class B	Class C
	Noise *Maximum*	
• 70dB (anywhere on lot) • 65 dB (interior space of neighboring use on same lot) • **Noise** caused by motor vehicles is exempted from this standard.	• 80 dB (anywhere on lot) • 65dB (at residential property line) • **Noise** caused by motor vehicles and trains is exempted from this standard.	• 85 dB (lot line) • 65dB (at residential property line) • Where a use occupies a lot abutting or separated by a street from a lot within the designated Class A or B performance standard or residential property, the performance standard of the abutting property shall apply at the common or facing lot line.
	Vibration	
All uses shall be so operated as not to generate vibration discernible without instruments by the average person while on or beyond the lot upon which the source is located or within an adjoining enclosed space if more than one establishment occupies a structure. Vibration caused by motor vehicles, trains, and temporary **construction** or demolition work is exempted from this standard.	All uses shall be operated so as not to generate vibration discernible without instruments by the average persons beyond the lot upon which the source is located. Vibration caused by motor vehicles, trains, and temporary **construction** or demolition is exempted from this standard.	All uses shall be operated so as not to generate vibration discernible without instruments by the average person beyond 600 feet from where the source is located. Vibration caused by motor vehicles, trains, and temporary **construction** and demolition is exempted from this standard.
	Particulate Matter and Air Contaminants	

In addition to compliance with the Air Quality Maintenance District (AQMD) standards, all uses shall be operated so as not to emit particulate matter or air contaminants that are readily detectable without instruments by the average person while on the lot containing such uses.	In addition to compliance with the AQMD standards, all uses shall be operated so as not to emit particulate matter or air contaminants that are readily detectable without instruments by the average person beyond any lot line of the lot containing such uses.	In addition to compliance with the AQMD standards, all uses shall be operated so as not to emit particulate matter or air contaminants that (a) are injurious to the health of either persons engaged in or related to the use of the lot, or persons residing, working, visiting, or recreating in neighboring areas; (b) substantially and adversely affect the maintenance of property in nearby areas; (c) are disruptive of industrial processes carried on in other parts of the industrial area. Where a use occupies a lot abutting or separated by a street lot with designated Class A or B, the A or B performance standard for particulate matter and air contaminants shall apply at the common or facing lot line.
Odor		
All uses shall be operated so as not to emit matter causing unpleasant odors that are perceptible to the average person while within or beyond the lot containing such uses.	All uses shall be operated so as not to emit matter causing unpleasant odors that are perceptible to the average person beyond any lot line of the lot containing such uses.	All uses shall be operated so as not to emit matter causing unpleasant odors that are perceptible to the average person beyond any lot line of the lot containing such uses.
Humidity, Heat, and Glare		
All uses shall be operated so as not to produce humidity, heat, glare, or high-intensity illumination that is perceptible without instruments by the average person while on or beyond the lot containing such use.	All uses shall be operated so as not to produce humidity, heat, glare, or high-intensity illumination that is perceptible without instruments by the average person beyond the lot line of any lot containing such use.	All uses shall be operated so as not to produce humidity, heat, glare, or high-intensity illumination that is perceptible without instruments by the average person while on any lot zoned for residential purposes or any industrial property with a Class A or B performance standard designation.

(Code 1980, § 17.66.110; Ord. No. 855 § 4, 2012)

Appendix B

Field Data and Photos

Field Sheet

Project:	Scheu Steel Corporation	**Engineer:** B. Estrada	**Date:** 7/2/2018
			JN: 2410-18-02
Measurement Address: Northeast Corner of Archibald Ave at 7th Street		**City:** Rancho Cucamonga	**Site No.:** 1

Sound Level Meter:
LD-712
Serial # A0520

Calibrator:
LD-250 250
Serial # 1322

Calibration Record:

	Input, dB/	Reading, dB/	Offset, dB/	Time
Before	114.0/	114.0/	26.7/	11.20AM
After	114.0/	114.0/	26.7/	11:20AM
Before	/	/	/	
After	/	/	/	

Notes:

Temp:	78
Windspeed:	6mph
Direction:	wsw
Skies:	clear
Camera:	
Photo Nos.	

Meter Settings:

☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS ___10____ - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

Notes:

Measurement Type:
Long-term
Short-term X

		Start Time	Stop Time	Leq	Lmin	Lmax	L2	L8	L25	L50
Locations	1	11:41 AM	11:51 PM	56.0	46.1	72.5	65.2	60.0	52.0	49.4
		At the Residential P/L to the north. Ambient noise from Acaia Street and Archibald Avenue, pedestrian and barking dog.								
	2	11:59AM	12:09PM	55.7	43.3	73.0	65.6	58.6	51.7	49.4
		At the nearest commercial P/L to the south. Ambient noise from the of Archibald Avenue and passing by trucks of 7th Street.								
	3									
	4									
	5									

RK engineering group, inc.

Field Sheet - ST1 Location Photos

Project: Scheu Steel Corporation	**Engineer:** B. Estrada	**Date:**	7/2/2018
		JN:	2410-18-02
Measurement Address: Northeast Corner of Archibald Ave at 7th Street	**City:** Rancho Cucamonga	**Site No.:**	1

RK engineering group, inc.

Field Sheet - ST2 Location Photos

Project: Scheu Steel Corporation	**Engineer:** B. Estrada	**Date:**	7/2/2018
		JN:	2410-18-02
Measurement Address: Northeast Corner of Archibald Ave at 7th Street	**City:** Rancho Cucamonga	**Site No.:**	2

RK engineering group, inc.

Appendix C

Roadway Noise Calculation Worksheets

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ARCHIBALD AVENUE: 8TH STREET TO 6TH STREET
SCENARIO: EXISTING CONDITIONS

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	29,523
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST :	43
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	2,952

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	97.71	- -
MEDIUM TRUCKS	4.0	97.67	- -
HEAVY TRUCKS	8.0	97.71	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.2	62.9	56.8	65.3	65.9
MEDIUM TRUCKS	59.6	55.6	47.8	57.0	63.2	63.2
HEAVY TRUCKS	66.3	62.3	54.6	63.8	69.9	70.0
NOISE LEVELS (dBA)	69.7	66.7	63.6	65.3	71.8	72.0

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.2	62.9	56.8	65.3	65.9
MEDIUM TRUCKS	59.6	55.6	47.8	57.0	63.2	63.2
HEAVY TRUCKS	66.3	62.3	54.6	63.8	69.9	70.0
NOISE LEVELS (dBA)	69.7	66.7	63.6	65.3	71.8	72.0

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	136	293	632	1362
LDN	133	286	616	1326

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ARCHIBALD AVENUE: 8TH STREET TO 6TH STREET
SCENARIO: EXISTING CONDITIONS PLUS PROJECT

JOB #: 2410-18-02
DATE: 9-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	29,825
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST :	43
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	2,983

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	97.71	- -
MEDIUM TRUCKS	4.0	97.67	- -
HEAVY TRUCKS	8.0	97.71	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.2	62.9	56.9	65.3	65.9
MEDIUM TRUCKS	59.6	55.7	47.9	57.1	63.2	63.3
HEAVY TRUCKS	66.4	62.4	54.6	63.8	70.0	70.0
NOISE LEVELS (dBA)	69.8	66.8	63.6	65.3	71.9	72.1

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.2	62.9	56.9	65.3	65.9
MEDIUM TRUCKS	59.6	55.7	47.9	57.1	63.2	63.3
HEAVY TRUCKS	66.4	62.4	54.6	63.8	70.0	70.0
NOISE LEVELS (dBA)	69.8	66.8	63.6	65.3	71.9	72.1

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	137	295	636	1371
LDN	134	288	620	1335

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ARCHIBALD AVENUE: 8TH STREET TO 6TH STREET
SCENARIO: OPENING YEAR WITHOUT PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	32,213
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST :	43
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	3,221

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	97.71	- -
MEDIUM TRUCKS	4.0	97.67	- -
HEAVY TRUCKS	8.0	97.71	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.5	63.3	57.2	65.6	66.3
MEDIUM TRUCKS	60.0	56.0	48.2	57.4	63.6	63.6
HEAVY TRUCKS	66.7	62.7	54.9	64.2	70.3	70.3
NOISE LEVELS (dBA)	70.1	67.1	64.0	65.7	72.2	72.4

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.5	63.3	57.2	65.6	66.3
MEDIUM TRUCKS	60.0	56.0	48.2	57.4	63.6	63.6
HEAVY TRUCKS	66.7	62.7	54.9	64.2	70.3	70.3
NOISE LEVELS (dBA)	70.1	67.1	64.0	65.7	72.2	72.4

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	144	311	670	1443
LDN	141	303	653	1406

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ARCHIBALD AVENUE: 8TH STREET TO 6TH STREET
SCENARIO: OPENING YEAR WITH PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	32,515
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST :	43
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	3,252

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	97.71	- -
MEDIUM TRUCKS	4.0	97.67	- -
HEAVY TRUCKS	8.0	97.71	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.6	63.3	57.2	65.7	66.3
MEDIUM TRUCKS	60.0	56.0	48.3	57.5	63.6	63.6
HEAVY TRUCKS	66.7	62.8	55.0	64.2	70.3	70.4
NOISE LEVELS (dBA)	70.1	67.1	64.0	65.7	72.3	72.4

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.6	63.3	57.2	65.7	66.3
MEDIUM TRUCKS	60.0	56.0	48.3	57.5	63.6	63.6
HEAVY TRUCKS	66.7	62.8	55.0	64.2	70.3	70.4
NOISE LEVELS (dBA)	70.1	67.1	64.0	65.7	72.3	72.4

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	145	313	674	1452
LDN	141	305	657	1415

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ACACIA STREET: EAST OF ARCHIBALD AVE
SCENARIO: EXISTING CONDITIONS

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	253	
SPEED =	25	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	16	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	25	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.72	- -
MEDIUM TRUCKS	4.0	99.68	- -
HEAVY TRUCKS	8.0	99.72	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.0	36.0	34.7	28.7	37.1	37.7
MEDIUM TRUCKS	34.8	30.8	23.0	32.3	38.4	38.4
HEAVY TRUCKS	43.2	39.2	31.4	40.6	46.8	46.8
NOISE LEVELS (dBA)	44.8	41.3	36.6	41.4	47.8	47.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.0	36.0	34.7	28.7	37.1	37.7
MEDIUM TRUCKS	34.8	30.8	23.0	32.3	38.4	38.4
HEAVY TRUCKS	43.2	39.2	31.4	40.6	46.8	46.8
NOISE LEVELS (dBA)	44.8	41.3	36.6	41.4	47.8	47.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	3	7	15	33
LDN	3	7	15	33

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ACACIA STREET: EAST OF ARCHIBALD AVE
SCENARIO: EXISTING CONDITION WITH PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	782	
SPEED =	25	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	16	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	78	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.72	- -
MEDIUM TRUCKS	4.0	99.68	- -
HEAVY TRUCKS	8.0	99.72	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	42.9	40.9	39.6	33.6	42.0	42.6
MEDIUM TRUCKS	39.7	35.7	27.9	37.2	43.3	43.3
HEAVY TRUCKS	48.1	44.1	36.3	45.5	51.7	51.7
NOISE LEVELS (dBA)	49.7	46.2	41.5	46.3	52.7	52.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	42.9	40.9	39.6	33.6	42.0	42.6
MEDIUM TRUCKS	39.7	35.7	27.9	37.2	43.3	43.3
HEAVY TRUCKS	48.1	44.1	36.3	45.5	51.7	51.7
NOISE LEVELS (dBA)	49.7	46.2	41.5	46.3	52.7	52.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	7	15	33	71
LDN	7	15	32	70

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ACACIA STREET: EAST OF ARCHIBALD AVE
SCENARIO: OPENING YEAR WITHOUT PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	259	
SPEED =	25	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	16	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	26	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.72	- -
MEDIUM TRUCKS	4.0	99.68	- -
HEAVY TRUCKS	8.0	99.72	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.1	36.1	34.8	28.8	37.2	37.8
MEDIUM TRUCKS	34.9	30.9	23.1	32.4	38.5	38.5
HEAVY TRUCKS	43.3	39.3	31.5	40.7	46.9	46.9
NOISE LEVELS (dBA)	44.9	41.4	36.7	41.5	47.9	47.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.1	36.1	34.8	28.8	37.2	37.8
MEDIUM TRUCKS	34.9	30.9	23.1	32.4	38.5	38.5
HEAVY TRUCKS	43.3	39.3	31.5	40.7	46.9	46.9
NOISE LEVELS (dBA)	44.9	41.4	36.7	41.5	47.9	47.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	3	7	16	34
LDN	3	7	16	33

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: ACACIA STREET: EAST OF ARCHIBALD AVE
SCENARIO: OPENING YEAR WITH PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	788	
SPEED =	25	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	16	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	79	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.72	- -
MEDIUM TRUCKS	4.0	99.68	- -
HEAVY TRUCKS	8.0	99.72	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	43.0	40.9	39.7	33.6	42.0	42.7
MEDIUM TRUCKS	39.7	35.8	28.0	37.2	43.3	43.4
HEAVY TRUCKS	48.1	44.1	36.3	45.6	51.7	51.7
NOISE LEVELS (dBA)	49.7	46.2	41.5	46.4	52.7	52.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	43.0	40.9	39.7	33.6	42.0	42.7
MEDIUM TRUCKS	39.7	35.8	28.0	37.2	43.3	43.4
HEAVY TRUCKS	48.1	44.1	36.3	45.6	51.7	51.7
NOISE LEVELS (dBA)	49.7	46.2	41.5	46.4	52.7	52.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	7	15	33	71
LDN	7	15	33	70

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: 7TH STREET - EAST OF ARCHIBALD AVE
SCENARIO: EXISTING CONDITIONS

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	1,137
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST :	23
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	114

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.38	- -
MEDIUM TRUCKS	4.0	99.34	- -
HEAVY TRUCKS	8.0	99.38	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	50.5	48.4	47.1	41.1	49.5	50.2
MEDIUM TRUCKS	44.5	40.6	32.8	42.0	48.1	48.2
HEAVY TRUCKS	51.6	47.6	39.8	49.0	55.2	55.2
NOISE LEVELS (dBA)	54.5	51.4	48.0	50.4	56.9	57.0

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	50.5	48.4	47.1	41.1	49.5	50.2
MEDIUM TRUCKS	44.5	40.6	32.8	42.0	48.1	48.2
HEAVY TRUCKS	51.6	47.6	39.8	49.0	55.2	55.2
NOISE LEVELS (dBA)	54.5	51.4	48.0	50.4	56.9	57.0

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	14	29	63	136
LDN	13	29	62	133

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: 7TH STREET - EAST OF ARCHIBALD AVE
SCENARIO: EXISTING CONDITION WITH PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,119	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	23	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	212	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.38	- -
MEDIUM TRUCKS	4.0	99.34	- -
HEAVY TRUCKS	8.0	99.38	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.2	51.1	49.9	43.8	52.2	52.9
MEDIUM TRUCKS	47.2	43.3	35.5	44.7	50.8	50.9
HEAVY TRUCKS	54.3	50.3	42.5	51.8	57.9	57.9
NOISE LEVELS (dBA)	57.2	54.1	50.7	53.1	59.6	59.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.2	51.1	49.9	43.8	52.2	52.9
MEDIUM TRUCKS	47.2	43.3	35.5	44.7	50.8	50.9
HEAVY TRUCKS	54.3	50.3	42.5	51.8	57.9	57.9
NOISE LEVELS (dBA)	57.2	54.1	50.7	53.1	59.6	59.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	21	44	96	206
LDN	20	43	94	202

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: 7TH STREET - EAST OF ARCHIBALD AVE
SCENARIO: OPENING YEAR WITHOUT PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	1,160	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST :	23	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	116	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.38	- -
MEDIUM TRUCKS	4.0	99.34	- -
HEAVY TRUCKS	8.0	99.38	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	50.5	48.5	47.2	41.2	49.6	50.2
MEDIUM TRUCKS	44.6	40.6	32.9	42.1	48.2	48.3
HEAVY TRUCKS	51.7	47.7	39.9	49.1	55.3	55.3
NOISE LEVELS (dBA)	54.6	51.5	48.1	50.5	57.0	57.1

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	50.5	48.5	47.2	41.2	49.6	50.2
MEDIUM TRUCKS	44.6	40.6	32.9	42.1	48.2	48.3
HEAVY TRUCKS	51.7	47.7	39.9	49.1	55.3	55.3
NOISE LEVELS (dBA)	54.6	51.5	48.1	50.5	57.0	57.1

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	14	30	64	138
LDN	14	29	63	135

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: SCHEU BUSINESS CENTER
ROADWAY: 7TH STREET - EAST OF ARCHIBALD AVE
SCENARIO: OPENING YEAR WITH PROJECT

JOB #: 2410-18-02
DATE: 6-Jul-18
ENGINEER: BRYAN ESTRADA

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,142
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST :	23
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	214

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.7554	0.1402	0.1043	0.9200
MEDIUM TRUCKS	0.4800	0.0200	0.5000	0.0300
HEAVY TRUCKS	0.4800	0.0200	0.5000	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	99.38	- -
MEDIUM TRUCKS	4.0	99.34	- -
HEAVY TRUCKS	8.0	99.38	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.2	51.2	49.9	43.8	52.3	52.9
MEDIUM TRUCKS	47.3	43.3	35.5	44.7	50.9	50.9
HEAVY TRUCKS	54.4	50.4	42.6	51.8	58.0	58.0
NOISE LEVELS (dBA)	57.3	54.2	50.8	53.1	59.6	59.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.2	51.2	49.9	43.8	52.3	52.9
MEDIUM TRUCKS	47.3	43.3	35.5	44.7	50.9	50.9
HEAVY TRUCKS	54.4	50.4	42.6	51.8	58.0	58.0
NOISE LEVELS (dBA)	57.3	54.2	50.8	53.1	59.6	59.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	21	45	97	208
LDN	20	44	94	203

Appendix D

Stationary Noise Calculation Worksheets

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	414.8			
DT WALL=	175.0			
DT W/OB=	239.8			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	47.5		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-8.30
NOISE EL =	0.0		NOISE HTH EL=	47.5
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	414.77	45.7	45.7	45.7	45.7	45.7	45.7
SHIELDING	414.77	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3
ADJ LEVEL	414.77	***37.4***	***37.4***	***37.4***	***37.4***	***37.4***	***37.4***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -42.8137216

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 4 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	622.8			
DT WALL=	500.0			
DT W/OB=	122.8			
HTH WALL=	43.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	51.5		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.40
NOISE EL =	0.0		NOISE HTH EL=	51.5
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	622.8	42.2	42.2	42.2	42.2	42.2	42.2
SHIELDING	622.8	-14.4	-14.4	-14.4	-14.4	-14.4	-14.4
ADJ LEVEL	622.8	***27.8***	***27.8***	***27.8***	***27.8***	***27.8***	***27.8***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -46.344547

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK - 1	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	422.4			
DT WALL=	422.4			
DT W/OB=	0.0			
HTH WALL=	0.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	422.44	42.3	60.0	54.5	44.0	37.5	34.5
SHIELDING	422.44	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	422.44	***42.3***	***60.0***	***54.5***	***44.0***	***37.5***	***34.5***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -36.9522757

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK - 2	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	471.4			
DT WALL=	316.8			
DT W/OB=	154.6			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	471.37	41.4	59.1	53.6	43.1	36.6	33.6
SHIELDING	471.37	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	471.37	***26.3***	***44.0***	***38.5***	***28.0***	***21.5***	***18.5***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -37.9042138

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	499.4			
DT WALL=	359.4			
DT W/OB=	140.1			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	499.41	40.9	58.6	53.1	42.6	36.1	33.1
SHIELDING	499.41	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	499.41	***25.8***	***43.5***	***38.0***	***27.5***	***21.0***	***18.0***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.4061197

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	610.4			
DT WALL=	462.4			
DT W/OB=	148.0			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.00
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	610.4	39.2	56.9	51.4	40.9	34.4	31.4
SHIELDING	610.4	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0
ADJ LEVEL	610.4	***24.2***	***41.9***	***36.4***	***25.9***	***19.4***	***16.4***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -40.1492655

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	638.7			
DT WALL=	482.5			
DT W/OB=	156.2			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-20.00
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	638.7	38.8	56.5	51.0	40.5	34.0	31.0
SHIELDING	638.7	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0
ADJ LEVEL	638.7	***18.8***	***36.5***	***31.0***	***20.5***	***14.0***	***11.0***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -40.5429133

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	765.3			
DT WALL=	578.7			
DT W/OB=	186.6			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.30
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	765.3	37.2	54.9	49.4	38.9	32.4	29.4
SHIELDING	765.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3
ADJ LEVEL	765.3	***22.9***	***40.6***	***35.1***	***24.6***	***18.1***	***15.1***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -42.1136093

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	259.3			
DT WALL=	106.5			
DT W/OB=	152.8			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-16.60
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	259.3	46.6	64.3	58.8	48.3	41.8	38.8
SHIELDING	259.3	-16.6	-16.6	-16.6	-16.6	-16.6	-16.6
ADJ LEVEL	259.3	***30.0***	***47.7***	***42.2***	***31.7***	***25.2***	***22.2***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -32.7130253

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	334.4			
DT WALL=	182.4			
DT W/OB=	152.0			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.70
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	334.4	44.4	62.1	56.6	46.1	39.6	36.6
SHIELDING	334.4	-15.7	-15.7	-15.7	-15.7	-15.7	-15.7
ADJ LEVEL	334.4	***28.7***	***46.4***	***40.9***	***30.4***	***23.9***	***20.9***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -34.9223004

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	368.8			
DT WALL=	200.2			
DT W/OB=	168.6			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	368.78	43.5	61.2	55.7	45.2	38.7	35.7
SHIELDING	368.78	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	368.78	***28.4***	***46.1***	***40.6***	***30.1***	***23.6***	***20.6***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -35.7723222

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	517.6			
DT WALL=	280.2			
DT W/OB=	237.4			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.50
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	517.6	40.6	58.3	52.8	42.3	35.8	32.8
SHIELDING	517.6	-14.5	-14.5	-14.5	-14.5	-14.5	-14.5
ADJ LEVEL	517.6	***26.1***	***43.8***	***38.3***	***27.8***	***21.3***	***18.3***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.7168603

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	548.2			
DT WALL=	296.4			
DT W/OB=	251.8			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.30
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	548.2	40.1	57.8	52.3	41.8	35.3	32.3
SHIELDING	548.2	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3
ADJ LEVEL	548.2	***25.8***	***43.5***	***38.0***	***27.5***	***21.0***	***18.0***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -39.2157556

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	691.6			
DT WALL=	372.5			
DT W/OB=	319.1			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-13.60
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	691.55	38.1	55.8	50.3	39.8	33.3	30.3
SHIELDING	691.55	-13.6	-13.6	-13.6	-13.6	-13.6	-13.6
ADJ LEVEL	691.55	***24.5***	***42.2***	***36.7***	***26.2***	***19.7***	***16.7***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -41.2334467

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 -PARKING LOT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	70.1			
DT WALL=	70.1			
DT W/OB=	0.0			
HTH WALL=	0.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	3.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	3.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	63.8	79.5	68.5	65.5	64.5	63.0
PROJ LEVEL	70.14	42.4	58.1	47.1	44.1	43.1	41.6
SHIELDING	70.14	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	70.14	***42.4***	***58.1***	***47.1***	***44.1***	***43.1***	***41.6***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -21.3562902

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 -PARKING LOT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	257.7			
DT WALL=	257.7			
DT W/OB=	0.0			
HTH WALL=	0.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	3.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	3.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	63.8	79.5	68.5	65.5	64.5	63.0
PROJ LEVEL	257.68	31.1	46.8	35.8	32.8	31.8	30.3
SHIELDING	257.68	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	257.68	***31.1***	***46.8***	***35.8***	***32.8***	***31.8***	***30.3***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -32.6585892

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	638.7			
DT WALL=	345.4			
DT W/OB=	293.3			
HTH WALL=	30.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	38.5		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-7.50
NOISE EL =	0.0		NOISE HTH EL=	38.5
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	638.65	41.9	41.9	41.9	41.9	41.9	41.9
SHIELDING	638.65	-7.5	-7.5	-7.5	-7.5	-7.5	-7.5
ADJ LEVEL	638.65	***34.4***	***34.4***	***34.4***	***34.4***	***34.4***	***34.4***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -46.5628332

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	329.0			
DT WALL=	77.0			
DT W/OB=	252.0			
HTH WALL=	28.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	36.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	36.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	328.97	47.7	47.7	47.7	47.7	47.7	47.7
SHIELDING	328.97	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	328.97	***47.7***	***47.7***	***47.7***	***47.7***	***47.7***	***47.7***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -40.8007008

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 4 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	559.5			
DT WALL=	39.0			
DT W/OB=	520.5			
HTH WALL=	39.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	47.5		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	47.5
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	559.53	43.1	43.1	43.1	43.1	43.1	43.1
SHIELDING	559.53	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	559.53	***43.1***	***43.1***	***43.1***	***43.1***	***43.1***	***43.1***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -45.4140424

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 4 - ROOFTOP HVAC EQUIPMENT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	280.8			
DT WALL=	123.7			
DT W/OB=	157.1			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	45.5		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-9.10
NOISE EL =	0.0		NOISE HTH EL=	45.5
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	3	88.5	88.5	88.5	88.5	88.5	88.5
PROJ LEVEL	280.84	49.1	49.1	49.1	49.1	49.1	49.1
SHIELDING	280.84	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1
ADJ LEVEL	280.84	***40.0***	***40.0***	***40.0***	***40.0***	***40.0***	***40.0***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -39.4267542

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK - 1	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	329.5			
DT WALL=	194.9			
DT W/OB=	134.6			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	329.47	44.5	62.2	56.7	46.2	39.7	36.7
SHIELDING	329.47	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	329.47	***29.4***	***47.1***	***41.6***	***31.1***	***24.6***	***21.6***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -34.7932925

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK - 2	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	316.3			
DT WALL=	185.9			
DT W/OB=	130.4			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.70
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	316.3	44.9	62.6	57.1	46.6	40.1	37.1
SHIELDING	316.3	-15.7	-15.7	-15.7	-15.7	-15.7	-15.7
ADJ LEVEL	316.3	***29.2***	***46.9***	***41.4***	***30.9***	***24.4***	***21.4***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -34.4389588

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	321.5			
DT WALL=	189.5			
DT W/OB=	132.0			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.70
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	321.46	44.7	62.4	56.9	46.4	39.9	36.9
SHIELDING	321.46	-15.7	-15.7	-15.7	-15.7	-15.7	-15.7
ADJ LEVEL	321.46	***29.0***	***46.7***	***41.2***	***30.7***	***24.2***	***21.2***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -34.5795138

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	390.2			
DT WALL=	228.8			
DT W/OB=	161.4			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	390.19	43.0	60.7	55.2	44.7	38.2	35.2
SHIELDING	390.19	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	390.19	***27.9***	***45.6***	***40.1***	***29.6***	***23.1***	***20.1***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -36.2624977

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	414.2			
DT WALL=	242.9			
DT W/OB=	171.4			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.90
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	414.22	42.5	60.2	54.7	44.2	37.7	34.7
SHIELDING	414.22	-14.9	-14.9	-14.9	-14.9	-14.9	-14.9
ADJ LEVEL	414.22	***27.6***	***45.3***	***39.8***	***29.3***	***22.8***	***19.8***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -36.7815963

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	526.4			
DT WALL=	310.9			
DT W/OB=	215.5			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	526.39	40.4	58.1	52.6	42.1	35.6	32.6
SHIELDING	526.39	-14.1	-14.1	-14.1	-14.1	-14.1	-14.1
ADJ LEVEL	526.39	***26.3***	***44.0***	***38.5***	***28.0***	***21.5***	***18.5***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.8631276

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	511.3			
DT WALL=	379.3			
DT W/OB=	132.0			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.00
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	511.27	40.7	58.4	52.9	42.4	35.9	32.9
SHIELDING	511.27	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0
ADJ LEVEL	511.27	***25.7***	***43.4***	***37.9***	***27.4***	***20.9***	***17.9***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.6099812

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	505.3			
DT WALL=	372.8			
DT W/OB=	132.5			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.00
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	505.31	40.8	58.5	53.0	42.5	36.0	33.0
SHIELDING	505.31	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0
ADJ LEVEL	505.31	***25.8***	***43.5***	***38.0***	***27.5***	***21.0***	***18.0***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.5081329

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	506.4			
DT WALL=	375.6			
DT W/OB=	130.9			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-15.10
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	506.43	40.8	58.5	53.0	42.5	36.0	33.0
SHIELDING	506.43	-15.1	-15.1	-15.1	-15.1	-15.1	-15.1
ADJ LEVEL	506.43	***25.7***	***43.4***	***37.9***	***27.4***	***20.9***	***17.9***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -38.5273635

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	555.4			
DT WALL=	409.6			
DT W/OB=	145.8			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.70
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	555.42	40.0	57.7	52.2	41.7	35.2	32.2
SHIELDING	555.42	-14.7	-14.7	-14.7	-14.7	-14.7	-14.7
ADJ LEVEL	555.42	***25.3***	***43.0***	***37.5***	***27.0***	***20.5***	***17.5***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -39.3294053

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	570.2			
DT WALL=	420.6			
DT W/OB=	149.5			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.70
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	570.15	39.7	57.4	51.9	41.4	34.9	31.9
SHIELDING	570.15	-14.7	-14.7	-14.7	-14.7	-14.7	-14.7
ADJ LEVEL	570.15	***25.0***	***42.7***	***37.2***	***26.7***	***20.2***	***17.2***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -39.5567576

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 - LOADING DOCK	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	655.6			
DT WALL=	484.3			
DT W/OB=	171.3			
HTH WALL=	37.5	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	8.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	-14.30
NOISE EL =	0.0		NOISE HTH EL=	8.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	79.3	97.0	91.5	81.0	74.5	71.5
PROJ LEVEL	655.56	38.5	56.2	50.7	40.2	33.7	30.7
SHIELDING	655.56	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3
ADJ LEVEL	655.56	***24.2***	***41.9***	***36.4***	***25.9***	***19.4***	***16.4***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -40.7692239

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 -PARKING LOT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	217.0			
DT WALL=	217.0			
DT W/OB=	0.0			
HTH WALL=	0.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	3.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	3.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	63.8	79.5	68.5	65.5	64.5	63.0
PROJ LEVEL	217	32.6	48.3	37.3	34.3	33.3	31.8
SHIELDING	217	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	217	***32.6***	***48.3***	***37.3***	***34.3***	***33.3***	***31.8***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -31.1661697

NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	SCHEU STEEL CORPORATION	JOB #:	2410-18-02
SOURCE:	BUILDING 3 -PARKING LOT	DATE:	05-Jul-18
LOCATION:	RESIDENTIAL PROPERTIES TO THE NORTH	BY:	BRYAN ESTRADA

NOISE INPUT DATA

OBS DIST=	158.6			
DT WALL=	158.6			
DT W/OB=	0.0			
HTH WALL=	0.0	********		
BARRIER =	0.0	(0=WALL,1=BERM)		
OBS HTH=	5.0			
NOISE HTH=	3.0		BARRIER+	
OBS EL =	0.0		TOPO SHIELDING =	0.00
NOISE EL =	0.0		NOISE HTH EL=	3.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)		
COFF				

NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	6	63.8	79.5	68.5	65.5	64.5	63.0
PROJ LEVEL	158.55	35.4	51.1	40.1	37.1	36.1	34.6
SHIELDING	158.55	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	158.55	***35.4***	***51.1***	***40.1***	***37.1***	***36.1***	***34.6***

NOISE LEVEL REDUCTION DUE TO DISTANCE = -28.4402999

Appendix E

Construction Noise and Vibration Calculation Worksheets

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/6/2018
Case Description: Scheu Business Center

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Site Preparation	Industrial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	100	0
Tractor	No	40	84		100	0
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Dozer		75.6	71.7
Tractor		78	74
Dozer		75.6	71.7
Dozer		75.6	71.7
Tractor		78	74
Tractor		78	74
Tractor		78	74
	Total	78	81.6

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/6/2018
Case Description: Scheu Business Center

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Grading	Industrial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	100	0
Grader	No	40	85		100	0
Dozer	No	40		81.7	100	0
Scraper	No	40		83.6	100	0
Tractor	No	40	84		100	0
Excavator	No	40		80.7	100	0
Scraper	No	40		83.6	100	0
Tractor	No	40	84		100	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Excavator		74.7	70.7
Grader		79	75
Dozer		75.6	71.7
Scraper		77.6	73.6
Tractor		78	74
Excavator		74.7	70.7
Scraper		77.6	73.6
Tractor		78	74
	Total	79	82.2

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/6/2018
Case Description: Scheu Business Center

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Building Construction	Industrial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	100	0
Pickup Truck	No	40		75	100	0
Generator	No	50		80.6	100	0
Tractor	No	40	84		100	0
Welder / Torch	No	40		74	100	0
Pickup Truck	No	40		75	100	0
Pickup Truck	No	40		75	100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Crane		74.5	66.6
Pickup Truck		69	65
Generator		74.6	71.6
Tractor		78	74
Welder / Torch		68	64
Pickup Truck		69	65
Pickup Truck		69	65
Tractor		78	74
Tractor		78	74
	Total	78	80.3

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/6/2018
Case Description: Scheu Business Center

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Paving	Industrial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	100	0
Tractor	No	40	84		100	0
Roller	No	20		80	100	0
Paver	No	50		77.2	100	0
Tractor	No	40	84		100	0
Roller	No	20		80	100	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Paver		71.2	68.2
Tractor		78	74
Roller		74	67
Paver		71.2	68.2
Tractor		78	74
Roller		74	67
	Total	78	78.7

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/6/2018
Case Description: Scheu Business Center

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Architectural Coating	Industrial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	100	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Compressor (air)		71.6	67.7
	Total	71.6	67.7

*Calculated Lmax is the Loudest value.