# 5355 East Airport Drive

## NOISE IMPACT ANALYSIS

## CITY OF ONTARIO

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# TABLE OF CONTENTS

## APPENDICES



## LIST OF EXHIBITS

# LIST OF TABLES

# LIST OF ABBREVIATED TERMS

| | |
|---|---|
| (1) | Reference |
| ADT | Average Daily Traffic |
| ANSI | American National Standards Institute |
| 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 |
| Hz | Hertz |
| INCE | Institute of Noise Control Engineering |
| $L_{eq}$ | Equivalent continuous (average) sound level |
| $L_{max}$ | Maximum level measured over the time interval |
| $L_{min}$ | Minimum level measured over the time interval |
| OPR | Office of Planning and Research |
| PPV | Peak particle velocity |
| Project | 5355 East Airport Drive |
| 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 potential noise impacts and the necessary noise mitigation measures, if any, for the proposed 5355 East Airport Drive development ("Project"). The proposed Project is to consist of a 270,337 square foot warehouse. This study has been prepared to satisfy applicable City of Ontario standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1).

The results of this 5355 East Airport Drive Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

**TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS**

| Analysis | Report Section | Significance Findings | |
|---|---|---|---|
| | | Unmitigated | Mitigated |
| Operational Noise | 7 | *Less Than Significant* | - |
| Construction Noise | 8 | *Less Than Significant* | - |
| Construction Vibration | | *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 5355 East Airport Drive ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

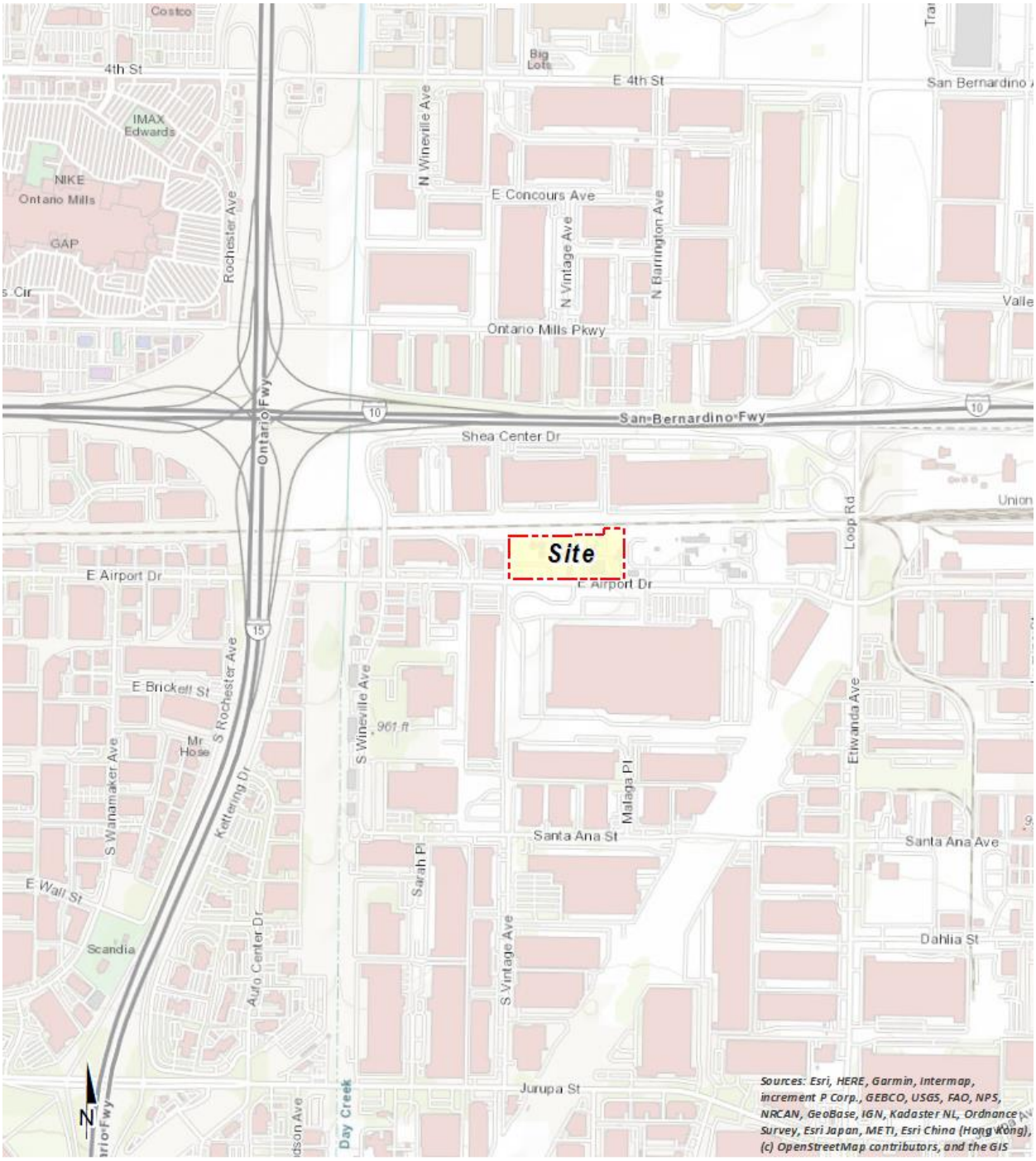
## 1.1 SITE LOCATION

The proposed Project is located at 5355 East Airport Drive in the City of Ontario as shown on Exhibit 1-A. The Project is located approximately 2.7 miles east of the Ontario International Airport (ONT).

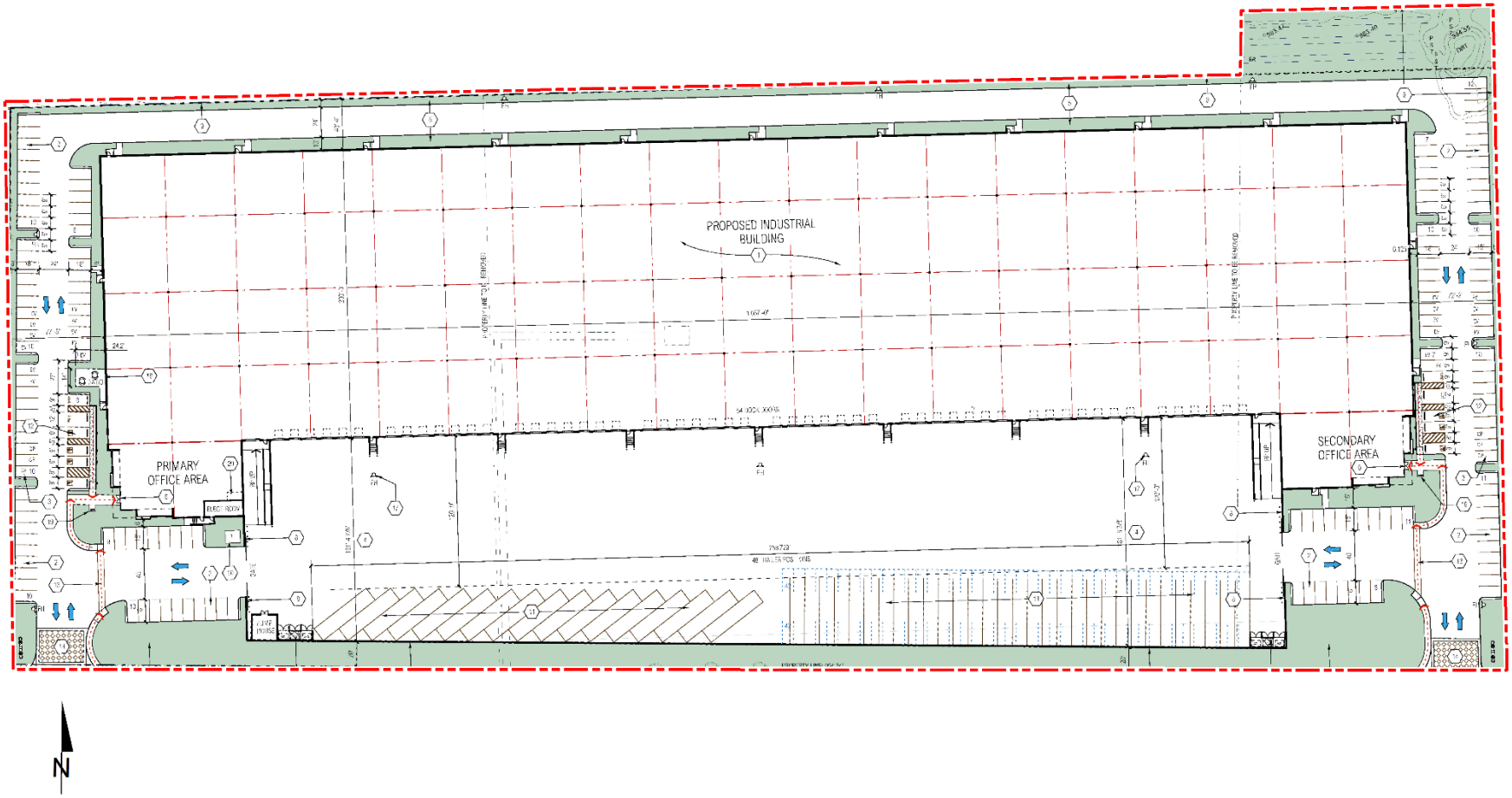
## 1.2 PROJECT DESCRIPTION

The proposed Project is to consist of a 270,337 square foot warehouse.as shown on Exhibit 1-B. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site.

## 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.

**EXHIBIT 2-A: TYPICAL NOISE LEVELS**

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

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

## 2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (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 Ontario 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. (5)

## 2.4 NOISE CONTROL

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

## 2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 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

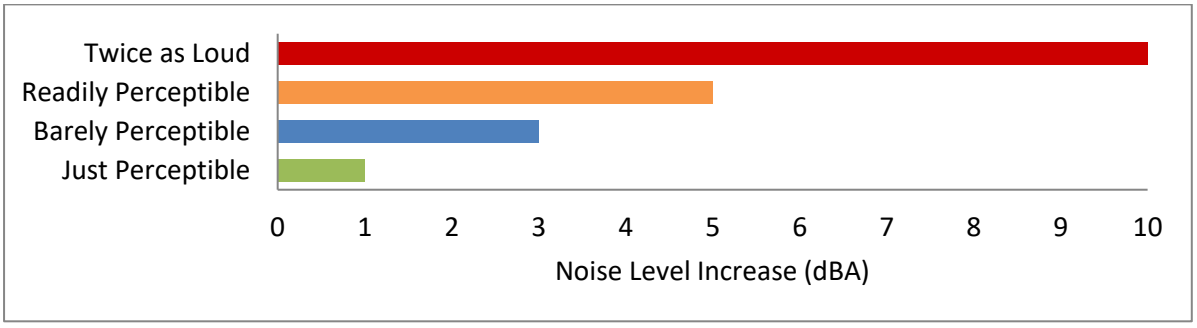
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, 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. (6)

## 2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

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. (8) According to research originally published in the Noise Effects Handbook (7), 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**



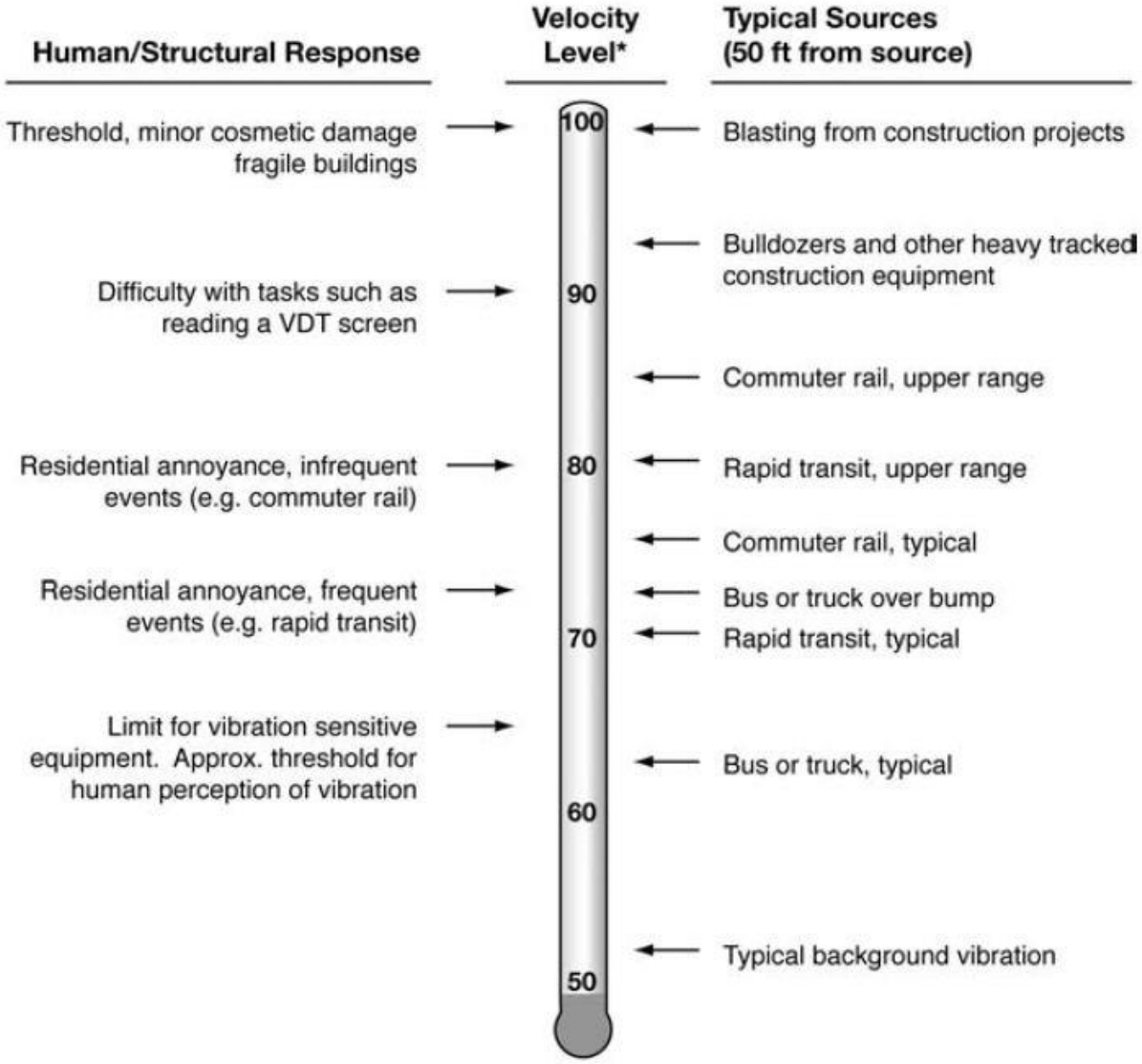
## 2.8 VIBRATION

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

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

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

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




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

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

# 3 REGULATORY SETTING

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). (9) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

## 3.2 CITY OF ONTARIO GENERAL PLAN NOISE ELEMENT

The City of Ontario General Plan (Policy Plan) identifies several policies to minimize the impacts of excessive noise levels throughout the community. Policy Plan Section S4, Noise Hazards, establishes a goal of maintaining *an environment where noise does not adversely affect the public's health, safety, and welfare.* (10) To satisfy this goal, the Policy Plan identifies six policies related to: noise mitigation; coordination with transportation authorities; airport noise mitigation; truck traffic; roadway design; and airport noise compatibility. Noise criteria identified at Policy Plan Table LU-7 provide guidelines to evaluate land use compatibility within various noise environments. Table LU-7 is reproduced here as Exhibit 3-A *Noise Level Exposure and Land Use Compatibility Guidelines*. The Project industrial land uses are considered *clearly acceptable* within exterior noise level environments approaching 70 dBA CNEL and *normally acceptable* within noise level environments up to 75 dBA CNEL. For noise level environments greater than 80 dBA CNEL, the Project land uses would be considered *clearly unacceptable,* and no new construction should be permitted.

**EXHIBIT 3-A: NOISE LEVEL EXPOSURE AND LAND USE COMPATIBILITY GUIDELINES**

| LAND USE CATEGORIES | | COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Category | Land Use | 55 | 60 | 65 | 70 | 75 | 80 | |
| Residential/ Lodging | Single Family / Duplex | | | | | | | |
| | Multi-Family | | | | | | | |
| | Mobile Homes | | | | | | | |
| | Hotel/Motels | | | | | | | |
| Public/Institutional | Schools/Hospitals | | | | | | | |
| | Churches/ Libraries | | | | | | | |
| | Auditoriums/Concert Halls | | | | | | | |
| Commercial | Offices | | | | | | | |
| | Retail | | | | | | | |
| Industrial | Manufacturing | | | | | | | |
| | Warehousing | | | | | | | |
| Recreational/ Open Space | Parks/Playgrounds | | | | | | | |
| | Golf Courses/ Riding Stables | | | | | | | |
| | Outdoor Spectator Sports | | | | | | | |
| | Outdoor Music Shells/ Amphitheaters | | | | | | | |
| | Livestock/Wildlife Preserves | | | | | | | |
| | Crop Agriculture | | | | | | | |

LEGEND

| | |
|---|---|
| **Clearly Acceptable:** | No special noise insulation required, assuming buildings of normal conventional construction. |
| **Normally Acceptable:** | Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice. |
| **Normally Unacceptable:** | New construction should be discouraged. Noise/aviation easements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made and necessary noise insulation features included. |
| **Clearly Unacceptable:** | No new construction should be permitted. |

*Source: The Ontario Plan Safety Section on Noise Hazards (Table LU-7).*

## 3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the 5355 East Airport Drive, stationary-source (operational) noise levels are evaluated against standards established under a City's Municipal Code. The City of Ontario requires that noise from new stationary sources in the City comply with the City's Noise Ordinance, which limits the acceptable noise at the property line of the impacted property, to reduce nuisances to sensitive land uses. Compliance with the City's Noise Ordinance would result in noise levels that are acceptable to the City and would result in less than significant noise impacts from stationary sources (11).

Section 5-29.04(a) identifies the allowable daytime and nighttime ambient exterior noise standards for each land use type. For Manufacturing and Industrial land uses (Noise Zone V), such as the Project, ambient exterior noise levels may not exceed 70 dBA $L_{eq}$. For residential land uses (Noise Zone I), ambient exterior noise levels may not exceed 65 dBA $L_{eq}$ during the daytime hours (7:00 a.m. to 10:00 p.m.) and may not exceed 45 dBA $L_{eq}$ during the nighttime hours (10:00 p.m. to 7:00 a.m.) (12). The lower noise level standard shall apply on the boundary between two (2) different noise zones. If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard. The maximum acceptable Project-related operational noise levels received at off-site land uses in the City of Ontario are identified on Table 3-1.

**TABLE 3-1: OPERATIONAL NOISE STANDARDS**

| Noise Zone | Land Use | Exterior Noise Levels (dBA Leq)[2] | |
|---|---|---|---|
| | | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| I | Single-Family Residential | 65 | 45 |
| II | Multi-Family Residential | 65 | 50 |
| III | Commercial | 65 | 60 |
| IV | Residential Mixed-Use | 70 | 70 |
| V | Manufacturing and Industrial | 70 | 70 |

[1] Source: Section 5-29.04 of the City of Ontario Municipal Code (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.

## 3.4 CONSTRUCTION NOISE STANDARDS

The City of Ontario has set restrictions to control noise impacts associated with construction. Section 5-29.09 of the Municipal Code states: No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m. (12) While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels at potentially affected receiver locations for CEQA analysis purposes.

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 (8 p. 179).

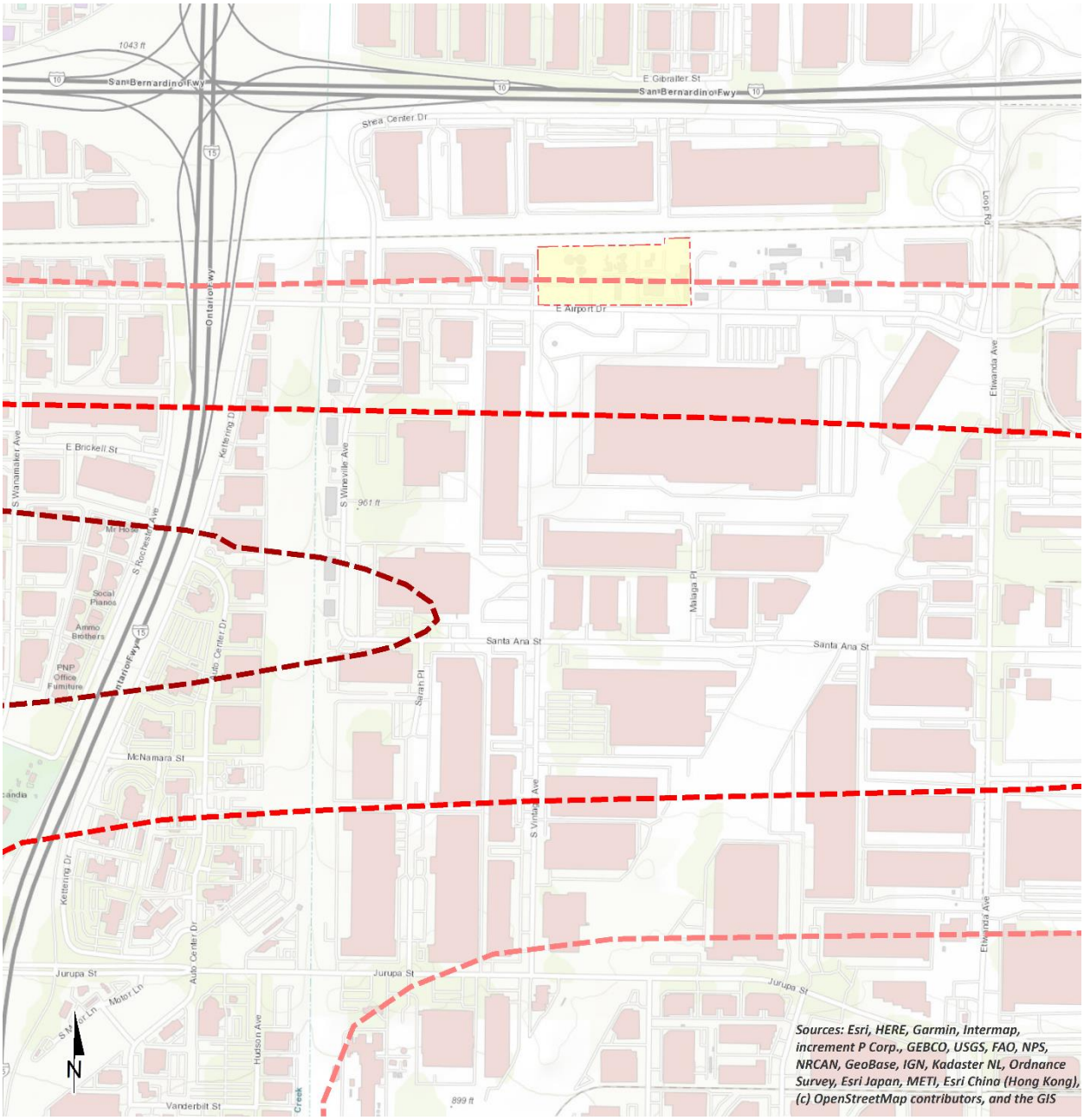
## 3.5 VIBRATION STANDARDS

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. (8) To analyze vibration impacts originating from the operation and construction of 5355 East Airport Drive, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Ontario does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (13 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).

## 3.6 AIRPORT LAND USE COMPATIBILITY

The Project site is located approximately 2.7 miles east of the Ontario International Airport (ONT). This places the Project site within the ONT Airport Influence Area according to Policy Map 2-1 of the *Ontario International Airport Land Use Compatibility Plan (ONT ALUCP).* The ONT ALUCP was amended July 2018 to promote compatibility between airport and the land uses that surround it (14). Since the Project site is located within the ONT Airport Influence Area, the Project is subject to the Noise Criteria established on Table 2-3 in the ONT ALUCP. As shown on Exhibit 3-B, the Project site is located within the ONT Airport Influence Area but outside the 65 dBA CNEL airport noise impact zone consistent with Policy Map 2-3. According to Table 2-3 of the ONT ALUCP, industrial land uses located outside the 65 dBA CNEL noise level contours of ONT, such as the Project, are considered *normally compatible land use.* For *normally compatible land use,* either the activities associated with the land use are inherently noisy or standard construction methods will sufficiently attenuate exterior noise to an acceptable indoor community noise equivalent level (CNEL).

## EXHIBIT 3-B: ONT FUTURE AIRPORT NOISE CONTOURS




**LEGEND:**

Project Site Boundary

***Ontario Airport Noise Impact Zone***

60 dBA CNEL Noise Contour

65 dBA CNEL Noise Contour

70 dBA CNEL Noise Contour

*Source: Ontario International ALUCP Compatibility Policy Map: Noise Impact Zones, Map 2-3 (July 2018 Amendment)*

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# 4 SIGNIFICANCE CRITERIA

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

A. 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. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of 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.* (15) 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) (16) 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 ($L_{eq}$).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (15) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if

the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline 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 (baseline) 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 noise-sensitive 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 (17 p. 2_48).

## 4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration impacts originating from the construction of the 5355 East Airport Drive, 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 closest airport which would require additional noise analysis under CEQA guideline C is the Ontario International Airport. As previously indicated in Section 3.6, the Project site is located within the ONT Airport Influence Area but is located outside the 65 dBA CNEL airport noise impact zone. Therefore, airport noise impacts are considered *less than significant,* and no further noise analysis is provided under Guideline 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 Project. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

**TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY**

| Analysis | Receiving Land Use | Condition(s) | Significance Criteria | |
|---|---|---|---|---|
| | | | Daytime | Nighttime |
| Operational | Noise-Sensitive | Exterior Noise Level Standards[1] | 65 dBA $L_{eq}$ | 45 dBA $L_{eq}$ |
| | | If ambient is < 60 dBA Leq[2] | ≥ 5 dBA $L_{eq}$ Project increase | |
| | | If ambient is 60 - 65 dBA Leq[2] | ≥ 3 dBA $L_{eq}$ Project increase | |
| | | If ambient is > 65 dBA Leq[2] | ≥ 1.5 dBA $L_{eq}$ Project increase | |
| Construction | | Permitted hours of 7:00 a.m. and 6:00 p.m. on weekdays[3] | | |
| | | Noise Level Threshold[4] | 80 dBA $L_{eq}$ | |
| | | Vibration Level Threshold[5] | 0.3 PPV (in/sec) | |

[1] City of Ontario Municipal Code, 5-29.04(a) exterior noise standards for residential land uses (Noise Zone I).
[2] FICON, 1992.
[3] City of Ontario Municipal Code Section 5-29.09(a).
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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# 5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four 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 Tuesday, March 8th, 2022. 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. (18)

## 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, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

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

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

## 5.3 NOISE MEASUREMENT RESULTS

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

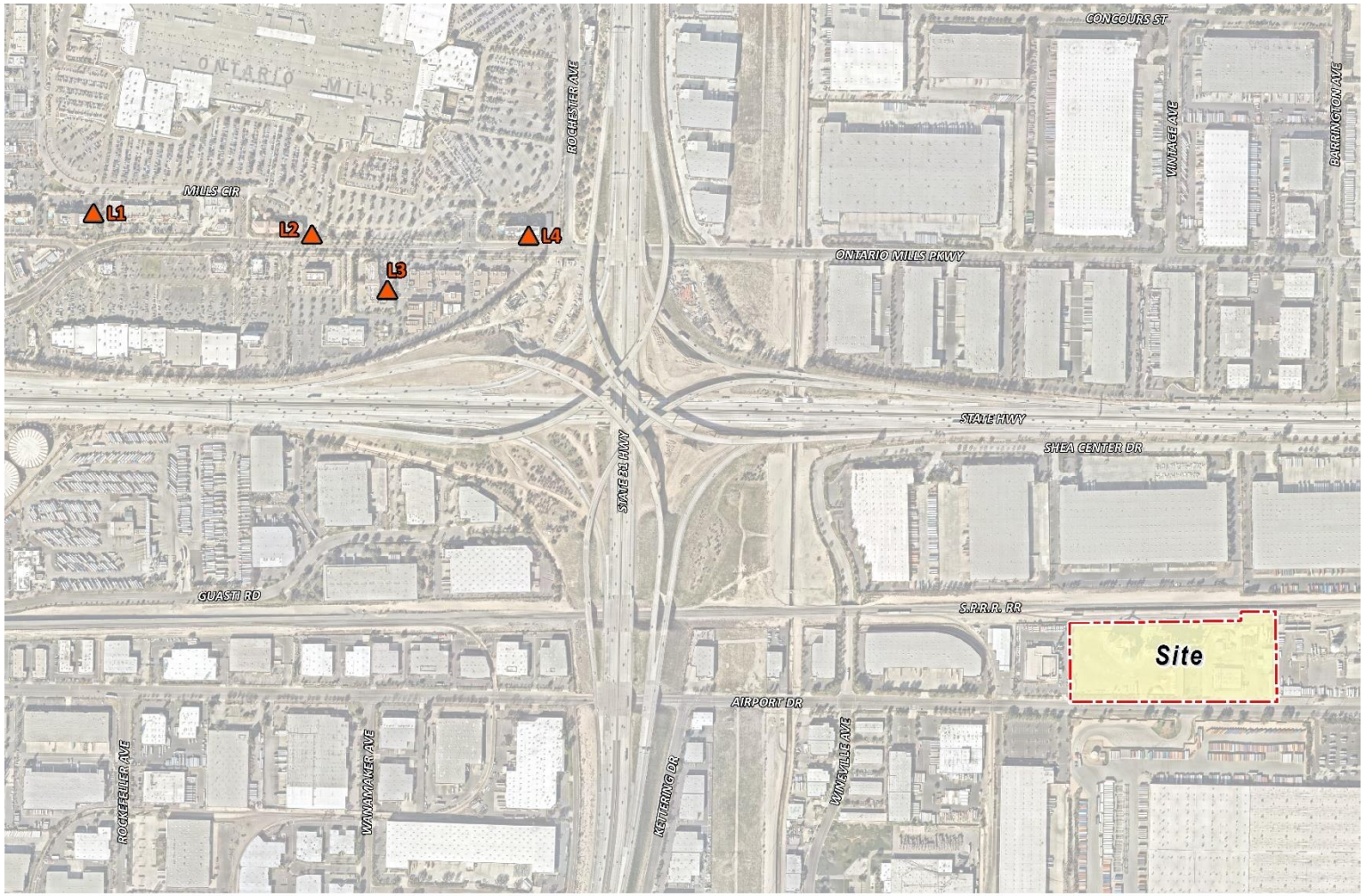
**TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS**

| Location[1] | Description | Energy Average Noise Level (dBA $L_{eq}$)[2] | |
|---|---|---|---|
| | | Daytime | Nighttime |
| L1 | Located northwest of the Project site near Ayres Hotel Ontario Mills Mall at 4395 Ontario Mills Parkway. | 58.4 | 59.0 |
| L2 | Located northwest of the Project site near Hampton Inn & Suites Ontario at 4500 Ontario Mills Parkway. | 61.7 | 61.3 |
| L3 | Located northwest of the Project site near Country Inn & Suites by Radisson, Ontario at Ontario Mills at 4674 Ontario Mills Parkway. | 67.1 | 62.2 |
| L4 | Located northwest of the Project site near Hyatt Place Ontario/Rancho Cucamonga at 4760 Mills Circle. | 69.8 | 68.2 |

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

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, $L_1$, $L_2$, $L_5$, $L_8$, $L_{25}$, $L_{50}$, $L_{90}$, $L_{95}$, and $L_{99}$ percentile noise levels observed during the daytime and nighttime periods.

## EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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# 6 RECEIVER LOCATIONS

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

To describe the potential off-site Project noise levels, four receiver locations in the vicinity of the Project site were identified. 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.

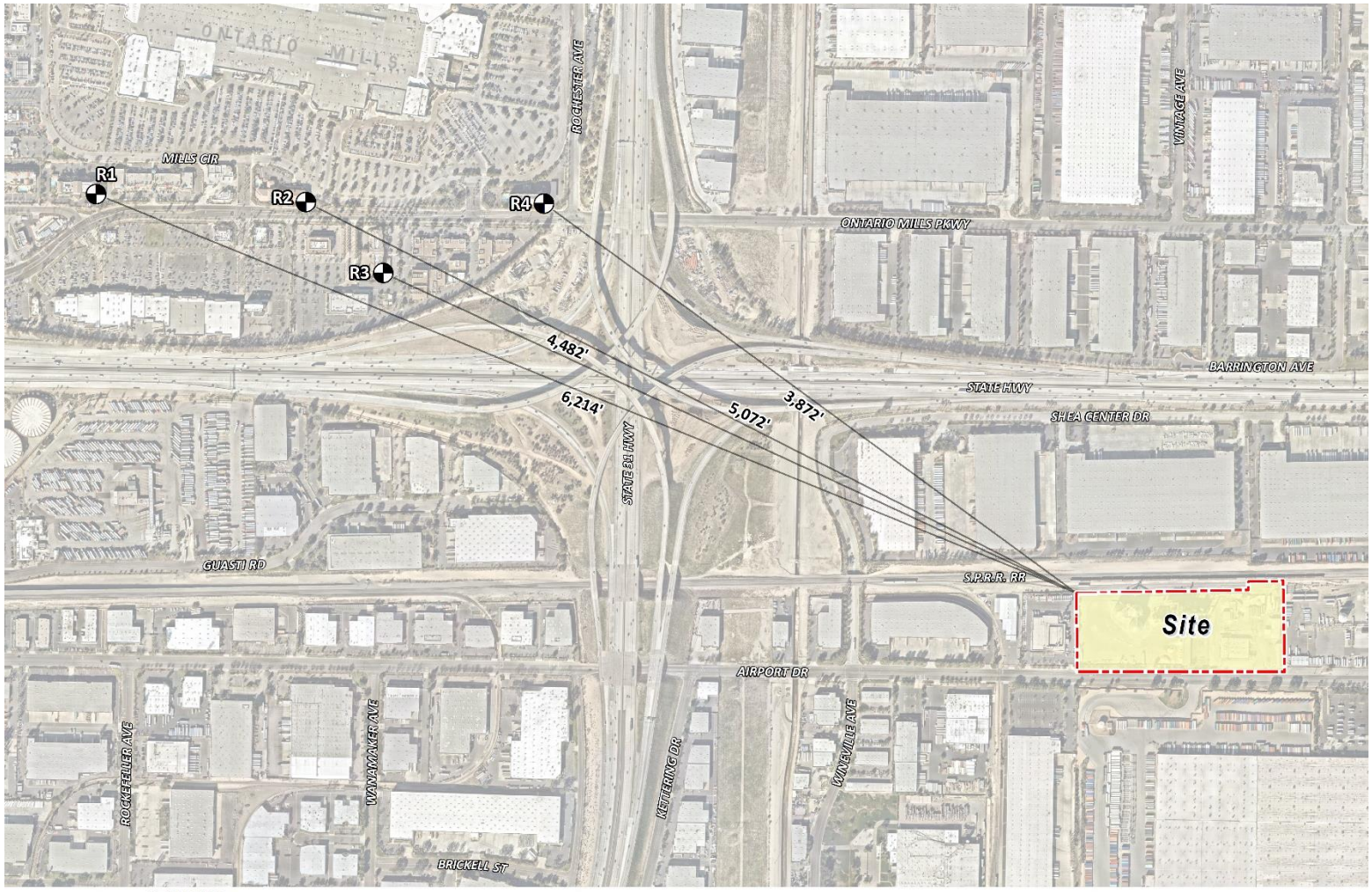
R1: Location R1 represents the existing noise sensitive Ayres Hotel Ontario Mills Mall at 4395 Ontario Mills Parkway, approximately 6,214 feet northwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the building façade. 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 Hampton Inn & Suites Ontario at 4500 Ontario Mills Parkway, approximately 5,072 feet northwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R2 is placed at the building façade. 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 Country Inn & Suites by Radisson, Ontario at Ontario Mills at 4674 Ontario Mills Parkway, approximately 4,482 feet northwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. 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 Hyatt Place Ontario/Rancho Cucamonga at 4760 Mills Circle, approximately 3,872 feet northwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R4 is placed at the building façade. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

## EXHIBIT 6-A: RECEIVER LOCATIONS



# 7 OPERATIONAL NOISE ANALYSIS

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations, identified in Section 6, resulting from the operation of the proposed 5355 East Airport Drive Project. Exhibit 7-A identifies the noise source locations used to assess the operational noise levels.

## 7.1 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 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: loading dock activity, roof-top air conditioning units, trash enclosure activity, parking lot vehicle movements, and truck movements.

## 7.2 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 7-1 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 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.

### 7.2.1 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. (18)

## EXHIBIT 7-A: OPERATIONAL NOISE SOURCE LOCATIONS

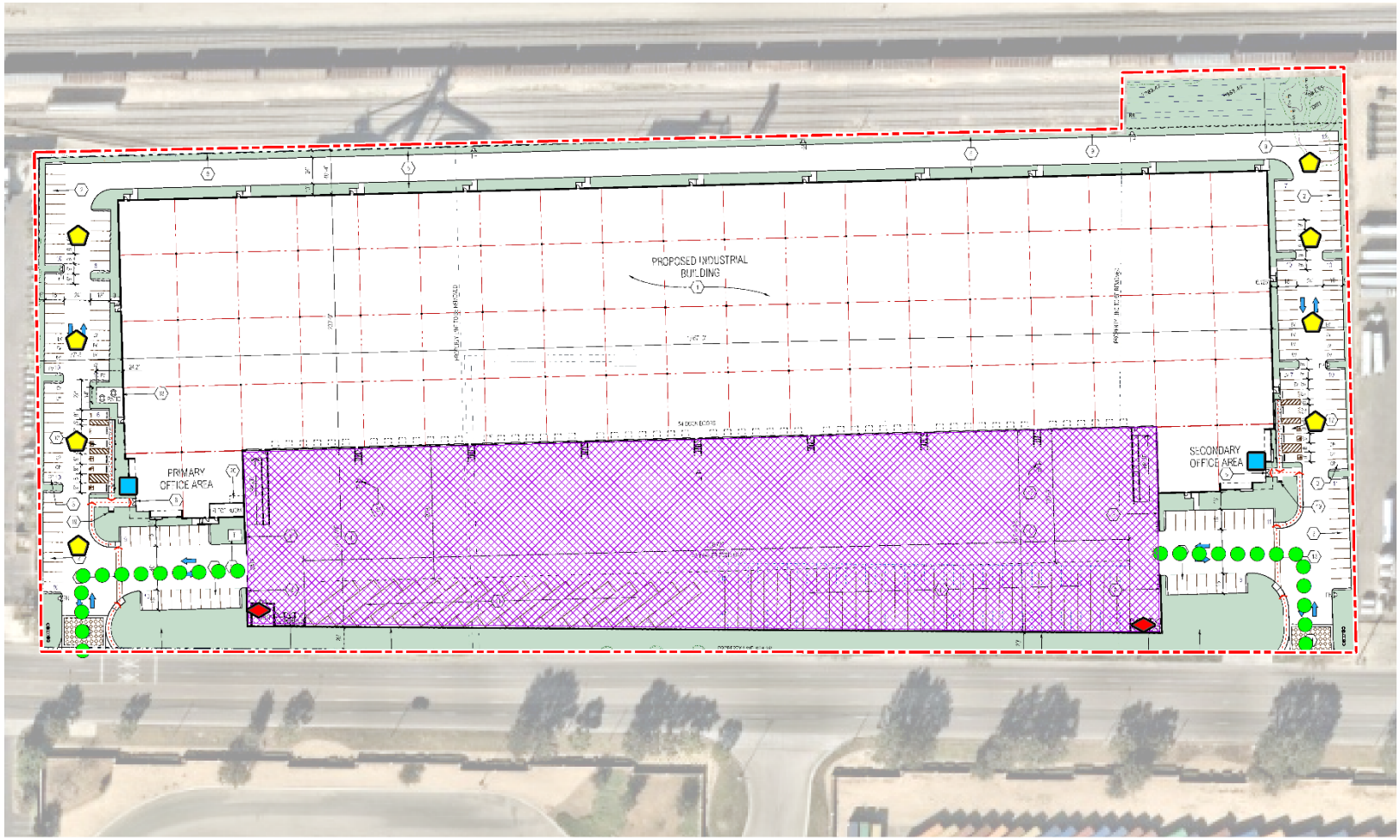


**TABLE 7-1: REFERENCE NOISE LEVEL MEASUREMENTS**

| Noise Source[1] | Noise Source Height (Feet) | Min./ Hour[2] | | Reference Noise Level (dBA $L_{eq}$) @ 50 Feet | Sound Power Level (dBA)[3] |
|---|---|---|---|---|---|
| | | Day | Night | | |
| 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 |

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 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.

### 7.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical outdoor operational noise activities associated with the Project. This includes truck idling, reefer activity (refrigerator truck/cold storage), deliveries, backup alarms, trailer docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background operation activities. Since the noise levels generated by cold storage loading dock activity can be slightly higher due to the use of refrigerated trucks or reefers.

The reference noise level measurement was taken in the center of the loading dock activity area and represents multiple concurrent noise sources resulting in a combined noise level of 65.7 dBA $L_{eq}$ at a uniform distance of 50 feet. Specifically, the reference noise level measurement represents one truck located approximately 30 feet from the noise level meter with another truck passing by to park roughly 20 feet away, both with their engines idling. Throughout the reference noise level measurement, a separate docked and running reefer truck was located approximately 50 feet east of the measurement location. Additional background noise sources included truck pass-by noise, truck drivers talking to each other next to docked trucks, and air brake release noise when trucks parked.

### 7.2.3 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 units are 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 units are expected to be located on the roof of the Project buildings.

### 7.2.4 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.

### 7.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of a warehouse 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.

### 7.2.6 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.

## 7.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, 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 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.

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 CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 7.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

## 7.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include 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 7-2 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 off-site receiver locations are expected to range from 22.2 to 27.4 dBA $L_{eq}$.

**TABLE 7-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS**

| Noise Source[1] | Operational Noise Levels by Receiver Location (dBA Leq) | | | |
|---|---|---|---|---|
| | R1 | R2 | R3 | R4 |
| Loading Dock Activity | 21.0 | 25.2 | 26.4 | 25.8 |
| Roof-Top Air Conditioning Units | 7.6 | 10.8 | 12.1 | 13.5 |
| Trash Enclosure Activity | 0.0 | 2.6 | 4.0 | 0.0 |
| Parking Lot Vehicle Movements | 11.5 | 15.6 | 16.9 | 18.5 |
| Truck Movements | 12.6 | 15.4 | 16.8 | 16.8 |
| **Total (All Noise Sources)** | **22.2** | **26.2** | **27.4** | **27.2** |

[1] See Exhibit 7-A for the noise source locations. CadnaA noise model calculations are included in Appendix 7.1.

Table 7-3 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 off-site receiver locations are expected to range from 22.1 to 27.4 dBA $L_{eq}$. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 7-1 and Appendix 7.1.

**TABLE 7-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS**

| Noise Source[1] | Operational Noise Levels by Receiver Location (dBA Leq) | | | |
|---|---|---|---|---|
| | R1 | R2 | R3 | R4 |
| Loading Dock Activity | 21.0 | 25.2 | 26.4 | 25.8 |
| Roof-Top Air Conditioning Units | 5.2 | 8.4 | 9.7 | 11.0 |
| Trash Enclosure Activity | 0.0 | 1.7 | 3.0 | 0.0 |
| Parking Lot Vehicle Movements | 11.5 | 15.6 | 16.9 | 18.5 |
| Truck Movements | 12.6 | 15.4 | 16.8 | 16.8 |
| **Total (All Noise Sources)** | **22.1** | **26.1** | **27.4** | **27.1** |

[1] See Exhibit 7-A for the noise source locations. CadnaA noise model calculations are included in Appendix 7.1.

## 7.5 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 Ontario exterior noise level standards at nearby noise-sensitive receiver locations. Table 7-4 shows the operational noise levels associated with 5355 East Airport Drive Project will satisfy the City of Ontario exterior noise level standards.

**TABLE 7-4: OPERATIONAL NOISE LEVEL COMPLIANCE**

| Receiver Location[1] | Project Operational Noise Levels (dBA Leq)[2] | | Noise Level Standards (dBA Leq)[3] | | Noise Level Standards Exceeded?[4] | |
|---|---|---|---|---|---|---|
| | Daytime | Nighttime | Daytime | Nighttime | Daytime | Nighttime |
| R1 | 22.2 | 22.1 | 65.0 | 45.0 | No | No |
| R2 | 26.2 | 26.1 | 65.0 | 45.0 | No | No |
| R3 | 27.4 | 27.4 | 65.0 | 45.0 | No | No |
| R4 | 27.2 | 27.1 | 65.0 | 45.0 | No | No |

[1] See Exhibit 6-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 7-2 and 7-3.
[3] Exterior noise level standards, for residential land use, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

## 7.6 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:

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

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. As indicated on Tables 7-5 and 7-6, the Project will not generate an unmitigated nighttime operational noise level increase at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented on Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

**TABLE 7-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES**

| 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? |
|---|---|---|---|---|---|---|---|
| R1 | 22.2 | L1 | 58.4 | 58.4 | 0.0 | 5.0 | No |
| R2 | 26.2 | L2 | 61.7 | 61.7 | 0.0 | 5.0 | No |
| R3 | 27.4 | L3 | 67.1 | 67.1 | 0.0 | 1.5 | No |
| R4 | 27.2 | L4 | 69.8 | 69.8 | 0.0 | 1.5 | No |

[1] See Exhibit 6-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 7-2.
[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 increase criteria as shown on Table 4-1.

**TABLE 7-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES**

| 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? |
|---|---|---|---|---|---|---|---|
| R1 | 22.1 | L1 | 59.0 | 59.0 | 0.0 | 5.0 | No |
| R2 | 26.1 | L2 | 61.3 | 61.3 | 0.0 | 5.0 | No |
| R3 | 27.4 | L3 | 62.2 | 62.2 | 0.0 | 5.0 | No |
| R4 | 27.1 | L4 | 68.2 | 68.2 | 0.0 | 1.5 | No |

[1] See Exhibit 6-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 7-4.
[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 increase criteria as shown on Table 4-1.

## 7.7 OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas and at the Project site. The off-site Project-related traffic represents an incremental increase to the existing roadway volumes, which is not expected to generate a barely perceptible noise level increase of 3 dBA CNEL at nearby sensitive land uses adjacent to study area roadways, since a doubling of the existing traffic volumes would be required to generate a 3 dBA CNEL increase. Due to the low traffic volumes generated by the Project, the off-site traffic noise levels generated by the Project are considered less than significant and no further analysis is required.

# 8 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 8-A shows the construction activity boundaries in relation to the nearest sensitive receiver locations previously described in Section 6. According to Section 5-29.09 of the Municipal Code states: *No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.* (12)

In addition, since neither the City of Ontario General Plan or County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. 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. The FTA considers a daytime exterior construction noise level of 80 dBA $L_{eq}$ as a reasonable threshold for noise sensitive residential land use. (8 p. 179).

## 8.1 CONSTRUCTION NOISE LEVELS

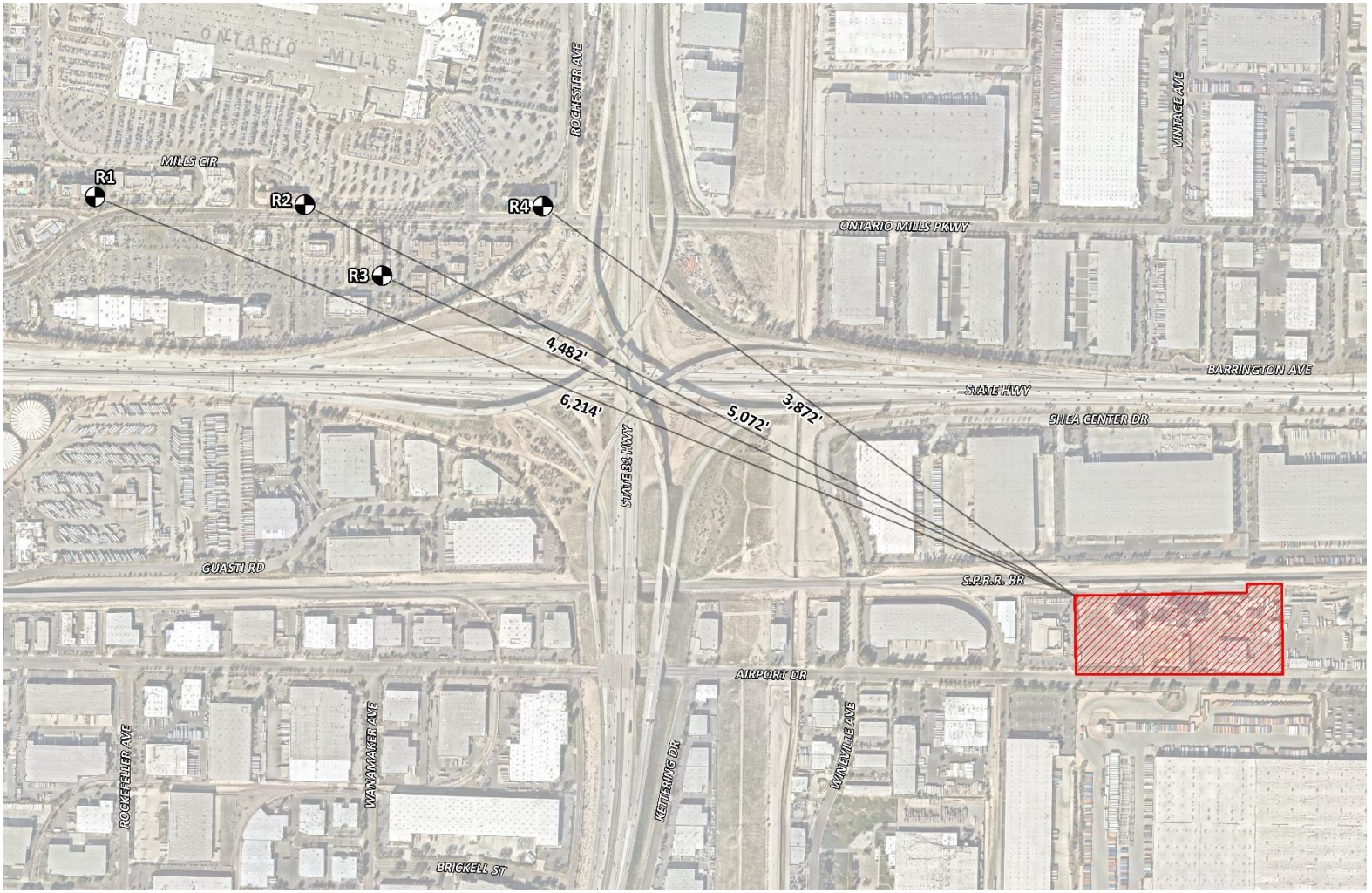
The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed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

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

## 8.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (21) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

## EXHIBIT 8-A: CONSTRUCTION NOISE SOURCE LOCATIONS



## 8.3 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 nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 8-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 8-2, the construction noise levels are expected to range from 27.6 to 38.6 dBA $L_{eq}$ at the nearby receiver locations. Appendix 8.1 includes the detailed CadnaA construction noise model inputs.

**TABLE 8-1: CONSTRUCTION REFERENCE NOISE LEVELS**

| Construction Stage | Reference Construction Activity | Reference Noise Level @ 50 Feet (dBA $L_{eq}$)[1] | Combined Noise Level (dBA $L_{eq}$)[2] | Combined Sound Power Level (PWL)[3] |
|---|---|---|---|---|
| Demolition | Demolition Equipment | 82 | 83 | 115 |
| | Backhoes | 74 | | |
| | Hauling Trucks | 72 | | |
| Site Preparation | Crawler Tractors | 78 | 80 | 112 |
| | Hauling Trucks | 72 | | |
| | Rubber Tired Dozers | 75 | | |
| Grading | Graders | 81 | 83 | 115 |
| | Excavators | 77 | | |
| | Compactors | 76 | | |
| Building Construction | Cranes | 73 | 81 | 113 |
| | Tractors | 80 | | |
| | Welders | 70 | | |
| Paving | Pavers | 74 | 83 | 115 |
| | Paving Equipment | 82 | | |
| | Rollers | 73 | | |
| Architectural Coating | Cranes | 73 | 77 | 109 |
| | Air Compressors | 74 | | |
| | Generator Sets | 70 | | |

[1] 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.
[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 calibrated using the CadnaA noise model at the reference distance to the noise source.

**TABLE 8-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY**

| Receiver Location[1] | Construction Noise Levels (dBA $L_{eq}$) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Demolition | Site Preparation | Grading | Building Construction | Paving | Architectural Coating | Highest Levels[2] |
| R1 | 33.6 | 30.6 | 33.6 | 31.6 | 33.6 | 27.6 | 33.6 |
| R2 | 35.9 | 32.9 | 35.9 | 33.9 | 35.9 | 29.9 | 35.9 |
| R3 | 37.1 | 34.1 | 37.1 | 35.1 | 37.1 | 31.1 | 37.1 |
| R4 | 38.6 | 35.6 | 38.6 | 36.6 | 38.6 | 32.6 | 38.6 |

[1] Noise receiver locations are shown on Exhibit 8-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 8.1.

## 8.4 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 8-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

**TABLE 8-3: CONSTRUCTION NOISE LEVEL COMPLIANCE**

| Receiver Location[1] | Construction Noise Levels (dBA $L_{eq}$) | | |
|---|---|---|---|
| | Highest Construction Noise Levels[2] | Threshold[3] | Threshold Exceeded?[4] |
| R1 | 33.6 | 80 | No |
| R2 | 35.9 | 80 | No |
| R3 | 37.1 | 80 | No |
| R4 | 38.6 | 80 | No |

[1] Noise receiver locations are shown on Exhibit 8-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 8-2.
[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?

## 8.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

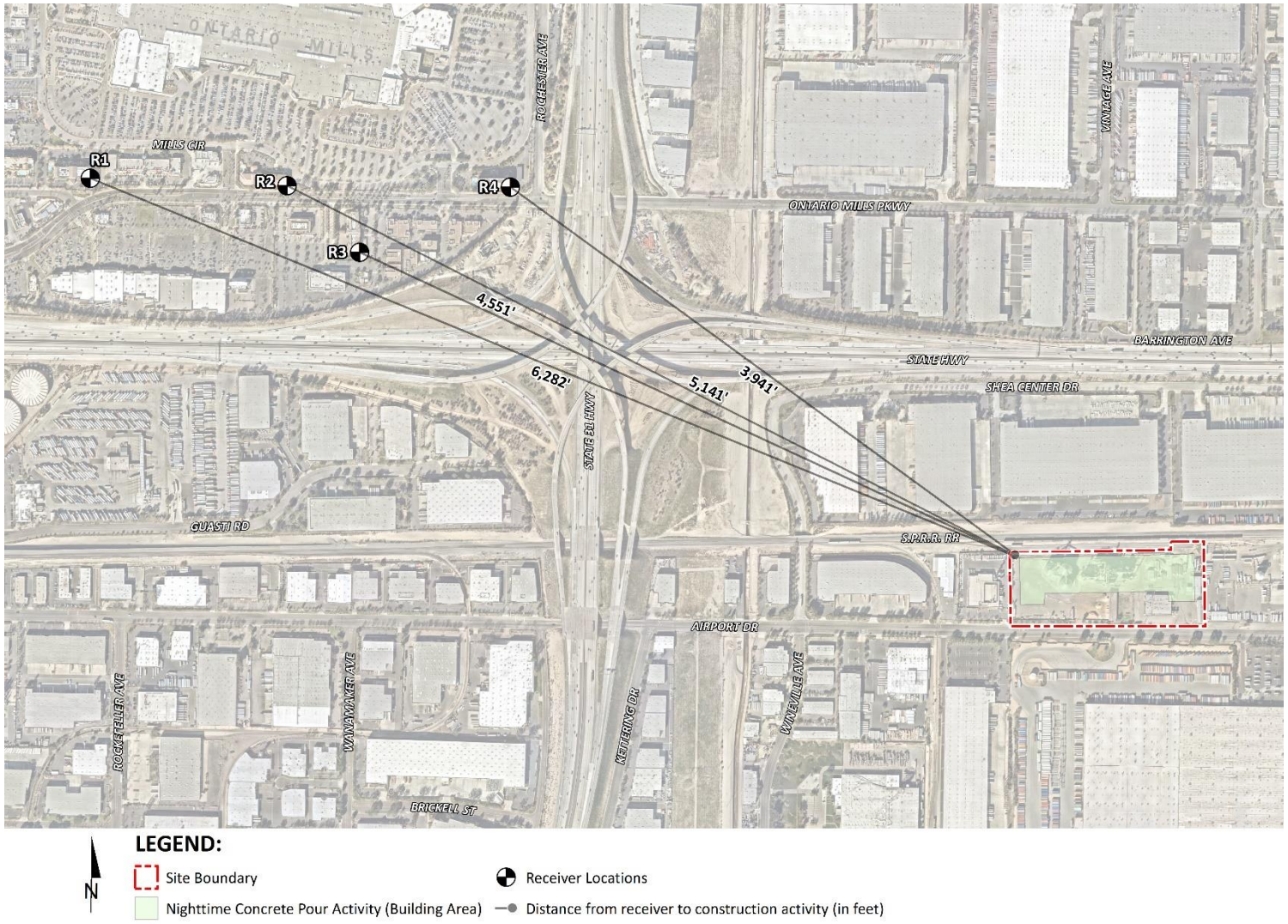
It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area as shown on Exhibit 8-B. Since the nighttime concrete pours will take place outside the permitted City of Ontario Municipal Code, Section 5-29.09 hours of *7:00 a.m. and 6:00 p.m.* or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m. The Project Applicant will be required to obtain authorization for nighttime work from the City of Ontario. Any nighttime construction noise activities shall satisfy the noise limits outlined in Table 4-1.

### 8.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

To estimate the noise levels due to nighttime concrete pour activities, sample reference noise level measurements were taken during a nighttime concrete pour at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling.

To describe the nighttime concrete pour noise levels associated with the construction of the 5355 East Airport Drive, this analysis relies on reference sound power level of 100.3 dBA $L_w$. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA $L_w$ is used to describe the expected Project nighttime concrete pour noise activities.

## EXHIBIT 8-B: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS



### 8.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 8-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 18.6 to 24.1 dBA $L_{eq}$ and will satisfy the City of Ontario nighttime stationary-source exterior hourly average $L_{eq}$ residential noise level threshold adjusted to reflect the ambient noise conditions at all the receiver locations. Based on the results of this analysis, all nearest noise receiver locations will experience *less than significant* impacts due to the Project related nighttime concrete pour activities. Appendix 8.2 includes the CadnaA nighttime concrete pour noise model inputs.

**TABLE 8-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE**

| Receiver Location[1] | Use | Construction Noise Levels (dBA $L_{eq}$) | | |
|---|---|---|---|---|
| | | Paving Construction[2] | Nighttime Threshold[3] | Threshold Exceeded?[4] |
| R1 | Residence | 18.6 | 45 | No |
| R2 | Residence | 21.2 | 45 | No |
| R3 | Residence | 22.5 | 45 | No |
| R4 | Residence | 24.1 | 45 | No |

[1] Noise receiver locations are shown on Exhibit 8-B.
[2] Paving construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations.
[3] Exterior nighttime noise level standards as shown on Table 5-1.
[4] Do the estimated Project construction noise levels exceed the nighttime construction noise level threshold?

## 8.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 8-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

**TABLE 8-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

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

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 8-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 3,872 to 6,214 feet from Project construction activities, construction vibration velocity levels are estimated to be 0.000 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

Moreover, the vibration levels reported at the 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.

**TABLE 8-6: PROJECT CONSTRUCTION VIBRATION LEVELS**

| Receiver[1] | Distance to Const. Activity (Feet)[2] | Typical Construction Vibration Levels PPV (in/sec)[3] | | | | | Thresholds PPV (in/sec)[4] | Thresholds Exceeded?[5] |
|---|---|---|---|---|---|---|---|---|
| | | Small bulldozer | Jackhammer | Loaded Trucks | Large bulldozer | Highest Vibration Level | | |
| R1 | 6,214' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.3 | No |
| R2 | 5,072' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.3 | No |
| R3 | 4,482' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.3 | No |
| R4 | 3,872' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.3 | No |

[1] Receiver locations are shown on Exhibit 8-A.
[2] Distance from receiver location to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 8-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

# 9 REFERENCES


1. **State of California.** *California Environmental Quality Act, Environmental Checklist Form Appendix G.* 2021.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
4. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
5. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
9. **Office of Planning and Research.** *State of California General Plan Guidlines.* October 2019.
10. **City of Ontario.** *The Ontario Plan Safety Section, S4, Noise Hazards.* March 2014.
11. —. *The Ontario Plan Draft EIR.* April 2009.
12. —. *Municipal Code, Chapter 29, Section 5- Noise.*
13. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
14. **City of Ontario.** *Ontario International Airport Land Use Compatibility Plan.* July 2018.
15. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
16. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
17. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
18. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
19. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.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# 10 CERTIFICATIONS

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed 5355 East Airport Drive 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.

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Principal
URBAN CROSSROADS, INC.
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(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 ONTARIO MUNICIPAL CODE

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# CHAPTER 29: NOISE



## Sec. 5-29.01. Declaration of findings and policy.

It is hereby found and declared that:

(a) The making and creation of excessive, unnecessary or unusually loud noises within the limits of the City is a condition that has existed for some time, however, the extent and volume of such noises is increasing;

(b) The making, creation or maintenance of such excessive, unnecessary, unnatural or unusually loud noises that are prolonged, unusual and unnatural in their time, place and use affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the City; and

(c) The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted, is declared as a matter of legislative determination and public policy, and it is further declared

that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the residents of the City.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.02. Definitions.

As used in this chapter, specific words and phrases are defined as follows:

(a) "Ambient noise level" shall mean the all-encompassing noise level associated with a given environment and is a composite of sounds from all sources, excluding the alleged offensive noise or excessive sound, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

(b) "Applicable (noise) zone" shall mean the noise zone category based on the actual use of the property, provided that the actual use is a legal use in the City.

(c) "A-weighted sound level" shall mean the sound pressure level in decibels (dBAs) as measured with a sound level meter using the A-weighted filter network (scale) at slow response and at a pressure of twenty (20) micropascals. The A-weighted filter de-emphasizes the very low and a very high frequency component of sound in a manner similar to the response of the human ear, and is a numerical method of rating human judgment of loudness.

(d) "Decibel (dBA)" shall mean a unit for measuring the amplitude of a sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of pressure of the sound measured to the reference pressure of twenty (20) micropascals.

(e) "Equivalent sound or noise level (Leq)" shall mean the International Electrotechnical Commission (IEC) 60804 Standard for measurement, or the most recent revision thereof, for the sound level corresponding to a steady state noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level or the energy average noise level during the sample period. The measurement period for the purposes of this chapter is fifteen (15) minutes.

(f) "Impulsive noise" shall mean a noise of short duration usually less than one (1) second and of high intensity, with an abrupt onset and rapid decay. Such objectionable noises may also be repetitive.

(g) "Intrusive noise" shall mean that noise that intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence and tonal information content, as well as the prevailing ambient noise level.

(h) "Maintenance" shall mean the upkeep, repair or preservation of existing property or structures.

(i) "Noise" shall mean any unwanted sound or sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing or is otherwise annoying.

(j) "Noise level (sound level)" shall mean the weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum. For purposes of this chapter, all noise levels (sound levels) shall be A-weighted sound pressure level.

(k) "Noise (sound) level meter" shall mean an instrument, including a microphone, an amplifier, an output meter and frequency weighting networks for the measurement and determination of noise and sound levels. For the purposes of this chapter, the sound level meter must meet the International Electrotechnical Commission (IEC) 60651 and 60804 Standards, or the most recent revisions thereof, for Type 1 sound level meters or an instrument and the associated recording and analyzing equipment that will provide equivalent data.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.03. Designated noise zones.

The properties hereinafter described shall be assigned to the following noise zones:

| | |
|---|---|
| Noise Zone I: | All single-family residential properties; |
| Noise Zone II: | All multi-family residential properties and mobile home parks; |
| Noise Zone III: | All commercial property; |
| Noise Zone IV: | The residential portion of mixed use properties; |
| Noise Zone V: | All manufacturing or industrial properties and all other uses. |

The actual use of the property, and not necessarily its zoning designation, shall be the determining factor in establishing whether a property is in Noise Zone I, II, III, IV or V, provided that the actual use is a legal use within the applicable zone.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.04. Exterior noise standards.

(a) The following exterior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.

| ***Allowable Exterior Noise Level (1)*** | | ***Allowed Equivalent Noise Level, Leq. (2)*** | |
|---|---|---|---|
| ***Noise Zone*** | ***Type of Land Use*** | ***7 a.m. to 10 p.m.*** | ***10 p.m. to 7 a.m.*** |
| I | Single-Family Residential | 65 dBA | 45 dBA |
| II | Multi-Family Residential, Mobile Home Parks | 65 dBA | 50 dBA |
| III | Commercial Property | 65 dBA | 60 dBA |
| IV | Residential Portion of Mixed Use | 70 dBA | 70 dBA |
| V | Manufacturing and Industrial, Other Uses | 70 dBA | 70 dBA |

(1) If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

(2) Measurements for compliance are made on the affected property pursuant to § 5-29.15.

(b) It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

(1) The noise standard for the applicable zone for any fifteen-minute (15) period; and

(2) A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

(c) In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.

(e) If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.05. Interior noise standards.

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.

| **Allowable Interior Noise Level** (1) | | **Allowed Equivalent Noise Level, Leq.** (2) | |
|---|---|---|---|
| ***Noise Zone*** | ***Type of Land Use*** | ***7 a.m. to 10 p.m.*** | ***10 p.m. to 7 a.m.*** |
| I | Single-Family Residential | 45 dBA | 40 dBA |
| II | Multi-Family Residential, Mobile Home Parks | 45 dBA | 40 dBA |
| IV | Residential Portion of Mixed Use | 45 dBA | 40 dBA |

(1) If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

(2) Measurements for compliance are made on the affected property pursuant to § 5-29.15.

(b) It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

(1) The noise standard for the applicable zone for any fifteen-minute (15) period;

(2) A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

(c) In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.

(e) If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

(§ 2, Ord. 2888, eff. March 6, 2008)

## Sec. 5-29.06. Exemptions.

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

(a) Any activity conducted on public property, or on private property with the consent of the owner, by any public entity or its officers, employees, representatives, agents, subcontractors, permittees, licensees or lessees that the public entity has authorized are exempt from the provisions of this chapter. This includes, without limitation, sporting and recreational activities that are sponsored, co-sponsored, permitted or allowed by the City or any school district within the City's jurisdictional boundaries. This also includes, without limitation, occasional outdoor gatherings, public dances, shows or sporting and entertainment events, provided such events are conducted pursuant to an approval, authorization, contract, lease, permit or sublease by the appropriate public entity, specifically the planning commission or City Council;

(b) Occasional outdoor gatherings, public dances, show, sporting and entertainment events, provided said events are conducted pursuant to a permit or license issued by the appropriate jurisdiction relative to the staging of said events;

(c) Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle, work or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within forty-five (45) minutes in any hour of its being activated;

(d) Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of § 5-29.09;

(e) Noise sources associated with construction, repair, remodeling, demolition or grading of public rights-of-way or during authorized seismic surveys;

(f) All mechanical devices, apparatus or equipment associated with agriculture operations provided that:

(1) Operations do not take place between 8:00 p.m. and 7:00 a.m.;

(2) Such operations and equipment are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; or

(3) Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by or regulations enforced by the California Department of Agriculture;

(g) Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of § 5-29.08;

(h) Any activity to the extent regulation thereof has been preempted by state or federal law;

(i) Any noise sources associated with people and/or music associated with a party at a residential property. Such noise shall be subject to the provisions of OMC § 5-29.07;

(j) Any noise source emanating from an ice cream truck within the City. Such noise shall be subject to the provisions of OMC § 4-18.04;

(k) Any noise sources associated with barking dogs or other intermittent noises made by animals on any properly within the City. Such noise shall be subject to the provisions of OMC Chapter 1, Title 6;

(l) Noise sources related to uses approved by a permit or development agreement adopted prior to the date of adoption of this chapter and that contains acoustic or noise standard conditions of approval. This exemption shall only be applicable during the effective period of the City-approved permit or development agreement.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.07. Loud and disturbing noise.

(a) It is unlawful for any person or property owner within the City to make, cause or allow to be made any loud, excessive, impulsive or intrusive noise, disturbance or commotion that disturbs the peace or quiet of any area or that causes discomfort or annoyance to any reasonable person of normal sensitivities in the area, after a Police or Code Enforcement Officer has first requested that the person or property owner cease and desist from making such noise. The types of loud, disturbing, excessive, impulsive or intrusive noise may include, but shall not be limited to, yelling, shouting, hooting, whistling, singing, playing a musical instrument, or emitting or transmitting any loud music or noise from any mechanical or electrical sound making or sound-amplifying device.

(b) The factors, standards, and conditions that may be considered in determining whether a violation of the provisions of this section has been committed, included, but not limited to, the following:

(1) The level of the noise;

(2) The level and intensity of the background (ambient) noise, if any;

(3) The proximity of the noise to residential or commercial sleeping areas;

(4) The nature and zoning of the area within which the noise emanates;

(5) The density of inhabitation of the area within which the noise emanates;

(6) The time of day and night the noise occurs;

(7) The duration of the noise;

(8) Whether the noise is constant, recurrent or intermittent;

(9) Whether the noise is produced by a commercial or noncommercial activity; and

(10) Whether the use is lawful under the provisions of Title 5 of this Code and whether the noise is one that could reasonably be expected from the activity or allowed use.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.08. Real property maintenance noise regulations.

(a) No person, while engaged in maintenance of real property, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, except between the hours of 8:00 a.m. and 6:00 p.m.

(b) Trimming or pruning that requires the use of chainsaws or mulching machines shall only be allowed between the hours of 8:00 a.m. and 6:00 p.m. on a weekday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday or Sunday.

(c) The use of electrical or gasoline powered blowers, such as commonly used by gardeners or other persons for cleaning lawns, yards, driveways, gutters and other property shall only be allowed between the hours of 8:00 a.m. and 6:00 p.m. on a weekday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday or Sunday.

(d) No landowner, gardener, property maintenance service, contractor, subcontractor or employer shall permit or allow any person or persons working under his or her direction or control to operate any tool, equipment or machine in violation of the provisions of this section.

(e) Exceptions. The provisions of this section shall not apply to the following:

(1) Emergency property maintenance required by the building official;

(2) The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City, or its employees, contractors or agents, unless:

(i) The City Manager or department head determines that the maintenance, repair or improvement is immediately necessary to maintain public service,

(ii) The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours, or

(iii) The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes maintenance during hours of the day that would otherwise be prohibited pursuant to this section; and

(3) Any maintenance that complies with the noise limits specified in § 5-29.04.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.09. Construction activity noise regulations.

(a) No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.

(b) No landowner, construction company owner, contractor, subcontractor, or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.

(c) Exceptions.

(1) The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the City Manager or his or her designee;

(2) The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City, or its employees, contractors or agents, unless:

(i) The City Manager or a department head determines that the maintenance, repair or improvement is immediately necessary to maintain public services,

(ii) The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours, or

(iii) The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes construction during hours of the day that would otherwise be prohibited pursuant to this section; and

(3) Any construction that complies with the noise limits specified in §§ 5-29.04 or 5-29.05.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.10. Other public agency exceptions.

The provisions of this chapter shall not be construed to prohibit any work at different hours by or under the direction of any other public agency or public or private utility companies in cases of necessity or emergency.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.11. Schools, day care centers, churches, libraries, museums, health care institutions; Special provisions.

It is unlawful for any person to create any noise that causes the outdoor noise level at any school, day care center, hospital or similar health care institution, church, library or museum while the same is in use, to exceed the noise standards specified in § 5-29.04 prescribed for the assigned Noise Zone I.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.12. Sound amplifying equipment.

Loudspeakers, sound amplifiers, public address systems or similar devices used to amplify sounds shall be subject to the provisions of § 5-29.13. Such sound amplifying equipment shall not be construed to include electronic devices, including but not limited to, radios, tape players, tape recorders, compact disc players, MP3 players, electric keyboards, music synthesizers, record players or televisions, which are designed and operated for personal use, or used entirely within a building and are not designed or used to convey the human voice, music or any other sound to an audience outside such building, or which are used in vehicles and heard only by occupants of the vehicle in which installed.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.13. Amplified sound.

(a) The City Council enacts the following legislation for the sole purpose of securing and promoting the public health, comfort, safety and welfare for its citizenry. While recognizing that the use of sound amplifying equipment may be entitled to certain protection by the constitutional rights of freedom of speech and assembly, the City Council finds that in order to protect the public safety and the correlative rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary noise, reasonable regulation of the time, place and manner of the use of amplifying equipment is necessary. In no event shall approval or authorization required herein be withheld by reason of the constitutionally protected content of any material proposed to be broadcast through amplifying equipment.

(b) It is unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate a loudspeaker or sound amplifying device in a fixed or movable position or mounted upon any vehicle within the City for the purpose of giving instructions, directions, talks, addresses or lectures to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place or public property without a permit to do so from the Police Chief or his or her designee. Notwithstanding any other provision of this chapter, the provisions of this section shall also apply to the use of sound amplifying equipment upon public or private property when used in connection with outdoor or indoor public or private events, whether or not admission is charged or food or beverages are sold, when such activity is to be attended by more than one hundred (100) persons and the noise emanating from the event will be audible at the property plane, or in the case of a street dance or concert on the nearest residential property. Those activities listed in § 5-29.06(a) are exempt from the requirements of this section.

(c) The Police Chief or his or her designee is authorized to approve and issue permits under this section.

(d) An application for a permit required by this section shall be filed with the Police Chief at least sixteen (16) days and no more than one hundred twenty (120) days prior to the date on which the sound amplifying equipment is intended to be used. Applications for events covered by the First Amendment of the United States Constitution are exempt from the time requirements of this section if it is shown that circumstances require a shorter filing period and the event will not constitute an unsafe condition. The application shall contain the following information:

(1) The name, address and telephone number of both the owner and the user of the sound amplifying equipment;

(2) The license number, if a sound truck is to be used;

(3) A general description of the sound amplifying equipment which is to be used;

(4) Whether sound amplifying equipment will be used for commercial or noncommercial purpose;

(5) The dates and times upon and within which, and the streets or property over or upon which, the equipment is proposed to be operated;

(6) The name or names of one (1) or more persons who will be present during the conduct of any activities for which registration is sought and who will have authority to reduce the volume of any sound amplifying equipment during the course of the activities if required pursuant to this chapter and, otherwise, to insure compliance with the provisions of this chapter;

(7) A statement by the applicant that he or she is willing and able to comply with the provisions of this chapter and the conditions of the permit; and

(8) A sketch of the area or facilities within which the activities are to be conducted, with approximate dimensions and illustration of the location and orientation of all sound-amplifying equipment.

(e) The Police Chief shall deny the permit application or revoke any permit if the chief finds any of the following:

(1) The application contains materially false or intentionally misleading information;

(2) The use of sound amplifying equipment at an event or activity proposed will be located in or upon a premises, building or structure that is hazardous to the health or safety of the employees or patrons of the premises, business, activity, or event, or the general public, under the standards established by the Uniform Building or Fire Codes, or other applicable codes, as set forth in OMC Titles 4 and 8;

(3) The use of sound amplifying equipment at an event or activity proposed in or upon a premises, building or structure that lacks adequate on-site parking for participants attending the proposed event or activity under the applicable standards set forth in OMC Title 9;

(4) The conditions of any motor vehicle movement are such that, in his or her opinion, the use of the equipment would constitute an unreasonable interference with traffic safety;

(5) The conditions of pedestrian movement are such that the use of the equipment would constitute a detriment to traffic safety;

(6) The application submitted by the applicant reveals that the applicant would violate the provisions of this section or any other provision of federal, state and/or local law;

(7) The applicant is unwilling or unable to comply with the provisions of this chapter or any conditions imposed upon any permit issued;

(8) There had already been a permitted event at the intended location, or within a two hundred (200) yard radius of the intended location and the prior permitted event was located on residentially zoned property or on a street, alley, public parking lot or neighborhood park within three (3) months prior to the intended event. Community parks are exempt from this subsection (8); or

(9) The applicant or location has had previous violations within the past calendar year, and in the judgment of the Police Chief, issuance would be contrary to the intent of this section.

(f) In determining whether the use of the equipment would constitute an unreasonable interference with or detriment to traffic safety, the Police Chief shall consider, but shall not necessarily be limited to:

(1) The volumes, patterns and speed of vehicular and pedestrian traffic in the proposed area of use;

(2) The relationship of the proposed use of equipment and potential impacts upon traffic patterns;

(3) Availability of sufficient room for the operation of the equipment without significantly interfering with the traffic patterns;

(4) Proximity to schools, playgrounds and similar facilities where use of such equipment might attract children into traffic patterns; or

(5) Proximity to busy intersections or other potentially hazardous conditions where use of such equipment might constitute a hazard by reason of its tendency to distract drivers of vehicles or pedestrians.

(g) Issuance or denial.

(1) If the application is approved, the Police Chief shall return an approved copy of the application to the applicant and shall issue a permit. The permit shall constitute permission for the use of the sound amplifying equipment as requested.

(2) Any application filed shall be either approved or disapproved within five (5) days of the filing thereof.

(3) If the application is disapproved, the Police Chief shall return a disapproved copy forthwith to the applicant with a written statement on the reason for disapproval.

(i) Any person aggrieved by a decision of the Police Chief or his or her designee may file an appeal to the City Manager. A complete and proper appeal shall be filed with the City Clerk within ten (10) calendar days of the action that is the subject of the appeal. If the applicant fails to file an appeal within the ten (10) day filing period provided herein, denial shall take effect immediately upon expiration of such filing period. All appeals shall be in writing and shall contain the following information: (a) name(s) of the person filing the appeal, (b) a brief statement in ordinary and concise language of the relief sought, and (c) the signatures of all parties named as appellants and their mailing addresses. After receiving the appeal, the City Clerk shall immediately forward the matter to the City Manager for handling.

(ii) The City Manager shall, upon receipt of the appeal, set the matter for hearing before the City Manager or a hearing officer. Any hearing officer shall be a licensed attorney or recognized mediator designated by the City Manager. The hearing shall be set for not more than ten (10) calendar days after the receipt of the appeal unless a longer time is requested or consented to by the appellant. Notice of such hearing shall be given in writing and mailed at least five (5) calendar days prior to the date of the hearing, by U.S. mail, with a proof of service attached, addressed to the address listed on the permit application, or the written appeal if different from the permit application. The notice shall state the grounds of the complaint or reason for the denial and shall state the time and place where such hearing will be held.

(iii) The City Manager or hearing officer shall, within ten (10) calendar days following the conclusion of the hearing, make a written finding and decision, which shall be delivered to the City and the appellant by first class mail. Notwithstanding any provision in this Code, the decision of the City Manager or hearing officer shall be the final administrative decision of the City. Any party dissatisfied with the decision of the City Manager or hearing officer may seek review of such decision under the provisions of Code Civil Procedure, §§ 1094.5 and 1094.8, as amended from time to time.

(h) In addition to any other provisions of this Code, the use of sound-amplifying equipment and sound trucks in the City shall be subject to the following regulations:

(1) The only sounds permitted are music and human speech;

(2) Sound shall not be emitted within one hundred (100) yards of hospitals, churches, schools and City Hall;

(3) The volume of sound shall be controlled so that it will not be audible for a distance in excess of one hundred (100) feet from the sound amplifying equipment or sound truck, and so that the volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance to persons within the range of allowed audibility; or

(4) The sound amplifying equipment or sound truck shall not be used between the hours of 8:00 p.m. and 8:00 a.m.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.14. Motor vehicles.

The use of any motor vehicle in such a condition as to create excessive, impulsive or intrusive noises is prohibited. The discharge into the open air of the exhaust of any internal combustion engine, stationary or mounted on wheels, motorboat or motor vehicle, including motor cycle, whether or not discharged through a muffler or other similar device, which discharge creates excessive, unusual, impulsive or intrusive noise is prohibited. Motor vehicles shall comply with the noise regulations of the California Vehicle Code.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.15. Noise level measurement.

(a) The location selected for measuring exterior noise levels in a residential area shall be at any part of a private yard, patio, deck or balcony normally used for human activity and identified by the owner or, if occupied by someone other than the owner, the occupant of the affected property as suspected of exceeding the noise level standard. This location may be the closest point in the private yard or patio, or on the deck or balcony, to the noise source, but should not be located in nonhuman activity areas such as trash container storage areas, planter beds, above or contacting a property line fence, or other areas not normally used as part of the yard, patio, deck or balcony. The location selected for measuring exterior noise levels in a nonresidential area shall be at the closest point to the noise source. The measurement microphone height shall be five (5) feet above finish elevation or, in the case of a deck or balcony, the measurement microphone height shall be five (5) feet above the finished floor level.

(b) The location selected for measuring interior noise levels shall be made within the affected residential unit. The measurements shall be made at a point at least four (4) feet from the wall, ceiling or floor, or within the frame of a window opening, nearest the noise source. The measurements shall be made with windows in an open position.

(c) Any decibel measurement made pursuant to the provisions of this chapter shall be measured in decibels (dBAs) as measured with a sound level meter using the A-weighted sound pressure level.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.16. Prima facie violation.

Any noise exceeding the noise level standard as specified in §§ 5-29.04 and 5-29.05, shall be deemed to be prima facie evidence of a violation of the provisions of this chapter.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.17. Penalty.

(a) Any person who negligently or knowingly violates any provision of this chapter shall be guilty of an infraction and upon conviction shall be punishable by a fine specified in OMC § 1-2.01. Each day a violation occurs shall constitute a separate offense and shall be punishable as such.

(b) Any person who negligently or knowingly violates any provision of this chapter may also be subject to fine(s) specified in the administrative citation schedule of fines set forth in OMC § 1-5.04. The manner of issuing administrative citations shall comply with all the procedures specified in OMC Chapter 5, Title 1.

(c) As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provisions of this chapter, which operation or maintenance causes or creates sound levels exceeding the allowable standards as specified in this chapter, shall be deemed and is declared to be a public nuisance and may be subject to abatement by a restraining order or injunction issued by a court of competent jurisdiction.

(d) Any violation of this chapter is declared to be a public nuisance and may be abated in accordance with law. The expense of enforcing this chapter is declared to be public nuisance and may be by resolution of the City Council declared to be a lien and special assessment against the property on which such nuisance is maintained, and any such charge shall also be a personal obligation of the property owner.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.18. Enforcement and administration.

(a) It shall be the responsibility of Police or Code Enforcement Officers to enforce the provisions of this chapter and to perform all other functions required by this chapter. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City prosecutor for legal action.

(b) For violations of § 5-29.07, Police or Code Enforcement Officers shall obtain a declaration under penalty of perjury from two (2) declarants living in separate households within a sixty (60) day period stating in detail all of the following:

(1) That the declarant is a resident of a residential neighborhood located within two hundred (200) yards of the noise source; and

(2) Within the past month declarant has heard noise for substantially long periods to the extreme annoyance of the declarant.

(3) Declarations from two (2) declarants are required to prove a violation of § 5-29.07, but are not required to prove that a person has violated any other provision of this chapter.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.19. City Manager waiver.

The City Manager is authorized to grant a temporary waiver to the provisions of this chapter for a period of time necessary to correct the violations of this chapter, if such temporary waiver would be in the public interest and there is no feasible and prudent alternative to the activity, or the method of conducting the activity, for which the temporary waiver is sought. This time period may include a commitment to a program that includes placing necessary orders and entering into necessary contracts within thirty (30) days for repair or installation.

(§ 2, Ord. 2888, eff. March 6, 2008)

### Sec. 5-29.20. Noise abatement program.

(a) In circumstances where adopted community-wide noise standards and policies prove impractical in controlling noise generated from a specific source, the City Council may establish a noise abatement program that recognizes the characteristics of the noise source and affected property and that incorporates specialized mitigation measures.

(b) Noise abatement programs shall set forth in detail the approved terms, conditions and requirements for achieving maximum compliance with noise standards and policies. Said terms, conditions and requirements may include, but shall not be limited to, limitations, restrictions, or prohibitions on operating hours, location of operations, and the types of equipment.

(§ 2, Ord. 2888, eff. March 6, 2008)

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# APPENDIX 5.1:

# STUDY AREA PHOTOS

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# JN: 14539 Study Area Photos

**L1_E**
**34, 4' 13.650000"117, 33' 19.070000"**

**L1_N**
**34, 4' 13.610000"117, 33' 19.180000"**

**L1_S**
**34, 4' 13.560000"117, 33' 19.150000"**

**L1_W**
**34, 4' 13.660000"117, 33' 19.070000"**

**L2_E**
**34, 4' 12.440000"117, 33' 3.660000"**

**L2_N**
**34, 4' 12.590000"117, 33' 3.750000"**

# JN: 14539 Study Area Photos

**L2_S**
**34, 4' 12.470000"117, 33' 3.640000"**

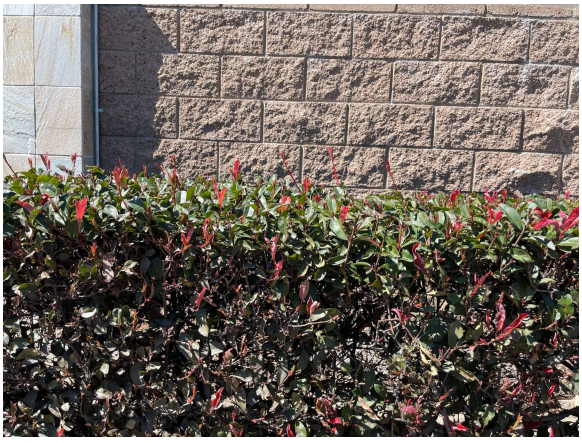
**L2_W**
**34, 4' 12.470000"117, 33' 3.720000"**

**L3_E**
**34, 4' 9.290000"117, 32' 58.420000"**

**L3_N**
**34, 4' 9.400000"117, 32' 58.420000"**

**L3_S**
**34, 4' 9.250000"117, 32' 58.390000"**

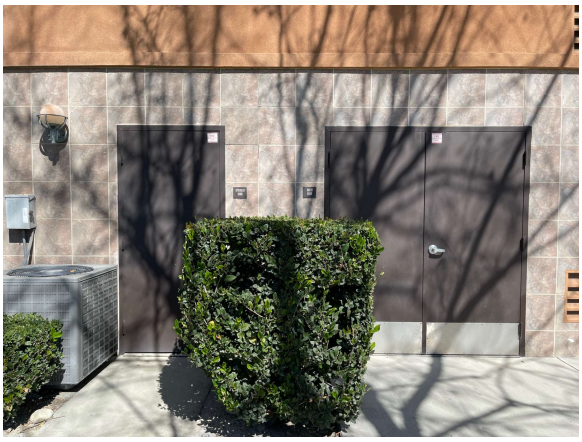
**L3_W**
**34, 4' 9.280000"117, 32' 58.470000"**



# JN: 14539 Study Area Photos

**L4_E**
**34, 4' 12.660000"117, 32' 48.530000"**

**L4_N**
**34, 4' 12.620000"117, 32' 48.610000"**



**L4_S**
**34, 4' 12.670000"117, 32' 48.560000"**

**L4_W**
**34, 4' 12.640000"117, 32' 48.500000"**

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# APPENDIX 5.2:

# NOISE LEVEL MEASUREMENT WORKSHEETS

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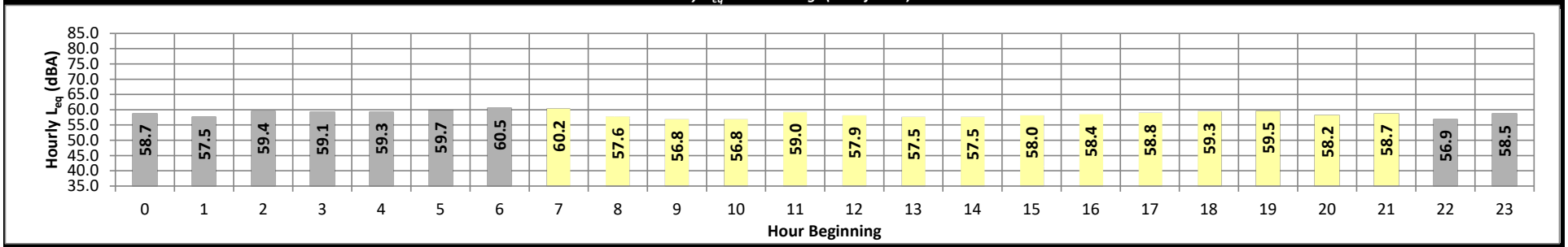
## 24-Hour Noise Level Measurement Summary

*Date:* Tuesday, March 8, 2022 *Location:* L1 - Located northwest of the Project site near Ayres Hotel *Meter:* Piccolo II *JN:* 14539

*Project:* IE Distribution Center *Source:* Ontario Mills Mall at 4395 Ontario Mills Parkway. *Analyst:* A. Khan

***Hourly $L_{eq}$ dBA Readings (unadjusted)***




| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | $L_{eq}$ | Adj. | Adj. $L_{eq}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Night | 0 | 58.7 | 61.8 | 57.1 | 61.6 | 61.3 | 60.7 | 60.3 | 59.1 | 58.4 | 57.5 | 57.3 | 57.2 | 58.7 | 10.0 | 68.7 |
| | 1 | 57.5 | 61.4 | 55.6 | 61.2 | 60.9 | 60.3 | 59.7 | 57.8 | 56.9 | 56.0 | 55.9 | 55.7 | 57.5 | 10.0 | 67.5 |
| | 2 | 59.4 | 63.3 | 57.5 | 63.1 | 62.9 | 62.3 | 61.4 | 59.6 | 58.9 | 57.9 | 57.7 | 57.6 | 59.4 | 10.0 | 69.4 |
| | 3 | 59.1 | 62.5 | 57.4 | 62.2 | 61.9 | 61.3 | 60.8 | 59.5 | 58.7 | 57.9 | 57.7 | 57.5 | 59.1 | 10.0 | 69.1 |
| | 4 | 59.3 | 63.0 | 57.4 | 62.7 | 62.4 | 61.8 | 61.2 | 59.6 | 58.8 | 57.8 | 57.7 | 57.5 | 59.3 | 10.0 | 69.3 |
| | 5 | 59.7 | 65.4 | 57.6 | 65.0 | 64.6 | 63.3 | 62.2 | 59.7 | 58.8 | 57.9 | 57.8 | 57.6 | 59.7 | 10.0 | 69.7 |
| | 6 | 60.5 | 66.9 | 57.5 | 66.5 | 66.1 | 64.4 | 63.3 | 60.8 | 59.2 | 57.9 | 57.7 | 57.5 | 60.5 | 10.0 | 70.5 |
| Day | 7 | 60.2 | 66.2 | 56.2 | 65.7 | 65.2 | 63.9 | 63.1 | 60.8 | 59.3 | 56.8 | 56.5 | 56.3 | 60.2 | 0.0 | 60.2 |
| | 8 | 57.6 | 64.1 | 53.5 | 63.7 | 63.1 | 61.5 | 60.5 | 58.2 | 56.4 | 54.3 | 53.9 | 53.6 | 57.6 | 0.0 | 57.6 |
| | 9 | 56.8 | 63.8 | 51.7 | 63.4 | 62.8 | 61.4 | 60.5 | 57.4 | 55.2 | 52.6 | 52.2 | 51.8 | 56.8 | 0.0 | 56.8 |
| | 10 | 56.8 | 63.2 | 52.2 | 62.8 | 62.2 | 61.0 | 60.0 | 57.4 | 55.5 | 53.0 | 52.6 | 52.3 | 56.8 | 0.0 | 56.8 |
| | 11 | 59.0 | 67.1 | 54.2 | 66.7 | 66.3 | 64.2 | 62.5 | 58.8 | 57.2 | 55.0 | 54.6 | 54.3 | 59.0 | 0.0 | 59.0 |
| | 12 | 57.9 | 65.6 | 53.0 | 65.2 | 64.8 | 62.4 | 60.8 | 58.2 | 56.6 | 54.1 | 53.5 | 53.1 | 57.9 | 0.0 | 57.9 |
| | 13 | 57.5 | 65.6 | 51.9 | 65.2 | 64.3 | 62.4 | 61.0 | 57.6 | 55.8 | 53.0 | 52.5 | 52.1 | 57.5 | 0.0 | 57.5 |
| | 14 | 57.5 | 64.4 | 52.7 | 64.0 | 63.5 | 61.9 | 60.8 | 57.8 | 56.1 | 53.7 | 53.3 | 52.8 | 57.5 | 0.0 | 57.5 |
| | 15 | 58.0 | 65.3 | 52.5 | 64.8 | 64.2 | 62.8 | 61.5 | 58.4 | 56.5 | 53.9 | 53.4 | 52.7 | 58.0 | 0.0 | 58.0 |
| | 16 | 58.4 | 67.8 | 52.6 | 67.3 | 66.4 | 63.9 | 61.8 | 57.9 | 56.1 | 53.5 | 53.0 | 52.7 | 58.4 | 0.0 | 58.4 |
| | 17 | 58.8 | 67.6 | 54.0 | 66.9 | 65.8 | 63.0 | 61.6 | 59.0 | 57.3 | 54.9 | 54.5 | 54.1 | 58.8 | 0.0 | 58.8 |
| | 18 | 59.3 | 66.5 | 54.8 | 66.1 | 65.5 | 64.0 | 62.7 | 59.6 | 57.8 | 55.6 | 55.3 | 54.9 | 59.3 | 0.0 | 59.3 |
| | 19 | 59.5 | 69.8 | 53.7 | 69.3 | 68.3 | 65.7 | 63.3 | 58.4 | 56.5 | 54.4 | 54.1 | 53.8 | 59.5 | 5.0 | 64.5 |
| | 20 | 58.2 | 68.0 | 52.7 | 67.4 | 66.4 | 63.3 | 61.7 | 57.8 | 55.8 | 53.6 | 53.2 | 52.8 | 58.2 | 5.0 | 63.2 |
| | 21 | 58.7 | 68.6 | 51.3 | 68.3 | 67.9 | 66.1 | 63.4 | 57.0 | 54.7 | 52.2 | 51.7 | 51.4 | 58.7 | 5.0 | 63.7 |
| Night | 22 | 56.9 | 64.2 | 52.7 | 63.9 | 63.4 | 61.9 | 60.9 | 57.0 | 54.9 | 53.1 | 52.9 | 52.7 | 56.9 | 10.0 | 66.9 |
| | 23 | 58.5 | 63.3 | 56.1 | 62.9 | 62.7 | 61.9 | 61.3 | 58.8 | 57.7 | 56.6 | 56.4 | 56.2 | 58.5 | 10.0 | 68.5 |

| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 56.8 | 63.2 | 51.3 | 62.8 | 62.2 | 61.0 | 60.0 | 57.0 | 54.7 | 52.2 | 51.7 | 51.4 |
| | Max | 60.2 | 69.8 | 56.2 | 69.3 | 68.3 | 66.1 | 63.4 | 60.8 | 59.3 | 56.8 | 56.5 | 56.3 |
| Energy Average | | 58.4 | Average: | | 65.8 | 65.1 | 63.2 | 61.7 | 58.3 | 56.4 | 54.0 | 53.6 | 53.3 |
| Night | Min | 56.9 | 61.4 | 52.7 | 61.2 | 60.9 | 60.3 | 59.7 | 57.0 | 54.9 | 53.1 | 52.9 | 52.7 |
| | Max | 60.5 | 66.9 | 57.6 | 66.5 | 66.1 | 64.4 | 63.3 | 60.8 | 59.2 | 57.9 | 57.8 | 57.6 |
| Energy Average | | 59.0 | Average: | | 63.2 | 62.9 | 62.0 | 61.2 | 59.1 | 58.0 | 57.0 | 56.8 | 56.6 |

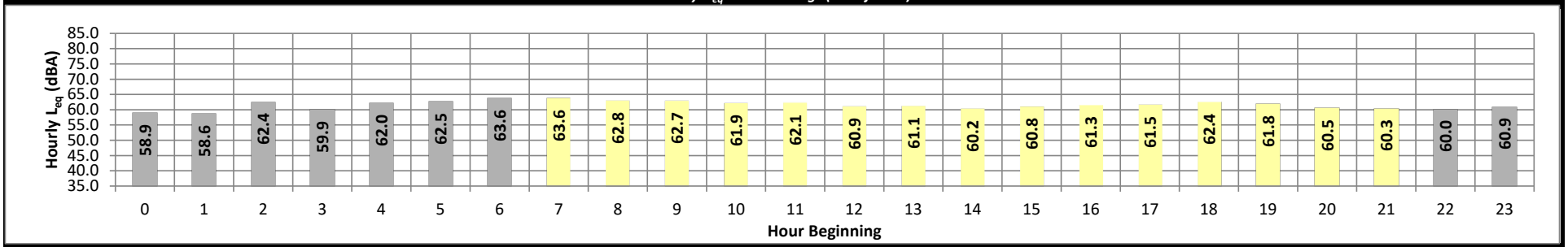
| $L_{eq}$ (dBA) | | |
|---|---|---|
| 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| **58.6** | **58.4** | **59.0** |

## 24-Hour Noise Level Measurement Summary

*Date:* Tuesday, March 8, 2022 | *Location:* L2 - Located northwest of the Project site near Hampton Inn & Suites Ontario at 4500 Ontario Mills Parkway. | *Meter:* Piccolo II | *JN:* 14539

*Project:* IE Distribution Center | *Analyst:* A. Khan

***Hourly $L_{eq}$ dBA Readings (unadjusted)***




| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | $L_{eq}$ | Adj. | Adj. $L_{eq}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Night | 0 | 58.9 | 65.8 | 55.4 | 65.6 | 65.1 | 63.4 | 62.2 | 58.8 | 57.4 | 56.0 | 55.8 | 55.5 | 58.9 | 10.0 | 68.9 |
| | 1 | 58.6 | 67.0 | 54.5 | 66.7 | 66.1 | 63.8 | 61.7 | 58.2 | 56.5 | 55.1 | 54.8 | 54.6 | 58.6 | 10.0 | 68.6 |
| | 2 | 62.4 | 73.3 | 56.8 | 73.0 | 71.9 | 68.3 | 65.6 | 61.2 | 59.1 | 57.4 | 57.2 | 56.9 | 62.4 | 10.0 | 72.4 |
| | 3 | 59.9 | 68.0 | 56.6 | 67.7 | 67.0 | 64.6 | 62.9 | 59.6 | 58.2 | 57.1 | 56.9 | 56.7 | 59.9 | 10.0 | 69.9 |
| | 4 | 62.0 | 73.1 | 57.2 | 72.7 | 71.5 | 67.3 | 64.7 | 60.6 | 58.8 | 57.6 | 57.4 | 57.2 | 62.0 | 10.0 | 72.0 |
| | 5 | 62.5 | 70.9 | 58.9 | 70.6 | 69.8 | 67.2 | 65.5 | 62.4 | 60.6 | 59.3 | 59.1 | 59.0 | 62.5 | 10.0 | 72.5 |
| | 6 | 63.6 | 72.3 | 57.9 | 71.9 | 71.3 | 69.3 | 67.8 | 63.7 | 60.7 | 58.4 | 58.2 | 57.9 | 63.6 | 10.0 | 73.6 |
| Day | 7 | 63.6 | 72.5 | 56.1 | 72.1 | 71.4 | 69.2 | 68.1 | 64.1 | 60.6 | 56.8 | 56.5 | 56.2 | 63.6 | 0.0 | 63.6 |
| | 8 | 62.8 | 71.7 | 54.4 | 71.3 | 70.7 | 68.7 | 67.2 | 63.3 | 59.4 | 55.4 | 54.9 | 54.5 | 62.8 | 0.0 | 62.8 |
| | 9 | 62.7 | 72.6 | 53.1 | 72.2 | 71.5 | 69.0 | 67.2 | 62.7 | 58.6 | 54.2 | 53.6 | 53.2 | 62.7 | 0.0 | 62.7 |
| | 10 | 61.9 | 71.7 | 53.6 | 71.2 | 70.4 | 67.9 | 65.9 | 62.1 | 58.8 | 54.5 | 54.1 | 53.7 | 61.9 | 0.0 | 61.9 |
| | 11 | 62.1 | 70.9 | 55.1 | 70.4 | 69.6 | 67.6 | 66.4 | 62.4 | 59.3 | 56.1 | 55.7 | 55.3 | 62.1 | 0.0 | 62.1 |
| | 12 | 60.9 | 70.9 | 52.6 | 69.9 | 69.2 | 67.0 | 65.0 | 60.9 | 58.0 | 53.9 | 53.2 | 52.7 | 60.9 | 0.0 | 60.9 |
| | 13 | 61.1 | 71.3 | 52.1 | 70.8 | 70.0 | 67.2 | 65.1 | 60.8 | 57.4 | 53.3 | 52.7 | 52.3 | 61.1 | 0.0 | 61.1 |
| | 14 | 60.2 | 69.0 | 51.2 | 68.7 | 68.1 | 66.0 | 64.6 | 60.6 | 57.2 | 52.6 | 51.8 | 51.4 | 60.2 | 0.0 | 60.2 |
| | 15 | 60.8 | 69.9 | 52.1 | 69.5 | 68.8 | 66.7 | 65.2 | 61.2 | 57.7 | 53.4 | 52.7 | 52.2 | 60.8 | 0.0 | 60.8 |
| | 16 | 61.3 | 70.5 | 52.6 | 70.1 | 69.4 | 67.1 | 65.6 | 61.7 | 58.3 | 53.8 | 53.2 | 52.7 | 61.3 | 0.0 | 61.3 |
| | 17 | 61.5 | 70.1 | 54.4 | 69.7 | 69.1 | 66.9 | 65.3 | 61.9 | 59.1 | 55.6 | 55.0 | 54.5 | 61.5 | 0.0 | 61.5 |
| | 18 | 62.4 | 71.8 | 55.6 | 71.4 | 70.9 | 68.5 | 66.5 | 62.0 | 59.4 | 56.4 | 56.0 | 55.7 | 62.4 | 0.0 | 62.4 |
| | 19 | 61.8 | 72.5 | 53.9 | 72.1 | 71.3 | 68.0 | 65.8 | 60.7 | 57.8 | 54.7 | 54.3 | 54.0 | 61.8 | 5.0 | 66.8 |
| | 20 | 60.5 | 69.2 | 53.4 | 68.8 | 68.3 | 66.3 | 64.8 | 60.7 | 57.3 | 54.2 | 53.8 | 53.5 | 60.5 | 5.0 | 65.5 |
| | 21 | 60.3 | 70.4 | 52.4 | 69.9 | 69.1 | 66.5 | 64.9 | 60.0 | 56.3 | 53.2 | 52.9 | 52.5 | 60.3 | 5.0 | 65.3 |
| Night | 22 | 60.0 | 69.8 | 53.5 | 69.5 | 69.1 | 66.5 | 64.2 | 59.0 | 56.3 | 54.1 | 53.8 | 53.6 | 60.0 | 10.0 | 70.0 |
| | 23 | 60.9 | 71.0 | 56.0 | 70.3 | 69.4 | 66.4 | 64.4 | 60.0 | 58.0 | 56.6 | 56.3 | 56.1 | 60.9 | 10.0 | 70.9 |

| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 60.2 | 69.0 | 51.2 | 68.7 | 68.1 | 66.0 | 64.6 | 60.0 | 56.3 | 52.6 | 51.8 | 51.4 |
| | Max | 63.6 | 72.6 | 56.1 | 72.2 | 71.5 | 69.2 | 68.1 | 64.1 | 60.6 | 56.8 | 56.5 | 56.2 |
| Energy Average | | 61.7 | Average: | | 70.5 | 69.8 | 67.5 | 65.8 | 61.7 | 58.3 | 54.5 | 54.0 | 53.6 |
| Night | Min | 58.6 | 65.8 | 53.5 | 65.6 | 65.1 | 63.4 | 61.7 | 58.2 | 56.3 | 54.1 | 53.8 | 53.6 |
| | Max | 63.6 | 73.3 | 58.9 | 73.0 | 71.9 | 69.3 | 67.8 | 63.7 | 60.7 | 59.3 | 59.1 | 59.0 |
| Energy Average | | 61.3 | Average: | | 69.8 | 69.0 | 66.3 | 64.3 | 60.4 | 58.4 | 56.8 | 56.6 | 56.4 |

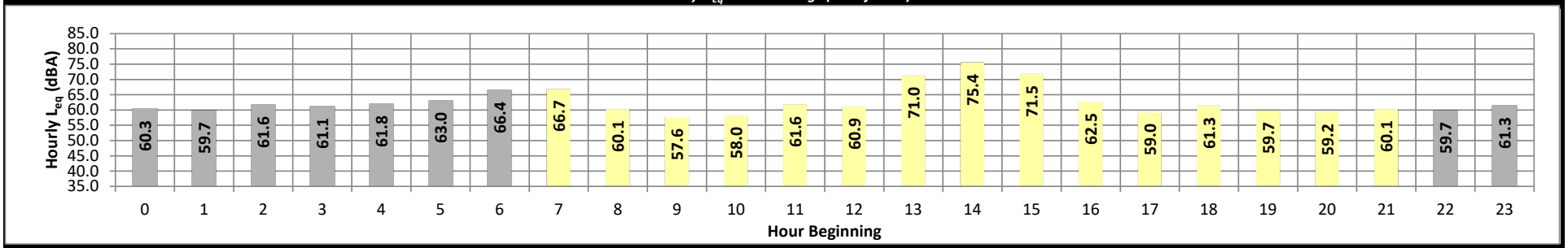
| $L_{eq}$ (dBA) | | |
|---|---|---|
| 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| **61.5** | **61.7** | **61.3** |

## 24-Hour Noise Level Measurement Summary

*Date:* Tuesday, March 8, 2022 *Location:* L3 - Located northwest of the Project site near Country Inn & Suites by Radisson, Ontario at Ontario Mills at 4674 Ontario Mills Parkway. *Meter:* Piccolo II *JN:* 14539

*Project:* IE Distribution Center *Source:* *Analyst:* A. Khan

***Hourly $L_{eq}$ dBA Readings (unadjusted)***




| *Timeframe* | *Hour* | *$L_{eq}$* | *$L_{max}$* | *$L_{min}$* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* | *$L_{eq}$* | *Adj.* | *Adj. $L_{eq}$* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Night | 0 | 60.3 | 63.8 | 58.3 | 63.4 | 63.0 | 62.3 | 61.9 | 60.8 | 60.0 | 58.8 | 58.6 | 58.4 | 60.3 | 10.0 | 70.3 |
| | 1 | 59.7 | 63.0 | 57.6 | 62.7 | 62.5 | 61.8 | 61.4 | 60.2 | 59.3 | 58.2 | 57.9 | 57.7 | 59.7 | 10.0 | 69.7 |
| | 2 | 61.6 | 64.9 | 59.4 | 64.6 | 64.4 | 63.8 | 63.4 | 62.2 | 61.1 | 59.9 | 59.7 | 59.5 | 61.6 | 10.0 | 71.6 |
| | 3 | 61.1 | 64.6 | 59.1 | 64.3 | 64.0 | 63.3 | 62.7 | 61.5 | 60.7 | 59.6 | 59.4 | 59.2 | 61.1 | 10.0 | 71.1 |
| | 4 | 61.8 | 65.6 | 59.7 | 65.3 | 65.0 | 64.3 | 63.6 | 62.1 | 61.4 | 60.3 | 60.1 | 59.8 | 61.8 | 10.0 | 71.8 |
| | 5 | 63.0 | 65.7 | 61.4 | 65.5 | 65.2 | 64.7 | 64.3 | 63.4 | 62.7 | 61.9 | 61.7 | 61.4 | 63.0 | 10.0 | 73.0 |
| | 6 | 66.4 | 75.9 | 61.8 | 75.5 | 75.0 | 72.7 | 70.8 | 64.9 | 63.2 | 62.2 | 62.1 | 61.8 | 66.4 | 10.0 | 76.4 |
| Day | 7 | 66.7 | 70.4 | 63.6 | 70.1 | 69.8 | 69.2 | 68.7 | 67.2 | 66.4 | 64.6 | 64.2 | 63.7 | 66.7 | 0.0 | 66.7 |
| | 8 | 60.1 | 68.3 | 55.8 | 68.0 | 67.5 | 66.0 | 64.1 | 59.4 | 57.9 | 56.5 | 56.3 | 56.0 | 60.1 | 0.0 | 60.1 |
| | 9 | 57.6 | 62.4 | 54.6 | 62.1 | 61.7 | 60.8 | 60.1 | 58.2 | 56.9 | 55.2 | 54.9 | 54.7 | 57.6 | 0.0 | 57.6 |
| | 10 | 58.0 | 62.2 | 55.4 | 61.9 | 61.6 | 60.8 | 60.3 | 58.7 | 57.4 | 56.0 | 55.8 | 55.5 | 58.0 | 0.0 | 58.0 |
| | 11 | 61.6 | 65.8 | 58.9 | 65.3 | 64.8 | 63.9 | 63.4 | 62.2 | 61.2 | 59.8 | 59.5 | 59.1 | 61.6 | 0.0 | 61.6 |
| | 12 | 60.9 | 66.1 | 57.9 | 65.7 | 65.3 | 64.2 | 63.8 | 61.3 | 60.0 | 58.6 | 58.4 | 58.1 | 60.9 | 0.0 | 60.9 |
| | 13 | 71.0 | 83.9 | 77.2 | 83.8 | 83.6 | 82.9 | 82.4 | 80.4 | 78.9 | 77.5 | 77.4 | 77.2 | 71.0 | 0.0 | 71.0 |
| | 14 | 75.4 | 81.3 | 70.4 | 81.1 | 80.8 | 79.7 | 79.0 | 76.5 | 74.5 | 71.7 | 71.2 | 70.5 | 75.4 | 0.0 | 75.4 |
| | 15 | 71.5 | 78.8 | 67.5 | 78.6 | 78.3 | 77.4 | 76.8 | 73.9 | 71.8 | 69.3 | 68.9 | 68.1 | 71.5 | 0.0 | 71.5 |
| | 16 | 62.5 | 67.0 | 57.5 | 66.8 | 66.5 | 65.9 | 65.2 | 63.6 | 62.1 | 58.6 | 58.1 | 57.6 | 62.5 | 0.0 | 62.5 |
| | 17 | 59.0 | 64.7 | 56.2 | 64.2 | 63.8 | 62.4 | 61.5 | 59.3 | 58.2 | 56.8 | 56.6 | 56.3 | 59.0 | 0.0 | 59.0 |
| | 18 | 61.3 | 67.5 | 58.1 | 67.1 | 66.6 | 64.8 | 63.8 | 61.6 | 60.3 | 58.7 | 58.5 | 58.2 | 61.3 | 0.0 | 61.3 |
| | 19 | 59.7 | 64.4 | 57.0 | 64.0 | 63.5 | 62.5 | 61.9 | 60.3 | 59.2 | 57.6 | 57.3 | 57.1 | 59.7 | 5.0 | 64.7 |
| | 20 | 59.2 | 63.6 | 56.5 | 63.2 | 62.9 | 61.8 | 61.2 | 59.7 | 58.6 | 57.2 | 56.9 | 56.6 | 59.2 | 5.0 | 64.2 |
| | 21 | 60.1 | 66.3 | 57.1 | 65.8 | 65.3 | 63.7 | 62.5 | 60.3 | 59.2 | 57.7 | 57.4 | 57.2 | 60.1 | 5.0 | 65.1 |
| Night | 22 | 59.7 | 64.2 | 57.1 | 63.9 | 63.6 | 62.8 | 61.9 | 60.2 | 59.1 | 57.7 | 57.4 | 57.2 | 59.7 | 10.0 | 69.7 |
| | 23 | 61.3 | 64.8 | 59.2 | 64.6 | 64.4 | 63.7 | 63.2 | 61.7 | 60.9 | 59.7 | 59.5 | 59.2 | 61.3 | 10.0 | 71.3 |

| *Timeframe* | *Hour* | *$L_{eq}$* | *$L_{max}$* | *$L_{min}$* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 57.6 | 62.2 | 54.6 | 61.9 | 61.6 | 60.8 | 60.1 | 58.2 | 56.9 | 55.2 | 54.9 | 54.7 |
| | Max | 75.4 | 83.9 | 77.2 | 83.8 | 83.6 | 82.9 | 82.4 | 80.4 | 78.9 | 77.5 | 77.4 | 77.2 |
| Energy Average | | 67.1 | Average: | | 68.5 | 68.1 | 67.1 | 66.3 | 64.2 | 62.8 | 61.1 | 60.7 | 60.4 |
| Night | Min | 59.7 | 63.0 | 57.1 | 62.7 | 62.5 | 61.8 | 61.4 | 60.2 | 59.1 | 57.7 | 57.4 | 57.2 |
| | Max | 66.4 | 75.9 | 61.8 | 75.5 | 75.0 | 72.7 | 70.8 | 64.9 | 63.2 | 62.2 | 62.1 | 61.8 |
| Energy Average | | 62.2 | Average: | | 65.5 | 65.2 | 64.4 | 63.7 | 61.9 | 60.9 | 59.8 | 59.6 | 59.4 |

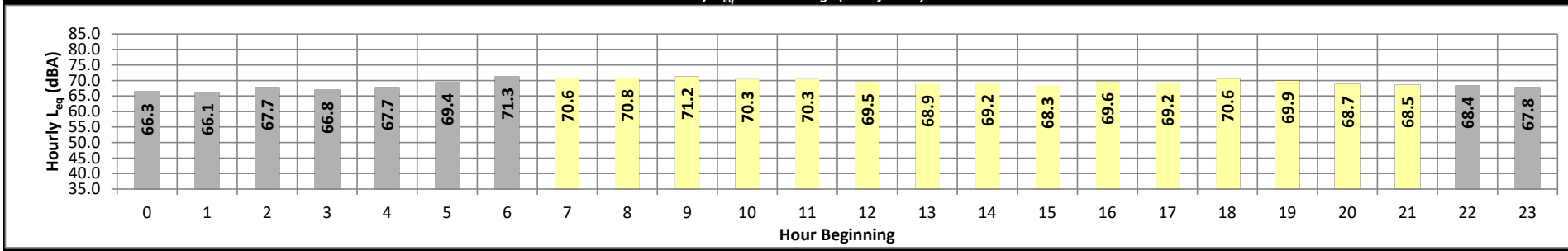
| *24-Hour* | *$L_{eq}$ (dBA) Daytime (7am-10pm)* | *Nighttime (10pm-7am)* |
|---|---|---|
| **65.9** | **67.1** | **62.2** |

## 24-Hour Noise Level Measurement Summary

*Date:* Tuesday, March 8, 2022 *Location:* L4 - Located northwest of the Project site near Hyatt Place *Meter:* Piccolo II *JN:* 14539

*Project:* IE Distribution Center *Source:* Ontario/Rancho Cucamonga at 4760 Mills Circle. *Analyst:* A. Khan

***Hourly $L_{eq}$ dBA Readings (unadjusted)***




| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | $L_{eq}$ | Adj. | Adj. $L_{eq}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Night | 0 | 66.3 | 74.6 | 62.4 | 74.0 | 73.1 | 71.0 | 69.5 | 66.1 | 64.5 | 62.9 | 62.7 | 62.5 | 66.3 | 10.0 | 76.3 |
| | 1 | 66.1 | 73.9 | 62.4 | 73.3 | 72.6 | 70.5 | 69.3 | 66.2 | 64.6 | 63.0 | 62.8 | 62.5 | 66.1 | 10.0 | 76.1 |
| | 2 | 67.7 | 76.8 | 63.3 | 76.2 | 75.3 | 72.6 | 70.8 | 67.4 | 65.7 | 63.8 | 63.6 | 63.4 | 67.7 | 10.0 | 77.7 |
| | 3 | 66.8 | 76.5 | 62.7 | 75.8 | 74.8 | 71.5 | 69.5 | 66.3 | 64.9 | 63.3 | 63.0 | 62.8 | 66.8 | 10.0 | 76.8 |
| | 4 | 67.7 | 75.6 | 64.2 | 75.0 | 74.1 | 72.1 | 70.6 | 67.7 | 66.3 | 64.7 | 64.5 | 64.3 | 67.7 | 10.0 | 77.7 |
| | 5 | 69.4 | 78.3 | 65.6 | 77.7 | 76.6 | 73.9 | 72.4 | 69.1 | 67.5 | 66.2 | 66.0 | 65.7 | 69.4 | 10.0 | 79.4 |
| | 6 | 71.3 | 81.9 | 65.8 | 81.5 | 80.5 | 77.0 | 74.7 | 70.2 | 68.0 | 66.4 | 66.2 | 65.9 | 71.3 | 10.0 | 81.3 |
| Day | 7 | 70.6 | 80.7 | 64.3 | 80.0 | 79.0 | 76.3 | 74.5 | 70.5 | 67.4 | 64.9 | 64.6 | 64.4 | 70.6 | 0.0 | 70.6 |
| | 8 | 70.8 | 81.1 | 65.4 | 80.6 | 79.6 | 76.1 | 73.9 | 70.3 | 68.0 | 66.0 | 65.7 | 65.5 | 70.8 | 0.0 | 70.8 |
| | 9 | 71.2 | 80.7 | 66.6 | 80.2 | 79.3 | 76.8 | 75.0 | 70.6 | 68.6 | 67.2 | 67.0 | 66.7 | 71.2 | 0.0 | 71.2 |
| | 10 | 70.3 | 80.5 | 65.8 | 79.8 | 78.5 | 75.3 | 73.4 | 69.7 | 67.8 | 66.3 | 66.0 | 65.8 | 70.3 | 0.0 | 70.3 |
| | 11 | 70.3 | 78.5 | 66.1 | 78.0 | 77.3 | 75.3 | 73.8 | 70.3 | 68.3 | 66.7 | 66.5 | 66.2 | 70.3 | 0.0 | 70.3 |
| | 12 | 69.5 | 77.1 | 65.8 | 76.6 | 75.9 | 73.9 | 72.6 | 69.7 | 67.8 | 66.3 | 66.1 | 65.8 | 69.5 | 0.0 | 69.5 |
| | 13 | 68.9 | 78.4 | 64.5 | 77.7 | 76.6 | 73.9 | 72.4 | 68.6 | 66.6 | 65.0 | 64.8 | 64.6 | 68.9 | 0.0 | 68.9 |
| | 14 | 69.2 | 78.5 | 65.0 | 78.0 | 77.0 | 74.2 | 72.2 | 69.0 | 67.0 | 65.5 | 65.3 | 65.1 | 69.2 | 0.0 | 69.2 |
| | 15 | 68.3 | 76.8 | 62.5 | 76.3 | 75.4 | 73.6 | 72.3 | 68.8 | 65.8 | 63.2 | 62.9 | 62.6 | 68.3 | 0.0 | 68.3 |
| | 16 | 69.6 | 78.8 | 63.8 | 78.4 | 77.5 | 75.2 | 73.5 | 69.7 | 66.9 | 64.5 | 64.2 | 63.9 | 69.6 | 0.0 | 69.6 |
| | 17 | 69.2 | 77.9 | 63.4 | 77.4 | 76.5 | 74.4 | 73.0 | 69.6 | 66.9 | 64.1 | 63.8 | 63.5 | 69.2 | 0.0 | 69.2 |
| | 18 | 70.6 | 80.3 | 65.7 | 79.7 | 78.8 | 76.0 | 74.2 | 70.1 | 67.8 | 66.3 | 66.1 | 65.8 | 70.6 | 0.0 | 70.6 |
| | 19 | 69.9 | 78.5 | 65.7 | 78.0 | 77.4 | 75.5 | 73.7 | 69.4 | 67.6 | 66.2 | 66.0 | 65.8 | 69.9 | 5.0 | 74.9 |
| | 20 | 68.7 | 75.2 | 65.8 | 74.8 | 74.2 | 72.2 | 71.3 | 68.9 | 67.6 | 66.4 | 66.2 | 65.9 | 68.7 | 5.0 | 73.7 |
| | 21 | 68.5 | 75.8 | 64.9 | 75.4 | 74.7 | 73.1 | 72.0 | 68.4 | 66.9 | 65.4 | 65.2 | 65.0 | 68.5 | 5.0 | 73.5 |
| Night | 22 | 68.4 | 77.0 | 63.9 | 76.6 | 75.9 | 74.1 | 72.3 | 67.8 | 66.1 | 64.4 | 64.2 | 64.0 | 68.4 | 10.0 | 78.4 |
| | 23 | 67.8 | 76.1 | 64.0 | 75.6 | 74.7 | 72.4 | 70.8 | 67.7 | 66.1 | 64.5 | 64.3 | 64.1 | 67.8 | 10.0 | 77.8 |

| Timeframe | Hour | $L_{eq}$ | $L_{max}$ | $L_{min}$ | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 68.3 | 75.2 | 62.5 | 74.8 | 74.2 | 72.2 | 71.3 | 68.4 | 65.8 | 63.2 | 62.9 | 62.6 |
| | Max | 71.2 | 81.1 | 66.6 | 80.6 | 79.6 | 76.8 | 75.0 | 70.6 | 68.6 | 67.2 | 67.0 | 66.7 |
| Energy Average | | 69.8 | Average: | | 78.1 | 77.2 | 74.8 | 73.2 | 69.6 | 67.4 | 65.6 | 65.4 | 65.1 |
| Night | Min | 66.1 | 73.9 | 62.4 | 73.3 | 72.6 | 70.5 | 69.3 | 66.1 | 64.5 | 62.9 | 62.7 | 62.5 |
| | Max | 71.3 | 81.9 | 65.8 | 81.5 | 80.5 | 77.0 | 74.7 | 70.2 | 68.0 | 66.4 | 66.2 | 65.9 |
| Energy Average | | 68.2 | Average: | | 76.2 | 75.3 | 72.8 | 71.1 | 67.6 | 66.0 | 64.4 | 64.1 | 63.9 |

| $L_{eq}$ (dBA) | | |
|---|---|---|
| 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| **69.3** | **69.8** | **68.2** |

# APPENDIX 7.1:

# CADNAA OPERATIONAL NOISE MODEL INPUTS

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# 14539 - IE Distribution Center #14

**CadnaA Noise Prediction Model:** 14539-02.cna
**Date:** 25.07.22
**Analyst:** S. Shami

## Calculation Configuration

| Configuration | |
|---|---|
| **Parameter** | **Value** |
| **General** | |
| **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** | |
| **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 (TNM)** | |
| **Railways (FTA/FRA)** | |
| **Aircraft (???)** | |
| **Strictly acc. to AzB** | |

## Receiver Noise Levels

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Night | CNEL | Day | Night | CNEL | Type | Auto | Noise Type | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (ft) | | (ft) | (ft) | (ft) |
| RECEIVERS | | R1 | 22.1 | 22.1 | 28.7 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6166354.34 | 2335548.36 | 5.00 |
| RECEIVERS | | R2 | 26.2 | 26.1 | 32.8 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6167586.75 | 2335500.55 | 5.00 |
| RECEIVERS | | R3 | 27.4 | 27.3 | 34.0 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168040.49 | 2335084.87 | 5.00 |
| RECEIVERS | | R4 | 27.2 | 27.1 | 33.8 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168984.89 | 2335492.36 | 5.00 |

## Point Source(s)

| Name | M. | ID | Result. PWL | | | Lw / Li | | | Operating Time | | | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | (ft) | | (ft) | (ft) | (ft) |
| POINTSOURCE | | TRASH01 | 89.0 | 89.0 | 89.0 | Lw | 89.0 | | 150.00 | 0.00 | 90.00 | 5.00 | a | 6173094.91 | 2332777.46 | 5.00 |
| POINTSOURCE | | TRASH02 | 89.0 | 89.0 | 89.0 | Lw | 89.0 | | 150.00 | 0.00 | 90.00 | 5.00 | a | 6172317.38 | 2332781.06 | 5.00 |
| POINTSOURCE | | AC01 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | | 585.00 | 0.00 | 252.00 | 5.00 | g | 6172196.56 | 2332896.19 | 50.00 |
| POINTSOURCE | | AC02 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | | 585.00 | 0.00 | 252.00 | 5.00 | g | 6173241.85 | 2332919.06 | 50.00 |
| POINTSOURCE | | PARK01 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6172137.90 | 2332843.70 | 5.00 |
| POINTSOURCE | | PARK02 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6172137.12 | 2332947.90 | 5.00 |
| POINTSOURCE | | PARK03 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6172133.27 | 2333035.12 | 5.00 |
| POINTSOURCE | | PARK04 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6172127.86 | 2333143.17 | 5.00 |
| POINTSOURCE | | PARK05 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173305.95 | 2332942.58 | 5.00 |
| POINTSOURCE | | PARK06 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173305.95 | 2333040.09 | 5.00 |
| POINTSOURCE | | PARK07 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173303.27 | 2333139.40 | 5.00 |
| POINTSOURCE | | PARK08 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173299.69 | 2333226.18 | 5.00 |
| POINTSOURCE | | PARK09 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173256.74 | 2333243.18 | 5.00 |
| POINTSOURCE | | PARK10 | 87.8 | 87.8 | 87.8 | Lw | 87.8 | | | | | 5.00 | a | 6173166.38 | 2333243.18 | 5.00 |

## Line Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL' | | | Lw / Li | | | Operating Time | | | 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 | 73.8 | 73.8 | 73.8 | Lw | 93.2 | | | | | | | | | 8 | a |
| LINESOURCE | | TRUCK02 | 93.2 | 93.2 | 93.2 | 74.8 | 74.8 | 74.8 | Lw | 93.2 | | | | | | | | | 8 | a |

| Name | Height | | | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|
| | Begin | | End | | x | y | z | Ground |
| | (ft) | | (ft) | | (ft) | (ft) | (ft) | (ft) |
| LINESOURCE | 8.00 | a | | | 6173104.76 | 2332844.63 | 8.00 | 0.00 |
| | | | | | 6173286.17 | 2332846.24 | 8.00 | 0.00 |
| | | | | | 6173287.75 | 2332742.15 | 8.00 | 0.00 |
| LINESOURCE | 8.00 | a | | | 6172308.47 | 2332817.94 | 8.00 | 0.00 |
| | | | | | 6172152.71 | 2332813.00 | 8.00 | 0.00 |
| | | | | | 6172154.29 | 2332742.76 | 8.00 | 0.00 |

## Area Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL'' | | | Lw / Li | | | Operating Time | | | Height | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | (ft) | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| AREASOURCE | | DOCK01 | 111.5 | 111.5 | 111.5 | 70.1 | 70.1 | 70.1 | Lw | 111.5 | | | | | 8 | a |

| Name | Height | | | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|
| | Begin | | End | | x | y | z | Ground |
| | (ft) | | (ft) | | (ft) | (ft) | (ft) | (ft) |
| AREASOURCE | 8.00 | a | | | 6172330.01 | 2332949.14 | 8.00 | 0.00 |
| | | | | | 6173102.54 | 2332961.81 | 8.00 | 0.00 |
| | | | | | 6173104.12 | 2332898.48 | 8.00 | 0.00 |
| | | | | | 6173105.70 | 2332765.51 | 8.00 | 0.00 |
| | | | | | 6172307.84 | 2332768.67 | 8.00 | 0.00 |
| | | | | | 6172309.27 | 2332880.67 | 8.00 | 0.00 |
| | | | | | 6172328.42 | 2332881.07 | 8.00 | 0.00 |

## Building(s)

| Name | M. | ID | RB | Residents | Absorption | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Begin | | x | y | z | Ground |
| | | | | | | (ft) | | (ft) | (ft) | (ft) | (ft) |
| BUILDING | | BUILDING00001 | x | 0 | | 45.00 | a | 6172170.12 | 2333172.35 | 45.00 | 0.00 |
| | | | | | | | | 6173265.59 | 2333197.68 | 45.00 | 0.00 |
| | | | | | | | | 6173268.76 | 2332898.48 | 45.00 | 0.00 |
| | | | | | | | | 6173104.12 | 2332898.48 | 45.00 | 0.00 |
| | | | | | | | | 6173102.54 | 2332961.81 | 45.00 | 0.00 |
| | | | | | | | | 6172330.01 | 2332949.14 | 45.00 | 0.00 |
| | | | | | | | | 6172328.42 | 2332881.07 | 45.00 | 0.00 |
| | | | | | | | | 6172178.03 | 2332877.90 | 45.00 | 0.00 |

# APPENDIX 8.1:

# CADNAA CONSTRUCTION NOISE MODEL INPUTS

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# 14539 - IE Distribution Center #14

**CadnaA Noise Prediction Model:** 14539-02 - Construction.cna
**Date:** 25.07.22
**Analyst:** S. Shami

## Calculation Configuration

| Configuration | |
|---|---|
| **Parameter** | **Value** |
| **General** | |
| **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** | |
| **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 (TNM)** | |
| **Railways (FTA/FRA)** | |
| **Aircraft (???)** | |
| **Strictly acc. to AzB** | |

## Receiver Noise Levels

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Night | CNEL | Day | Night | CNEL | Type | Auto | Noise Type | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (ft) | | (ft) | (ft) | (ft) |
| RECEIVERS | | R1 | 33.6 | 33.6 | 40.3 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6166354.34 | 2335548.36 | 5.00 |
| RECEIVERS | | R2 | 35.9 | 35.9 | 42.5 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6167586.75 | 2335500.55 | 5.00 |
| RECEIVERS | | R3 | 37.1 | 37.1 | 43.8 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168040.49 | 2335084.87 | 5.00 |
| RECEIVERS | | R4 | 38.6 | 38.6 | 45.3 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168984.89 | 2335492.36 | 5.00 |

## Area Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL'' | | | Lw / Li | | | Operating Time | | | Height | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | (ft) | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| SITEBOUNDARY | | CONSTRUCTION | 115.0 | 115.0 | 115.0 | 67.6 | 67.6 | 67.6 | Lw | 115 | | | | | 8 | a |

| Name | Height | | | Coordinates | | | |
|---|---|---|---|---|---|---|---|
| | Begin | | End | x | y | z | Ground |
| | (ft) | | (ft) | (ft) | (ft) | (ft) | (ft) |
| SITEBOUNDARY | 8.00 | a | | 6172109.54 | 2333205.54 | 8.00 | 0.00 |
| | | | | 6173121.48 | 2333222.49 | 8.00 | 0.00 |
| | | | | 6173122.48 | 2333272.51 | 8.00 | 0.00 |
| | | | | 6173325.40 | 2333275.95 | 8.00 | 0.00 |
| | | | | 6173334.39 | 2332742.12 | 8.00 | 0.00 |
| | | | | 6172116.20 | 2332742.78 | 8.00 | 0.00 |

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# APPENDIX 8.2:

# CADNAA CONCRETE POUR NOISE MODEL INPUTS

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# 14539 - IE Distribution Center #14

**CadnaA Noise Prediction Model:** 14539-02 - ConcretePour.cna
**Date:** 25.07.22
**Analyst:** S. Shami

## Calculation Configuration

| Configuration | |
|---|---|
| **Parameter** | **Value** |
| **General** | |
| **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** | |
| **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 (TNM)** | |
| **Railways (FTA/FRA)** | |
| **Aircraft (???)** | |
| **Strictly acc. to AzB** | |

## Receiver Noise Levels

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Night | CNEL | Day | Night | CNEL | Type | Auto | Noise Type | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (ft) | | (ft) | (ft) | (ft) |
| RECEIVERS | | R1 | 18.6 | 18.6 | 25.2 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6166354.34 | 2335548.36 | 5.00 |
| RECEIVERS | | R2 | 21.2 | 21.2 | 27.9 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6167586.75 | 2335500.55 | 5.00 |
| RECEIVERS | | R3 | 22.5 | 22.5 | 29.2 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168040.49 | 2335084.87 | 5.00 |
| RECEIVERS | | R4 | 24.1 | 24.1 | 30.7 | 65.0 | 45.0 | 0.0 | | | | 5.00 | a | 6168984.89 | 2335492.36 | 5.00 |

## Area Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL" | | | Lw / Li | | | Operating Time | | | Height | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | (ft) | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| BUILDING | | CONCRETEPOUR | 100.3 | 100.3 | 100.3 | 56.3 | 56.3 | 56.3 | Lw | 100.3 | | | | | 8 | a |

| Name | Height | | | Coordinates | | | |
|---|---|---|---|---|---|---|---|
| | Begin | | End | x | y | z | Ground |
| | (ft) | | (ft) | (ft) | (ft) | (ft) | (ft) |
| BUILDING | 8.00 | a | | 6172170.12 | 2333172.35 | 8.00 | 0.00 |
| | | | | 6173265.59 | 2333197.68 | 8.00 | 0.00 |
| | | | | 6173268.76 | 2332898.48 | 8.00 | 0.00 |
| | | | | 6173104.12 | 2332898.48 | 8.00 | 0.00 |
| | | | | 6173102.54 | 2332961.81 | 8.00 | 0.00 |
| | | | | 6172330.01 | 2332949.14 | 8.00 | 0.00 |
| | | | | 6172328.42 | 2332881.07 | 8.00 | 0.00 |
| | | | | 6172178.03 | 2332877.90 | 8.00 | 0.00 |

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