

Ottawa Business Center

NOISE IMPACT ANALYSIS CITY OF VICTORVILLE

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14035-05 Noise Study



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LIST OF ABBREVIATED TERMS

(1)	Reference		
ANSI	American National Standards Institute		
Calveno	California Vehicle Noise		
CEQA	California Environmental Quality Act		
CNEL	Community Noise Equivalent Level		
dBA	A-weighted decibels		
EPA	Environmental Protection Agency		
FHWA	Federal Highway Administration		
FTA	Federal Transit Administration		
INCE	Institute of Noise Control Engineering		
L _{eq}	Equivalent continuous (average) sound level		
L _{max}	Maximum level measured over the time interval		
mph	Miles per hour		
PPV	Peak Particle Velocity		
Project	Ottawa Business Center		
REMEL	Reference Energy Mean Emission Level		
RMS	Root-mean-square		
VdB	Vibration Decibels		

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Ottawa Business Center development ("Project"). The Project site is located at the northeast corner of Hesperia Road and Ottawa Street in the City of Victorville. The Project is proposed to consist of 200,000 square feet of high-cube cold storage warehouse use and 796,520 square feet of high-cube fulfillment center warehouse use. This noise study has been prepared to satisfy applicable City of Victorville noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

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

Analysia	Report	Significance Findings			
Analysis	Section	Unmitigated	Mitigated		
Off-Site Noise	7	Potentially Significant	Potentially Significant		
On-Site Noise	8	Less Than Significant	-		
Operational Noise	11	Less Than Significant	-		
Construction Noise	12	Less Than Significant	-		
Construction Vibration	12	Less Than Significant	-		



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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Ottawa Business Center ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the regulatory setting, presents the study methods and procedures for noise analysis, and evaluates off-site noise impacts, long-term stationary-source operational noise, and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Project is located at the northeast corner of Hesperia Road and Ottawa Street in the City of Victorville, as shown on Exhibit 1-A. An industrial use is located to the south, residential uses located to the east across the Union Pacific railroad, and vacant land surrounds the Project site to the west and north. The Project Site is currently vacant.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of 200,000 square feet of high-cube cold storage warehouse use and 796,520 square feet of high-cube fulfillment center warehouse use, as shown on Exhibit 1-B. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2024.

The on-site Project-related operational noise sources are expected to include: cold storage loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements. This report assumes the Project will operate 24-hours daily for seven days per week.

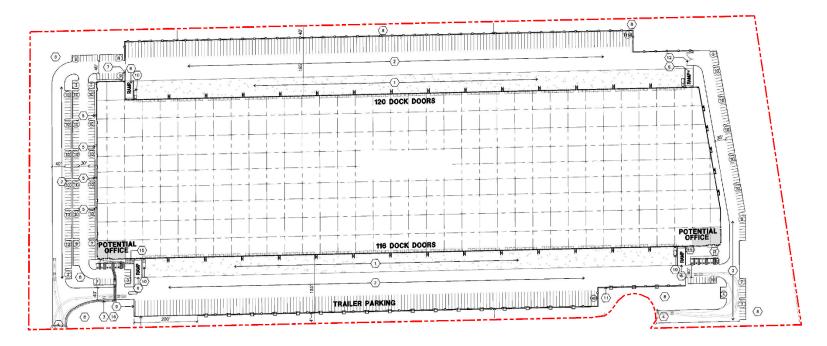




EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN





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2 FUNDAMENTALS

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

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA



at approximately 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

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

2.3 SOUND PROPAGATION

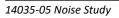
When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually





sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

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

2.4 NOISE CONTROL

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

2.5 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.



2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (5)

2.7 COMMUNITY RESPONSE TO NOISE

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

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

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (7) According to research originally published in the Noise Effects Handbook (6), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)



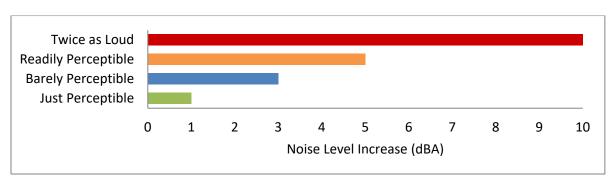


EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION

2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (7), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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

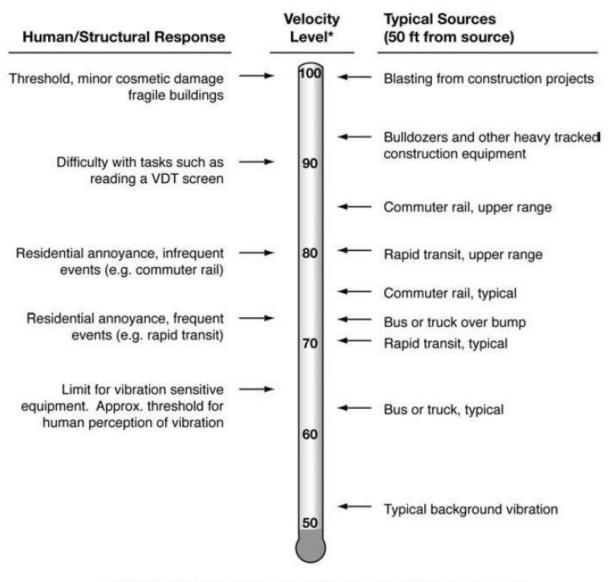


EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION

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

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



3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (8) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The State of California's Green Building Standards Code contains mandatory measures for nonresidential building construction in Section 5.507 on Environmental Comfort. (9) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other noise source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be construction to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

3.3 CITY OF VICTORVILLE GENERAL PLAN NOISE ELEMENT

The City of Victorville General Plan Noise Element is intended to limit exposure of the community to excessive noise levels. (10) The City of Victorville General Plan Noise Element land use compatibility standards specify the noise levels allowable for new developments impacted by transportation noise sources. The City's compatibility criteria, found in Table N-3 of the General Plan, identify the criteria for the multi-family and commercial land uses such as the Project, as shown on Exhibit 3-A. For the multi-family residential land use, exterior noise levels of less than 65 dBA CNEL are considered normally acceptable, conditionally acceptable with exterior noise



levels between 65 to 70 dBA CNEL, and *normally unacceptable* with exterior noise levels above 70 dBA CNEL. For the commercial land use, exterior noise levels of less than 70 dBA CNEL are considered *normally acceptable*, and *conditionally acceptable* with exterior noise levels between 70 to 75 dBA CNEL, and *normally unacceptable* with exterior noise levels above 75 dBA CNEL.

Table N-3 Victorville Land Use Compatibility S	tand	ards					
	Cor	Community Noise Exposure Ldn or CNEL, dB					
Land Use Categories	55	60	65	70	75	80 +	
Residential - Low Density, Single Family, Duplex, Multi- family, Mobile Home	1	1	2	2	3	4	4
Transient Lodging - Motels, Hotels	1	1	2	2	3	3	4
Schools, Libraries, Churches, Hospitals, Nursing Homes	1	1	2	3	3	4	4
Auditoriums, Concert Halls, Amphitheaters	2	2	3	3	4	4	4
Sports Arena, Outdoor Spectator Sports	2	2	2	2	3	3	3
Playgrounds, Neighborhood Parks	1	1	1	2	3	3	3
Golf Courses, Riding Stables, Water Recreation, Cemeteries	1	1	1	2	2	4	4
Office Buildings, Business Commercial, Retail Commercial and Professional		1	1	2	2	3	3
Industrial, Manufacturing, Utilities		1	1	1	2	2	2
Agriculture			1	1	1	1	1
 NORMALLY ACCEPTABLE: Specified land use is satisfact that any buildings involved are of normal conventional con- noise insulation requirements. CONDITIONALLY ACCEPTABLE: New construction or dev only after a detailed analysis of the noise reduction require braries, Churches, Hospitals, Nursing Homes 1 needed no in the design. Conventional construction, with closed windo or air conditioning will normally suffice. NORMALLY UNACCEPTABLE: New construction or develo couraged. If new construction or development does procee noise reduction requirements must be made and needed n in the design. 	struct velopr ment bise ir bws a opme ed, a	ion, v ment s is n nsula nd fro nt sh detail	vitho shou nade tion f esh a ould ed ai	ut an IId be and eatur air sup gene nalys	y spe unde Scho res in pply s rally is of	ecial ertake ols, L clude syster be dis the	en i- d ms S-
 CLEARLY UNACCEPTABLE: New construction or develop undertaken. 	ment	shou	ıld ge	enera	lly nc	ot be	

EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY CRITERIA

Source: City of Victorville General Plan Noise Element, Table N-3.



3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Ottawa Business Center Project, stationary-source (operational) noise such as the expected cold storage loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements are typically evaluated against standards established under a jurisdiction's Municipal Code.

Section 13.01.030 of the City of Victorville Municipal Code, establishes the noise level standards for stationary noise sources. For residential properties, the exterior noise level shall not exceed 65 dBA L_{eq} during the daytime hours (7:00 a.m. to 10:00 p.m.) and 55 dBA L_{eq} during the nighttime hours (10:00 p.m. to 7:00 a.m.). (11) For commercial uses, exterior noise levels shall not exceed 70 dBA L_{eq} at any time. For the industrial uses the exterior noise levels commercial uses shall not exceed 75 dBA L_{eq} at any time. The operational noise level standards are shown on Table 3-1.

Land Llag	Exterior Noise Levels (dBA L _{eq}) ²				
Land Use	Daytime (7am-10pm)	Nighttime (10pm-7am)			
Residential	65	55			
Commercial	70				
Industrial	5				

TABLE 3-1: OPERATIONAL NOISE STANDARDS

¹ City of Victorville Municipal Code, Section 13.01.030 (Appendix 3.1).

 2 L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given period.

3.5 CONSTRUCTION NOISE STANDARDS

Section 13.01.060.9 of the City of Victorville Municipal Code, provided in Appendix 3.1, indicates that construction activity is considered exempt from the noise level standards on private properties that are determined by the director of building and safety to be essential to the completion of a project. However, neither the City of Victorville General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for



construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (7 p. 179).

3.6 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (7)

To analyze vibration impacts originating from the operation and construction of the Ottawa Business Center, vibration-generating activities are appropriately evaluated against standards established under a City of Victorville's Municipal Code, if such standards exist. However, the City of Victorville does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (12 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).



4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

- A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- B. Generation of excessive ground-borne vibration or ground-borne noise levels?
- C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 Noise Level Increases (Threshold A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach *recognizes that there is no single noise increase that renders the noise impact significant*. (13) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (14) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}). The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely* perceptible, and 1.5 dBA depending on the underlying without Project noise levels for noisesensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (15 p. 2 48).



4.2 VIBRATION (THRESHOLD B)

As described in Section 3.6, the vibration impacts originating from the construction of the Ottawa Business Center, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the Apple Valley Airport located around 7.19 northeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant*, and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

Analysia	Condition(c)	Significance Criteria			
Analysis	Condition(s)	Daytime	Nighttime		
	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase			
Off-Site ¹	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase			
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase			
On-Site	Exterior Noise Compatibility Criteria ²	See Exhibit 3-A			
Un-site	Interior Noise Level Standard ³	50 dBA L _{eq}			
	Exterior Noise Level Standards ⁴	See Table 3-1			
Operational	If ambient is < 60 dBA Leq ¹	≥ 5 dBA L _{eq} Project increase			
Operational	If ambient is 60 - 65 dBA Leq ¹	≥ 3 dBA L _{eq} Project increase			
	If ambient is > 65 dBA Leq ¹	≥ 1.5 dBA L _{eq} Project increas			
Construction	Noise Level Threshold ⁵	80 dBA L _{eq}			
Construction	Vibration Level Threshold ⁶	0.3 PPV (in/sec)			

TABLE 4-1: 9	SIGNIFICANCE	CRITERIA	SUMMARY
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¹ FICON, 1992.

² City of Victorville General Plan Noise Element Land Use Compatibility Standards (Table N-3).

³ State of California Green Building Standards Code 5.507.4.2.

⁴ City of Victorville Municipal Code, Section 13.01.030 (Appendix 3.1).

⁵ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.

⁶ Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.

[&]quot;Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, May 27, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (16)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources. (2) Further, FTA guidance states, that it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community. (7)*

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (7) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels



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

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the hourly energy average sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

Location ¹	ion ¹ Description		Energy Average Noise Level (dBA L _{eq}) ²	
		Daytime	Nighttime	
L1	Located north of the Project site on Tropicana Drive near existing single-family residential home at 13758 Tropicana Drive.	56.6	55.1	62.2
L2	Located east of the Project site on Jubilee Place near existing single-family residential home at 13432 Jubilee Place.	56.2	54.6	61.7
L3	Located east of the Project site on Bluff Crest Street near existing single-family residential home at 13284 High Mesa Street.	56.1	57.6	64.0
L4	Located west of the Project site on Ottawa Street near existing single-family residential home at 13291 Great Falls Avenue.	58.1	56.2	63.3
L5	Located west of the Project site on Grant Street near existing single-family residential home at 16883 Lambert Lane.	48.7	52.4	58.6

TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

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

² Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.

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

Table 5-1 provides the equivalent noise levels used to describe the daytime and nighttime ambient conditions and the calculated 24-hour CNEL. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each of the daytime and nighttime hours.



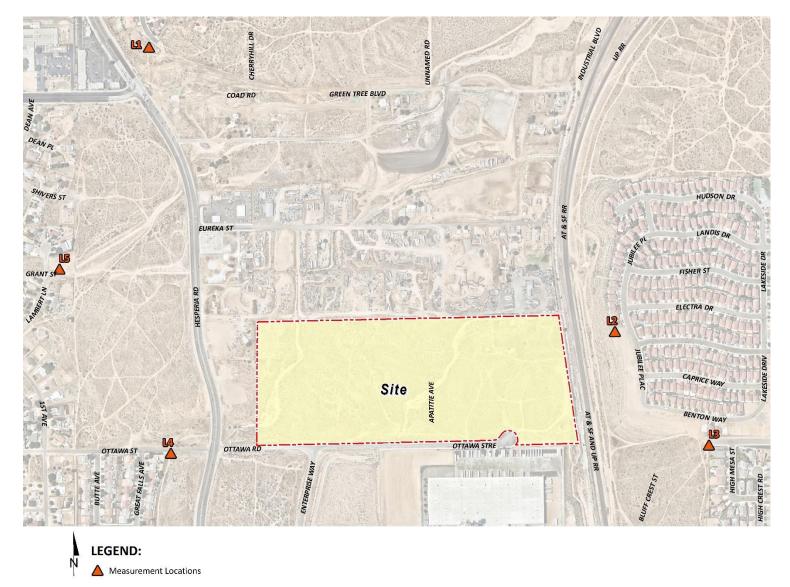


EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future transportation related noise environment. Consistent with the City of Victorville *Land Use Compatibility Standards* guidelines outline on Exhibit 3-A, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (17) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (18) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (19)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the eight off-site study area roadway segments, the distance from the centerline to adjacent receiving land use based on the functional roadway classifications per the City of Victorville General Plan Circulation Element, and the vehicle speeds. The ADT volumes used in this study are presented on Table 6-2 are based on the Ottawa Business Center *Traffic Analysis* prepared by Urban Crossroads, Inc. for the following traffic conditions:

- 1. Existing Without Project (2021)
- 2. Existing With Project (E+P)
- 3. Opening Year Cumulative (2024) Without Project (OY)
- 4. Opening Year Cumulative (2024) With Project (OYP)
- 5. Future Year (2034) Without Project (FY)
- 6. Future Year (2034) With Project (FYP)



ID	Roadway	Segment	Classification ¹	Centerline Distance to Receiving Land Use ²	Vehicle Speed (mph)
1	Seventh Av.	s/o Nisqualli Rd.	Arterial	42'	40
2	Hesperia Rd.	n/o Ottawa St.	Super Arterial	62'	50
3	Hesperia Rd.	s/o Ottawa St.	Super Arterial	62'	50
4	Hesperia Rd.	s/o Nisqualli Rd.	Super Arterial	62'	45
5	La Mesa Rd.	w/o Amargosa Rd.	Major Arterial	50'	45
6	Nisqualli Rd.	e/o Mariposa Rd.	Major Arterial	50'	45
7	Ottawa St.	w/o Hesperia Rd.	Collector	32'	45
8	Nisqualli Rd.	w/o Hesperia Rd.	Arterial	42'	45
1 Cite	, of Vistonillo Conorol	Plan Circulation Element	•		

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

¹ City of Victorville General Plan Circulation Element

² Based upon the right-of-way distances for each roadway classification provided in the General Plan Circulation Element.

			Average Daily Traffic Volumes ¹						
			Exis	ting	OY 2	OY 2023		034	
ID	ID Roadway	Segment	Without Project	With Project	Without Project	With Project	Without Project	With Project	
1	Seventh Av.	s/o Nisqualli Rd.	13,658	13,742	13,742	13,826	17,880	17,964	
2	Hesperia Rd.	n/o Ottawa St.	35,265	35,766	35,767	36,268	45,979	46,480	
3	Hesperia Rd.	s/o Ottawa St.	35,573	37,113	37,113	38,653	46,378	47,917	
4	Hesperia Rd.	s/o Nisqualli Rd.	28,590	28,924	29,796	30,130	36,984	37,318	
5	La Mesa Rd.	w/o Amargosa Rd.	43,020	43,187	43,188	43,355	55,651	55,818	
6	Nisqualli Rd.	e/o Mariposa Rd.	35,573	36,695	37,113	38,235	46,378	47,500	
7	Ottawa St.	w/o Hesperia Rd.	733	817	817	901	948	1,032	
8	Nisqualli Rd.	w/o Hesperia Rd.	15,891	17,097	17,097	18,303	20,557	21,762	

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

¹ Ottawa Business Center Traffic Analysis, Urban Crossroads, Inc.

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. In addition, the off-site traffic noise analysis is based on a PM peak hour to average daily traffic (peak-to-daily) relationship of 9.38%. (20)

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Impact Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 through 6-



7 show the vehicle mixes used for the with Project traffic scenarios. Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

		Total of Time of		
Vehicle Type	Daytime	Evening	Nighttime	Day Splits
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

¹ Typical Southern California vehicle mix.

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

TABLE 6-4: WITHOUT PROJECT VEHIVCLE MIX

Classification		Total		
Classification	Autos	Medium Trucks	Heavy Trucks	TOLAI
All Roadways ¹	95.48%	2.99%	1.53%	100.00%

¹ Based on an existing vehicle count taken at Hesperia Road and Nisqualli Road (Ottawa Business Center, Traffic Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

				With P	Nith Project ¹		
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²	
1	Seventh Av.	s/o Nisqualli Rd.	95.51%	2.97%	1.52%	100.00%	
2	Hesperia Rd.	n/o Ottawa St.	95.55%	2.94%	1.51%	100.00%	
3	Hesperia Rd.	s/o Ottawa St.	94.45%	3.00%	2.55%	100.00%	
4	Hesperia Rd.	s/o Nisqualli Rd.	95.54%	2.95%	1.51%	100.00%	
5	La Mesa Rd.	w/o Amargosa Rd.	95.50%	2.98%	1.52%	100.00%	
6	Nisqualli Rd.	e/o Mariposa Rd.	94.38%	3.04%	2.58%	100.00%	
7	Ottawa St.	w/o Hesperia Rd.	95.95%	2.68%	1.37%	100.00%	
8	Nisqualli Rd.	w/o Hesperia Rd.	93.15%	3.08%	3.77%	100.00%	

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

¹ Ottawa Business Center, Traffic Analysis, Urban Crossroads, Inc.

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



				roject ¹		
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²
1	Seventh Av.	s/o Nisqualli Rd.	95.51%	2.97%	1.52%	100.00%
2	Hesperia Rd.	n/o Ottawa St.	95.55%	2.95%	1.51%	100.00%
3	Hesperia Rd.	s/o Ottawa St.	94.49%	3.00%	2.51%	100.00%
4	Hesperia Rd.	s/o Nisqualli Rd.	95.53%	2.95%	1.51%	100.00%
5	La Mesa Rd.	w/o Amargosa Rd.	95.50%	2.98%	1.52%	100.00%
6	Nisqualli Rd.	e/o Mariposa Rd.	94.43%	3.04%	2.54%	100.00%
7	Ottawa St.	w/o Hesperia Rd.	95.90%	2.71%	1.39%	100.00%
8	Nisqualli Rd.	w/o Hesperia Rd.	93.30%	3.07%	3.62%	100.00%

TABLE 6-6: OYC 2024 WITH PROJECT VEHICLE MIX

¹ Ottawa Business Center, Traffic Analysis, Urban Crossroads, Inc.

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

			With Project ¹				
ID	Roadway	Segment	Autos	Medium Trucks	Heavy Trucks	Total ²	
1	Seventh Av.	s/o Nisqualli Rd.	95.50%	2.97%	1.52%	100.00%	
2	Hesperia Rd.	n/o Ottawa St.	95.53%	2.95%	1.51%	100.00%	
3	Hesperia Rd.	s/o Ottawa St.	94.68%	3.00%	2.32%	100.00%	
4	Hesperia Rd.	s/o Nisqualli Rd.	95.52%	2.96%	1.52%	100.00%	
5	La Mesa Rd.	w/o Amargosa Rd.	95.50%	2.98%	1.52%	100.00%	
6	Nisqualli Rd.	e/o Mariposa Rd.	94.63%	3.03%	2.34%	100.00%	
7	Ottawa St.	w/o Hesperia Rd.	95.85%	2.74%	1.41%	100.00%	
8	Nisqualli Rd.	w/o Hesperia Rd.	93.65%	3.06%	3.29%	100.00%	

TABLE 6-7: FY 2034 WITH PROJECT VEHICLE MIX

¹ Ottawa Business Center, Traffic Analysis, Urban Crossroads, Inc.

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

6.2 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior noise levels, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each operational noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe



individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

6.2.1 CADNAA OPERATIONAL NOISE METHODOLOGY

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces.

6.2.2 FEDERAL TRANSIT AND RAIL ADMINISTRATION METHODOLOGIES

The CadnaA noise prediction model provides the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) methodology protocol for railroad-related noise modeling. This includes emission parameters for multiple types of trains and associated noise sources such as locomotives, cars, and horns or warning signals. The FTA/FRA methodology within the CadnaA model analyzes each train pass-by event based on the number and type of locomotives, and cars during the daytime, evening, and nighttime hours to calculate the exterior noise levels.

The existing train volumes shown on Exhibit 6-8 were obtained from the Department of Transportation Crossing Inventory Form at Lilac Avenue (Crossing Number 026080V). (21) According to Crossing Inventory Form included in Appendix 6-1, the number of daily train movements is 34 during the daytime and 34 during nighttime hours with a total of 68 daily train movements at a speed of 50 miles per hour.

		Trains Per Day				
Type of Rail Activity	Speed (mph)	Daytime	Nighttime	Total		
Freight ¹	50	34	34	68		

 TABLE 6-8: EXISTING RAILROAD PARAMETERS

¹U.S. Department of Transportation Crossing Inventory Number 026080V dated 4/14/2020. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

6.3 CONSTRUCTION VIBRATION ASSESSMENT METHODOLOGY

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). (7) However, while vehicular traffic is rarely perceptible, construction has



the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-9. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by FTA. To determine vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.1}$

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

TABLE 6-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual



7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *Ottawa Business Center Traffic Analysis*, prepared by Urban Crossroads, Inc. (20)

7.1 NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at receiving land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the eight study area roadway segments analyzed under each of the following conditions:

- 1. Existing Without Project (2021)
- 2. Existing With Project (E+P)
- 3. Opening Year Cumulative (2024) Without Project (OY)
- 4. Opening Year Cumulative (2024) With Project (OYP)
- 5. Future Year (2034) Without Project (FY)
- 6. Future Year (2034) With Project (FYP)

Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.



10	CNEL at Nearest		Distance to C	ontour from Cen	terline (Feet)	
ID	Road	Segment	Receiving Land Use (dBA) ¹	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Seventh Av.	s/o Nisqualli Rd.	69.5	RW	83	179
2	Hesperia Rd.	n/o Ottawa St.	74.0	114	246	531
3	Hesperia Rd.	s/o Ottawa St.	74.0	115	248	534
4	Hesperia Rd.	s/o Nisqualli Rd.	72.0	84	182	391
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	104	224	483
6	Nisqualli Rd.	e/o Mariposa Rd.	73.9	92	197	425
7	Ottawa St.	w/o Hesperia Rd.	60.2	RW	RW	33
8	Nisqualli Rd.	w/o Hesperia Rd.	71.3	51	110	238

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use. "RW" = Location of the respective noise contour falls within the right-of-way of the road.

ID	Road	Segment	CNEL at Nearest Receiving Land Use (dBA) ¹	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Seventh Av.	s/o Nisqualli Rd.	69.5	RW	83	180
2	Hesperia Rd.	n/o Ottawa St.	74.0	115	248	534
3	Hesperia Rd.	s/o Ottawa St.	74.9	132	284	612
4	Hesperia Rd.	s/o Nisqualli Rd.	72.0	85	182	393
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	104	224	483
6	Nisqualli Rd.	e/o Mariposa Rd.	74.9	106	228	490
7	Ottawa St.	w/o Hesperia Rd.	60.5	RW	RW	35
8	Nisqualli Rd.	w/o Hesperia Rd.	73.2	68	147	317

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.



10	Deed	Segment	CNEL at Nearest	Distance to Contour from Centerline (Feet)			
ID	Road	Segment	Receiving Land Use (dBA) ¹	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
1	Seventh Av.	s/o Nisqualli Rd.	69.5	RW	84	180	
2	Hesperia Rd.	n/o Ottawa St.	74.0	115	249	536	
3	Hesperia Rd.	s/o Ottawa St.	74.2	118	255	549	
4	Hesperia Rd.	s/o Nisqualli Rd.	72.2	87	187	402	
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	104	225	484	
6	Nisqualli Rd.	e/o Mariposa Rd.	74.1	94	203	437	
7	Ottawa St.	w/o Hesperia Rd.	60.7	RW	RW	36	
8	Nisqualli Rd.	w/o Hesperia Rd.	71.6	54	116	250	

TABLE 7-3: OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT CONTOURS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use. "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: OPENING YEAR CUMULATIVE (2024) WITH PROJECT CONTOURS

	Deed	Segment	CNEL at Nearest	Distance to Contour from Centerline (Feet)			
ID	Road	Segment	Receiving Land Use (dBA) ¹	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
1	Seventh Av.	s/o Nisqualli Rd.	69.5	RW	84	180	
2	Hesperia Rd.	n/o Ottawa St.	74.1	116	250	539	
3	Hesperia Rd.	s/o Ottawa St.	75.1	135	291	626	
4	Hesperia Rd.	s/o Nisqualli Rd.	72.2	87	187	404	
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	104	225	484	
6	Nisqualli Rd.	e/o Mariposa Rd.	75.0	108	233	502	
7	Ottawa St.	w/o Hesperia Rd.	60.9	RW	RW	37	
8	Nisqualli Rd.	w/o Hesperia Rd.	73.4	70	152	327	

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.



	Deed	Sogmont	CNEL at Nearest Receiving	Distance to Contour from Centerline (Feet)			
ID	Road	Segment	Land Use (dBA) ¹	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
1	Seventh Av.	s/o Nisqualli Rd.	70.6	46	100	215	
2	Hesperia Rd.	n/o Ottawa St.	75.1	136	294	633	
3	Hesperia Rd.	s/o Ottawa St.	75.2	137	296	637	
4	Hesperia Rd.	s/o Nisqualli Rd.	73.1	100	216	465	
5	La Mesa Rd.	w/o Amargosa Rd.	75.9	123	266	573	
6	Nisqualli Rd.	e/o Mariposa Rd.	75.1	109	235	507	
7	Ottawa St.	w/o Hesperia Rd.	61.4	RW	RW	39	
8	Nisqualli Rd.	w/o Hesperia Rd.	72.4	61	131	282	

TABLE 7-5: FUTURE YEAR (2034) WITHOUT PROJECT CONTOURS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use. "RW" = Location of the respective noise contour falls within the right-of-way of the road.

	Deed	Segment	CNEL at Nearest	Distance to Contour from Centerline (Feet)			
ID	Road	Segment	Receiving Land Use (dBA) ¹	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	
1	Seventh Av.	s/o Nisqualli Rd.	70.6	46	100	215	
2	Hesperia Rd.	n/o Ottawa St.	75.2	137	295	636	
3	Hesperia Rd.	s/o Ottawa St.	75.9	153	329	709	
4	Hesperia Rd.	s/o Nisqualli Rd.	73.1	100	216	466	
5	La Mesa Rd.	w/o Amargosa Rd.	75.9	124	266	574	
6	Nisqualli Rd.	e/o Mariposa Rd.	75.8	122	263	567	
7	Ottawa St.	w/o Hesperia Rd.	61.6	RW	RW	41	
8	Nisqualli Rd.	w/o Hesperia Rd.	73.9	77	165	356	

TABLE 7-6: FUTURE YEAR (2034) WITH PROJECT CONTOURS

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use. "RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been provided to fully analyze the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 60.2 to 74.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 60.5 to 74.9 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level increases range from 0.0 to 1.9 dBA CNEL on



the study area roadway segments. Based on the significance criteria for off-site traffic noise presented in Table 4-1, the following study area roadway segment is shown to experience *potentially significant* off-site traffic noise level increase due to the proposed Project truck trip distribution under Existing with Project conditions.

• Existing noise-sensitive use on Nisqualli Road west of Hesperia Road (Segment #8)

7.3 PROJECT OPENING YEAR CUMULATIVE (2024) TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Project Opening Year Cumulative (2024) without Project conditions CNEL noise levels. The Project Opening Year Cumulative (2024) without Project exterior noise levels range from 60.7 to 74.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the Project Opening Year Cumulative (2024) with Project conditions will also range from 60.9 to 75.1 dBA CNEL. Table 7-8 shows that the Project off-site traffic noise level increases range from 0.0 to 1.8 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, the following study area roadway segment is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project truck trip distribution under Opening Year Cumulative (2024) with Project conditions.

• Existing noise-sensitive use on Nisqualli Road west of Hesperia Road (Segment #8)

7.4 FUTURE YEAR (2034) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Future Year (2034) without Project conditions CNEL noise levels. The Future Year (2034) without Project exterior noise levels range from 61.4 to 75.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the Future Year (2034) with Project conditions will also range from 61.6 to 75.9 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases range from 0.0 to 1.5 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, the following study area roadway segment is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project truck trip distribution under Future Year (2034) with Project conditions.

• Existing noise-sensitive use on Nisqualli Road west of Hesperia Road (Segment #8)



ID	Road	Segment		EL at Receiv and Use (dBA	Incremental Noise Level Increase Threshold ²		
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Seventh Av.	s/o Nisqualli Rd.	69.5	69.5	0.0	1.5	No
2	Hesperia Rd.	n/o Ottawa St.	74.0	74.0	0.0	1.5	No
3	Hesperia Rd.	s/o Ottawa St.	74.0	74.9	0.9	1.5	No
4	Hesperia Rd.	s/o Nisqualli Rd.	72.0	72.0	0.0	1.5	No
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	74.8	0.0	1.5	No
6	Nisqualli Rd.	e/o Mariposa Rd.	73.9	74.9	1.0	1.5	No
7	Ottawa St.	w/o Hesperia Rd.	60.2	60.5	0.3	3.0	No
8	Nisqualli Rd.	w/o Hesperia Rd.	71.3	73.2	1.9	1.5	Yes

TABLE 7-7: EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use. ² Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?



ID	Road	Segment		EL at Receiv and Use (dBA	Incremental Noise Level Increase Threshold ²		
		5	NoWithProjectProjectProjectAddition		-	Limit	Exceeded?
1	Seventh Av.	s/o Nisqualli Rd.	69.5	69.5	0.0	1.5	No
2	Hesperia Rd.	n/o Ottawa St.	74.0	74.1	0.1	1.5	No
3	Hesperia Rd.	s/o Ottawa St.	74.2	75.1	0.9	1.5	No
4	Hesperia Rd.	s/o Nisqualli Rd.	72.2	72.2	0.0	1.5	No
5	La Mesa Rd.	w/o Amargosa Rd.	74.8	74.8	0.0	1.5	No
6	Nisqualli Rd.	e/o Mariposa Rd.	74.1	75.0	0.9	1.5	No
7	Ottawa St.	w/o Hesperia Rd.	60.7	60.9	0.2	3.0	No
8	Nisqualli Rd.	w/o Hesperia Rd.	71.6	73.4	1.8	1.5	Yes

TABLE 7-8: OPENING YEAR CUMULATIVE (2024) TRAFFIC NOISE LEVEL INCREASES

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use. ² Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

ID	Road	Segment		EL at Receiv and Use (dBA	Incremental Noise Level Increase Threshold ²		
		5	NoWithProjectProjectProjectAddition		Project Addition	Limit	Exceeded?
1	Seventh Av.	s/o Nisqualli Rd.	70.6	70.6	0.0	1.5	No
2	Hesperia Rd.	n/o Ottawa St.	75.1	75.2	0.1	1.5	No
3	Hesperia Rd.	s/o Ottawa St.	75.2	75.9	0.7	1.5	No
4	Hesperia Rd.	s/o Nisqualli Rd.	73.1	73.1	0.0	1.5	No
5	La Mesa Rd.	w/o Amargosa Rd.	75.9	75.9	0.0	1.5	No
6	Nisqualli Rd.	e/o Mariposa Rd.	75.1	75.8	0.7	1.5	No
7	Ottawa St.	w/o Hesperia Rd.	61.4	61.6	0.2	3.0	No
8	Nisqualli Rd.	w/o Hesperia Rd.	72.4	73.9	1.5	1.5	Yes

TABLE 7-9: FUTURE YEAR (2034) PROJECT TRAFFIC NOISE LEVEL INCREASES

¹ The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use. ² Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.5 OFF-SITE TRAFFIC NOISE MITIGATION

To reduce the *potentially significant* Project traffic noise level increases on the study area roadway segment (Segment #8) for Existing plus Project, Opening Year, and Future Year conditions, potential noise mitigation measures are identified in this analysis. Potential mitigation measures discussed below include rubberized asphalt hot mix pavement and off-site noise barriers for the existing residential land uses adjacent to impacted roadway segments.

7.5.1 RUBBERIZED ASPHALT

Due to the potential noise attenuation benefits, rubberized asphalt is considered as a mitigation measure for the off-site Project-related traffic noise level increases. To reduce traffic noise levels at the noise source, Caltrans research has shown that rubberized asphalt can provide noise attenuation of approximately 4 dBA for automobile traffic noise levels. (22) Changing the pavement type of a roadway has been shown to reduce the amount of tire/pavement noise produced at the source under both near-term and long-term conditions. Traffic noise is generated primarily by the interaction of the tires and pavement, the engine, and exhaust systems. For automobiles noise, as much as 75 to 90-percent of traffic noise is generated by the interaction of the tires and pavement, and constant speeds. (2) According to research conducted by Caltrans (22) and the Canadian Ministry of Transportation and Highways (23) a 4 dBA reduction in tire/pavement noise is attainable using rubberized asphalt under typical operating conditions.

The effectiveness of reducing traffic noise levels is higher on roadways with low percentages of heavy trucks, since the heavy truck engine and exhaust noise is not affected by rubberized alternative pavement due to the truck engine and exhaust stack height above the pavement itself. (22) Per Caltrans guidance a truck stack height is modeled using a height of 11.5 feet above the road. (4) (24) With the primary off-site traffic noise source consisting of heavy trucks with a stack height of 11.5 feet off the ground, the tire/pavement noise reduction benefits associated rubberized asphalt will be primarily limited to autos.

While the off-site Project-related traffic noise level increases would theoretically be reduced with the 4 dBA reduction provided by rubberized asphalt, the reduction would not provide reliable benefits for the noise levels generated by heavy truck traffic. This is, as previously stated, due to the noise source height difference between automobiles and trucks. While rubberized asphalt will provide some noise reduction, this noise study recognizes that this is only effective for tireon-pavement noise at higher speeds and would not reduce truck-related off-site traffic noise levels associated with truck engine and exhaust stacks to less than significant levels. Since the use of rubberized asphalt would not lower the off-site traffic noise levels below a level of significance, rubberized asphalt is not proposed as mitigation for the Project and the off-site Project-related traffic noise level increases at adjacent land uses would remain *significant*.

7.5.2 OFF-SITE NOISE BARRIERS

Since existing and future noise-sensitive receiving land uses are located adjacent to the impacted roadway segment in the Project study area, off-site noise barriers were considered in this analysis





as a potential traffic noise mitigation measure to reduce the impacts. Off-site noise barriers are estimated to provide a *readily perceptible* 5 dBA reduction which, according to the FHWA, is *simple* to attain when blocking the line-of-sight from the noise source to the receiver. (4) As previously discussed, Caltrans guidance in the Highway Design Manual, Section 1102.3(3), indicates that for design purposes, *the noise barrier should intercept the line of sight from the exhaust stack of a truck to the receptor*, and an 11.5-foot-high truck stack height is assumed to represent the truck engine and exhaust noise source. (24) Therefore, any exterior noise barriers at receiving noise sensitive land uses experiencing Project-related traffic noise level increases would need to be high enough and long enough to block the line-of-sight from the noise source (at 11.5 feet high per Caltrans) to the receiver (at 5 feet high per FHWA guidance) in order to provide a 5 dBA reduction per FHWA guidance. (24)

In addition, according to FHWA guidance, outdoor living areas are generally limited to outdoor living areas of frequent human use (e.g., backyards of single-family homes). Therefore, front and side yards of residential homes adjacent to off-site roadway segments do not represent noise sensitive areas of frequent human use that require exterior noise mitigation. (4) Exterior noise mitigation in the form of noise barriers is not anticipated to provide the FHWA attainable reduction of 5 dBA required to reduce the off-site traffic noise level increases and would also require potential openings for driveway access to individual residential lots fronting the road. As such, off-site noise barriers would not be feasible and would not lower the off-site traffic noise levels below a level of significance, and therefore, noise barriers are not proposed as mitigation for the Project.

7.5.3 SIGNIFICANT OFF-SITE TRAFFIC NOISE IMPACTS

Both rubberized asphalt and off-site noise barriers are considered as potential noise mitigation measures to reduce the *potentially significant* off-site traffic noise level increases shown on Tables 7-7 to 7-9. However, neither form of mitigation would eliminate the off-site traffic noise level increases at the adjacent land uses to the impacted roadway segments. Therefore, the Project-related off-site traffic noise level increases at adjacent noise-sensitive land are considered a *significant and unavoidable* impact.



8 ON-SITE NOISE LEVELS

To satisfy the State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507.4.2 on Environmental Comfort (9), an on-site exterior noise impact analysis has been completed to determine the noise exposure levels.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Based on the Project site plan, the Project would potentially have offices at the southwest and southeast of the proposed building. Based on the distance to the nearest airport, the Project would not be subject excessive aircraft noise levels. However, the project may be subject to ground level transportation noise from roadway traffic on the west end and the adjacent railroad on the east end. Traffic noise levels are based on traffic modeling conducted for the off-site impacts, the details of which are presented in Chapter 7 and Appendix 7.1. Based on the Future Year with Project conditions, noise levels approximately 62 feet from Hesperia Road are projected to be 75.1 dBA L_{eq} . The proposed building is located approximately 500 feet from the center of Hesperia Road, at this distance the noise level would attenuate to approximately 61.5 dBA L_{eq} .

A review of the existing ambient noise measurements provided in Section 5 shows that the areas near the Project site including are exposed to unmitigated exterior noise levels ranging from 50.1 to 58.1 dBA L_{eq} (measurement location L2). This includes the existing unmitigated ambient noise level measurement at 270 feet from the BNSF railroad. It is expected that the Project exterior building located approximately 310 feet west of the BNSF railroad will experience similar exterior noise levels to what was measured at location L2.

8.2 ON-SITE INTERIOR NOISE ANALYSIS

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Standard building construction will provide a Noise Reduction (NR) of approximately 25 dBA with "windows closed." (25) To satisfy the 50 dBA L_{eq} interior noise level performance criteria outlined in the California Green Building Standards Code Section 5.507.4.2, an interior noise reduction of up to 8.1 dBA and a "windows closed" condition requiring a means of mechanical ventilation (e.g. air conditioning) are required for the occupied offices within the Project.

The interior noise analysis indicates that typical building construction with an interior noise reduction of 25 dBA will provide an interior noise level of 33.1 dBA L_{eq} (exterior noise level of 58.1 dBA minus the typical noise reduction of 25 dBA). The interior noise analysis demonstrates that the Ottawa Business Center will satisfy the 50 dBA L_{eq} interior noise level performance criteria outlined in the California Green Building Standards Code Section 5.507.4.2 using standard building construction. Therefore, the on-site interior noise levels are considered *less than significant*.



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9 **RECEIVER LOCATIONS**

To assess the potential for long-term operational and short-term construction noise impacts, the following off-site receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, outpatient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, five receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

- R1: Location R1 represents existing noise sensitive residence at 17049 Montecito Drive, approximately 2,232 feet northwest of the Project site. Receiver R1 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2: Location R2 represents the existing noise sensitive residence at 13432 Jubilee Place, approximately 380 feet east of the Project site Receiver R2 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents the existing noise sensitive residence at 13284 High Mesa Street, approximately 1,011 feet southeast of the Project site. Receiver R3 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the existing noise sensitive residence at 13291 Great Falls Avenue, approximately 717 feet southwest of the Project site. Receiver R4 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.
- R5: Location R5 represents the existing noise sensitive residence at 16873 Lambert Lane, approximately 1,478 feet northwest of the Project site. Receiver R5 is placed in the



private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.





EXHIBIT 9-A: RECEIVER LOCATIONS



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10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of the Ottawa Business Center Project. Exhibit 11-A identifies the representative noise source activities used to assess the operational noise levels.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse and light industrial uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: cold storage loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 10-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the cold storage loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements all operating at the same time. These sources of noise activity will likely vary throughout the day.

10.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (16)



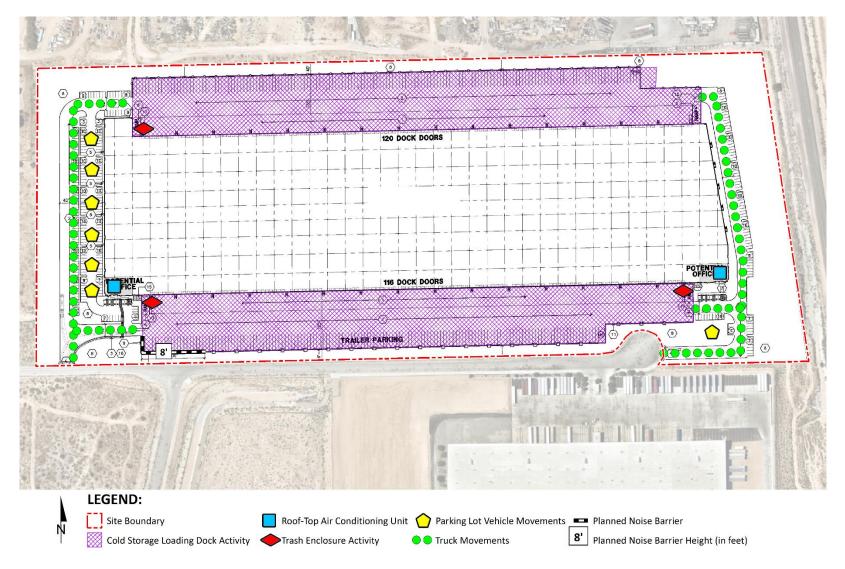


EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS

	Noise	Min.,	/Hour ²	Reference	Sound Power Level (dBA) ³	
Noise Source ¹	Source Height (Feet)	Day	Night	Noise Level @ 50 feet (dBA L _{eq})		
Cold Storage Loading Dock Activity	8'	60	60	65.7	111.5	
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9	
Trash Enclosure Activity	5'	10	10	57.3	89.0	
Parking Lot Vehicle Movements	5'	60	60	56.1	87.8	
Truck Movements	8'	60	60	59.8	93.2	

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

¹As measured by Urban Crossroads, Inc.

² Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

³ Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

10.2.2 COLD STORAGE LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, reefer activity (refrigerator truck/cold storage), deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 65.7 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. Specifically, the reference noise level measurement represents one truck located approximately 30 feet from the noise level measurement, a separate docked and running reefer truck was located approximately 50 feet east of the measurement location. Additional background noise sources included truck pass-by noise, truck drivers talking to each other next to docked trucks, and air brake release noise when trucks parked.

10.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq} . Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning unit is estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning unit is expected to be located on the roof of the Project building.



10.2.4 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

10.2.5 PARKING LOT

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was within the staff parking lot of an Amazon distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 56.1 dBA L_{eq} . Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with car doors opening and closing.

10.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represents multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

10.3 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include cold storage loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the nearest receiver locations are expected to range from 43.9 to 51.6 dBA L_{eq}.

Table 10-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the nearest receiver locations are expected to range from 43.0 to 50.6 dBA L_{eq} . The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity (Table 10-1). Appendix 10.1 includes the detailed noise model inputs including the planned 8-foot-high noise barrier as shown on Exhibit 10-A.



10.4 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Victorville exterior noise level standards at nearby noise-sensitive receiver locations. Table 10-4 shows the operational noise levels associated with Ottawa Business Center Project will satisfy the City of Victorville 65 dBA L_{eq} daytime and 55 dBA L_{eq} nighttime exterior noise level standards at all nearest receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

Notice Coursel	Operati	Operational Noise Levels by Receiver Location (dBA Leq)							
Noise Source ¹	R1	R2	R3	R4	R5				
Cold Storage Loading Dock Activity	43.7	51.4	46.8	48.7	45.2				
Roof-Top Air Conditioning Units	20.9	29.6	25.4	27.1	22.8				
Trash Enclosure Activity	14.8	22.5	17.1	21.2	18.2				
Parking Lot Vehicle Movements	24.0	29.3	26.7	32.7	28.1				
Truck Movements	26.8	36.8	32.6	35.1	30.1				
Total (All Noise Sources)	43.9	51.6	47.0	49.0	45.4				

TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

¹ See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Nation Courses1	Operati	Operational Noise Levels by Receiver Location (dBA Leq)							
Noise Source ¹	R1	R2	R3	R4	R5				
Cold Storage Loading Dock Activity	42.8	50.4	45.8	47.7	44.2				
Roof-Top Air Conditioning Units	20.0	28.7	24.4	26.2	21.8				
Trash Enclosure Activity	13.8	21.6	16.1	20.3	17.2				
Parking Lot Vehicle Movements	23.0	28.4	25.7	31.8	27.2				
Truck Movements	26.8	36.8	32.6	35.1	30.1				
Total (All Noise Sources)	43.0	50.6	46.1	48.1	44.5				

¹ See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.



Receiver Location ¹	Project Operational Noise Levels (dBA Leq) ²			l Standards Leq) ³	Threshold Exceeded? ⁴		
Location	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime	
R1	43.9	43.0	65	55	No	No	
R2	51.6	50.6	65	55	No	No	
R3	47.0	46.1	65	55	No	No	
R4	49.0	48.1	65	55	No	No	
R5	45.4	44.5	65	55	No	No	

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

¹ See Exhibit 10-A for the noise source locations.

² Proposed Project operational noise levels as shown on Tables 10-3 and 10-4.

³ City of Victorville Municipal Code, Section 13.01.030 (Appendix 3.1).

⁴ Do the estimated Project operational noise source activities exceed the noise level standards? "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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

10.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 10-5 and 10-6, respectively. As indicated on Tables 10-5 and 10-6, the Project will generate a daytime and nighttime operational noise level increases ranging from 0.2 to 1.5 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1, the increases at the sensitive receiver locations will be *less than significant*.



Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded? ⁷
R1	43.9	L1	56.6	56.8	0.2	5.0	No
R2	51.6	L2	56.2	57.5	1.3	5.0	No
R3	47.0	L3	56.1	56.6	0.5	5.0	No
R4	49.0	L4	58.1	58.6	0.5	5.0	No
R5	45.4	L5	48.7	50.4	1.7	5.0	No

TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL IN	CREASES
--	---------

¹ See Exhibit 10-A for the noise source locations.

² Total Project daytime operational noise levels as shown on Table 10-3.

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

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

⁵ Represents the combined ambient conditions plus the Project activities.

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

⁷ Significance Criteria as shown on Table 4-1.



Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded? ⁷
R1	43.0	L1	55.1	55.4	0.3	5.0	No
R2	50.6	L2	54.6	56.1	1.5	5.0	No
R3	46.1	L3	57.6	57.9	0.3	5.0	No
R4	48.1	L4	56.2	56.8	0.6	5.0	No
R5	44.5	L5	52.4	53.0	0.6	5.0	No

TABLE 10-6: NIGHTTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

¹ See Exhibit 10-A for the noise source locations.

² Total Project nighttime operational noise levels as shown on Table 10-4.

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

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

⁵ Represents the combined ambient conditions plus the Project activities.

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

⁷ Significance Criteria as shown on Table 4-1.



11 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 9.

11.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

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

11.2 Typical Construction Reference Noise Levels

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (26). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 11-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (27) to describe the typical construction activities for each stage of Project construction.



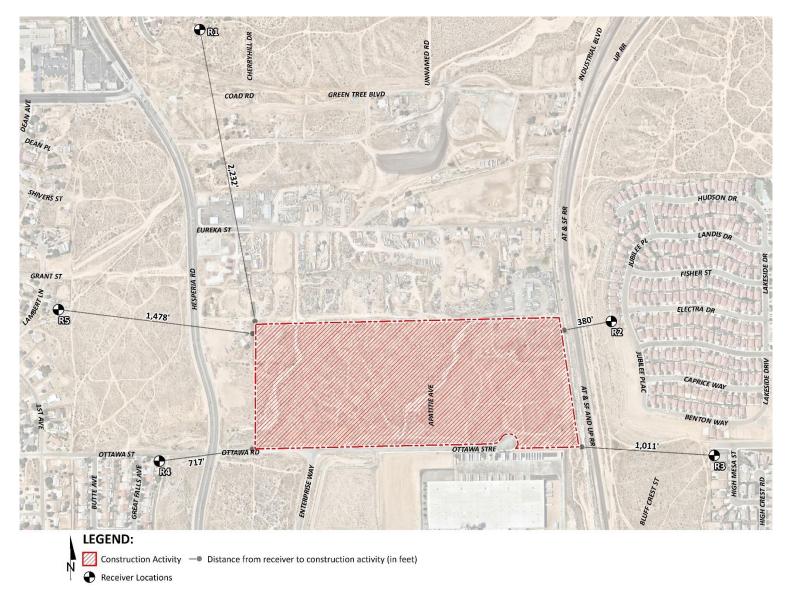


EXHIBIT 11-A: CONSTRUCTION NOISE SOURCE AND RECEIVER LOCATIONS



Construction Stage	Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq}) ¹	Combined Noise Level (dBA L _{eq})	
C 11	Crawler Tractors	77		
Site Preparation	Hauling Trucks	71	79	
reparation	Rubber Tired Dozers	71		
	Graders	79		
Grading	Compactors	67	79	
	Excavators	64		
	Tractors	72		
Building Construction	Cranes	67	74	
Construction	Welders	65		
	Pavers	70		
Paving	Paving Equipment	69	74	
	Rollers	69		
	Cranes	67		
Architectural	Architectural Coating Generator Sets		72	
Coating				

 TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

¹ Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) expressed in hourly average L_{eq} based on estimated usage factors from the FHWA Roadway Construction Noise Model (RCNM).

² Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance for general construction noise assessment.

11.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. Consistent with FTA guidance for general construction noise assessment, Table 11-1 presents the combined noise level for all equipment, assuming they operate at the same time. As shown on Table 11-2, the construction noise levels are expected to range from 52.8 to 69.0 dBA Lea, and the highest construction levels are expected to range from 59.8 to 69.0 dBA Leg at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs. The construction noise analysis presents a conservative approach with the combined noise-levelproducing equipment for each stage of Project construction operating at the closest point from primary construction activity (property line) to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location.



	Construction Noise Levels (dBA Leq)							
Receiver Location ¹	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels ²		
R1	59.8	59.8	54.8	54.8	52.8	59.8		
R2	69.0	69.0	64.0	64.0	62.0	69.0		
R3	63.9	63.9	58.9	58.9	56.9	63.9		
R4	65.8	65.8	60.8	60.8	58.8	65.8		
R5	62.0	62.0	57.0	57.0	55.0	62.0		

TABLE 11-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

¹Noise receiver locations are shown on Exhibit 11-A.

² Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

	Construction Noise Levels (dBA L _{eq})					
Receiver Location ¹	Highest Construction Noise Levels ² Threshold ³		Threshold Exceeded? ⁴			
R1	59.8	80	No			
R2	69.0	80	No			
R3	63.9	80	No			
R4	65.8	80	No			
R5	62.0	80	No			

¹Noise receiver locations are shown on Exhibit 11-A.

² Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 11-2.

³ Construction noise level thresholds as shown on Table 4-1.

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



11.5 CONSTRUCTION VIBRATION IMPACTS

Table 11-4 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 380 to 2,232 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.000 to 0.002 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec) for older residential buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver locations. In addition, the typical construction vibration levels at the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries.

	Distance to	Typical Construction Vibration Levels PPV (in/sec) ³					Thresholds	Thresholds
Receiver ¹ Const. Activity (Feet) ²	Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level	PPV (in/sec) ⁴	Exceeded? ⁵	
R1	2,232'	0.000	0.000	0.000	0.000	0.000	0.3	No
R2	380'	0.000	0.001	0.001	0.002	0.002	0.3	No
R3	1,011'	0.000	0.000	0.000	0.000	0.000	0.3	No
R4	717'	0.000	0.000	0.000	0.001	0.001	0.3	No
R5	1,478'	0.000	0.000	0.000	0.000	0.000	0.3	No

TABLE 11-4: PROJECT CONSTRUCTION VIBRATION LEVELS

¹ Receiver locations are shown on Exhibit 11-A.

² Distance from receiver location to Project construction boundary (Project site boundary).

³ Based on the Vibration Source Levels of Construction Equipment (Table 6-9).

⁴ Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.

⁵ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

Moreover, the impacts at the site of the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.



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12 REFERENCES

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- 27. FHWA. Roadway Construction Noise Model. January 2006.



13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Ottawa Business Center Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

Bill Lawson, P.E., INCE Principal URBAN CROSSROADS, INC. 1133 Camelback #8329 Newport Beach, CA 92658 (949) 581-3148 blawson@urbanxroads.com



EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018 Certified Acoustical Consultant – County of Orange • February, 2011 FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013



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APPENDIX 3.1:

CITY OF VICTORVILLE MUNICIPAL CODE



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Chapter 13.01 - NOISE CONTROL

Sections:

13.01.010 - Purpose and intent.

- (a) The purpose of this chapter is to establish criteria and standards for the regulation of noise levels within the city of Victorville.
- (b) The city council declares and finds that excessive noise levels are detrimental to the public health, welfare and safety and contrary to the public interest. It is the intent of this chapter to protect persons from excessive levels of noise from sources including, but not limited to; persons, animals, or fowl; automobiles, motorcycles, engines, machines, or other mechanical devices; loudspeakers, musical instruments, radios, televisions, phonographs, or other amplifying devices.
- (c) This chapter includes standards for the measurement of noise levels to ensure that noise levels do not disturb and interfere with the peace, comfort or repose of the residents of the neighborhood from which the noise is emitted.

(Ord. 1962 § 2 (part), 2002)

13.01.020 - Definitions.

The following words, phrases, and terms as used in this chapter shall have the following meanings:

- (1) "A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using A-weighting network. The level to read is designated db(A) or dB(A).
- (2) "Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding any intrusive noise.
- (3) "Cumulative period" means an additive period of time composed of individual time segments which may be continuous or interrupted.
- (4) "Decibel" means a unit of measure of sound level noise.
- (5) "Noise level" means the same as "sound level" and the terms may be used interchangeably herein.
- (6) "Sound level" (noise level) in decibels is the quantity measured using the frequency weighting of A of a sound level meter as defined herein.
- (7) "Sound level meter" means an instrument meeting American National Standard Institute's Standard S1.4-1971 for type 1 or type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(Ord. 1962 § 2 (part), 2002)

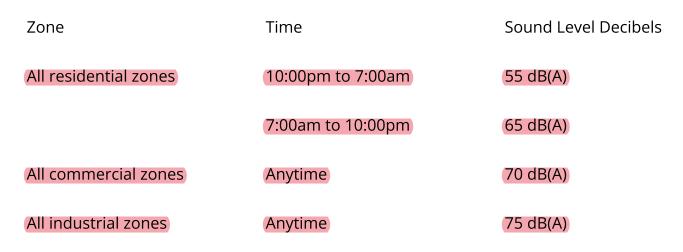
13.01.030 - Noise measurement criteria.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in this chapter. The location selected for measuring exterior noise levels shall be at any point on the property line of the offender or anywhere on the affected property.

(Ord. 1962 § 2 (part), 2002)

13.01.040 - Base ambient noise levels.

All ambient noise measurements shall commence in decibels within the respective zones and times as follows:



If the ambient noise level exceeds the applicable limit as noted in the above table, the ambient noise level shall be the standard.

(Ord. 1962 § 2 (part), 2002)

13.01.050 - Noise levels prohibited.

Noise levels shall not exceed the ambient noise levels in <u>Section 13.01.040</u> by the following dB(A) levels for the cumulative period of time specified:

- (1) Less than 5dB(A) for a cumulative period of more than thirty minutes in any hour;
- (2) Less than <u>10</u> dB(A) for a cumulative period of more than fifteen minutes in any hour;
- (3) Less than <u>15</u> dB(A) for a cumulative period of more than five minutes in any hour;
- (4) Less than 20 dB(A) for a cumulative period of more than one minute in any hour;
- (5) 20 dB(A) or more for any period of time.

(Ord. 1962 § 2 (part), 2002)

13.01.060 - Noise source exemptions.

The following activities shall be exempted from the provisions of this chapter:

- (1) All mechanical devices, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.
- (2) The provisions of this regulation shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation projects, public works projects or essential public works services and facilities, including those utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.
- (3) Activities conducted on the grounds of any elementary, intermediate or secondary school or college.
- (4) Outdoor gatherings, public dances and shows, provided said events are conducted pursuant to a permit as required by this code.
- (5) Activities conducted in public parks and public playgrounds, provided said events are conducted pursuant to a permit as required by this code.
- (6) Any activity to the extent regulation thereof has been preempted by state or federal law.
- (7) Traffic on any roadway or railroad right-of-way.
- (8) The operation of the Southern California Logistics Airport.
- (9) Construction activity on private properties that are determined by the director of building and safety to be essential to the completion of a project.

(Ord. 1962 § 2 (part), 2002)

13.01.070 - Notice and penalties.

Any person violating any of the provisions, or failing to comply with the requirements of this chapter, is guilty of a civil penalty, punishable in accordance with <u>Chapter 1.05</u>. In addition, in the discretion of the city attorney and based upon the specific facts and circumstances presented to him or her, any such violation may be charged as an infraction subject to the penalties contained in <u>Section 1.04.010</u>.

(Ord. 1962 § 2 (part), 2002)

13.01.080 - Severability.

If any provision of the ordinance codified in this chapter or the application thereof to any person or circumstance is held invalid, the remainder of the ordinance, and the application of such provision to other persons or circumstances, shall not be affected thereby.

(Ord. 1962 § 2 (part), 2002)



APPENDIX 5.1:

STUDY AREA PHOTOS







L1_E 34, 29' 42.390000"117, 16' 53.900000"



L1_N 34, 29' 42.380000"117, 16' 53.930000"



L1_S 34, 29' 42.410000"117, 16' 53.900000"



L1_W 34, 29' 42.380000"117, 16' 53.900000"



L2_E 34, 29' 34.000000"117, 16' 45.610000"



L2_N 34, 29' 33.990000"117, 16' 45.610000"



L2_S 34, 29' 34.060000"117, 16' 45.660000"



L2_W 34, 29' 34.070000"117, 16' 45.630000"



L3_E 34, 29' 33.630000"117, 17' 33.780000"



L3_N 34, 29' 33.630000"117, 17' 33.750000"



L3_S 34, 29' 33.650000"117, 17' 33.780000"



L3_W 34, 29' 33.650000"117, 17' 33.810000"



L4_E 34, 29' 47.380000"117, 17' 43.670000"



L4_N 34, 29' 47.320000"117, 17' 43.700000"



L4_S 34, 29' 47.350000"117, 17' 43.670000"



L4_W 34, 29' 47.340000"117, 17' 43.670000"



L5_E 34, 30' 3.790000"117, 17' 35.460000"



L5_N 34, 30' 3.790000"117, 17' 35.460000"



L5_S 34, 30' 3.790000"117, 17' 35.480000"



L5_W 34, 30' 3.790000"117, 17' 35.460000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS





						24-Ho	ur Noise L	evel Meas	urement S	ummary						
Date:	Thursday, N	/lay 27, 2021			Location:	L1 - Located	l north of the	e Project site	on Tropican	a Drive near	Meter:	Piccolo II			JN:	14035
Project:	Ottowa Bus	siness Center				0 0	gle-family re	sidential hon	ne at 13758	Tropicana					Analyst:	N. Boyko
						Drive.	Hourly I	dBA Readings	(unadiusted)							
							nouny L _{eq}	abA neuunigs	(unuujusteu)							
85.0 80.0 75.0 70.0	3															
(Vap) 80.0	ξ — — — — — — — — — — — — — — — — — — —															
0.0 و 65.0 ي 60.0 م	3 —															
60.0 ت 60.0	3												<u>ი</u>	+ + +		
1 55.0 1 55.0 1 55.0 1 55.0 45.0 45.0 40.0	(-	53.5	23.0	5.4	56.6	56.1 55.0		<mark>סי – מי</mark> –	- 4 •	1	56.9 57.3	28.3	<mark>59.9</mark>	58.1	<mark>57.3</mark> 56.4	ف
¥ 40.0	50.	51.5	23	55.		22. 55.	2 <mark>3.</mark>	27 23	2 <mark>.54</mark>	- <mark>.5.</mark>		_			<u>и</u> – и	24
35.0	0	1 2	3	4 5	6	7 8	9 :	10 11	12 1	.3 14	15 16	17	18 19	20	21 22	23
			-		-		-	Hour Be	eginning							
Timeframe	Hour	L _{eq}	L max	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0 1	50.1 51.5	57.0 57.8	44.6 47.2	56.7 57.5	56.3 57.0	54.9 56.0	53.9 55.1	50.8 51.9	48.3 50.0	45.5 48.0	45.1 47.6	44.8 47.3	50.1 51.5	10.0 10.0	60.1 61.5
	2	53.5	60.6	48.9	60.3	59.9	58.6	57.4	53.3	51.7	49.8	49.4	49.0	53.5	10.0	63.5
Night	3	53.0	59.1	49.2	58.9	58.6	57.6	56.5	53.3	51.8	49.9	49.7	49.3	53.0	10.0	63.0
	4	55.4	61.1	51.1	60.7	60.3	59.4	58.5	56.0	54.5	51.9	51.6	51.2	55.4	10.0	65.4
	5 6	58.2 56.6	64.1 62.1	54.3 52.9	63.8 61.7	63.4 61.3	62.3 60.3	61.2 59.7	59.0 57.3	57.0 55.7	55.0 53.6	54.7 53.3	54.4 53.0	58.2 56.6	10.0 10.0	68.2 66.6
	7	56.1	62.1	52.8	61.9	61.5	60.1	58.9	56.4	54.9	53.4	53.2	52.9	56.1	0.0	56.1
	8	55.0	63.2	49.3	63.0	62.6	60.7	59.1	55.0	52.7	50.2	49.8	49.4	55.0	0.0	55.0
	9	53.6	61.7	46.5	61.3	60.9	59.2	57.9	53.8	51.4	47.7	47.2	46.6	53.6	0.0	53.6
	10 11	53.9 54.8	61.5 62.2	47.6 47.3	61.2 61.9	60.8 61.5	59.2 60.1	57.9 59.1	54.4 55.9	52.1 52.1	48.8 48.6	48.2 48.1	47.8 47.5	53.9 54.8	0.0 0.0	53.9 54.8
Dav	12	54.4	63.6	46.9	63.1	62.3	60.4	58.9	54.2	51.3	48.1	47.6	47.1	54.4	0.0	54.4
Day	13	54.1	61.8	47.5	61.5	61.0	59.4	58.0	54.4	52.1	49.0	48.4	47.7	54.1	0.0	54.1
	14 15	55.9	65.6	48.0	65.1	64.4 64.0	61.9	60.2	55.6 57.1	52.8 54.9	49.3	48.8	48.2 50.8	55.9 56.9	0.0 0.0	55.9
	15	56.9 57.3	64.8 64.3	50.7 51.7	64.4 64.0	63.6	62.4 62.2	61.0 61.0	57.1	54.9	51.9 52.9	51.4 52.4	50.8	56.9	0.0	56.9 57.3
	17	58.3	65.5	52.7	65.1	64.7	63.1	62.1	58.6	56.6	53.8	53.3	52.8	58.3	0.0	58.3
	18	59.9	68.6	53.2	68.2	67.6	66.0	64.4	59.6	57.2	54.5	54.0	53.4	59.9	0.0	59.9
Evening	19 20	57.4 58.1	65.3 66.6	51.8 52.0	64.9 66.2	64.3 65.4	62.7 63.4	61.4 62.0	57.6 58.1	55.4 55.8	53.1 53.5	52.6 52.9	52.1 52.2	57.4 58.1	5.0 5.0	62.4 63.1
Evening	20	57.3	65.2	52.0	64.7	64.1	62.5	61.3	57.4	55.4	53.5	52.9	52.2	57.3	5.0	62.3
Night	22	56.4	63.5	51.7	63.1	62.7	61.4	60.2	56.3	54.9	53.0	52.5	51.9	56.4	10.0	66.4
Ū	23	54.9	64.9	49.9	63.8	62.1	58.7	57.2	54.7	53.4	51.2	50.7	50.2	54.9	10.0	64.9
Timeframe Day	Hour Min	L _{eq} 53.6	L _{max} 61.5	L _{min} 46.5	L1% 61.2	L2% 60.8	L5% 59.2	<i>L8%</i> 57.9	L25% 53.8	<i>L50%</i> 51.3	L90% 47.7	L95% 47.2	L99% 46.6		L _{eq} (dBA) Daytime	Nighttime
(7am-7pm)	Max	59.9	68.6	53.2	68.2	67.6	66.0	64.4	59.6	57.2	54.5	54.0	53.4	24-Hour	(7am-10pm)	(10pm-7am)
	Average	56.3		erage:	63.4	62.9	61.2	59.9	56.0	53.6	50.7	50.2	49.7	56.1	56.6	55.1
Evening	Min	57.3	65.2	51.8	64.7	64.1	62.5	61.3	57.4	55.4	53.1	52.6	52.1			
(7pm-10pm) Energy	Max Average	58.1 57.6	66.6 Ave	52.3 erage:	66.2 65.2	65.4 64.6	63.4 62.9	62.0 61.6	58.1 57.7	55.8 55.5	53.5 53.3	53.0 52.8	52.5 52.3	24-	Hour CNEL (d	ΙБАЈ
Night	Min	50.1	57.0	44.6	56.7	56.3	54.9	53.9	50.8	48.3	45.5	45.1	44.8	1	677	
(10pm-7am)	Max	58.2	64.9	54.3	63.8	63.4	62.3	61.2	59.0	57.0	55.0	54.7	54.4		62.2	
Energy	Average	55.1	Ave	erage:	60.7	60.2	58.8	57.7	54.7	53.0	50.9	50.5	50.1			



						24-Ho	ur Noise Le	evel Meas	urement S	ummary						
		May 27, 2021 siness Center			Location	0 0	d east of the gle-family res				Meter:	Piccolo II				14035 N. Boyko
						Place.	Hourly L _{ea} o	dBA Readings	(unadjusted)							
85.0																
85.0 80.0 75.0 70.0 65.0 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9																
65.0 60.0																
AJINOH 55.0 45.0 40.0	20.1	51.5	23.0	53.6 57.4	26.6	56.1 55.0		54.2	54.4 54.4	22.9	56.9 57.3	58.1	58.1 56.7	57.3	57.0 56.1	54.1
35.0) ++										45 45		10 10		24 22	
	0	1 2	3	4 5	6	7 8	9 1	0 11 Hour Be	12 1 eginning	3 14	15 16	17	18 19	-	21 22	23
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0	50.1 51.5	57.0 57.8	44.6 47.2	56.7 57.5	56.3 57.0	54.9 56.0	53.9 55.1	50.8 51.9	48.3 50.0	45.5 48.0	45.1 47.6	44.8 47.3	50.1 51.5	10.0 10.0	60.1 61.5
	2	53.5	60.6	48.9	60.3	59.9	58.6	57.4	53.3	51.7	49.8	49.4	49.0	53.5	10.0	63.5
Night	3 4	53.0 53.6	59.1 61.1	49.2 51.1	58.9 60.7	58.6 60.3	57.6 59.4	56.5 58.5	53.3 56.0	51.8 54.5	49.9 51.9	49.7 51.6	49.3 51.2	53.0 53.6	10.0 10.0	63.0
	4 5	53.6	61.1 64.1	51.1	60.7	60.3	62.3	58.5 61.2	56.0	54.5 57.0	51.9	51.6	51.2	53.6 57.4	10.0	63.6 67.4
	6	56.6	62.1	52.9	61.7	61.3	60.3	59.7	57.3	55.7	53.6	53.3	53.0	56.6	10.0	66.6
	7	56.1	62.1	52.8	61.9	61.5	60.1	58.9	56.4	54.9	53.4	53.2	52.9	56.1	0.0	56.1
	8	55.0 53.6	63.2 61.7	49.3 46.5	63.0 61.3	62.6 60.9	60.7 59.2	59.1 57.9	55.0 53.8	52.7 51.4	50.2 47.7	49.8 47.2	49.4 46.6	55.0 53.6	0.0 0.0	55.0 53.6
	10	53.9	61.5	47.6	61.2	60.8	59.2	57.9	54.4	52.1	48.8	48.2	47.8	53.9	0.0	53.9
	11	54.2	62.2	47.3	61.9	61.5	60.1	59.1	55.9	52.1	48.6	48.1	47.5	54.2	0.0	54.2
Day	12	54.4	63.6	46.9	63.1	62.3	60.4	58.9	54.2	51.3	48.1	47.6	47.1	54.4	0.0	54.4
	13 14	54.1 55.9	61.8 65.6	47.5 48.0	61.5 65.1	61.0 64.4	59.4 61.9	58.0 60.2	54.4 55.6	52.1 52.8	49.0 49.3	48.4 48.8	47.7 48.2	54.1 55.9	0.0 0.0	54.1 55.9
	14	56.9	64.8	50.7	64.4	64.0	62.4	61.0	57.1	54.9	51.9	40.0 51.4	50.8	56.9	0.0	56.9
	16	57.3	64.3	51.7	64.0	63.6	62.2	61.0	57.5	55.7	52.9	52.4	51.9	57.3	0.0	57.3
	17	58.1	65.5	52.7	65.1	64.7	63.1	62.1	58.6	56.6	53.8	53.3	52.8	58.1	0.0	58.1
	<u>18</u> 19	58.1 56.7	68.6 65.3	53.2 51.8	68.2 64.9	67.6 64.3	66.0 62.7	64.4 61.4	59.6 57.6	57.2 55.4	54.5 53.1	54.0 52.6	53.4 52.1	58.1 56.7	0.0	58.1 61.7
Evening	20	57.3	66.6	52.0	66.2	65.4	63.4	62.0	58.1	55.8	53.5	52.9	52.2	57.3	5.0	62.3
	21	57.0	65.2	52.3	64.7	64.1	62.5	61.3	57.4	55.4	53.4	53.0	52.5	57.0	5.0	62.0
Night	22 23	56.1 54.1	63.5 64.9	51.7 49.9	63.1 63.8	62.7 62.1	61.4 58.7	60.2 57.2	56.3 54.7	54.9 53.4	53.0 51.2	52.5 50.7	51.9 50.2	56.1 54.1	10.0 10.0	66.1 64.1
Timeframe	Hour	L _{eq}	L max	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%		L _{eq} (dBA)	
Day	Min	53.6	61.5	46.5	61.2	60.8	59.2	57.9	53.8	51.3	47.7	47.2	46.6	24-Hour	Daytime	Nighttime
(7am-7pm) Energy	Max Average	58.1 55.9	68.6 Δνε	53.2 erage:	68.2 63.4	67.6 62.9	66.0 61.2	64.4 59.9	59.6 56.0	57.2 53.6	54.5 50.7	54.0 50.2	53.4 49.7		(7am-10pm)	(10pm-7am
Evening	Min	56.7	65.2	51.8	64.7	64.1	62.5	61.3	57.4	55.4	53.1	52.6	52.1	55.6	56.2	54.6
7pm-10pm)	Max	57.3	66.6	52.3	66.2	65.4	63.4	62.0	58.1	55.8	53.5	53.0	52.5	24-	Hour CNEL (d	dBA)
0,	Average	57.0		erage:	65.2	64.6	62.9	61.6	57.7	55.5	53.3	52.8	52.3		• • •	
Night 10pm-7am)	Min Max	50.1 57.4	57.0 64.9	44.6 54.3	56.7 63.8	56.3 63.4	54.9 62.3	53.9 61.2	50.8 59.0	48.3 57.0	45.5 55.0	45.1 54.7	44.8 54.4		61.7	
	Average	54.6		erage:	60.7	60.2	58.8	57.7	54.7	53.0	50.9	50.5	50.1	1	2	

						24-Ho	ur Noise Le	evel Meas	urement S	ummary						
Date:	Thursday, N	/lay 27, 2021			Location	: L3 - Located					Meter:	Piccolo II			JN:	14035
Project:	Ottowa Bus	siness Center				0 0	gle-family res	sidential hom	ne at 13284 I	High Mesa					Analyst:	N. Boyko
						Street.	Hourly I	dBA Readings	(unadiusted)							
							riouriy L eq	abri neuunigs	(undujusteu)							
85.0 80.0 75.0 70.0 65.0 1 65.0																
(80.0 75.0 70.0																
ප_ /0.0 65.0																
60.0 ت 60.0																
^ 55.0 Jun 50.0 45.0 40.0	0 - u -	56.4	60.0	56.3	56.7	57.4 57.0	- <u>1</u>			<mark> </mark>	56.1 57.3		5.2	ຸ	55.1 55.1	55.8
	55 .				n	<mark>57</mark>	<mark>: 22.</mark>	51.2	2 <mark>.54</mark>		57 56.		55.	24.	S. S.	
35.0		4 2					+ - + -				45 40	47	10 10		24 22	
	0	1 2	3	4 5	6	7 8	9 1	LO 11 Hour Be	12 1 eginning	3 14	15 16	17	18 19	20	21 22	23
Timeframe	Hour	L _{eq}	L max	L min	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0	55.6	61.4	51.9 53.9	61.2	60.8	60.3	59.7 58.2	56.2	53.6	52.5	52.3	52.1 54.0	55.6	10.0	65.6
	2	56.4 60.0	59.3 64.4	53.9 55.7	59.1 64.3	58.9 64.1	58.4 63.6	58.2 63.4	57.2 61.2	56.2 58.7	54.6 56.6	54.3 56.2	54.0 55.8	56.4 60.0	10.0 10.0	66.4 70.0
Night	3	60.0	64.3	56.8	64.1	64.0	63.5	63.1	61.9	59.6	57.5	57.2	56.9	60.0	10.0	70.0
	4	56.3	63.9	54.9	63.7	63.6	63.2	62.8	61.7	58.5	55.5	55.2	55.0	56.3	10.0	66.3
	5	59.0	63.3	56.6	63.1	62.9	62.3	62.0	60.2	58.6	57.2	57.0	56.7	59.0	10.0	69.0
	6	56.7 57.4	63.3 62.5	55.4 55.9	63.1 62.2	62.8 62.0	62.3 61.5	61.8 61.3	60.4 60.2	57.4 58.1	55.9 56.6	55.7 56.4	55.5 56.1	56.7 57.4	10.0 0.0	66.7 57.4
	8	57.0	62.3	53.1	62.1	61.9	61.4	60.8	57.9	55.1	53.7	53.5	53.2	57.0	0.0	57.0
	9	52.5	57.2	49.0	57.0	56.9	56.3	55.9	53.6	51.0	49.6	49.4	49.1	52.5	0.0	52.5
	10	51.2	61.8	49.3	61.5	61.1	60.5	60.3	58.3	53.3	50.0	49.7	49.4	51.2	0.0	51.2
	11 12	56.0 54.4	63.9 60.4	51.0 49.2	63.7 60.2	63.5 59.9	63.0 59.3	62.5 58.8	60.6 55.7	56.0 51.6	51.9 50.0	51.5 49.7	51.1 49.4	56.0 54.4	0.0 0.0	56.0 54.4
Day	13	56.0	60.7	50.4	60.2	60.3	59.9	59.6	57.6	54.8	51.2	50.9	50.6	56.0	0.0	56.0
	14	55.8	62.3	49.4	61.8	61.4	60.6	60.0	57.5	53.5	50.3	49.9	49.5	55.8	0.0	55.8
	15	56.1	61.4	51.3	61.0	60.7	59.9	59.2	57.1	54.7	52.5	52.1	51.5	56.1	0.0	56.1
	16 17	57.3 58.9	65.1 65.2	53.2 53.2	64.7 64.7	64.3 64.1	63.6 62.9	63.2 62.1	61.3 59.9	59.1 57.5	54.4 54.6	54.0 54.1	53.4 53.4	57.3 58.9	0.0 0.0	57.3 58.9
	18	57.8	63.9	52.8	63.6	63.2	62.3	61.7	58.2	56.2	53.9	53.5	53.0	57.8	0.0	57.8
	19	55.2	59.6	52.0	59.1	58.7	58.0	57.6	56.2	54.4	52.7	52.4	52.1	55.2	5.0	60.2
Evening	20	54.6	58.3	52.3	57.9	57.6	56.8	56.4	55.2	54.2	53.0	52.7	52.4	54.6	5.0	59.6
	21 22	55.0 55.1	65.1 62.3	53.3 52.9	64.6 62.0	64.1 61.8	63.3 61.2	62.3 60.6	60.3 59.2	56.5 56.3	54.0 53.7	53.7 53.4	53.4 53.1	55.0 55.1	5.0 10.0	60.0 65.1
Night	23	55.8	59.6	52.8	59.2	58.9	58.3	57.9	56.6	55.5	53.5	53.2	53.0	55.8	10.0	65.8
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%		L _{eq} (dBA)	
Day	Min	51.2 58.9	57.2 65.2	49.0	57.0 64.7	56.9 64.3	56.3 63.6	55.9 63.2	53.6 61.3	51.0 59.1	49.6	49.4 56.4	49.1 56.1	24-Hour	Daytime	Nighttime
(7am-7pm) Energy	Max Average	58.9		55.9 rage:	64.7	61.6	60.9	63.2 60.4	58.2	59.1	56.6 52.4	56.4	56.1	F.C. =	(7am-10pm)	(10pm-7am)
Evening	Min	54.6	58.3	52.0	57.9	57.6	56.8	56.4	55.2	54.2	52.7	52.4	52.1	56.7	56.1	57.6
(7pm-10pm)	Max	55.2	65.1	53.3	64.6	64.1	63.3	62.3	60.3	56.5	54.0	53.7	53.4	24-	Hour CNEL (c	IBA)
Energy Night	Average Min	54.9 55.1	Ave 59.3	erage: 51.9	<u>60.5</u> 59.1	60.1 58.9	59.4 58.3	58.8 57.9	57.2 56.2	55.0 53.6	53.2 52.5	53.0 52.3	52.6 52.1			
(10pm-7am)	Max	55.1 60.0	59.3 64.4	51.9	59.1 64.3	58.9 64.1	58.3 63.6	57.9 63.4	56.2 61.9	53.6	52.5	52.3	52.1		64.0	
	Average	57.6	-	erage:	62.2	62.0	61.5	61.0	59.4	57.2	55.2	54.9	54.7			



						24-Ho	ur Noise Le	evel Measu	urement S	ummary						
Date:	Thursday, N	May 27, 2021			Location:	L4 - Located					Meter:	Piccolo II			JN:	14035
Project:	Ottowa Bus	siness Center				0 0	gle-family res	idential hom	ne at 13291 (Great Falls					Analyst:	N. Boyko
						Avenue.	Hourly L and	dBA Readings	(unadjusted)							
							у ец	<u> </u>								
85.0 80.0 75.0 70.0 65.0 1 65.0	$3 \equiv 1$															
(80.0 75.0 70.0																
g 65.0																
60.0 ٽـ 60.0 <u>حـ</u> 55.0	5				- m	<u>0</u> - 4					<mark></mark> ر.	<mark>.</mark>	<mark>و ج</mark>		<u></u>	
1 6 0.0 55.0 1 / 1 50.0 45.0 40.0	51.3	53.1	8.	56.4	29.3	28 <mark>.</mark>		<mark>56.9</mark>	55.9		59.5	2 <mark>.</mark>	28. 28.	27.8	56.7	
± 40.0 35.0	5 <u>-</u> 5 -	_ S S	ù				+- "' -+- '		- ⁶	· •''						54
55.0	0	1 2	3	4 5	6	7 8	9 1	.0 11	12 1	3 14	15 16	17	18 19	20	21 22	23
								Hour Be	<u> </u>							
Timeframe	Hour 0	L _{eq} 51.3	60.4	L _{min} 45.0	L1% 60.0	L2% 59.2	L5% 56.8	L8% 55.1	L25% 51.3	L50% 48.8	L90% 46.0	L95% 45.6	L99%	L _{eq} 51.3	<i>Adj.</i> 10.0	Adj. L _{eq} 61.3
	1	51.3	63.2	45.0	62.6	61.5	58.1	55.1	51.3	48.8 50.6	46.0	45.6	45.1 47.4	51.3	10.0	63.1
	2	52.7	58.5	48.2	58.2	57.8	56.7	56.0	53.5	51.4	49.1	48.7	48.3	52.7	10.0	62.7
Night	3	54.8	61.8	50.4	61.5	61.0	59.2	58.0	55.1	53.5	51.2	50.9	50.5	54.8	10.0	64.8
	4	56.4	65.2	51.7	64.6	63.6	60.9	59.2	56.5	54.7	52.4	52.1	51.8	56.4	10.0	66.4
	5 6	59.5 59.3	67.0 68.8	55.4 54.0	66.4 68.2	65.5 67.3	63.0 64.2	61.8 62.3	59.9 59.1	58.5 57.3	56.1 54.8	55.8 54.4	55.5 54.1	59.5 59.3	10.0 10.0	69.5 69.3
	7	58.9	68.6	52.8	68.0	67.0	63.9	61.9	59.2	57.1	53.9	53.3	52.9	58.9	0.0	58.9
	8	59.4	69.9	50.8	69.4	68.4	65.6	63.3	58.7	56.3	52.2	51.5	51.0	59.4	0.0	59.4
	9	56.4	66.5	47.7	66.0	65.0	61.8	59.7	56.5	54.1	49.5	48.5	47.9	56.4	0.0	56.4
	10 11	57.3 56.9	69.7 68.2	46.6 47.2	69.0 67.7	67.7 66.6	63.7 62.9	60.9 60.6	55.2 56.0	52.7 53.3	48.2 48.7	47.4 48.0	46.8 47.4	57.3 56.9	0.0 0.0	57.3 56.9
	11	55.9	67.0	46.0	66.6	65.7	62.8	60.6	54.4	51.7	47.5	46.8	46.2	55.9	0.0	55.9
Day	13	56.9	71.1	47.2	70.3	69.0	64.4	60.9	55.3	52.8	48.9	48.3	47.4	56.9	0.0	56.9
	14	56.5	72.2	49.8	71.7	70.5	66.8	64.0	57.5	54.5	51.3	50.7	50.1	56.5	0.0	56.5
	15 16	57.5 59.5	67.8 69.5	50.7 52.8	67.4 68.9	66.5 67.8	63.6 64.4	61.4 62.5	56.5 59.3	54.5 57.4	51.9 54.2	51.4 53.6	50.9 53.0	57.5 59.5	0.0 0.0	57.5 59.5
	10	59.5 59.6	70.2	52.8	68.9	68.8	65.7	63.8	60.2	57.4	55.8	55.0	54.5	59.5	0.0	59.5 59.6
	18	58.9	69.1	51.9	68.5	67.4	64.0	61.9	58.8	56.7	53.4	52.8	52.1	58.9	0.0	58.9
	19	58.4	78.7	52.0	77.6	76.1	70.6	65.9	58.7	56.1	53.1	52.7	52.2	58.4	5.0	63.4
Evening	20 21	57.8 59.3	67.3 71.0	51.4 51.8	66.8 70.1	66.0 69.1	63.1 65.8	61.3 63.7	57.5 58.7	55.7 55.8	52.6 52.9	52.0 52.5	51.5 52.0	57.8 59.3	5.0 5.0	62.8 64.3
	21	59.3	67.1	51.8	66.5	65.5	62.2	60.2	55.9	53.7	52.9	52.5	52.0	59.3	10.0	66.7
Night	23	54.5	72.0	49.6	71.6	70.9	66.8	62.8	55.3	53.0	50.7	50.2	49.7	54.5	10.0	64.5
Timeframe	Hour	L _{eq}	L max	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%		L _{eq} (dBA)	
Day (7am-7pm)	Min Max	55.9 59.6	66.5 72.2	46.0 54.3	66.0 71.7	65.0 70.5	61.8 66.8	59.7 64.0	54.4 60.2	51.7 58.5	47.5 55.8	46.8 55.2	46.2 54.5	24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
· · /	Average	58.0		erage:	68.6	67.5	64.1	61.8	57.3	55.0	51.3	50.6	50.0	57 5	· · · ·	
Evening	Min	57.8	67.3	51.4	66.8	66.0	63.1	61.3	57.5	55.7	52.6	52.0	51.5	57.5	58.1	56.2
(7pm-10pm)		59.3	78.7	52.0	77.6	76.1	70.6	65.9	58.7	56.1	53.1	52.7	52.2	24-	Hour CNEL (a	IBA)
Night	Average Min	58.5 51.3	58.5	erage: 45.0	71.5 58.2	70.4 57.8	66.5 56.7	63.6 55.1	58.3 51.3	55.9 48.8	52.9 46.0	52.4 45.6	51.9 45.1		$c \rightarrow \phi$	
(10pm-7am)	Max	59.5	72.0	55.4	71.6	70.9	66.8	62.8	59.9	58.5	56.1	55.8	55.5		63.3	
Energy	Average	56.2	Ave	erage:	64.4	63.6	60.9	59.0	55.5	53.5	51.1	50.7	50.3			



						24-Ho	ur Noise Le	evel Measu	urement S	ummary						
	-	May 27, 2021 siness Center			Location	L5 - Located existing sing			on Grant Stro ne at 16883 L		Meter:	Piccolo II				14035 N. Boyko
						Lane.	Hourly L o	dBA Readings	(unadiusted)							•
	_						у су	J·								
85.0 80.0 75.0 70.0 65.0 60.0																
λ 55.0 50.0 50.0 45.0 40.0 35.0	47.3	48.5	51.5	53.4 57.1	55.2	52.6 49.1	46.3	44.9 45.1	44.6	46.9	47.5 49.6	49.9	50.0 49.3	50.3	49.1	49.1
55.0	0	1 2	3	4 5	6	7 8	9 1	10 11 Hour Be	12 1 eginning	3 14	15 16	17	18 19	20	21 22	23
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
	0	47.3	56.0	41.4	55.6	55.2	53.8	51.6	46.9	44.9	42.2	41.9	41.5	47.3	10.0	57.3
	1	48.5	53.1	45.7	52.6	52.2	51.2	50.6	48.9	47.9	46.5	46.2	45.9	48.5	10.0	58.5
Night	2 3	48.7 51.5	53.7 56.1	44.8 48.2	53.4 55.9	53.0 55.6	52.3 54.8	51.5 54.2	49.5 52.2	47.7 50.8	45.6 49.0	45.3 48.7	44.9 48.3	48.7 51.5	10.0 10.0	58.7 61.5
Man	4	53.4	59.1	50.6	58.9	58.6	54.8	57.7	55.8	54.2	51.5	51.1	50.7	53.4	10.0	63.4
	5	57.1	63.8	53.7	63.6	63.4	62.6	61.5	58.6	56.9	54.6	54.2	53.8	57.1	10.0	67.1
	6	55.2	60.4	51.9	60.1	59.6	58.7	58.2	56.3	54.9	52.7	52.3	52.0	55.2	10.0	65.2
	7	52.6	56.0	50.4	55.7	55.5	54.7	54.3	53.1	52.3	51.0	50.7	50.5	52.6	0.0	52.6
	8	49.1	54.5	45.5	54.1	53.8	52.8	52.1	49.9	48.1	46.2	46.0	45.6	49.1	0.0	49.1
	9 10	46.3 44.9	51.8 50.3	42.0 41.2	51.3 49.7	50.8 49.1	49.8 48.0	49.1 47.4	47.1 45.6	45.5 44.1	43.0 42.0	42.6 41.7	42.1 41.3	46.3 44.9	0.0 0.0	46.3 44.9
	10	44.9	58.4	41.2	49.7 57.4	56.9	48.0 55.4	54.7	43.0 51.0	44.1	42.0	41.7	41.5	44.9	0.0	44.9
	12	44.6	52.1	40.3	51.7	51.0	49.3	47.6	44.9	42.9	41.0	40.8	40.5	44.6	0.0	44.6
Day	13	46.0	57.6	41.5	56.9	56.1	53.9	51.8	48.4	45.9	42.9	42.5	41.7	46.0	0.0	46.0
	14	46.9	52.6	42.9	52.1	51.6	50.8	50.2	47.5	45.9	43.7	43.4	43.0	46.9	0.0	46.9
	15	47.5	53.6	44.1	53.1	52.2	50.9	50.2	48.2	46.5	44.7	44.5	44.2	47.5	0.0	47.5
	16	49.6	56.8	45.8	56.3	55.7	54.4	52.3	49.6	48.5	46.7	46.4	45.9	49.6	0.0	49.6
	17 18	49.9 50.0	60.8 55.9	47.0 46.3	60.2 55.3	59.1 54.6	56.9 53.3	55.5 52.7	50.7 50.5	49.6 49.0	47.9 47.3	47.5 46.9	47.1 46.5	49.9 50.0	0.0 0.0	49.9 50.0
	18	49.3	55.2	46.1	55.5	53.7	52.3	52.7	49.8	49.0	47.0	46.9	46.3	49.3	5.0	54.3
Evening	20	50.3	55.7	46.8	55.0	54.3	53.2	52.6	51.0	49.7	47.8	47.4	47.0	50.3	5.0	55.3
	21	49.1	58.3	46.1	57.2	56.2	54.4	53.3	50.8	49.3	46.9	46.6	46.3	49.1	5.0	54.1
Night	22 23	48.8 49.1	53.8 65.3	45.9 45.6	53.3 64.3	52.9 62.5	51.9 57.1	51.2 53.0	49.4 49.1	47.9 47.9	46.6 46.4	46.4 46.1	46.0 45.8	48.8 49.1	10.0 10.0	58.8 59.1
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%		L _{eq} (dBA)	
Day	Min	44.6	50.3	40.3	49.7	49.1	48.0	47.4	44.9	42.9	41.0	40.8	40.5	24-Hour	Daytime	Nighttime
(7am-7pm)	Max Average	52.6 48.4	60.8 Ave	50.4 rage:	60.2 54.5	59.1 53.9	56.9 52.5	55.5 51.5	53.1 48.9	52.3 47.0	51.0 44.9	50.7 44.6	50.5 44.2		(7am-10pm)	(10pm-7am)
Evening	Min	48.4	55.2	46.1	54.5	53.9	52.5	51.5	48.9	47.0	44.9	44.6	44.2	50.5	48.7	52.4
(7pm-10pm)	Max	50.3	58.3	46.8	57.2	56.2	54.4	53.3	51.0	49.7	47.8	47.4	47.0	24-	Hour CNEL (a	IBA)
	Average	49.6		rage:	55.5	54.7	53.3	52.5	50.6	49.2	47.2	46.9	46.5			
Night	Min	47.3	53.1	41.4	52.6	52.2	51.2	50.6	46.9	44.9	42.2	41.9	41.5		58.6	
(10pm-7am)	Max	57.1	65.3	53.7	64.3	63.4	62.6	61.5	58.6	56.9	54.6	54.2	53.8		20.0	
Energy	Average	52.4	Ave	rage:	57.5	57.0	55.6	54.4	51.9	50.3	48.3	48.0	47.7			





APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS





FHWA-RD-77-108 HIGHWAY N	DISE PREDICTION MODEL (9/12/2021)
Scenario: E (2021) Road Name: Seventh Av. Road Segment: s/o Nisqualli Rd.	Project Name: Ottawa Budiness Center Job Number: 14035
SITE SPECIFIC INPUT DATA	NOISE MODEL INPUTS
Highway Data	Site Conditions (Hard = 10, Soft = 15)
Average Daily Traffic (Adt): 13,658 vehicles	Autos: 15
Peak Hour Percentage: 9.38%	Medium Trucks (2 Axles): 15
Peak Hour Volume: 1,281 vehicles	Heavy Trucks (3+ Axles): 15
Vehicle Speed: 40 mph	Vehicle Mix
Near/Far Lane Distance: 36 feet	VehicleType Day Evening Night Daily
Site Data	Autos: 77.5% 12.9% 9.6% 95.48
	Medium Trucks: 84.8% 4.9% 10.3% 2.99
Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0	Heavy Trucks: 86.5% 2.7% 10.8% 1.53
Centerline Dist. to Barrier: 42.0 feet	
Centerline Dist. to Observer: 42.0 feet	Noise Source Elevations (in feet)
Barrier Distance to Observer: 0.0 feet	Autos: 0.000
Observer Height (Above Pad): 5.0 feet	Medium Trucks: 2.297
Pad Elevation: 0.0 feet	Heavy Trucks: 8.004 Grade Adjustment: 0.0
Road Elevation: 0.0 feet	Lane Equivalent Distance (in feet)
Road Grade: 0.0%	Autos: 38.275
Left View: -90.0 degrees	Medium Trucks: 38.043
Right View: 90.0 degrees	Heavy Trucks: 38.066
FHWA Noise Model Calculations	
VehicleType REMEL Traffic Flow Dist	
Autos: 66.51 -0.45	1.64 -1.20 -4.60 0.000 0.0
Medium Trucks: 77.72 -15.50	1.68 -1.20 -4.87 0.000 0.0
Heavy Trucks: 82.99 -18.41	1.67 -1.20 -5.53 0.000 0.0
Unmitigated Noise Levels (without Topo and barried	,
	eq Evening Leq Night Ldn CNEL
Autos: 66.5 64.9	63.1 57.1 65.7 66
Medium Trucks: 62.7 61.5	55.1 53.6 62.0 62
Heavy Trucks: 65.1 63.9	54.9 56.1 64.5 64
Vehicle Noise: 69.8 68.4	64.3 60.6 69.1 69
Centerline Distance to Noise Contour (in feet)	
	70 dBA 65 dBA 60 dBA 55 dBA
	36 79 169 36
Ldn: CNEL:	39 83 179 36

	FHWA-RD-	77-108 HIGH	NAY	NOISE F	PREDIC		IODEL (9/12/2	021)		
Scenario: Road Name: Road Segment:		Rd					t Name: lumber:		a Budiness	Center	
-	ECIFIC INF						NOISE	NODE		s	
Highway Data				S	ite Con		(Hard =			•	
Average Daily Tra	affic (Adt): 1	3,742 vehicle	s					Autos:	15		
Peak Hour Pe	ercentage:	9.38%			Med	dium Tr	ucks (2)	Axles):	15		
Peak Hou	r Volume: 1	1,289 vehicles			Hea	avy Tru	cks (3+)	Axles):	15		
Vehic	le Speed:	40 mph		V	ehicle N	lix					
Near/Far Lane	Distance:	36 feet		-		cleType		Dav	Evening	Night	Daily
Site Data							Autos:	77.5%	•	•	95.489
	er Height:	0.0 feet			Me	dium T	rucks:	84.8%	4.9%	10.3%	2.99
Barrier Type (0-Wall	•	0.0			h	leavy T	rucks:	86.5%	5 2.7%	10.8%	1.539
Centerline Dist.	· ,	42.0 feet			oioo Co	uraa E	levation	a (in f	o.o.#l		
Centerline Dist. to	Observer:	42.0 feet		N	use su	Auto		000	eelj		
Barrier Distance to	Observer:	0.0 feet			Mediun			297			
Observer Height (Ab	ove Pad):	5.0 feet				y Truck		004	Grade Ad	iustment	0.0
Pad	Elevation:	0.0 feet								,	
	Elevation:	0.0 feet		L	ane Equ		t Distan		feet)		
	ad Grade:	0.0%				Auto		275			
	Left View:	-90.0 degree			Mediun			043 066			
R	light View:	90.0 degree	s		Heav	y Truck	S: 38.	000			
FHWA Noise Model	Calculations										
Vehicle Type		Traffic Flow	Dist	tance	Finite		Fresr		Barrier Att	-	m Atten
Autos:	66.51	-0.43		1.64		-1.20		-4.60		000	0.00
Medium Trucks:	77.72	-15.47		1.68		-1.20		-4.87		000	0.00
Heavy Trucks:	82.99	-18.38		1.67		-1.20		-5.53	0.0	000	0.00
Unmitigated Noise L			barrie		<u> </u>			1			
	eq Peak Hour			Leq Eve		Leq	Night		Ldn		VEL
Autos: Medium Trucks:	66.5 62.7		64.9 61.5		63.1 55.1		57. 53.0		65. 62.0		66. 62.
Medium Trucks: Heavy Trucks:	62.7		51.5 53.9		55.1 54.9		53.0		62.0		62. 64.
Vehicle Noise:	69.8		53.9 58.4		64.3		60.0		69.1		69.
					04.0		00.0	, 	05.	·	00.
Centerline Distance	to Noise Con	itour (in feet)		70 dl	84	65	dBA		50 dBA	55	dBA
		1	dn:	10 01	37	55	79		170		36
			IEL:		39		84		180		38

Wednesday, October 27, 2021

FHWA-F	D-77-108 HIGHW	AY NOIS	E PREDIC	TION MO	ODEL (9/12	2/2021)		
Scenario: E+P (202						wa Budiness	Center	
Road Name: Seventh A				Job Nu	mber: 140	35		
Road Segment: s/o Nisqua	alli Rd.							
SITE SPECIFIC I	NPUT DATA					DEL INPUTS	6	
Highway Data			Site Con	ditions (Hard = 10,	Soft = 15)		
Average Daily Traffic (Adt):	13,742 vehicles				Auto			
Peak Hour Percentage:	9.38%				cks (2 Axle	-, -		
Peak Hour Volume:	1,289 vehicles		He	avy Truci	ks (3+ Axle	s): 15		
Vehicle Speed:	40 mph		Vehicle I	Nix				
Near/Far Lane Distance:	36 feet			icleType	Da	/ Evening	Night [Daily
Site Data				A	utos: 77.	5% 12.9%	9.6% 9	5.519
Barrier Height:	0.0 feet		M	edium Tru	ucks: 84.	8% 4.9%	10.3%	2.979
Barrier Type (0-Wall, 1-Berm):	0.0		F	leavy Tru	ucks: 86.	5% 2.7%	10.8%	1.529
Centerline Dist. to Barrier:	42.0 feet		Noise Sc	urco Ele	vations (ii	1 foot)		
Centerline Dist. to Observer:	42.0 feet		110/30 00	Autos		,		
Barrier Distance to Observer:	0.0 feet		Madiu	n Trucks	0.000			
Observer Height (Above Pad):	5.0 feet			y Trucks.			ustment: 0.	0
Pad Elevation:	0.0 feet							.0
Road Elevation:	0.0 feet		Lane Eq		Distance (,		
Road Grade:	0.0%			Autos.				
Left View:	-90.0 degrees			n Trucks.				
Right View:	90.0 degrees		Heav	y Trucks.	38.066			
FHWA Noise Model Calculatio	ns		1					
VehicleType REMEL	Traffic Flow	Distance		Road	Fresnel	Barrier Atte		
Autos: 66.5	1 -0.42	1	.64	-1.20	-4.6	50 0.0	00	0.00
Medium Trucks: 77.7			.68	-1.20	-4.8			0.00
Heavy Trucks: 82.9	9 -18.41	1	.67	-1.20	-5.8	53 0.0	00	0.00
Unmitigated Noise Levels (with	hout Topo and ba	arrier atte	enuation)					
VehicleType Leq Peak Ho			Evening	Leq N	•	Ldn	CNE	
		1.9	63.1		57.1	65.7		66
		1.5	55.1		53.6	62.0		62
		3.9	54.9		56.1	64.5		64.
Vehicle Noise: 6	9.8 68	3.4	64.3		60.6	69.1		69.
Centerline Distance to Noise C	Contour (in feet)							
) dBA	65 d		60 dBA	55 dB	
	Lo	dn:	37		79	170		366
	CNE		39		83	180		387

FHWA-RD-	77-108 HIGHWAY	Y NOISE	PREDIC	TION M	IODEL (S	9/12/20	021)		
Scenario: OYC+P (202 Road Name: Seventh Av. Road Segment: s/o Nisqualli	,				Name: (umber: 1		Budiness	Center	
SITE SPECIFIC INP	UT DATA			N	IOISE N	IODE	L INPUT	s	
Highway Data			Site Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily Traffic (Adt): 1	3,826 vehicles				A	Autos:	15		
Peak Hour Percentage:	9.38%		Med	dium Tri	ucks (2 A	xles):	15		
Peak Hour Volume: 1	,296 vehicles		Hea	avy Truo	cks (3+ A	xles):	15		
Vehicle Speed:	40 mph		Vehicle N	lix					
Near/Far Lane Distance:	36 feet	-		cleType		Dav	Evening	Night	Daily
Site Data						77.5%	•	9.6%	
Barrier Height:	0.0 feet		Me	dium Ti	rucks:	84.8%		10.3%	
Barrier Type (0-Wall, 1-Berm):	0.0		h	leavy T	rucks:	86.5%	2.7%	10.8%	1.52%
Centerline Dist. to Barrier:	42.0 feet	-		· _					
Centerline Dist. to Observer:	42.0 feet	4	Noise So				eet)		
Barrier Distance to Observer:	0.0 feet			Auto		000			
Observer Height (Above Pad):	5.0 feet		Mediun				Crada Ad	ivetment	
Pad Elevation:	0.0 feet		Heav	y Truck	s: 8.0	004	Grade Ad	usimeni	. 0.0
Road Elevation:	0.0 feet	1	Lane Equ	iivalent	Distanc	e (in i	feet)		
Road Grade:	0.0%			Auto	s: 38.2	275			
Left View:	-90.0 degrees		Mediun	n Truck	s: 38.0	043			
Right View:	90.0 degrees		Heav	y Truck	s: 38.0	066			
FHWA Noise Model Calculations									
	Traffic Flow Di	istance	Finite		Fresn	-	Barrier Att	en Bei	m Atten
Autos: 66.51	-0.40	1.6		-1.20		-4.60		000	0.000
Medium Trucks: 77.72	-15.47	1.6	-	-1.20		-4.87		000	0.000
Heavy Trucks: 82.99	-18.38	1.6	7	-1.20		-5.53	0.0	000	0.000
Unmitigated Noise Levels (without									
VehicleType Leq Peak Hour		Leq E	vening	Leq	Night		Ldn		NEL
Autos: 66.6			63.2		57.1		65.7		66.3
Medium Trucks: 62.7			55.1		53.6		62.0	-	62.3
Heavy Trucks: 65.1			54.9		56.2		64.5		64.6
Vehicle Noise: 69.8	68.5		64.3		60.6		69.1	1	69.5
Centerline Distance to Noise Con	tour (in feet)			-					-
			dBA	65	dBA	6	60 dBA		dBA
	Ldn:		37 79 170				367		
	CNEL:				39 84 180 38				

FHWA-RD-77-1	08 HIGHWAY NO	ISE PREDICT	ION MODEL (S	9/12/2021)	
Scenario: FY (2034) Road Name: Seventh Av. Road Segment: s/o Nisqualli Rd.		F	Project Name: (Job Number: 1	Ottawa Budiness 14035	Center
SITE SPECIFIC INPUT	DATA		NOISE N	IODEL INPUT	3
Highway Data		Site Cond	itions (Hard =	10, Soft = 15)	
Average Daily Traffic (Adt): 17,88	0 vehicles		A	Autos: 15	
Peak Hour Percentage: 9.38	%	Medi	ium Trucks (2 A	xles): 15	
Peak Hour Volume: 1,677	vehicles	Hear	vy Trucks (3+ A	xles): 15	
Vehicle Speed: 40	mph	Vehicle Mi	iv		
Near/Far Lane Distance: 36	feet			Day Evening	Night Daily
Site Data		1011101		77.5% 12.9%	9.6% 95.48%
	0 feet	Med	dium Trucks:	84.8% 4.9%	10.3% 2.99%
Barrier Type (0-Wall, 1-Berm): 0.		He	eavy Trucks:	86.5% 2.7%	10.8% 1.53%
	0 feet				
	0 feet	Noise Sou	Irce Elevations	, ,	
	0 feet			000	
Observer Height (Above Pad): 5.	0 feet	Medium		297	
. ,	0 feet	Heavy	Trucks: 8.0	04 Grade Adj	ustment: 0.0
Road Elevation: 0.	0 feet	Lane Equi	ivalent Distanc	e (in feet)	
Road Grade: 0.09	6		Autos: 38.2	275	
Left View: -90.	0 degrees	Medium	Trucks: 38.0	043	
Right View: 90.	0 degrees	Heavy	Trucks: 38.0	066	
FHWA Noise Model Calculations					
VehicleType REMEL Traff.	ic Flow Distant	ce Finite R	Road Fresn	el Barrier Atte	en Berm Atten
Autos: 66.51	0.72			-4.60 0.0	
Medium Trucks: 77.72	-14.33			-4.87 0.0	
Heavy Trucks: 82.99	-17.24	1.67	-1.20	-5.53 0.0	0.000
Unmitigated Noise Levels (without To	po and barrier a	ttenuation)			
VehicleType Leq Peak Hour		q Evening	Leq Night	Ldn	CNEL
Autos: 67.7	66.0	64.3	58.2		
Medium Trucks: 63.9	62.6	56.3	54.7		
Heavy Trucks: 66.2	65.1	56.1	57.3		
Vehicle Noise: 71.0	69.6	65.4	61.8	70.3	70.6
Centerline Distance to Noise Contour					
	1	70 dBA	65 dBA	60 dBA	55 dBA
	Ldn: CNEL:	44 46	94 100	203 215	437 462

	FHWA-RD)-77-108 HIGHWA	Y NOIS	E PREDIC		IODEL (9/12/20	021)		
	o: E (2021) e: Hesperia R∉ t: n/o Ottawa					Name: lumber:		a Budiness	Center	
SITE S	PECIFIC IN	PUT DATA			N	OISE	NODE		5	
Highway Data		-		Site Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily T	raffic (Adt):	35.265 vehicles					Autos:	15		
Peak Hour F	Percentage:	9.38%		Me	dium Tr	ucks (2	Axles):	15		
Peak Ho	our Volume:	3,307 vehicles		He	avy Tru	cks (3+ .	Axles):	15		
Veh	icle Speed:	50 mph		Vehicle	Mix					
Near/Far Lan	e Distance:	72 feet			icleType		Day	Evening	Night	Daily
Site Data				ven		Autos:	77.5%	•	9.6%	
	rier Heiaht:	0.0 feet		м	, edium T		84.8%		10.3%	2.99%
вагг Barrier Type (0-Wa		0.0 reet			Heavy T		86.5%		10.8%	1.539
Centerline Dist	. ,	62.0 feet								
Centerline Dist. to		62.0 feet		Noise So				eet)		
Barrier Distance to		0.0 feet			Auto		000			
Observer Height (A		5.0 feet			m Truck		297			
. .	d Elevation:	0.0 feet		Heav	y Truck	s: 8.	004	Grade Adj	iustment.	0.0
	d Elevation:	0.0 feet		Lane Eq	uivalen	t Distan	ce (in i	feet)		
R	oad Grade:	0.0%			Auto	s: 50	725			
	Left View:	-90.0 degrees		Mediu	m Truck	s: 50	550			
	Right View:	90.0 degrees		Heav	ry Truck	s: 50	567			
FHWA Noise Model										
VehicleType	REMEL		Distance		Road	Fresi		Barrier Att		m Atten
Autos:	70.20	2.70	-0.		-1.20		-4.70		000	0.00
Medium Trucks:	81.00	-12.35 -15.26	-0. -0.		-1.20 -1.20		-4.88 -5.32		000	0.00
Heavy Trucks:	85.38	-15.26	-0.	18	-1.20		-5.32	0.0	000	0.00
Unmitigated Noise			rier atte	nuation)						
	Leq Peak Hou			Evening	Leq	Night		Ldn		VEL
Autos:	71		-	68.1		62.		70.7		71.
Medium Trucks:	67		-	59.7		58.		66.6		66.
Heavy Trucks:	68		-	58.6		59.		68.2		68.
Vehicle Noise:	74		9	69.1		65.	1	73.6	5	74.
Centerline Distance	e to Noise Co	ntour (in feet)	70) dBA	65	dBA	4	0 dBA	FF	dBA
		Ldr		108A	00	ава 232		499		ава 1.076
		CNEL		108		232		499 531		1,076
		UNEL		114		∠40		031		1,144

Wednesday, October 27, 2021

FHWA-	RD-77-108 HIGH\	NAY NOIS	SE PREDIC	TION MC	DEL (9/12	2/2021)	
Scenario: FY+P (20	(34)					wa Budiness (Center
Road Name: Seventh				Job Nu	mber: 140	35	
Road Segment: s/o Nisqu	alli Rd.						
SITE SPECIFIC	INPUT DATA					DEL INPUTS	6
Highway Data			Site Con	ditions (I		Soft = 15)	
Average Daily Traffic (Adt):	17,964 vehicle	s			Auto		
Peak Hour Percentage:	9.38%				cks (2 Axle	-, -	
Peak Hour Volume:			He	avy Truck	is (3+ Axle	s): 15	
Vehicle Speed:	40 mph		Vehicle I	Mix			
Near/Far Lane Distance:	36 feet		Veh	icleType	Day	/ Evening	Night Daily
Site Data				A	itos: 77.		9.6% 95.50%
Barrier Height:	0.0 feet		M	edium Tru	cks: 84.	B% 4.9%	10.3% 2.97%
Barrier Type (0-Wall, 1-Berm):			F	leavy Tru	cks: 86.	5% 2.7%	10.8% 1.52%
Centerline Dist. to Barrier.	42.0 feet		Noise Sc	ource Ele	vations (ir	n feet)	
Centerline Dist. to Observer.	42.0 feet			Autos			
Barrier Distance to Observer:	0.0 feet		Modiu	m Trucks:	0.000		
Observer Height (Above Pad):	5.0 feet			v Trucks:		Grade Adii	istment: 0.0
Pad Elevation:	0.0 feet						
Road Elevation:	0.0 1001		Lane Eq		Distance (,	
Road Grade:	0.070			Autos:			
Left View:	00.0 409.00			m Trucks:	00.010		
Right View:	90.0 degree	s	Heav	y Trucks:	38.066		
FHWA Noise Model Calculatio	ons		1				
VehicleType REMEL	Traffic Flow	Distance		Road	Fresnel	Barrier Atte	
Autos: 66.5	••••		.64	-1.20	-4.6		
Medium Trucks: 77.7			.68	-1.20	-4.8		
Heavy Trucks: 82.9	9 -17.24	1	.67	-1.20	-5.5	53 0.0	0.00
Unmitigated Noise Levels (wi	thout Topo and I	parrier att	enuation)				
VehicleType Leq Peak H			Evening	Leq N		Ldn	CNEL
		6.1	64.3		58.2	66.9	67.
		62.6	56.3		54.7	63.2	63.
		65.1	56.1		57.3	65.7	65.
Vehicle Noise:	71.0 6	69.6	65.5		61.8	70.3	70.
Centerline Distance to Noise	Contour (in feet)						
		7	0 dBA	65 d	BA	60 dBA	55 dBA
	L	dn:	44		94	203	43

FHWA-RD-77-108	HIGHWAY NO	SE PREDIC	TION MODEL	(9/12/2021)		
Scenario: E+P (2021) Road Name: Hesperia Rd. Road Segment: n/o Ottawa St.			Project Name: Job Number:		liness Ce	nter
SITE SPECIFIC INPUT DA	TA		NOISE	MODEL IN	IPUTS	
Highway Data		Site Cond	ditions (Hard :	= 10, Soft =	15)	
Average Daily Traffic (Adt): 35,766 v	ehicles			Autos: 1	5	
Peak Hour Percentage: 9.38%		Med	dium Trucks (2	Axles): 1	5	
Peak Hour Volume: 3,354 ve	hicles	Hea	avy Trucks (3+	Axles): 1	5	
Vehicle Speed: 50 m	ph	Vehicle N	lix			
Near/Far Lane Distance: 72 fe	et		cleType	Dav Eve	ning Ni	ght Daily
Site Data			Autos:			9.6% 95.55%
Barrier Height: 0.0 ft	aat	Me	dium Trucks:			0.3% 2.94%
Barrier Type (0-Wall, 1-Berm): 0.0	eel	н	leavy Trucks:	86.5%	2.7% 10	0.8% 1.51%
Centerline Dist. to Barrier: 62.0 ft	eet					
Centerline Dist. to Observer: 62.0 ft		Noise So	urce Elevatio			
Barrier Distance to Observer: 0.0 fe				.000		
Observer Height (Above Pad): 5.0 fe	eet			.297		
Pad Elevation: 0.0 f	eet	Heavy	y Trucks: 8	.004 Gra	de Adjust	nent: 0.0
Road Elevation: 0.0 fe	eet	Lane Equ	ivalent Distar	nce (in feet)		
Road Grade: 0.0%			Autos: 50	.725		
Left View: -90.0 d	legrees	Mediun	n Trucks: 50	.550		
Right View: 90.0 d	legrees	Heavy	y Trucks: 50	.567		
FHWA Noise Model Calculations						
VehicleType REMEL Traffic F	low Distant	e Finite I	Road Fres	nel Barr	ier Atten	Berm Atten
Autos: 70.20	2.76 -	0.20	-1.20	-4.70	0.000	0.000
		0.17	-1.20	-4.88	0.000	0.000
Heavy Trucks: 85.38 -1	5.26 -	0.18	-1.20	-5.32	0.000	0.000
Unmitigated Noise Levels (without Topo		,				
		q Evening	Leq Night	Ldn		CNEL
Autos: 71.6	69.9	68.2	62		70.8	71.4
Medium Trucks: 67.3	66.0	59.7	58		66.6	66.8
Heavy Trucks: 68.7	67.6	58.6	59	-	68.2	68.3
Vehicle Noise: 74.3	72.9	69.2	65	.1	73.6	74.0
Centerline Distance to Noise Contour (in	,			1		
		70 dBA	65 dBA	60 dE		55 dBA
	Ldn:	108	23	-	502	1,081
	CNEL:	115	24	В	534	1,150

FHWA-I	RD-77-108 HIC	GHWAY	NOISE	PREDIC	TION M	ODEL (9)/12/20	021)		
Scenario: OYC (202 Road Name: Hesperia Road Segment: n/o Ottaw	Rd.					Name: (umber: 1		Budiness	Center	
SITE SPECIFIC	INPUT DAT	1			N	OISE N	IODE	L INPUTS	3	
Highway Data			5	Site Con	ditions	(Hard =	10, So	ft = 15)		
Average Daily Traffic (Adt):	35,767 vehi	cles				A	Autos:	15		
Peak Hour Percentage:	9.38%			Me	dium Tru	icks (2 A	xles):	15		
Peak Hour Volume:	3,354 vehic	les		He	avy Truc	ks (3+ A	xles):	15		
Vehicle Speed:	50 mph			/ehicle	Mix					
Near/Far Lane Distance:	72 feet				icleType		Dav	Evening	Night	Daily
Site Data				ven			77.5%	•	9.6%	
				14	-ر edium Tr		84.8%		10.3%	2.99%
Barrier Height:					Heavy Tr		04.0% 86.5%		10.3%	2.99%
Barrier Type (0-Wall, 1-Berm):				,	icavy II	uchs.	00.370	2.170	10.070	1.55%
Centerline Dist. to Barrier:			Λ	Voise So	ource El	evations	; (in fe	et)		
Centerline Dist. to Observer:					Autos	s: 0.0	000			
Barrier Distance to Observer:				Mediu	m Trucks	s: 2.2	97			
Observer Height (Above Pad):				Heav	y Trucks	s: 8.0	04	Grade Adj	ustment.	0.0
Pad Elevation: Road Elevation:				ono Ea	uivalent	Distanc	o (in f	in cél		
Road Elevation: Road Grade:			-	ane Ly	Autos			eeij		
Left View:				Modiu	m Trucks					
Right View:					y Trucks					
FHWA Noise Model Calculatio	ons									
VehicleType REMEL	Traffic Flow	/ Dist	tance	Finite	Road	Fresn	e/	Barrier Atte	en Ber	m Atten
Autos: 70.2	20 2.7	76	-0.20)	-1.20		-4.70	0.0	00	0.000
Medium Trucks: 81.0	0 -12.2	29	-0.17	7	-1.20		-4.88	0.0	00	0.000
Heavy Trucks: 85.3	38 -15.1	19	-0.18	3	-1.20		-5.32	0.0	00	0.000
Unmitigated Noise Levels (with										
VehicleType Leq Peak H			Leq Ev	•		Night		Ldn		VEL
	71.6	69.9		68.2		62.1		70.7		71.4
	67.3	66.1		59.7		58.2		66.7		66.9
	68.8	67.7		58.6		59.9		68.2		68.4
	74.4	73.0		69.2		65.1		73.7		74.0
Centerline Distance to Noise	Contour (in fe	et)					-			
		L	70 a		65 0	dBA	6	0 dBA	55	dBA
		Ldn:		109		234		504		1,086
		CNEL:		115		249		536		1,154

	FHWA-RD	-77-108 HIGHV	VAY NO	ISE PR	EDICTION I	IODEL	(9/12/2	021)		
Road Nam	o: FY (2034) e: Hesperia Ro nt: n/o Ottawa					t Name: lumber:		a Budiness	Center	
SITE	SPECIFIC IN	PUT DATA			1	NOISE	MODE		s	
Highway Data				Site	Conditions	(Hard =	= 10, So	oft = 15)		
Average Daily	Traffic (Adt):	45.979 vehicle:	s				Autos:	15		
Peak Hour	Percentage:	9.38%			Medium T	rucks (2	Axles):	15		
Peak H	our Volume:	4,311 vehicles			Heavy Tru	cks (3+	Axles):	15		
Vei	hicle Speed:	50 mph		Voh	icle Mix					
Near/Far La	ne Distance:	72 feet		ven	VehicleTyp	•	Day	Evening	Night	Daily
Site Data						Autos:	77.5%	•	9.6%	
		0.0.6		-	Medium 1		84.8%		10.3%	
	rier Height:	0.0 feet 0.0			Heavy 1		86.5%		10.8%	
Barrier Type (0-W Centerline Dis	. ,	0.0 62.0 feet							10.070	
Centerline Dis		62.0 feet		Noi	se Source E	levatior	ns (in fe	eet)		
Barrier Distance		0.0 feet			Auto		.000			
Observer Height (5.0 feet			ledium Trucl		.297			
÷ (ad Elevation:	0.0 feet			Heavy Truck	(s: 8	.004	Grade Ad	justment.	0.0
	d Elevation:	0.0 feet		Lan	e Equivalen	t Distan	ce (in	feet)		
	Road Grade:	0.0%			Auto		.725			
	Left View:	-90.0 degree:	5	N	ledium Truci		.550			
	Right View:	90.0 degree			Heavy Truck	ks: 50	.567			
FHWA Noise Mode									T	
VehicleType	REMEL	Traffic Flow	Distant		inite Road	Fres		Barrier Att		m Atten
Autos:	70.20	3.85		0.20	-1.20		-4.70		000	0.00
Medium Trucks:	81.00	-11.20		0.17	-1.20		-4.88		000	0.00
Heavy Trucks:	85.38	-14.10		-0.18	-1.20		-5.32	0.0	000	0.00
Unmitigated Noise			1				_			
	Leq Peak Hou			q Even		Night		Ldn		VEL
Autos:	72.		1.0		69.3	63.		71.		72
Medium Trucks:	68.		7.2		60.8	59.		67.	-	68
Heavy Trucks:	69.	-	8.8		59.7	61.	-	69.3		69
Vehicle Noise:	75.		4.1		70.3	66.	2	74.	(75
Centerline Distanc	e to Noise Co	ntour (in feet)		70 dBA	65	dBA	4	50 dBA	55	dBA
		,	.dn:	i u aBA						-
			.an: 'EL:		128	271		596		1,28
		CN	EL.		136	294	ŧ	633		1,36

Wednesday, October 27, 2021

FHWA-F	D-77-108 HIGHW	AY NOIS	E PREDIC	TION M	ODEL (9/12	2/2021)	
Scenario: OYC+P (2						wa Budiness (Center
Road Name: Hesperia				Job Ni	imber: 140	35	
Road Segment: n/o Ottaw	a St.						
SITE SPECIFIC I	NPUT DATA					DEL INPUTS	1
Highway Data			Site Con	ditions (Hard = 10,	,	
Average Daily Traffic (Adt):	36,268 vehicles				Auto		
Peak Hour Percentage:	9.38%				cks (2 Axle		
Peak Hour Volume:	3,401 vehicles		He	avy Truc	ks (3+ Axle	s): 15	
Vehicle Speed:	50 mph		Vehicle I	lix			
Near/Far Lane Distance:	72 feet		Vehi	cleType	Day	/ Evening	Night Dai
Site Data				A	utos: 77.	5% 12.9%	9.6% 95.5
Barrier Height:	0.0 feet		Me	dium Tr	ucks: 84.	8% 4.9%	10.3% 2.9
Barrier Type (0-Wall, 1-Berm):	0.0		F	leavy Tr	ucks: 86.	5% 2.7%	10.8% 1.5
Centerline Dist. to Barrier:	62.0 feet		Noise So	urce Ele	evations (ii	n feet)	
Centerline Dist. to Observer:	62.0 feet			Autos		,	
Barrier Distance to Observer:	0.0 feet		Mediur	n Trucks	. 0.000		
Observer Height (Above Pad):	5.0 feet			y Trucks		Grade Adiu	istment: 0.0
Pad Elevation:	0.0 feet			·			
Road Elevation:	0.0 feet		Lane Equ		Distance (,	
Road Grade:	0.0%			Autos			
Left View:	-90.0 degrees			n Trucks			
Right View:	90.0 degrees		Heav	y Trucks	50.567		
FHWA Noise Model Calculatio	ns						
VehicleType REMEL	Traffic Flow	Distance	Finite	Road	Fresnel	Barrier Atte	n Berm Atte
Autos: 70.2	2.82	-0.	20	-1.20	-4.7	70 0.00	0. 00
Medium Trucks: 81.0	-12.29	-0.	17	-1.20	-4.8	38 0.00	.0 00
Heavy Trucks: 85.3	3 -15.19	-0.	18	-1.20	-5.3	32 0.00	00 0.
Unmitigated Noise Levels (wit	hout Topo and ba	arrier atte	nuation)				
VehicleType Leq Peak Ho	our Leq Day	Leq I	Evening	Leq I	Vight	Ldn	CNEL
		0.0	68.2		62.2	70.8	7
Medium Trucks: 6	7.3 66	5.1	59.7		58.2	66.7	e
Heavy Trucks: 6	8.8 67	7.7	58.6		59.9	68.2	6
Vehicle Noise: 7	4.4 73	3.0	69.2		65.2	73.7	7
Centerline Distance to Noise C	Contour (in feet)						
		70) dBA	65 a		60 dBA	55 dBA
	Lo	dn:	109 116		235 250	507	1,0

Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Heavy Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.3		FHWA-RD-	77-108 HIGHW/	AY NOISI	E PREDIC	TION M	ODEL (9	/12/20)21)		
Highway Data Site Conditions (Hard = 10, Soft = 15) Average Daily Traffic (Adt): 46,480 vehicles Autos: 15 Peak Hour Porcentage: 9.38% Medium Trucks (2 Avles): 15 Peak Hour Volume: 4,358 vehicles Medium Trucks (2 Avles): 15 Vehicle Speed: 50 mph Medium Trucks (2 Avles): 15 Near/Far Lane Distance: 72 feet Vehicle Mix Vehicle Mix Barrier Height: 0.0 feet Heavy Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Jist no Barrier: 62.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Centerline Dist. to Dbserver: 62.0 feet Moise Source Elevations (in feet) Moise Source Elevations (in feet) Autos: 7.7% 10.8% 1.51% Pad Elevation: 0.0 feet Road Grade: 0.0% Heavy Trucks: 50.560 Heavy Trucks: 50.560 FHWA Noise Model Calculations Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 7.0	Road Nam	e: Hesperia Rd							Budiness	Center	
Average Delly Traffic (Adt): 46,480 vehicles Average Delly Traffic (Adt): 46,480 vehicles Peak Hour Percentage: 9.38% Peak Hour Volume: 4,358 vehicles Vehicle Speed: 50 mph Vehicle Speed: 50 mph Site Data Autos: 72 feet Barrier Height: 0.0 feet Barrier Dist. to Desrver: 62.0 feet Barrier Dist. to Desrver: 62.0 feet Road Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: 90.0 degrees Right View: 90.0 degrees FHWA Noise Model Calculations Dotsons VehicleType REMEL Traffic Flow Distance VehicleType Remult Traffic Flow Distance VehicleType Leg View: 90.0 degrees Right View: 90.0 degrees Finite Road Fresnel Barrier Atten Berm Atten Medium Trucks: 81.0 -11.20 -0.18 -1.20 -4.70	SITE	SPECIFIC INF	UT DATA			N	OISE M	ODE	L INPUTS	3	
Peak Hour Percentage: 9.38% Medium Trucks (2 Axles): 15 Peak Hour Volume: 4.358 vehicles Medium Trucks (3+ Axles): 15 Vehicle Speed: 50 mph Vehicle Type Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 95.53% Barrier Height: 0.0 feet Autos: Trucks: 84.9% 4.9% 10.3% 2.95% Barrier Dist. to Barrier: 62.0 feet Autos: 0.00 Medium Trucks: 2.97 10.8% 1.51% Observer: 0.0 feet Mato: 0.00 Medium Trucks: 2.97 10.8% 1.51% Road Elevation: 0.0 feet Medium Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Lane Equivalent Distance (in feet) Autos: 50.550 FHWA Noise Model Calculations Finite Road Fresnet Barrier Atten Berm Atten Autos: 70.2 3.90 -0.20 -1.20 -4.88 0.000 0.00	Highway Data				Site Con	ditions	(Hard = :	10, So	ft = 15)		
Peak Hour Volume: 4,358 vehicles Vehicle Speed: Heavy Trucks (3+ Axles): 15 Vehicle Speed: 50 mph Vehicle Mix Vehicle Mix Vehicle Mix Site Data Value Vehicle Speed: 50 mph Vehicle Mix Vehicle Mix Barrier Height: 0.0 feet Madus: 77.5% 12.9% 9.6% 9.53% Barrier Type (0-Wail, 1-Berm): 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Centerline Dist. to Dserver: 62.0 feet Moise Source Elevations (in feet) Noise Source Elevations (in feet) Vehicle Mix 0.0 Medium Trucks: 2.297 0.0 Barrier Distance to Observer: 0.0 feet Madus: 50.560 Medium Trucks: 50.550 Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Lane Equivalent Distance (in feet) Autos: 50.550 Heavy Trucks: 50.550 Heavy Trucks: 81.00 -11.20 -0.17 -1.20 -4.70 0.000 0.000 Medium Trucks:	Average Daily	Traffic (Adt): 4	6,480 vehicles				A	utos:	15		
Vehicle Speed: Near/Far Lane Distance: 50 mph 72 feet Vehicle Mix Site Data Autos: 77.5% 12.9% 9.6% 95.5% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Type (0-Wall, 1-Berm): 0.0 Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Type (0-Wall, 1-Berm): 0.0 Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Dist. to Darrier: 62.0 feet Autos: 0.000 Medium Trucks: 86.5% 2.7% 10.8% 1.51% Deserver Height: 0.0 feet Autos: 0.000 Medium Trucks: 8.04 Grade Adjustment: 0.0 Road Grade: 0.0% Autos: 50.755 Heavy Trucks: 50.567 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000	Peak Hour	Percentage:	9.38%		Me	dium Tru	icks (2 A	xles):	15		
Near/Far Lane Distance: 72 feet Venicle Type Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 95.53% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Type (0-Wall, 1-Berm): 0.0 Noise Source Elevations (in feet) 0.08% 1.51% Centerline Dist. to Daerver: 62.0 feet Noise Source Elevations (in feet) 0.000 Medium Trucks: 8.04 Grade Adjustment: 0.0 Observer Height (Above Pad): 5.0 feet Medium Trucks: 8.04 Grade Adjustment: 0.0 Road Grade: 0.0% Lane Equivalent Distance (in feet) 0.0 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000	Peak H	lour Volume: 4	,358 vehicles		He	avy Truc	:ks (3+ A	xles):	15		
Near/Far Lane Distance: 72 feet VehicleType Day Evening Night Daily Site Data Autos: 77.5% 12.9% 9.6% 95.5% 2.9% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Type (0-Wall, 1-Berm): 0.0 feet Medium Trucks: 84.5% 2.7% 10.8% 1.51% Centerline Dist. to Doserver: 62.0 feet Autos: 0.00 Medium Trucks: 84.9% 0.0% Medium Trucks: 84.04 Grade Adjustment: 0.0 Barrier Distance to Observer: 0.0 feet Autos: 50.75 Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Grade: 0.0% Autos: 50.755 Heavy Trucks: 50.550 Heavy Trucks: 50.550 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 71.20 -0.17 -1.20 <td< td=""><td>Ve</td><td>hicle Speed:</td><td>50 mph</td><td></td><td>Vehicle I</td><td>Mix</td><td></td><td></td><td></td><td></td><td></td></td<>	Ve	hicle Speed:	50 mph		Vehicle I	Mix					
Site Data Autos: 77.5% 12.9% 9.6% 95.53% Barrier Height: 0.0 feet Medium Trucks: 84.8% 4.9% 10.3% 2.95% Barrier Type (0-Wall, 1-Berm): 0.0 centerline Dist. to Barrier: 62.0 feet Noise Source Elevations (in feet) Centerline Dist. to Dserver: 62.0 feet Noise Source Elevations (in feet) Autos: 0.00 Observer Height (Above Pad): 5.0 feet Medium Trucks: 2.297 Noise Source Elevations (in feet) Road Grade: 0.0 feet Medium Trucks: 8.04 Grade Adjustment: 0.0 Road Grade: 0.0 feet Autos: 50.550 Heavy Trucks: 50.550 FHWA Noise Model Calculations Vehicle Type Traffic Flow Distance Finite Road Fresnet Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.0000 Un	Near/Far La	ne Distance:	72 feet					Dav	Evening	Night	Daily
Barrier Height: 0.0 feet Barrier Type (-Wail, 1-Berm): 0.0 Centerline Dist. to Barrier: 62.0 feet Barrier Distance to Observer: 62.0 feet Barrier Distance to Observer: 62.0 feet Barrier Distance to Observer: 0.0 feet Barrier Distance to Observer: 0.0 feet Road Grade: 0.0 feet Road Grade: 0.0 feet Road Grade: 0.0 feet Road Grade: 0.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees Right View: 90.0 degrees Heavy Trucks: 50.560 Heavy Trucks: 50.550 Heavy Trucks: 50.560 Heavy Trucks: 50.50 Heavy Trucks: 60.00 Noise Buold Calculations Fresnet Barrier Atten Medium T	Site Data				ven						
Barrier Type (I-Wall, 1-Berm): 0.0 feet Heavy Trucks: 86.5% 2.7% 10.8% 1.51% Centerline Dist. to Diserver: 62.0 feet Autos: 0.000 Noise Source Elevations (in feet) Autos: 0.000 Autos: 50.725 Autos: Autos: Feest Autos: 0.000 0.000 Autos: 70.00 0.000 Autos: 70.00 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 <td></td> <td></td> <td>0.0.6</td> <td></td> <td>Me</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			0.0.6		Me						
Centerline Dist. to Darrier: 62.0 feet Noise Source Elevations (in feet) Centerline Dist. to Daerver: 62.0 feet Autos: 0.000 Barrier Distance to Observer: 62.0 feet Autos: 0.000 Deserver Height (Above Pad): 5.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Centerline Dist. 0.0 Road Grade: 0.0% Autos: 50.567 Medium Trucks: 50.567 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Unnitigited Noise Levels (without Topo and barrier attenuation) VehicleType Leg Peak Hour Leg Revening Leg Night Ldn CNEL Autos: 72.7 71.1 69.3					ŀ	leavy Tr	ucks: 8	36.5%			
Centerline Dist. to Observer: 62.0 feet Noise Source Levations (in reet) Barrier Distance to Observer: 0.0 feet Autos: 0.000 Observer Height (Above Pad): 5.0 feet Medium Trucks: 2.297 Pad Elevation: 0.0 feet Lane Equivalent Distance (in feet) Let View: Road Grade: 0.0% Let View: -90.0 degrees Medium Trucks: 50.550 FHWA Noise Model Calculations Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: T0.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -111.20 -0.17 -1.20 -4.88 0.000 0.000 Medium Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Reging Leq Reging Leg Noise 68.6 59.3 67.8 68.0 Heavy Trucks: 68.4 67.2 60.8 59.3		. ,									
Barrier Distance to Observer: 0.0 feet Autos: 0.000 Observer Height (Above Pad): 5.0 feet Medium Trucks: 2.297 Pad Elevation: 0.0 feet Heavy Trucks: 8.004 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Lane Equivalent Distance (in feet) Road Grade: 0.0% Autos: 50.755 Left View: 90.0 degrees Medium Trucks: 50.560 FHWA Noise Model Calculations Medium Trucks: 50.560 FHWA Noise Model Calculations 0.016 Frashel Traffic Flow VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.0 0.00 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Day Leq Day Leq Neinig Chei					Noise Sc				et)		
Observer Height (Above Pad): 5.0 feet Instant Value: 8.0.0 Grade Adjustment: 0.0 Pad Elevation: 0.0 feet Heavy Tracks: 8.0.04 Grade Adjustment: 0.0 Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Autos: 50.725 Left View: 90.0 degrees Medium Tracks: 50.567 FHWA Noise Model Calculations VenicleType REMEL Traffic Flow Distance Finite Road Fresel Barrier Atten Bern Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Tracks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Medium Tracks: 81.00 -11.20 -0.17 -1.20 -5.32 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Rowing Leq Noise 60.8 67.2 Medium Tracks: 68.4 67.2 60.8 59.3 67.			0.0 feet								
Pad Elevation: 0.0 feet Heav frucks: 8.004 Grade Adjustment. 0.0 Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Lane Equivalent Distance (in feet) Road Grade: 0.0% Lane Equivalent Distance (in feet) Autos: 50.755 Heavy Trucks: 50.567 Medium Trucks: 50.567 Medium Trucks: 50.567 FHWA Noise Model Calculations Presnel Barrier Atten Berm Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.70 0.000 0.000 Medium Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) Vehicle Type Leq Day Leq Evening Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 75.2 Medium Trucks: 68.4 67.2	Observer Height	Above Pad):	5.0 feet								
Road Grade: 0.0% Autos: 50.725 Left View: -90.0 degrees Medium Trucks: 50.560 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Bern Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.18 -1.20 -5.32 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: <t< td=""><td></td><td>,</td><td></td><td></td><td>Heav</td><td>y Trucks</td><td>s: 8.0</td><td>04</td><td>Grade Adj</td><td>usiment.</td><td>0.0</td></t<>		,			Heav	y Trucks	s: 8.0	04	Grade Adj	usiment.	0.0
Left View: -90.0 degrees Medium Tracks: 50.550 Right View: 90.0 degrees Heavy Tracks: 50.567 FHWA Noise Model Calculations VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: T0.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Tracks: 81.00 -11.20 -0.17 -1.20 -4.70 0.000 0.000 Medium Tracks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq New CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Tracks: 69.9 68.8 59.7 61.0 69.3 63.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 d	Roa	ad Elevation:	0.0 feet		Lane Eq	uivalent	Distanc	e (in f	eet)		
Right View: 90.0 degrees Heavy Trucks: 50.567 FHWA Noise Model Calculations Permitter Heavy Trucks: 50.567 VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 61.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) Use Leg Revining Leg Night Ldn CNEL VehicleType Leg Peak Hour Leg Day Leg Revining Leg Night Ldn CNEL Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 75.2 Medium Trucks: 69.9 68.8 59.7 61.0 69.3 75.2 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8		Road Grade:	0.0%			Autos	s: 50.7	25			
Right View: 90.0 degrees Heavy Trucks: 50.567 FHWA Noise Model Calculations Efficient Type REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Medium Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Deak Hour Leq Day Leq Reving Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.08 59.3 67.8 68.08 Heavy Truck: 69.9 68.8 59.7 61.0 69.3 65.2 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2<		Left View:	-90.0 degrees		Mediu	n Trucks	s: 50.5	50			
VehicleType REMEL Traffic Flow Distance Finite Road Fresnel Barrier Atten Berm Atten Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.120 -4.70 0.000 0.000 Heavy Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unmitigated Noise Levels (without Topo and barrier attenuation) VehicleType Leq Peak Hour Leq Day Leq Vening Leq Night Ldn CNEL Medium Trucks: 68.4 67.2 60.3 71.9 72.5 Medium Trucks: 69.9 68.8 59.7 61.0 69.3 68.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet)		Right View:	90.0 degrees		Heav	y Trucks	50.5	67			
Autos: 70.20 3.90 -0.20 -1.20 -4.70 0.000 0.000 Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.70 0.000 0.000 Heavy Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Umritigated Noise Levels (without Topo and barrier attenuation) VehicleType Leg Peak Hour Leg Day Leg Evening Leg Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 68.4 67.2 60.3 74.8 75.2 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) - 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289	FHWA Noise Mode	el Calculations									
Medium Trucks: 81.00 -11.20 -0.17 -1.20 -4.88 0.000 0.000 Heavy Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) VehiceType Leq Deak Hour Leq Day Leq Keining Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.9 Heavy Truck: 75.5 74.1 70.3 66.3 74.8 75.2 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet)	VehicleType	REMEL	Traffic Flow	Distance	Finite	Road	Fresne	e/	Barrier Atte	en Ber	m Atten
Heavy Trucks: 85.38 -14.10 -0.18 -1.20 -5.32 0.000 0.000 Unnitigated Noise Levels (without Topo and barrier attenuation) Leq Venicle Type Leq Peak Hour Leq Day Leq Venicle Leq Night Ldn CNEL Vehicle Type Leq Peak Hour Leq Day Leq Evening Leq Night Ldn CNEL Mutos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) T 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289	Autos:	70.20	3.90	-0.	20	-1.20		4.70	0.0	00	0.000
Vehicle Noise Leq Peak Hour Leq Day Leq Vehicle Vehicle Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 68.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289	Medium Trucks:	81.00	-11.20	-0.	17	-1.20	-	4.88	0.0	00	0.000
VehicleType Leq Peak Hour Leq Day Leq Vening Leq Night Ldn CNEL Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289	Heavy Trucks:	85.38	-14.10	-0.	18	-1.20		5.32	0.0	00	0.000
Autos: 72.7 71.1 69.3 63.3 71.9 72.5 Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289				rrier atte	nuation)						
Medium Trucks: 68.4 67.2 60.8 59.3 67.8 68.0 Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289						Leq	•		-		
Heavy Trucks: 69.9 68.8 59.7 61.0 69.3 69.5 Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1.289											
Vehicle Noise: 75.5 74.1 70.3 66.3 74.8 75.2 Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1,289				-							
Centerline Distance to Noise Contour (in feet) 70 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1,289	· · · · ·			-							
T0 dBA 65 dBA 60 dBA 55 dBA Ldn: 129 278 598 1,289				.1	70.3		66.3		74.8		75.2
Ldn: 129 278 598 1,289	Centerline Distant	ce to Noise Con	tour (in feet)	1							
						65 (6		55	
CNEL: 137 295 636 1,370											,
			CNE	L:	137		295		636		1,370

FHWA	-RD-77-	108 HIGH	WAY	NOISE	PREDIC		IODEL (9/12/2	021)		
Scenario: E (2021 Road Name: Hesper Road Segment: s/o Otta	ia Rd.						Name: lumber:		a Budiness	Center	
SITE SPECIFIC	INPUT	DATA				N	IOISE I	NODE		S	
Highway Data					Site Con	ditions	(Hard =	10, Sc	oft = 15)		
Average Daily Traffic (Ad	t): 35,5	73 vehicle	s					Autos:	15		
Peak Hour Percentag	e: 9.3	8%			Me	dium Tr	ucks (2 /	Axles):	15		
Peak Hour Volum	e: 3,33	6 vehicles	6		He	avy Tru	cks (3+)	Axles):	15		
Vehicle Spee	d: 5	0 mph		-	Vehicle I	Mix					
Near/Far Lane Distanc	e: 7	2 feet		ŀ		icleType		Day	Evening	Night	Daily
Site Data					Ven		Autos:	77.5%	•	9.6%	,
					M	, edium T		84.8%		10.3%	
Barrier Heigh		0.0 feet				Heavy T		86.5%		10.8%	
Barrier Type (0-Wall, 1-Bern Centerline Dist. to Barrie	·	2.0 feet								10.070	1.0070
Centerline Dist. to Barrie Centerline Dist. to Observe		2.0 feet			Noise Sc	ource El	levation	s (in fe	eet)		
Barrier Distance to Observe		0 feet				Auto		000			
Observer Height (Above Pag		5.0 feet			Mediur	m Truck	s: 2.	297			
Pad Elevatio	·	0.0 feet			Heav	y Truck	s: 8.	004	Grade Ad	iustment	: 0.0
Road Elevatio).0 feet		ŀ	Lane Eq	uivalen	t Distan	ce (in i	feet)		
Road Grad				ŀ	Lane Lq	Auto		725			
Left Vie).0 degree	e e		Mediu	m Truck		550			
Right Vie).0 degree				y Truck		567			
FHWA Noise Model Calculat	ions										
VehicleType REMEL	Trat	fic Flow	Dis	tance	Finite	Road	Fresr	nel	Barrier Att	en Bei	rm Atten
	.20	2.74		-0.2		-1.20		-4.70		000	0.000
	.00	-12.31		-0.1		-1.20		-4.88		000	0.000
Heavy Trucks: 85	.38	-15.22		-0.1	8	-1.20		-5.32	0.0	000	0.000
Unmitigated Noise Levels (v	-										
VehicleType Leq Peak		Leq Day		Leq E	vening	Leq	Night		Ldn		NEL
Autos:	71.5		69.9		68.2		62.1		70.7		71.3
Medium Trucks:	67.3		66.1		59.7		58.2		66.6		66.9
Heavy Trucks: Vehicle Noise:	68.8 74.3		67.6 72.9		58.6 69.1		59.9		68.2	-	68.3
					69.1		65.1		73.6)	74.0
Centerline Distance to Nois	e Contou	ır (in feet)	1	70	dBA	65	dBA	4	50 dBA	FF	dBA
			Ldn:	70	ава 108	00	ава 233		50 dBA 502		1.082
			VEL:		108		233		502		1,082
		Cr	VLL.		115		248		534		1,150

	FHWA-RD-	77-108 HIGHWA	Y NOIS	E PREDIC	TION MO	DDEL (9	/12/20)21)		
	OYC (2024) Hesperia Rd. s/o Ottawa Si					Vame: (mber: 1		Budiness	Center	
SITE SP	ECIFIC INP	UT DATA			N	DISE N	ODE		s	
Highway Data				Site Con	ditions (Hard =	10, So	ft = 15)		
Average Daily Tra	affic (Adt): 3	7.113 vehicles				A	Autos:	15		
Peak Hour Pe	rcentage:	9.38%		Me	dium Tru	cks (2 A	xles):	15		
Peak Hou	r Volume: 3	,480 vehicles		He	avy Truc	ks (3+ A	xles):	15		
Vehic	le Speed:	50 mph		Vehicle I	<i>liv</i>					
Near/Far Lane	Distance:	72 feet			cleType		Dav	Evening	Night	Daily
Site Data				von			77.5%		9.6%	
		0.0 feet		Me	dium Tri		84.8%		10.3%	
	r Height:	0.0 teet 0.0			leavy Tru		B6.5%		10.8%	
Barrier Type (0-Wall, Centerline Dist.		0.0 62.0 feet								
Centerline Dist. to		62.0 feet		Noise So	urce Ele	vations	; (in fe	et)		
Barrier Distance to		0.0 feet			Autos					
Observer Height (Ab		5.0 feet			n Trucks					
	Elevation:	0.0 feet		Heav	y Trucks	8.0	104	Grade Ad	iustment.	0.0
	Elevation:	0.0 feet		Lane Equ	ivalent	Distanc	e (in f	eet)		
Ro	ad Grade:	0.0%			Autos	50.7	25	í		
	Left View:	-90.0 degrees		Mediur	n Trucks	50.5	550			
R	ight View:	90.0 degrees		Heav	y Trucks	50.5	67			
FHWA Noise Model (1		-					T	
			Distance			Fresn		Barrier Att		m Atten
Autos:	70.20	2.92		.20	-1.20		-4.70		000	0.00
Medium Trucks:	81.00	-12.13	-	.17	-1.20 -1.20		-4.88		000	0.00
Heavy Trucks:	85.38	-15.03	-0.	.18	-1.20		-5.32	0.0	000	0.00
Unmitigated Noise L		it Topo and bar	rier atte	enuation)			-			
	q Peak Hour	Leq Day		Evening	Leq N			Ldn		VEL
Autos:	71.7			68.3		62.3		70.9		71.
Medium Trucks:	67.5			59.9		58.4		66.8		67
Heavy Trucks:	69.0		-	58.8		60.0		68.4		68
Vehicle Noise:	74.5		1	69.3		65.3		73.8	3	74
Centerline Distance	to Noise Con	tour (in feet)								
) dBA	65 a		6	0 dBA		dBA
		Ldr		111		240		517		1,11
		CNEL		118		255		549		1.18

Wednesday, October 27, 2021

FH	WA-RD	0-77-108 HIGH	WAY	NOISE			ODEL (9	/12/2	021)	_	_
Scenario: E+P Road Name: Hes Road Segment: s/o (peria R	d.					Name: (umber: 1		a Budiness	Center	
SITE SPECI	FIC IN	PUT DATA				Ν	OISE N	IODE	L INPUTS	3	
Highway Data					Site Con	ditions (Hard =	10, So	oft = 15)		
Average Daily Traffic ('Adt):	37,113 vehicle	s				A	lutos:	15		
Peak Hour Percen	tage:	9.38%			Me	dium Tru	icks (2 A	xles):	15		
Peak Hour Vol	ume:	3,480 vehicles	5		He	avy Truc	ks (3+ A	xles):	15		
Vehicle Sp	eed:	50 mph		-	Vehicle I	<i>lix</i>					
Near/Far Lane Dista	ance:	72 feet		-		cleType		Day	Evening	Night	Daily
Site Data								77.5%	•	9.6%	
Barrier He	iaht [.]	0.0 feet			Me	edium Tr	ucks: 1	84.8%	4.9%	10.3%	3.00%
Barrier Type (0-Wall, 1-B		0.0			F	leavy Tr	ucks: 1	86.5%	2.7%	10.8%	2.55%
Centerline Dist. to Ba		62.0 feet		-	Noise So	uree El	wationa	line	o.o.#)		
Centerline Dist. to Obse	erver:	62.0 feet		-	Noise 30	Autos			eelj		
Barrier Distance to Obse	erver:	0.0 feet				n Trucks	. 0.0				
Observer Height (Above	Pad):	5.0 feet				n Trucks y Trucks			Grade Adj	ustment	. 0.0
Pad Eleva	ation:	0.0 feet			neav	y TTUCKS	. 0.0	04	Grade Auj	usunen.	0.0
Road Eleva	ation:	0.0 feet			Lane Equ	ıivalent	Distanc	e (in	feet)		
Road G	rade:	0.0%				Autos	: 50.7	25			
Left	View:	-90.0 degree	s		Mediur	n Trucks	50.5	50			
Right	View:	90.0 degree	s		Heav	y Trucks	50.5	67			
FHWA Noise Model Calcu	Ilation	5									
VehicleType REN	1EL	Traffic Flow	Dis	stance	Finite	Road	Fresne	e/	Barrier Atte	en Ber	m Atten
Autos:	70.20	2.87		-0.2	20	-1.20		4.70	0.0	00	0.000
Medium Trucks:	81.00	-12.10		-0.1	17	-1.20		4.88	0.0	00	0.000
Heavy Trucks:	85.38	-12.82		-0.1	18	-1.20		-5.32	0.0	00	0.000
Unmitigated Noise Level			barri	er atter	nuation)						
VehicleType Leq Pe				Leq E	vening	Leq I			Ldn		VEL
Autos:	71		70.1		68.3		62.2		70.9		71.5
Medium Trucks:	67		66.3		59.9		58.4		66.8		67.1
Heavy Trucks:	71		70.0		61.0		62.3		70.6		70.7
Vehicle Noise:	75	.3	73.9		69.5		66.1		74.6	i	74.9
Centerline Distance to No	oise Co	ontour (in feet)									
			L	70	dBA	65 c			60 dBA	55	dBA
			Ldn:		125		269		579		1,248
			IEL :		132		284		612		1.318

FHWA-RD-77	7-108 HIGHWAY NO	DISE PREDIO	CTION MOD	DEL (9/12/2	:021)	
Scenario: OYC+P (2024) Road Name: Hesperia Rd. Road Segment: s/o Ottawa St.				me: Ottaw ber: 14035	a Budiness (Center
SITE SPECIFIC INPU	IT DATA				EL INPUTS	1
Highway Data		Site Cor	nditions (Ha	ard = 10, S	oft = 15)	
Average Daily Traffic (Adt): 38,	,653 vehicles			Autos	: 15	
Peak Hour Percentage: 9	.38%	Me	edium Truck	s (2 Axles)	: 15	
Peak Hour Volume: 3,6	324 vehicles	He	avy Trucks	(3+ Axles)	: 15	
Vehicle Speed:	50 mph	Vehicle	Mix			
Near/Far Lane Distance:	72 feet		icleType	Dav	Evening	Night Daily
Site Data			Aut		•	9.6% 94.49%
Barrier Height:	0.0 feet	М	edium Truc	ks: 84.8%	6 4.9%	10.3% 3.00%
Barrier Type (0-Wall, 1-Berm):	0.0		Heavy Truc	ks: 86.5%	6 2.7%	10.8% 2.51%
	52.0 feet	Noine C	ource Eleva	tiono (in t	in at l	
Centerline Dist. to Observer: 6	52.0 feet	NOISe 3	Autos:		eelj	
Barrier Distance to Observer:	0.0 feet	14	m Trucks:	0.000		
Observer Height (Above Pad):	5.0 feet			8.004	Grade Adi	stment: 0.0
Pad Elevation:	0.0 feet	nea	vy Trucks:	0.004	Orade Adja	atment. 0.0
Road Elevation:	0.0 feet	Lane Eq	uivalent Di	stance (in	feet)	
Road Grade: 0	.0%		Autos:	50.725		
Left View: -9	90.0 degrees	Mediu	m Trucks:	50.550		
Right View:	90.0 degrees	Hea	vy Trucks:	50.567		
FHWA Noise Model Calculations		1				
VehicleType REMEL Tr	affic Flow Distar	nce Finite	Road	Fresnel	Barrier Atte	n Berm Atten
Autos: 70.20	3.05	-0.20	-1.20	-4.70	0.00	
Medium Trucks: 81.00	-11.93	-0.17	-1.20	-4.88		
Heavy Trucks: 85.38	-12.71	-0.18	-1.20	-5.32	0.00	000.00
Unmitigated Noise Levels (without		,				
VehicleType Leq Peak Hour		eq Evening	Leq Nig		Ldn	CNEL
Autos: 71.9	70.2	68.5		62.4	71.0	71.6
				58.6	67.0	67.3
Medium Trucks: 67.7	66.5	60.1				
Heavy Trucks: 71.3	70.2	61.1		62.4	70.7	
Heavy Trucks: 71.3 Vehicle Noise: 75.4	70.2 74.0				70.7 74.7	
Heavy Trucks: 71.3	70.2 74.0	61.1 69.7		62.4 66.2	74.7	75.1
Heavy Trucks:71.3Vehicle Noise:75.4	70.2 74.0	61.1 69.7 70 dBA		62.4 66.2	74.7 60 dBA	75.1 55 dBA
Heavy Trucks:71.3Vehicle Noise:75.4	70.2 74.0	61.1 69.7		62.4 66.2	74.7	70.8 75.1 55 dBA 1,277 1.348

	FHWA-RD-	77-108 HIGH	WAY N	OISE I	PREDIC		IODEL (S	9/12/2	021)		
	FY (2034) Hesperia Rd. s/o Ottawa S						Name: (lumber: '		a Budiness	Center	
SITE SI	PECIFIC INF	PUT DATA				N	IOISE N	IODE	L INPUTS	6	
Highway Data				S	ite Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Tr	affic (Adt): 4	6,378 vehicle	s					Autos:	15		
Peak Hour Pe	ercentage:	9.38%			Mee	dium Tr	ucks (2 A	(xles):	15		
Peak Hou	ır Volume: 4	1,349 vehicles			Hea	avy Tru	cks (3+ A	(xles):	15		
Vehio	cle Speed:	50 mph		v	ehicle N	<i>liv</i>					
Near/Far Lane	Distance:	72 feet		F		cleType		Dav	Evening	Niaht	Daily
Site Data					10/11			77.5%		9.6%	
Barri	er Height:	0.0 feet			Ме	dium T	rucks:	84.8%	4.9%	10.3%	2.99%
Barrier Type (0-Wal		0.0			E	leavy T		86.5%		10.8%	
Centerline Dist.		62.0 feet									
Centerline Dist. to		62.0 feet		N	loise So		evations		eet)		
Barrier Distance to		0.0 feet				Auto		000			
Observer Height (Al		5.0 feet				n Truck		297	~		
• •	Elevation:	0.0 feet			Heav	y Truck	s: 8.0	004	Grade Adj	ustment	: 0.0
Road	Elevation:	0.0 feet		L	ane Equ	iivalent	t Distand	e (in :	feet)		
Ro	ad Grade:	0.0%				Auto	s: 50.	725			
	Left View:	-90.0 degree	s		Mediur	n Truck	s: 50.8	550			
F	Right View:	90.0 degree	s		Heav	y Truck	s: 50.8	567			
FHWA Noise Model	Calculations										
VehicleType	REMEL	Traffic Flow	Dista	nce	Finite	Road	Fresn	el	Barrier Atte	en Bei	m Atten
Autos:	70.20	3.89		-0.20		-1.20		-4.70	0.0		0.000
Medium Trucks:	81.00	-11.16		-0.17		-1.20		-4.88	0.0		0.000
Heavy Trucks:	85.38	-14.07		-0.18		-1.20		-5.32	0.0	00	0.000
Unmitigated Noise L										-	
	eq Peak Hour			.eq Ev		Leq	Night		Ldn		NEL
Autos:	72.7		71.1		69.3		63.3		71.9		72.5
Medium Trucks:	68.5		57.2		60.9		59.3		67.8		68.0
Heavy Trucks: Vehicle Noise:	69.9 75.5		58.8 74.1		59.8 70.3		61.0		69.4 74.8		69.5 75.2
			14.1		70.3		00.3		74.8		/5.2
Centerline Distance	to Noise Con	ntour (in feet)		70 d	RA	65	dBA		60 dBA	55	dBA
			.dn:		129	00	278	L `	599		1.291
			IEL:		125		270		637		1.373
		01			107		230		007		1,070

	FHWA-RD	-77-108 HIGH	WAY	NOISE	PREDICT		IODEL (9/12/2	021)		
	o: E (2021) e: Hesperia Ro t: s/o Nisquall						Name: lumber:		a Budiness	Center	
SITE S	SPECIFIC IN	PUT DATA				1	IOISE N	IODE		s	
Highway Data				5	Site Cona	litions	(Hard =	10, So	oft = 15)		
Average Daily	Traffic (Adt):	28,590 vehicle	es					Autos:	15		
Peak Hour I	Percentage:	9.38%			Med	lium Tr	ucks (2 A	(xles)	15		
Peak He	our Volume:	2,681 vehicles	6		Hea	vy Tru	cks (3+ A	Axles):	15		
	nicle Speed:	45 mph		1	/ehicle M	lix					
Near/Far Lar	e Distance:	72 feet			Vehic	leType	9	Day	Evening	Night	Daily
Site Data							Autos:	77.5%	12.9%	9.6%	95.48%
Bar	rier Height:	0.0 feet			Me	dium T	rucks:	84.8%	4.9%	10.3%	2.99%
Barrier Type (0-Wa		0.0			H	eavy T	rucks:	86.5%	2.7%	10.8%	1.53%
Centerline Dis	t. to Barrier:	62.0 feet			loise Sou	urce F	levation	s (in fi	pet)		
Centerline Dist. t	o Observer:	62.0 feet		-		Auto		200			
Barrier Distance t	o Observer:	0.0 feet			Medium			297			
Observer Height (/		5.0 feet			Heavy	/ Truck	s: 8.0	004	Grade Ad	iustment	0.0
	d Elevation:	0.0 feet		-							
	d Elevation:	0.0 feet		L	.ane Equ				feet)		
F	Road Grade:	0.0%			Medium	Auto					
	Left View: Right View:	-90.0 degree 90.0 degree				/ Truck / Truck					
FHWA Noise Mode					-						
VehicleType	REMEL	Traffic Flow	Die	tance	Finite F	Poad	Fresr	ام	Barrier Att	en Rer	m Atten
Autos:	68.46	2.24	013	-0.20		-1.20		-4.70		000	0.00
Medium Trucks:	79.45	-12.80		-0.17		-1.20		-4.88		000	0.00
Heavy Trucks:	84.25	-15.71		-0.18	3	-1.20		-5.32	0.0	000	0.00
Unmitigated Noise			-								
	Leq Peak Hou			Leq Ev		Leq	Night		Ldn		VEL
Autos:	69.		67.7		65.9		59.9		68.5		69.
Medium Trucks:	65.		64.0		57.7		56.1		64.6		64.
Heavy Trucks: Vehicle Noise:	67.		66.0 70.9		57.0 67.0		58.2 63.1		66.0 71.0		66. 72.
		-			67.0		63.1		71.0)	12.
Centerline Distanc	e to Noise Co	ntour (in feet)		70 d	IBA	65	dBA	6	60 dBA	55	dBA
			Ldn:		79		171		369		79
			VEL:				182		391		843

Wednesday, October 27, 2021

FHV	/A-RC)-77-108 HIGH\	VAY N	OISE	PREDIC		DEL (9/1	2/2021)		
Scenario: FY+P	(2034	4)				Project N	ame: Ot	awa Budiness	Center	
Road Name: Hespe						Job Nu	nber: 14	035		
Road Segment: s/o O	ttawa	St.								
SITE SPECIF	IC IN	PUT DATA						DEL INPUT	5	
Highway Data					Site Con	ditions (H	lard = 10	, Soft = 15)		
Average Daily Traffic (A	dt):	47,917 vehicle	5				Au	tos: 15		
Peak Hour Percenta	ige:	9.38%			Me	dium Truc	ks (2 Axl	es): 15		
Peak Hour Volu	me:	4,493 vehicles			He	avy Truck	s (3+ Axl	es): 15		
Vehicle Spe		50 mph		F	Vehicle I	Nix				
Near/Far Lane Distar	ice:	72 feet		ŀ		icleType	Da	evening	Night	Daily
Site Data						Au	tos: 77	.5% 12.9%	9.6%	94.68
Barrier Heig	aht.	0.0 feet			Me	edium Tru	cks: 84	.8% 4.9%	10.3%	3.00
Barrier Type (0-Wall, 1-Bei		0.0			F	leavy Tru	cks: 86	.5% 2.7%	10.8%	2.32
Centerline Dist. to Ban		62.0 feet		F	Noise So	ource Elev	ations (in feet)		
Centerline Dist. to Obser	ver:	62.0 feet		F		Autos:	0.00	,		
Barrier Distance to Obser	ver:	0.0 feet			Modiur	n Trucks:	2.29			
Observer Height (Above P	ad):	5.0 feet				v Trucks:	8.00		ustment	0.0
Pad Elevat	ion:	0.0 feet		L						
Road Elevat	ion:	0.0 feet		Ļ	Lane Equ	uivalent E		, ,		
Road Gra		0.0%				Autos:	50.72	-		
Left Vi		-90.0 degree				n Trucks:	50.55			
Right Vi	ew:	90.0 degree	5		Heav	y Trucks:	50.56	7		
FHWA Noise Model Calcul	ation	5								
VehicleType REME	EL	Traffic Flow	Dista	nce	Finite	Road	Fresnel	Barrier Att	en Ber	m Atter
	70.20	3.99		-0.2		-1.20			000	0.0
	31.00	-11.00		-0.1		-1.20			000	0.0
Heavy Trucks: 8	35.38	-12.12		-0.1	8	-1.20	-5	.32 0.0	000	0.0
Unmitigated Noise Levels	(with	out Topo and b	arrier	atter	nuation)					
VehicleType Leq Pea				.eq E	vening	Leq N		Ldn	-	VEL
Autos:	72		1.2		69.4		63.4	72.0		72
Medium Trucks:	68		7.4		61.0		59.5	68.0		68
Heavy Trucks:	71	-	0.7		61.7		63.0	71.3		71
· · · · · · · · · · · · · · · · · · ·	76	.2 7	4.8		70.6		67.0	75.5	5	75
Vehicle Noise:										
	se Co	ontour (in feet)								
Vehicle Noise: Centerline Distance to Noi	se Co			70	dBA	65 dE		60 dBA		dBA
	se Co	L	.dn: EL :	70	dBA 144 153	65 dE	3A 311 329	60 dBA 670 709		dBA 1,44 1.52

FHV	VA-RD-7	7-108 HIGHV	VAY N	IOISE	PREDIC	TION M	IODEL (S	9/12/2	021)				
Scenario: E+P Road Name: Hesp Road Segment: s/o N	eria Rd.	۲d.			Project Name: Ottawa Budiness Center Job Number: 14035								
SITE SPECIF	IC INP	UT DATA							L INPUT	s			
Highway Data				3	Site Con	ditions	(Hard =	10, So	oft = 15)				
Average Daily Traffic (A	A <i>dt):</i> 28	3,924 vehicles	6				A	Autos:	15				
Peak Hour Percente	age: 9	9.38%			Mee	dium Tri	ucks (2 A	xles):	15				
Peak Hour Volu	me: 2,	712 vehicles			Hea	avy Truc	cks (3+ A	xles):	15				
Vehicle Spe	eed:	45 mph		1	Vehicle N	Nix							
Near/Far Lane Dista	nce:	72 feet		E E		cleType		Dav	Evening	Night	Daily		
Site Data				-				77.5%		9.6%			
Barrier Hei	abt.	0.0 feet			Me	edium Ti	rucks:	84.8%	4.9%	10.3%	2.95%		
Barrier Type (0-Wall, 1-Be		0.0			H	leavy Ti	rucks:	86.5%	2.7%	10.8%	1.51%		
Centerline Dist. to Bar	,	62.0 feet		-				. (i.e. f.	41				
Centerline Dist. to Obser	ver:	62.0 feet		'	Noise So	Auto			eet)				
Barrier Distance to Obser	ver:	0.0 feet					. 0.0	000 297					
Observer Height (Above P	ad):	5.0 feet				n Truck			Grade Ad	ivetment			
Pad Eleva	tion:	0.0 feet			Heav	y Truck	S: 8.0	004	Graue Auj	usimeni	. 0.0		
Road Eleva	tion:	0.0 feet		1	Lane Equ	uivalent	Distanc	e (in	feet)				
Road Gr	ade: (0.0%				Auto	s: 50.7	725					
Left V	iew: ·	-90.0 degrees	6		Mediur	n Truck	s: 50.8	550					
Right V	ïew:	90.0 degrees	6		Heav	y Truck	s: 50.8	567					
FHWA Noise Model Calcu	lations												
VehicleType REMI	EL T	raffic Flow	Dista		Finite		Fresn	-	Barrier Atte	en Bei	m Atten		
Autos:	68.46	2.30		-0.20	0	-1.20		-4.70	0.0	000	0.000		
	79.45	-12.80		-0.1		-1.20		-4.88		000	0.000		
Heavy Trucks:	84.25	-15.71		-0.18	В	-1.20		-5.32	0.0	000	0.000		
Unmitigated Noise Levels													
VehicleType Leq Pea		Leq Day		Leq E	vening	Leq	Night		Ldn		NEL		
Autos:	69.4		7.7		66.0		59.9		68.5		69.1		
Medium Trucks:	65.3		4.0		57.7		56.1		64.6		64.8		
Heavy Trucks:	67.2		6.0		57.0		58.2		66.6		66.7		
Vehicle Noise:	72.4	-	1.0		67.0		63.1		71.6	5	72.0		
Centerline Distance to No.	ise Cont	our (in feet)	-	70 -	10.4	05	-/0.4		0 -0 4		-10.4		
		,	dn:	70 c	3BA 80	05	dBA 172		50 dBA 370		dBA 798		
		CN			80 85		1/2		370		798 847		
		CN	LL.		00		102		393		047		

	FHWA-RD-7	77-108 HIGHW	AY NOIS	E PREDIO	TION M	ODEL (9	/12/20	21)		
Scenario: Road Name: Road Segment:		Rd.				Name: C umber: 1		Budiness	Center	
SITE SP	ECIFIC INP	UT DATA			N	OISE M	ODEL	. INPUTS	6	
Highway Data				Site Cor	ditions (Hard = 1	10, Sof	ft = 15)		
Average Daily Tra	affic (Adt): 2	9,796 vehicles				A	utos:	15		
Peak Hour Pe	rcentage:	9.38%		Me	dium Tru	icks (2 A.	xles):	15		
Peak Hou	r Volume: 2	,794 vehicles		He	avy Truc	ks (3+ A	xles):	15		
Vehic	le Speed:	45 mph		Vehicle	Mix					
Near/Far Lane	Distance:	72 feet			icleType	1	Dav	Evening	Night	Daily
Site Data				Ven			7.5%	12.9%	9.6%	
				м	edium Tri		34.8%	4.9%	10.3%	2.99%
	r Height:	0.0 feet			Heavy Tr		36.5%	2.7%	10.8%	1.53%
Barrier Type (0-Wall, Centerline Dist.		0.0 62.0 feet							10.070	1.0070
Centerline Dist. to		62.0 feet		Noise S				et)		
Barrier Distance to		0.0 feet			Autos					
Observer Height (Ab		5.0 feet			m Trucks					
• •	Elevation:	0.0 feet		Hear	vy Trucks	8.0	04 (Grade Adj	ustment:	0.0
	Elevation:	0.0 feet		Lane Eq	uivalent	Distanc	e (in fe	eet)		
		0.0%			Autos					
	Left View:	-90.0 degrees		Mediu	m Trucks	50.5	50			
R	ight View:	90.0 degrees		Hea	y Trucks	50.5	67			
FHWA Noise Model (Calculations									
VehicleType	REMEL 1	Traffic Flow	Distance	Finite	Road	Fresne	e/ E	Barrier Atte	en Ber	m Atten
Autos:	68.46	2.42	-0.	.20	-1.20	-	4.70	0.0	00	0.000
Medium Trucks:	79.45	-12.62		.17	-1.20		4.88	0.0		0.000
Heavy Trucks:	84.25	-15.53	-0.	.18	-1.20	-	5.32	0.0	00	0.000
Unmitigated Noise L										
	q Peak Hour	Leq Day		Evening	Leq I	•		Ldn		VEL
Autos:	69.5		7.9	66.1		60.0		68.7		69.3
Medium Trucks:	65.5	-	1.2	57.9		56.3		64.8		65.0
Heavy Trucks: Vehicle Noise:	67.3		5.2 1.1	57.2 67.2		58.4 63.3		66.8 71.8		66.9
			1.1	67.2		63.3		/1.8		72.2
Centerline Distance	to Noise Con	tour (in feet)	7/) dBA	65 0	IRA I	6/) dBA	55	dBA
			dn:	82	030	176	00	379	55	817
		CNE		87		187		402		867
		CIVL		07		107		402		007

	FHWA-RD	-77-108 HIGH	WAY N	OISE P	REDICT	ION M) DEL	9/12/20	021)		
	o: FY (2034) e: Hesperia R	d.			F		Name: (Imber:		Budiness	Center	
	nt: s/o Nisquall										
SITE	SPECIFIC IN	PUT DATA								s	
Highway Data				Si	te Cond	itions (Hard =	10, Sc	oft = 15)		
Average Daily	Traffic (Adt):	36,984 vehicle	s				,	Autos:	15		
Peak Hour	Percentage:	9.38%			Medi	um Tru	cks (2 A	Axles):	15		
Peak H	our Volume:	3,468 vehicles			Hear	vy Truc	ks (3+ A	Axles):	15		
Ve	hicle Speed:	45 mph		Ve	hicle Mi	Y					
Near/Far La	ne Distance:	72 feet				eType		Dav	Evening	Night	Daily
Site Data							utos:	77.5%		9.6%	
Bai	rier Height:	0.0 feet			Med	lium Tr	ucks:	84.8%	4.9%	10.3%	2.99
Barrier Type (0-W		0.0			He	avy Tr	ucks:	86.5%	2.7%	10.8%	1.539
Centerline Dis		62.0 feet									
Centerline Dist.		62.0 feet		NO	oise Sou				et)		
Barrier Distance	to Observer:	0.0 feet				Autos		000			
Observer Height (Above Pad):	5.0 feet			Medium			297	Crada Ad	ivetment	
Pa	d Elevation:	0.0 feet			Heavy	Trucks	: 8.0	004	Grade Ad	usimenii	0.0
Roa	d Elevation:	0.0 feet		La	ne Equi	valent	Distand	ce (in i	feet)		
1	Road Grade:	0.0%				Autos	: 50.	725			
	Left View:	-90.0 degree	s		Medium	Trucks	50.	550			
	Right View:	90.0 degree	s		Heavy	Trucks	50.	567			
FHWA Noise Mode	el Calculations	5									
VehicleType	REMEL	Traffic Flow	Dista	nce	Finite R	load	Fresh		Barrier Att	en Ber	m Atten
Autos:	68.46	3.36		-0.20		-1.20		-4.70		000	0.00
Medium Trucks:	79.45	-11.68		-0.17		-1.20		-4.88		000	0.00
Heavy Trucks:	84.25	-14.59		-0.18		-1.20		-5.32	0.0	000	0.00
Unmitigated Noise				attenu	ation)						
VehicleType	Leq Peak Hou			eq Eve		Leq I	•		Ldn		VEL
Autos:	70		58.8		67.0		61.0		69.6		70
Medium Trucks:	66		35.2		58.8		57.3		65.7		65
Heavy Trucks:	68		57.1		58.1		59.4		67.7		67
Vehicle Noise:	73		72.1		68.1		64.2	2	72.7	(73
Centerline Distanc	e to Noise Co	ntour (in feet)		70 dE		65 c	ID A	6	0 dBA	55	dBA
			Ldn:	70 UE	94	001	203	-	<i>и ив</i> д 438		<u>ив</u> я 94:
			IEL:		94 100		203		430		1,00
		Ci			100		210		405		1,00

Wednesday, October 27, 2021

FHWA-F	RD-77-108 HIGHW	AY NOIS	E PREDIC	TION MC	DEL (9/12	2/2021)						
Scenario: OYC+P (2	2024)			Project N	lame: Otta	wa Budiness	Center					
Road Name: Hesperia				Job Nu	mber: 140	35						
Road Segment: s/o Nisqua	alli Rd.					Data Description there: 14035 SE MODEL INPUTS 14035 and = 10, Soft = 15) 15 Autos: 15 (3 + Axies): 15 Day Evening Night Dai 0s: 77.5% 12.9% 9.6% 95.5 ks: 84.8% 4.9% 10.3% 2.5						
SITE SPECIFIC I	NPUT DATA						5					
Highway Data			Site Cond	ditions (H	lard = 10,	Soft = 15)						
Average Daily Traffic (Adt):	30,130 vehicles				Auto	os: 15						
Peak Hour Percentage:	9.38%		Med	dium Truc	ks (2 Axle	s): 15						
Peak Hour Volume:	2,825 vehicles		Hea	avy Truck	s (3+ Axle	s): 15						
Vehicle Speed:	45 mph		Vehicle N	lix								
Near/Far Lane Distance:	72 feet			cleType	Da	/ Evening	Night	Daily				
Site Data					itos: 77.	5% 12.9%	9.6%	95.53				
Barrier Height:	0.0 feet		Me	dium Tru	cks: 84.	8% 4.9%	10.3%	2.95				
Barrier Type (0-Wall, 1-Berm):	0.0		H	leavy Tru	cks: 86.	5% 2.7%	10.8%	1.51				
Centerline Dist. to Barrier:	62.0 feet		Noise So	urce Elev	vations (in	1 feet)						
Centerline Dist. to Observer:	62.0 feet			Autos:		,						
Barrier Distance to Observer:	0.0 feet		Mediun	n Trucks:	0.000							
Observer Height (Above Pad):	5.0 feet			v Trucks:			ustment:	0.0				
Pad Elevation:	0.0 feet		-	·								
Road Elevation:	0.0 feet		Lane Equ			,						
Road Grade:	0.0%			Autos:								
Left View:	-90.0 degrees			n Trucks:								
Right View:	90.0 degrees		Heav	y Trucks:	50.567							
FHWA Noise Model Calculatio	ns		1									
VehicleType REMEL	Traffic Flow	Distance	Finite	Road	Fresnel	Barrier Atte	en Berr	n Atter				
Autos: 68.4	6 2.47	-0.	20	-1.20	-4.7	70 0.0	000	0.00				
Medium Trucks: 79.4		-0.		-1.20	-4.8			0.00				
Heavy Trucks: 84.2	5 -15.53	-0.	18	-1.20	-5.3	32 0.0	000	0.00				
Unmitigated Noise Levels (wit	hout Topo and bai	rrier atte	nuation)									
VehicleType Leq Peak He			Evening	Leq N	•	Ldn		IEL				
	9.5 67.		66.2		60.1	68.7		69				
	5.5 64.		57.9		56.3	64.8		65				
	7.3 66.		57.2		58.4	66.8		66				
Vehicle Noise: 7	2.5 71.	.1	67.2		63.3	71.8	5	72				
Centerline Distance to Noise (Contour (in feet)											
) dBA	65 dl		60 dBA	55	dBA				
	Ldi	n [.]	82		177	381		82				
	CNEI		87		187	404		87				

DISE PREDICTION MODEL (9/12/2021)								
Project Name: Ottawa Budiness Center Job Number: 14035								
NOISE MODEL INPUTS								
Site Conditions (Hard = 10, Soft = 15)								
Autos: 15								
Medium Trucks (2 Axles): 15								
Heavy Trucks (3+ Axles): 15								
Vehicle Mix								
VehicleType Day Evening Night Daily								
Autos: 77.5% 12.9% 9.6% 95.52%								
Medium Trucks: 84.8% 4.9% 10.3% 2.96%								
Heavy Trucks: 86.5% 2.7% 10.8% 1.52%								
Noise Source Elevations (in feet)								
Autos: 0.000								
Medium Trucks: 2.297								
Heavy Trucks: 8.004 Grade Adjustment: 0.0								
, , , , , , , , , , , , , , , , , , , ,								
Lane Equivalent Distance (in feet)								
Autos: 50.725								
Medium Trucks: 50.550								
Heavy Trucks: 50.567								
nce Finite Road Fresnel Barrier Atten Berm Atten								
-0.20 -1.20 -4.70 0.000 0.00								
-0.17 -1.20 -4.88 0.000 0.00								
-0.18 -1.20 -5.32 0.000 0.00								
attenuation)								
eq Evening Leq Night Ldn CNEL 67.1 61.0 69.6 70.								
58.8 57.3 65.7 65.								
58.1 59.4 67.7 67								
58.1 59.4 67.7 67. 68.1 64.2 72.8 73.								
68.1 64.2 72.8 73.								

FHWA-RD-77-10	8 HIGHWAY NOIS	E PREDICTION MODEL (9/12/2021)								
Scenario: E (2021) Road Name: La Mesa Rd. Road Segment: w/o Amargosa Rd.		Project Name: Ottawa Budiness Center Job Number: 14035								
SITE SPECIFIC INPUT I	DATA	NOISE MODEL INPUTS								
Highway Data		Site Conditions (Hard = 10, Soft = 15)								
Average Daily Traffic (Adt): 43,020	vehicles	Autos: 15								
Peak Hour Percentage: 9.38	6	Medium Trucks (2 Axles): 15								
Peak Hour Volume: 4,034	vehicles	Heavy Trucks (3+ Axles): 15								
Vehicle Speed: 45	mph	Vehicle Mix								
Near/Far Lane Distance: 50	feet	VehicleType Day Evening Night Da	ilv							
Site Data		Autos: 77.5% 12.9% 9.6% 95.4								
	6		99%							
	feet	01.070 1.070 LO	53%							
	feet									
	feet	Noise Source Elevations (in feet)								
	feet	Autos: 0.000								
	feet	Medium Trucks: 2.297								
	feet	Heavy Trucks: 8.004 Grade Adjustment: 0.0								
	feet	Lane Equivalent Distance (in feet)								
Road Elevation. 0.0 Road Grade: 0.0%		Autos: 43.589								
	degrees	Medium Trucks: 43.386								
	degrees	Heavy Trucks: 43.405								
FHWA Noise Model Calculations										
VehicleType REMEL Traffic	Flow Distance	Finite Road Fresnel Barrier Atten Berm Att	en							
Autos: 68.46	4.02 0	79 -1.20 -4.65 0.000 0	.000							
Medium Trucks: 79.45	-11.03 C	82 -1.20 -4.87 0.000 0	.000							
Heavy Trucks: 84.25	-13.94 0	82 -1.20 -5.43 0.000 0	.000							
Unmitigated Noise Levels (without Top	oo and barrier att									
		Evening Leq Night Ldn CNEL								
Autos: 72.1	70.5		71.9							
Medium Trucks: 68.0	66.8		67.6							
Heavy Trucks: 69.9	68.8		69.5							
Vehicle Noise: 75.1	73.7	69.8 65.9 74.4	74.8							
Centerline Distance to Noise Contour										
		0 dBA 65 dBA 60 dBA 55 dBA								
	Ldn:		980							
	CNEL:	104 224 483 1,	040							

	FHWA-RD	0-77-108 HIGH	WAY I	NOISE P	REDICT		ODEL (9/12/20	021)				
	o: OYC (2024 e: La Mesa Ro t: w/o Amargo	, d.		Project Name: Ottawa Budiness Center Job Number: 14035									
SITE S	SPECIFIC IN	PUT DATA				N	OISE	NODE		s			
Highway Data				Si	te Cona	litions ('Hard =	10, Sc	oft = 15)				
Average Daily	Traffic (Adt):	43,188 vehicle	s					Autos:	15				
Peak Hour	Percentage:	9.38%			Med	lium Tru	cks (2 /	Axles):	15				
Peak H	our Volume:	4,050 vehicles	6		Hea	vy Truc	ks (3+ /	Axles):	15				
Vel	nicle Speed:	45 mph		Ve	hicle M	liv							
Near/Far Lar	ne Distance:	50 feet				leType		Day	Evening	Night	Daily		
Site Data					vonne		utos:	77.5%	•	9.6%			
	rier Heiaht:	0.0 feet			Medium Trucks: 84.8% 4.9% 10.3% 2.9								
Barrier Type (0-W		0.0 1001			Н	eavy Tr	ucks:	86.5%		10.8%			
Centerline Dis	. ,	50.0 feet		_									
Centerline Dist. 1		50.0 feet		No	oise Sou				eet)				
Barrier Distance t		0.0 feet				Autos		000					
Observer Height (5.0 feet			Medium			297					
. .	d Elevation:	0.0 feet			Heavy	/ Trucks	: 8.	004	Grade Ad	ustment.	0.0		
	d Elevation:	La	ne Equ	ivalent	Distan	ce (in i	feet)						
F			Autos	: 43.	589	-							
	Left View:	-90.0 degree	es		Medium	Trucks	: 43.	386					
	Right View:	90.0 degree	es		Heavy	/ Trucks	: 43.	405					
FHWA Noise Mode								1		T			
VehicleType	REMEL	Traffic Flow	Dist	ance	Finite F		Fresr	-	Barrier Att		m Atten		
Autos:	68.46	4.04		0.79		-1.20		-4.65		000	0.00		
Medium Trucks:	79.45	-11.01		0.82		-1.20		-4.87		000	0.00		
Heavy Trucks:	84.25	-13.92		0.82		-1.20		-5.43	0.0	000	0.00		
Unmitigated Noise	Levels (with	out Topo and	barrie	r attenu	ation)								
	Leq Peak Hou			Leq Eve		Leq I			Ldn		VEL		
Autos:	72		70.5		68.7		62.6		71.3		71		
Medium Trucks:	68		66.8		60.5		58.9		67.4		67		
Heavy Trucks:	70		68.8		59.8		61.0		69.4		69		
Vehicle Noise:	75	.1	73.7		69.8		65.9	9	74.4	1	74		
Centerline Distanc	e to Noise Co	ontour (in feet))										
			L	70 dE		65 0			60 dBA		dBA		
			Ldn:		98		212		456		98		
		CI	VEL:		104		225		484		1.04		

Wednesday, October 27, 2021

Scenario: E+P (2	021					Project	Name: (Ottown	- Rudinoss (Contor				
Road Name: La Me							warne: 0 umber: 1			Jenter				
Road Segment: w/o Ar						JOD IN	umber.	4030		IS IS 15 15 15 15 12.9% 9.6% 95.4 4.9% 10.3% 2.5 2.7% 10.8% 1.5 0 0 0 0 arrier Atten Bern Atten Bern Atten 0.000 0 0 0				
÷														
SITE SPECIFI	CIN	PUT DATA			0				LINPUTS	;				
Highway Data					Site Con	ditions		- ·	,					
Average Daily Traffic (A	·	43,187 vehicle	s					Autos:						
Peak Hour Percenta		9.38%					icks (2 A							
Peak Hour Volun		4,050 vehicles	3		He	avy Truc	:ks (3+ A	xles).	15					
Vehicle Spee		45 mph		ŀ	Vehicle I	Mix								
Near/Far Lane Distan	ce:	50 feet		ŀ	Veh	icleType		Day	Evening	Night	Daily			
Site Data							Autos:	77.5%	12.9%	9.6%	95.50%			
Barrier Heig	ht.	0.0 feet			Me	edium Ti	ucks:	84.8%	4.9%					
Barrier Type (0-Wall, 1-Ben		0.0 teet			ŀ	leavy Ti	ucks:	86.5%	2.7%		1.529			
Centerline Dist. to Barr	·	50.0 feet		ļ										
Centerline Dist. to Observ		50.0 feet			Noise So				eet)					
Barrier Distance to Observ		0.0 feet				Auto:	. 0.0	000						
Observer Height (Above Pa		5.0 feet				n Truck		297						
Pad Elevation: 0.0 feet					Heav	y Truck	s: 8.0	04	Grade Adjı	istment	: 0.0			
Pad Elevation: 0.0 feet Road Elevation: 0.0 feet				ŀ	Lane Eq	uivalent	Distanc	e (in	feet)					
Road Gra		0.0%		ŀ		Auto								
Left Vie		-90.0 degree			Mediu	n Truck	5: 43.3	286						
Right Vie		90.0 degree			Heav	y Truck								
FHWA Noise Model Calcula	tions													
VehicleType REME	<u>_</u>	Traffic Flow	Dis	stance	Finite	Road	Fresn	el	Barrier Atte	n Ber	m Atten			
Autos: 6	8.46	4.04		0.7	'9	-1.20		-4.65	0.00	00	0.00			
Medium Trucks: 7	9.45	-11.03		0.8	32	-1.20		-4.87	0.00	00	0.00			
Heavy Trucks: 8	4.25	-13.94		0.8	32	-1.20		-5.43	0.00	00	0.00			
Unmitigated Noise Levels (
VehicleType Leq Peak				Leq E	vening	Leq	Night		Ldn	CI	VEL			
Autos:	72.		70.5		68.7		62.6		71.3		71.			
Medium Trucks:	68.	-	66.8		60.5		58.9		67.4		67.			
Heavy Trucks:	69.	-	68.8		59.8		61.0		69.4		69.			
Vehicle Noise:	75.		73.7		69.8		65.9		74.4		74.			
Centerline Distance to Nois	e Co	ntour (in feet)		70	-04			_			-10.4			
			L	70	dBA	65	dBA	1	60 dBA	55	dBA			
			Ldn:		98		211		455		98			
			VEL		104		224		483		1.04			

FHWA-RD-77-1	08 HIGHWA	y noise	E PREDIC		ODEL (9/	12/20)21)				
Scenario: OYC+P (2024) Road Name: La Mesa Rd. Road Segment: w/o Amargosa R	d.		Project Name: Ottawa Budiness Center Job Number: 14035								
SITE SPECIFIC INPUT	DATA							6			
Highway Data			Site Con	ditions	(Hard = 1	· ·	,				
	5 vehicles		140	diuma Tr	Al ICKS (2 Ax	utos:	15 15				
· • • • • • • • • • • • • • • • • • • •	5 vehicles				cks (2 Ax cks (3+ Ax		15				
	5 mph				//2 (3+ //X	<i>lies)</i> .	15				
) feet		Vehicle I								
) leel		Veh	cleType)ay	Evening	Night	Daily		
Site Data						7.5%		9.6%			
Barrier Height: 0	.0 feet			edium T		4.8%		10.3%			
	.0		, F	leavy T	ucks: 8	6.5%	2.7%	10.8%	1.52%		
	.0 feet	F	Noise Sc	urce El	evations	(in fe	et)				
	.0 feet	1		Auto	s: 0.00	00					
	.0 feet		Mediu	n Truck	s; 2.29	97					
• • • •	0 feet		Heav	y Truck	s: 8.00	04	Grade Adj	ustment	: 0.0		
	.0 feet	-									
	0 feet	-	Lane Eq		Distance		eet)				
Road Grade: 0.0				Auto							
	0 degrees			n Truck							
Right View: 90	0 degrees		Heav	y Truck	s: 43.40	J5					
FHWA Noise Model Calculations											
		istance	Finite		Fresne		Barrier Atte		m Atten		
Autos: 68.46	4.05	0.7	79	-1.20	-4	4.65	0.0	00	0.00		
Autos: 68.46 Medium Trucks: 79.45	4.05 -11.01	0.7	79 32	-1.20 -1.20	-4	4.65 4.87	0.0 0.0	00 00	0.00		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25	4.05 -11.01 -13.92	0.7 0.8 0.8	79 82 82	-1.20	-4	4.65	0.0	00 00	0.00		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr	4.05 -11.01 -13.92 opo and barr	0.7 0.8 0.8 ier atte r	79 32 32 nuation)	-1.20 -1.20 -1.20	-4 -4 -{	4.65 4.87	0.0 0.0 0.0	00 00 00	0.00 0.00 0.00		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr VehicleType Leq Peak Hour	4.05 -11.01 -13.92 Dpo and barr Leq Day	0.7 0.8 0.8 ier atter Leq E	79 32 32 nuation) Evening	-1.20 -1.20 -1.20	-4 -4 -5 Night	4.65 4.87	0.0 0.0 0.0	00 00 00 C	0.00 0.00 0.00		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr VehicleType Leq Peak Hour Autos: 72.1	4.05 -11.01 -13.92 opo and barr Leq Day 70.5	0.7 0.8 0.8 ier atter Leq E	79 32 32 nuation) Evening 68.7	-1.20 -1.20 -1.20	-4 -4 -{ Night 62.7	4.65 4.87	0.0 0.0 0.0 <i>Ldn</i> 71.3	00 00 00 C	0.00 0.00 0.00 NEL 71.		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without T VehicleType Leg Peak Hour Autos: 72.1 Medium Trucks: 68.1	4.05 -11.01 -13.92 opo and barn Leq Day 70.5 66.8	0.7 0.8 0.8 ier atter Leg E	79 32 32 52 50 50 50 50 50 50 50 50 50 50 50 50 50	-1.20 -1.20 -1.20	-4 -4 -8 Night 62.7 58.9	4.65 4.87	0.0 0.0 0.0 <i>Ldn</i> 71.3 67.4	00 00 00 C	0.00 0.00 0.00 NEL 71. 67.		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr VehicleType Leq Peak Hour Autos: 72.1	4.05 -11.01 -13.92 opo and barr Leq Day 70.5	0.7 0.8 0.8 <i>ier atter</i> Leq E	79 32 32 nuation) Evening 68.7	-1.20 -1.20 -1.20	-4 -4 -{ Night 62.7	4.65 4.87	0.0 0.0 0.0 <i>Ldn</i> 71.3	00 00 00 C	0.00 0.00 0.00 NEL 71. 67. 69.		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Umitigated Noise Levels (without Tr VehicleType Leg Peak Hour Autos: 72.1 Medium Trucks: 68.1 Heavy Trucks: 70.0	4.05 -11.01 -13.92 opo and barr Leq Day 70.5 66.8 68.8 73.7	0.7 0.8 0.8 <i>ier atter</i> Leq E	79 32 32 Evening 68.7 60.5 59.8	-1.20 -1.20 -1.20	-4 -4 -5 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4	4.65 4.87	0.0 0.0 0.0 <i>Ldn</i> 71.3 67.4 69.4	00 00 00 C	0.000 0.000 0.000 NEL 71.9 67.6 69.9		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr VehicleType Leg Peak Hour Autos: 72.1 Medium Trucks: 68.1 Heavy Trucks: 75.1	4.05 -11.01 -13.92 opo and barr Leq Day 70.5 66.8 68.8 73.7	0.7 0.8 0.8 ier atter Leg E	79 32 32 Evening 68.7 60.5 59.8	-1.20 -1.20 -1.20 <i>Leq</i>	-4 -4 -5 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4 -4	4.65 4.87 5.43	0.0 0.0 0.0 <i>Ldn</i> 71.3 67.4 69.4	00 00 00 C	0.000 0.000 0.000 NEL 71.9 67.6 69.9		
Autos: 68.46 Medium Trucks: 79.45 Heavy Trucks: 84.25 Unmitigated Noise Levels (without Tr VehicleType Leg Peak Hour Autos: 72.1 Medium Trucks: 68.1 Heavy Trucks: 75.1	4.05 -11.01 -13.92 opo and barr Leq Day 70.5 66.8 68.8 73.7	0.7 0.8 0.8 ier atter Leq E	79 32 32 Evening 68.7 60.5 59.8 69.8	-1.20 -1.20 -1.20 <i>Leq</i>		4.65 4.87 5.43	0.0 0.0 0.0 71.3 67.4 69.4 74.4	00 00 00 C	0.000 0.000 0.000 NEL 71.§ 67.6 69.§ 74.8		

FHWA-RD-	77-108 HIGHWAY	NOISE	E PREDIC	TION M	ODEL (9	/12/20	021)				
Scenario: FY (2034) Road Name: La Mesa Rd. Road Segment: w/o Amargos			Project Name: Ottawa Budiness Center Job Number: 14035								
SITE SPECIFIC INF	PUT DATA			N	OISE N	IODE	L INPUTS	6			
Highway Data			Site Con	ditions	(Hard = '	10, So	ft = 15)				
Average Daily Traffic (Adt): 5	5,651 vehicles				A	lutos:	15				
Peak Hour Percentage:	9.38%		Me	dium Tru	icks (2 A	xles):	15				
Peak Hour Volume:	5,218 vehicles		He	avy Truc	:ks (3+ A	xles):	15				
Vehicle Speed:	45 mph	-	Vehicle I	Mix							
Near/Far Lane Distance:	50 feet	-		icleType		Dav	Evening	Night	Daily		
Site Data			Ven			77.5%	•	9.6%			
			M	edium Tr		84.8%		10.3%			
Barrier Height:	0.0 feet			Heavy Tr		34.0 % 36.5%		10.3%	1.53%		
Barrier Type (0-Wall, 1-Berm):	0.0 50.0 feet				40/10.	50.070	2.170	10.070	1.0070		
Centerline Dist. to Barrier: Centerline Dist. to Observer:	50.0 feet		Noise Sc	ource El	evations	(in fe	et)				
Barrier Distance to Observer:	0.0 feet			Autos	s: 0.0	00					
	5.0 feet		Mediur	m Trucks	s: 2.2	97					
Observer Height (Above Pad): Pad Elevation:	0.0 feet		Heav	y Trucks	s: 8.0	04	Grade Adj	ustment	0.0		
Road Elevation:	0.0 feet	F	Lane Eq	uivalont	Dictanc	o (in f	iont)				
Road Elevation: Road Grade:	0.0 reet	F	Lane Ly	Autos			eelj				
Left View:			Modiu	m Trucks							
Right View:	-90.0 degrees 90.0 degrees			y Truck							
FHWA Noise Model Calculations											
	Traffic Flow Dis	stance	Finite	Road	Fresne	e/	Barrier Atte	en Ber	m Atten		
Autos: 68.46	5.14	0.7	79	-1.20		4.65	0.0	00	0.000		
Medium Trucks: 79.45	-9.91	0.8	32	-1.20		4.87	0.0	00	0.000		
Heavy Trucks: 84.25	-12.82	0.8	32	-1.20		-5.43	0.0	00	0.000		
Unmitigated Noise Levels (witho	ut Topo and barri	ier attei	nuation)								
VehicleType Leq Peak Hour	Leq Day	Leq E	vening	Leq	Night		Ldn	CI	VEL		
Autos: 73.2			69.8		63.7		72.4		73.0		
Medium Trucks: 69.2			61.6		60.0		68.5		68.7		
Heavy Trucks: 71.1			60.9		62.1		70.5		70.6		
Vehicle Noise: 76.2	2 74.8		70.9		67.0		75.5		75.9		
Centerline Distance to Noise Cor	ntour (in feet)										
	L	70	dBA	65 (dBA	6	0 dBA	55	dBA		
	Ldn:		116		251		540		1,163		
	CNEL:		123		266		573		1,234		

	FHWA-RD-77	-108 HIGHWAY	NOISE	PREDIC	TION M	ODEL (S	9/12/20	021)		
Scenario: E Road Name: 1 Road Segment: e	visqualli Rd.	d.				Name: (Imber: 1		a Budiness	Center	
SITE SPI	CIFIC INPU	T DATA			N	OISE N	IODE		s	
Highway Data				Site Con	ditions ('Hard =	10, So	oft = 15)		
Average Daily Trai	ffic (Adt): 35,	573 vehicles					Autos:	15		
Peak Hour Per	centage: 9.	38%		Med	dium Tru	cks (2 A	xles):	15		
Peak Hour	Volume: 3,3	36 vehicles		Hea	avy Truc	ks (3+ A	xles):	15		
		45 mph		Vehicle N	lix					
Near/Far Lane L	Distance:	50 feet		Vehi	cleType		Day	Evening	Night	Daily
Site Data					A	utos:	77.5%	12.9%	9.6%	95.489
Barrie	r Height:	0.0 feet		Me	dium Tr	ucks:	84.8%	4.9%	10.3%	2.99%
Barrier Type (0-Wall,		0.0		H	leavy Tr	ucks:	86.5%	2.7%	10.8%	1.53%
Centerline Dist. to	b Barrier: 5	50.0 feet	E E	Noise So	urco Ele	vation	in fe	oof)		
Centerline Dist. to C	Observer: 5	50.0 feet	H	10/30 00	Autos		000			
Barrier Distance to C	Observer:	0.0 feet		Mediun	n Trucks		97			
Observer Height (Abo	ve Pad):	5.0 feet			v Trucks		04	Grade Ad	iustment.	0.0
	levation:	0.0 feet	-							
	levation:	0.0 feet	4	Lane Equ				feet)		
		.0%			Autos					
-		0.0 degrees			n Trucks v Trucks					
Rig	ght View: 9	0.0 degrees		Heav	y Trucks	: 43.4	4U5			
FHWA Noise Model C	alculations									
VehicleType F	REMEL Tra	affic Flow Di	istance	Finite	Road	Fresn	el	Barrier Att	en Ber	m Atten
Autos:	68.46	3.19	0.7		-1.20		-4.65		000	0.00
Medium Trucks:	79.45	-11.85	0.8		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-14.76	0.8	2	-1.20		-5.43	0.0	000	0.00
Unmitigated Noise Le	vels (without	Topo and barr	ier atten	uation)						
	g Peak Hour	Leq Day	Leq E	vening	Leq I			Ldn		VEL
Autos:	71.2	69.6		67.9		61.8		70.4		71.
Medium Trucks:	67.2	66.0		59.6		58.1		66.5		66.
Heavy Trucks:	69.1	68.0		58.9		60.2		68.5		68.
Vehicle Noise:	74.3	72.9		68.9		65.1		73.6	j.	73.
Centerline Distance to	o Noise Conto	our (in feet)							_	
			70 (dBA	65 0		6	60 dBA		dBA
		Ldn:		86		186		401		863
		CNEL:		92		197		425		916

Wednesday, October 27, 2021

0 : 545		-77-108 HIGH	_								_
Scenario: FY+P							wame: (umber: '		a Budiness	Center	
Road Name: La Me Road Segment: w/o Ar						JOD IN	umber:	4035			
Road Segment. W/O Al	nargo	isa Ru.									
SITE SPECIFI	C IN	PUT DATA							L INPUTS	6	
Highway Data					Site Con	ditions	(Hard =	10, So	oft = 15)		
Average Daily Traffic (A	dt):	55,818 vehicle	s					Autos:	15		
Peak Hour Percenta	ge:	9.38%			Me	dium Tru	icks (2 A	xles):	15		
Peak Hour Volur	ne:	5,234 vehicles			He	avy Truc	:ks (3+ A	xles):	15		
Vehicle Spe	ed:	45 mph		F	Vehicle I	<i>lix</i>					
Near/Far Lane Distan	ce:	50 feet		ŀ		cleTvpe		Dav	Evening	Night	Daily
Site Data								77.5%	•	9.6%	
no - m	A. 4.	0.0.6			Me	dium Tr		84.8%		10.3%	
Barrier Heig Barrier Type (0-Wall, 1-Ber		0.0 feet 0.0				leavy Tr		86.5%		10.8%	
Centerline Dist. to Barr		50.0 feet									
Centerline Dist. to Observ		50.0 feet			Noise So			in f	eet)		
Barrier Distance to Observ		0.0 feet				Autos		000			
		5.0 feet			Mediur	n Trucks	s: 2.2	297			
Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet					Heav	y Trucks	s: 8.0	04	Grade Adji	ustment	: 0.0
Pad Elevation: 0.0 feet Road Elevation: 0.0 feet					l ano Equ	ivalont	Distanc	o (in	foot)		
	Road Elevation: 0.0 feet Lane Equivalent Distance (in feet) Road Grade: 0.0% Autos: 43.589										
Left Vie					Modiur	n Truck:					
Right Vie		-90.0 degree				y Trucks					
Right Vie	ew.	90.0 degree	s		neav	y much	5. 43.4	100			
FHWA Noise Model Calcula	ations	5									
VehicleType REME	Ľ	Traffic Flow	Dista	ance	Finite	Road	Fresn	e/	Barrier Atte	n Ber	m Atten
Autos: 6	8.46	5.15		0.7	9	-1.20		-4.65	0.0	00	0.00
Medium Trucks: 7	9.45	-9.91		0.8	2	-1.20		-4.87	0.0	00	0.00
Heavy Trucks: 8	4.25	-12.82		0.8	2	-1.20		-5.43	0.0	00	0.00
Unmitigated Noise Levels	with	out Topo and	barrier	atter	uation)						
VehicleType Leq Peal	k Hou	r Leq Day	1	Leq E	vening	Leq	Night		Ldn	CI	NEL
Autos:	73	.2	71.6		69.8		63.8		72.4		73.
Medium Trucks:	69	.2	67.9		61.6		60.0		68.5		68.
	71	.1 (59.9		60.9		62.1		70.5		70.
Heavy Trucks:	70	2	74.8		70.9		67.0		75.5		75.
Heavy Trucks: Vehicle Noise:	76	.2									
			-								
Vehicle Noise:			-	70	dBA	65 (1BA	(60 dBA	55	dBA
Vehicle Noise:		ntour (in feet)	-	70	<i>dBA</i> 116	65 (1BA 251	(60 dBA 540	55	dBA 1,164

FHWA-RD-77-108 HIG	HWAY NO	ISE PREDIC	TION MO	DEL (9/12/	2021)					
Scenario: E+P (2021)		Project Name: Ottawa Budiness Center								
Road Name: Nisqualli Rd.			Job Nun	nber: 1403	5					
Road Segment: e/o Mariposa Rd.										
SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS								
Highway Data		Site Con	ditions (H	ard = 10, S	Soft = 15)					
Average Daily Traffic (Adt): 36,695 vehi	cles			Autos	s: 15					
Peak Hour Percentage: 9.38%		Me	dium Truci	ks (2 Axles): 15					
Peak Hour Volume: 3,441 vehic	es	He	avy Trucks	s (3+ Axles): 15					
Vehicle Speed: 45 mph		Vehicle I	Mix							
Near/Far Lane Distance: 50 feet			icleType	Day	Evening	Night	Daily			
Site Data			Au	tos: 77.5	% 12.9%	9.6%	94.389			
Barrier Height: 0.0 feet		Me	edium Truc	ks: 84.8	% 4.9%	10.3%	3.04%			
Barrier Type (0-Wall, 1-Berm): 0.0		ŀ	leavy Truc	cks: 86.5	% 2.7%	10.8%	2.58			
Centerline Dist. to Barrier: 50.0 feet		Noise Sc	ource Elev	ations (in	feet)					
Centerline Dist. to Observer: 50.0 feet			Autos:	0.000						
Barrier Distance to Observer: 0.0 feet		Mediu	n Trucks:	2,297						
Observer Height (Above Pad): 5.0 feet			v Trucks:	8.004	Grade Adj	ustment:	0.0			
Pad Elevation: 0.0 feet										
Road Elevation: 0.0 feet		Lane Eq		istance (in	i feet)					
Road Grade: 0.0%			Autos:	43.589						
Left View: -90.0 degr			n Trucks:	43.386						
Right View: 90.0 degr	ees	Heav	y Trucks:	43.405						
FHWA Noise Model Calculations										
VehicleType REMEL Traffic Flow				Fresnel	Barrier Atte		n Atten			
Autos: 68.46 3.2	-	0.79	-1.20	-4.65			0.00			
Medium Trucks: 79.45 -11.6		0.82	-1.20	-4.87			0.00			
Heavy Trucks: 84.25 -12.3	6	0.82	-1.20	-5.43	3 0.0	00	0.00			
Unmitigated Noise Levels (without Topo an		,								
VehicleType Leq Peak Hour Leq D		q Evening	Leq Ni		Ldn	CN				
Autos: 71.3	69.7	67.9		61.9	70.5		71.			
Medium Trucks: 67.4	66.2	59.8		58.3	66.8		67.			
Heavy Trucks: 71.5	70.4	61.3		62.6	70.9		71.			
	73.9	69.3		66.1	74.5		74.			
Vehicle Noise: 75.2										
Vehicle Noise: 75.2 Centerline Distance to Noise Contour (in fee	et)									
		70 dBA	65 dB		60 dBA	55 d				
Centerline Distance to Noise Contour (in fe	,	70 dBA 100 106	65 dB	216 228	60 dBA 465 490	55 d	BA 1,003			

FHWA-RD-77-10	8 HIGHWAY NOIS	E PREDICTION I	IODEL (9/12/2	:021)	
Scenario: OYC (2024) Road Name: Nisqualli Rd. Road Segment: e/o Mariposa Rd.			t Name: Ottaw lumber: 14035		Center
SITE SPECIFIC INPUT	ATA		NOISE MODE	EL INPUTS	i
Highway Data		Site Conditions	(Hard = 10, S	oft = 15)	
Average Daily Traffic (Adt): 37,113	vehicles		Autos	15	
Peak Hour Percentage: 9.38%	6	Medium T	ucks (2 Axles)	: 15	
Peak Hour Volume: 3,480	vehicles	Heavy Tru	cks (3+ Axles)	: 15	
Vehicle Speed: 45	mph	Vehicle Mix			
Near/Far Lane Distance: 50	feet	VehicleTyp	e Dav	Evening	Night Daily
Site Data			Autos: 77.5%	÷	9.6% 95.48%
	feet	Medium 1	rucks: 84.8%	6 4.9%	10.3% 2.99%
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy 1	rucks: 86.5%	6 2.7%	10.8% 1.53%
	feet	-			
	feet	Noise Source E		ieet)	
	feet	Auto			
	feet	Medium Truck			
. ,	feet	Heavy Truck	(s: 8.004	Grade Adju	istment: 0.0
	feet	Lane Equivalen	t Distance (in	feet)	
Road Grade: 0.0%		Auto			
	degrees	Medium Truck	(s: 43.386		
	degrees	Heavy Truck	(s: 43.405		
FHWA Noise Model Calculations					
VehicleType REMEL Traffic	Flow Distance	Finite Road	Fresnel	Barrier Atte	n Berm Atten
Autos: 68.46	3.38 0	.79 -1.20	-4.65	0.00	
Medium Trucks: 79.45	-11.67 0	.82 -1.20	-4.87	0.00	000.0
Heavy Trucks: 84.25	-14.58 0	.82 -1.20	-5.43	0.00	0.000
Unmitigated Noise Levels (without Top	o and barrier att	enuation)			
			Night	Ldn	CNEL
Autos: 71.4	69.8	68.0	62.0	70.6	71.2
Medium Trucks: 67.4	66.2	59.8	58.3	66.7	67.0
Heavy Trucks: 69.3	68.2	59.1	60.4	68.7	68.8
	73.1	69.1	65.2	73.7	74.1
Vehicle Noise: 74.5	70.1				
Vehicle Noise: 74.5 Centerline Distance to Noise Contour	(in feet)				
	(in feet)			60 dBA	55 dBA
	(in feet)	0 dBA 65 89 94	dBA 191 203	60 dBA 412 437	55 dBA 888 942

	FHWA-RD-7	77-108 HIGHWA	Y NOISE	PREDIC	TION M	ODEL (9/12/20	021)		
	FY (2034)		Project Name: Ottawa Budiness Center							
Road Name: Road Segment:	Nisqualli Rd.			Job Ni	umber: *	14035				
-	PECIFIC INP				N				•	
Highway Data	PECIFIC INP	UIDAIA		Site Con					3	
Average Daily Tr	affic (Adt): A	6.378 vehicles					Autos:	,		
Peak Hour Pe	()	9.38%		Med	dium Tru	, icks (2 A				
		.349 vehicles				ks (3+ A				
Vehic	cle Speed:	45 mph	-	Vehicle N	, Nu					
Near/Far Lane	Distance:	50 feet	ŀ		l ix cleType		Dav	Evening	Night	Daily
Site Data				Verm			77.5%	•	•	95.48%
		0.0.6		Me	dium Tr		84.8%		10.3%	2.99%
Barrier Type (0-Wal	er Height:	0.0 feet 0.0			leavy Tr		86.5%		10.8%	
Centerline Dist.	. ,	50.0 feet	-							
Centerline Dist. to		50.0 feet	-	Noise So				eet)		
Barrier Distance to		0.0 feet			Autos		000			
Observer Height (Al	bove Pad):	5.0 feet			n Trucks		297	Grade Ad	ivetment	
Pad	Elevation:	0.0 feet		Heav	y Trucks	. 8.0	004	Grade Au	usimenii	0.0
Road	Elevation:	0.0 feet	[Lane Equ	iivalent	Distand	e (in t	feet)		
Ro		0.0%			Autos	: 43.	589			
	Left View:	-90.0 degrees			n Trucks					
F	Right View:	90.0 degrees		Heav	y Trucks	: 43.4	405			
FHWA Noise Model	Calculations									
VehicleType			listance	Finite		Fresn	-	Barrier Att		m Atten
Autos:	68.46	4.35	0.7		-1.20		-4.65		000	0.00
Medium Trucks:	79.45	-10.70	0.8		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-13.61	0.8	2	-1.20		-5.43	0.0	000	0.00
Unmitigated Noise L		•	1	<u> </u>					1	
	eq Peak Hour	Leq Day		vening	Leq I			Ldn		VEL
Autos: Medium Trucks:	72.4 68.4			69.0 60.8		63.0 59.2		71.0 67.1		72. 67.
Heavy Trucks:	68.4 70.3			60.8		59.2 61.3		67.		69.
Vehicle Noise:	70.3			70.1		66.2		74.		75.
Centerline Distance	to Noiso Con									
contenine Distance	10 10/30 00/1	ioui (iii ieei)	70	dBA	65 0	1BA	6	60 dBA	55	dBA
		Ldn.	:	103		222	1	478		1,03
		CNEL		109		235		507		1.093

Wednesday, October 27, 2021

FHWA-F	D-77-108 HIGHV	VAY NOI	SE PREDIO	CTION M	ODEL (9/1:	2/2021)							
	Scenario: OYC+P (2024)					Project Name: Ottawa Budiness Center							
	Road Name: Nisqualli Rd.					35							
Road Segment: e/o Maripo	Road Segment: e/o Mariposa Rd.												
SITE SPECIFIC I	NPUT DATA					DEL INPUTS							
Highway Data			Site Cor	ditions	(Hard = 10,	Soft = 15)							
Average Daily Traffic (Adt):	38,235 vehicles	3			Aut								
Peak Hour Percentage:	9.38%				icks (2 Axle								
Peak Hour Volume:	3,585 vehicles		He	eavy Truc	ks (3+ Axle	es): 15							
Vehicle Speed:	45 mph		Vehicle	Mix									
Near/Far Lane Distance:	50 feet			icleType	Da	y Evening	Night Daily						
Site Data				A	utos: 77.	.5% 12.9%	9.6% 94.43						
Barrier Height:	0.0 feet		М	edium Tr	ucks: 84.	.8% 4.9%	10.3% 3.049						
Barrier Type (0-Wall, 1-Berm):	0.0			Heavy Tr	ucks: 86.	.5% 2.7%	10.8% 2.54%						
Centerline Dist. to Barrier:	50.0 feet		Noise S	ource El	evations (i	n feet)							
Centerline Dist. to Observer:	50.0 feet			Autos		,							
Barrier Distance to Observer:	0.0 feet		Mediu	m Trucks	0.000								
Observer Height (Above Pad):	5.0 feet			vy Trucks			stment: 0.0						
Pad Elevation:	0.0 feet												
Road Elevation:	0.0 feet		Lane Eq		Distance (
Road Grade:	0.0%			Autos									
Left View:	-90.0 degrees	3		m Trucks									
Right View:	90.0 degrees	3	Hea	vy Trucks	s: 43.405	5							
FHWA Noise Model Calculatio	ns												
VehicleType REMEL	Traffic Flow	Distance	e Finite	Road	Fresnel	Barrier Atte	n Berm Atten						
Autos: 68.4	3.46	(.79	-1.20	-4.	65 0.00	0.00						
Medium Trucks: 79.4	5 -11.47	0	.82	-1.20	-4.	87 0.00	0.00						
Heavy Trucks: 84.2	5 -12.25	C	.82	-1.20	-5.	43 0.00	0.00						
Unmitigated Noise Levels (wit	hout Topo and b	arrier att	enuation)										
VehicleType Leq Peak Ho			Evening		Night	Ldn	CNEL						
		9.9	68.1		62.1	70.7	71.						
Medium Trucks: 6	7.6 6	6.4	60.0		58.5	66.9	67.						
		0.5	61.4		62.7	71.0	71.						
Vehicle Noise: 7	5.4 7	4.0	69.5		66.2	74.7	75.						
Centerline Distance to Noise C	contour (in feet)												
			0 dBA	65 0		60 dBA	55 dBA						
						476	1.02						
	L CN	dn:	103 108		221 233	476	1,020						

FHWA-RD-77-108 HIGHWAY	NOISE PRE		IODEL (9/12	2/2021)					
Scenario: FY+P (2034) Road Name: Nisqualli Rd. Road Segment: e/o Mariposa Rd.		Project Name: Ottawa Budiness Center Job Number: 14035							
SITE SPECIFIC INPUT DATA			IOISE MOI	DEL INPUTS	1				
Highway Data	Site	Conditions	(Hard = 10,	Soft = 15)					
Average Daily Traffic (Adt): 47,500 vehicles			Auto	os: 15					
Peak Hour Percentage: 9.38%		Medium Tr	ucks (2 Axle	s): 15					
Peak Hour Volume: 4,454 vehicles		Heavy Tru	cks (3+ Axle	s): 15					
Vehicle Speed: 45 mph	Vehi	le Mix							
Near/Far Lane Distance: 50 feet		/ehicleType	Day	/ Evening	Night Daily				
Site Data			Autos: 77.		9.6% 94.63%				
Barrier Height: 0.0 feet		Medium T	rucks: 84.	8% 4.9%	10.3% 3.03%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy T	rucks: 86.	5% 2.7%	10.8% 2.34%				
Centerline Dist. to Barrier: 50.0 feet	Nois	Source E	levations (ir	1 foot)					
Centerline Dist. to Observer: 50.0 feet	14013	Auto		neey					
Barrier Distance to Observer: 0.0 feet	14	dium Truck	. 0.000						
Observer Height (Above Pad): 5.0 feet		eavy Truck		Grade Adi	stment: 0.0				
Pad Elevation: 0.0 feet									
Road Elevation: 0.0 feet	Lane		t Distance (in feet)					
Road Grade: 0.0%		Auto							
Left View: -90.0 degrees		dium Truck							
Right View: 90.0 degrees	F	eavy Truck	s: 43.405						
FHWA Noise Model Calculations									
VehicleType REMEL Traffic Flow Dis	stance Fi	nite Road	Fresnel	Barrier Atte	n Berm Atten				
Autos: 68.46 4.41	0.79	-1.20	-4.6	65 0.00	000.0 00				
Medium Trucks: 79.45 -10.54	0.82	-1.20	-4.8	37 0.00	000.0				
Heavy Trucks: 84.25 -11.66	0.82	-1.20	-5.4	13 0.00	0.000				
Unmitigated Noise Levels (without Topo and barrie									
VehicleType Leq Peak Hour Leq Day	Leq Evenir		Night	Ldn	CNEL				
Autos: 72.5 70.8		9.1	63.0	71.6	72.2				
Medium Trucks: 68.5 67.3		0.9	59.4	67.9	68.1				
Heavy Trucks: 72.2 71.1		2.0	63.3	71.6	71.8				
Vehicle Noise: 76.2 74.8	1	0.4	67.0	75.5	75.8				
Centerline Distance to Noise Contour (in feet)	70 dBA			00.154					
			dBA	60 dBA	55 dBA				
			-	500	4.450				
Ldn: CNEL:		16 22	250 263	538 567	1,159 1,223				

	FHWA-RD)-77-108 HIGH	IWAY NO	ISE PREI		IODEL (9	/12/202	21)		
	o: E (2021) e: Ottawa St. t: w/o Hesper	ia Rd.				Name: C lumber: 1		Budiness	Center	
SITE S	PECIFIC IN	PUT DATA			1	IOISE M	ODEL	INPUTS	6	
Highway Data				Site C	onditions	(Hard = :	10, Sof	t = 15)		
Average Daily 1	raffic (Adt):	733 vehicl	es			A	lutos:	15		
Peak Hour F	Percentage:	9.38%			Medium Tr	ucks (2 A	xles):	15		
Peak Ho	our Volume:	69 vehicle	s		Heavy Tru	cks (3+ A	xles):	15		
Veh	icle Speed:	45 mph		Vehic	o Mix					
Near/Far Lan	e Distance:	36 feet			e hicleType		Dav I	Evening	Night	Daily
Site Data							77.5%	12.9%	9.6%	95.48%
	rier Height:	0.0 feet			Medium T	rucks: {	34.8%	4.9%	10.3%	2.99%
Barrier Type (0-Wa	•	0.0			Heavy T		36.5%	2.7%	10.8%	1.53%
Centerline Dis	. ,	32.0 feet								
Centerline Dist. t		32.0 feet		Noise	Source E			et)		
Barrier Distance t		0.0 feet			Auto					
Observer Height (A		5.0 feet			lium Truck					
. (d Elevation:	0.0 feet		He	eavy Truck	s: 8.0	04 0	Grade Adj	ustment.	0.0
Roa	d Elevation:	0.0 feet		Lane	Equivalen	t Distanc	e (in fe	et)		
	oad Grade:	0.0%			Auto	s: 26.9	926	,		
	Left View:	-90.0 degre	es	Med	lium Truck	s: 26.5	595			
	Right View:	90.0 degre	es	He	avy Truck	s: 26.6	628			
FHWA Noise Mode	I Calculation:	5		1						
VehicleType	REMEL	Traffic Flow	Distar	ce Fin	ite Road	Fresne	el B	arrier Atte	en Ber	m Atten
Autos:	68.46	-13.67		3.93	-1.20	-	4.51	0.0	00	0.000
Medium Trucks:	79.45	-28.71		4.01	-1.20	-	4.86	0.0	00	0.000
Heavy Trucks:	84.25	-31.62		4.00	-1.20	-	-5.72	0.0	00	0.000
Unmitigated Noise	Levels (with	out Topo and	barrier a	ttenuatio	1)					
	Leq Peak Hou			eq Evening		Night	I	dn		IEL
Autos:	57		55.9	-	l.1	48.1		56.7		57.3
Medium Trucks:	53		52.3		6.0	44.4		52.9		53.1
Heavy Trucks:	55		54.3		5.3	46.5		54.9		55.0
Vehicle Noise:	60	.6	59.2	55	5.2	51.4		59.9		60.2
Centerline Distance	e to Noise Co	ntour (in feet)							
Centerline Distance	e to Noise Co	ntour (in feet		70 dBA		dBA	60	dBA	55	dBA
Centerline Distance	e to Noise Co) Ldn: NEL:	70 dBA	65 7 7	dBA 15	60	dBA 31 33	55	dBA 67 72

	FHWA-RD-	77-108 HIGHW	AY NO	ISE PREC		MODEL (9/12/20	021)				
	o: OYC (2024)			Project Name: Ottawa Budiness Center								
	e: Ottawa St.			Job Number: 14035								
Road Segmen	it: w/o Hesperia	a Rd.										
	SPECIFIC INF	PUT DATA						L INPUT	S			
Highway Data				Site C	onditions	s (Hard =	10, Sc	oft = 15)				
Average Daily	Traffic (Adt):	817 vehicles					Autos:	15				
Peak Hour	Percentage:	9.38%				rucks (2 A						
	our Volume:	77 vehicles		1	Heavy Tru	icks (3+ A	Axles):	15				
	nicle Speed:	45 mph		Vehicl	e Mix							
Near/Far Lar	ne Distance:	36 feet		V	ehicleTyp	е	Day	Evening	Night	Daily		
Site Data						Autos:	77.5%	12.9%	9.6%	95.489		
Bar	rier Height:	0.0 feet			Medium	Trucks:	84.8%	4.9%	10.3%	2.99		
Barrier Type (0-W		0.0			Heavy	Trucks:	86.5%	2.7%	10.8%	1.53		
Centerline Dis	t. to Barrier:	32.0 feet		Noise	Source F	levation	s (in fe	pet)				
Centerline Dist. I	to Observer:	32.0 feet			Auto		200	,				
Barrier Distance t	to Observer:	0.0 feet		Med	ium Truc		297					
Observer Height (J	,	5.0 feet		He	avy Truc		004	Grade Ad	iustment	0.0		
	d Elevation:	0.0 feet			· ·							
	d Elevation:	0.0 feet		Lane E		nt Distand		teet)				
F	Road Grade:	0.0%			Auto							
	Left View:	-90.0 degrees			ium Truc							
	Right View:	90.0 degrees		He	avy Truc	KS: 20.	628					
FHWA Noise Mode	Calculations											
VehicleType	REMEL	Traffic Flow	Distan	ce Fin	te Road	Fresh	el	Barrier Att	en Ber	m Atten		
Autos:	68.46	-13.19		3.93	-1.20		-4.51	0.0	000	0.00		
Medium Trucks:	79.45	-28.24		4.01	-1.20		-4.86	0.0	000	0.00		
Heavy Trucks:	84.25	-31.15		4.00	-1.20		-5.72	0.0	000	0.00		
Unmitigated Noise	Levels (witho	ut Topo and b	arrier a	ttenuatior	1)							
VehicleType	Leq Peak Hour	Leq Day	Le	eq Evening	Leo	Night		Ldn	C	VEL		
Autos:	58.0) 56	6.4	54	.6	48.6	6	57.2	2	57		
Medium Trucks:	54.0		2.8	46		44.9		53.3		53		
Heavy Trucks:	55.9		1.8	45		47.0		55.3		55.		
Vehicle Noise:	61.0) 59	9.7	55	.7	51.8	3	60.3	3	60.		
Centerline Distanc	e to Noise Cor	ntour (in feet)										
				70 dBA	65	i dBA	6	60 dBA	55	dBA		
			dn:		7	16		34		73		
		CNE	1.		8	17		36		77		

Wednesday, October 27, 2021

FH	WA-RD	-77-108 HIGH\	NAY	NOISE	PREDIC	TION MO	DDEL (9/12/2	021)					
Scenario: E+P	Scenario: E+P (2021)						Project Name: Ottawa Budiness Center							
Road Name: Otta	Road Name: Ottawa St.					Job Nu	mber:	14035						
Road Segment: w/o	Road Segment: w/o Hesperia Rd.													
SITE SPECI Highway Data	FIC IN	PUT DATA			Site Con					S				
					Sile Con	uiuons (i		Autos:	,					
Average Daily Traffic (817 vehicle	s			dium Tru								
Peak Hour Percen		9.38% 77 vehicles				aium Trui avy Truci		/						
Peak Hour Vol					пе	avy muci	(5 (3+)	axies).	15					
Vehicle Sp Near/Far Lane Dista		45 mph		Γ	Vehicle I	Nix								
Near/Far Lane Dista	ince:	36 feet		Γ	Veh	icleType		Day	Evening	Night	Daily			
Site Data						A	utos:	77.5%	6 12.9%	9.6%	95.95			
Barrier He	iaht:	0.0 feet			Me	edium Tru	icks:	84.8%	6 4.9%	10.3%	2.68			
Barrier Type (0-Wall, 1-B		0.0			ŀ	leavy Tru	icks:	86.5%	6 2.7%	10.8%	1.37			
Centerline Dist. to Ba	mier:	32.0 feet		-	Noise Sc	urce Fle	vation	s (in fi	eef)					
Centerline Dist. to Obse	erver:	32.0 feet		-	10130 00	Autos		000						
Barrier Distance to Obse	erver:	0.0 feet			Madiu	n Trucks		297						
Observer Height (Above I	Pad):	5.0 feet				v Trucks.		004	Grade Ad	liustment	. 0.0			
Pad Eleva	ation:	0.0 feet		L	Tieav	y mucks.	0.	004	0/000/10	Jaounoni	. 0.0			
Road Eleva	ation:	0.0 feet			Lane Equ	uivalent	Distan	ce (in	feet)					
Road G	rade:	0.0%				Autos.	26.	926						
Left	view:	-90.0 degree	s		Mediur	n Trucks.	26.	595						
Right	view:	90.0 degree	s		Heav	y Trucks	26.	628						
FHWA Noise Model Calcı	Ilations	;												
VehicleType REM		Traffic Flow	Di	stance	Finite		Fresr		Barrier Att		rm Attei			
Autos:	68.46	-13.18		3.9		-1.20		-4.51		000	0.0			
Medium Trucks:	79.45	-28.71		4.0		-1.20		-4.86		000	0.0			
Heavy Trucks:	84.25	-31.62		4.0	0	-1.20		-5.72	0.0	000	0.0			
Unmitigated Noise Levels			barri					1						
VehicleType Leq Pe				Leq E	vening	Leq N			Ldn		NEL			
Autos:	58.		56.4		54.6		48.6		57.		57			
Medium Trucks:	53.		52.3		46.0		44.4		52.		53			
Heavy Trucks:	55.		54.3		45.3		46.5		54.	-	55			
Vehicle Noise:	60.		59.4		55.6		51.6)	60.	1	60			
Centerline Distance to No	oise Co	ntour (in feet)		70	d D A	65 -	D A		60 dBA		dBA			
			dn:	70	dBA 7	65 d	<i>ва</i> 15		60 dBA 33		dBA			
			.an: IEL:		7		15 16		33		7			
		CA	ICL.		/		16		35	,				

	FHWA-RD	-77-108 HIGH	WAY NO	ISE PREDI	CTION M	ODEL (9/1	12/2021)				
	o: OYC+P (20 e: Ottawa St. nt: w/o Hesper	,	Project Name: Ottawa Budiness Center Job Number: 14035								
SITE	SPECIFIC IN	PUT DATA					DEL INPUT	s			
Highway Data				Site Col	nditions ((Hard = 10), Soft = 15)				
Average Daily	Traffic (Adt):	901 vehicle	s			Au	tos: 15				
Peak Hour	Percentage:	9.38%		M	edium Tru	icks (2 Axi	les): 15				
Peak H	our Volume:	84 vehicles	3	H	eavy Truc	ks (3+ Axi	les): 15				
Vel	nicle Speed:	45 mph		Vehicle	Misc		-				
Near/Far Lar	ne Distance:	36 feet			nicleType	0	ay Evening	Night	Daily		
Site Data				ver							
							7.5% 12.9%	9.69			
	rier Height:	0.0 feet			ledium Tr		1.8% 4.9% 3.5% 2.7%				
Barrier Type (0-W	. ,	0.0			Heavy Tr	ucks: 8t	0.070 Z.7%	10.85	0 1.39%		
Centerline Dis		32.0 feet		Noise S	ource Ele	evations (ïn feet)				
Centerline Dist. I		32.0 feet			Autos	: 0.00	0				
Barrier Distance I		0.0 feet		Mediu	ım Trucks	2.29	7				
Observer Height (J	,	5.0 feet			vy Trucks		4 Grade Ad	ljustmer	nt: 0.0		
	d Elevation:	0.0 feet									
	d Elevation:	0.0 feet		Lane Ec		Distance	. ,				
F	Road Grade:	0.0%			Autos						
	Left View:	-90.0 degree	s		ım Trucks						
	Right View:	90.0 degree	s	Hea	vy Trucks	26.62	8				
FHWA Noise Mode	Calculation	5									
VehicleType	REMEL	Traffic Flow	Distan	ce Finite	e Road	Fresnel	Barrier At	ten Be	erm Atten		
Autos:	68.46	-12.75		3.93	-1.20	-4	.51 0.	000	0.000		
Medium Trucks:	79.45	-28.24		4.01	-1.20	-4	.86 0.	000	0.000		
Heavy Trucks:	84.25	-31.15		4.00	-1.20	-5	.72 0.	000	0.000		
Unmitigated Noise			-	,							
	Leq Peak Hou			q Evening	Leq I	•	Ldn		CNEL		
Autos:	58		56.8	55.1		49.0	57.		58.2		
Medium Trucks:	54		52.8	46.4		44.9	53.		53.6		
Heavy Trucks:	55	-	54.8	45.7		47.0	55.	-	55.5		
Vehicle Noise:	61	.3	59.9	56.0)	52.0	60.	5	60.9		
venicie Noise:											
Centerline Distanc		ntour (in feet)			-			-			
		,		70 dBA	65 0		60 dBA		5 dBA		
				70 dBA 8 8		1BA 16 17	60 dBA 35	5	5 dBA 75 80		

	FHWA-RD)-77-108 HIGH	WAY NO	DISE PI	REDIC		ODEL (9	/12/20	021)		
	o: FY (2034) e: Ottawa St. t: w/o Hesper	ia Rd.					Name: (umber: 1		Budiness	Center	
SITE S	SPECIFIC IN	PUT DATA				N	OISE N	IODE	L INPUTS	6	
Highway Data				Sit	e Con	ditions	(Hard =	10, So	ft = 15)		
Average Daily 1	Traffic (Adt):	948 vehicl	es				A	lutos:	15		
Peak Hour F	Percentage:	9.38%			Me	dium Tru	icks (2 A	xles):	15		
Peak Ho	our Volume:	89 vehicle	s		He	avy Truc	:ks (3+ A	xles):	15		
Veh	icle Speed:	45 mph		1/0	hicle I	Niv					
Near/Far Lan	e Distance:	36 feet		ve		icleType		Dav	Evening	Night	Daily
Site Data					Ven			77.5%	•	9.6%	
	rier Height:	0.0 feet			Me	edium Tr	ucks:	34.8%		10.3%	
Barrier Type (0-Wa		0.0			F	leavy Tr		36.5%		10.8%	
Centerline Dis	. ,	32.0 feet									
Centerline Dist. t		32.0 feet		No	ise So		evations		et)		
Barrier Distance t		0.0 feet				Autos					
Observer Height (A		5.0 feet		1		n Trucks					
. (d Elevation:	0.0 feet			Heav	y Trucks	s: 8.0	04	Grade Adj	ustment	: 0.0
Roa	d Elevation:	0.0 feet		La	ne Equ	uivalent	Distanc	e (in f	eet)		
R	Road Grade:	0.0%				Autos	s: 26.9	926			
	Left View:	-90.0 degre	es		Mediur	n Trucks	s: 26.5	595			
	Right View:	90.0 degre	es		Heav	y Truck	s: 26.6	628			
FHWA Noise Mode	I Calculation:	5		_							
VehicleType	REMEL	Traffic Flow	Distar	ice	Finite		Fresne		Barrier Atte	en Ber	m Atten
Autos:	68.46	-12.55		3.93		-1.20		4.51	0.0		0.000
Medium Trucks:	79.45	-27.60		4.01		-1.20		4.86	0.0		0.000
Heavy Trucks:	84.25	-30.50		4.00		-1.20		-5.72	0.0	00	0.000
Unmitigated Noise	Levels (with	out Topo and	barrier a	ttenua	tion)						
	Leq Peak Hou			eq Evel		Leq	Night		Ldn		NEL
Autos:	58		57.0		55.3		49.2		57.8		58.4
Medium Trucks:	54		53.4		47.1		45.5		54.0		54.2
Heavy Trucks:	56		55.4		46.4		47.6		56.0		56.1
Vehicle Noise:	61	.7	60.3		56.3		52.5		61.0		61.4
Centerline Distance	e to Noise Co	ontour (in feet)								
			1	70 dB	A	65	dBA	6	0 dBA	55	dBA
				10 00		001		-			
			Ldn: NFL:	10 00.	8	001	17		37		80 85

	FHWA-RD-	77-108 HIGH	WAY	NOISE	PREDIC	TION	MODEL (9/12/2	021)				
	Scenario: E (2021) Road Name: Nisqualli Rd.					Project Name: Ottawa Budiness Center Job Number: 14035							
	Road Segment: w/o Hesperia Rd.					JOD I	vumber:	14035					
-	ECIFIC INF						NOISE	IODE		s			
Highway Data				1	Site Con	ditions	(Hard =	10, Se	oft = 15)				
Average Daily Tra	affic (Adt): 1	5,891 vehicle	es					Autos:	15				
Peak Hour Pe	ercentage:	9.38%					rucks (2 A						
		1,490 vehicle	s		Hea	avy Tru	icks (3+ A	(xles)	15				
	le Speed:	45 mph			Vehicle N	lix							
Near/Far Lane	Distance:	36 feet			Vehi	cleTyp	е	Day	Evening	Night	Daily		
Site Data								77.5%	12.9%	9.6%	95.48		
Barrie	er Height:	0.0 feet						84.8%		10.3%	2.99		
Barrier Type (0-Wall	, 1-Berm):	0.0			h	leavy 1	Frucks:	86.5%	2.7%	10.8%	1.53		
Centerline Dist.		42.0 feet		7	Noise So	urce E	levation	s (in f	eet)				
Centerline Dist. to		42.0 feet				Auto	os: 0.0	000	,				
Barrier Distance to		0.0 feet			Mediun	n Trucl	ks: 2.1	297					
Observer Height (Ab	,	5.0 feet			Heav	y Trucl	ks: 8.0	004	Grade Ad	iustment.	0.0		
	Elevation: Elevation:	0.0 feet 0.0 feet		H	Lane Equ	iivəlor	t Distan	no (in	foot)				
	ad Grade:	0.0%		F	Lano Lqu	Auto		275					
	Left View:	-90.0 degree	es		Mediun								
R	light View:	90.0 degree			Heav	y Trucl	ks: 38.	066					
FHWA Noise Model	Calculations												
Vehicle Type		Traffic Flow	Di	stance	Finite		Fresh	-	Barrier Att		m Atten		
Autos:	68.46	-0.31		1.6		-1.20		-4.60		000	0.00		
Medium Trucks:	79.45	-15.35		1.6		-1.20		-4.87		000	0.00		
Heavy Trucks:	84.25	-18.26		1.6	/	-1.20		-5.53	0.0	000	0.00		
Unmitigated Noise L			<u> </u>		<u> </u>								
	eq Peak Hour			Leq E	vening	Leq	Night		Ldn		VEL		
Autos: Medium Trucks:	68.6 64.6		67.0 63.3		65.2 57.0		59.2 55.4		67. 63.		68. 64.		
Heavy Trucks:	66.5		65.3		57.0		57.5		65.9		66.		
Vehicle Noise:	71.6		70.2		66.3		62.4		70.9		71.		
Centerline Distance					00.0		02.1		10.				
containite bistance		noai (iii ieei,		70 (1BA	65	dBA		60 dBA	55	dBA		
			Ldn:		48		104		224		48		
		~	NEL:		51		110		238		513		

Wednesday, October 27, 2021

	RD-77-108 HIGH	WAT NO	ISE PREL				
Scenario: FY+P (20						tawa Budiness	Center
Road Name: Ottawa S				Job N	umber: 14	035	
Road Segment: w/o Hesp	oeria Rd.						
SITE SPECIFIC	INPUT DATA					DEL INPUTS	;
Highway Data			Site C	onditions), Soft = 15)	
Average Daily Traffic (Adt).		es				tos: 15	
Peak Hour Percentage:					ucks (2 Axl	,	
Peak Hour Volume:		6		Heavy Truc	cks (3+ Axl	es): 15	
Vehicle Speed:			Vehic	e Mix			
Near/Far Lane Distance:	36 feet		V	ehicleType	Da	ay Evening	Night Daily
Site Data				/	Autos: 77	.5% 12.9%	9.6% 95.85
Barrier Height	: 0.0 feet			Medium Ti	rucks: 84	.8% 4.9%	10.3% 2.74
Barrier Type (0-Wall, 1-Berm).				Heavy Ti	rucks: 86	6.5% 2.7%	10.8% 1.41
Centerline Dist. to Barrier	: 32.0 feet		Noise	Source El	evations (in feet)	
Centerline Dist. to Observer	: 32.0 feet			Auto:			
Barrier Distance to Observer	: 0.0 feet		Mer	lium Truck	0.00		
Observer Height (Above Pad)	5.0 feet			avv Truck			ustment: 0.0
Pad Elevation	0.0 feet						
Road Elevation.	0.0 feet		Lane I		Distance	, ,	
Road Grade.	0.070			Auto		-	
Left View.				lium Truck	20.00		
Right View.	90.0 degree	es	He	avy Truck	s: 26.62	8	
FHWA Noise Model Calculatio	ons		1				
VehicleType REMEL	Traffic Flow	Distan	ce Fin	ite Road	Fresnel	Barrier Atte	en Berm Atte
Autos: 68.4			3.93	-1.20		.51 0.0	0.0 0.0
Medium Trucks: 79.4	45 -27.60		4.01	-1.20	-4	.86 0.0	0.0 0.0
Heavy Trucks: 84.2	-30.50		4.00	-1.20	-5	.72 0.0	00 0.0
Unmitigated Noise Levels (wi	thout Topo and	barrier a	tenuation	1)			
VehicleType Leq Peak H			q Evening		Night	Ldn	CNEL
Autos:		57.4		.6	49.6	58.2	
	54.7	53.4	47		45.5	54.0	
		55.4	46		47.6	56.0	
Heavy Trucks:						61.2	61
Heavy Trucks:		60.5	56	.6	52.7	01.2	0
Heavy Trucks:	61.9	60.5					
Heavy Trucks: Vehicle Noise:	61.9 Contour (in feet)	60.5	70 dBA	65	dBA	60 dBA	55 dBA
Heavy Trucks: Vehicle Noise:	61.9 Contour (in feet)	60.5	70 dBA				

	FHWA-RD	0-77-108 HIGH	WAY NO	ISE PR	REDIC	TION M	IODEL (9	/12/20)21)		
Road Nar	rio: E+P (2021) ne: Nisqualli Ro ent: w/o Hesper	i.					Name: C umber: 1		Budiness	Center	
SITE	SPECIFIC IN	PUT DATA				N	IOISE M	ODE	L INPUTS	5	
Highway Data				Site	e Con	ditions	(Hard = :	10, So	ft = 15)		
Average Daily	Traffic (Adt):	17,097 vehicle	s				A	utos:	15		
Peak Hou	Percentage:	9.38%			Mee	dium Tri	ucks (2 A	xles):	15		
Peak I	lour Volume:	1,603 vehicles	6		Hea	avy Truc	cks (3+ A	xles):	15		
Ve	ehicle Speed:	45 mph		Vel	hicle N	Nix					
Near/Far La	ane Distance:	36 feet				cleType		Day	Evening	Night	Daily
Site Data								77.5%	12.9%	9.6%	
Ba	rrier Height:	0.0 feet			Me	edium Ti	rucks: 8	34.8%	4.9%	10.3%	3.08%
Barrier Type (0-V		0.0			H	leavy T	rucks: 8	36.5%	2.7%	10.8%	3.77%
	ist. to Barrier:	42.0 feet		Noi	100 50	urco El	evations	(in fo	of		
Centerline Dist.	to Observer:	42.0 feet		1401	36 30	Auto			eŋ		
Barrier Distance	to Observer:	0.0 feet			An dium	n Truck	0.0				
Observer Height	(Above Pad):	5.0 feet		^		y Truck			Grade Adj	istment	0.0
F	ad Elevation:	0.0 feet						•		Journorm	0.0
Ro	ad Elevation:	0.0 feet		Lar	ie Equ		Distanc		eet)		
	Road Grade:	0.0%				Auto		75			
	Left View:	-90.0 degree	s	٨		n Truck					
	Right View:	90.0 degree	s		Heav	y Truck	s: 38.0	66			
FHWA Noise Mod	lel Calculation:	s									
VehicleType	REMEL	Traffic Flow	Distand	e	Finite	Road	Fresne	e/	Barrier Atte	en Ber	m Atten
Autos	68.46	-0.10		1.64		-1.20	-	4.60	0.0	00	0.000
Medium Trucks	79.45	-14.90		1.68		-1.20	-	4.87	0.0	00	0.000
Heavy Trucks	84.25	-14.02		1.67		-1.20	-	5.53	0.0	00	0.000
Unmitigated Nois	e Levels (with	out Topo and	barrier at	tenua	tion)						
VehicleType	Leq Peak Hou	r Leq Day	Le	q Even	ning	Leq	Night		Ldn		VEL
Autos:			67.2		65.4		59.4		68.0		68.6
Medium Trucks:			63.8		57.4		55.9		64.4		64.6
Heavy Trucks			69.6		60.5		61.8		70.1		70.3
Vehicle Noise:	73	.5	72.2		67.1		64.4		72.9		73.2
Centerline Distan	ce to Noise Co	ontour (in feet)									
				70 dBA		65	dBA	6	0 dBA	55	dBA
			Ldn:		65		140		302		651
		CI	VEL:		68		147		317		682

FHWA-RD-77-108 HIGHWAY	' NOISE PF		IODEL (9/	12/2021)		
Scenario: OYC (2024) Road Name: Nisqualli Rd. Road Segment: w/o Hesperia Rd.			t Name: O lumber: 14	ttawa Budines 4035	ss Cente	r
SITE SPECIFIC INPUT DATA		1	NOISE M	ODEL INPU	тs	
Highway Data	Site	e Conditions	(Hard = 1	0, Soft = 15)		
Average Daily Traffic (Adt): 17,097 vehicles			A	utos: 15		
Peak Hour Percentage: 9.38%		Medium Tr	ucks (2 Ax	des): 15		
Peak Hour Volume: 1,603 vehicles		Heavy Tru	cks (3+ Ax	(les): 15		
Vehicle Speed: 45 mph	Vel	nicle Mix				
Near/Far Lane Distance: 36 feet	Ver	VehicleType		ay Evening	Nigh	t Daily
Site Data				7.5% 12.9%		
Barrier Height: 0.0 feet		Medium T	rucks: 8	4.8% 4.9%		
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy T		6.5% 2.7%		
Centerline Dist. to Barrier: 42.0 feet						
Centerline Dist. to Observer: 42.0 feet	No	se Source E		. ,		
Barrier Distance to Observer: 0.0 feet		Auto				
Observer Height (Above Pad): 5.0 feet	/	Aedium Truck				
Pad Elevation: 0.0 feet		Heavy Truck	s: 8.00)4 Grade A	ajustme	nt: 0.0
Road Elevation: 0.0 feet	Lar	e Equivalen	t Distance	e (in feet)		
Road Grade: 0.0%		Auto	s: 38.2	75		
Left View: -90.0 degrees	/	Aedium Truck	s: 38.04	43		
Right View: 90.0 degrees		Heavy Truck	s: 38.00	66		
FHWA Noise Model Calculations						
VehicleType REMEL Traffic Flow Di	stance	Finite Road	Fresne	I Barrier A	Atten E	lerm Atten
Autos: 68.46 0.01	1.64	-1.20			0.000	0.000
Medium Trucks: 79.45 -15.04	1.68	-1.20			0.000	0.000
Heavy Trucks: 84.25 -17.94	1.67	-1.20	-	5.53 (0.000	0.000
Unmitigated Noise Levels (without Topo and barr	ier attenua	tion)				
VehicleType Leq Peak Hour Leq Day	Leq Even		Night	Ldn		CNEL
Autos: 68.9 67.3		65.5	59.5		3.1	68.7
Medium Trucks: 64.9 63.7		57.3	55.8	-	1.2	64.4
Heavy Trucks: 66.8 65.6		56.6	57.9	-	5.2	66.3
Vehicle Noise: 71.9 70.5		66.6	62.7	7.	1.2	71.6
Centerline Distance to Noise Contour (in feet)						
	70 dBA	65	dBA	60 dBA		55 dBA
Ldn: CNEL:		51 54	109 116	23		507 538

	FHWA-RD	-77-108 HIGH	WAY	NOISE	PREDIC	TION	MODEL (9/12/2	021)		
	: FY (2034)								a Budiness	Center	
Road Name Road Segmen	Nisqualli Rd w/o Hesperi					JOD I	Vumber:	14035			
SITE S	PECIFIC IN	PUT DATA					NOISE	NODE		s	
Highway Data					Site Con	ditions	; (Hard =	10, Se	oft = 15)		
Average Daily T	raffic (Adt):	20,557 vehicle	es					Autos:	15		
Peak Hour F	Percentage:	9.38%					rucks (2)				
		1,928 vehicles	8		Hea	avy Tru	ıcks (3+)	Axles):	15		
	icle Speed:	45 mph			Vehicle N	lix					
Near/Far Lan	e Distance:	36 feet			Vehi	cleTyp	e	Day	Evening	Night	Daily
Site Data							Autos:	77.5%	5 12.9%	9.6%	95.489
Barr	ier Height:	0.0 feet					Frucks:	84.8%		10.3%	
Barrier Type (0-Wa	ll, 1-Berm):	0.0			h	leavy T	rucks:	86.5%	5 2.7%	10.8%	1.539
Centerline Dist		42.0 feet		h	Noise So	urce E	levation	s (in f	eet)		
Centerline Dist. to		42.0 feet		F		Auto		000			
Barrier Distance to		0.0 feet			Mediun	n Trucl	ks: 2.	297			
Observer Height (A	,	5.0 feet			Heav	y Trucl	ks: 8.	004	Grade Ad	iustment.	0.0
	d Elevation: d Elevation:	0.0 feet 0.0 feet		H	Lane Equ	ivalor	t Dicton	co (in	foot		
	oad Grade:	0.0 Teet		ľ	Lane Lyi	Auto		275	ieel)		
~	Left View:	-90.0 degree	24		Mediun			043			
	Right View:	90.0 degree			Heav	y Truck	ks: 38.	066			
FHWA Noise Model	Calculations	1									
VehicleType	REMEL	Traffic Flow	Dis	stance	Finite		Fresr		Barrier Att		m Atten
Autos:	68.46	0.81		1.6		-1.20		-4.60		000	0.00
Medium Trucks:	79.45	-14.24		1.6		-1.20		-4.87		000	0.00
Heavy Trucks:	84.25	-17.14		1.6		-1.20		-5.53	0.0	000	0.00
Unmitigated Noise			- T		<u> </u>			1			
	eq Peak Hou			Leq E	vening	Leq	Night		Ldn		VEL
Autos: Medium Trucks:	69. 65.		68.1 64.5		66.3 58.1		60.3 56.6		68.9 65.0		69. 65.
Heavy Trucks:	67.		66.4		57.4		58.		67.0		67.
Vehicle Noise:	72.		71.3		67.4		63.		72.0		72.
Centerline Distance	to Noise Co	ntour (in feet)								
			I	70 (dBA	65	dBA	(60 dBA	55	dBA
			Ldn:		57		124		266		573
		CI	VEL:		61		131		282		608

Wednesday, October 27, 2021

FHWA	-RD-7	77-108 HIGH	WAY	NOISE	PREDIC	TION M	IODEL (9	/12/2	021)		
Scenario: OYC+P	(2024	4)				Project	Name: C	Ottawa	a Budiness	Center	
Road Name: Nisquall	i Rd.					Job N	lumber: 1	4035			
Road Segment: w/o Hes	peria	Rd.									
SITE SPECIFIC	INP	UT DATA							L INPUTS	5	
Highway Data					Site Con	ditions	(Hard = 1	10, S	oft = 15)		
Average Daily Traffic (Adt): 18	8,303 vehicle	s				A	utos	15		
Peak Hour Percentage	e:	9.38%			Me	dium Tru	ucks (2 A	xles).	15		
Peak Hour Volume	e: 1	,716 vehicles			He	avy Truc	cks (3+ A	xles).	15		
Vehicle Speed	1:	45 mph		-	Vehicle I	<i>Aix</i>					
Near/Far Lane Distance) .'	36 feet		-		cleType		Day	Evening	Night	Daily
Site Data								77.5%	•	9.6%	
Barrier Heigh	<i>t</i> -	0.0 feet			Me	edium Ti	rucks: 8	34.8%	6 4.9%	10.3%	3.079
Barrier Type (0-Wall, 1-Berm		0.0			F	leavy Ti	rucks: 8	36.5%	6 2.7%	10.8%	3.62
Centerline Dist. to Barrie		42.0 feet		-	Noise So	uree El	lovationa	lin f	in cet)		
Centerline Dist. to Observe	r:	42.0 feet		H	NUISE 30	Auto:			eelj		
Barrier Distance to Observe	r:	0.0 feet				n Truck	. 0.0				
Observer Height (Above Pad):	5.0 feet							Grade Adj	ictment	
Pad Elevation	n:	0.0 feet			Heav	y Truck	s: 8.0	04	Graue Auji	JSUMENI.	0.0
Road Elevation	n:	0.0 feet			Lane Equ	ivalent	t Distanc	e (in	feet)		
Road Grade	e:	0.0%				Auto	s: 38.2	75			
Left View	V:	-90.0 degree	s		Mediur	n Truck	s: 38.0	43			
Right View	V:	90.0 degree	s		Heav	y Truck	s: 38.0	66			
FHWA Noise Model Calculat	ions										
VehicleType REMEL	1	Traffic Flow	Dis	stance	Finite	Road	Fresne	e/	Barrier Atte	n Ber	m Atter
Autos: 68	.46	0.21		1.6	4	-1.20	-	4.60	0.0	00	0.00
Medium Trucks: 79	.45	-14.61		1.6	8	-1.20	-	4.87	0.0	00	0.00
Heavy Trucks: 84	.25	-13.90		1.6	7	-1.20		5.53	0.0	00	0.00
Unmitigated Noise Levels (w	ithou	It Topo and	barri	er atter	uation)						
VehicleType Leq Peak	Hour	Leq Day		Leq E	vening	Leq	Night		Ldn	CI	VEL
Autos:	69.1	(67.5		65.7		59.7		68.3		68
Medium Trucks:	65.3	: 1	64.1		57.7		56.2		64.6		64
Heavy Trucks:	70.8	: 1	59.7		60.6		61.9		70.3		70
Vehicle Noise:	73.7		72.4		67.4		64.6		73.1		73
Centerline Distance to Noise	Con	tour (in feet)									
			L	70	dBA	65	dBA	-	60 dBA	55	dBA
			_dn:		67		145		312		67
			IEL :		70		152		327		70

	FHWA-RI	D-77-108 HIGH	WAY NO	ISE PREI		NODEL (9/1	12/2021)	
Road Nam	io: FY+P (203 ne: Nisqualli R nt: w/o Hespe	d.				t Name: Ot lumber: 14	tawa Budiness 035	Center
SITE	SPECIFIC IN	IPUT DATA			1	NOISE MO	DEL INPUTS	5
Highway Data				Site C	onditions	(Hard = 10), Soft = 15)	
Average Daily	Traffic (Adt):	21,762 vehicle	es			Au	tos: 15	
Peak Hour	Percentage:	9.38%			Medium Tr	ucks (2 Axi	les): 15	
Peak H	lour Volume:	2,041 vehicle	s		Heavy Tru	cks (3+ Axi	'es): 15	
Ve	hicle Speed:	45 mph		Vehic	le Mix			
Near/Far La	ne Distance:	36 feet			ehicleType	e Di	ay Evening	Night Daily
Site Data							7.5% 12.9%	9.6% 93.65
Ba	rrier Height:	0.0 feet			Medium T	rucks: 84	4.8% 4.9%	10.3% 3.06
Barrier Type (0-W		0.0			Heavy T	rucks: 86	6.5% 2.7%	10.8% 3.29
Centerline Di	. ,	42.0 feet		Malaa	0 F		(in fr - 4)	
Centerline Dist.	to Observer:	42.0 feet		Noise	Source E	levations (,	
Barrier Distance	to Observer:	0.0 feet			Auto dium Truck	0.00		
Observer Height	(Above Pad):	5.0 feet			aum Truck avy Truck			ustment: 0.0
P	ad Elevation:	0.0 feet		n	avy much	.5. 0.00	4 0/200 703	Jaiment. 0.0
Ro	ad Elevation:	0.0 feet		Lane	Equivalen	t Distance	(in feet)	
	Road Grade:	0.0%			Auto		5	
	Left View:	-90.0 degree	es		lium Truck		-	
	Right View:	90.0 degree	es	H	eavy Truck	s: 38.06	6	
FHWA Noise Mod	el Calculation	s						
VehicleType	REMEL	Traffic Flow	Distar	ce Fin	ite Road	Fresnel	Barrier Atte	en Berm Atter
Autos:				1.64	-1.20	-4	.60 0.0	0.0
Medium Trucks:	79.45	-13.88		1.68	-1.20	-4	.87 0.0	0.0
Heavy Trucks:	84.25	-13.57		1.67	-1.20	-5	.53 0.0	0.0
Unmitigated Nois	e Levels (with	out Topo and	barrier a	ttenuatio	n)			
VehicleType	Leq Peak Ho			eq Evening		Night	Ldn	CNEL
Autos:			68.3		6.5	60.4	69.1	
Medium Trucks:			64.8		8.5	56.9	65.4	
Heavy Trucks:		.2	70.0		.0	62.2	70.6	
Vehicle Noise:			73.0	6	3.1	65.1	73.6	73
Contorling Distan	ce to Noise C	ontour (in feet)	70 /0 /				
Centernine Distant				70 dBA		dBA	60 dBA	55 dBA
Centernine Distant			🖵				000	
Centernine Distant			Ldn: NFL:		'3 '7	157	339 356	73

APPENDIX 10.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS





14035 - Ottawa Business Center

CadnaA Noise Prediction Model: 14035_02.cna Date: 01.11.21 Analyst: S. Shami

Calculation Configuration

Configurat	ion
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	0.00
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
	0.00 On
Proj. Line Sources	
Proj. Area Sources	On
Ref. Time	060.00
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	М.	ID		Level Lr		Lir	nit. Valu	Je		Land	l Use	Height		C	oordinates	
			Day	Night	CNEL	Day	Night	CNEL	Туре	Auto	Noise Type			Х	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	43.9	42.9	49.4	65.0	55.0	0.0				5.00	а	6247697.83	2491568.99	5.00
RECEIVERS		R2	51.6	50.6	57.1	65.0	55.0	0.0				5.00	а	6250723.72	2489345.64	5.00
RECEIVERS		R3	47.0	46.1	52.5	65.0	55.0	0.0				5.00	а	6251473.61	2488334.72	5.00
RECEIVERS		R4	49.0	48.1	54.5	65.0	55.0	0.0				5.00	а	6247342.60	2488363.88	5.00
RECEIVERS		R5	45.4	44.5	50.9	65.0	55.0	0.0				5.00	а	6246611.40	2489503.41	5.00

Point Source(s)

		• •															
Name	М.	ID	R	esult. PW	L		Lw / L	i	Op	erating Ti	me	KO	Height		Co	oordinates	
			Day	Evening	Night	Туре	Value	norm.	Day	Special	Night				Х	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	6250078.18	2488641.35	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	6248421.14	2488634.03	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	а	6248403.63	2489175.49	5.00
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		900.00	0.00	540.00	0.0	5.00	g	6250193.49	2488696.28	5.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		900.00	0.00	540.00	0.0	5.00	g	6248303.50	2488685.97	5.00
POINTSOURCE		PARKING01	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6250165.56	2488512.50	5.00
POINTSOURCE		PARKING02	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248233.63	2488675.35	5.00
POINTSOURCE		PARKING03	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248235.00	2488755.64	5.00
POINTSOURCE		PARKING04	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248236.59	2488848.92	5.00
POINTSOURCE		PARKING05	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248238.30	2488949.29	5.00
POINTSOURCE		PARKING06	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248240.05	2489052.02	5.00

Name	М.	ID	R	esult. PW	Ľ		Lw / L	i	Ope	erating Ti	me	К0	Height		Co	oordinates	
			Day	Evening	Night	Туре	Value	norm.	Day	Special	Night				х	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARKING07	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	а	6248239.31	2489147.71	5.00

Line Source(s)

Name	М.	ID	R	esult. PW	Ľ	R	esult. PW	L'		Lw / L	i	Op	erating Ti	me		Moving	Pt. Src		Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night		Number		Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)
LINESOURCE		TRUCK01	93.2	93.2	93.2	68.0	68.0	68.0	Lw	93.2									8
LINESOURCE		TRUCK02	93.2	93.2	93.2	68.4	68.4	68.4	Lw	93.2									8
LINESOURCE		TRUCK03	93.2	93.2	93.2	75.0	75.0	75.0	Lw	93.2									8
LINESOURCE		TRUCK04	93.2	93.2	93.2	76.6	76.6	76.6	Lw	93.2									8

Name	ŀ	lei	ight		Coordinat	es	
	Begin		End	x	у	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	а		6250012.01	2488448.29	8.00	0.00
				6250253.03	2488447.23	8.00	0.00
				6250266.15	2488731.66	8.00	0.00
				6250187.50	2489245.61	8.00	0.00
				6250144.32	2489245.25	8.00	0.00
LINESOURCE	8.00	а		6248371.44	2489257.70	8.00	0.00
				6248185.65	2489256.10	8.00	0.00
				6248171.81	2488442.18	8.00	0.00
LINESOURCE	8.00	а		6248173.64	2488549.77	8.00	0.00
				6248388.77	2488550.98	8.00	0.00
LINESOURCE	8.00	а		6250109.09	2488586.10	8.00	0.00
				6250259.40	2488585.31	8.00	0.00

Area Source(s)

Name	М.	ID	R	esult. PW	'L	Re	esult. PW	L''		Lw/L	i	Op	erating Ti	me	Height
			Day	Evening	Night	Day	Evening	Night	Туре	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	111.5	111.5	111.5	66.9	66.9	66.9	Lw	111.5		900.00	0.00	540.00	8
AREASOURCE		DOCK02	111.5	111.5	111.5	67.2	67.2	67.2	Lw	111.5		900.00	0.00	540.00	8

Name	ŀ	lei	ght			Coordinat	es		
	Begin		End		х	У	z	Ground	
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)	
AREASOURCE	8.00	а			6248369.36	2489151.63	8.00	0.00	
					6248370.34	2489208.69	8.00	0.00	
					6248373.11	2489331.52	8.00	0.00	
					6250006.65	2489340.34	8.00	0.00	
					6250002.47	2489274.22	8.00	0.00	
					6250145.02	2489273.83	8.00	0.00	
					6250142.24	2489160.86	8.00	0.00	
AREASOURCE	8.00	а			6248389.64	2488656.72	8.00	0.00	
					6250109.14	2488664.19	8.00	0.00	
					6250109.06	2488544.05	8.00	0.00	
					6249833.32	2488542.56	8.00	0.00	
					6249833.10	2488484.47	8.00	0.00	
					6248388.16	2488477.34	8.00	0.00	

Barrier(s)

	Name	М.	ID	Abso	rption	Z-Ext.	Z-Ext. Cantilever			Height			Coordinates					
				left	right		horz.	vert.	Begin		End		х	У	z	Ground		
						(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		
BAF	RRIERTEMP		0						8.00	а			6248388.60	2488530.41	8.00	0.00		
													6248388.16	2488477.34	8.00	0.00		
													6248584.98	2488478.31	8.00	0.00		

Building(s)

Name	м.	ID	RB	Residents	Absorption	Height		Coordinates						
						Begin		х	У	z	Ground			
						(ft)		(ft)	(ft)	(ft)	(ft)			
BUILDING		BUILDING00001	х	0		0.00	а	6248281.16	2489209.02	0.00	0.00			
								6248370.34	2489208.69	0.00	0.00			
								6248369.36	2489151.63	0.00	0.00			
								6250159.64	2489160.96	0.00	0.00			
								6250222.04	2488775.83	0.00	0.00			
								6250220.74	2488664.67	0.00	0.00			
								6248274.72	2488656.22	0.00	0.00			

APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS





14035 - Ottawa Business Center

CadnaA Noise Prediction Model: 14035_03 - Construction.cna Date: 01.11.21 Analyst: S. Shami

Calculation Configuration

Configuration											
Parameter	Value										
General											
Country	(user defined)										
Max. Error (dB)	0.00										
Max. Search Radius (#(Unit,LEN))	2000.01										
Min. Dist Src to Rcvr	0.00										
Partition											
Raster Factor	0.50										
Max. Length of Section (#(Unit,LEN))	999.99										
Min. Length of Section (#(Unit,LEN))	1.01										
Min. Length of Section (%)	0.00										
Proj. Line Sources	On										
Proj. Area Sources	On										
Ref. Time											
Reference Time Day (min)	960.00										
Reference Time Night (min)	480.00										
Daytime Penalty (dB)	0.00										
Recr. Time Penalty (dB)	5.00										
Night-time Penalty (dB)	10.00										
DTM	10.00										
Standard Height (m)	0.00										
Model of Terrain											
Reflection	Triangulation										
max. Order of Reflection	2										
Search Radius Src	100.00										
Search Radius Rcvr	100.00										
Max. Distance Source - Rcvr	100.00 1000.00										
Min. Distance Rvcr - Reflector	1.00 1.00										
Min. Distance Source - Reflector	0.10										
Industrial (ISO 9613)	anna Ohi										
Lateral Diffraction	some Obj										
Obst. within Area Src do not shield	On										
Screening	Incl. Ground Att. over Barrier										
	Dz with limit (20/25)										
Barrier Coefficients C1,2,3	3.0 20.0 0.0										
Temperature (#(Unit,TEMP))	10										
rel. Humidity (%)	70										
Ground Absorption G	0.50										
Wind Speed for Dir. (#(Unit,SPEED))	3.0										
Roads (RLS-90)											
Strictly acc. to RLS-90											
Railways (FTA/FRA)											
Aircraft (???)											
Strictly acc. to AzB											

Receiver Noise Levels

Name	М.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates			
			Day	Night	CNEL	Day	Night	CNEL	Туре	Auto	Noise Type			Х	Y	Z	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)	
RECEIVERS		R1	59.8	59.8	66.5	65.0	55.0	0.0				5.00	а	6247697.83	2491568.99	5.00	
RECEIVERS		R2	69.0	69.0	75.6	65.0	55.0	0.0				5.00	а	6250723.72	2489345.64	5.00	
RECEIVERS		R3	63.9	63.9	70.5	65.0	55.0	0.0				5.00	а	6251473.61	2488334.72	5.00	
RECEIVERS		R4	65.8	65.8	72.4	65.0	55.0	0.0				5.00	а	6247342.60	2488363.88	5.00	
RECEIVERS		R5	62.0	62.0	68.6	65.0	55.0	0.0				5.00	а	6246611.40	2489503.41	5.00	

Area Source(s)

Name	М.	ID	Result. PWL			R	esult. PW	L''	Lw / Li			Op	Height		
			Day	Evening	Night	Day	Evening	Night	Туре	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	132.1	132.1	132.1	79.0	79.0	79.0	Lw"	79					8

Name	ł	lei	ght		Coordinates							
	Begin		End		х	у	z	Ground				
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)				
SITEBOUNDARY	8.00	а			6248076.37	2489369.26	8.00	0.00				
					6250335.82	2489380.73	8.00	0.00				
					6250465.71	2488416.04	8.00	0.00				
					6249995.73	2488413.34	8.00	0.00				
					6250012.81	2488438.04	8.00	0.00				
					6250010.85	2488463.05	8.00	0.00				

Name	He	ight	Coordinates							
	Begin	End	x	у	z	Ground				
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)				
			6250004.12	2488486.96	8.00	0.00				
			6249990.20	2488507.43	8.00	0.00				
			6249966.59	2488518.53	8.00	0.00				
			6249946.43	2488522.45	8.00	0.00				
			6249915.41	2488517.03	8.00	0.00				
			6249896.11	2488501.89	8.00	0.00				
			6249882.71	2488483.08	8.00	0.00				
			6249871.76	2488468.99	8.00	0.00				
			6249853.68	2488455.03	8.00	0.00				
			6249811.95	2488449.79	8.00	0.00				
			6248055.81	2488441.64	8.00	0.00				