Appendix H Noise Analysis Technical Report for the Solana Torrance Project City of Torrance, California

Appendices

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Noise Analysis Technical Report for the Solana Torrance Project City of Torrance, California

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AMSL	above mean sea level
ANSI	American National Standards Institute
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Torrance
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
EIR	Environmental Impact Report
FICON	Federal Interagency Committee on Noise
L_{dn}	Day Night Level (also referred to as DNL)
L_{eq}	equivalent sound level
L_{eq} (1-hr)	1-hour A-weighted equivalent sound level
L_{max}	maximum sound level during the measurement interval
L_n	level equaled or exceeded “n” percent of the time
MM	mitigation measure
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
RMS	Root Mean Square
TNM	Traffic Noise Model
VdB	velocity decibel

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EXECUTIVE SUMMARY

The purpose of this technical report is to assess the potential noise and groundborne vibration impacts associated with implementation of the proposed Solana Torrance Project (project). This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

The project site is an assemblage of terraced, existing parcels covering 24.68 acres on the southwest corner of Via Valmonte and Hawthorne Boulevard in the City of Torrance, California. Topography ranges from natural open space on a significant hillside to a highly disturbed area that contains a former diatomaceous soil surface mine. The 5.71 acre portion of the site that encompasses the disturbed surface mine area will be reclaimed and redeveloped. The remaining 18.97 acres of the total site will be preserved as open space.

Proposed development on the 5.71 acre portion consists of 248 multifamily residential apartments and a 7,475 square foot leasing office/community clubhouse in three (3) four- and five-story residential structures constructed over at-grade parking garages. A free-standing, five (5) level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. The project's residential unit mix will include 135 one-bedroom units and 113 two-bedroom units. A total of 478 parking spaces will be provided by a combination of surface parking and in the parking structures. Construction of the project is estimated to last approximately 29 months.

Dudek acoustical specialists have evaluated the potential noise and groundborne vibration impacts associated with the proposed project. The analysis addressed potential noise impacts from construction and operation (traffic, on-site equipment, rooftop deck activities and parking structure) of the project at adjacent noise-sensitive receivers and from traffic noise at the proposed future on-site residential land uses, as well as potential groundborne vibration impacts during construction and operation. Noise from Torrance Municipal Airport (Zamperini Field), located approximately 0.5 mile to the northeast, is also addressed. Residential land uses are located to the north, east and west of the proposed project.

The results indicate that the proposed project would not result in a measurable or audible increase in traffic noise levels at nearby noise-sensitive land uses. With implementation of mitigation measures specified in this report, on-site traffic and operational noise levels would be in compliance with California Environmental Quality Act (CEQA) significance criteria and City noise standards corresponding to low medium density residential land uses. Similarly, with implementation of mitigation measures construction noise will be in compliance with CEQA significance criteria and City standards for construction. Groundborne vibration during

construction and operation would be less than significant without mitigation. Additionally, the construction and operation of the proposed project would not result in the exposure of persons to excessive noise levels related to airports or airstrips.

1 INTRODUCTION

1.1 Report Purpose and Scope

The purpose of this report is to evaluate the potential noise and vibration impacts associated with implementation of the Solana Torrance Project (project).

1.2 Regional and Local Setting

The approximately 24.68-acre Solana Torrance property is located on privately owned land located west and north of Hawthorne Boulevard, south of Via Valmonte, and east of Palos Verdes Drive North within the City of Torrance (City) in southwestern Los Angeles County, approximately 18 miles southwest of downtown Los Angeles (Figure 1, Regional Map). The property is directly adjacent to and west of State Route 107/Hawthorne Boulevard and approximately 0.5 miles south of State Route 1 (Figure 2, Vicinity Map). More specifically, the property is located northeast of Palos Verdes Estates and north of Rolling Hills Estates. Ernie J. Howlett Park is located directly to the south.

The project is planned to occur within an approximate 5.71-acre area within an old mining pit and terraced area located southwest of the intersection of Via Valmonte and State Route 107/Hawthorne Boulevard in the northeastern portion of the property. Major circulation corridors surrounding the project in less than a 1-mile radius include Hawthorne Boulevard and Via Valmonte adjacent to the project site. Adjacent land uses include residential to the north and west, residential and light commercial/office to the east, and vacant land/hillside to the south.

The General Plan (City of Torrance 2010) land use designation for the project development footprint is low density residential (R-LO), which is located within the Hillside Neighborhood District (City of Torrance 2010). The project is within an area zoned as light agricultural (A-1) within the City of Torrance Property Zoning Map (City of Torrance 2015).

1.3 Project Description

The project (Figure 3) is a 248-unit multifamily residential development, which includes four- and five-story residential structures constructed over at-grade parking garages. The project's residential unit mix would include 135 one-bedroom units and 113 two-bedroom units (Withee Malcom 2017). In addition to the 223,525 square feet of residential living space, the project would include 7,475 square feet for a leasing office and community room. A freestanding, five-level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. A total of 484 parking spaces would be provided by a combination of surface parking and in the parking structures.

The project's estimated development area, which is proposed to occur within a disturbed and terraced area along the northeastern portion of the project development footprint, is 5.71 acres east of a moderate to steep hillside. The project would preserve 18.97 acres of the 24.68-acre property as natural open space. The project's density is approximately 10 dwelling units per acre, assuming the project site area of 24.68 acres. The project's density within the 5.71-acre Lot 1, which is the only lot in which project development would occur, is approximately 43.4 dwelling units per acre.[1] Table 1 provides a summary of the proposed residential units and parking spaces provided.

Table 1
Project Residential and Parking Land Use Breakdown

Residential Units and Amenities			
Plan Description	*Quantity (Number of Dwelling Units)*	*Gross Unit Area (Square Feet)*	*Floor Area (Square Feet)*
1A. 1 bedroom + 1 bath	84	705	59,220
1B. 1 bedroom + 1 bath and mezzanine	47	745	35,015
1C. 1 bedroom + 1 bath	4	735	2,940
2A. 2 bedroom + 2 bath	96	1,115	107,040
2B. 2 bedroom + 2 bath and mezzanine	9	1,110	9,990
2C. 2 bedroom + 2 bath	4	1,130	4,520
2D. 2 bedroom + 2 bath	4	1,200	4,800
Residential units subtotal	*248*	*901* (weighted average)	*223,525*
Circulation (enclosed corridors), lobby, stairs, elevator, storage, and mechanical space			*53,244*
		Residential area subtotal	*276,769*
		Leasing office and community room	*7,475*
		Building area total[a]	**284,244**
Parking			
Parking Area	*Parking Provided (Number of Spaces)*		*Floor Area (Square Feet)*
Building A parking garage	62		24,800
Building B parking garage	86		33,950
Building C parking garage	49		18,925

[1] Lot 1 represents the developed project site area, which is 5.71 acres. Lot 2 is proposed as open space reserve totaling 6.0 acres and Lot 3 is proposed as open space reserve totaling 12.92 acres. Because no development would occur within Lots 2 and 3, the density is 0 dwelling units per acre within Lots 2 and 3.

Table 1
Project Residential and Parking Land Use Breakdown

Residential Units and Amenities			
Plan Description	*Quantity (Number of Dwelling Units)*	*Gross Unit Area (Square Feet)*	*Floor Area (Square Feet)*
Building D parking garage	242		96,800
Subtotal	*439*		*174,475*
On-grade parking	45		64,383[b]
Total	**484**		**238,858**

Source: Withee Malcom 2017.
Notes:
[a] Building area total square footage does not include parking garage, which is presented separately in Table 1, or patio and balcony space, which is not included as habitable space in this analysis,
[b] On-grade parking square footage includes street area in addition to open parking. Assuming an average of 400 square feet per parking space, 45 spaces would total 18,000 square feet. As such, the estimate of 64,383 square feet conservatively includes additional space that is not intended for parking only, including driveway areas.

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2 EXISTING CONDITIONS

2.1 Noise and Vibration Concepts

Noise is generally defined as loud, unexpected, or undesired sound typically associated with human activity that interferes with or disrupts normal activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. The definition of noise as unwanted sound implies that it has an adverse effect on people and their environment.

The following is a brief discussion of fundamental noise concepts and basic terminology.

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewton per square meter, also called micropascal. One micropascal is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels (dB).

A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds.

Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 2.

Table 2
Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	110	Rock band
Jet fly over at 300 meters (1,000 feet)	100	
Gas lawn mower at 1 meter (3 feet)	90	
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour)	80	Food blender at 1 meter (3 feet); garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime; gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area; heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban, daytime	50	Large business office; dishwasher next room
Quiet urban, nighttime	40	Theater; large conference room (background)
Quiet suburban, nighttime	30	Library
Quiet rural, nighttime	20	Bedroom at night; concert hall (background)
	10	Broadcast/Recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013

Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level).

Noise Descriptors

Additional units of measure (i.e., noise metrics) have been developed to evaluate the long-term characteristics of sound. The equivalent sound level (L_{eq}) is also referred to as the time-average

sound level. It is the equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The 1-hour A-weighted equivalent sound level, $L_{eq}(h)$, is the energy average of the A-weighted sound levels occurring during a 1-hour period, and is the primary basis for the City of Torrance noise ordinance criteria for stationary sources. Additional noise metrics include the L_{max}, L_{min} (the maximum and minimum instantaneous noise levels, respectively) and L_n. The L_n noise metric represents the noise level equaled or exceeded "n" percent of the time. For example, L_{10} is the level equaled or exceeded 10% of the time.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments—the community noise equivalent level (CNEL)—was introduced. The CNEL scale represents a time-weighted, 24-hour average noise level based on the A-weighted sound level. The CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dBA and 10 dBA, respectively, to the average sound levels occurring during the evening and nighttime hours. The CNEL noise metric (or a similar noise metric the Day Night Level (L_{dn}[2]) is the basis for the City's standards for mobile source noise such as traffic and aircraft noise.

Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features.

Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients can also temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects. Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as hills and dense woods.

[2] L_{dn} (also known as DNL) is comparable to CNEL, except that there is no evening component: the period from 7 a.m. to 10 p.m. is classified as daytime, and no adjustment to the noise levels is made during these hours; the period from 10 p.m. to 7 a.m. is classified as nighttime and 10 decibels is added to the hourly L_{eq}s occurring during these hours.

Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground, and can be described in terms of displacement, velocity, or acceleration. Displacement is the distance that a point on a surface moves away from its original static position; vibration velocity is the instantaneous speed that a point on a surface moves; and acceleration is the velocity's rate of change. Each of these descriptors can be used to correlate vibration to environmental effects such as human response and building damage.

Several basic measurement units are commonly used to describe the intensity of ground vibration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units. In this study, all PPV and RMS velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). A comparison of common groundborne vibration levels, in terms of VdB, is shown in Figure 4. As shown in Figure 4, the threshold of perception is approximately 65 VdB. Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB (Federal Transit Administration (FTA), 2006), which is equivalent to approximately 0.42 inches per second in terms of PPV.

The strength of groundborne vibration attenuates fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Typically, groundborne vibration generated by humans attenuates rapidly with distance from the source of the vibration. Manmade vibration problems are usually confined to relatively short distances (approximately 500 to 600 feet or less) from the source (FTA, 2006).

The calculation to determine PPV at a given distance is as follows:

$$PPV_{distance} = PPV_{ref}*(25/D)^{1.5}$$

Where:

$PPV_{distance}$ = the peak particle velocity in inches per second of the equipment adjusted for distance
PPV_{ref} = the reference vibration level in inches per second at 25 feet
D = the distance from the equipment to the receiver

The calculation to determine the root-mean square at a given distance is as follows:

$$L_v(D) = L_v(25 \text{ feet}) - 30*\log(D/25)$$

Where:

$L_v(D)$ = the vibration level at the receiver
$L_v(25 \text{ feet})$ = the reference source vibration level
D = the distance from the vibration activity to the receiver

Caltrans guidelines (Caltrans, 2013) recommend that a vibration level of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures. With respect to human response within residential uses (i.e., annoyance), FTA recommends a maximum acceptable vibration standard of 80 VdB.

2.2 Existing Noise Environment

A sound level survey was conducted on May 11, 2016 to evaluate existing sound levels and assess potential Project noise impacts on the surrounding area. Noise measurements were conducted using a Piccolo Integrating Sound Level Meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute (ANSI) standard for a Type 2 (General Use) sound level meter. The calibration of the sound level meter was verified before and after the measurements, and the measurements were conducted with the measurement microphone covered with a windscreen and positioned approximately five feet above the ground.

Four noise measurement locations were selected (ST1–ST4), representing existing and/or future noise-sensitive receptors on the project site and in the project vicinity. The measurement locations are shown in Figure 5 (Noise Measurement Locations), and the measured average noise levels and measurement locations are provided in Table 3. Noise measurement data is also included in Appendix A. As shown in Table 3, measured ambient noise levels ranged from approximately 58 dBA L_{eq} at ST1 (southeast side of proposed project site) to 64 dBA L_{eq} at ST2 (northeast side of proposed project). The primary noise sources at the sites consisted of traffic along the adjacent roadways. Secondary noise sources included aircraft noise, birds, rustling leaves, distant aircraft, and distant landscaping activities.

Table 3
Measured Noise Levels

Receptors	Location/Address	Date	Time	L_{eq} (dBA)	L_{10} (dBA)	L_{max} (dBA)
ST1	Southeast side of project site adjacent to Hawthorne Blvd.	May 11, 2016	11:53 a.m. – 12:08 p.m.	57.5	59.0	64.9
ST2	Northeast side of project site, adjacent to Via Valmonte	May 11, 2016	12:28 p.m. – 12:42 p.m.	64.4	67.0	74.0
ST3	Residence at 3662 Blair Way, east of project site	May 11, 2016	1:33 p.m. – 1:48 p.m.	62.9	65.0	68.5
ST4	Residence at 24648 Via Valmonte, north of project site	May 11, 2016	2:02 p.m. – 2:17 p.m.	60.5	63.0	74.5

Source: Appendix A
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{10} = sound level equaled or exceeded 10 percent of the time; L_{max} = maximum sound level during the measurement interval

3 REGULATORY SETTING

3.1 Federal

No federal noise standards apply to this project.

3.2 State

State of California regulation CCR Title 24 requires that an affected building be oriented, shielded, and designed to have sound insulation such that with all exterior doors and windows in the closed position, the interior noise exposure level attributable to exterior sources will not exceed 45 dBA Day-Night Average Sound Level (L_{dn}) in any habitable room. CCR Title 24 thus requires an acoustical analysis for any new multi-family residential structures located in an area with a noise level of 60 dBA L_{dn}/CNEL or greater.

3.3 Local

City of Torrance General Plan Noise Element

Recognizing that environmental noise is an important factor in the quality of life for both residents and visitors, the City adopted an update to the Noise Element of the General Plan in 2010. The Noise Element establishes policies to guard against creation of new noise/land use conflicts and to minimize the impact of existing noise sources on the community.

The Noise Element's Table N-3 (Torrance Noise/Land Use Compatibility Guidelines (Torrance, 2010)), provided here as Table 4, specifies exterior and interior noise standards by proposed land use type and proposed density (for residential projects). The proposed project would have a density of 10.0 dwelling units per acre (DU/AC) for the entire site[3], which equates to a low medium density, pursuant to the City Housing Element (adopted October 1, 2013). As shown in Table 4, the exterior noise standard for low medium density residential uses is 65 dBA Ldn or CNEL, and the interior noise standard is 45 dBA Ldn or CNEL. The maximum acceptable exposure from aircraft-related noise is 60 dBA CNEL.

As stated in the Noise Element, "These compatibility criteria serve as guidelines. For example, an acoustical analysis must be prepared when noise-sensitive land uses are proposed within noise impact areas. The analysis must show that the project is designed to attenuate noise to meet the

[3] Lot 1 within the project site, which is the portion of the project site upon which the proposed project would be constructed, would have a density of 43.8 DU/AC (43.4 DU/AC net); this corresponds to a medium-high density, for which a slightly more permissive set of noise standards for on-site noise (up to 70 dBA Ldn or CNEL exterior) would apply, if the overall project site were of such a density. Because that is not the case, the slightly more restrictive noise standard of 65 dBA Ldn or CNEL is used.

City's noise standards in order to receive approval. If the project design does not meet the noise standards, mitigation can be recommended in the analysis. If the analysis demonstrates that the noise standards can be met by implementing the mitigation measures, the project can be approved conditioned upon implementation of the mitigation measures."

Table 4
Torrance Noise/Land Use Compatibility Guidelines

Property Receiving Noise		Maximum Noise Level Ldn or CNEL, dB(A)	
Type of Use	*Land Use Designations*	*Interior*	*Exterior*[3]
Residential	Low Density Residential Low Medium Density Residential Medium Density Residential	45	60/65[1]
	Medium High Density Residential	45	65 / 70[2]
	High Density Residential	45	70[1]
Commercial and Office	General Commercial Commercial Center	--	70
	Residential Office	50	70
Industrial	Business Park Light Industrial Heavy Industrial	55	75
Public and Medical Uses	Public/Quasi-Public/Open Space	50	65
	Hospital/Medical	50	70
Airport	Airport	--	70

Source: Table N-3, Torrance General Plan Noise Element

1 The normally acceptable standard is 60 db(A). The higher standard is acceptable subject to inclusion of noise-reduction features in project design and construction.

2 Maximum exterior noise levels up to 70 dB CNEL are allowed for Multiple-Family Housing.

3 Regarding aircraft-related noise, the maximum acceptable exposure for new residential development is 60 dB(A) CNEL.

City of Torrance Municipal Code

Stationary Source Noise

Whereas the noise standards of the City's General Plan Noise Element (shown in Table 4) are primarily used to ensure noise/land use compatibility with transportation noise sources, the noise regulations in the Municipal Code are used to regulate noise occurring from local on site noise sources, such as mechanical equipment or events noise. The City's Municipal Code, Division 4: Public Health and Welfare (Chapter 6 – Noise Regulation) establishes noise level limits in most residential areas of 50 to 55 dBA between 7 A.M. to 10 P.M., and 45-50 dBA between 10 P.M. to 7 A.M., depending on location. The regulations establish regions with differing noise regulations, with the noise standards in Region 3 (where this project site is located as well as the residences to the north) being the most stringent. As shown below in Table 5, the highest permitted noise level

for residences in Region 3 is 50 dBA from 7 A.M. to 10 P.M. and 45 dBA from 10 P.M. to 7 A.M. Section 46.7.2, subsection c 3 c of the Municipal Code states that for noises occurring less than 30 minutes per day or less than 6 minutes per night, the highest allowable noise level is adjusted upward by 15 dBA (i.e., 65 dBA from 7 A.M. to 10 P.M. and 60 dBA from 10 P.M. to 7 A.M.

Table 5
Torrance Municipal Code Noise Regulations

Region (in which noise receiver is located)	Noise Level (dB)	
	Day	*Night*
3	50	45
4	55	50

Source: City of Torrance Municipal Code, Division 4, Chapter 6, Article 7, Section 46.7.2..

Construction Noise

Noise from construction activities is regulated in the Municipal Code (Article 3, Construction, Section 46.3.1, Construction of Buildings and Projects. It is unlawful for any person within the City to operate power construction tools, equipment, or engage in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area involving the creation of noise beyond 50 decibels (dB) as measured at property lines, except between the hours of 7:30 A.M. to 6:00 P.M. Monday through Friday and 9:00 A.M. to 5:00 P.M. on Saturdays. Construction is prohibited on Sundays and holidays observed by City Hall. An exception exists between the hours of 10:00 A.M. to 4:00 P.M. for homeowners that reside at the property.

Additionally, heavy construction equipment such as pile drivers, mechanical shovels, derricks, hoists, pneumatic hammers, compressors or similar devices are prohibited to be operated at any time, within or adjacent to a residential area, without first obtaining from the Community Development Director permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use, and the applicant shall be required to show that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers. Such permission to operate heavy construction equipment will be revoked if operation of such equipment is not in accordance to approval (TMC Section 46.3.1).

For the purposes of determination of significant impact from construction noise, the City of Torrance applies a threshold of 75 dBA, based upon Table N-2 of the General Plan Noise Element. The City of Torrance General Plan Update Draft EIR (The Planning Center, 2009), further states in Impact N-4 that "construction activities substantially elevating the ambient noise environment at noise-sensitive uses for a substantial amount of time" would be considered to result in a substantial temporary or periodic noise increase, resulting in a significant impact.

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4 THRESHOLDS OF SIGNIFICANCE

Based on the criteria identified in Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on noise if it would result in:

1. The exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. The exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the exposure of people residing or working in the project area to excessive noise levels as a result of the project.
6. For a project within the vicinity of a private airstrip, the exposure of people residing or working in the project area to excessive noise levels as a result of the project.

Significant Changes In Ambient Noise Levels

The City of Torrance noise regulations do not directly address the incremental threshold for community noise increases (i.e., the CEQA Significance Threshold 3; "A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project"). Neither the City's General Plan Noise Element nor the Municipal Code have quantified levels of increase in noise above ambient which are considered "substantial." Some guidance regarding the determination of a substantial permanent increase in ambient noise levels in the project vicinity above existing levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON recommendations are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a qualitative measure of the adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment.

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of Ldn. The changes in noise exposure that are shown in Table 6 are expected to result in equal changes in annoyance at sensitive

land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are used in this analysis to define a substantial increase in community noise levels related to all transportation noise sources and permanent non-transportation noise sources.

Table 6
Measures of Substantial Increase for Community Noise Sources

Ambient Noise Level Without Project (L_{dn})	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels by:
<60 dB	+ 5 dB or more
60-65 dB	+ 3 dB or more
>65 dB	+ 2 dB or more

Vibration Significance Criteria

Impacts related to excessive ground-borne vibration would be significant if the project results in the exposure of persons to or generation of excessive ground-borne vibration equal to or in excess of 80 VdB for annoyance criteria or 0.2 inches/second PPV for potential for structural damage. Construction activities within 200 feet and pile driving within 600 feet would be potentially disruptive to vibration-sensitive operations (such as concert halls or television studios (FTA 2006).

5 NOISE AND VIBRATION IMPACTS

5.1 Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance

Implementation of the project would result in two primary types of potential noise impacts: short-term (i.e., temporary) noise during construction and long-term noise during operation of the Project.

5.1.1 Construction Noise

Construction of the proposed project is anticipated to take place over a period of approximately 29 months. As detailed above in Regulatory Standards, the City restricts the times of day when construction may occur (i.e., 7:30 a.m. to 6 p.m. Mondays through Fridays, 9 a.m. to 5 p.m. on Saturdays and not at all on Sundays or on holidays observed by City Hall). Also, operation of heavy construction equipment such as pile drivers, mechanical shovels, compressors or similar devices are prohibited without first obtaining permission from the Community Development Director. For the purposes of determination of significant impact from construction noise, a threshold of 75 dBA is used.

Construction of the proposed project would take place within the hours specified in Article 3, Section 46.3.1 of the City's Municipal Code. Construction operations shall not occur between 6:00 p.m. and 7:30 a.m. Monday through Friday, 5 p.m. to 9 a.m. on Saturday or at any time on Sunday or on holidays observed by Torrance City Hall. The hours of construction, including noisy maintenance activities and all spoils and material transport, shall be restricted to the periods and days permitted by the local noise or other applicable ordinance. Additionally, no construction vehicles, material deliveries or staging prior to the allowable hours listed above, and no early or continuous pours shall be permitted that extend beyond the hours listed above. Permission for operation of heavy equipment shall be submitted to the Community Development Director. No special construction techniques (i.e., pile driving or blasting) are anticipated to be necessary for this project[4]. In addition, during construction the the following Best Management Practices (BMPs) are recommended in order to reduce noise from construction:

Best Management Practices (BMPs) – Construction:

1. Ensure that all noise-producing project equipment and vehicles using internal combustion engines are equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features are in good operating condition that meet

[4] Includes retaining wall construction. Based on information from the applicant, retaining wall work would either be conducted using standard construction techniques and/or soil nails (which involves horizontal drilling, placement of steel rebar, and injection of grout, without pile driving or other impact-type noise-producing machinery).

or exceed original factory specification. Ensure that mobile or fixed "package" equipment (e.g., arc-welders, air compressors) are equipped with shrouds and noise control features that are readily available for that type of equipment.

2. Ensure that all mobile or fixed noise-producing equipment used on the Project that are regulated for noise output by a local, state, or federal agency complies with such regulation while in the course of Project activity.
3. Implement construction noise reduction methods such as shutting off idling equipment and maximizing the distance between construction equipment staging areas and adjacent residences where feasible.
4. Material stockpiles and mobile equipment staging, parking, and maintenance areas should be located as far as practicable from noise-sensitive receptors.
5. Establish and enforce construction site and access road speed limits of 15 miles per hour during the construction period.
6. Ensure that the use of noise-producing signals, including horns, whistles, alarms, and bells, be for safety warning purposes only.
7. Ensure that project-related public address or music systems are not audible at any adjacent receptor.
8. The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to the owner will be established prior to construction commencement that will allow for resolution of noise problems that cannot be immediately solved by the site supervisor.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time each piece is in operation, condition of each piece of equipment, and number of pieces that would operate on the site. The range of maximum noise levels for various types of construction equipment at a distance of 50 feet is presented in Table 7. The noise values represent maximum noise generation, or full- power operation of the equipment. As an example, a loader and two dozers, all operating at full power and relatively close together, would generate a maximum sound level of approximately 90 dBA at 50 feet from their operations. As the distance between equipment or separation of areas with simultaneous construction activity increases, dispersion and distance attenuation reduce the effects of the separate noise sources added together. In addition, typical operating cycles may involve 2 minutes of full-power operation, followed by 3 or 4 minutes at lower levels. The average noise level during construction activities is generally lower (typical levels of approximately 88 dBA Leq at a distance of 50 feet), because maximum noise generation may only occur up to 50% of the

time. Noise levels from construction operations decrease at a rate of approximately 6 dB per doubling of distance from the source.

Table 7
Typical Construction Equipment Noise Emission Levels

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
Truck	88

Source: FTA 2006.

In order to assess noise from construction activities, the same construction equipment and phasing information as used for the project's Air Quality / Greenhouse Gas analysis (summarized here as Table 8), as well as distances and acoustical shielding (where applicable), were input into the Federal Highway Administration's Roadway Construction Noise Model (RCNM) noise model (FHWA, 2008). Although the model was funded and promulgated by the Federal Highway Administration, the RCNM is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are also used for other project types. Input variables for the RCNM consist of the receiver/land use types, the equipment type and number of each (e.g., two excavators, a loader, a dump truck), the duty cycle for each piece of equipment (i.e., percentage of hours the equipment typically works per day), acoustical shielding from intervening terrain or structures, and the distance from the sensitive noise receptor. The RCNM has default duty cycle values for the various pieces of equipment, which were derived from an

extensive study of typical construction activity patterns. Those default duty cycle values were used for this noise analysis.

Table 8
Construction Equipment Assumptions

Construction Phase	Equipment		
	Equipment Type	*Quantity*	*Usage Hours*
Grading	Excavators	2	8
	Rubber tired loaders	1	8
Building construction – parking garage	Tractors/loaders/backhoes	2	8
Paving	Pavers	1	8
	Paving equipment	1	8
	Rollers	1	8
Building construction – residential (above garage)	Cranes	1	6
	Forklifts	2	8
	Welders	1	4
Architectural coating	—	—	—

Illustrative cross-sections of the project site in relation to the nearest residential land uses are provided in Appendix B. The nearest noise-sensitive land use (the residence at 24648 Via Valmonte) is located approximately 77.5 feet north of the project site, approximately 118 feet or more from actual building construction work, and approximately 250 feet away from the acoustic center of construction activity (the idealized point from which the energy sum of all construction activity noise near and far would be centered). During short periods of time (during grading/swale construction activities and perimeter retaining wall construction), construction activities would take place within approximately 77.5 feet of the nearest residential property; however, the direct view of the work occurring in proximity of the nearest residence would be shielded by an existing intervening berm[5] at the top of slope, as shown in Appendix B. Based upon calculations estimating terrain shielding[6] (Beranek 1971), the berm would provide a theoretical benefit of approximately 19 decibels (dB) noise reduction. In real-life applications, noise barrier attenuation is generally limited to approximately 10 to 15 dB. For the purposes of this analysis, it was conservatively assumed that the berm would provide approximately 12 dB of noise reduction during the periods when construction takes place near the project boundary, but that during other work phases no shielding would occur. Similarly, the second-nearest residence would also benefit from terrain shielding when construction

[5] The elevation of the nearest residence (located at 2648 Via Valmonte) is approximately 230 feet at the residential property line; the work area nearest to the residence has an elevation of approximately 204 feet; and the intervening berm, located approximately 30 feet from the residential property line, has an elevation of approximately 240 feet.
[6] Provided in Appendix C.

takes place near the project boundary, but during other work phases no shielding would occur. For the third and fourth-nearest residences, no terrain shielding was assumed.

The construction noise analysis input and output is provided in Appendix D. The results (as shown in Table 9) are presented for each of the four nearest residences adjacent to the project site, for both the nearest point of the construction work and the more typical condition where construction equipment would be at varying locations near and far on-site. The table shows the L_{eq} (average noise level), the estimated maximum noise level (L_{max}), and the level equaled or exceeded 10% of the time (L_{10}). As shown in Table 9, noise levels on an L_{eq} basis during construction at the nearest residential receivers are estimated to range from approximately 55 dBA to 73 dBA L_{eq}; noise levels on an L_{10} basis during construction are estimated to range from approximately 58 dBA to 76 dBA L_{10}; and noise levels on an L_{max} basis are estimated to range from approximately 59 dBA to 74 dBA L_{max}. The 3rd-nearest residential location (24704 Via Valmonte) is predicted to have higher noise levels than the two nearer residences; this is because the first and second residences have the benefit of terrain shielding, particularly when the construction equipment would be near the project boundary, whereas the third and fourth residences do not. It is also noted that in several instances the L_{10} noise levels are higher than the L_{max} noise levels. This is because the RCNM model shows the maximum noise level of the loudest piece of equipment for each construction phase[7], whereas the L_{10} noise level (similarly to the L_{eq} noise level) represents the cumulative sum of each phase.

Based upon this analysis, the noise from construction would exceed the City's construction noise significance threshold of 75 dBA at one location; at 24704 Via Valmonte, during grading nearest the project's northwest boundary near the residence, the noise level is estimated to be approximately 76 dBA L_{10}. Noise from construction activities would therefore exceed the City of Torrance threshold of significance for construction noise at this location. The noise impact would be considered significant. Mitigation Measure MM NOI-1 shall be implemented to ensure that construction noise levels do not exceed 75 dBA. The noise impact would be **less than significant with mitigation**.

[7] This is because it is unlikely that any two or more pieces of construction equipment would generate their maximum noise levels simultaneously.

Table 9
Construction Noise Model Results Summary

Residence	Construction Phase	Construction Noise at Receiver Distances (dBA)				
		Nearest or Typical Construction Work Location Distance (feet)	L_{eq}	L_{10}	L_{max}	*75 dBA Significance Threshold Exceeded?*
24648 Via Valmonte	Grading	*Nearest Construction Work (77.5')*	65	68	65	No
		Typical Construction Work (245')	68	71	67	No
	Paving	*Nearest Construction Work (77.5')*	63	66	64	No
		Typical Construction Work (245')	66	70	67	No
	Building Construction - Parking Garage	*Nearest Construction Work (96')*	63	66	66	No
		Typical Construction Work (164')	71	74	74	No
	Building Construction - Residential	*Nearest Construction Work (96')*	59	62	63	No
		Typical Construction Work (164')	63	66	67	No
24660 Via Valmonte	Grading	*Nearest Construction Work (177')*	60	63	60	No
		Typical Construction Work (410')	63	66	62	No
	Paving	*Nearest Construction Work (177')*	59	62	59	No
		Typical Construction Work (410')	62	65	62	No
	Building Construction - Parking Garage	*Nearest Construction Work (200')*	59	62	61	No
		Typical Construction Work (307')	66	69	68	No
	Building Construction - Residential	*Nearest Construction Work (200')*	55	58	59	No
		Typical Construction Work (307')	59	62	62	No
24704 Via Valmonte	Grading	*Nearest Construction Work (135')*	73	76	72	Yes (76 dBA L_{10})
		Typical Construction Work (370')	64	67	63	No
	Paving	*Nearest Construction Work (135')*	71	74	71	No
		Typical Construction Work (370')	63	66	63	No
	Building Construction - Parking Garage	*Nearest Construction Work (240)*	67	70	70	No
		Typical Construction Work (315')	65	68	68	No
	Building Construction - Residential	*Nearest Construction Work (240)*	64	67	67	No
		Typical Construction Work (315')	60	63	63	No
24706 Via Valmonte	Grading	*Nearest Construction Work (187')*	70	73	69	No
		Typical Construction Work (450')	63	66	62	No
	Paving	*Nearest Construction Work (187')*	69	72	69	No
		Typical Construction Work (450')	61	64	61	No
	Building Construction - Parking Garage	*Nearest Construction Work (347')*	64	67	67	No
		Typical Construction Work (425')	63	66	65	No

Table 9
Construction Noise Model Results Summary

Residence	Construction Phase	Construction Noise at Receiver Distances (dBA)				
		Nearest or Typical Construction Work Location Distance (feet)	L_{eq}	L_{10}	L_{max}	*75 dBA Significance Threshold Exceeded?*
	Building Construction - Residential	*Nearest Construction Work (347')*	60	63	64	No
		Typical Construction Work (425')	58	61	62	No

Source: Appendix D.

Interior noise levels during construction. Typically, with the windows open, building shells provide approximately 15 dB of noise reduction, while with windows closed, modern residential construction generally provides a minimum of 25 dB attenuation. Thus, the interior noise levels at the nearest residences during the nearest construction work are estimated to be approximately 40 to 58 dBA Leq with windows open and 30 to 48 dBA Leq with windows closed. As shown in Table 2, noise levels of this magnitude are moderate to relatively low in the context of typical daytime community noise, although it is likely that such noise would be audible at times.

5.1.2 Operational Noise

Potential noise impacts from operation of the proposed project include increases in noise from project-related traffic, as well as from on-site operational noise ((i.e., mechanical equipment, parking structure, rooftop deck activities).

Traffic Noise

The proposed project would generate traffic, primarily along Hawthorne Boulevard and Via Valmonte. Potential noise effects from vehicular traffic were assessed using FHWA's Traffic Noise Model, version 2.5. The TNM 2.5 traffic noise prediction model was calibrated first, using the measured average noise levels previously shown in Table 3 and the concurrently counted traffic volumes. The same traffic volumes and vehicle composition ratios counted during the noise measurements were used to calibrate the model and verify the input used in the noise model. The modeled noise levels for the monitoring locations were within two decibels of the measured noise levels. This result confirms the assumptions used in the noise model; traffic noise modeling data, as well as the traffic volume input data, is included as Appendix E.

Consistent with the Traffic Impact Study provided by KHR Associates (KHR, 2018), the modeled traffic scenarios included the Existing (i.e., baseline conditions), Existing plus Project, Cumulative

(Year 2019), and Cumulative plus Project traffic volumes and speeds. Noise levels were modeled at representative on-site and off-site noise-sensitive receivers. The receivers, which represent noise-sensitive receivers with the most potential to be impacted by project-related traffic noise, are shown in Figure 6. As shown in Figure 6, ST3, ST4 and R56 represent the existing off-site receivers and R1 through R55 represent the proposed on-site receivers.

The information provided from this modeling was compared to the noise impact significance criteria in the City's General Plan (i.e., a 65 dBA Ldn noise standard for noise-sensitive land uses) and the FICON thresholds for noise increase (i.e., a 5 dBA increase in an ambient noise environment of less than 60 dBA Ldn, a 3 dBA noise increase in an ambient noise environment of 60–65 dBA Ldn and a 2 dBA increase in an ambient noise environment of more than 65 dBA Ldn) to assess whether project traffic noise would cause a significant impact and, if so, where.

Off-Site Traffic Noise

The results of the comparisons for nearby existing off-site receivers (as represented by ST-3, ST-4 and R-56) are presented in Table 10.

Table 10
Traffic Noise at Adjacent Noise-Sensitive Receivers (dBA L_{dn})

Receiver	Existing	Existing + Project	Noise Increase (dB)	Cumulative	Cumulative + Project	Noise Increase (dB)
ST3 – Residences east of project site	61	61	0	61	61	0
ST4 - Residence north of project	63	63	0	64	63	-0.1
R56 - Residences northeast of project	66	66	0	66	66	0

Source: Appendix E

As shown in Table 10, modeled existing and cumulative traffic noise levels range from approximately 61 dBA L_{dn} at receiver ST3 to 66 dBA L_{dn} at R56, both with and without the proposed project. The incremental increase resulting from project-related traffic would increase the traffic noise levels by less than 1 dBA (0 dBA L_{dn} when rounded to whole numbers) along the study area roadways. At ST4, the traffic noise level is predicted to decrease slightly[8] in the cumulative plus project scenario, because the project's buildings would provide additional structural shielding from traffic noise on Hawthorne Boulevard south of Via Valmonte. The project would not cause an exceedance of City noise standards for transportation noise, and would not

[8] The decrease would be 0.1 dB, which is not an audible change.

result in an audible or measurable increase in traffic noise. Project-related traffic noise impacts would therefore be **less than significant**.

On-Site Exterior Traffic Noise

The results of the noise analysis for traffic noise levels at proposed on-site receivers is provided in Table 11. On-site noise sensitive receiver locations consisted of the building facades of the four residential levels (i.e., levels 2 through 5) of Buildings A, B and C and the proposed on-site outdoor recreation/pool areas. Based upon information provided by the applicant, each of the residential units would have outdoor open spaces in the form of balconies; however, these spaces are not subject to City of Torrance outdoor noise standards.

As shown in Table 11, the results of the noise modeling indicate that on-site noise levels at the facades with a direct view of Hawthorne Boulevard would range from 65 to 73 dBA L_{dn}. Because the project's proposed balconies are not subject to the 65 dB L_{dn} noise standard, noise mitigation is not required for these exterior areas. The future noise levels at the proposed outdoor common areas (R1 – R13) are predicted to range from 29 to 64 dBA L_{dn}, and thus would meet the City's exterior noise level criterion. Therefore, the noise impact would be **less than significant**; no mitigation would be required for the shared (common) exterior areas.

Table 11
Summary of On-Site Future (Cumulative plus Project)
Unmitigated Traffic Noise Levels (dBA L_{dn})

Modeled Receiver #	Floor Level			
	2nd Level	*3rd Level*	*4th Level*	*5th Level*
R1 - Outdoor community area rooftop deck - 1	n/a	60	n/a	n/a
R2 - Outdoor community area rooftop deck - 2	n/a	53	n/a	n/a
R3 - Outdoor area Bldg B	42	n/a	n/a	n/a
R4 - Outdoor area Bldg B west side	40	n/a	n/a	n/a
R5 - Outdoor area Bldg B west side	47	n/a	n/a	n/a
R6 - Outdoor area Bldg A west side	29	n/a	n/a	n/a
R7 - Outdoor area Bldg A west side	29	n/a	n/a	n/a
R8 - Outdoor area Bldg C	33	n/a	n/a	n/a
R9 - Outdoor area Bldg C south side	64	n/a	n/a	n/a
R10 - Outdoor area Bldg C southwest side	60	n/a	n/a	n/a
R11 - Pool / Rec Area at Parking Structure	n/a	n/a	n/a	49
R12 - Pool / Rec Area at Parking Structure	n/a	n/a	n/a	50
R13 - Pool / Rec Area at Parking Structure	n/a	n/a	n/a	52
R14 - Bldg B	**61**	**62**	**62**	**62**
R15 - Bldg B	**65**	**65**	**66**	**66**

Table 11
Summary of On-Site Future (Cumulative plus Project)
Unmitigated Traffic Noise Levels (dBA L_{dn})

Modeled Receiver #	Floor Level			
	2nd Level	*3rd Level*	*4th Level*	*5th Level*
R16 - Bldg B	**66**	**67**	**67**	**66**
R17 - Bldg B	**68**	**68**	**68**	**68**
R18 - Bldg B	**69**	**69**	**69**	**69**
R19 - Bldg B	**72**	**72**	**72**	**71**
R20 - Bldg B	**73**	**72**	**72**	**72**
R21 - Bldg B	**73**	**72**	**72**	**72**
R22 - Bldg B	**73**	**73**	**72**	**72**
R23 - Bldg B	57	57	58	**69**
R24 - Bldg B	43	44	49	58
R25 - Bldg B	44	44	48	54
R26 - Bldg B	51	51	56	52
R27 - Bldg B	40	40	42	46
R28 - Bldg B	51	51	52	52
R29 - Bldg B	51	52	52	53
R30 - Bldg B	43	45	45	47
R31 - Bldg B	32	36	36	42
R32 - Bldg B	41	42	43	45
R33 - Bldg B	46	49	49	49
R34 - Bldg B	47	49	52	50
R35 - Bldg A	56	59	**61**	**61**
R36 - Bldg A	49	52	54	56
R37 - Bldg A	45	48	49	52
R38 - Bldg A	35	34	36	37
R39 - Bldg A	38	39	43	43
R40 - Bldg C	**69**	**69**	**69**	**68**
R41 - Bldg C	**73**	**72**	**72**	**72**
R42 - Bldg C	**73**	**73**	**72**	**72**
R43 - Bldg C	**72**	**72**	**72**	**72**
R44 - Bldg C	**73**	**73**	**72**	**72**
R45 - Bldg C	**68**	**68**	**68**	**68**
R46 - Bldg C	51	53	55	55
R47 - Bldg C	**72**	**72**	**72**	**72**
R48 - Bldg C	**63**	**64**	**64**	**64**
R49 - Bldg C	60	**61**	**61**	**61**
R50 - Bldg C	52	52	52	52
R51 - Bldg C	49	52	54	54
R52 - Bldg C	38	40	42	45

Table 11
Summary of On-Site Future (Cumulative plus Project)
Unmitigated Traffic Noise Levels (dBA L_{dn})

Modeled Receiver #	Floor Level			
	2nd Level	*3rd Level*	*4th Level*	*5th Level*
R53 - Bldg C	54	54	54	55
R54 - Bldg C	42	45	48	48
R55 - Bldg C	**66**	**67**	**66**	**66**

Source: Appendix E
Notes: Bolded numbers represent building facade locations exceeding 60 dBA L_{dn}; these units will require subsequent interior noise analysis to verify compliance with the 45 dBA L_{dn} noise standard for habitable rooms.

On-Site Interior Traffic Noise

The City and the State require that interior noise levels not exceed a CNEL or L_{dn} of 45 dBA within the habitable rooms of residences. Typically, with the windows open, building shells provide approximately 15 dB of noise reduction. Therefore, rooms exposed to an exterior L_{dn} greater than 60 dBA could result in an interior L_{dn} greater than 45 dB. The State Building Code recognizes this relationship and, therefore requires interior noise studies when the exterior noise level is projected to exceed 60 dBA L_{dn}.

The data shown in Table 11 indicates that the future noise levels would range up to 73 dBA L_{dn} at the facades of the on-site residences adjacent to Hawthorne Boulevard. Thus, the unmitigated interior noise level within the habitable rooms of these dwelling units could exceed the 45 dB L_{dn} or CNEL noise criterion. As a mitigation measure (MM NOI-2, detailed below (in Section 6, Mitigation)), a subsequent interior noise analysis will be required for these units, which are depicted in Figure 7 and showin in Table 11 (bolded cells). The impact would be **less than significant with mitigation**. Dwelling units which are oriented such that the doors and windows are interior to the project site (i.e., do not have a direct view of Hawthorne Boulevard) would have traffic noise level exposures of less than 60 dB L_{dn}.

Operational Noise

Mechanical Noise (Heating, Ventilation and Air Conditioning)

Based upon information provided by the applicant and the most recent plan set, exterior heating, ventilation and air conditioning (HVAC) equipment (i.e., the condenser units) will be mounted on the rooftops of Buildings A, B and C. The HVAC units will consist of small residential condensers - one per unit - on the roofs over the building corridors. HVAC specifications are provided in

Appendix F. The 2-ton HVAC units used would each have a dimensionless sound power level[9] of 71 dBA (Empay, 2017) The nearest exiting residence would be approximately 150 feet north of the nearest bank of HVAC units, atop building A. Assuming a sound power level of 71 dBA, the noise level at a distance of 150 feet[10] from one HVAC unit would be approximately 30 dBA at the nearest residential unit. If all 24 of the nearest set of individual banked units were operating simultaneously, the resultant noise level at the nearest existing residence (at 24648 Via Valmonte) would be approximately 44 dBA. The estimated HVAC noise levels at the four adjacent residences to the north and west of the project site are provided in Table 12. The noise levels would be less than the City of Torrance Region 3 exterior noise ordinance standards of 50 dBA from 7 a.m. to 10 p.m. and 45 dBA from 10 p.m. to 7 a.m. The noise impact would be less than significant.

Interior noise levels would be substantially lower. Typically, with windows open, building shells provide approximately 15 dB of noise reduction, while with windows closed, modern residential construction generally provides a minimum of 25 dB attenuation. Thus, the interior noise level from project-related HVAC noise at the nearest residence is estimated to be approximately 29 dBA with windows open and 19 dBA with windows closed. As previously shown in Table 2, noise levels of this magnitude are low in the context of typical community noise, and under most circumstances would be inaudible, because they would be masked by other community noises.

Table 12
Summary of HVAC Noise Levels at Adjacent Off-Site Residences (dBA L_{eq})

Receiver Description	HVAC Noise	Applicable Region 3 Daytime Standard (50 dBA L_{eq}) Exceeded?	Applicable Region 3 Nighttime Standard (45 dBA L_{eq}) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	43.8	No	No
2nd Nearest Residential P/L (24660 Via Valmonte)	40.0	No	No
3rd nearest Residential P/L (24704 Via Valmonte	37.7	No	No
4th nearest Residential P/L (24706 Via Valmonte	35.4	No	No

[9] Sound power or acoustic power is the rate at which sound energy is emitted, reflected, transmitted or received, per unit time. It is calculated and expressed in watts and as sound power level Lw in decibels It is the power of the sound force on a surface of the medium of propagation of the sound wave. For a sound source, unlike sound pressure (Lp), sound power is neither room-dependent nor distance-dependent. Sound pressure is a measurement at a point in space near the source, while the sound power of a source is the total power emitted by that source in all directions. The relation between sound power and sound pressure utilized for this analysis was the following:
Lp=Lw-20*Log(R)+2.5, where R is the source-receiver distance of interest, in feet - as for a free field above a reflecting plane (Diehl, 1973).

[10] Horizontal distance as measured using the project site plan. The actual straight-line distances would be slightly greater because of the differences in vertical elevations. Thus the noise estimates err on the conservative side.

Roof-Top Deck/Pool Area and Parking Structure Noise

Rooftop Deck Noise

A rooftop deck /pool and spa area (rooftop deck) is proposed as part of the project. The rooftop deck would be on the upper level of the eastern portion of the project's parking structure, located along the south side of the project site. A pool, spa, deck chairs, cabanas, a fire pit and picnic table/ chair sets are proposed. The maximum permitted occupancy of the rooftop deck would be 220 people. No amplified voice, music, live music or other loud events would be permitted, and the deck / pool area will be closed at 10 p.m.

The distance from the nearest residence (24648 Via Valmonte) to the nearest side of the rooftop deck area is approximately 415 feet, and the distance from the nearest residence to the rooftop deck's acoustic center[11] is approximately 484 feet. The view of the pool deck would be obstructed by the intervening proposed residential structures for the nearest residence[12].

Based upon reference sound levels from the literature for a raised male voice (65 dBA at 3.28 feet (Harris 1979)), the resultant noise levels at nearby residential land uses were estimated, as shown in Table 13. Note that this is a very conservative estimate, as it is highly unlikely that there would be 220 people using the facility at any one time, and that the raised male voices would be sustained for extended periods (i.e., 30 minutes or more during any one-hour period). Additionally, it is anticipated that there would generally be some combination of male and female residents and guests, and the noise levels would be lower for this reason as well (because the typical female voice is of a lower sound power). As summarized in Table 13, the conservative estimate for noise levels for the maximum-use scenario (220 voices) would range from 40 dBA L_{eq} at the nearest residential property line[13] to 42 dBA L_{eq} at the 2nd-nearest residential property line. The input and output data for these results is provided in Appendix G. These noise levels would be below the applicable City of Torrance noise standard for activities taking place between the hours of 7 a.m. and 10 p.m. of 50 dBA L_{eq}. Additionally, based on the ambient noise measurements, these noise

[11] The acoustic center is the idealized point from which the energy sum of all activity noise, near and far, would be centered. The acoustic center is derived by taking the square root of the product of the nearest and the farthest distances.

[12] The rooftop pool deck elevation would be approximately 250.4 feet above mean sea level (AMSL). The nearest residence's elevation is approximately 230 feet AMSL, and the intervening structure (Building B) would have a rooftop elevation of approximately 249.3 feet AMSL.

[13] Based upon the relative distances and elevations of the receivers, noise sources and intervening structures, shielding attenuation calculations (Beranek 1971) were performed. The input and output sheets for these calculations are provided in Appendix C. It was determined that at the nearest residence, the direct view of the rooftop deck would be blocked by Building B, which would reduce the noise level by 5 decibels. The direct view of the rooftop deck for the other adjacent residences would not be blocked by intervening structures, and no additional noise reduction was claimed at these locations.

levels would be well below typical noise levels in the project area, and thus would not result in a substantial noise increase. Therefore the noise from on-site activities at the rooftop deck would be **less than significant**.

Table 13
Summary of Noise Levels from Rooftop Deck at Adjacent Off-Site Residences (dBA L_{eq})

Receiver Description	Receiver Distance (feet)	Raised Male Voices (dBA)	Acoustical Shielding[1] (if any)	Resultant (dBA L_{eq})	Applicable Region 3 Standard (50 dBA[2]) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	484	45.0	5.0	40	No
2nd Nearest Residential P/L (24660 Via Valmonte)	654	42.0	0.0	42	No
3rd nearest Residential P/L (24704 Via Valmonte	710	41.3	0.0	41	No
4th nearest Residential P/L (24706 Via Valmonte	711	41.3	0.0	41	No

Note: Conservatively assumes a maximum legal occupancy of 220 persons, all males with voices raised simultaneously and continuously.
1 Acoustical shielding calculations provided in Appendix C.
2 Applicable from 7 a.m. to 10 p.m. The rooftop deck would be closed outside of these hours.

Potential Acoustical Reverberation Effects

Potential acoustical reverberation effects from the steep slopes located to the south and west of the project site was evaluated as part of this project. In order for a surface to be effective in reflecting sound, the characteristics of the surface are important. Specifically, a good reflecting surface is smooth, hard, and rigid (Caltrans 2013). Ideal reflecting surfaces include glass, metal, polished stone, and smooth walls. The slopes on the south and west sides of the project site are not good reflectors of sound. Based upon a recent soils report (Geocon West 2017), the slope to the south exposes Miocene age Monterey Formation materials that are composed primarily of "interbedded sandstone, siltstone, and diatomaceous siltstone. These materials are composed of predominantly silt and clay…". The slope on the west exposes Pleistocene age San Pedro Sand. These materials are composed primarily of massive, uncemented sand and silt.

Examination of the slope (photographs of which are included as Appendix H) further confirms that these soils are not resistant to weathering; the slope face is dissected by multiple small and large gullies. Vegetation is also scattered across the slope face. There is no continuous "plane" conducive to reflecting sound, but rather a very irregular surface where gullies and vegetation will minimize reflection. The gullying is a direct representation of the weakness/softness of the materials – water easily infiltrates the surface, as would sound waves.

Because these adjacent slopes are rough and relatively soft, they are more likely to be effective absorbers (rather than reflectors) of sound. Therefore, the potential for the adjacent slopes to reflect project-related noise into the adjacent residential neighborhood is negligible.

Parking Structure Noise - Vehicles

The proposed 5-story parking structure would be located along the project's southern boundary. The parking structure would have a solid wall on its southern side, and would be partially open to the north, west and east sides. The distance from the nearest residence to the nearest side of the parking structure is approximately 300 feet, and the distance from the nearest residence to the parking structure's acoustic center is approximately 418 feet. The view[14] of the parking structure would be obstructed by the proposed residential structures for the nearest three residences (24648, 24660, and 24704 Via Valmonte), which would result in additional reduction of noise from the parking structure. At the fourth-nearest residence (24706 Via Valmonte), the view of the parking structure would not be obstructed; however, the distance from the residence at 24706 Via Valmonte to the parking structure would be substantially further, at approximately 706 feet.

Based upon noise measurements conducted at a similar parking structure (5 stories, with open sides), noise levels from the proposed facility during peak commute hours (early morning and early evening hours) are anticipated to be approximately 63 dBA L_{eq} at a distance of 30 feet from the open side of the structure, with instantaneous maximum noise levels (L_{max}) noise levels of approximately 72 dBA at 30 feet occurring periodically from remote locking system "chirps," horn beeps etc.[15] (Dudek 2016). As shown in Table 14, the estimated noise levels from parking structure noise at the nearest off-site residential uses would range from approximately 28 dBA L_{eq} to approximately 36 dBA L_{eq}. This would be less than the City of Torrance Municipal Code Region 3 noise standards of 50 dBA during daytime hours and 45 dBA during nighttime hours. Therefore, the noise from the parking structure noise would be **less than significant**.

[14] The uppermost parking deck elevation would be approximately 236' AMSL. The lowest level would be approximately 193' AMSL. The calculations assumed that the parking noise would emanate from the middle floor, which is approximately 215' AMSL. This is conservative because the behavior of the average driver is to park as soon as a usable space is available, and therefore most parking structure noise would emanate from the lower floors.

[15] Additional nuisance noises such as overly sensitive, loud car alarms or unusually loud exhaust systems can and do occasionally result in higher noise levels, which can be disruptive. Such nuisances, when they become a frequent occurrence, are within the purview of City of Torrance code enforcement action.

Table 14
Summary of Average Noise Levels from Parking Structure at Adjacent Off-Site Residences (dBA L_{eq})

Receiver Description	Receiver Distance (feet)	Unshielded Parking Structure Noise (During Peak Traffic Hours) (dBA L_{eq})	Acoustical Shielding[1] (if any) (dB)	Resultant Parking Structure Noise (During Peak Traffic Hours) (dBA L_{eq})	Applicable Region 3 Nighttime Standard (45 dBA L_{eq}) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	418	40.1	12.0	28.1	No
2nd Nearest Residential P/L (24660 Via Valmonte)	575	37.3	7.6	29.8	No
3rd nearest Residential P/L (24704 Via Valmonte	642	36.4	6.0	30.4	No
4th nearest Residential P/L (24706 Via Valmonte	706	35.6	0.0	35.6	No

1 Acoustical shielding calculations provided in Appendix C. For the residence at 24648 Via Valmonte, calculations indicate higher levels of acoustical shielding, but 12 dB was used as a conservative measure.

The corresponding maximum noise levels from the proposed parking structure (which, similarly to the data shown in Table 14 for average noise levels, were derived from the measurements conducted at a similar parking facility) are presented below in Table 15. As shown in Table 15, the very brief L_{max} noise levels would range from approximately 37 to 45 dBA, which would be well below the allowable noise level for noises occurring less than 30 minutes per day or less than 6 minutes per night of 60 dBA (45 dBA+15 dBA) for nighttime noise. Therefore, the noise from parking structure activities would be **less than significant**.

Table 15
Summary of Maximum Noise Levels from Parking Structure at Adjacent Off-Site Residences (dBA L_{max})

Receiver Description	Receiver Distance (feet)	Unshielded Parking Structure Noise (During Peak Hours) (L_{max})	Acoustical Shielding[1] (if any) (dB)	Resultant Parking Structure Noise (During Peak Traffic Hours) (dBA L_{max})	Applicable Region 3 NIghttime Standard (60 dBA for short-term / instantaneous noise) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	418	49.1	12.0	37	No
2nd Nearest Residential P/L (24660 Via Valmonte)	575	46.3	7.6	39	No

Table 15
Summary of Maximum Noise Levels from Parking Structure at Adjacent Off-Site Residences (dBA L_{max})

Receiver Description	Receiver Distance (feet)	Unshielded Parking Structure Noise (During Peak Hours) (L_{max})	Acoustical Shielding[1] (if any) (dB)	Resultant Parking Structure Noise (During Peak Traffic Hours) (dBA L_{max})	Applicable Region 3 Nlghttime Standard (60 dBA for short-term / instantaneous noise) Exceeded?
3rd nearest Residential P/L (24704 Via Valmonte	642	45.4	6.0	39	No
4th nearest Residential P/L (24706 Via Valmonte	706	44.6	0.0	45	No

[1] Acoustical shielding calculations provided in Appendix C. For the residence at 24648 Via Valmonte, calculations indicate higher levels of acoustical shielding, but 12 dB was used as a conservative measure.

Parking Structure Noise – Ventilation System

Depending upon the final design of the proposed parking structure, ventilation fans may be necessary. All mechanical equipment will be internal to the garage and would be completely enclosed and sound-attenuated. Exterior noise from ventilation system equipment, if needed, would be negligible and **less than significant**.

Combined Noise Levels – Mechanical Equipment and On-Site Activities.

The combined noise from on-site activities and mechanical equipment noise (summarized in Table 16), would range from approximately 41 to 45 dBA L_{eq}. The highest combined operational noise levels (45.3 dBA L_{eq}) would occur at the nearest residence to the project site, at 24648 Via Valmonte. As shown in Table 16, the project would not result in an exceedance of the City of Torrance daytime (7 a.m. to 10 p.m.) noise standard. Combined noise levels would be **less than significant**.

Table 16
Summary of Combined Noise Levels from HVAC Equipment and On-site Activities at Adjacent Off-Site Residences (dBA L_{eq})

Receiver Description	Parking Structure Noise (dBA L_{eq})	Pool Deck Noise (dBA L_{eq})	HVAC Noise (dBA L_{eq})	Combined Parking Structure, Pool Deck and HVAC Noise (dBA L_{eq})	Applicable Region 3 Daytime Standard (50 dBA L_{eq}) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	28.1	39.8	43.8	45.3	No
2nd Nearest Residential P/L (24660 Via Valmonte)	29.8	34.6	40.0	41.4	No
3rd nearest Residential P/L (24704 Via Valmonte	30.4	41.3	37.7	43.1	No
4th nearest Residential P/L (24706 Via Valmonte	35.6	41.3	35.4	43.1	No

5.2 Excessive Groundborne Vibration or Groundborne Noise Levels

The project has the potential to result in significant levels of groundborne vibration during construction. Groundborne vibration from construction activities is typically attenuated over short distances. The heavier pieces of construction equipment used at this site could include bulldozers, graders, loaded trucks, water trucks, and pavers. Based on published vibration data, the anticipated construction equipment would generate an RMS vibration level of approximately 87 VdB re 1 micro-inch/second at a distance of 25 feet from the source (FTA 2006). The closest existing residences are approximately 77.5 feet or more from the construction area. At this distance and with the anticipated construction equipment, the RMS vibration levels would be approximately 72.3 VdB. This would be less than the recommended threshold of 80 VdB for human response within residential structures. Vibration from construction equipment may be perceptible at times but the amount of time would be relatively brief as the construction equipment moves around the site. Furthermore, the majority of the construction work would take place well away from the nearest existing residences, and the vibration would be temporary. Therefore, the potential impact from groundborne vibration during construction would be less than significant.

Following construction, the proposed project would not have a potential to create significant levels of groundborne vibration, because of the nature of the project (i.e., a multi-family residential development). Operational vibration would be negligible and less than significant.

With regards to potential for structural damage, the vibration levels are presented in terms of inches per second peak particle velocity (PPV). Based on published vibration data, the anticipated construction equipment would generate vibration levels of approximately 0.089 inches per second PPV at a distance of 25 feet from the source (FTA 2006). At the nearest existing residences located 77 or more feet away from the nearest heavy construction work, the resultant peak particle velocity would be approximately 0.017 inch/second. This level would be less than the recommended threshold of 0.20 inches per second for potential of architectural damage to normal houses with plastered walls and ceilings. Construction vibration impacts would be less than significant. No mitigation measures are required.

5.3 Substantial Permanent Increase in Ambient Noise Levels

The project would incrementally increase off-site traffic volumes along adjacent roads, including Hawthorne Boulevard. However, as addressed in Section 5.1 and shown in Table 10, the resulting incremental increase in traffic noise compared to levels without the project would be less than 1 dBA (0 dBA L_{dn} when rounded to whole numbers). The project would not result in an audible or measurable increase in traffic noise. Project-related traffic noise impacts would therefore be **less than significant**.

Combined On-site Operational Noise and Existing Ambient Noise

As previously shown in Table 16 (Section 5.1.2) the combined noise from on-site activities and mechanical equipment noise would range from approximately 41 to 45 dBA L_{eq}. The highest combined operational noise levels (45.3 dBA L_{eq}) would occur at the nearest residence to the project site, at 24648 Via Valmonte (Table 17). This is also the location in which an ambient noise measurement was conducted, in which the dominant noise source was traffic noise (from Hawthorne Boulevard). The measured ambient noise level at this location was 60.5 dBA L_{eq}. Combining this noise level with the operational noise results in an increase of approximately 0.1 dB (i.e., 60.6 dBA L_{eq}). In the context of community noise, this is not an audible change and would not be a substantial increase. Therefore, the permanent noise increase would be less than significant.

Table 17
Summary of Combined On-Site Noise Levels and
Existing Ambient Noise Levels (dBA L_{eq})

Receiver Description	Combined Parking Structure, Pool Deck and HVAC Noise (From Table 15)	Existing Measured Noise Level (From Table 2)	Combined On-Site Noise Level Plus Existing Noise Level
Nearest Residential P/L (24648 Via Valmonte)	45.3	60.5	60.6

5.4 Substantial Temporary or Periodic Increase in Ambient Noise

As discussed in Section 5.1.1, noise levels from construction activities would generate temporary noise levels ranging from approximately 55 dBA to 73 dBA L_{eq}; noise levels on an L_{10} basis are estimated to range from approximately 58 dBA to 76 dBA L_{10}; and noise levels on an L_{max} basis are estimated to range from approximately 59 dBA to 74 dBA L_{max}. The measured ambient noise levels at the nearest noise-sensitive receiver (ST4) were 60.5 dBA L_{eq}, 63.0 dBA L_{10} and 74.5 dBA L_{max}. Without mitigation, this is considered to be a substantial increase.

Implementation of MM NOI-1 would reduce construction-related noise impacts to a level that is **less than significant**; the resultant noise levels during construction would be reduced substantially, and would not constitute a substantial temporary noise increase. No additional mitigation is required for conventional construction activities.

5.5 Airport Noise / Airport Land Use Plan

The project site is located approximately 0.5 mile from Torrance Municipal Airport (Zamperini Field). Based upon the City's General Plan Noise Element (City of Torrance, 2010), the project site is located approximately 2,200 feet southwest of the airport's 60 dBA CNEL noise contour, and thus noise from aircraft operations would be well below 60 dBA CNEL. Additionally, the proposed project is outside of the airport's Planning Boundary/Airport Influence Area (Los Angeles County Airport Land Use Commission 2003). The project would not result in people residing or working in the project area to being exposed to excessive noise levels from aircraft. This impact would be **less than significant**.

5.6 Private Airstrip

No private airstrips exist in the project vicinity (Airnav.com, 2017). Therefore, there would be **no impact** associated with noise from aircraft utilizing a private airstrip.

6 MITIGATION

6.1 Construction Noise Mitigation Measures

MM NOI-1 The following measure shall be incorporated into the Project contract specifications to reduce construction noise impacts to a level below significance:

> Prior to commencement of construction activities involving heavy equipment, temporary construction noise barriers shall be constructed in the locations shown in Figure 8. The noise barriers shall be a minimum of six feet in height, must have a surface density of at least four pounds per square foot, and be free of openings and cracks (with the exception of expansion joints gaps and other construction techniques, which could create an opening or crack).

Effectiveness of mitigation: With implementation of MM NOI-1, the construction noise level would be reduced to 65 dBA or less, as shown in Table 18. The construction noise levels would not exceed the City of Torrance threshold of significance for construction noise, and would not represent a substantial noise increase above levels existing without the project. Noise impacts would be **less than significant with mitigation incorporated.**

Table 18
Construction Noise Model Results Summary - with Mitigation

Residence	Construction Phase	Construction Noise at Representative Receiver Distances (dBA)			
		Nearest or Typical Construction Work Location Distance (feet)	L_{eq}	L_{10}	L_{max}
24648 Via Valmonte	Grading	*Nearest Construction Work (77.5')*	62	65	62
		Typical Construction Work (245')	58	61	57
	Paving	*Nearest Construction Work (77.5')*	60	63	61
		Typical Construction Work (245')	57	60	56
	Building Construction - Parking Garage	*Nearest Construction Work (96')*	60	63	63
		Typical Construction Work (164')	61	64	64
	Building Construction - Residential	*Nearest Construction Work (96')*	56	59	60
		Typical Construction Work (164')	53	56	57

Table 18
Construction Noise Model Results Summary - with Mitigation

Residence	Construction Phase	Construction Noise at Representative Receiver Distances (dBA)			
		Nearest or Typical Construction Work Location Distance (feet)	L_{eq}	L_{10}	L_{max}
24660 Via Valmonte	Grading	*Nearest Construction Work (177')*	56	59	56
		Typical Construction Work (410')	53	56	52
	Paving	*Nearest Construction Work (177')*	55	58	55
		Typical Construction Work (410')	52	55	52
	Building Construction - Parking Garage	*Nearest Construction Work (200')*	55	58	57
		Typical Construction Work (307')	56	59	58
	Building Construction - Residential	*Nearest Construction Work (200')*	51	54	55
		Typical Construction Work (307')	49	52	52
24704 Via Valmonte	Grading	*Nearest Construction Work (135')*	61	64	60
		Typical Construction Work (370')	54	57	53
	Paving	*Nearest Construction Work (135')*	59	62	59
		Typical Construction Work (370')	53	56	53
	Building Construction - Parking Garage	*Nearest Construction Work (240)*	55	58	58
		Typical Construction Work (315')	55	58	58
	Building Construction - Residential	*Nearest Construction Work (240)*	52	55	55
		Typical Construction Work (315')	50	53	53
24706 Via Valmonte	Grading	*Nearest Construction Work (187')*	58	61	57
		Typical Construction Work (450')	53	56	52
	Paving	*Nearest Construction Work (187')*	57	60	57
		Typical Construction Work (450')	51	54	51

Table 18
Construction Noise Model Results Summary - with Mitigation

Residence	Construction Phase	Construction Noise at Representative Receiver Distances (dBA)			
		Nearest or Typical Construction Work Location Distance (feet)	L_{eq}	L_{10}	L_{max}
	Building Construction - Parking Garage	*Nearest Construction Work (347')*	52	55	55
		Typical Construction Work (425')	53	56	55
	Building Construction - Residential	*Nearest Construction Work (347')*	48	51	52
		Typical Construction Work (425')	48	51	52

Source: Appendix D

6.2 Operational Noise Mitigation Measures

MM NOI-2 **Interior Noise.** To comply with the City and State's 45 dBA L_{dn}/CNEL interior noise standard, the dwelling units so designated in Table 11 (in **bolded** numbers) and depicted in Figure 7 will most likely require mechanical ventilation system or air conditioning system and possibly sound-rated windows. Prior to issuance of building permits, an interior noise analysis shall be required for those dwelling units identified in Table 11. Additionally, an interior noise analysis shall be required for residential units that are adjacent to elevators and other mechanical equipment, to ensure compliance with the City and State's 45 dBA L_{dn}/CNEL interior noise standard.

Effectiveness of mitigation: With implementation of MM NOI-2, the project's interior habitable spaces (i.e., living rooms, sleeping rooms, etc.) would have noise levels which would be in verified compliance with the City and State's 45 dBA Ldn/CNEL interior noise standard. Noise impacts would be less than significant with mitigation incorporated.

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8 LIST OF PREPARERS

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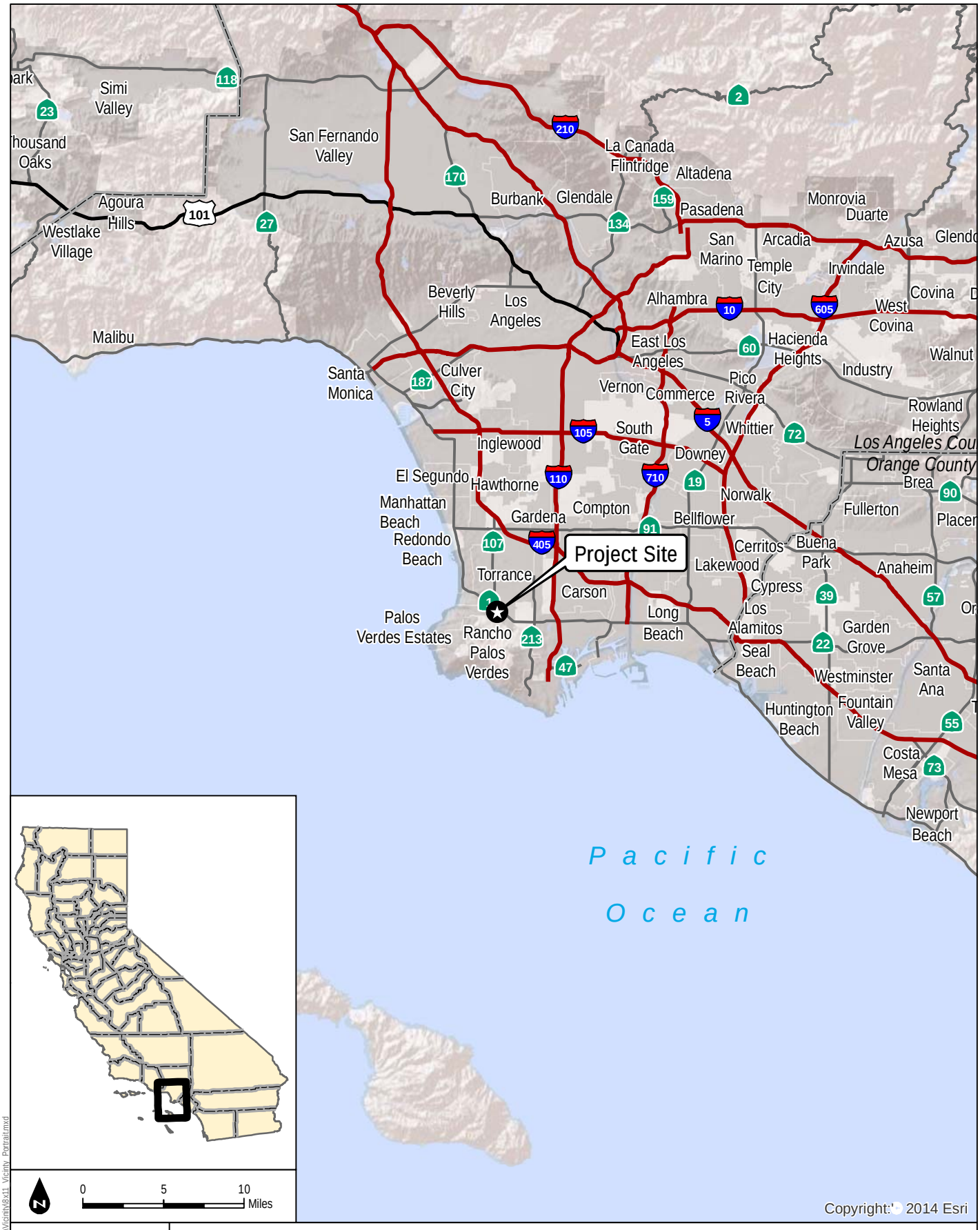

DUDEK

FIGURE 1

Regional Map

Solana Torrance Project

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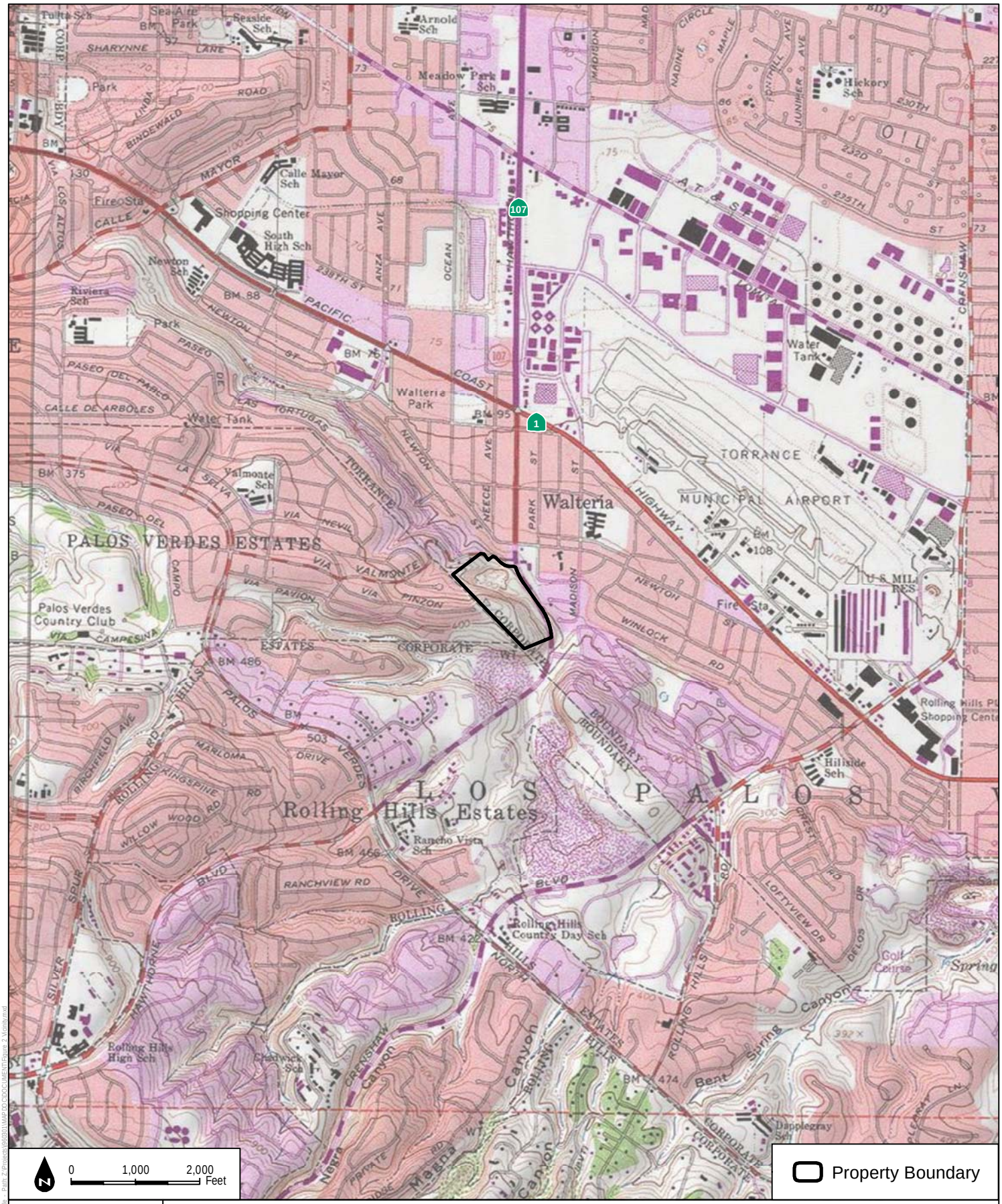

SOURCE: USGS 7.5-Minute Series Torrance Quadrangle

FIGURE 2
Vicinity Map

DUDEK

Solana Torrance Project

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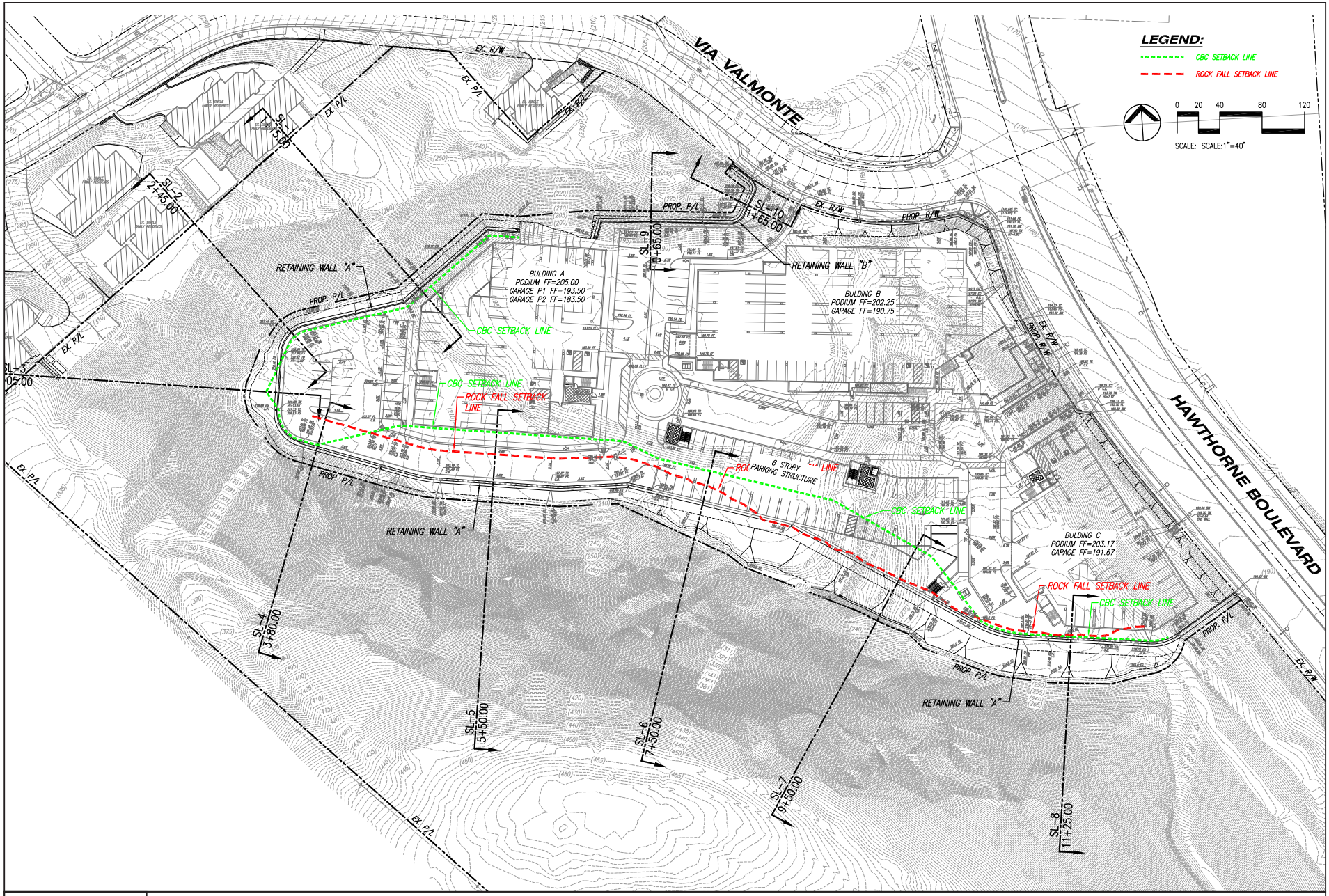

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FIGURE 3
Site Plan

Solana Torrance Project

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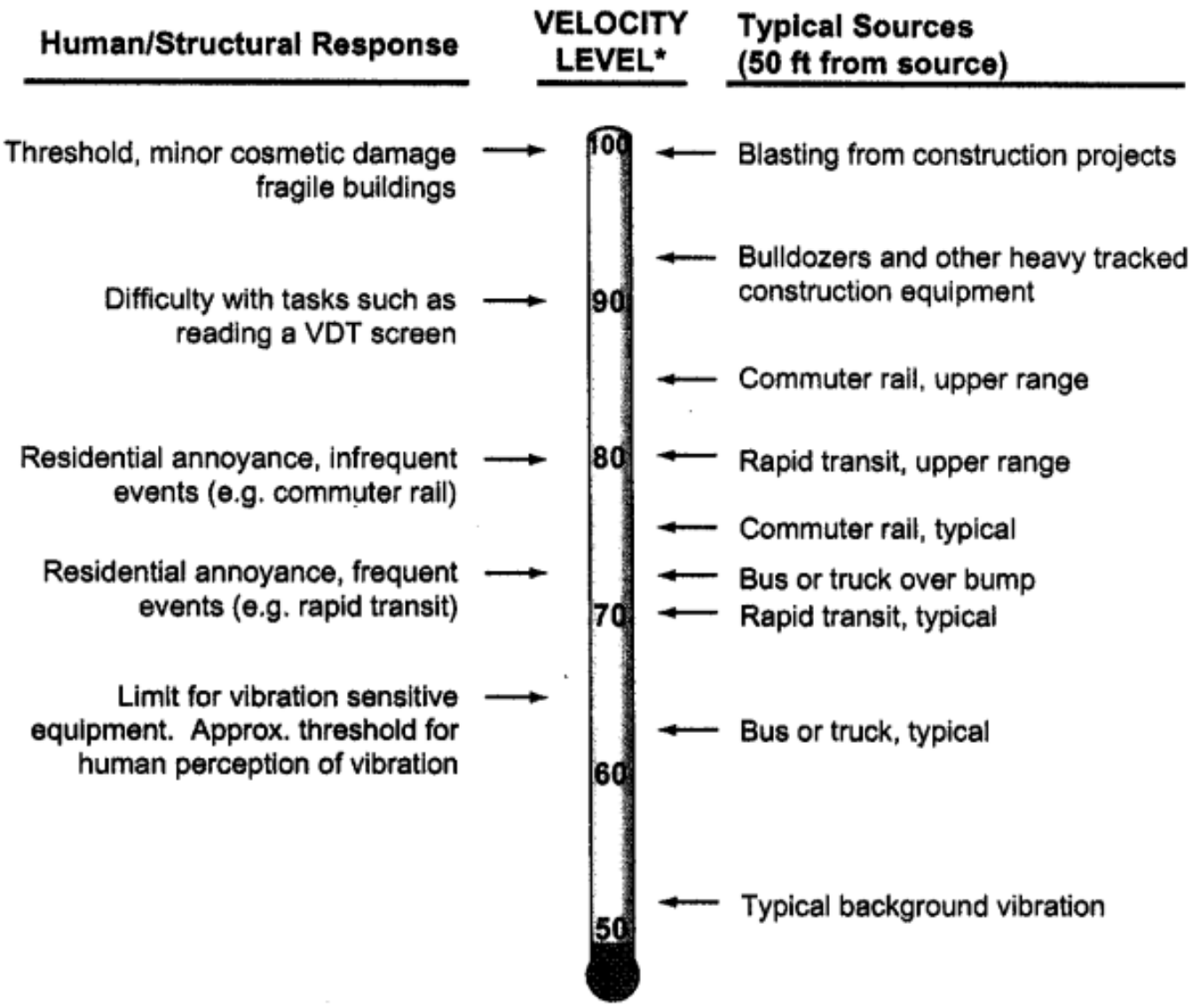

DUDEK

FIGURE 4
Typical Levels of Groundborne Vibration

Solana Torrance Project

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SOURCE: Bing Maps, 2016

FIGURE 5

Noise Measurement Locations

Solana Torrance Project

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SOURCE: Withee Malcom, 2016

FIGURE 6

Noise Modeling Receiver Locations

Solana Torrance Project

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SOURCE: Withee Malcom, 2016

FIGURE 7

Units Requiring Subsequent Interior Noise Analysis

Solana Torrance Project

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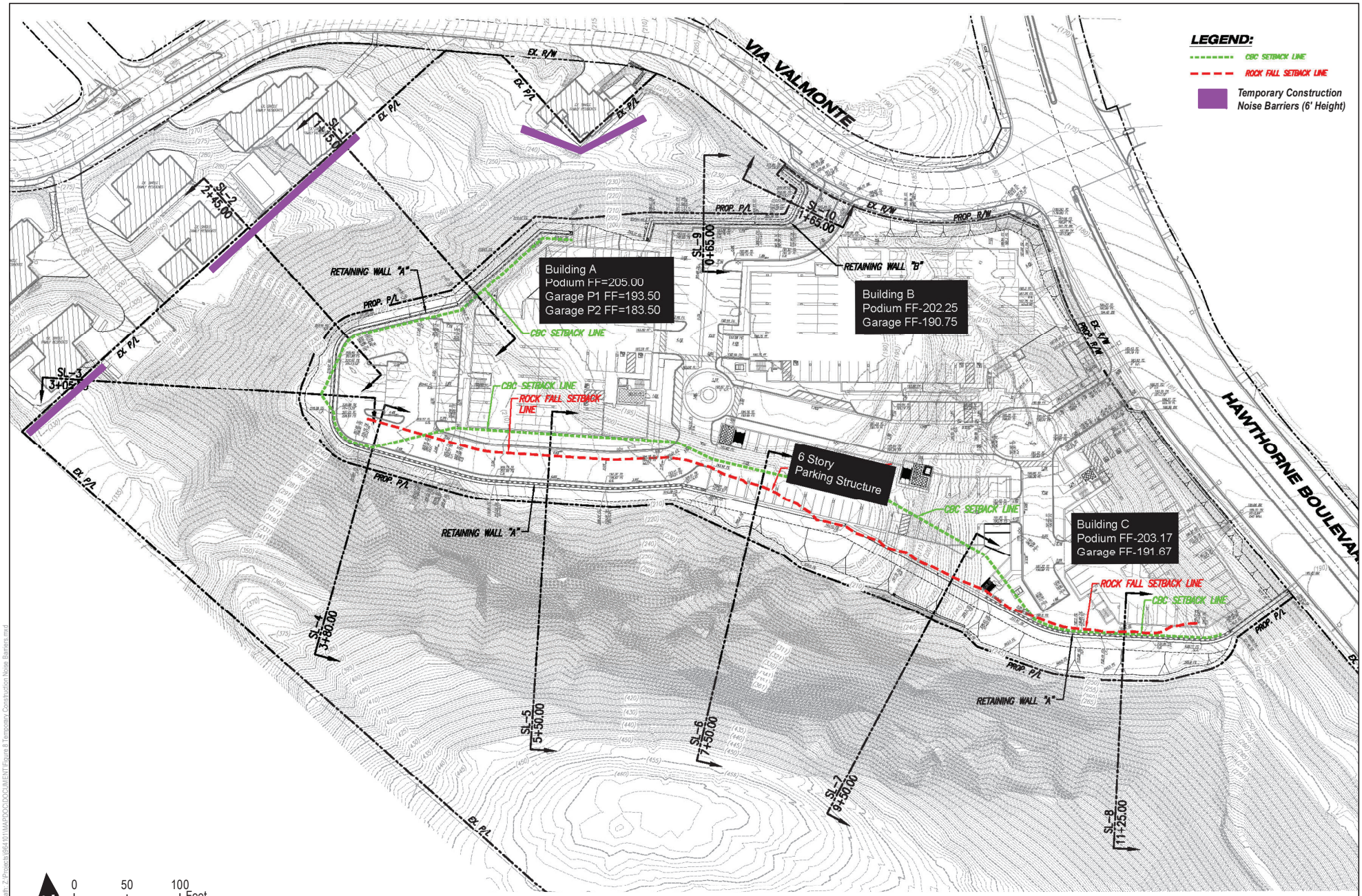

SOURCE: Withee Malcom, 2016

FIGURE 8

Temporary Construction Noise Barriers

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Solana Torrance Project

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APPENDIX A

Field Noise Data Sheets

FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: Solana Torrance — PROJECT #: 9641
SITE ID: M1 - Project Site (S/E Corner)
SITE ADDRESS:
OBSERVER(S): Stephanie Tang
START DATE: 5/11/16 — END DATE: 5/11/16
START TIME: 11:53AM — END TIME: 12:08pm

METEOROLOGICAL CONDITIONS

TEMP: 65.9 F — HUMIDITY: 72.7 % R.H. — WIND: CALM / LIGHT / MODERATE
WINDSPD: 3.4 MPH — DIR. N NE S (SE) S SW W NW — VARIABLE / STEADY / GUSTY
SKY: (SUNNY) CLEAR — OVRCAST — (PRTLY CLDY) — FOG — RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT: Piccolo SLM — TYPE 1 (2) — SERIAL #: 13625008
CALIBRATOR: BSWA CA114 — SERIAL #: 490151
CALIBRATION CHECK — PRE-TEST: 94.0 dBA SPL — POST-TEST: 94.0 dBA SPL — WINDSCRN: ✓

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M1	11:53AM	12:08PM	57.5	64.9	52.3				

COMMENTS: Noise Sources: Aircraft; Rustling leaves; Birds; Roadway Traffic Noise along Via Valmonte & Hawthorne Blvd

SOURCE INFO AND TRAFFIC COUNTS N/A

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: — DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN

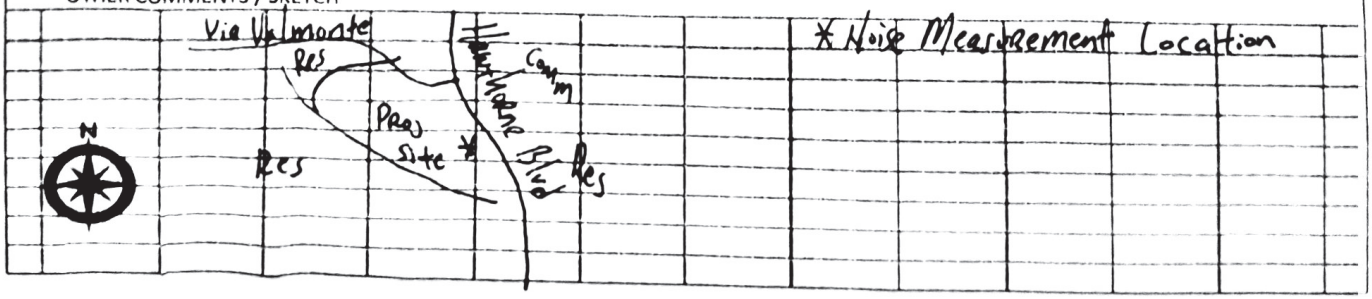
COUNT 1 (OR RDWY 1) DIRECTION	SPEED NB/EB	SPEED SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___	COUNT 2 (OR RDWY 2) DIRECTION	SPEED NB/EB	SPEED SB/WB
AUTOS						
MED TRKS						
HVY TRKS						
BUSES						
MOTRCLS						

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH

TERRAIN: (HARD) SOFT MIXED (FLAT) OTHER: Dirt Area
PHOTOS: See Attached
OTHER COMMENTS / SKETCH



DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT Solana Torrance — PROJECT # 9641
SITE ID M2 - Project Site (N/E Corner)
SITE ADDRESS — OBSERVER(S) Stephanie Tang
START DATE 5/11/16 — END DATE 5/11/16
START TIME 12:28pm — END TIME 12:43pm

METEOROLOGICAL CONDITIONS

TEMP 73.2 F — HUMIDITY 64.7 % R.H. — WIND (CALM) (LIGHT) MODERATE
WINDSPD 2.3 MPH — DIR. N NE S (SE) S SW W NW — VARIABLE STEADY GUSTY
SKY (SUNNY) CLEAR — OVRCAST (PRTLY CLDY) FOG — RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT Piccolo SLM — TYPE 1 (2) — SERIAL # 130625008
CALIBRATOR B&KWA CA 114 — SERIAL # 490151
CALIBRATION CHECK — PRE-TEST ____ dBA SPL — POST-TEST 94.0 dBA SPL — WINDSCRN ✓

SETTINGS (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER: ____

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M2	12:28pm	12:43pm	64.4	74.0	55.2				

COMMENTS

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER: ____
ROADWAY TYPE: Hawthorne Blvd — DIST. TO RDWY C/L OR EOP: ~120'

TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1) DIRECTION	(NB/EB)	(SB/WB)	SPEED NB/EB	SPEED SB/WB
AUTOS	331	254		
MED TRKS	4	0		
HVY TRKS	8	2		
BUSES	1	1		
MOTRCLS	0	1		

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ____

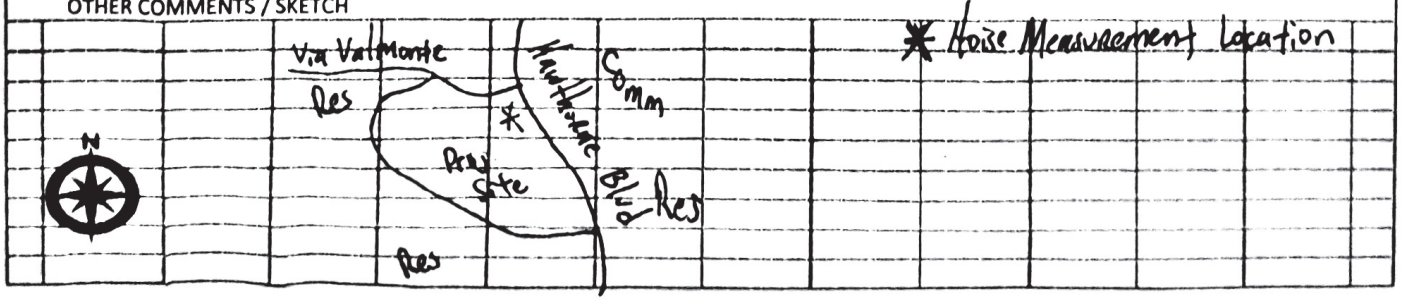
COUNT 2 (OR RDWY 2)	(NB/EB)	(SB/WB)	MIN SPEED NB/EB	MIN SPEED SB/WB
	67	69		
	0	2		
	0	0		
	0	0		
	0	0		

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 45mph — Via Valmonte 25mph

OTHER NOISE SOURCES (BACKGROUND): (DIST. AIRCRAFT) (RUSTLING LEAVES) DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS / YELLING) DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: Car Alarm Honk

DESCRIPTION / SKETCH

TERRAIN (HARD) SOFT MIXED (FLAT) OTHER: Dirt Area
PHOTOS See Attached
OTHER COMMENTS / SKETCH



DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT Skana Torrance — PROJECT # 9641
SITE ID M3 - SFR (Backyard)
SITE ADDRESS 3662 Blair Torrance, CA — OBSERVER(S) Stephanie Tang
START DATE 5/11/16 — END DATE 5/11/16
START TIME 1:33pm — END TIME 1:48pm

METEOROLOGICAL CONDITIONS
TEMP 79.0 F — HUMIDITY 60.7 % R.H. — WIND (CALM) LIGHT MODERATE
WINDSPD 0 MPH — DIR. N NE E SE S SW W NW — VARIABLE STEADY GUSTY
SKY (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT Piccolo SLM — TYPE 1 (2) — SERIAL # 13062500 8
CALIBRATOR B&KWA CA 114 — SERIAL # 490151
CALIBRATION CHECK — PRE-TEST 94.0 dBA SPL — POST-TEST 94.0 dBA SPL — WINDSCRN ✓

SETTINGS (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M3	1:33pm	1:48pm	62.9	68.5	51.9				

COMMENTS
Noise Sources: Rustling leaves, Vehicular traffic noise off Hawthorne Blvd & Blair Ave; Birds, Distant Aircraft; Distant Landscape Noise; Dist. Trash trucks
Comments: Noise measurements @ Elevation Below Hawthorne Blvd. (~10'+) Grade, 5' Masonry Block along Western Boundary & Ornamental Trees

SOURCE INFO AND TRAFFIC COUNTS N/A
PRIMARY NOISE SOURCE TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: DIST. TO RDWY C/L OR EOP:

TRAFFIC COUNT DURATION: ___ MIN

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB SPEED	SB/WB SPEED	NB/EB	SB/WB
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

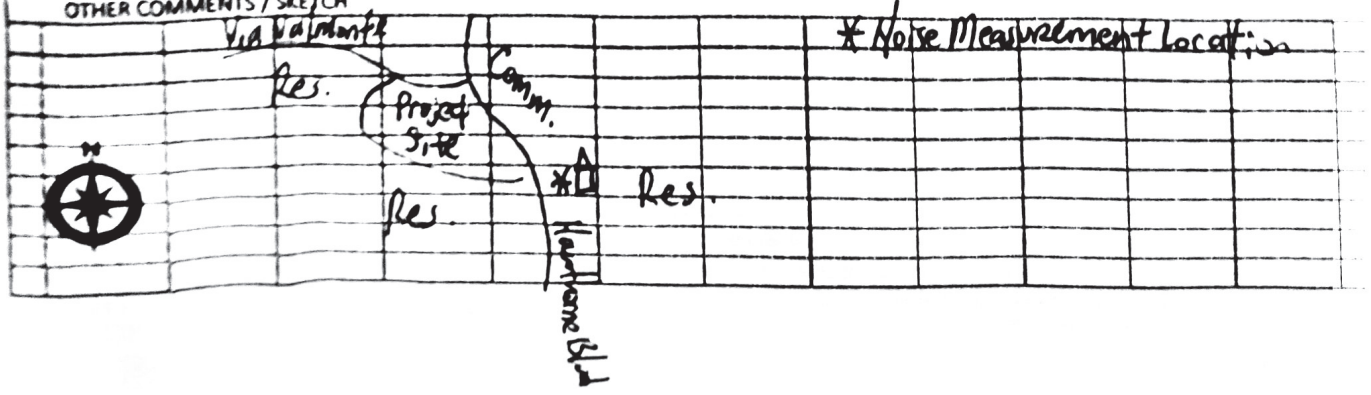
IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

COUNT 2 (OR RDWY 2) ___ MIN	NB/EB SPEED	SB/WB SPEED	NB/EB	SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH
TERRAIN (HARD) SOFT MIXED (FLAT) OTHER:
PHOTOS See Attached
OTHER COMMENTS / SKETCH



FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT Solana Torrance PROJECT # 9641
SITE ID M4 - SFR
SITE ADDRESS 24648 Via Valmonte Torrance, CA OBSERVER(S) Stephanie Tang
START DATE 5/11/16 END DATE 5/11/16
START TIME 2:02pm END TIME 2:17pm

METEOROLOGICAL CONDITIONS

TEMP 71.4 F HUMIDITY 66.4 % R.H. WIND CALM (LIGHT) MODERATE
WINDSPD 1.5 MPH DIR. N NE S SE, S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT Piccolo SLM TYPE 1 (2) SERIAL # 13062500
CALIBRATOR BSWA CA114 SERIAL # 49015
CALIBRATION CHECK PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCRN ✓

SETTINGS (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M4	2:02PM	2:17PM	60.5	74.5	53.2				

COMMENTS

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: Via Valmonte DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB
AUTOS	57	68		
MED TRKS	1	0		
HVY TRKS	0	0		
BUSES	0	0		
MOTRCLS	0	0		

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

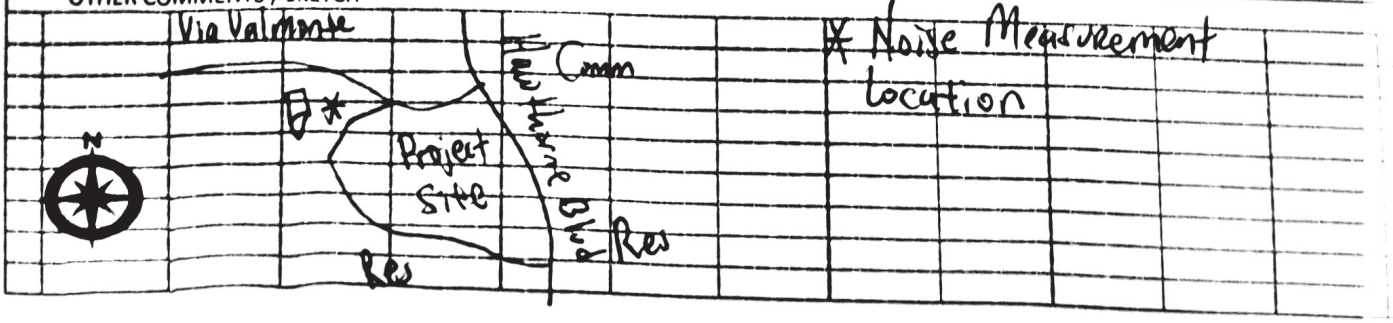
COUNT 2 (OR RDWY 2) ___ MIN	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 25mph

OTHER NOISE SOURCES (BACKGROUND): (DIST. AIRCRAFT) (RUSTLING LEAVES) DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DIST. GARDENERS/LANDSCAPING NOISE
OTHER: Wind Chime; Distant Auto Repair Op. Noise; Distant Backing up Noise.

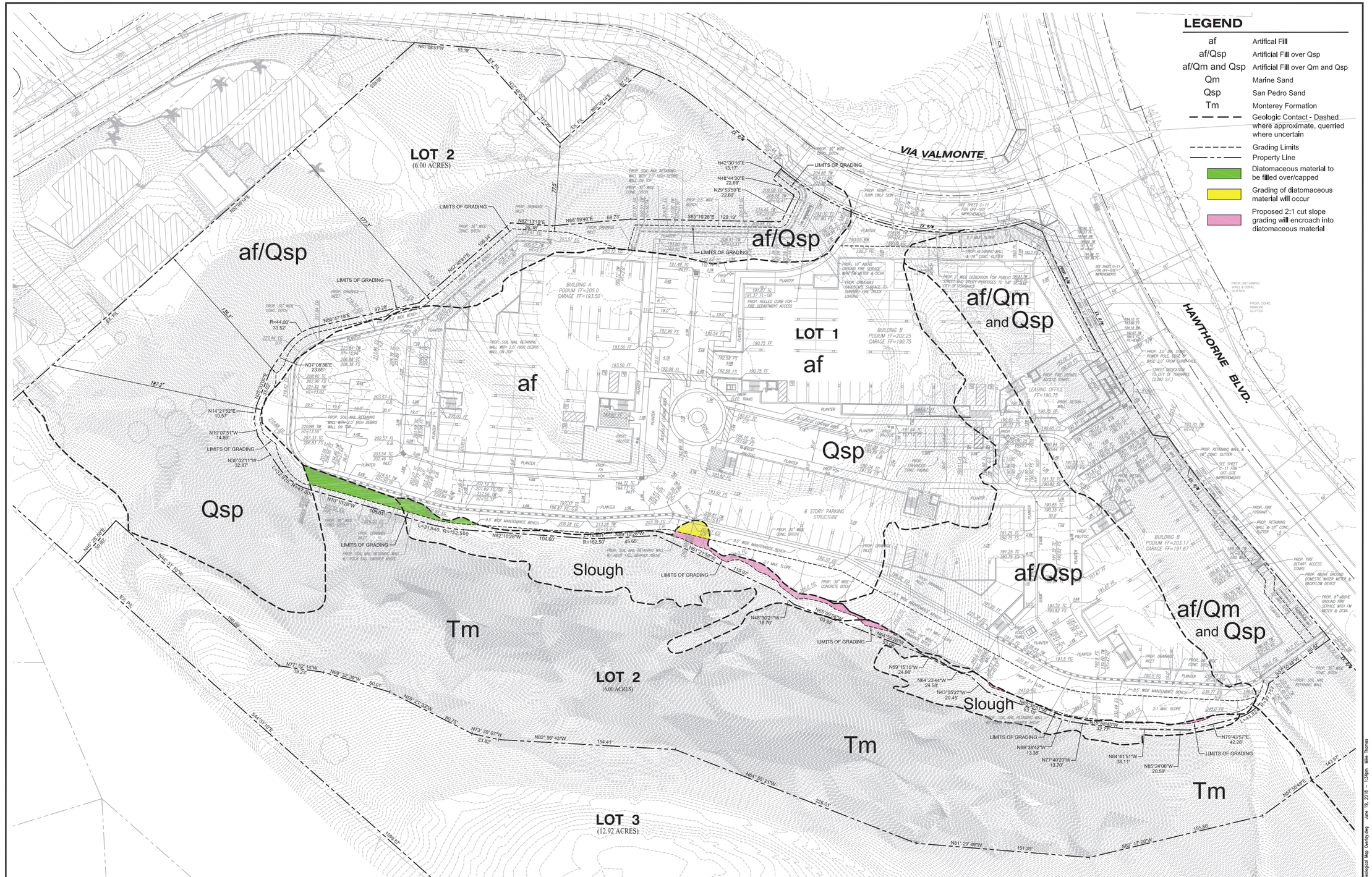
DESCRIPTION / SKETCH

TERRAIN (HARD) SOFT MIXED (FLAT) OTHER:
PHOTOS See Attached
OTHER COMMENTS / SKETCH



APPENDIX B

Project Cross-Sections



SOLANA

REYLENN PROPERTIES, LLC

GEOLOGICAL MAP OVERLAY REFERENCE EXHIBIT

TORRANCE, CALIFORNIA

PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444

VIA VALMONTE

NO SCALE

24680

24660

24648

24702

24704

24708

24706

P/L

±118'

±200'

±269'

±362'

±775'

A

B

C

D

HAWTHORNE BLVD.

RUBBLE

P/L

SOLANA

REYLENN PROPERTIES LLC

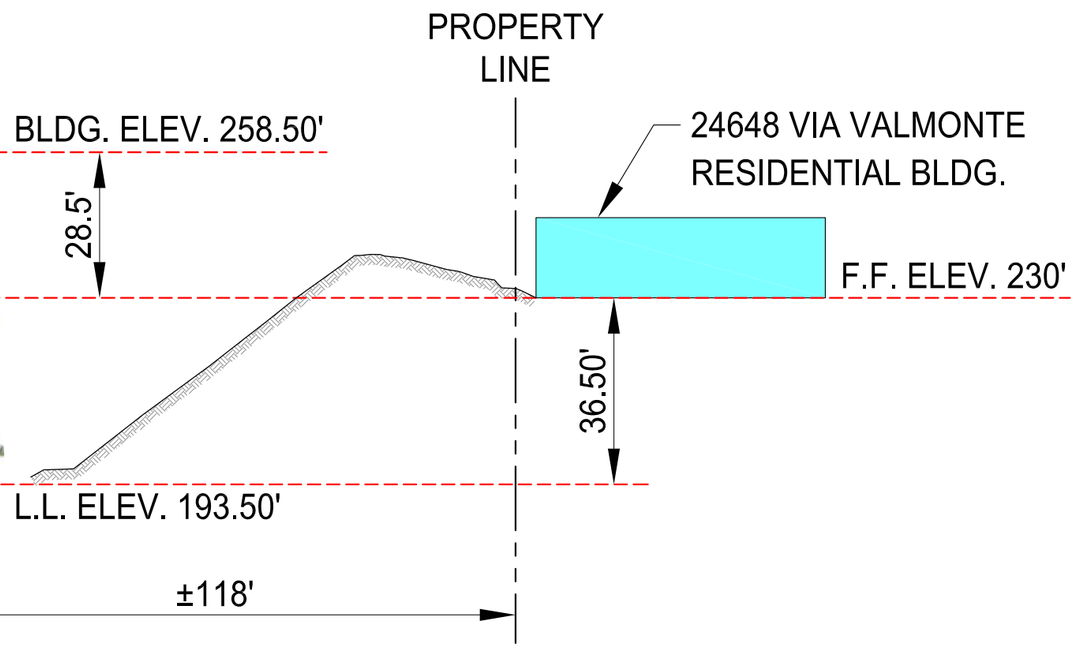
BUILDING SETBACKS EXHIBIT

TORRANCE , CALIFORNIA

KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Tel (949) 756-6440
Newport Beach, California 92660 Fax (949) 756-6444

65.0'

BUILDING A



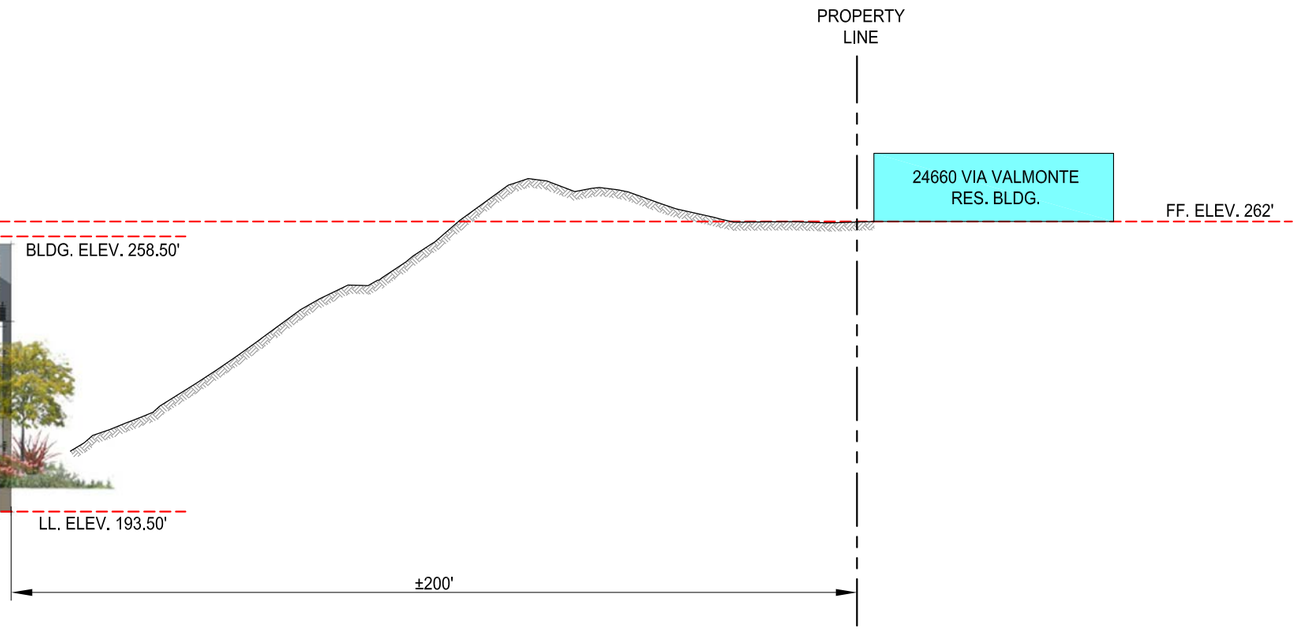
SOLANA

REYLENN PROPERTIES LLC

BUILDING SETBACKS/ VERTICAL SEPARATION
24648 VIA VALMONTE - ELEVATION EXHIBIT

TORRANCE , CALIFORNIA

KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Tel (949) 756-6440
Newport Beach, California 92660 Fax (949) 756-6444



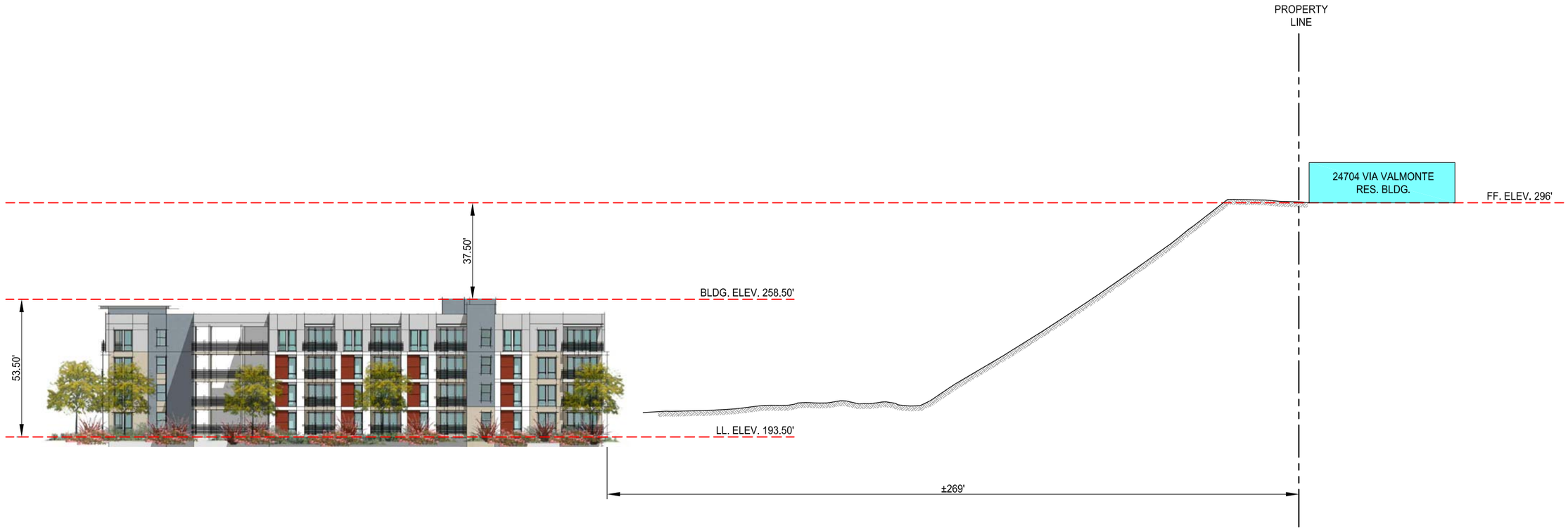
SOLANA

REYLENN PROPERTIES LLC

24660 VIA VALMONTE - ELEVATION EXHIBIT

TORRANCE , CALIFORNIA

KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Tel (949) 756-6440
Newport Beach, California 92660 Fax (949) 756-6444



SOLANA

REYLENN PROPERTIES LLC

24704 VIA VALMONTE - ELEVATION EXHIBIT

TORRANCE , CALIFORNIA

KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Tel (949) 756-6440
Newport Beach, California 92660 Fax (949) 756-6444

PROPERTY LINE

24706 VIA VALMONTE
RES. BLDG.

FF. ELEV. 313'

54.50'

BLDG. ELEV. 258.50'

53.50'

LL. ELEV. 193.50'

±362'

SOLANA

REYLENN PROPERTIES LLC

24706 VIA VALMONTE - ELEVATION EXHIBIT

TORRANCE , CALIFORNIA

KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
20411 SW Birch Street - Suite 310 Tel (949) 756-6440
Newport Beach, California 92660 Fax (949) 756-6444

APPENDIX C

Acoustical Shielding Calculations

SHIELDING ATTENUATION CALCULATIONS: RAY-TRACE PROGRAM (FOR A POINT-SOURCE)

Uses the Equation: $(A_{et})_{point}=20*\log[(2*pi*N)^{1/2}/\tanh(2*pi*N)^{1/2}]+5dB$

(Ref. Pg.174, Noise and Vibration Control, L.L. Beranek Editor, 1971 Ed.

Project: Solana Torrance
Date: 14-Nov-18
By: MG

Please Enter: Using English (E) units E

Ray Trace Number/Description	Source-Receiver Distance (ft. or m)	Source Base Elev. (ft. or m)	Source Height above Ground (ft. or m)	Receiver Base Elev. (ft. or m)	Receiver Height above Ground (ft. or m)	Horizontal Barrier Dist. (in ref. to source) (ft. or m)	Barrier Base Elev. (ft. or m)	Barrier Height (ft. or m)	Dominant Freq.(Hz)	Source-Rcvr Straight-Line Dist. (ft. or m)	Source-Top-of-Barrier Dist. (ft. or m)	Receiver-Top-of-Barrier Dist. (ft. or m)	Lambda	N_{max}	$AE_{(barriers)}$ (dB)
Construction Work - Nearest - 24648 Via Valmonte - Without Temporary Construction Barrier	77.5	204.0	10.0	230.0	5.0	47.5	240.0	**0.0**	500.0	80.3	54.2	30.4	2.3	3.8	**18.8**
Construction Work - Typical - 24648 Via Valmonte - WithoutTemporary Construction Barrier	245.0	195.0	10.0	230.0	5.0	215.0	240.0	**0.0**	500.0	246.8	217.8	30.4	2.3	1.3	**14.0**
Construction Work - Nearest - 24660 Via Valmonte - Without Temporary Construction Barrier	177.3	220.0	10.0	262.0	5.0	147.3	270.0	**0.0**	500.0	181.1	152.6	30.1	2.3	1.5	**14.7**
Construction Work - Typical - 24660 Via Valmonte - Without Temporary Construction Barrier	410.0	195.0	10.0	262.0	5.0	380.0	270.0	**0.0**	500.0	414.7	385.5	30.1	2.3	0.9	**12.6**
Construction Work - Nearest - 24648 Via Valmonte - With Temporary Construction Barrier	77.5	204.0	10.0	230.0	5.0	47.5	240.0	**6.0**	500.0	80.3	57.3	32.0	2.3	7.9	**22.0**
Construction Work - Typical - 24648 Via Valmonte - With Temporary Construction Barrier	245.0	195.0	10.0	230.0	5.0	215.0	240.0	**6.0**	500.0	246.8	218.9	32.0	2.3	3.5	**18.5**
Construction Work - Nearest - 24660 Via Valmonte - With Temporary Construction Barrier	177.3	220.0	10.0	262.0	5.0	147.3	270.0	**6.0**	500.0	181.1	154.3	31.3	2.3	4.0	**19.0**
Construction Work - Typical - 24660 Via Valmonte - With Temporary Construction Barrier	410.0	195.0	10.0	262.0	5.0	380.0	270.0	**6.0**	500.0	414.7	386.6	31.3	2.3	2.9	**17.6**
Construction Work - Nearest - 24704 Via Valmonte - With Temporary Construction Barrier	135.0	220.0	10.0	269.0	5.0	115.0	269.0	**6.0**	500.0	142.0	123.5	20.0	2.3	1.4	**14.3**
Construction Work - Typical - 24704 Via Valmonte - With Temporary Construction Barrier	370.0	195.0	10.0	269.0	5.0	350.0	269.0	**6.0**	500.0	376.4	356.9	20.0	2.3	0.5	**10.6**
Construction Work - Nearest - 24706 Via Valmonte - With Temporary Construction Barrier	187.0	220.0	10.0	313.0	5.0	167.0	312.0	**6.0**	500.0	206.7	188.8	20.0	2.3	1.9	**15.7**
Construction Work - Typical - 24706 Via Valmonte - With Temporary Construction Barrier	450.0	195.0	10.0	313.0	5.0	430.0	312.0	**6.0**	500.0	464.0	444.6	20.0	2.3	0.6	**10.9**

SHIELDING ATTENUATION CALCULATIONS: RAY-TRACE PROGRAM (FOR A POINT-SOURCE)

Uses the Equation: $(A_{c4})_{point}=20*\log[(2*pi*N)^{1/2}/\tanh(2*pi*N)^{1/2}]+5dB$

(Ref. Pg.174, Noise and Vibration Control, L.L. Beranek Editor, 1971 Ed.

Project: Solana Torrance
Date: 20-Jun-18
By: MG

Please Enter: Using English (E) units E

Ray Trace Number/Description	Source-Receiver Distance (ft. or m)	Source Base Elev. (ft. or m)	Source Height above Ground (ft. or m)	Receiver Base Elev. (ft. or m)	Receiver Height above Ground (ft. or m)	Horizontal Barrier Dist. (in ref. to source) (ft. or m)	Barrier Base Elev. (ft. or m)	Barrier Height (ft. or m)	Dominant Freq.(Hz)	Source-Rcvr Straight-Line Dist. (ft. or m)	Source-Top-of-Barrier Dist. (ft. or m)	Receiver-Top-of-Barrier Dist. (ft. or m)	Lambda	N_{max}	$AE_{(barriers)}$ (dB)
Pool Deck Area Near - 24648 Via Valmonte	416.0	250.4	5.0	230.0	5.0	150.0	249.3	**0.0**	500.0	416.5	150.1	266.4	2.3	0.0	**5.1**
Pool Deck Area Far - 24648 Via Valmonte	564.0	250.4	5.0	230.0	5.0	250.0	249.3	**0.0**	500.0	564.4	250.1	314.3	2.3	0.0	**5.5**
Pool Deck Area Acoustic Center- 24648 Via Valmonte	484.4	250.4	5.0	230.0	5.0	193.6	249.3	**0.0**	500.0	484.8	193.7	291.1	2.3	0.0	**5.3**
Pool Deck Area Near - 24660 Via Valmonte	582.0	250.4	5.0	262.0	5.0	542.0	270.0	**0.0**	500.0	582.1	542.2	40.1	2.3	0.2	**7.5**
Pool Deck Area Far - 24660 Via Valmonte	734.0	250.4	5.0	262.0	5.0	694.0	270.0	**0.0**	500.0	734.1	694.2	40.1	2.3	0.2	**7.3**
Pool Deck Area Acoustic Center - 24660 Via Valmonte	653.6	250.4	5.0	262.0	5.0	613.6	270.0	**0.0**	500.0	653.7	613.8	40.1	2.3	0.2	**7.4**
Pool Deck Area Near - 24704 Via Valmonte	639.0	250.4	5.0	296.0	5.0	222.0	252.0	**0.0**	500.0	640.6	n/a	n/a	n/a	n/a	**0.0**
Pool Deck Area Far - 24704 Via Valmonte	791.0	250.4	5.0	296.0	5.0	355.0	252.0	**0.0**	500.0	792.3	n/a	n/a	n/a	n/a	**0.0**
Pool Deck Area Acoustic Center - 24704 Via Valmonte	710.9	250.4	5.0	296.0	5.0	280.7	252.0	**0.0**	500.0	712.4	n/a	n/a	n/a	n/a	**0.0**
Pool Deck Area Near - 24706 Via Valmonte	720.0	250.4	5.0	313.0	5.0	n/a	n/a	**n/a**	500.0	722.7	n/a	n/a	n/a	n/a	**0.0**
Pool Deck Area Far - 24706 Via Valmonte	840.0	250.4	5.0	313.0	5.0	n/a	n/a	**n/a**	500.0	842.3	n/a	n/a	n/a	n/a	**0.0**
Pool Deck Area Acoustic Center - 24706 Via Valmonte	777.7	250.4	5.0	313.0	5.0	n/a	n/a	**n/a**	500.0	780.2	n/a	n/a	n/a	n/a	**0.0**

Parking Structure Top Deck Near - 24648 Via Valmonte	330.0	236.0	4.0	230.0	5.0	150.0	249.0	**0.0**	500.0	330.0	150.3	180.5	2.3	0.7	**11.6**
Parking Structure Top Deck Far - 24648 Via Valmonte	530.0	236.0	4.0	230.0	5.0	250.0	249.0	**0.0**	500.0	530.0	250.2	280.3	2.3	0.4	**10.0**
Parking Structure Top Deck Acoustic Center-24648 Via Valmonte	418.2	236.0	4.0	230.0	5.0	193.6	249.0	**0.0**	500.0	418.2	193.9	225.0	2.3	0.5	**10.8**
Parking Structure Top Deck Near - 24660 Via Valmonte	465.0	236.0	4.0	262.0	5.0	250.0	252.0	**0.0**	500.0	465.8	250.3	215.5	2.3	0.0	**5.4**
Parking Structure Top Deck Far - 24660 Via Valmonte	712.0	236.0	4.0	262.0	5.0	370.0	252.0	**0.0**	500.0	712.5	370.2	342.3	2.3	0.0	**5.2**
Parking Structure Top Deck Acoustic Center - 24660 Via Valmonte	575.4	236.0	4.0	262.0	5.0	304.1	252.0	**0.0**	500.0	576.0	304.4	271.7	2.3	0.0	**5.3**
Parking Structure Top Deck Near - 24704 Via Valmonte	522.0	236.0	4.0	296.0	5.0	140.0	252.0	**0.0**	500.0	525.6	140.5	385.1	2.3	0.1	**6.3**
Parking Structure Top Deck Far - 24704 Via Valmonte	791.0	236.0	4.0	296.0	5.0	355.0	252.0	**0.0**	500.0	793.3	355.2	438.7	2.3	0.5	**10.7**
Parking Structure Top Deck Acoustic Center - 24704 Via Valmonte	642.6	236.0	4.0	296.0	5.0	222.9	252.0	**0.0**	500.0	645.5	223.3	422.5	2.3	0.3	**8.4**
Parking Structure Top Deck Near - 24706 Via Valmonte	594.0	236.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	599.1	n/a	n/a	n/a	n/a	**0.0**
Parking Structure Top Deck Far - 24706 Via Valmonte	840.0	236.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	843.6	n/a	n/a	n/a	n/a	**0.0**
Parking Structure Top Deck Acoustic Center - 24706 Via Valmonte	706.4	236.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	710.7	n/a	n/a	n/a	n/a	**0.0**
Parking Structure 3rd Flr Deck Near - 24648 Via Valmonte	330.0	215.0	4.0	230.0	5.0	150.0	249.0	**0.0**	500.0	330.4	153.0	180.5	2.3	2.8	**17.4**
Parking Structure 3rd Flr Deck Far - 24648 Via Valmonte	530.0	215.0	4.0	230.0	5.0	250.0	249.0	**0.0**	500.0	530.2	251.8	280.3	2.3	1.7	**15.3**
Parking Structure 3rd Flr Deck Acoustic Center-24648 Via Valmonte	418.2	215.0	4.0	230.0	5.0	193.6	249.0	**0.0**	500.0	418.5	196.0	225.0	2.3	2.2	**16.3**
Parking Structure 3rd Flr Near - 24660 Via Valmonte	465.0	215.0	4.0	262.0	5.0	250.0	252.0	**0.0**	500.0	467.5	252.2	215.5	2.3	0.2	**7.8**

Parking Structure 3rd Flr Far - 24660 Via Valmonte	712.0	215.0	4.0	262.0	5.0	370.0	252.0	**0.0**	500.0	713.6	371.5	342.3	2.3	0.2	**7.4**
Parking Structure 3rd Flr Acoustic Center - 24660 Via Valmonte	575.4	215.0	4.0	262.0	5.0	304.1	252.0	**0.0**	500.0	577.4	305.9	271.7	2.3	0.2	**7.6**
Parking Structure 3rd Flr Near - 24704 Via Valmonte	522.0	215.0	4.0	296.0	5.0	140.0	252.0	**0.0**	500.0	528.4	143.8	385.1	2.3	0.5	**10.5**
Parking Structure 3rd Flr Far - 24704 Via Valmonte	791.0	215.0	4.0	296.0	5.0	355.0	252.0	**0.0**	500.0	795.2	356.5	438.7	2.3	0.0	**5.6**
Parking Structure 3rd Flr Acoustic Center - 24704 Via Valmonte	642.6	215.0	4.0	296.0	5.0	222.9	252.0	**0.0**	500.0	647.8	225.4	422.5	2.3	0.1	**6.0**
Parking Structure 3rd Flr Near - 24706 Via Valmonte	594.0	215.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	602.2	n/a	n/a	n/a	n/a	**0.0**
Parking Structure 3rd Flr Far - 24706 Via Valmonte	840.0	215.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	845.8	n/a	n/a	n/a	n/a	**0.0**
Parking Structure 3rd Flr Acoustic Center - 24706 Via Valmonte	706.4	215.0	4.0	313.0	5.0	n/a	n/a	**n/a**	500.0	713.3	n/a	n/a	n/a	n/a	**0.0**

APPENDIX D

Construction Noise Modeling
Input and Output

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Grading Phase

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	77.5	12
Excavator	No	40		80.7	100	12
Dozer	No	40		81.7	77.5	12
Dump Truck	No	40		76.5	100	12

Results

	Calculated (dBA)		Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	64.9	60.9	N/A	N/A	N/A	N/A
Excavator	62.7	58.7	N/A	N/A	N/A	N/A
Dozer	65.9	61.9	N/A	N/A	N/A	N/A
Dump Truck	58.4	54.5	N/A	N/A	N/A	N/A
Total	65.9	65.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	245	0
Excavator	No	40		80.7	245	0
Dozer	No	40		81.7	245	0
Dump Truck	No	40		76.5	245	0

Results

	Calculated (dBA)		Day		Evening	

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	66.9	62.9	N/A	N/A	N/A	N/A
Excavator	66.9	62.9	N/A	N/A	N/A	N/A
Dozer	67.9	63.9	N/A	N/A	N/A	N/A
Dump Truck	62.6	58.7	N/A	N/A	N/A	N/A
Total	67.9	68.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	177	10
Excavator	No	40		80.7	185	10
Dozer	No	40		81.7	177	10
Dump Truck	No	40		76.5	190	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	59.7	55.8	N/A	N/A	N/A	N/A
Excavator	59.3	55.4	N/A	N/A	N/A	N/A
Dozer	60.7	56.7	N/A	N/A	N/A	N/A
Dump Truck	54.9	50.9	N/A	N/A	N/A	N/A
Total	60.7	61.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	410	0
Excavator	No	40		80.7	410	0
Dozer	No	40		81.7	410	0
Dump Truck	No	40		76.5	410	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	62.4	58.5	N/A	N/A	N/A	N/A
Excavator	62.4	58.5	N/A	N/A	N/A	N/A
Dozer	63.4	59.4	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A
Total	63.4	64	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	135.3	0
Excavator	No	40		80.7	145	0
Dozer	No	40		81.7	135.3	0
Dump Truck	No	40		76.5	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	72.1	68.1	N/A	N/A	N/A	N/A
Excavator	71.5	67.5	N/A	N/A	N/A	N/A
Dozer	73	69	N/A	N/A	N/A	N/A
Dump Truck	66.9	62.9	N/A	N/A	N/A	N/A
Total	73	73.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	370	0
Excavator	No	40		80.7	370	0

Dozer	No	40	81.7	370	0
Dump Truck	No	40	76.5	370	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	63.3	59.3	N/A	N/A	N/A	N/A
Excavator	63.3	59.3	N/A	N/A	N/A	N/A
Dozer	64.3	60.3	N/A	N/A	N/A	N/A
Dump Truck	59.1	55.1	N/A	N/A	N/A	N/A
Total	64.3	64.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	187	0
Excavator	No	40		80.7	200	0
Dozer	No	40		81.7	187	0
Dump Truck	No	40		76.5	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	69.3	65.3	N/A	N/A	N/A	N/A
Excavator	68.7	64.7	N/A	N/A	N/A	N/A
Dozer	70.2	66.2	N/A	N/A	N/A	N/A
Dump Truck	64.4	60.4	N/A	N/A	N/A	N/A
Total	70.2	70.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

		Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
	Impact				

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	450		0
Excavator	No	40		80.7	450		0
Dozer	No	40		81.7	450		0
Dump Truck	No	40		76.5	450		0

			Results			
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	61.6	57.6	N/A	N/A	N/A	N/A
Excavator	61.6	57.6	N/A	N/A	N/A	N/A
Dozer	62.6	58.6	N/A	N/A	N/A	N/A
Dump Truck	57.4	53.4	N/A	N/A	N/A	N/A
Total	62.6	63.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Grading Phase

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	77.5	12
Excavator	No	40		80.7	100	12
Dozer	No	40		81.7	77.5	12
Dump Truck	No	40		76.5	100	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	64.9	63.9	N/A	N/A	N/A	N/A
Excavator	62.7	61.7	N/A	N/A	N/A	N/A
Dozer	65.9	64.9	N/A	N/A	N/A	N/A
Dump Truck	58.4	57.5	N/A	N/A	N/A	N/A
Total	65.9	68.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	245	0
Excavator	No	40		80.7	245	0
Dozer	No	40		81.7	245	0
Dump Truck	No	40		76.5	245	0

Results

Calculated (dBA)	Noise Limits (dBA)	
	Day	Evening

Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	66.9	65.9	N/A	N/A	N/A	N/A
Excavator	66.9	65.9	N/A	N/A	N/A	N/A
Dozer	67.9	66.9	N/A	N/A	N/A	N/A
Dump Truck	62.6	61.7	N/A	N/A	N/A	N/A
Total	67.9	71.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	177	10
Excavator	No	40		80.7	185	10
Dozer	No	40		81.7	177	10
Dump Truck	No	40		76.5	190	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	59.7	58.8	N/A	N/A	N/A	N/A
Excavator	59.3	58.4	N/A	N/A	N/A	N/A
Dozer	60.7	59.7	N/A	N/A	N/A	N/A
Dump Truck	54.9	53.9	N/A	N/A	N/A	N/A
Total	60.7	64.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	410	0
Excavator	No	40		80.7	410	0
Dozer	No	40		81.7	410	0
Dump Truck	No	40		76.5	410	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	62.4	61.5	N/A	N/A	N/A	N/A
Excavator	62.4	61.5	N/A	N/A	N/A	N/A
Dozer	63.4	62.4	N/A	N/A	N/A	N/A
Dump Truck	58.2	57.2	N/A	N/A	N/A	N/A
Total	63.4	67	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	135.3	0
Excavator	No	40		80.7	145	0
Dozer	No	40		81.7	135.3	0
Dump Truck	No	40		76.5	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	72.1	71.1	N/A	N/A	N/A	N/A
Excavator	71.5	70.5	N/A	N/A	N/A	N/A
Dozer	73	72	N/A	N/A	N/A	N/A
Dump Truck	66.9	65.9	N/A	N/A	N/A	N/A
Total	73	76.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	370	0
Excavator	No	40		80.7	370	0

Dozer	No	40	81.7	370	0
Dump Truck	No	40	76.5	370	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	63.3	62.3	N/A	N/A	N/A	N/A
Excavator	63.3	62.3	N/A	N/A	N/A	N/A
Dozer	64.3	63.3	N/A	N/A	N/A	N/A
Dump Truck	59.1	58.1	N/A	N/A	N/A	N/A
Total	64.3	67.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	187	0
Excavator	No	40		80.7	200	0
Dozer	No	40		81.7	187	0
Dump Truck	No	40		76.5	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	69.3	68.3	N/A	N/A	N/A	N/A
Excavator	68.7	67.7	N/A	N/A	N/A	N/A
Dozer	70.2	69.2	N/A	N/A	N/A	N/A
Dump Truck	64.4	63.4	N/A	N/A	N/A	N/A
Total	70.2	73.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	450	0
Excavator	No	40		80.7	450	0
Dozer	No	40		81.7	450	0
Dump Truck	No	40		76.5	450	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	61.6	60.6	N/A	N/A	N/A	N/A
Excavator	61.6	60.6	N/A	N/A	N/A	N/A
Dozer	62.6	61.6	N/A	N/A	N/A	N/A
Dump Truck	57.4	56.4	N/A	N/A	N/A	N/A
Total	62.6	66.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Bldg Construction - Residential

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	96	12
Man Lift	No	20		74.7	105	12
Man Lift	No	20		74.7	100	12
Welder / Torch	No	40		74	100	12
Pickup Truck	No	40		75	110	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62.9	54.9	N/A	N/A	N/A	N/A
Man Lift	56.3	49.3	N/A	N/A	N/A	N/A
Man Lift	56.7	49.7	N/A	N/A	N/A	N/A
Welder / Torch	56	52	N/A	N/A	N/A	N/A
Pickup Truck	56.2	52.2	N/A	N/A	N/A	N/A
Total	62.9	59.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	245	0
Man Lift	No	20		74.7	245	0
Man Lift	No	20		74.7	245	0
Welder / Torch	No	40		74	245	0
Pickup Truck	No	40		75	245	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	66.7	58.8	N/A	N/A	N/A	N/A
Man Lift	60.9	53.9	N/A	N/A	N/A	N/A
Man Lift	60.9	53.9	N/A	N/A	N/A	N/A
Welder / Torch	60.2	56.2	N/A	N/A	N/A	N/A
Pickup Truck	61.2	57.2	N/A	N/A	N/A	N/A
Total	66.7	63.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200	10
Man Lift	No	20		74.7	215	10
Man Lift	No	20		74.7	200	10
Welder / Torch	No	40		74	220	10
Pickup Truck	No	40		75	210	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	58.5	50.6	N/A	N/A	N/A	N/A
Man Lift	52	45	N/A	N/A	N/A	N/A
Man Lift	52.7	45.7	N/A	N/A	N/A	N/A
Welder / Torch	51.1	47.2	N/A	N/A	N/A	N/A
Pickup Truck	52.5	48.6	N/A	N/A	N/A	N/A
Total	58.5	54.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	410	0
Man Lift	No	20		74.7	410	0
Man Lift	No	20		74.7	410	0
Welder / Torch	No	40		74	410	0
Pickup Truck	No	40		75	410	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62.3	54.3	N/A	N/A	N/A	N/A
Man Lift	56.4	49.4	N/A	N/A	N/A	N/A
Man Lift	56.4	49.4	N/A	N/A	N/A	N/A
Welder / Torch	55.7	51.7	N/A	N/A	N/A	N/A
Pickup Truck	56.7	52.7	N/A	N/A	N/A	N/A
Total	62.3	58.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	240	0
Man Lift	No	20		74.7	250	0
Man Lift	No	20		74.7	240	0
Welder / Torch	No	40		74	250	0
Pickup Truck	No	40		75	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	66.9	59	N/A	N/A	N/A	N/A
Man Lift	60.7	53.7	N/A	N/A	N/A	N/A
Man Lift	61.1	54.1	N/A	N/A	N/A	N/A
Welder / Torch	60	56	N/A	N/A	N/A	N/A
Pickup Truck	61.4	57.4	N/A	N/A	N/A	N/A
Total	66.9	63.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	370	0
Man Lift	No	20		74.7	370	0
Man Lift	No	20		74.7	370	0
Welder / Torch	No	40		74	370	0
Pickup Truck	No	40		75	370	0

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	63.2	55.2	N/A	N/A	N/A	N/A
Man Lift	57.3	50.3	N/A	N/A	N/A	N/A
Man Lift	57.3	50.3	N/A	N/A	N/A	N/A
Welder / Torch	56.6	52.6	N/A	N/A	N/A	N/A
Pickup Truck	57.6	53.6	N/A	N/A	N/A	N/A
Total	63.2	59.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	347	0
Man Lift	No	20		74.7	360	0
Man Lift	No	20		74.7	360	0
Welder / Torch	No	40		74	350	0
Pickup Truck	No	40		75	360	0

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	63.7	55.8	N/A	N/A	N/A	N/A
Man Lift	57.6	50.6	N/A	N/A	N/A	N/A

Man Lift	57.6	50.6	N/A	N/A	N/A	N/A
Welder / Torch	57.1	53.1	N/A	N/A	N/A	N/A
Pickup Truck	57.9	53.9	N/A	N/A	N/A	N/A
Total	63.7	60.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	450	0
Man Lift	No	20		74.7	450	0
Man Lift	No	20		74.7	450	0
Welder / Torch	No	40		74	450	0
Pickup Truck	No	40		75	450	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	61.5	53.5	N/A	N/A	N/A	N/A
Man Lift	55.6	48.6	N/A	N/A	N/A	N/A
Man Lift	55.6	48.6	N/A	N/A	N/A	N/A
Welder / Torch	54.9	50.9	N/A	N/A	N/A	N/A
Pickup Truck	55.9	51.9	N/A	N/A	N/A	N/A
Total	61.5	58.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Bldg Construction - Residential

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	96	12
Man Lift	No	20		74.7	105	12
Man Lift	No	20		74.7	100	12
Welder / Torch	No	40		74	100	12
Pickup Truck	No	40		75	110	12

Equipment	Calculated (dBA) *Lmax	L10	Results Day Lmax	Noise Limits (dBA) Day L10	Evening Lmax	Evening L10
Crane	62.9	57.9	N/A	N/A	N/A	N/A
Man Lift	56.3	52.3	N/A	N/A	N/A	N/A
Man Lift	56.7	52.7	N/A	N/A	N/A	N/A
Welder / Torch	56	55	N/A	N/A	N/A	N/A
Pickup Truck	56.2	55.2	N/A	N/A	N/A	N/A
Total	62.9	62.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	245	0
Man Lift	No	20		74.7	245	0
Man Lift	No	20		74.7	245	0
Welder / Torch	No	40		74	245	0
Pickup Truck	No	40		75	245	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	66.7	61.8	N/A	N/A	N/A	N/A
Man Lift	60.9	56.9	N/A	N/A	N/A	N/A
Man Lift	60.9	56.9	N/A	N/A	N/A	N/A
Welder / Torch	60.2	59.2	N/A	N/A	N/A	N/A
Pickup Truck	61.2	60.2	N/A	N/A	N/A	N/A
Total	66.7	66.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200	10
Man Lift	No	20		74.7	215	10
Man Lift	No	20		74.7	200	10
Welder / Torch	No	40		74	220	10
Pickup Truck	No	40		75	210	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	58.5	53.6	N/A	N/A	N/A	N/A
Man Lift	52	48	N/A	N/A	N/A	N/A
Man Lift	52.7	48.7	N/A	N/A	N/A	N/A
Welder / Torch	51.1	50.2	N/A	N/A	N/A	N/A
Pickup Truck	52.5	51.6	N/A	N/A	N/A	N/A
Total	58.5	57.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	410	0
Man Lift	No	20		74.7	410	0
Man Lift	No	20		74.7	410	0
Welder / Torch	No	40		74	410	0
Pickup Truck	No	40		75	410	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	62.3	57.3	N/A	N/A	N/A	N/A
Man Lift	56.4	52.4	N/A	N/A	N/A	N/A
Man Lift	56.4	52.4	N/A	N/A	N/A	N/A
Welder / Torch	55.7	54.7	N/A	N/A	N/A	N/A
Pickup Truck	56.7	55.7	N/A	N/A	N/A	N/A
Total	62.3	61.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	240	0
Man Lift	No	20		74.7	250	0
Man Lift	No	20		74.7	240	0
Welder / Torch	No	40		74	250	0
Pickup Truck	No	40		75	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	66.9	62	N/A	N/A	N/A	N/A
Man Lift	60.7	56.7	N/A	N/A	N/A	N/A
Man Lift	61.1	57.1	N/A	N/A	N/A	N/A
Welder / Torch	60	59	N/A	N/A	N/A	N/A
Pickup Truck	61.4	60.4	N/A	N/A	N/A	N/A
Total	66.9	66.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	370	0
Man Lift	No	20		74.7	370	0
Man Lift	No	20		74.7	370	0
Welder / Torch	No	40		74	370	0
Pickup Truck	No	40		75	370	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	63.2	58.2	N/A	N/A	N/A	N/A
Man Lift	57.3	53.3	N/A	N/A	N/A	N/A
Man Lift	57.3	53.3	N/A	N/A	N/A	N/A
Welder / Torch	56.6	55.6	N/A	N/A	N/A	N/A
Pickup Truck	57.6	56.6	N/A	N/A	N/A	N/A
Total	63.2	62.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	347	0
Man Lift	No	20		74.7	360	0
Man Lift	No	20		74.7	360	0
Welder / Torch	No	40		74	350	0
Pickup Truck	No	40		75	360	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	63.7	58.8	N/A	N/A	N/A	N/A
Man Lift	57.6	53.6	N/A	N/A	N/A	N/A

Man Lift	57.6	53.6	N/A	N/A	N/A	N/A
Welder / Torch	57.1	56.1	N/A	N/A	N/A	N/A
Pickup Truck	57.9	56.9	N/A	N/A	N/A	N/A
Total	63.7	63.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	450	0
Man Lift	No	20		74.7	450	0
Man Lift	No	20		74.7	450	0
Welder / Torch	No	40		74	450	0
Pickup Truck	No	40		75	450	0

	Calculated (dBA)		Results			
			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	61.5	56.5	N/A	N/A	N/A	N/A
Man Lift	55.6	51.6	N/A	N/A	N/A	N/A
Man Lift	55.6	51.6	N/A	N/A	N/A	N/A
Welder / Torch	54.9	53.9	N/A	N/A	N/A	N/A
Pickup Truck	55.9	54.9	N/A	N/A	N/A	N/A
Total	61.5	61.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/21/2018
Case Descr Solana Torrance - Bldg Construction - Parking Garage

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	96	12
Tractor	No	40	84		105	12
Pickup Truck	No	40		75	100	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	59.9	55.9	N/A	N/A	N/A	N/A
Tractor	65.6	61.6	N/A	N/A	N/A	N/A
Pickup Truck	57	53	N/A	N/A	N/A	N/A
Total	65.6	63.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	164	0
Tractor	No	40	84		164	0
Pickup Truck	No	40		75	164	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	67.2	63.3	N/A	N/A	N/A	N/A
Tractor	73.7	69.7	N/A	N/A	N/A	N/A

Pickup Truck	64.7	60.7	N/A	N/A	N/A	N/A
Total	73.7	71	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	200	10
Tractor	No	40	84		215	10
Pickup Truck	No	40		75	200	10

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	55.5	51.5	N/A	N/A	N/A	N/A
Tractor	61.3	57.4	N/A	N/A	N/A	N/A
Pickup Truck	53	49	N/A	N/A	N/A	N/A
Total	61.3	58.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	307	0
Tractor	No	40	84		307	0
Pickup Truck	No	40		75	307	0

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	61.8	57.8	N/A	N/A	N/A	N/A
Tractor	68.2	64.3	N/A	N/A	N/A	N/A
Pickup Truck	59.2	55.3	N/A	N/A	N/A	N/A

Total	68.2	65.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	240	0
Tractor	No	40	84		250	0
Pickup Truck	No	40		75	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	63.9	60	N/A	N/A	N/A	N/A
Tractor	70	66	N/A	N/A	N/A	N/A
Pickup Truck	61.4	57.4	N/A	N/A	N/A	N/A
Total	70	67.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	315	0
Tractor	No	40	84		315	0
Pickup Truck	No	40		75	315	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	61.6	57.6	N/A	N/A	N/A	N/A
Tractor	68	64	N/A	N/A	N/A	N/A
Pickup Truck	59	55	N/A	N/A	N/A	N/A
Total	68	65.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description Land Use	Baselines (dBA) Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	347	0
Tractor	No	40	84		360	0
Pickup Truck	No	40		75	360	0

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	60.7	56.8	N/A	N/A	N/A	N/A
Tractor	66.9	62.9	N/A	N/A	N/A	N/A
Pickup Truck	57.9	53.9	N/A	N/A	N/A	N/A
Total	66.9	64.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description Land Use	Baselines (dBA) Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	425	0
Tractor	No	40	84		425	0
Pickup Truck	No	40		75	425	0

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	59	55	N/A	N/A	N/A	N/A
Tractor	65.4	61.4	N/A	N/A	N/A	N/A
Pickup Truck	56.4	52.4	N/A	N/A	N/A	N/A
Total	65.4	62.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Bldg Construction - Parking Garage

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	96	12
Tractor	No	40	84		105	12
Pickup Truck	No	40		75	100	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	59.9	58.9	N/A	N/A	N/A	N/A
Tractor	65.6	64.6	N/A	N/A	N/A	N/A
Pickup Truck	57	56	N/A	N/A	N/A	N/A
Total	65.6	66.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	164	0
Tractor	No	40	84		164	0
Pickup Truck	No	40		75	164	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	67.2	66.3	N/A	N/A	N/A	N/A
Tractor	73.7	72.7	N/A	N/A	N/A	N/A

Pickup Truck	64.7	63.7	N/A	N/A	N/A	N/A
Total	73.7	74	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	200	10
Tractor	No	40	84		215	10
Pickup Truck	No	40		75	200	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	55.5	54.5	N/A	N/A	N/A	N/A
Tractor	61.3	60.4	N/A	N/A	N/A	N/A
Pickup Truck	53	52	N/A	N/A	N/A	N/A
Total	61.3	61.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	307	0
Tractor	No	40	84		307	0
Pickup Truck	No	40		75	307	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	61.8	60.8	N/A	N/A	N/A	N/A
Tractor	68.2	67.3	N/A	N/A	N/A	N/A
Pickup Truck	59.2	58.3	N/A	N/A	N/A	N/A

Total	68.2	68.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	240	0
Tractor	No	40	84		250	0
Pickup Truck	No	40		75	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	63.9	63	N/A	N/A	N/A	N/A
Tractor	70	69	N/A	N/A	N/A	N/A
Pickup Truck	61.4	60.4	N/A	N/A	N/A	N/A
Total	70	70.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	315	0
Tractor	No	40	84		315	0
Pickup Truck	No	40		75	315	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	61.6	60.6	N/A	N/A	N/A	N/A
Tractor	68	67	N/A	N/A	N/A	N/A
Pickup Truck	59	58	N/A	N/A	N/A	N/A
Total	68	68.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Baselines (dBA)			
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	347	0
Tractor	No	40	84		360	0
Pickup Truck	No	40		75	360	0

Results

Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	60.7	59.8	N/A	N/A	N/A	N/A
Tractor	66.9	65.9	N/A	N/A	N/A	N/A
Pickup Truck	57.9	56.9	N/A	N/A	N/A	N/A
Total	66.9	67.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Baselines (dBA)			
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	425	0
Tractor	No	40	84		425	0
Pickup Truck	No	40		75	425	0

Results

Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	59	58	N/A	N/A	N/A	N/A
Tractor	65.4	64.4	N/A	N/A	N/A	N/A
Pickup Truck	56.4	55.4	N/A	N/A	N/A	N/A
Total	65.4	65.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Paving Phase

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	77.5	12
Drum Mixer	No	50		80	100	12
Roller	No	20		80	77.5	12
Pickup Truck	No	40		75	100	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	61.4	58.4	N/A	N/A	N/A	N/A
Drum Mixer	62	59	N/A	N/A	N/A	N/A
Roller	64.2	57.2	N/A	N/A	N/A	N/A
Pickup Truck	57	53	N/A	N/A	N/A	N/A
Total	64.2	63.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	245	0
Drum Mixer	No	50		80	245	0
Roller	No	20		80	245	0
Pickup Truck	No	40		75	245	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.4	60.4	N/A	N/A	N/A	N/A
Drum Mixer	66.2	63.2	N/A	N/A	N/A	N/A
Roller	66.2	59.2	N/A	N/A	N/A	N/A
Pickup Truck	61.2	57.2	N/A	N/A	N/A	N/A
Total	66.2	66.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	177	10
Drum Mixer	No	50		80	185	10
Roller	No	20		80	177	10
Pickup Truck	No	40		75	190	10

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	56.2	53.2	N/A	N/A	N/A	N/A
Drum Mixer	58.6	55.6	N/A	N/A	N/A	N/A
Roller	59	52	N/A	N/A	N/A	N/A
Pickup Truck	53.4	49.4	N/A	N/A	N/A	N/A
Total	59	59.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	410	0
Drum Mixer	No	50		80	410	0
Roller	No	20		80	410	0
Pickup Truck	No	40		75	410	0

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.9	55.9	N/A	N/A	N/A	N/A
Drum Mixer	61.7	58.7	N/A	N/A	N/A	N/A
Roller	61.7	54.7	N/A	N/A	N/A	N/A
Pickup Truck	56.7	52.7	N/A	N/A	N/A	N/A
Total	61.7	62.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	135.3	0
Drum Mixer	No	50		80	145	0
Roller	No	20		80	135.3	0
Pickup Truck	No	40		75	150	0

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	68.6	65.6	N/A	N/A	N/A	N/A
Drum Mixer	70.8	67.7	N/A	N/A	N/A	N/A
Roller	71.4	64.4	N/A	N/A	N/A	N/A
Pickup Truck	65.5	61.5	N/A	N/A	N/A	N/A
Total	71.4	71.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	370	0
Drum Mixer	No	50		80	370	0

Roller	No	20	80	370	0
Pickup Truck	No	40	75	370	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	59.8	56.8	N/A	N/A	N/A	N/A
Drum Mixer	62.6	59.6	N/A	N/A	N/A	N/A
Roller	62.6	55.6	N/A	N/A	N/A	N/A
Pickup Truck	57.6	53.6	N/A	N/A	N/A	N/A
Total	62.6	63	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	187	0
Drum Mixer	No	50		80	200	0
Roller	No	20		80	187	0
Pickup Truck	No	40		75	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	65.8	62.8	N/A	N/A	N/A	N/A
Drum Mixer	68	64.9	N/A	N/A	N/A	N/A
Roller	68.5	61.6	N/A	N/A	N/A	N/A
Pickup Truck	63	59	N/A	N/A	N/A	N/A
Total	68.5	68.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Paver	No	50		77.2	450		0
Drum Mixer	No	50		80	450		0
Roller	No	20		80	450		0
Pickup Truck	No	40		75	450		0

			Results			
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.1	55.1	N/A	N/A	N/A	N/A
Drum Mixer	60.9	57.9	N/A	N/A	N/A	N/A
Roller	60.9	53.9	N/A	N/A	N/A	N/A
Pickup Truck	55.9	51.9	N/A	N/A	N/A	N/A
Total	60.9	61.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 6/22/2018
Case Descr Solana Torrance - Paving Phase

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	77.7	12
Drum Mixer	No	50		80	100	12
Roller	No	20		80	77.5	12
Pickup Truck	No	40		75	100	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	61.4	61.4	N/A	N/A	N/A	N/A
Drum Mixer	62	62	N/A	N/A	N/A	N/A
Roller	64.2	60.2	N/A	N/A	N/A	N/A
Pickup Truck	57	56	N/A	N/A	N/A	N/A
Total	64.2	66.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	245	0
Drum Mixer	No	50		80	245	0
Roller	No	20		80	245	0
Pickup Truck	No	40		75	245	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	

Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	63.4	63.4	N/A	N/A	N/A	N/A
Drum Mixer	66.2	66.2	N/A	N/A	N/A	N/A
Roller	66.2	62.2	N/A	N/A	N/A	N/A
Pickup Truck	61.2	60.2	N/A	N/A	N/A	N/A
Total	66.2	69.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	177	10
Drum Mixer	No	50		80	185	10
Roller	No	20		80	177	10
Pickup Truck	No	40		75	190	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	56.2	56.2	N/A	N/A	N/A	N/A
Drum Mixer	58.6	58.6	N/A	N/A	N/A	N/A
Roller	59	55	N/A	N/A	N/A	N/A
Pickup Truck	53.4	52.4	N/A	N/A	N/A	N/A
Total	59	62.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	410	0
Drum Mixer	No	50		80	410	0
Roller	No	20		80	410	0
Pickup Truck	No	40		75	410	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	58.9	58.9	N/A	N/A	N/A	N/A
Drum Mixer	61.7	61.7	N/A	N/A	N/A	N/A
Roller	61.7	57.7	N/A	N/A	N/A	N/A
Pickup Truck	56.7	55.7	N/A	N/A	N/A	N/A
Total	61.7	65.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	135.3	0
Drum Mixer	No	50		80	145	0
Roller	No	20		80	135.3	0
Pickup Truck	No	40		75	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	68.6	68.6	N/A	N/A	N/A	N/A
Drum Mixer	70.8	70.7	N/A	N/A	N/A	N/A
Roller	71.4	67.4	N/A	N/A	N/A	N/A
Pickup Truck	65.5	64.5	N/A	N/A	N/A	N/A
Total	71.4	74.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	370	0
Drum Mixer	No	50		80	370	0

Roller	No	20	80	370	0
Pickup Truck	No	40	75	370	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	59.8	59.8	N/A	N/A	N/A	N/A
Drum Mixer	62.6	62.6	N/A	N/A	N/A	N/A
Roller	62.6	58.6	N/A	N/A	N/A	N/A
Pickup Truck	57.6	56.6	N/A	N/A	N/A	N/A
Total	62.6	66	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	187	0
Drum Mixer	No	50		80	200	0
Roller	No	20		80	187	0
Pickup Truck	No	40		75	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	65.8	65.8	N/A	N/A	N/A	N/A
Drum Mixer	68	67.9	N/A	N/A	N/A	N/A
Roller	68.5	64.6	N/A	N/A	N/A	N/A
Pickup Truck	63	62	N/A	N/A	N/A	N/A
Total	68.5	71.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

	Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	450	0
Drum Mixer	No	50		80	450	0
Roller	No	20		80	450	0
Pickup Truck	No	40		75	450	0

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	58.1	58.1	N/A	N/A	N/A	N/A
Drum Mixer	60.9	60.9	N/A	N/A	N/A	N/A
Roller	60.9	56.9	N/A	N/A	N/A	N/A
Pickup Truck	55.9	54.9	N/A	N/A	N/A	N/A
Total	60.9	64.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Grading Phase - with Construction Wall

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	77.5	15
Excavator	No	40		80.7	100	15
Front End Loader	No	40		79.1	77.5	15
Dump Truck	No	40		76.5	100	15

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq
Excavator	61.9	57.9	N/A	N/A	N/A	N/A
Excavator	59.7	55.7	N/A	N/A	N/A	N/A
Front End Loader	60.3	56.3	N/A	N/A	N/A	N/A
Dump Truck	55.4	51.5	N/A	N/A	N/A	N/A
Total	61.9	61.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	245	10
Excavator	No	40		80.7	245	10
Front End Loader	No	40		79.1	245	10
Dump Truck	No	40		76.5	245	10

Calculated (dBA)		Results Day	Noise Limits (dBA) Evening

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	56.9	52.9	N/A	N/A	N/A	N/A
Excavator	56.9	52.9	N/A	N/A	N/A	N/A
Front End Loader	55.3	51.3	N/A	N/A	N/A	N/A
Dump Truck	52.6	48.7	N/A	N/A	N/A	N/A
Total	56.9	57.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	177	14
Excavator	No	40		80.7	185	14
Front End Loader	No	40		79.1	177	14
Dump Truck	No	40		76.5	190	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	55.7	51.8	N/A	N/A	N/A	N/A
Excavator	55.3	51.4	N/A	N/A	N/A	N/A
Front End Loader	54.1	50.2	N/A	N/A	N/A	N/A
Dump Truck	50.9	46.9	N/A	N/A	N/A	N/A
Total	55.7	56.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	410	10
Excavator	No	40		80.7	410	10
Front End Loader	No	40		79.1	410	10
Dump Truck	No	40		76.5	410	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	52.4	48.5	N/A	N/A	N/A	N/A
Excavator	52.4	48.5	N/A	N/A	N/A	N/A
Front End Loader	50.8	46.9	N/A	N/A	N/A	N/A
Dump Truck	48.2	44.2	N/A	N/A	N/A	N/A
Total	52.4	53.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	135.3	12
Excavator	No	40		80.7	145	12
Front End Loader	No	40		79.1	135.3	12
Dump Truck	No	40		76.5	150	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	60.1	56.1	N/A	N/A	N/A	N/A
Excavator	59.5	55.5	N/A	N/A	N/A	N/A
Front End Loader	58.5	54.5	N/A	N/A	N/A	N/A
Dump Truck	54.9	50.9	N/A	N/A	N/A	N/A
Total	60.1	60.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	370	10
Excavator	No	40		80.7	370	10

Front End Loader	No	40	79.1	370	10
Dump Truck	No	40	76.5	370	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	53.3	49.3	N/A	N/A	N/A	N/A
Excavator	53.3	49.3	N/A	N/A	N/A	N/A
Front End Loader	51.7	47.7	N/A	N/A	N/A	N/A
Dump Truck	49.1	45.1	N/A	N/A	N/A	N/A
Total	53.3	54.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	187	12
Excavator	No	40		80.7	200	12
Front End Loader	No	40		79.1	187	12
Dump Truck	No	40		76.5	200	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	57.3	53.3	N/A	N/A	N/A	N/A
Excavator	56.7	52.7	N/A	N/A	N/A	N/A
Front End Loader	55.7	51.7	N/A	N/A	N/A	N/A
Dump Truck	52.4	48.4	N/A	N/A	N/A	N/A
Total	57.3	57.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	450	10
Excavator	No	40		80.7	450	10
Front End Loader	No	40		79.1	450	10
Dump Truck	No	40		76.5	450	10

			Results			
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	51.6	47.6	N/A	N/A	N/A	N/A
Excavator	51.6	47.6	N/A	N/A	N/A	N/A
Front End Loader	50	46	N/A	N/A	N/A	N/A
Dump Truck	47.4	43.4	N/A	N/A	N/A	N/A
Total	51.6	52.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Grading Phase - with Construction Wall

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	77.5	15
Excavator	No	40		80.7	100	15
Front End Loader	No	40		79.1	77.5	15
Dump Truck	No	40		76.5	100	15

Results

	Calculated (dBA)		Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	61.9	60.9	N/A	N/A	N/A	N/A
Excavator	59.7	58.7	N/A	N/A	N/A	N/A
Front End Loader	60.3	59.3	N/A	N/A	N/A	N/A
Dump Truck	55.4	54.5	N/A	N/A	N/A	N/A
Total	61.9	64.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	245	10
Excavator	No	40		80.7	245	10
Front End Loader	No	40		79.1	245	10
Dump Truck	No	40		76.5	245	10

Results

Calculated (dBA)		Day	Evening

Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	56.9	55.9	N/A	N/A	N/A	N/A
Excavator	56.9	55.9	N/A	N/A	N/A	N/A
Front End Loader	55.3	54.3	N/A	N/A	N/A	N/A
Dump Truck	52.6	51.7	N/A	N/A	N/A	N/A
Total	56.9	60.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	177	14
Excavator	No	40		80.7	185	14
Front End Loader	No	40		79.1	177	14
Dump Truck	No	40		76.5	190	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	55.7	54.8	N/A	N/A	N/A	N/A
Excavator	55.3	54.4	N/A	N/A	N/A	N/A
Front End Loader	54.1	53.2	N/A	N/A	N/A	N/A
Dump Truck	50.9	49.9	N/A	N/A	N/A	N/A
Total	55.7	59.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	410	10
Excavator	No	40		80.7	410	10
Front End Loader	No	40		79.1	410	10
Dump Truck	No	40		76.5	410	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	52.4	51.5	N/A	N/A	N/A	N/A
Excavator	52.4	51.5	N/A	N/A	N/A	N/A
Front End Loader	50.8	49.9	N/A	N/A	N/A	N/A
Dump Truck	48.2	47.2	N/A	N/A	N/A	N/A
Total	52.4	56.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	135.3	12
Excavator	No	40		80.7	145	12
Front End Loader	No	40		79.1	135.3	12
Dump Truck	No	40		76.5	150	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	60.1	59.1	N/A	N/A	N/A	N/A
Excavator	59.5	58.5	N/A	N/A	N/A	N/A
Front End Loader	58.5	57.5	N/A	N/A	N/A	N/A
Dump Truck	54.9	53.9	N/A	N/A	N/A	N/A
Total	60.1	63.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	370	10
Excavator	No	40		80.7	370	10

Front End Loader	No	40	79.1	370	10
Dump Truck	No	40	76.5	370	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	53.3	52.3	N/A	N/A	N/A	N/A
Excavator	53.3	52.3	N/A	N/A	N/A	N/A
Front End Loader	51.7	50.7	N/A	N/A	N/A	N/A
Dump Truck	49.1	48.1	N/A	N/A	N/A	N/A
Total	53.3	57.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	187	12
Excavator	No	40		80.7	200	12
Front End Loader	No	40		79.1	187	12
Dump Truck	No	40		76.5	200	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	57.3	56.3	N/A	N/A	N/A	N/A
Excavator	56.7	55.7	N/A	N/A	N/A	N/A
Front End Loader	55.7	54.7	N/A	N/A	N/A	N/A
Dump Truck	52.4	51.4	N/A	N/A	N/A	N/A
Total	57.3	60.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	450	10
Excavator	No	40		80.7	450	10
Front End Loader	No	40		79.1	450	10
Dump Truck	No	40		76.5	450	10

			Results			
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Excavator	51.6	50.6	N/A	N/A	N/A	N/A
Excavator	51.6	50.6	N/A	N/A	N/A	N/A
Front End Loader	50	49	N/A	N/A	N/A	N/A
Dump Truck	47.4	46.4	N/A	N/A	N/A	N/A
Total	51.6	55.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Paving Phase - with Construction Wall

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	77.5	15
Drum Mixer	No	50		80	100	15
Roller	No	20		80	77.5	15
Pickup Truck	No	40		75	100	15

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.4	55.4	N/A	N/A	N/A	N/A
Drum Mixer	59	56	N/A	N/A	N/A	N/A
Roller	61.2	54.2	N/A	N/A	N/A	N/A
Pickup Truck	54	50	N/A	N/A	N/A	N/A
Total	61.2	60.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	245	10
Drum Mixer	No	50		80	245	10
Roller	No	20		80	245	10
Pickup Truck	No	40		75	245	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	53.4	50.4	N/A	N/A	N/A	N/A
Drum Mixer	56.2	53.2	N/A	N/A	N/A	N/A
Roller	56.2	49.2	N/A	N/A	N/A	N/A
Pickup Truck	51.2	47.2	N/A	N/A	N/A	N/A
Total	56.2	56.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	177	14
Drum Mixer	No	50		80	185	14
Roller	No	20		80	177	14
Pickup Truck	No	40		75	190	14

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	52.2	49.2	N/A	N/A	N/A	N/A
Drum Mixer	54.6	51.6	N/A	N/A	N/A	N/A
Roller	55	48	N/A	N/A	N/A	N/A
Pickup Truck	49.4	45.4	N/A	N/A	N/A	N/A
Total	55	55.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	410	10
Drum Mixer	No	50		80	410	10
Roller	No	20		80	410	10
Pickup Truck	No	40		75	410	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	48.9	45.9	N/A	N/A	N/A	N/A
Drum Mixer	51.7	48.7	N/A	N/A	N/A	N/A
Roller	51.7	44.7	N/A	N/A	N/A	N/A
Pickup Truck	46.7	42.7	N/A	N/A	N/A	N/A
Total	51.7	52.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	135.3	12
Drum Mixer	No	50		80	145	12
Roller	No	20		80	135.3	12
Pickup Truck	No	40		75	150	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	56.6	53.6	N/A	N/A	N/A	N/A
Drum Mixer	58.8	55.7	N/A	N/A	N/A	N/A
Roller	59.4	52.4	N/A	N/A	N/A	N/A
Pickup Truck	53.5	49.5	N/A	N/A	N/A	N/A
Total	59.4	59.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	370	10
Drum Mixer	No	50		80	370	10

Roller	No	20	80	370	10
Pickup Truck	No	40	75	370	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	49.8	46.8	N/A	N/A	N/A	N/A
Drum Mixer	52.6	49.6	N/A	N/A	N/A	N/A
Roller	52.6	45.6	N/A	N/A	N/A	N/A
Pickup Truck	47.6	43.6	N/A	N/A	N/A	N/A
Total	52.6	53	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	187	12
Drum Mixer	No	50		80	200	12
Roller	No	20		80	187	12
Pickup Truck	No	40		75	200	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	53.8	50.8	N/A	N/A	N/A	N/A
Drum Mixer	56	52.9	N/A	N/A	N/A	N/A
Roller	56.5	49.6	N/A	N/A	N/A	N/A
Pickup Truck	51	47	N/A	N/A	N/A	N/A
Total	56.5	56.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Equipment

	Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	450	10
Drum Mixer	No	50		80	450	10
Roller	No	20		80	450	10
Pickup Truck	No	40		75	450	10

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	48.1	45.1	N/A	N/A	N/A	N/A
Drum Mixer	50.9	47.9	N/A	N/A	N/A	N/A
Roller	50.9	43.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	41.9	N/A	N/A	N/A	N/A
Total	50.9	51.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Paving Phase - with Construction Wall

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	77.5	15
Drum Mixer	No	50		80	100	15
Roller	No	20		80	77.5	15
Pickup Truck	No	40		75	100	15

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	58.4	58.4	N/A	N/A	N/A	N/A
Drum Mixer	59	59	N/A	N/A	N/A	N/A
Roller	61.2	57.2	N/A	N/A	N/A	N/A
Pickup Truck	54	53	N/A	N/A	N/A	N/A
Total	61.2	63.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	245	10
Drum Mixer	No	50		80	245	10
Roller	No	20		80	245	10
Pickup Truck	No	40		75	245	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	

Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	53.4	53.4	N/A	N/A	N/A	N/A
Drum Mixer	56.2	56.2	N/A	N/A	N/A	N/A
Roller	56.2	52.2	N/A	N/A	N/A	N/A
Pickup Truck	51.2	50.2	N/A	N/A	N/A	N/A
Total	56.2	59.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	177	14
Drum Mixer	No	50		80	185	14
Roller	No	20		80	177	14
Pickup Truck	No	40		75	190	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	52.2	52.2	N/A	N/A	N/A	N/A
Drum Mixer	54.6	54.6	N/A	N/A	N/A	N/A
Roller	55	51	N/A	N/A	N/A	N/A
Pickup Truck	49.4	48.4	N/A	N/A	N/A	N/A
Total	55	58.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	410	10
Drum Mixer	No	50		80	410	10
Roller	No	20		80	410	10
Pickup Truck	No	40		75	410	10

	Calculated (dBA)		Results	Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	48.9	48.9	N/A	N/A	N/A	N/A
Drum Mixer	51.7	51.7	N/A	N/A	N/A	N/A
Roller	51.7	47.7	N/A	N/A	N/A	N/A
Pickup Truck	46.7	45.7	N/A	N/A	N/A	N/A
Total	51.7	55.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	135.3	12
Drum Mixer	No	50		80	145	12
Roller	No	20		80	135.3	12
Pickup Truck	No	40		75	150	12

	Calculated (dBA)		Results	Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	56.6	56.6	N/A	N/A	N/A	N/A
Drum Mixer	58.8	58.7	N/A	N/A	N/A	N/A
Roller	59.4	55.4	N/A	N/A	N/A	N/A
Pickup Truck	53.5	52.5	N/A	N/A	N/A	N/A
Total	59.4	62.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	370	10
Drum Mixer	No	50		80	370	10

Roller	No	20	80	370	10
Pickup Truck	No	40	75	370	10

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	49.8	49.8	N/A	N/A	N/A	N/A
Drum Mixer	52.6	52.6	N/A	N/A	N/A	N/A
Roller	52.6	48.6	N/A	N/A	N/A	N/A
Pickup Truck	47.6	46.6	N/A	N/A	N/A	N/A
Total	52.6	56	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	187	12
Drum Mixer	No	50		80	200	12
Roller	No	20		80	187	12
Pickup Truck	No	40		75	200	12

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	53.8	53.8	N/A	N/A	N/A	N/A
Drum Mixer	56	55.9	N/A	N/A	N/A	N/A
Roller	56.5	52.6	N/A	N/A	N/A	N/A
Pickup Truck	51	50	N/A	N/A	N/A	N/A
Total	56.5	59.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	450	10
Drum Mixer	No	50		80	450	10
Roller	No	20		80	450	10
Pickup Truck	No	40		75	450	10

			Results			
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Paver	48.1	48.1	N/A	N/A	N/A	N/A
Drum Mixer	50.9	50.9	N/A	N/A	N/A	N/A
Roller	50.9	46.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	44.9	N/A	N/A	N/A	N/A
Total	50.9	54.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Bldg Construction - Residential w Const Wall

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	96	15
Man Lift	No	20		74.7	105	15
Man Lift	No	20		74.7	100	15
Welder / Torch	No	40		74	100	15
Pickup Truck	No	40		75	110	15

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Noise Limits (dBA) Leq	Evening Lmax	Leq
Crane	59.9	51.9	N/A	N/A	N/A	N/A
Man Lift	53.3	46.3	N/A	N/A	N/A	N/A
Man Lift	53.7	46.7	N/A	N/A	N/A	N/A
Welder / Torch	53	49	N/A	N/A	N/A	N/A
Pickup Truck	53.2	49.2	N/A	N/A	N/A	N/A
Total	59.9	56.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	245	10
Man Lift	No	20		74.7	245	10
Man Lift	No	20		74.7	245	10
Welder / Torch	No	40		74	245	10
Pickup Truck	No	40		75	245	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	56.7	48.8	N/A	N/A	N/A	N/A
Man Lift	50.9	43.9	N/A	N/A	N/A	N/A
Man Lift	50.9	43.9	N/A	N/A	N/A	N/A
Welder / Torch	50.2	46.2	N/A	N/A	N/A	N/A
Pickup Truck	51.2	47.2	N/A	N/A	N/A	N/A
Total	56.7	53.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200	14
Man Lift	No	20		74.7	215	14
Man Lift	No	20		74.7	200	14
Welder / Torch	No	40		74	220	14
Pickup Truck	No	40		75	210	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	54.5	46.6	N/A	N/A	N/A	N/A
Man Lift	48	41	N/A	N/A	N/A	N/A
Man Lift	48.7	41.7	N/A	N/A	N/A	N/A
Welder / Torch	47.1	43.2	N/A	N/A	N/A	N/A
Pickup Truck	48.5	44.6	N/A	N/A	N/A	N/A
Total	54.5	50.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	410	10
Man Lift	No	20		74.7	410	10
Man Lift	No	20		74.7	410	10
Welder / Torch	No	40		74	410	10
Pickup Truck	No	40		75	410	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	52.3	44.3	N/A	N/A	N/A	N/A
Man Lift	46.4	39.4	N/A	N/A	N/A	N/A
Man Lift	46.4	39.4	N/A	N/A	N/A	N/A
Welder / Torch	45.7	41.7	N/A	N/A	N/A	N/A
Pickup Truck	46.7	42.7	N/A	N/A	N/A	N/A
Total	52.3	48.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	240	12
Man Lift	No	20		74.7	250	12
Man Lift	No	20		74.7	240	12
Welder / Torch	No	40		74	250	12
Pickup Truck	No	40		75	240	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	54.9	47	N/A	N/A	N/A	N/A
Man Lift	48.7	41.7	N/A	N/A	N/A	N/A
Man Lift	49.1	42.1	N/A	N/A	N/A	N/A
Welder / Torch	48	44	N/A	N/A	N/A	N/A
Pickup Truck	49.4	45.4	N/A	N/A	N/A	N/A
Total	54.9	51.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	370	10
Man Lift	No	20		74.7	370	10
Man Lift	No	20		74.7	370	10
Welder / Torch	No	40		74	370	10
Pickup Truck	No	40		75	370	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	53.2	45.2	N/A	N/A	N/A	N/A
Man Lift	47.3	40.3	N/A	N/A	N/A	N/A
Man Lift	47.3	40.3	N/A	N/A	N/A	N/A
Welder / Torch	46.6	42.6	N/A	N/A	N/A	N/A
Pickup Truck	47.6	43.6	N/A	N/A	N/A	N/A
Total	53.2	49.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	347	12
Man Lift	No	20		74.7	360	12
Man Lift	No	20		74.7	360	12
Welder / Torch	No	40		74	350	12
Pickup Truck	No	40		75	360	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	51.7	43.8	N/A	N/A	N/A	N/A
Man Lift	45.6	38.6	N/A	N/A	N/A	N/A

Man Lift	45.6	38.6	N/A	N/A	N/A	N/A
Welder / Torch	45.1	41.1	N/A	N/A	N/A	N/A
Pickup Truck	45.9	41.9	N/A	N/A	N/A	N/A
Total	51.7	48.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	450	10
Man Lift	No	20		74.7	450	10
Man Lift	No	20		74.7	450	10
Welder / Torch	No	40		74	450	10
Pickup Truck	No	40		75	450	10

	Calculated (dBA)		Results Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	51.5	43.5	N/A	N/A	N/A	N/A
Man Lift	45.6	38.6	N/A	N/A	N/A	N/A
Man Lift	45.6	38.6	N/A	N/A	N/A	N/A
Welder / Torch	44.9	40.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	41.9	N/A	N/A	N/A	N/A
Total	51.5	48.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Bldg Construction - Residential w Const Wall

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	96	15
Man Lift	No	20		74.7	105	15
Man Lift	No	20		74.7	100	15
Welder / Torch	No	40		74	100	15
Pickup Truck	No	40		75	110	15

Results

Equipment	Calculated (dBA) *Lmax	L10	Day Lmax	Noise Limits (dBA) Day L10	Evening Lmax	Evening L10
Crane	59.9	54.9	N/A	N/A	N/A	N/A
Man Lift	53.3	49.3	N/A	N/A	N/A	N/A
Man Lift	53.7	49.7	N/A	N/A	N/A	N/A
Welder / Torch	53	52	N/A	N/A	N/A	N/A
Pickup Truck	53.2	52.2	N/A	N/A	N/A	N/A
Total	59.9	59.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	245	10
Man Lift	No	20		74.7	245	10
Man Lift	No	20		74.7	245	10
Welder / Torch	No	40		74	245	10
Pickup Truck	No	40		75	245	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	56.7	51.8	N/A	N/A	N/A	N/A
Man Lift	50.9	46.9	N/A	N/A	N/A	N/A
Man Lift	50.9	46.9	N/A	N/A	N/A	N/A
Welder / Torch	50.2	49.2	N/A	N/A	N/A	N/A
Pickup Truck	51.2	50.2	N/A	N/A	N/A	N/A
Total	56.7	56.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	200	14
Man Lift	No	20		74.7	215	14
Man Lift	No	20		74.7	200	14
Welder / Torch	No	40		74	220	14
Pickup Truck	No	40		75	210	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	54.5	49.6	N/A	N/A	N/A	N/A
Man Lift	48	44	N/A	N/A	N/A	N/A
Man Lift	48.7	44.7	N/A	N/A	N/A	N/A
Welder / Torch	47.1	46.2	N/A	N/A	N/A	N/A
Pickup Truck	48.5	47.6	N/A	N/A	N/A	N/A
Total	54.5	53.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

		Spec	Actual	Receptor	Estimated
Impact		Lmax	Lmax	Distance	Shielding

Description	Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	410	10
Man Lift	No	20		74.7	410	10
Man Lift	No	20		74.7	410	10
Welder / Torch	No	40		74	410	10
Pickup Truck	No	40		75	410	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	52.3	47.3	N/A	N/A	N/A	N/A
Man Lift	46.4	42.4	N/A	N/A	N/A	N/A
Man Lift	46.4	42.4	N/A	N/A	N/A	N/A
Welder / Torch	45.7	44.7	N/A	N/A	N/A	N/A
Pickup Truck	46.7	45.7	N/A	N/A	N/A	N/A
Total	52.3	51.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	240	12
Man Lift	No	20		74.7	250	12
Man Lift	No	20		74.7	240	12
Welder / Torch	No	40		74	250	12
Pickup Truck	No	40		75	240	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	54.9	50	N/A	N/A	N/A	N/A
Man Lift	48.7	44.7	N/A	N/A	N/A	N/A
Man Lift	49.1	45.1	N/A	N/A	N/A	N/A
Welder / Torch	48	47	N/A	N/A	N/A	N/A
Pickup Truck	49.4	48.4	N/A	N/A	N/A	N/A
Total	54.9	54.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	370	10
Man Lift	No	20		74.7	370	10
Man Lift	No	20		74.7	370	10
Welder / Torch	No	40		74	370	10
Pickup Truck	No	40		75	370	10

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	53.2	48.2	N/A	N/A	N/A	N/A
Man Lift	47.3	43.3	N/A	N/A	N/A	N/A
Man Lift	47.3	43.3	N/A	N/A	N/A	N/A
Welder / Torch	46.6	45.6	N/A	N/A	N/A	N/A
Pickup Truck	47.6	46.6	N/A	N/A	N/A	N/A
Total	53.2	52.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	347	12
Man Lift	No	20		74.7	360	12
Man Lift	No	20		74.7	360	12
Welder / Torch	No	40		74	350	12
Pickup Truck	No	40		75	360	12

			Results			
	Calculated (dBA)			Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	51.7	46.8	N/A	N/A	N/A	N/A
Man Lift	45.6	41.6	N/A	N/A	N/A	N/A

Man Lift	45.6	41.6	N/A	N/A	N/A	N/A
Welder / Torch	45.1	44.1	N/A	N/A	N/A	N/A
Pickup Truck	45.9	44.9	N/A	N/A	N/A	N/A
Total	51.7	51.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	450	10
Man Lift	No	20		74.7	450	10
Man Lift	No	20		74.7	450	10
Welder / Torch	No	40		74	450	10
Pickup Truck	No	40		75	450	10

	Calculated (dBA)		Results			
			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Crane	51.5	46.5	N/A	N/A	N/A	N/A
Man Lift	45.6	41.6	N/A	N/A	N/A	N/A
Man Lift	45.6	41.6	N/A	N/A	N/A	N/A
Welder / Torch	44.9	43.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	44.9	N/A	N/A	N/A	N/A
Total	51.5	51.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Bldg Construction - Parking Garage w Const Wall

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	96	15
Tractor	No	40	84		105	15
Pickup Truck	No	40		75	100	15

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	56.9	52.9	N/A	N/A	N/A	N/A
Tractor	62.6	58.6	N/A	N/A	N/A	N/A
Pickup Truck	54	50	N/A	N/A	N/A	N/A
Total	62.6	60.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	164	10
Tractor	No	40	84		164	10
Pickup Truck	No	40		75	164	10

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	57.2	53.3	N/A	N/A	N/A	N/A
Tractor	63.7	59.7	N/A	N/A	N/A	N/A

Pickup Truck	54.7	50.7	N/A	N/A	N/A	N/A
Total	63.7	61	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	200	14
Tractor	No	40	84		215	14
Pickup Truck	No	40		75	200	14

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	51.5	47.5	N/A	N/A	N/A	N/A
Tractor	57.3	53.4	N/A	N/A	N/A	N/A
Pickup Truck	49	45	N/A	N/A	N/A	N/A
Total	57.3	54.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	307	10
Tractor	No	40	84		307	10
Pickup Truck	No	40		75	307	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	51.8	47.8	N/A	N/A	N/A	N/A
Tractor	58.2	54.3	N/A	N/A	N/A	N/A
Pickup Truck	49.2	45.3	N/A	N/A	N/A	N/A

Total	58.2	55.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	240	12
Tractor	No	40	84		250	12
Pickup Truck	No	40		75	240	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	51.9	48	N/A	N/A	N/A	N/A
Tractor	58	54	N/A	N/A	N/A	N/A
Pickup Truck	49.4	45.4	N/A	N/A	N/A	N/A
Total	58	55.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Baselines (dBA)

Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	315	10
Tractor	No	40	84		315	10
Pickup Truck	No	40		75	315	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	51.6	47.6	N/A	N/A	N/A	N/A
Tractor	58	54	N/A	N/A	N/A	N/A
Pickup Truck	49	45	N/A	N/A	N/A	N/A
Total	58	55.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	347	12
Tractor	No	40	84		360	12
Pickup Truck	No	40		75	360	12

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	48.7	44.8	N/A	N/A	N/A	N/A
Tractor	54.9	50.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	41.9	N/A	N/A	N/A	N/A
Total	54.9	52.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	425	10
Tractor	No	40	84		425	10
Pickup Truck	No	40		75	425	10

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	49	45	N/A	N/A	N/A	N/A
Tractor	55.4	51.4	N/A	N/A	N/A	N/A
Pickup Truck	46.4	42.4	N/A	N/A	N/A	N/A
Total	55.4	52.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 11/14/2018
Case Descr Solana Torrance - Bldg Construction - Parking Garage w Const Wall

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	96	15
Tractor	No	40	84		105	15
Pickup Truck	No	40		75	100	15

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	56.9	55.9	N/A	N/A	N/A	N/A
Tractor	62.6	61.6	N/A	N/A	N/A	N/A
Pickup Truck	54	53	N/A	N/A	N/A	N/A
Total	62.6	63.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Re	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	164	10
Tractor	No	40	84		164	10
Pickup Truck	No	40		75	164	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	57.2	56.3	N/A	N/A	N/A	N/A
Tractor	63.7	62.7	N/A	N/A	N/A	N/A

Pickup Truck	54.7	53.7	N/A	N/A	N/A	N/A
Total	63.7	64	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	200	14
Tractor	No	40	84		215	14
Pickup Truck	No	40		75	200	14

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	51.5	50.5	N/A	N/A	N/A	N/A
Tractor	57.3	56.4	N/A	N/A	N/A	N/A
Pickup Truck	49	48	N/A	N/A	N/A	N/A
Total	57.3	57.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
2nd Neares	Residential	60	55	50

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	307	10
Tractor	No	40	84		307	10
Pickup Truck	No	40		75	307	10

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	51.8	50.8	N/A	N/A	N/A	N/A
Tractor	58.2	57.3	N/A	N/A	N/A	N/A
Pickup Truck	49.2	48.3	N/A	N/A	N/A	N/A

Total	58.2	58.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	240	12
Tractor	No	40	84		250	12
Pickup Truck	No	40		75	240	12

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	51.9	51	N/A	N/A	N/A	N/A
Tractor	58	57	N/A	N/A	N/A	N/A
Pickup Truck	49.4	48.4	N/A	N/A	N/A	N/A
Total	58	58.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
3rd Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	315	10
Tractor	No	40	84		315	10
Pickup Truck	No	40		75	315	10

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	51.6	50.6	N/A	N/A	N/A	N/A
Tractor	58	57	N/A	N/A	N/A	N/A
Pickup Truck	49	48	N/A	N/A	N/A	N/A
Total	58	58.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Baselines (dBA)			
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	347	12
Tractor	No	40	84		360	12
Pickup Truck	No	40		75	360	12

Results

Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	48.7	47.8	N/A	N/A	N/A	N/A
Tractor	54.9	53.9	N/A	N/A	N/A	N/A
Pickup Truck	45.9	44.9	N/A	N/A	N/A	N/A
Total	54.9	55.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Baselines (dBA)			
Descriptior Land Use	Daytime	Evening	Night
4th Neares Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	425	10
Tractor	No	40	84		425	10
Pickup Truck	No	40		75	425	10

Results

Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10
Backhoe	49	48	N/A	N/A	N/A	N/A
Tractor	55.4	54.4	N/A	N/A	N/A	N/A
Pickup Truck	46.4	45.4	N/A	N/A	N/A	N/A
Total	55.4	55.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX E

Traffic Noise Modeling
Input and Output

Dudek					**28 July 2018**						
M Greene / S Tang					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**9641**						**a State highway agency substantiates the use**				
RUN:	**Solana Trrnce MF Resi - Exist 0118**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Hawthorne Blvd - North of Via Valmonte	85.0	point61	61	37,309,840.0	12,269,859.0	146.00				Average	
		point62	62	37,309,832.0	12,269,580.0	159.00				Average	
		point63	63	37,309,848.0	12,269,362.0	175.00				Average	
		point64	64	37,309,884.0	12,269,253.0	179.00					
Roadway25	12.0	point197	197	37,304,704.0	12,266,266.0	0.00				Average	
		point198	198	37,304,764.0	12,266,266.0	0.00					
Hawthorne Blvd- South of Via Valmonte	85.0	point238	238	37,309,884.0	12,269,251.0	179.00				Average	
		point240	240	37,309,944.0	12,269,120.0	184.00				Average	
		point241	241	37,310,044.0	12,268,969.0	190.00				Average	
		point242	242	37,310,164.0	12,268,816.0	194.00				Average	
		point243	243	37,310,248.0	12,268,662.0	198.00				Average	
		point244	244	37,310,328.0	12,268,532.0	210.00				Average	
		point245	245	37,310,384.0	12,268,425.0	218.00				Average	
		point246	246	37,310,424.0	12,268,250.0	225.00				Average	
		point247	247	37,310,440.0	12,268,139.0	230.00				Average	
		point248	248	37,310,440.0	12,267,961.0	230.00				Average	
		point249	249	37,310,440.0	12,267,911.0	231.00				Average	
		point250	250	37,310,384.0	12,267,745.0	243.00				Average	
		point251	251	37,310,316.0	12,267,563.0	255.00				Average	
		point252	252	37,310,212.0	12,267,421.0	268.00				Average	
		point253	253	37,310,080.0	12,267,309.0	278.00				Average	
		point254	254	37,309,924.0	12,267,197.0	291.00				Average	
		point255	255	37,309,640.0	12,267,006.0	315.00				Average	
		point256	256	37,309,056.0	12,266,609.0	358.00				Average	
		point257	257	37,308,744.0	12,266,390.0	379.00				Average	

		point258	258	37,308,560.0	12,266,208.0	400.00				Average	
		point239	239	37,308,072.0	12,265,757.0	440.00					
Via Valmonte	35.0	point95	95	37,309,028.0	12,269,397.0	265.00				Average	
		point86	86	37,309,168.0	12,269,443.0	252.00				Average	
		point87	87	37,309,304.0	12,269,436.0	239.00				Average	
		point186	186	37,309,464.0	12,269,406.0	214.00				Average	
		point88	88	37,309,524.0	12,269,394.0	208.00				Average	
		point89	89	37,309,604.0	12,269,335.0	200.00				Average	
		point111	111	37,309,684.0	12,269,273.0	191.00				Average	
		point92	92	37,309,736.0	12,269,254.0	187.00				Average	
		point93	93	37,309,776.0	12,269,254.0	185.00				Average	
		point21	21	37,309,868.0	12,269,275.0	178.00					

Dudek			**28 July 2018**	
M Greene / S Tang			**TNM 2.5**	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	**9641**			
RUN:	**Solana Trrnce MF Resi - Exist 0118**			
Terrain Line	**Points**			
Name	**No.**	**Coordinates (ground)**		
		X	**Y**	**Z**
		ft	ft	ft
Terrain Line21	185	37,309,712.0	12,269,198.0	190.00
	186	37,309,804.0	12,269,204.0	200.00
	187	37,310,028.0	12,268,763.0	240.00

Dudek
M Greene / S Tang
28 July 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - Exist 0118
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1 - On-Site SE side	429	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
ST2 - On-Site NE corner	430	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0
ST3 - Resi Area E. of Proj.	485	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
ST4 - Resi Area N. of Proj.	652	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
R14 - Resi's northeast of Proj.	654	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek					**28 July 2018**						
M Greene / S Tang					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**9641**						**a State highway agency substantiates the use**				
RUN:	**Solana Trrnce MF Resi - ExWP 0118**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Hawthorne Blvd - North of Via Valmonte	85.0	point61	61	37,309,840.0	12,269,859.0	146.00				Average	
		point62	62	37,309,832.0	12,269,580.0	159.00				Average	
		point63	63	37,309,848.0	12,269,362.0	175.00				Average	
		point64	64	37,309,884.0	12,269,253.0	179.00					
Via Valmonte - W. of Project Entrance	35.0	point95	95	37,309,028.0	12,269,397.0	265.00				Average	
		point86	86	37,309,168.0	12,269,443.0	252.00				Average	
		point87	87	37,309,304.0	12,269,436.0	239.00				Average	
		point186	186	37,309,464.0	12,269,406.0	214.00				Average	
		point88	88	37,309,524.0	12,269,394.0	208.00				Average	
		point89	89	37,309,604.0	12,269,335.0	200.00				Average	
		point90	90	37,309,684.0	12,269,273.0	191.00					
Via Valmonte- E. of Project Entrance	35.0	point111	111	37,309,684.0	12,269,273.0	191.00				Average	
		point92	92	37,309,736.0	12,269,254.0	187.00				Average	
		point93	93	37,309,776.0	12,269,254.0	185.00				Average	
		point21	21	37,309,868.0	12,269,275.0	178.00					
Roadway25	12.0	point197	197	37,304,704.0	12,266,266.0	0.00				Average	
		point198	198	37,304,764.0	12,266,266.0	0.00					
Project Entrance - fm Via Valmonte	24.0	point225	225	37,309,660.0	12,269,255.0	190.00				Average	
		point226	226	37,309,652.0	12,269,234.0	191.00				Average	
		point227	227	37,309,640.0	12,269,222.0	192.00				Average	
		point228	228	37,309,632.0	12,269,215.0	192.00				Average	
		point229	229	37,309,608.0	12,269,211.0	192.00				Average	
		point230	230	37,309,592.0	12,269,213.0	192.00				Average	
		point231	231	37,309,564.0	12,269,214.0	192.00					
Project Entrance - Hawthorne Blvd	24.0	point232	232	37,309,912.0	12,269,064.0	185.00				Average	

		point233	233	37,309,892.0	12,269,052.0	189.00				Average	
		point234	234	37,309,860.0	12,269,034.0	193.00					
Hawthorne Blvd- South of Via Valmonte	85.0	point238	238	37,309,884.0	12,269,251.0	179.00				Average	
		point240	240	37,309,944.0	12,269,120.0	184.00				Average	
		point241	241	37,310,044.0	12,268,969.0	190.00				Average	
		point242	242	37,310,164.0	12,268,816.0	194.00				Average	
		point243	243	37,310,248.0	12,268,662.0	198.00				Average	
		point244	244	37,310,328.0	12,268,532.0	210.00				Average	
		point245	245	37,310,384.0	12,268,425.0	218.00				Average	
		point246	246	37,310,424.0	12,268,250.0	225.00				Average	
		point247	247	37,310,440.0	12,268,139.0	230.00				Average	
		point248	248	37,310,440.0	12,267,961.0	230.00				Average	
		point249	249	37,310,440.0	12,267,911.0	231.00				Average	
		point250	250	37,310,384.0	12,267,745.0	243.00				Average	
		point251	251	37,310,316.0	12,267,563.0	255.00				Average	
		point252	252	37,310,212.0	12,267,421.0	268.00				Average	
		point253	253	37,310,080.0	12,267,309.0	278.00				Average	
		point254	254	37,309,924.0	12,267,197.0	291.00				Average	
		point255	255	37,309,640.0	12,267,006.0	315.00				Average	
		point256	256	37,309,056.0	12,266,609.0	358.00				Average	
		point257	257	37,308,744.0	12,266,390.0	379.00				Average	
		point258	258	37,308,560.0	12,266,208.0	400.00				Average	
		point239	239	37,308,072.0	12,265,757.0	440.00					

Dudek **28 July 2018**

M Greene / S Tang **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Percentages

PROJECT/CONTRACT: **9641**

RUN: **Solana Trrnce MF Resi - ExWP 0118**

Roadway	Points												
Name	Name	No.	Segment										
			Total	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			Volume	P	S	P	S	P	S	P	S	P	S
			veh/hr	%	mph	%	mph	%	mph	%	mph	%	mph
Hawthorne Blvd - North of Via Valmonte	point61	61	3740	97	45	1	45	2	45	0	0	0	0
	point62	62	3740	97	45	1	45	2	45	0	0	0	0
	point63	63	3740	97	45	1	45	2	45	0	0	0	0
	point64	64											
Via Valmonte - W. of Project Entrance	point95	95	644	99	25	1	25	0	0	0	0	0	0
	point86	86	644	99	25	1	25	0	0	0	0	0	0
	point87	87	644	99	25	1	25	0	0	0	0	0	0
	point186	186	644	99	25	1	25	0	0	0	0	0	0
	point88	88	644	99	25	1	25	0	0	0	0	0	0
	point89	89	644	99	25	1	25	0	0	0	0	0	0
	point90	90											
Via Valmonte- E. of Project Entrance	point111	111	710	99	25	1	25	0	0	0	0	0	0
	point92	92	710	99	25	1	25	0	0	0	0	0	0
	point93	93	710	99	25	1	25	0	0	0	0	0	0
	point21	21											
Roadway25	point197	197	0	0	0	0	0	0	0	0	0	0	0
	point198	198											
Project Entrance - fm Via Valmonte	point225	225	107	99	15	1	15	0	0	0	0	0	0
	point226	226	107	99	15	1	15	0	0	0	0	0	0
	point227	227	107	99	15	1	15	0	0	0	0	0	0
	point228	228	107	99	15	1	15	0	0	0	0	0	0
	point229	229	107	99	15	1	15	0	0	0	0	0	0
	point230	230	107	99	15	1	15	0	0	0	0	0	0

	point231	231											
Project Entrance - Hawthorne Blvd	point232	232	30	99	15	1	15	0	0	0	0	0	0
	point233	233	30	99	15	1	15	0	0	0	0	0	0
	point234	234											
Hawthorne Blvd- South of Via Valmonte	point238	238	3730	97	45	1	45	2	45	0	0	0	0
	point240	240	3730	97	45	1	45	2	45	0	0	0	0
	point241	241	3730	97	45	1	45	2	45	0	0	0	0
	point242	242	3730	97	45	1	45	2	45	0	0	0	0
	point243	243	3730	97	45	1	45	2	45	0	0	0	0
	point244	244	3730	97	45	1	45	2	45	0	0	0	0
	point245	245	3730	97	45	1	45	2	45	0	0	0	0
	point246	246	3730	97	45	1	45	2	45	0	0	0	0
	point247	247	3730	97	45	1	45	2	45	0	0	0	0
	point248	248	3730	97	45	1	45	2	45	0	0	0	0
	point249	249	3730	97	45	1	45	2	45	0	0	0	0
	point250	250	3730	97	45	1	45	2	45	0	0	0	0
	point251	251	3730	97	45	1	45	2	45	0	0	0	0
	point252	252	3730	97	45	1	45	2	45	0	0	0	0
	point253	253	3730	97	45	1	45	2	45	0	0	0	0
	point254	254	3730	97	45	1	45	2	45	0	0	0	0
	point255	255	3730	97	45	1	45	2	45	0	0	0	0
	point256	256	3730	97	45	1	45	2	45	0	0	0	0
	point257	257	3730	97	45	1	45	2	45	0	0	0	0
	point258	258	3730	97	45	1	45	2	45	0	0	0	0
	point239	239											

Dudek 28 July 2018
M Greene / S Tang TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - ExWP 0118

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST3 - Resi Area E. of Proj.	429	1	37,310,176.0	12,268,919.0	172.00	5.00	0.00	66	10.0	8.0	Y
ST4 - Resi Area N. of Proj.	430	1	37,309,472.0	12,269,365.0	223.00	5.00	0.00	66	10.0	8.0	Y
R14 - Resi's northeast of Proj.	485	1	37,309,956.0	12,269,378.0	160.00	5.00	0.00	66	10.0	8.0	Y
R1 - Outdoor community area rooftop de	668	1	37,309,872.0	12,269,081.0	222.00	5.00	0.00	66	10.0	8.0	Y
R2 - Outdoor community area rooftop de	669	1	37,309,844.0	12,269,072.0	222.00	5.00	0.00	66	10.0	8.0	Y
R3 - Outdoor area Bldg B	670	1	37,309,768.0	12,269,088.0	202.30	5.00	0.00	66	10.0	8.0	Y
R4 - Outdoor area Bldg B west side	671	1	37,309,672.0	12,269,116.0	203.00	5.00	0.00	66	10.0	8.0	Y
R5 - Outdoor area Bldg B west side	672	1	37,309,672.0	12,269,156.0	203.00	5.00	0.00	66	10.0	8.0	Y
R6 - Outdoor area Bldg A west side	673	1	37,309,396.0	12,269,132.0	203.00	5.00	0.00	66	10.0	8.0	Y
R7 - Outdoor area Bldg A west side	674	1	37,309,384.0	12,269,069.0	203.00	5.00	0.00	66	10.0	8.0	Y
R8 - Outdoor area Bldg C	675	1	37,309,872.0	12,268,928.0	203.00	5.00	0.00	66	10.0	8.0	Y
R9 - Outdoor area Bldg C south side	676	1	37,309,976.0	12,268,834.0	203.00	5.00	0.00	66	10.0	8.0	Y
R10 - Outdoor area Bldg C southwest sic	677	1	37,309,928.0	12,268,841.0	203.00	5.00	0.00	66	10.0	8.0	Y
R11 - Pool / Rec Area at Parking Structu	678	1	37,309,780.0	12,268,915.0	249.00	5.00	0.00	66	10.0	8.0	Y
R12 - Pool / Rec Area at Parking Structu	679	1	37,309,796.0	12,268,924.0	249.00	5.00	0.00	66	10.0	8.0	Y
R13 - Pool / Rec Area at Parking Structu	680	1	37,309,800.0	12,268,972.0	249.00	5.00	0.00	66	10.0	8.0	Y

Dudek
M Greene / S Tang
28 July 2018
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - ExWP 0118

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Bldg B - 2	W	0.00	99.99	0.00				0.00	point298	298	37,309,648.0	12,269,204.0	192.00	55.00	0.00	0	0		
									point300	300	37,309,660.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point301	301	37,309,664.0	12,269,209.0	192.00	55.00	0.00	0	0		
									point303	303	37,309,676.0	12,269,210.0	192.00	55.00	0.00	0	0		
									point305	305	37,309,688.0	12,269,208.0	192.00	55.00	0.00	0	0		
									point306	306	37,309,712.0	12,269,206.0	192.00	55.00	0.00	0	0		
									point308	308	37,309,724.0	12,269,207.0	192.00	55.00	0.00	0	0		
									point309	309	37,309,724.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point311	311	37,309,752.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point312	312	37,309,760.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point313	313	37,309,760.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point314	314	37,309,788.0	12,269,201.0	192.00	55.00	0.00	0	0		
									point315	315	37,309,788.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point316	316	37,309,800.0	12,269,202.0	192.00	55.00	0.00	0	0		
									point317	317	37,309,800.0	12,269,200.0	192.00	55.00	0.00	0	0		
									point318	318	37,309,820.0	12,269,199.0	192.00	55.00	0.00	0	0		
									point319	319	37,309,832.0	12,269,179.0	192.00	55.00	0.00	0	0		
									point320	320	37,309,836.0	12,269,181.0	192.00	55.00	0.00	0	0		
									point322	322	37,309,844.0	12,269,160.0	192.00	55.00	0.00	0	0		
									point324	324	37,309,856.0	12,269,139.0	192.00	55.00	0.00	0	0		
									point326	326	37,309,864.0	12,269,129.0	192.00	55.00	0.00	0	0		
									point327	327	37,309,872.0	12,269,107.0	192.00	55.00	0.00	0	0		
									point328	328	37,309,848.0	12,269,091.0	192.00	55.00	0.00	0	0		
									point299	299	37,309,804.0	12,269,169.0	192.00	55.00					
Bldg B - 3	W	0.00	99.99	0.00				0.00	point329	329	37,309,712.0	12,269,157.0	192.00	55.00	0.00	0	0		
									point331	331	37,309,716.0	12,269,169.0	192.00	55.00	0.00	0	0		
									point332	332	37,309,756.0	12,269,166.0	192.00	55.00	0.00	0	0		
									point333	333	37,309,780.0	12,269,164.0	192.00	55.00	0.00	0	0		
									point334	334	37,309,792.0	12,269,164.0	192.00	55.00	0.00	0	0		
									point335	335	37,309,800.0	12,269,163.0	192.00	55.00	0.00	0	0		
									point336	336	37,309,832.0	12,269,108.0	192.00	55.00	0.00	0	0		
									point337	337	37,309,808.0	12,269,095.0	192.00	55.00	0.00	0	0		
									point338	338	37,309,800.0	12,269,092.0	192.00	55.00	0.00	0	0		
									point340	340	37,309,796.0	12,269,103.0	192.00	55.00	0.00	0	0		
									point342	342	37,309,784.0	12,269,123.0	192.00	55.00	0.00	0	0		

									point343	343	37,309,776.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point344	344	37,309,764.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point345	345	37,309,764.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point346	346	37,309,752.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point347	347	37,309,752.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point348	348	37,309,748.0	12,269,126.0	192.00	55.00	0.00	0	0		
									point349	349	37,309,744.0	12,269,126.0	192.00	55.00	0.00	0	0		
									point351	351	37,309,744.0	12,269,113.0	192.00	55.00	0.00	0	0		
									point352	352	37,309,744.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point353	353	37,309,740.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point354	354	37,309,740.0	12,269,090.0	192.00	55.00	0.00	0	0		
									point355	355	37,309,744.0	12,269,090.0	192.00	55.00	0.00	0	0		
									point356	356	37,309,740.0	12,269,080.0	192.00	55.00	0.00	0	0		
									point357	357	37,309,736.0	12,269,080.0	192.00	55.00	0.00	0	0		
									point330	330	37,309,708.0	12,269,081.0	192.00	55.00					
Bldg B - 4	W	0.00	99.99	0.00				0.00	point359	359	37,309,612.0	12,269,175.0	192.00	55.00	0.00	0	0		
									point361	361	37,309,624.0	12,269,175.0	192.00	55.00	0.00	0	0		
									point362	362	37,309,656.0	12,269,173.0	192.00	55.00	0.00	0	0		
									point363	363	37,309,652.0	12,269,145.0	192.00	55.00	0.00	0	0		
									point364	364	37,309,652.0	12,269,138.0	192.00	55.00	0.00	0	0		
									point365	365	37,309,648.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point366	366	37,309,644.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point367	367	37,309,640.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point368	368	37,309,640.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point369	369	37,309,644.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point371	371	37,309,640.0	12,269,109.0	192.00	55.00	0.00	0	0		
									point373	373	37,309,640.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point374	374	37,309,640.0	12,269,086.0	192.00	55.00	0.00	0	0		
									point375	375	37,309,636.0	12,269,086.0	192.00	55.00	0.00	0	0		
									point376	376	37,309,608.0	12,269,088.0	192.00	55.00	0.00	0	0		
									point377	377	37,309,608.0	12,269,112.0	192.00	55.00	0.00	0	0		
									point378	378	37,309,608.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point360	360	37,309,612.0	12,269,164.0	192.00	55.00					
Bldg B - 1	W	0.00	99.99	0.00				0.00	point380	380	37,309,572.0	12,269,191.0	192.00	55.00	0.00	0	0		
									point382	382	37,309,580.0	12,269,191.0	192.00	55.00	0.00	0	0		
									point383	383	37,309,608.0	12,269,189.0	192.00	55.00	0.00	0	0		
									point384	384	37,309,604.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point385	385	37,309,604.0	12,269,129.0	192.00	55.00	0.00	0	0		
									point386	386	37,309,600.0	12,269,106.0	192.00	55.00	0.00	0	0		
									point387	387	37,309,572.0	12,269,108.0	192.00	55.00	0.00	0	0		
									point388	388	37,309,572.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point389	389	37,309,568.0	12,269,121.0	192.00	55.00	0.00	0	0		
									point391	391	37,309,572.0	12,269,131.0	192.00	55.00	0.00	0	0		
									point393	393	37,309,572.0	12,269,144.0	192.00	55.00	0.00	0	0		
									point395	395	37,309,572.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point396	396	37,309,576.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point397	397	37,309,572.0	12,269,180.0	192.00	55.00					
Bldg C - 1	W	0.00	99.99	0.00				0.00	point402	402	37,309,892.0	12,269,014.0	192.00	55.00	0.00	0	0		
									point404	404	37,309,916.0	12,269,027.0	192.00	55.00	0.00	0	0		

									point405	405	37,309,920.0	12,269,030.0	192.00	55.00	0.00	0	0		
									point406	406	37,309,928.0	12,269,020.0	192.00	55.00	0.00	0	0		
									point407	407	37,309,924.0	12,269,019.0	192.00	55.00	0.00	0	0		
									point408	408	37,309,936.0	12,268,998.0	192.00	55.00	0.00	0	0		
									point409	409	37,309,940.0	12,268,999.0	192.00	55.00	0.00	0	0		
									point411	411	37,309,944.0	12,268,987.0	192.00	55.00	0.00	0	0		
									point413	413	37,309,956.0	12,268,967.0	192.00	55.00	0.00	0	0		
									point415	415	37,309,960.0	12,268,956.0	192.00	55.00	0.00	0	0		
									point416	416	37,309,972.0	12,268,934.0	192.00	55.00	0.00	0	0		
									point417	417	37,309,976.0	12,268,936.0	192.00	55.00	0.00	0	0		
									point418	418	37,309,980.0	12,268,939.0	192.00	55.00	0.00	0	0		
									point420	420	37,309,984.0	12,268,928.0	192.00	55.00	0.00	0	0		
									point421	421	37,310,008.0	12,268,886.0	192.00	55.00	0.00	0	0		
									point422	422	37,310,012.0	12,268,886.0	192.00	55.00	0.00	0	0		
									point424	424	37,310,016.0	12,268,876.0	192.00	55.00	0.00	0	0		
									point425	425	37,310,028.0	12,268,854.0	192.00	55.00	0.00	0	0		
									point426	426	37,310,000.0	12,268,839.0	192.00	55.00	0.00	0	0		
									point427	427	37,309,980.0	12,268,870.0	192.00	55.00	0.00	0	0		
									point428	428	37,309,964.0	12,268,902.0	192.00	55.00	0.00	0	0		
									point429	429	37,309,952.0	12,268,922.0	192.00	55.00	0.00	0	0		
									point403	403	37,309,944.0	12,268,919.0	192.00	55.00					
Bldg C - 5	W	0.00	99.99	0.00				0.00	point431	431	37,309,856.0	12,268,995.0	192.00	55.00	0.00	0	0		
									point433	433	37,309,864.0	12,268,998.0	192.00	55.00	0.00	0	0		
									point434	434	37,309,884.0	12,269,012.0	192.00	55.00	0.00	0	0		
									point435	435	37,309,896.0	12,268,991.0	192.00	55.00	0.00	0	0		
									point436	436	37,309,868.0	12,268,976.0	192.00	55.00	0.00	0	0		
									point438	438	37,309,864.0	12,268,986.0	192.00	55.00					
Bldg C - 3	W	0.00	99.99	0.00				0.00	point439	439	37,309,876.0	12,268,960.0	192.00	55.00	0.00	0	0		
									point440	440	37,309,884.0	12,268,963.0	192.00	55.00	0.00	0	0		
									point441	441	37,309,904.0	12,268,976.0	192.00	55.00	0.00	0	0		
									point442	442	37,309,924.0	12,268,944.0	192.00	55.00	0.00	0	0		
									point443	443	37,309,940.0	12,268,919.0	192.00	55.00	0.00	0	0		
									point444	444	37,309,944.0	12,268,908.0	192.00	55.00	0.00	0	0		
									point445	445	37,309,932.0	12,268,902.0	192.00	55.00	0.00	0	0		
									point446	446	37,309,908.0	12,268,888.0	192.00	55.00	0.00	0	0		
									point447	447	37,309,892.0	12,268,912.0	192.00	55.00	0.00	0	0		
									point448	448	37,309,888.0	12,268,919.0	192.00	55.00	0.00	0	0		
									point449	449	37,309,892.0	12,268,927.0	192.00	55.00	0.00	0	0		
									point450	450	37,309,896.0	12,268,929.0	192.00	55.00	0.00	0	0		
									point452	452	37,309,884.0	12,268,950.0	192.00	55.00					
Bldg C - 4	W	0.00	99.99	0.00				0.00	point453	453	37,309,852.0	12,268,889.0	192.00	55.00	0.00	0	0		
									point454	454	37,309,848.0	12,268,894.0	192.00	55.00	0.00	0	0		
									point456	456	37,309,860.0	12,268,898.0	192.00	55.00	0.00	0	0		
									point457	457	37,309,880.0	12,268,910.0	192.00	55.00	0.00	0	0		
									point458	458	37,309,896.0	12,268,882.0	192.00	55.00	0.00	0	0		
									point459	459	37,309,864.0	12,268,864.0	192.00	55.00	0.00	0	0		
									point460	460	37,309,852.0	12,268,888.0	192.00	55.00					
Bldg C - 2	W	0.00	99.99	0.00				0.00	point461	461	37,309,884.0	12,268,869.0	192.00	55.00	0.00	0	0		
									point463	463	37,309,916.0	12,268,886.0	192.00	55.00	0.00	0	0		

									point464	464	37,309,944.0	12,268,901.0	192.00	55.00	0.00	0	0		
									point465	465	37,309,952.0	12,268,906.0	192.00	55.00	0.00	0	0		
									point466	466	37,309,960.0	12,268,896.0	192.00	55.00	0.00	0	0		
									point467	467	37,309,972.0	12,268,871.0	192.00	55.00	0.00	0	0		
									point468	468	37,309,984.0	12,268,850.0	192.00	55.00	0.00	0	0		
									point469	469	37,309,960.0	12,268,837.0	192.00	55.00	0.00	0	0		
									point470	470	37,309,956.0	12,268,834.0	192.00	55.00	0.00	0	0		
									point472	472	37,309,952.0	12,268,845.0	192.00	55.00	0.00	0	0		
									point473	473	37,309,948.0	12,268,856.0	192.00	55.00	0.00	0	0		
									point474	474	37,309,944.0	12,268,854.0	192.00	55.00	0.00	0	0		
									point475	475	37,309,940.0	12,268,855.0	192.00	55.00	0.00	0	0		
									point476	476	37,309,936.0	12,268,856.0	192.00	55.00	0.00	0	0		
									point477	477	37,309,932.0	12,268,860.0	192.00	55.00	0.00	0	0		
									point478	478	37,309,908.0	12,268,847.0	192.00	55.00	0.00	0	0		
									point479	479	37,309,912.0	12,268,846.0	192.00	55.00	0.00	0	0		
									point480	480	37,309,900.0	12,268,840.0	192.00	55.00	0.00	0	0		
									point481	481	37,309,896.0	12,268,846.0	192.00	55.00					
Bldg A - 1	W	0.00	99.99	0.00				0.00	point482	482	37,309,384.0	12,269,229.0	192.00	55.00	0.00	0	0		
									point484	484	37,309,396.0	12,269,227.0	192.00	55.00	0.00	0	0		
									point485	485	37,309,396.0	12,269,229.0	192.00	55.00	0.00	0	0		
									point486	486	37,309,408.0	12,269,228.0	192.00	55.00	0.00	0	0		
									point487	487	37,309,408.0	12,269,226.0	192.00	55.00	0.00	0	0		
									point488	488	37,309,420.0	12,269,224.0	192.00	55.00	0.00	0	0		
									point489	489	37,309,420.0	12,269,226.0	192.00	55.00	0.00	0	0		
									point491	491	37,309,432.0	12,269,223.0	192.00	55.00	0.00	0	0		
									point492	492	37,309,444.0	12,269,221.0	192.00	55.00	0.00	0	0		
									point493	493	37,309,444.0	12,269,223.0	192.00	55.00	0.00	0	0		
									point495	495	37,309,456.0	12,269,220.0	192.00	55.00	0.00	0	0		
									point496	496	37,309,480.0	12,269,216.0	192.00	55.00	0.00	0	0		
									point497	497	37,309,480.0	12,269,218.0	192.00	55.00	0.00	0	0		
									point498	498	37,309,492.0	12,269,216.0	192.00	55.00	0.00	0	0		
									point499	499	37,309,492.0	12,269,210.0	192.00	55.00	0.00	0	0		
									point500	500	37,309,488.0	12,269,184.0	192.00	55.00	0.00	0	0		
									point501	501	37,309,484.0	12,269,184.0	192.00	55.00	0.00	0	0		
									point502	502	37,309,452.0	12,269,189.0	192.00	55.00	0.00	0	0		
									point503	503	37,309,428.0	12,269,192.0	192.00	55.00	0.00	0	0		
									point504	504	37,309,404.0	12,269,195.0	192.00	55.00	0.00	0	0		
									point483	483	37,309,380.0	12,269,198.0	192.00	55.00					
Bldg A - 5	W	0.00	99.99	0.00				0.00	point505	505	37,309,356.0	12,269,196.0	192.00	55.00	0.00	0	0		
									point507	507	37,309,368.0	12,269,194.0	192.00	55.00	0.00	0	0		
									point508	508	37,309,396.0	12,269,190.0	192.00	55.00	0.00	0	0		
									point509	509	37,309,392.0	12,269,162.0	192.00	55.00	0.00	0	0		
									point510	510	37,309,392.0	12,269,156.0	192.00	55.00	0.00	0	0		
									point511	511	37,309,388.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point512	512	37,309,384.0	12,269,150.0	192.00	55.00	0.00	0	0		
									point513	513	37,309,380.0	12,269,151.0	192.00	55.00	0.00	0	0		
									point515	515	37,309,380.0	12,269,138.0	192.00	55.00	0.00	0	0		
									point516	516	37,309,380.0	12,269,127.0	192.00	55.00	0.00	0	0		
									point517	517	37,309,376.0	12,269,128.0	192.00	55.00	0.00	0	0		

									point519	519	37,309,376.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point520	520	37,309,376.0	12,269,091.0	192.00	55.00	0.00	0	0		
									point521	521	37,309,372.0	12,269,092.0	192.00	55.00	0.00	0	0		
									point522	522	37,309,368.0	12,269,067.0	192.00	55.00	0.00	0	0		
									point523	523	37,309,372.0	12,269,066.0	192.00	55.00	0.00	0	0		
									point524	524	37,309,368.0	12,269,056.0	192.00	55.00	0.00	0	0		
									point525	525	37,309,364.0	12,269,057.0	192.00	55.00	0.00	0	0		
									point526	526	37,309,336.0	12,269,060.0	192.00	55.00	0.00	0	0		
									point527	527	37,309,340.0	12,269,096.0	192.00	55.00	0.00	0	0		
									point528	528	37,309,348.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point529	529	37,309,348.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point506	506	37,309,352.0	12,269,184.0	192.00	55.00					
Bldg A - 6	W	0.00	99.99	0.00				0.00	point530	530	37,309,312.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point532	532	37,309,320.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point533	533	37,309,348.0	12,269,176.0	192.00	55.00	0.00	0	0		
									point534	534	37,309,344.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point535	535	37,309,340.0	12,269,130.0	192.00	55.00	0.00	0	0		
									point536	536	37,309,336.0	12,269,106.0	192.00	55.00	0.00	0	0		
									point537	537	37,309,304.0	12,269,110.0	192.00	55.00	0.00	0	0		
									point538	538	37,309,308.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point539	539	37,309,304.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point541	541	37,309,308.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point542	542	37,309,312.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point543	543	37,309,308.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point545	545	37,309,312.0	12,269,157.0	192.00	55.00	0.00	0	0		
									point531	531	37,309,312.0	12,269,170.0	192.00	55.00					
Bldg A - 4	W	0.00	99.99	0.00				0.00	point547	547	37,309,408.0	12,269,188.0	192.00	55.00	0.00	0	0		
									point549	549	37,309,440.0	12,269,185.0	192.00	55.00	0.00	0	0		
									point550	550	37,309,452.0	12,269,183.0	192.00	55.00	0.00	0	0		
									point551	551	37,309,448.0	12,269,172.0	192.00	55.00	0.00	0	0		
									point552	552	37,309,444.0	12,269,142.0	192.00	55.00	0.00	0	0		
									point553	553	37,309,440.0	12,269,119.0	192.00	55.00	0.00	0	0		
									point554	554	37,309,436.0	12,269,083.0	192.00	55.00	0.00	0	0		
									point555	555	37,309,432.0	12,269,047.0	192.00	55.00	0.00	0	0		
									point556	556	37,309,404.0	12,269,051.0	192.00	55.00	0.00	0	0		
									point557	557	37,309,400.0	12,269,052.0	192.00	55.00	0.00	0	0		
									point559	559	37,309,400.0	12,269,062.0	192.00	55.00	0.00	0	0		
									point561	561	37,309,404.0	12,269,088.0	192.00	55.00	0.00	0	0		
									point562	562	37,309,404.0	12,269,099.0	192.00	55.00	0.00	0	0		
									point563	563	37,309,408.0	12,269,098.0	192.00	55.00	0.00	0	0		
									point564	564	37,309,412.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point565	565	37,309,408.0	12,269,124.0	192.00	55.00	0.00	0	0		
									point566	566	37,309,408.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point567	567	37,309,412.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point568	568	37,309,412.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point569	569	37,309,408.0	12,269,147.0	192.00	55.00	0.00	0	0		
									point570	570	37,309,408.0	12,269,150.0	192.00	55.00	0.00	0	0		
									point571	571	37,309,404.0	12,269,154.0	192.00	55.00	0.00	0	0		
									point548	548	37,309,404.0	12,269,161.0	192.00	55.00					

Bldg A - 2	W	0.00	99.99	0.00				0.00	point572	572	37,309,456.0	12,269,183.0	192.00	55.00	0.00	0	0		
									point574	574	37,309,484.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point575	575	37,309,488.0	12,269,179.0	192.00	55.00	0.00	0	0		
									point577	577	37,309,488.0	12,269,168.0	192.00	55.00	0.00	0	0		
									point578	578	37,309,484.0	12,269,156.0	192.00	55.00	0.00	0	0		
									point579	579	37,309,488.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point581	581	37,309,484.0	12,269,144.0	192.00	55.00	0.00	0	0		
									point582	582	37,309,480.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point583	583	37,309,484.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point585	585	37,309,480.0	12,269,121.0	192.00	55.00	0.00	0	0		
									point586	586	37,309,476.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point587	587	37,309,444.0	12,269,101.0	192.00	55.00	0.00	0	0		
									point588	588	37,309,452.0	12,269,137.0	192.00	55.00	0.00	0	0		
									point573	573	37,309,452.0	12,269,160.0	192.00	55.00					
Bldg A - 7	W	0.00	99.99	0.00				0.00	point596	596	37,309,304.0	12,269,101.0	192.00	55.00	0.00	0	0		
									point598	598	37,309,336.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point599	599	37,309,332.0	12,269,061.0	192.00	55.00	0.00	0	0		
									point600	600	37,309,304.0	12,269,064.0	192.00	55.00	0.00	0	0		
									point601	601	37,309,296.0	12,269,065.0	192.00	55.00	0.00	0	0		
									point597	597	37,309,300.0	12,269,076.0	192.00	55.00					
Parking Structure	W	0.00	99.99	0.00				0.00	point603	603	37,309,540.0	12,269,052.0	204.00	50.00	0.00	0	0		
									point605	605	37,309,708.0	12,269,001.0	204.00	50.00	0.00	0	0		
									point606	606	37,309,708.0	12,269,006.0	204.00	50.00	0.00	0	0		
									point607	607	37,309,736.0	12,268,998.0	204.00	50.00	0.00	0	0		
									point608	608	37,309,736.0	12,268,993.0	204.00	50.00	0.00	0	0		
									point609	609	37,309,752.0	12,268,988.0	204.00	50.00	0.00	0	0		
									point610	610	37,309,808.0	12,268,984.0	204.00	50.00	0.00	0	0		
									point611	611	37,309,800.0	12,268,897.0	204.00	50.00	0.00	0	0		
									point612	612	37,309,776.0	12,268,874.0	204.00	50.00	0.00	0	0		
									point613	613	37,309,656.0	12,268,950.0	204.00	50.00	0.00	0	0		
									point604	604	37,309,520.0	12,268,992.0	204.00	50.00					
Bldg A - 8	W	0.00	99.99	0.00				0.00	point614	614	37,309,444.0	12,269,087.0	192.00	55.00	0.00	0	0		
									point615	615	37,309,476.0	12,269,083.0	192.00	55.00	0.00	0	0		
									point616	616	37,309,468.0	12,269,044.0	192.00	55.00	0.00	0	0		
									point617	617	37,309,440.0	12,269,048.0	192.00	55.00					
Office / Rec Room	W	0.00	99.99	0.00				0.00	point618	618	37,309,868.0	12,269,103.0	192.00	35.00	0.00	0	0		
									point619	619	37,309,884.0	12,269,079.0	192.00	35.00	0.00	0	0		
									point620	620	37,309,848.0	12,269,057.0	192.00	35.00	0.00	0	0		
									point621	621	37,309,840.0	12,269,069.0	192.00	35.00	0.00	0	0		
									point622	622	37,309,800.0	12,269,071.0	192.00	35.00					

Dudek			**28 July 2018**	
M Greene / S Tang			**TNM 2.5**	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	**9641**			
RUN:	**Solana Trrnce MF Resi - ExWP 0118**			
Terrain Line	**Points**			
Name	**No.**	**Coordinates (ground)**		
		X	**Y**	**Z**
		ft	ft	ft
Terrain Line15	129	37,309,780.0	12,269,203.0	190.50
	130	37,309,804.0	12,269,204.0	190.50
	131	37,309,820.0	12,269,206.0	190.50
	132	37,309,836.0	12,269,197.0	190.50
	133	37,309,864.0	12,269,135.0	190.50
	134	37,309,872.0	12,269,118.0	190.50
	135	37,309,888.0	12,269,079.0	190.50
	136	37,309,848.0	12,269,055.0	190.50
	137	37,309,840.0	12,269,067.0	190.50
Terrain Line16	138	37,309,860.0	12,269,008.0	193.00
	139	37,309,920.0	12,269,042.0	193.00
	140	37,309,924.0	12,269,036.0	193.00
	141	37,309,940.0	12,269,034.0	193.00
	142	37,310,008.0	12,268,936.0	193.00
Terrain Line17	143	37,310,000.0	12,268,924.0	193.00
	144	37,310,012.0	12,268,930.0	193.00
	145	37,310,064.0	12,268,860.0	193.00
Terrain Line19	158	37,310,048.0	12,268,768.0	0.00
	159	37,310,000.0	12,268,768.0	0.00
	160	37,309,976.0	12,268,768.0	0.00
	161	37,309,948.0	12,268,764.0	0.00
	162	37,309,860.0	12,268,777.0	0.00
	163	37,309,784.0	12,268,810.0	0.00
	164	37,309,776.0	12,268,824.0	0.00

	165	37,309,680.0	12,268,872.0	0.00
	166	37,309,664.0	12,268,869.0	0.00
	167	37,309,580.0	12,268,917.0	0.00
	168	37,309,504.0	12,268,961.0	0.00
	169	37,309,436.0	12,268,959.0	0.00
Terrain Line20	170	37,310,060.0	12,268,707.0	210.00
	171	37,310,016.0	12,268,707.0	220.00
	172	37,309,988.0	12,268,707.0	240.00
	173	37,309,964.0	12,268,703.0	260.00
	174	37,309,876.0	12,268,722.0	280.00
	175	37,309,800.0	12,268,749.0	300.00
	176	37,309,788.0	12,268,763.0	330.00
	177	37,309,696.0	12,268,811.0	360.00
	178	37,309,676.0	12,268,808.0	380.00
	179	37,309,596.0	12,268,856.0	380.00
	180	37,309,516.0	12,268,899.0	380.00
	181	37,309,452.0	12,268,899.0	380.00
	182	37,309,384.0	12,268,914.0	380.00
	184	37,309,352.0	12,268,920.0	380.00
	183	37,309,312.0	12,268,952.0	380.00

Dudek
M Greene / S Tang

28 July 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - ExWP 0118
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST3 - Resi Area E. of Proj.	429	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
ST4 - Resi Area N. of Proj.	430	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
R14 - Resi's northeast of Proj.	485	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
R1 - Outdoor community area rooftop deck	668	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R2 - Outdoor community area rooftop deck	669	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R3 - Outdoor area Bldg B	670	1	0.0	41.6	66	41.6	10	----	41.6	0.0	8	-8.0
R4 - Outdoor area Bldg B west side	671	1	0.0	40.1	66	40.1	10	----	40.1	0.0	8	-8.0
R5 - Outdoor area Bldg B west side	672	1	0.0	45.9	66	45.9	10	----	45.9	0.0	8	-8.0
R6 - Outdoor area Bldg A west side	673	1	0.0	28.4	66	28.4	10	----	28.4	0.0	8	-8.0
R7 - Outdoor area Bldg A west side	674	1	0.0	28.5	66	28.5	10	----	28.5	0.0	8	-8.0
R8 - Outdoor area Bldg C	675	1	0.0	32.9	66	32.9	10	----	32.9	0.0	8	-8.0
R9 - Outdoor area Bldg C south side	676	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R10 - Outdoor area Bldg C southwest side	677	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R11 - Pool / Rec Area at Parking Structure	678	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0
R12 - Pool / Rec Area at Parking Structure	679	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
R13 - Pool / Rec Area at Parking Structure	680	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	16	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek					**28 July 2018**						
M Greene / S Tang					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**9641**						**a State highway agency substantiates the use**				
RUN:	**Solana Trrnce MF Resi - Future 0118**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Hawthorne Blvd - North of Via Valmonte	85.0	point61	61	37,309,840.0	12,269,859.0	146.00				Average	
		point62	62	37,309,832.0	12,269,580.0	159.00				Average	
		point63	63	37,309,848.0	12,269,362.0	175.00				Average	
		point64	64	37,309,884.0	12,269,253.0	179.00					
Roadway25	12.0	point197	197	37,304,704.0	12,266,266.0	0.00				Average	
		point198	198	37,304,764.0	12,266,266.0	0.00					
Hawthorne Blvd- South of Via Valmonte	85.0	point238	238	37,309,884.0	12,269,251.0	179.00				Average	
		point240	240	37,309,944.0	12,269,120.0	184.00				Average	
		point241	241	37,310,044.0	12,268,969.0	190.00				Average	
		point242	242	37,310,164.0	12,268,816.0	194.00				Average	
		point243	243	37,310,248.0	12,268,662.0	198.00				Average	
		point244	244	37,310,328.0	12,268,532.0	210.00				Average	
		point245	245	37,310,384.0	12,268,425.0	218.00				Average	
		point246	246	37,310,424.0	12,268,250.0	225.00				Average	
		point247	247	37,310,440.0	12,268,139.0	230.00				Average	
		point248	248	37,310,440.0	12,267,961.0	230.00				Average	
		point249	249	37,310,440.0	12,267,911.0	231.00				Average	
		point250	250	37,310,384.0	12,267,745.0	243.00				Average	
		point251	251	37,310,316.0	12,267,563.0	255.00				Average	
		point252	252	37,310,212.0	12,267,421.0	268.00				Average	
		point253	253	37,310,080.0	12,267,309.0	278.00				Average	
		point254	254	37,309,924.0	12,267,197.0	291.00				Average	
		point255	255	37,309,640.0	12,267,006.0	315.00				Average	
		point256	256	37,309,056.0	12,266,609.0	358.00				Average	
		point257	257	37,308,744.0	12,266,390.0	379.00				Average	

		point258	258	37,308,560.0	12,266,208.0	400.00				Average	
		point239	239	37,308,072.0	12,265,757.0	440.00					
Via Valmonte	35.0	point95	95	37,309,028.0	12,269,397.0	265.00				Average	
		point86	86	37,309,168.0	12,269,443.0	252.00				Average	
		point87	87	37,309,304.0	12,269,436.0	239.00				Average	
		point186	186	37,309,464.0	12,269,406.0	214.00				Average	
		point88	88	37,309,524.0	12,269,394.0	208.00				Average	
		point89	89	37,309,604.0	12,269,335.0	200.00				Average	
		point111	111	37,309,684.0	12,269,273.0	191.00				Average	
		point92	92	37,309,736.0	12,269,254.0	187.00				Average	
		point93	93	37,309,776.0	12,269,254.0	185.00				Average	
		point21	21	37,309,868.0	12,269,275.0	178.00					

Dudek **28 July 2018**

M Greene / S Tang **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Percentages

PROJECT/CONTRACT: **9641**

RUN: **Solana Trrnce MF Resi - Future 0118**

Roadway	Points												
Name	Name	No.	Segment										
			Total	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			Volume	P	S	P	S	P	S	P	S	P	S
			veh/hr	%	mph	%	mph	%	mph	%	mph	%	mph
Hawthorne Blvd - North of Via Valmonte	point61	61	3886	97	45	1	45	2	45	0	0	0	0
	point62	62	3886	97	45	1	45	2	45	0	0	0	0
	point63	63	3886	97	45	1	45	2	45	0	0	0	0
	point64	64											
Roadway25	point197	197	0	0	0	0	0	0	0	0	0	0	0
	point198	198											
Hawthorne Blvd- South of Via Valmonte	point238	238	3886	97	45	1	45	2	45	0	0	0	0
	point240	240	3886	97	45	1	45	2	45	0	0	0	0
	point241	241	3886	97	45	1	45	2	45	0	0	0	0
	point242	242	3886	97	45	1	45	2	45	0	0	0	0
	point243	243	3886	97	45	1	45	2	45	0	0	0	0
	point244	244	3886	97	45	1	45	2	45	0	0	0	0
	point245	245	3886	97	45	1	45	2	45	0	0	0	0
	point246	246	3886	97	45	1	45	2	45	0	0	0	0
	point247	247	3886	97	45	1	45	2	45	0	0	0	0
	point248	248	3886	97	45	1	45	2	45	0	0	0	0
	point249	249	3886	97	45	1	45	2	45	0	0	0	0
	point250	250	3886	97	45	1	45	2	45	0	0	0	0
	point251	251	3886	97	45	1	45	2	45	0	0	0	0
	point252	252	3886	97	45	1	45	2	45	0	0	0	0
	point253	253	3886	97	45	1	45	2	45	0	0	0	0
	point254	254	3886	97	45	1	45	2	45	0	0	0	0
	point255	255	3886	97	45	1	45	2	45	0	0	0	0

	point256	256	3886	97	45	1	45	2	45	0	0	0	0
	point257	257	3886	97	45	1	45	2	45	0	0	0	0
	point258	258	3886	97	45	1	45	2	45	0	0	0	0
	point239	239											
Via Valmonte	point95	95	764	99	25	1	25	0	0	0	0	0	0
	point86	86	764	99	25	1	25	0	0	0	0	0	0
	point87	87	764	99	25	1	25	0	0	0	0	0	0
	point186	186	764	99	25	1	25	0	0	0	0	0	0
	point88	88	764	99	25	1	25	0	0	0	0	0	0
	point89	89	764	99	25	1	25	0	0	0	0	0	0
	point111	111	764	99	25	1	25	0	0	0	0	0	0
	point92	92	764	99	25	1	25	0	0	0	0	0	0
	point93	93	764	99	25	1	25	0	0	0	0	0	0
	point21	21											

Dudek						**28 July 2018**					
M Greene / S Tang						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**9641**										
RUN:	**Solana Trrnce MF Resi - Future 0118**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1 - On-Site SE side	429	1	37,309,904.0	12,268,861.0	234.00	5.00	0.00	66	10.0	8.0	Y
ST2 - On-Site NE corner	430	1	37,309,748.0	12,269,179.0	198.00	5.00	0.00	66	10.0	8.0	Y
ST3 - Resi Area E. of Proj.	485	1	37,310,176.0	12,268,919.0	172.00	5.00	0.00	66	10.0	8.0	Y
ST4 - Resi Area N. of Proj.	652	1	37,309,472.0	12,269,365.0	223.00	5.00	0.00	66	10.0	8.0	Y
R14 - Resi's northeast of Proj.	654	1	37,309,956.0	12,269,378.0	160.00	5.00	0.00	66	10.0	8.0	Y

Dudek			**28 July 2018**	
M Greene / S Tang			**TNM 2.5**	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	**9641**			
RUN:	**Solana Trrnce MF Resi - Future 0118**			
Terrain Line	**Points**			
Name	**No.**	**Coordinates (ground)**		
		X	**Y**	**Z**
		ft	ft	ft
Terrain Line21	185	37,309,712.0	12,269,198.0	190.00
	186	37,309,804.0	12,269,204.0	200.00
	187	37,310,028.0	12,268,763.0	240.00

Dudek
M Greene / S Tang

28 July 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - Future 0118
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1 - On-Site SE side	429	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
ST2 - On-Site NE corner	430	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
ST3 - Resi Area E. of Proj.	485	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
ST4 - Resi Area N. of Proj.	652	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R14 - Resi's northeast of Proj.	654	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek					**28 July 2018**						
M Greene / S Tang					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**9641**						**a State highway agency substantiates the use**				
RUN:	**Solana Trrnce MF Resi - FutWP 0118**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Hawthorne Blvd - North of Via Valmonte	85.0	point61	61	37,309,840.0	12,269,859.0	146.00				Average	
		point62	62	37,309,832.0	12,269,580.0	159.00				Average	
		point63	63	37,309,848.0	12,269,362.0	175.00				Average	
		point64	64	37,309,884.0	12,269,253.0	179.00					
Via Valmonte - W. of Project Entrance	35.0	point95	95	37,309,028.0	12,269,397.0	265.00				Average	
		point86	86	37,309,168.0	12,269,443.0	252.00				Average	
		point87	87	37,309,304.0	12,269,436.0	239.00				Average	
		point186	186	37,309,464.0	12,269,406.0	214.00				Average	
		point88	88	37,309,524.0	12,269,394.0	208.00				Average	
		point89	89	37,309,604.0	12,269,335.0	200.00				Average	
		point90	90	37,309,684.0	12,269,273.0	191.00					
Via Valmonte- E. of Project Entrance	35.0	point111	111	37,309,684.0	12,269,273.0	191.00				Average	
		point92	92	37,309,736.0	12,269,254.0	187.00				Average	
		point93	93	37,309,776.0	12,269,254.0	185.00				Average	
		point21	21	37,309,868.0	12,269,275.0	178.00					
Roadway25	12.0	point197	197	37,304,704.0	12,266,266.0	0.00				Average	
		point198	198	37,304,764.0	12,266,266.0	0.00					
Project Entrance - fm Via Valmonte	24.0	point225	225	37,309,660.0	12,269,255.0	190.00				Average	
		point226	226	37,309,652.0	12,269,234.0	191.00				Average	
		point227	227	37,309,640.0	12,269,222.0	192.00				Average	
		point228	228	37,309,632.0	12,269,215.0	192.00				Average	
		point229	229	37,309,608.0	12,269,211.0	192.00				Average	
		point230	230	37,309,592.0	12,269,213.0	192.00				Average	
		point231	231	37,309,564.0	12,269,214.0	192.00					
Project Entrance - Hawthorne Blvd	24.0	point232	232	37,309,912.0	12,269,064.0	185.00				Average	

		point233	233	37,309,892.0	12,269,052.0	189.00				Average	
		point234	234	37,309,860.0	12,269,034.0	193.00					
Hawthorne Blvd- South of Via Valmonte	85.0	point238	238	37,309,884.0	12,269,251.0	179.00				Average	
		point240	240	37,309,944.0	12,269,120.0	184.00				Average	
		point241	241	37,310,044.0	12,268,969.0	190.00				Average	
		point242	242	37,310,164.0	12,268,816.0	194.00				Average	
		point243	243	37,310,248.0	12,268,662.0	198.00				Average	
		point244	244	37,310,328.0	12,268,532.0	210.00				Average	
		point245	245	37,310,384.0	12,268,425.0	218.00				Average	
		point246	246	37,310,424.0	12,268,250.0	225.00				Average	
		point247	247	37,310,440.0	12,268,139.0	230.00				Average	
		point248	248	37,310,440.0	12,267,961.0	230.00				Average	
		point249	249	37,310,440.0	12,267,911.0	231.00				Average	
		point250	250	37,310,384.0	12,267,745.0	243.00				Average	
		point251	251	37,310,316.0	12,267,563.0	255.00				Average	
		point252	252	37,310,212.0	12,267,421.0	268.00				Average	
		point253	253	37,310,080.0	12,267,309.0	278.00				Average	
		point254	254	37,309,924.0	12,267,197.0	291.00				Average	
		point255	255	37,309,640.0	12,267,006.0	315.00				Average	
		point256	256	37,309,056.0	12,266,609.0	358.00				Average	
		point257	257	37,308,744.0	12,266,390.0	379.00				Average	
		point258	258	37,308,560.0	12,266,208.0	400.00				Average	
		point239	239	37,308,072.0	12,265,757.0	440.00					

Dudek **28 July 2018**

M Greene / S Tang **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Percentages

PROJECT/CONTRACT: **9641**

RUN: **Solana Trrnce MF Resi - FutWP 0118**

Roadway	Points												
Name	Name	No.	Segment										
			Total	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			Volume	P	S	P	S	P	S	P	S	P	S
			veh/hr	%	mph	%	mph	%	mph	%	mph	%	mph
Hawthorne Blvd - North of Via Valmonte	point61	61	4000	97	45	1	45	2	45	0	0	0	0
	point62	62	4000	97	45	1	45	2	45	0	0	0	0
	point63	63	4000	97	45	1	45	2	45	0	0	0	0
	point64	64											
Via Valmonte - W. of Project Entrance	point95	95	764	99	25	1	25	0	0	0	0	0	0
	point86	86	764	99	25	1	25	0	0	0	0	0	0
	point87	87	764	99	25	1	25	0	0	0	0	0	0
	point186	186	764	99	25	1	25	0	0	0	0	0	0
	point88	88	764	99	25	1	25	0	0	0	0	0	0
	point89	89	764	99	25	1	25	0	0	0	0	0	0
	point90	90											
Via Valmonte- E. of Project Entrance	point111	111	830	99	25	1	25	0	0	0	0	0	0
	point92	92	830	99	25	1	25	0	0	0	0	0	0
	point93	93	830	99	25	1	25	0	0	0	0	0	0
	point21	21											
Roadway25	point197	197	0	0	0	0	0	0	0	0	0	0	0
	point198	198											
Project Entrance - fm Via Valmonte	point225	225	129	99	15	1	15	0	0	0	0	0	0
	point226	226	129	99	15	1	15	0	0	0	0	0	0
	point227	227	129	99	15	1	15	0	0	0	0	0	0
	point228	228	129	99	15	1	15	0	0	0	0	0	0
	point229	229	129	99	15	1	15	0	0	0	0	0	0
	point230	230	129	99	15	1	15	0	0	0	0	0	0

	point231	231											
Project Entrance - Hawthorne Blvd	point232	232	30	99	15	1	15	0	0	0	0	0	0
	point233	233	30	99	15	1	15	0	0	0	0	0	0
	point234	234											
Hawthorne Blvd- South of Via Valmonte	point238	238	3991	97	45	1	45	2	45	0	0	0	0
	point240	240	3991	97	45	1	45	2	45	0	0	0	0
	point241	241	3991	97	45	1	45	2	45	0	0	0	0
	point242	242	3991	97	45	1	45	2	45	0	0	0	0
	point243	243	3991	97	45	1	45	2	45	0	0	0	0
	point244	244	3991	97	45	1	45	2	45	0	0	0	0
	point245	245	3991	97	45	1	45	2	45	0	0	0	0
	point246	246	3991	97	45	1	45	2	45	0	0	0	0
	point247	247	3991	97	45	1	45	2	45	0	0	0	0
	point248	248	3991	97	45	1	45	2	45	0	0	0	0
	point249	249	3991	97	45	1	45	2	45	0	0	0	0
	point250	250	3991	97	45	1	45	2	45	0	0	0	0
	point251	251	3991	97	45	1	45	2	45	0	0	0	0
	point252	252	3991	97	45	1	45	2	45	0	0	0	0
	point253	253	3991	97	45	1	45	2	45	0	0	0	0
	point254	254	3991	97	45	1	45	2	45	0	0	0	0
	point255	255	3991	97	45	1	45	2	45	0	0	0	0
	point256	256	3991	97	45	1	45	2	45	0	0	0	0
	point257	257	3991	97	45	1	45	2	45	0	0	0	0
	point258	258	3991	97	45	1	45	2	45	0	0	0	0
	point239	239											

Dudek
M Greene / S Tang

28 July 2018
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - FutWP 0118

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST3 - Resi Area E. of Proj.	429	1	37,310,176.0	12,268,919.0	172.00	5.00	0.00	66	10.0	8.0	Y
ST4 - Resi Area N. of Proj.	430	1	37,309,472.0	12,269,365.0	223.00	5.00	0.00	66	10.0	8.0	Y
R56 - Resi's northeast of Proj.	485	1	37,309,956.0	12,269,378.0	160.00	5.00	0.00	66	10.0	8.0	Y
R1 - Outdoor community area rooftop de	668	1	37,309,872.0	12,269,081.0	222.00	5.00	0.00	66	10.0	8.0	Y
R2 - Outdoor community area rooftop de	669	1	37,309,844.0	12,269,072.0	222.00	5.00	0.00	66	10.0	8.0	Y
R3 - Outdoor area Bldg B	670	1	37,309,768.0	12,269,088.0	202.50	5.00	0.00	66	10.0	8.0	Y
R4 - Outdoor area Bldg B west side	671	1	37,309,672.0	12,269,116.0	202.50	5.00	0.00	66	10.0	8.0	Y
R5 - Outdoor area Bldg B west side	672	1	37,309,672.0	12,269,156.0	202.50	5.00	0.00	66	10.0	8.0	Y
R6 - Outdoor area Bldg A west side	673	1	37,309,396.0	12,269,132.0	202.50	5.00	0.00	66	10.0	8.0	Y
R7 - Outdoor area Bldg A west side	674	1	37,309,384.0	12,269,069.0	202.50	5.00	0.00	66	10.0	8.0	Y
R8 - Outdoor area Bldg C	675	1	37,309,872.0	12,268,928.0	202.50	5.00	0.00	66	10.0	8.0	Y
R9 - Outdoor area Bldg C south side	676	1	37,309,976.0	12,268,834.0	202.50	5.00	0.00	66	10.0	8.0	Y
R10 - Outdoor area Bldg C southwest sic	677	1	37,309,928.0	12,268,841.0	202.50	5.00	0.00	66	10.0	8.0	Y
R11 - Pool / Rec Area at Parking Structu	678	1	37,309,780.0	12,268,915.0	249.00	5.00	0.00	66	10.0	8.0	Y
R12 - Pool / Rec Area at Parking Structu	679	1	37,309,796.0	12,268,924.0	249.00	5.00	0.00	66	10.0	8.0	Y
R13 - Pool / Rec Area at Parking Structu	680	1	37,309,800.0	12,268,972.0	249.00	5.00	0.00	66	10.0	8.0	Y
R14 Bldg B 2nd Level	682	1	37,309,600.0	12,269,191.0	202.50	5.00	0.00	66	10.0	8.0	Y
R15 Bldg B 2nd Level	683	1	37,309,680.0	12,269,211.0	202.50	5.00	0.00	66	10.0	8.0	Y
R16 Bldg B 2nd Level	684	1	37,309,720.0	12,269,208.0	202.50	5.00	0.00	66	10.0	8.0	Y
R17 Bldg B 2nd Level	685	1	37,309,756.0	12,269,207.0	202.50	5.00	0.00	66	10.0	8.0	Y
R18 Bldg B 2nd Level	686	1	37,309,792.0	12,269,203.0	202.50	5.00	0.00	66	10.0	8.0	Y
R19 Bldg B 2nd Level	687	1	37,309,824.0	12,269,198.0	202.50	5.00	0.00	66	10.0	8.0	Y

R20 Bldg B 2nd Level	688	1	37,309,840.0	12,269,174.0	202.50	5.00	0.00	66	10.0	8.0	Y
R21 Bldg B 2nd Level	689	1	37,309,860.0	12,269,136.0	202.50	5.00	0.00	66	10.0	8.0	Y
R22 Bldg B 2nd Level	690	1	37,309,872.0	12,269,114.0	202.50	5.00	0.00	66	10.0	8.0	Y
R23 Bldg B 2nd Level	691	1	37,309,860.0	12,269,098.0	202.50	5.00	0.00	66	10.0	8.0	Y
R24 Bldg B 2nd Level	692	1	37,309,820.0	12,269,101.0	202.50	5.00	0.00	66	10.0	8.0	Y
R25 Bldg B 2nd Level	693	1	37,309,800.0	12,269,091.0	202.50	5.00	0.00	66	10.0	8.0	Y
R26 Bldg B 2nd Level	694	1	37,309,744.0	12,269,081.0	202.50	5.00	0.00	66	10.0	8.0	Y
R27 Bldg B 2nd Level	695	1	37,309,748.0	12,269,104.0	202.50	5.00	0.00	66	10.0	8.0	Y
R28 Bldg B 2nd Level	696	1	37,309,704.0	12,269,079.0	202.50	5.00	0.00	66	10.0	8.0	Y
R29 Bldg B 2nd Level	697	1	37,309,688.0	12,269,068.0	202.50	5.00	0.00	66	10.0	8.0	Y
R30 Bldg B 2nd Level	698	1	37,309,700.0	12,269,171.0	202.50	5.00	0.00	66	10.0	8.0	Y
R31 Bldg B 2nd Level	699	1	37,309,788.0	12,269,162.0	202.50	5.00	0.00	66	10.0	8.0	Y
R32 Bldg B 2nd Level	700	1	37,309,660.0	12,269,147.0	202.50	5.00	0.00	66	10.0	8.0	Y
R33 Bldg B 2nd Level	701	1	37,309,616.0	12,269,087.0	202.50	5.00	0.00	66	10.0	8.0	Y
R34 Bldg B 2nd Level	702	1	37,309,640.0	12,269,083.0	202.50	5.00	0.00	66	10.0	8.0	Y
R35 Bldg A 2nd Level	703	1	37,309,488.0	12,269,217.0	203.00	5.00	0.00	66	10.0	8.0	Y
R36 Bldg A 2nd Level	704	1	37,309,480.0	12,269,097.0	203.00	5.00	0.00	66	10.0	8.0	Y
R37 Bldg A 2nd Level	705	1	37,309,472.0	12,269,045.0	203.00	5.00	0.00	66	10.0	8.0	Y
R38 Bldg A 2nd Level	706	1	37,309,452.0	12,269,042.0	203.00	5.00	0.00	66	10.0	8.0	Y
R39 Bldg A 2nd Level	707	1	37,309,416.0	12,269,048.0	203.00	5.00	0.00	66	10.0	8.0	Y
R40 Bldg C 2nd Level	708	1	37,309,904.0	12,269,022.0	203.00	5.00	0.00	66	10.0	8.0	Y
R41 Bldg C 2nd Level	709	1	37,309,920.0	12,269,031.0	203.00	5.00	0.00	66	10.0	8.0	Y
R42 Bldg C 2nd Level	710	1	37,309,944.0	12,268,997.0	203.00	5.00	0.00	66	10.0	8.0	Y
R43 Bldg C 2nd Level	711	1	37,309,960.0	12,268,963.0	203.00	5.00	0.00	66	10.0	8.0	Y
R44 Bldg C 2nd Level	712	1	37,309,984.0	12,268,937.0	203.00	5.00	0.00	66	10.0	8.0	Y
R45 Bldg C 2nd Level	713	1	37,310,020.0	12,268,849.0	203.00	5.00	0.00	66	10.0	8.0	Y
R46 Bldg C 2nd Level	714	1	37,309,980.0	12,268,861.0	203.00	5.00	0.00	66	10.0	8.0	Y
R47 Bldg C 2nd Level	715	1	37,310,016.0	12,268,878.0	203.00	5.00	0.00	66	10.0	8.0	Y
R48 Bldg C 2nd Level	716	1	37,309,960.0	12,268,836.0	203.00	5.00	0.00	66	10.0	8.0	Y
R49 Bldg C 2nd Level	717	1	37,309,904.0	12,268,841.0	203.00	5.00	0.00	66	10.0	8.0	Y
R50 Bldg C 2nd Level	718	1	37,309,852.0	12,268,896.0	203.00	5.00	0.00	66	10.0	8.0	Y
R51 Bldg C 2nd Level	719	1	37,309,868.0	12,268,865.0	203.00	5.00	0.00	66	10.0	8.0	Y
R52 Bldg C 2nd Level	721	1	37,309,876.0	12,268,961.0	203.00	5.00	0.00	66	10.0	8.0	Y
R53 Bldg C 2nd Level	722	1	37,309,856.0	12,268,994.0	203.00	5.00	0.00	66	10.0	8.0	Y
R54 Bldg C 2nd Level	723	1	37,309,900.0	12,268,975.0	203.00	5.00	0.00	66	10.0	8.0	Y
R55 Bldg C 2nd Level	724	1	37,309,880.0	12,269,010.0	203.00	5.00	0.00	66	10.0	8.0	Y

R14 Bldg B 3rd Level	725	1	37,309,600.0	12,269,191.0	202.50	15.00	0.00	66	10.0	8.0	Y
R15 Bldg B 3rd Level	726	1	37,309,680.0	12,269,211.0	202.50	15.00	0.00	66	10.0	8.0	Y
R16 Bldg B 3rd Level	727	1	37,309,720.0	12,269,208.0	202.50	15.00	0.00	66	10.0	8.0	Y
R17 Bldg B 3rd Level	728	1	37,309,756.0	12,269,207.0	202.50	15.00	0.00	66	10.0	8.0	Y
R18 Bldg B 3rd Level	729	1	37,309,792.0	12,269,203.0	202.50	15.00	0.00	66	10.0	8.0	Y
R19 Bldg B 3rd Level	730	1	37,309,824.0	12,269,198.0	202.50	15.00	0.00	66	10.0	8.0	Y
R20 Bldg B 3rd Level	731	1	37,309,840.0	12,269,174.0	202.50	15.00	0.00	66	10.0	8.0	Y
R21 Bldg B 3rd Level	732	1	37,309,860.0	12,269,136.0	202.50	15.00	0.00	66	10.0	8.0	Y
R22 Bldg B 3rd Level	733	1	37,309,872.0	12,269,114.0	202.50	15.00	0.00	66	10.0	8.0	Y
R23 Bldg B 3rd Level	734	1	37,309,860.0	12,269,098.0	202.50	15.00	0.00	66	10.0	8.0	Y
R24 Bldg B 3rd Level	735	1	37,309,820.0	12,269,101.0	202.50	15.00	0.00	66	10.0	8.0	Y
R25 Bldg B 3rd Level	736	1	37,309,800.0	12,269,091.0	202.50	15.00	0.00	66	10.0	8.0	Y
R26 Bldg B 3rd Level	737	1	37,309,744.0	12,269,081.0	202.50	15.00	0.00	66	10.0	8.0	Y
R27 Bldg B 3rd Level	738	1	37,309,748.0	12,269,104.0	202.50	15.00	0.00	66	10.0	8.0	Y
R28 Bldg B 3rd Level	739	1	37,309,704.0	12,269,079.0	202.50	15.00	0.00	66	10.0	8.0	Y
R29 Bldg B 3rd Level	740	1	37,309,688.0	12,269,068.0	202.50	15.00	0.00	66	10.0	8.0	Y
R30 Bldg B 3rd Level	741	1	37,309,700.0	12,269,171.0	202.50	15.00	0.00	66	10.0	8.0	Y
R31 Bldg B 3rd Level	742	1	37,309,788.0	12,269,162.0	202.50	15.00	0.00	66	10.0	8.0	Y
R32 Bldg B 3rd Level	743	1	37,309,660.0	12,269,147.0	202.50	15.00	0.00	66	10.0	8.0	Y
R33 Bldg B 3rd Level	744	1	37,309,616.0	12,269,087.0	202.50	15.00	0.00	66	10.0	8.0	Y
R34 Bldg B 3rd Level	745	1	37,309,640.0	12,269,083.0	202.50	15.00	0.00	66	10.0	8.0	Y
R35 Bldg A 3rd Level	746	1	37,309,488.0	12,269,217.0	203.00	15.00	0.00	66	10.0	8.0	Y
R36 Bldg A 3rd Level	747	1	37,309,480.0	12,269,097.0	203.00	15.00	0.00	66	10.0	8.0	Y
R37 Bldg A 3rd Level	748	1	37,309,472.0	12,269,045.0	203.00	15.00	0.00	66	10.0	8.0	Y
R38 Bldg A 3rd Level	749	1	37,309,452.0	12,269,042.0	203.00	15.00	0.00	66	10.0	8.0	Y
R39 Bldg A 3rd Level	750	1	37,309,416.0	12,269,048.0	203.00	15.00	0.00	66	10.0	8.0	Y
R40 Bldg C 3rd Level	751	1	37,309,904.0	12,269,022.0	203.00	15.00	0.00	66	10.0	8.0	Y
R41 Bldg C 3rd Level	752	1	37,309,920.0	12,269,031.0	203.00	15.00	0.00	66	10.0	8.0	Y
R42 Bldg C 3rd Level	753	1	37,309,944.0	12,268,997.0	203.00	15.00	0.00	66	10.0	8.0	Y
R43 Bldg C 3rd Level	754	1	37,309,960.0	12,268,963.0	203.00	15.00	0.00	66	10.0	8.0	Y
R44 Bldg C 3rd Level	755	1	37,309,984.0	12,268,937.0	203.00	15.00	0.00	66	10.0	8.0	Y
R45 Bldg C 3rd Level	756	1	37,310,020.0	12,268,849.0	203.00	15.00	0.00	66	10.0	8.0	Y
R46 Bldg C 3rd Level	757	1	37,309,980.0	12,268,861.0	203.00	15.00	0.00	66	10.0	8.0	Y
R47 Bldg C 3rd Level	758	1	37,310,016.0	12,268,878.0	203.00	15.00	0.00	66	10.0	8.0	Y
R48 Bldg C 3rd Level	759	1	37,309,960.0	12,268,836.0	203.00	15.00	0.00	66	10.0	8.0	Y
R49 Bldg C 3rd Level	760	1	37,309,904.0	12,268,841.0	203.00	15.00	0.00	66	10.0	8.0	Y

R50 Bldg C 3rd Level	761	1	37,309,852.0	12,268,896.0	203.00	15.00	0.00	66	10.0	8.0	Y
R51 Bldg C 3rd Level	762	1	37,309,868.0	12,268,865.0	203.00	15.00	0.00	66	10.0	8.0	Y
R52 Bldg C 3rd Level	764	1	37,309,876.0	12,268,961.0	203.00	15.00	0.00	66	10.0	8.0	Y
R53 Bldg C 3rd Level	765	1	37,309,856.0	12,268,994.0	203.00	15.00	0.00	66	10.0	8.0	Y
R54 Bldg C 3rd Level	766	1	37,309,900.0	12,268,975.0	203.00	15.00	0.00	66	10.0	8.0	Y
R55 Bldg C 3rd Level	767	1	37,309,880.0	12,269,010.0	203.00	15.00	0.00	66	10.0	8.0	Y
R14 Bldg B 4th Level	768	1	37,309,600.0	12,269,190.0	202.50	25.00	0.00	66	10.0	8.0	Y
R15 Bldg B 4th Level	769	1	37,309,680.0	12,269,210.0	202.50	25.00	0.00	66	10.0	8.0	Y
R16 Bldg B 4th Level	770	1	37,309,720.0	12,269,208.0	202.50	25.00	0.00	66	10.0	8.0	Y
R17 Bldg B 4th Level	771	1	37,309,756.0	12,269,208.0	202.50	25.00	0.00	66	10.0	8.0	Y
R18 Bldg B 4th Level	772	1	37,309,792.0	12,269,203.0	202.50	25.00	0.00	66	10.0	8.0	Y
R19 Bldg B 4th Level	773	1	37,309,824.0	12,269,196.0	202.50	25.00	0.00	66	10.0	8.0	Y
R20 Bldg B 4th Level	774	1	37,309,840.0	12,269,172.0	202.50	25.00	0.00	66	10.0	8.0	Y
R21 Bldg B 4th Level	775	1	37,309,864.0	12,269,134.0	202.50	25.00	0.00	66	10.0	8.0	Y
R22 Bldg B 4th Level	776	1	37,309,872.0	12,269,112.0	202.50	25.00	0.00	66	10.0	8.0	Y
R23 Bldg B 4th Level	777	1	37,309,860.0	12,269,096.0	202.50	25.00	0.00	66	10.0	8.0	Y
R24 Bldg B 4th Level	778	1	37,309,820.0	12,269,100.0	202.50	25.00	0.00	66	10.0	8.0	Y
R25 Bldg B 4th Level	779	1	37,309,800.0	12,269,090.0	202.50	25.00	0.00	66	10.0	8.0	Y
R26 Bldg B 4th Level	780	1	37,309,744.0	12,269,080.0	202.50	25.00	0.00	66	10.0	8.0	Y
R27 Bldg B 4th Level	781	1	37,309,748.0	12,269,102.0	202.50	25.00	0.00	66	10.0	8.0	Y
R28 Bldg B 4th Level	782	1	37,309,704.0	12,269,078.0	202.50	25.00	0.00	66	10.0	8.0	Y
R29 Bldg B 4th Level	783	1	37,309,688.0	12,269,066.0	202.50	25.00	0.00	66	10.0	8.0	Y
R30 Bldg B 4th Level	784	1	37,309,700.0	12,269,170.0	202.50	25.00	0.00	66	10.0	8.0	Y
R31 Bldg B 4th Level	785	1	37,309,788.0	12,269,160.0	202.50	25.00	0.00	66	10.0	8.0	Y
R32 Bldg B 4th Level	786	1	37,309,660.0	12,269,146.0	202.50	25.00	0.00	66	10.0	8.0	Y
R33 Bldg B 4th Level	787	1	37,309,616.0	12,269,086.0	202.50	25.00	0.00	66	10.0	8.0	Y
R34 Bldg B 4th Level	788	1	37,309,640.0	12,269,082.0	202.50	25.00	0.00	66	10.0	8.0	Y
R35 Bldg A 4th Level	789	1	37,309,488.0	12,269,217.0	203.00	25.00	0.00	66	10.0	8.0	Y
R36 Bldg A 4th Level	790	1	37,309,480.0	12,269,097.0	203.00	25.00	0.00	66	10.0	8.0	Y
R37 Bldg A 4th Level	791	1	37,309,472.0	12,269,044.0	203.00	25.00	0.00	66	10.0	8.0	Y
R38 Bldg A 4th Level	792	1	37,309,452.0	12,269,042.0	203.00	25.00	0.00	66	10.0	8.0	Y
R39 Bldg A 4th Level	793	1	37,309,416.0	12,269,046.0	203.00	25.00	0.00	66	10.0	8.0	Y
R40 Bldg C 4th Level	794	1	37,309,904.0	12,269,022.0	203.00	25.00	0.00	66	10.0	8.0	Y
R41 Bldg C 4th Level	796	1	37,309,924.0	12,269,030.0	203.00	25.00	0.00	66	10.0	8.0	Y
R42 Bldg C 4th Level	797	1	37,309,944.0	12,268,996.0	203.00	25.00	0.00	66	10.0	8.0	Y
R43 Bldg C 4th Level	798	1	37,309,960.0	12,268,962.0	203.00	25.00	0.00	66	10.0	8.0	Y

R44 Bldg C 4th Level	799	1	37,309,984.0	12,268,936.0	203.00	25.00	0.00	66	10.0	8.0	Y
R45 Bldg C 4th Level	800	1	37,310,020.0	12,268,848.0	203.00	25.00	0.00	66	10.0	8.0	Y
R46 Bldg C 4th Level	801	1	37,309,980.0	12,268,860.0	203.00	25.00	0.00	66	10.0	8.0	Y
R47 Bldg C 4th Level	802	1	37,310,020.0	12,268,876.0	203.00	25.00	0.00	66	10.0	8.0	Y
R48 Bldg C 4th Level	803	1	37,309,960.0	12,268,834.0	203.00	25.00	0.00	66	10.0	8.0	Y
R49 Bldg C 4th Level	804	1	37,309,904.0	12,268,840.0	203.00	25.00	0.00	66	10.0	8.0	Y
R50 Bldg C 4th Level	805	1	37,309,852.0	12,268,896.0	203.00	25.00	0.00	66	10.0	8.0	Y
R51 Bldg C 4th Level	806	1	37,309,868.0	12,268,864.0	203.00	25.00	0.00	66	10.0	8.0	Y
R52 Bldg C 4th Level	808	1	37,309,876.0	12,268,961.0	203.00	25.00	0.00	66	10.0	8.0	Y
R53 Bldg C 4th Level	809	1	37,309,856.0	12,268,992.0	203.00	25.00	0.00	66	10.0	8.0	Y
R54 Bldg C 4th Level	810	1	37,309,900.0	12,268,974.0	203.00	25.00	0.00	66	10.0	8.0	Y
R55 Bldg C 4th Level	811	1	37,309,880.0	12,269,010.0	203.00	25.00	0.00	66	10.0	8.0	Y
R14 Bldg B 5th Level	812	1	37,309,600.0	12,269,191.0	202.50	35.00	0.00	66	10.0	8.0	Y
R15 Bldg B 5th Level	813	1	37,309,680.0	12,269,211.0	202.50	35.00	0.00	66	10.0	8.0	Y
R16 Bldg B 5th Level	814	1	37,309,720.0	12,269,208.0	202.50	35.00	0.00	66	10.0	8.0	Y
R17 Bldg B 5th Level	815	1	37,309,756.0	12,269,207.0	202.50	35.00	0.00	66	10.0	8.0	Y
R18 Bldg B 5th Level	816	1	37,309,792.0	12,269,203.0	202.50	35.00	0.00	66	10.0	8.0	Y
R19 Bldg B 5th Level	817	1	37,309,824.0	12,269,198.0	202.50	35.00	0.00	66	10.0	8.0	Y
R20 Bldg B 5th Level	818	1	37,309,840.0	12,269,174.0	202.50	35.00	0.00	66	10.0	8.0	Y
R21 Bldg B 5th Level	819	1	37,309,860.0	12,269,136.0	202.50	35.00	0.00	66	10.0	8.0	Y
R22 Bldg B 5th Level	821	1	37,309,872.0	12,269,114.0	202.50	35.00	0.00	66	10.0	8.0	Y
R23 Bldg B 5th Level	822	1	37,309,860.0	12,269,098.0	202.50	35.00	0.00	66	10.0	8.0	Y
R24 Bldg B 5th Level	823	1	37,309,820.0	12,269,101.0	202.50	35.00	0.00	66	10.0	8.0	Y
R25 Bldg B 5th Level	824	1	37,309,800.0	12,269,091.0	202.50	35.00	0.00	66	10.0	8.0	Y
R26 Bldg B 5th Level	825	1	37,309,744.0	12,269,081.0	202.50	35.00	0.00	66	10.0	8.0	Y
R27 Bldg B 5th Level	826	1	37,309,748.0	12,269,104.0	202.50	35.00	0.00	66	10.0	8.0	Y
R28 Bldg B 5th Level	827	1	37,309,704.0	12,269,079.0	202.50	35.00	0.00	66	10.0	8.0	Y
R29 Bldg B 5th Level	828	1	37,309,688.0	12,269,068.0	202.50	35.00	0.00	66	10.0	8.0	Y
R30 Bldg B 5th Level	829	1	37,309,700.0	12,269,171.0	202.50	35.00	0.00	66	10.0	8.0	Y
R31 Bldg B 5th Level	830	1	37,309,788.0	12,269,162.0	202.50	35.00	0.00	66	10.0	8.0	Y
R32 Bldg B 5th Level	831	1	37,309,660.0	12,269,147.0	202.50	35.00	0.00	66	10.0	8.0	Y
R33 Bldg B 5th Level	832	1	37,309,616.0	12,269,087.0	202.50	35.00	0.00	66	10.0	8.0	Y
R34 Bldg B 5th Level	833	1	37,309,640.0	12,269,083.0	202.50	35.00	0.00	66	10.0	8.0	Y
R35 Bldg A 5th Level	834	1	37,309,488.0	12,269,217.0	203.00	35.00	0.00	66	10.0	8.0	Y
R36 Bldg A 5th Level	835	1	37,309,480.0	12,269,097.0	203.00	35.00	0.00	66	10.0	8.0	Y
R37 Bldg A 5th Level	836	1	37,309,472.0	12,269,045.0	203.00	35.00	0.00	66	10.0	8.0	Y

R38 Bldg A 5th Level	837	1	37,309,452.0	12,269,042.0	203.00	35.00	0.00	66	10.0	8.0	Y
R39 Bldg A 5th Level	838	1	37,309,416.0	12,269,048.0	203.00	35.00	0.00	66	10.0	8.0	Y
R40 Bldg C 5th Level	839	1	37,309,904.0	12,269,022.0	203.00	35.00	0.00	66	10.0	8.0	Y
R41 Bldg C 5th Level	840	1	37,309,920.0	12,269,031.0	203.00	35.00	0.00	66	10.0	8.0	Y
R42 Bldg C 5th Level	841	1	37,309,944.0	12,268,997.0	203.00	35.00	0.00	66	10.0	8.0	Y
R43 Bldg C 5th Level	842	1	37,309,960.0	12,268,963.0	203.00	35.00	0.00	66	10.0	8.0	Y
R44 Bldg C 5th Level	843	1	37,309,984.0	12,268,937.0	203.00	35.00	0.00	66	10.0	8.0	Y
R45 Bldg C 5th Level	844	1	37,310,020.0	12,268,849.0	203.00	35.00	0.00	66	10.0	8.0	Y
R46 Bldg C 5th Level	845	1	37,309,980.0	12,268,861.0	203.00	35.00	0.00	66	10.0	8.0	Y
R47 Bldg C 5th Level	846	1	37,310,016.0	12,268,878.0	203.00	35.00	0.00	66	10.0	8.0	Y
R48 Bldg C 5th Level	848	1	37,309,960.0	12,268,836.0	203.00	35.00	0.00	66	10.0	8.0	Y
R49 Bldg C 5th Level	849	1	37,309,904.0	12,268,841.0	203.00	35.00	0.00	66	10.0	8.0	Y
R50 Bldg C 5th Level	851	1	37,309,852.0	12,268,896.0	203.00	35.00	0.00	66	10.0	8.0	Y
R51 Bldg C 5th Level	852	1	37,309,868.0	12,268,865.0	203.00	35.00	0.00	66	10.0	8.0	Y
R52 Bldg C 5th Level	854	1	37,309,876.0	12,268,961.0	203.00	35.00	0.00	66	10.0	8.0	Y
R53 Bldg C 5th Level	855	1	37,309,856.0	12,268,994.0	203.00	35.00	0.00	66	10.0	8.0	Y
R54 Bldg C 5th Level	856	1	37,309,900.0	12,268,975.0	203.00	35.00	0.00	66	10.0	8.0	Y
R55 Bldg C 5th Level	857	1	37,309,880.0	12,269,010.0	203.00	35.00	0.00	66	10.0	8.0	Y

Dudek
28 July 2018
M Greene / S Tang
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - FutWP 0118

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Bldg B - 2	W	0.00	99.99	0.00				0.00	point298	298	37,309,648.0	12,269,204.0	192.00	55.00	0.00	0	0		
									point300	300	37,309,660.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point301	301	37,309,664.0	12,269,209.0	192.00	55.00	0.00	0	0		
									point303	303	37,309,676.0	12,269,210.0	192.00	55.00	0.00	0	0		
									point305	305	37,309,688.0	12,269,208.0	192.00	55.00	0.00	0	0		
									point306	306	37,309,712.0	12,269,206.0	192.00	55.00	0.00	0	0		
									point308	308	37,309,724.0	12,269,207.0	192.00	55.00	0.00	0	0		
									point309	309	37,309,724.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point311	311	37,309,752.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point312	312	37,309,760.0	12,269,205.0	192.00	55.00	0.00	0	0		
									point313	313	37,309,760.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point314	314	37,309,788.0	12,269,201.0	192.00	55.00	0.00	0	0		
									point315	315	37,309,788.0	12,269,203.0	192.00	55.00	0.00	0	0		
									point316	316	37,309,800.0	12,269,202.0	192.00	55.00	0.00	0	0		
									point317	317	37,309,800.0	12,269,200.0	192.00	55.00	0.00	0	0		
									point318	318	37,309,820.0	12,269,199.0	192.00	55.00	0.00	0	0		
									point319	319	37,309,832.0	12,269,179.0	192.00	55.00	0.00	0	0		
									point320	320	37,309,836.0	12,269,181.0	192.00	55.00	0.00	0	0		
									point322	322	37,309,844.0	12,269,160.0	192.00	55.00	0.00	0	0		
									point324	324	37,309,856.0	12,269,139.0	192.00	55.00	0.00	0	0		
									point326	326	37,309,864.0	12,269,129.0	192.00	55.00	0.00	0	0		
									point327	327	37,309,872.0	12,269,107.0	192.00	55.00	0.00	0	0		
									point328	328	37,309,848.0	12,269,091.0	192.00	55.00	0.00	0	0		
									point299	299	37,309,804.0	12,269,169.0	192.00	55.00					
Bldg B - 3	W	0.00	99.99	0.00				0.00	point329	329	37,309,712.0	12,269,157.0	192.00	55.00	0.00	0	0		
									point331	331	37,309,716.0	12,269,169.0	192.00	55.00	0.00	0	0		
									point332	332	37,309,756.0	12,269,166.0	192.00	55.00	0.00	0	0		
									point333	333	37,309,780.0	12,269,164.0	192.00	55.00	0.00	0	0		
									point334	334	37,309,792.0	12,269,164.0	192.00	55.00	0.00	0	0		
									point335	335	37,309,800.0	12,269,163.0	192.00	55.00	0.00	0	0		
									point336	336	37,309,832.0	12,269,108.0	192.00	55.00	0.00	0	0		
									point337	337	37,309,808.0	12,269,095.0	192.00	55.00	0.00	0	0		
									point338	338	37,309,800.0	12,269,092.0	192.00	55.00	0.00	0	0		
									point340	340	37,309,796.0	12,269,103.0	192.00	55.00	0.00	0	0		
									point342	342	37,309,784.0	12,269,123.0	192.00	55.00	0.00	0	0		

									point343	343	37,309,776.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point344	344	37,309,764.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point345	345	37,309,764.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point346	346	37,309,752.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point347	347	37,309,752.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point348	348	37,309,748.0	12,269,126.0	192.00	55.00	0.00	0	0		
									point349	349	37,309,744.0	12,269,126.0	192.00	55.00	0.00	0	0		
									point351	351	37,309,744.0	12,269,113.0	192.00	55.00	0.00	0	0		
									point352	352	37,309,744.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point353	353	37,309,740.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point354	354	37,309,740.0	12,269,090.0	192.00	55.00	0.00	0	0		
									point355	355	37,309,744.0	12,269,090.0	192.00	55.00	0.00	0	0		
									point356	356	37,309,740.0	12,269,080.0	192.00	55.00	0.00	0	0		
									point357	357	37,309,736.0	12,269,080.0	192.00	55.00	0.00	0	0		
									point330	330	37,309,708.0	12,269,081.0	192.00	55.00					
Bldg B - 4	W	0.00	99.99	0.00				0.00	point359	359	37,309,612.0	12,269,175.0	192.00	55.00	0.00	0	0		
									point361	361	37,309,624.0	12,269,175.0	192.00	55.00	0.00	0	0		
									point362	362	37,309,656.0	12,269,173.0	192.00	55.00	0.00	0	0		
									point363	363	37,309,652.0	12,269,145.0	192.00	55.00	0.00	0	0		
									point364	364	37,309,652.0	12,269,138.0	192.00	55.00	0.00	0	0		
									point365	365	37,309,648.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point366	366	37,309,644.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point367	367	37,309,640.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point368	368	37,309,640.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point369	369	37,309,644.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point371	371	37,309,640.0	12,269,109.0	192.00	55.00	0.00	0	0		
									point373	373	37,309,640.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point374	374	37,309,640.0	12,269,086.0	192.00	55.00	0.00	0	0		
									point375	375	37,309,636.0	12,269,086.0	192.00	55.00	0.00	0	0		
									point376	376	37,309,608.0	12,269,088.0	192.00	55.00	0.00	0	0		
									point377	377	37,309,608.0	12,269,112.0	192.00	55.00	0.00	0	0		
									point378	378	37,309,608.0	12,269,135.0	192.00	55.00	0.00	0	0		
									point360	360	37,309,612.0	12,269,164.0	192.00	55.00					
Bldg B - 1	W	0.00	99.99	0.00				0.00	point380	380	37,309,572.0	12,269,191.0	192.00	55.00	0.00	0	0		
									point382	382	37,309,580.0	12,269,191.0	192.00	55.00	0.00	0	0		
									point383	383	37,309,608.0	12,269,189.0	192.00	55.00	0.00	0	0		
									point384	384	37,309,604.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point385	385	37,309,604.0	12,269,129.0	192.00	55.00	0.00	0	0		
									point386	386	37,309,600.0	12,269,106.0	192.00	55.00	0.00	0	0		
									point387	387	37,309,572.0	12,269,108.0	192.00	55.00	0.00	0	0		
									point388	388	37,309,572.0	12,269,120.0	192.00	55.00	0.00	0	0		
									point389	389	37,309,568.0	12,269,121.0	192.00	55.00	0.00	0	0		
									point391	391	37,309,572.0	12,269,131.0	192.00	55.00	0.00	0	0		
									point393	393	37,309,572.0	12,269,144.0	192.00	55.00	0.00	0	0		
									point395	395	37,309,572.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point396	396	37,309,576.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point397	397	37,309,572.0	12,269,180.0	192.00	55.00					
Bldg C - 1	W	0.00	99.99	0.00				0.00	point402	402	37,309,892.0	12,269,014.0	192.00	55.00	0.00	0	0		
									point404	404	37,309,916.0	12,269,027.0	192.00	55.00	0.00	0	0		

									point405	405	37,309,920.0	12,269,030.0	192.00	55.00	0.00	0	0		
									point406	406	37,309,928.0	12,269,020.0	192.00	55.00	0.00	0	0		
									point407	407	37,309,924.0	12,269,019.0	192.00	55.00	0.00	0	0		
									point408	408	37,309,936.0	12,268,998.0	192.00	55.00	0.00	0	0		
									point409	409	37,309,940.0	12,268,999.0	192.00	55.00	0.00	0	0		
									point411	411	37,309,944.0	12,268,987.0	192.00	55.00	0.00	0	0		
									point413	413	37,309,956.0	12,268,967.0	192.00	55.00	0.00	0	0		
									point415	415	37,309,960.0	12,268,956.0	192.00	55.00	0.00	0	0		
									point416	416	37,309,972.0	12,268,934.0	192.00	55.00	0.00	0	0		
									point417	417	37,309,976.0	12,268,936.0	192.00	55.00	0.00	0	0		
									point418	418	37,309,980.0	12,268,939.0	192.00	55.00	0.00	0	0		
									point420	420	37,309,984.0	12,268,928.0	192.00	55.00	0.00	0	0		
									point421	421	37,310,008.0	12,268,886.0	192.00	55.00	0.00	0	0		
									point422	422	37,310,012.0	12,268,886.0	192.00	55.00	0.00	0	0		
									point424	424	37,310,016.0	12,268,876.0	192.00	55.00	0.00	0	0		
									point425	425	37,310,028.0	12,268,854.0	192.00	55.00	0.00	0	0		
									point426	426	37,310,000.0	12,268,839.0	192.00	55.00	0.00	0	0		
									point427	427	37,309,980.0	12,268,870.0	192.00	55.00	0.00	0	0		
									point428	428	37,309,964.0	12,268,902.0	192.00	55.00	0.00	0	0		
									point429	429	37,309,952.0	12,268,922.0	192.00	55.00	0.00	0	0		
									point403	403	37,309,944.0	12,268,919.0	192.00	55.00					
Bldg C - 5	W	0.00	99.99	0.00				0.00	point431	431	37,309,856.0	12,268,995.0	192.00	55.00	0.00	0	0		
									point433	433	37,309,864.0	12,268,998.0	192.00	55.00	0.00	0	0		
									point434	434	37,309,884.0	12,269,012.0	192.00	55.00	0.00	0	0		
									point435	435	37,309,896.0	12,268,991.0	192.00	55.00	0.00	0	0		
									point436	436	37,309,868.0	12,268,976.0	192.00	55.00	0.00	0	0		
									point438	438	37,309,864.0	12,268,986.0	192.00	55.00					
Bldg C - 3	W	0.00	99.99	0.00				0.00	point439	439	37,309,876.0	12,268,960.0	192.00	55.00	0.00	0	0		
									point440	440	37,309,884.0	12,268,963.0	192.00	55.00	0.00	0	0		
									point441	441	37,309,904.0	12,268,976.0	192.00	55.00	0.00	0	0		
									point442	442	37,309,924.0	12,268,944.0	192.00	55.00	0.00	0	0		
									point443	443	37,309,940.0	12,268,919.0	192.00	55.00	0.00	0	0		
									point444	444	37,309,944.0	12,268,908.0	192.00	55.00	0.00	0	0		
									point445	445	37,309,932.0	12,268,902.0	192.00	55.00	0.00	0	0		
									point446	446	37,309,908.0	12,268,888.0	192.00	55.00	0.00	0	0		
									point447	447	37,309,892.0	12,268,912.0	192.00	55.00	0.00	0	0		
									point448	448	37,309,888.0	12,268,919.0	192.00	55.00	0.00	0	0		
									point449	449	37,309,892.0	12,268,927.0	192.00	55.00	0.00	0	0		
									point450	450	37,309,896.0	12,268,929.0	192.00	55.00	0.00	0	0		
									point452	452	37,309,884.0	12,268,950.0	192.00	55.00					
Bldg C - 4	W	0.00	99.99	0.00				0.00	point453	453	37,309,852.0	12,268,889.0	192.00	55.00	0.00	0	0		
									point454	454	37,309,848.0	12,268,894.0	192.00	55.00	0.00	0	0		
									point456	456	37,309,860.0	12,268,898.0	192.00	55.00	0.00	0	0		
									point457	457	37,309,880.0	12,268,910.0	192.00	55.00	0.00	0	0		
									point458	458	37,309,896.0	12,268,882.0	192.00	55.00	0.00	0	0		
									point459	459	37,309,864.0	12,268,864.0	192.00	55.00	0.00	0	0		
									point460	460	37,309,852.0	12,268,888.0	192.00	55.00					
Bldg C - 2	W	0.00	99.99	0.00				0.00	point461	461	37,309,884.0	12,268,869.0	192.00	55.00	0.00	0	0		
									point463	463	37,309,916.0	12,268,886.0	192.00	55.00	0.00	0	0		

									point464	464	37,309,944.0	12,268,901.0	192.00	55.00	0.00	0	0		
									point465	465	37,309,952.0	12,268,906.0	192.00	55.00	0.00	0	0		
									point466	466	37,309,960.0	12,268,896.0	192.00	55.00	0.00	0	0		
									point467	467	37,309,972.0	12,268,871.0	192.00	55.00	0.00	0	0		
									point468	468	37,309,984.0	12,268,850.0	192.00	55.00	0.00	0	0		
									point469	469	37,309,960.0	12,268,837.0	192.00	55.00	0.00	0	0		
									point470	470	37,309,956.0	12,268,834.0	192.00	55.00	0.00	0	0		
									point472	472	37,309,952.0	12,268,845.0	192.00	55.00	0.00	0	0		
									point473	473	37,309,948.0	12,268,856.0	192.00	55.00	0.00	0	0		
									point474	474	37,309,944.0	12,268,854.0	192.00	55.00	0.00	0	0		
									point475	475	37,309,940.0	12,268,855.0	192.00	55.00	0.00	0	0		
									point476	476	37,309,936.0	12,268,856.0	192.00	55.00	0.00	0	0		
									point477	477	37,309,932.0	12,268,860.0	192.00	55.00	0.00	0	0		
									point478	478	37,309,908.0	12,268,847.0	192.00	55.00	0.00	0	0		
									point479	479	37,309,912.0	12,268,846.0	192.00	55.00	0.00	0	0		
									point480	480	37,309,900.0	12,268,840.0	192.00	55.00	0.00	0	0		
									point481	481	37,309,896.0	12,268,846.0	192.00	55.00					
Bldg A - 1	W	0.00	99.99	0.00				0.00	point482	482	37,309,384.0	12,269,229.0	192.00	55.00	0.00	0	0		
									point484	484	37,309,396.0	12,269,227.0	192.00	55.00	0.00	0	0		
									point485	485	37,309,396.0	12,269,229.0	192.00	55.00	0.00	0	0		
									point486	486	37,309,408.0	12,269,228.0	192.00	55.00	0.00	0	0		
									point487	487	37,309,408.0	12,269,226.0	192.00	55.00	0.00	0	0		
									point488	488	37,309,420.0	12,269,224.0	192.00	55.00	0.00	0	0		
									point489	489	37,309,420.0	12,269,226.0	192.00	55.00	0.00	0	0		
									point491	491	37,309,432.0	12,269,223.0	192.00	55.00	0.00	0	0		
									point492	492	37,309,444.0	12,269,221.0	192.00	55.00	0.00	0	0		
									point493	493	37,309,444.0	12,269,223.0	192.00	55.00	0.00	0	0		
									point495	495	37,309,456.0	12,269,220.0	192.00	55.00	0.00	0	0		
									point496	496	37,309,480.0	12,269,216.0	192.00	55.00	0.00	0	0		
									point497	497	37,309,480.0	12,269,218.0	192.00	55.00	0.00	0	0		
									point498	498	37,309,492.0	12,269,216.0	192.00	55.00	0.00	0	0		
									point499	499	37,309,492.0	12,269,210.0	192.00	55.00	0.00	0	0		
									point500	500	37,309,488.0	12,269,184.0	192.00	55.00	0.00	0	0		
									point501	501	37,309,484.0	12,269,184.0	192.00	55.00	0.00	0	0		
									point502	502	37,309,452.0	12,269,189.0	192.00	55.00	0.00	0	0		
									point503	503	37,309,428.0	12,269,192.0	192.00	55.00	0.00	0	0		
									point504	504	37,309,404.0	12,269,195.0	192.00	55.00	0.00	0	0		
									point483	483	37,309,380.0	12,269,198.0	192.00	55.00					
Bldg A - 5	W	0.00	99.99	0.00				0.00	point505	505	37,309,356.0	12,269,196.0	192.00	55.00	0.00	0	0		
									point507	507	37,309,368.0	12,269,194.0	192.00	55.00	0.00	0	0		
									point508	508	37,309,396.0	12,269,190.0	192.00	55.00	0.00	0	0		
									point509	509	37,309,392.0	12,269,162.0	192.00	55.00	0.00	0	0		
									point510	510	37,309,392.0	12,269,156.0	192.00	55.00	0.00	0	0		
									point511	511	37,309,388.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point512	512	37,309,384.0	12,269,150.0	192.00	55.00	0.00	0	0		
									point513	513	37,309,380.0	12,269,151.0	192.00	55.00	0.00	0	0		
									point515	515	37,309,380.0	12,269,138.0	192.00	55.00	0.00	0	0		
									point516	516	37,309,380.0	12,269,127.0	192.00	55.00	0.00	0	0		
									point517	517	37,309,376.0	12,269,128.0	192.00	55.00	0.00	0	0		

									point519	519	37,309,376.0	12,269,102.0	192.00	55.00	0.00	0	0		
									point520	520	37,309,376.0	12,269,091.0	192.00	55.00	0.00	0	0		
									point521	521	37,309,372.0	12,269,092.0	192.00	55.00	0.00	0	0		
									point522	522	37,309,368.0	12,269,067.0	192.00	55.00	0.00	0	0		
									point523	523	37,309,372.0	12,269,066.0	192.00	55.00	0.00	0	0		
									point524	524	37,309,368.0	12,269,056.0	192.00	55.00	0.00	0	0		
									point525	525	37,309,364.0	12,269,057.0	192.00	55.00	0.00	0	0		
									point526	526	37,309,336.0	12,269,060.0	192.00	55.00	0.00	0	0		
									point527	527	37,309,340.0	12,269,096.0	192.00	55.00	0.00	0	0		
									point528	528	37,309,348.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point529	529	37,309,348.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point506	506	37,309,352.0	12,269,184.0	192.00	55.00					
Bldg A - 6	W	0.00	99.99	0.00				0.00	point530	530	37,309,312.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point532	532	37,309,320.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point533	533	37,309,348.0	12,269,176.0	192.00	55.00	0.00	0	0		
									point534	534	37,309,344.0	12,269,153.0	192.00	55.00	0.00	0	0		
									point535	535	37,309,340.0	12,269,130.0	192.00	55.00	0.00	0	0		
									point536	536	37,309,336.0	12,269,106.0	192.00	55.00	0.00	0	0		
									point537	537	37,309,304.0	12,269,110.0	192.00	55.00	0.00	0	0		
									point538	538	37,309,308.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point539	539	37,309,304.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point541	541	37,309,308.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point542	542	37,309,312.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point543	543	37,309,308.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point545	545	37,309,312.0	12,269,157.0	192.00	55.00	0.00	0	0		
									point531	531	37,309,312.0	12,269,170.0	192.00	55.00					
Bldg A - 4	W	0.00	99.99	0.00				0.00	point547	547	37,309,408.0	12,269,188.0	192.00	55.00	0.00	0	0		
									point549	549	37,309,440.0	12,269,185.0	192.00	55.00	0.00	0	0		
									point550	550	37,309,452.0	12,269,183.0	192.00	55.00	0.00	0	0		
									point551	551	37,309,448.0	12,269,172.0	192.00	55.00	0.00	0	0		
									point552	552	37,309,444.0	12,269,142.0	192.00	55.00	0.00	0	0		
									point553	553	37,309,440.0	12,269,119.0	192.00	55.00	0.00	0	0		
									point554	554	37,309,436.0	12,269,083.0	192.00	55.00	0.00	0	0		
									point555	555	37,309,432.0	12,269,047.0	192.00	55.00	0.00	0	0		
									point556	556	37,309,404.0	12,269,051.0	192.00	55.00	0.00	0	0		
									point557	557	37,309,400.0	12,269,052.0	192.00	55.00	0.00	0	0		
									point559	559	37,309,400.0	12,269,062.0	192.00	55.00	0.00	0	0		
									point561	561	37,309,404.0	12,269,088.0	192.00	55.00	0.00	0	0		
									point562	562	37,309,404.0	12,269,099.0	192.00	55.00	0.00	0	0		
									point563	563	37,309,408.0	12,269,098.0	192.00	55.00	0.00	0	0		
									point564	564	37,309,412.0	12,269,123.0	192.00	55.00	0.00	0	0		
									point565	565	37,309,408.0	12,269,124.0	192.00	55.00	0.00	0	0		
									point566	566	37,309,408.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point567	567	37,309,412.0	12,269,134.0	192.00	55.00	0.00	0	0		
									point568	568	37,309,412.0	12,269,146.0	192.00	55.00	0.00	0	0		
									point569	569	37,309,408.0	12,269,147.0	192.00	55.00	0.00	0	0		
									point570	570	37,309,408.0	12,269,150.0	192.00	55.00	0.00	0	0		
									point571	571	37,309,404.0	12,269,154.0	192.00	55.00	0.00	0	0		
									point548	548	37,309,404.0	12,269,161.0	192.00	55.00					

Bldg A - 2	W	0.00	99.99	0.00				0.00	point572	572	37,309,456.0	12,269,183.0	192.00	55.00	0.00	0	0		
									point574	574	37,309,484.0	12,269,180.0	192.00	55.00	0.00	0	0		
									point575	575	37,309,488.0	12,269,179.0	192.00	55.00	0.00	0	0		
									point577	577	37,309,488.0	12,269,168.0	192.00	55.00	0.00	0	0		
									point578	578	37,309,484.0	12,269,156.0	192.00	55.00	0.00	0	0		
									point579	579	37,309,488.0	12,269,155.0	192.00	55.00	0.00	0	0		
									point581	581	37,309,484.0	12,269,144.0	192.00	55.00	0.00	0	0		
									point582	582	37,309,480.0	12,269,133.0	192.00	55.00	0.00	0	0		
									point583	583	37,309,484.0	12,269,132.0	192.00	55.00	0.00	0	0		
									point585	585	37,309,480.0	12,269,121.0	192.00	55.00	0.00	0	0		
									point586	586	37,309,476.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point587	587	37,309,444.0	12,269,101.0	192.00	55.00	0.00	0	0		
									point588	588	37,309,452.0	12,269,137.0	192.00	55.00	0.00	0	0		
									point573	573	37,309,452.0	12,269,160.0	192.00	55.00					
Bldg A - 7	W	0.00	99.99	0.00				0.00	point596	596	37,309,304.0	12,269,101.0	192.00	55.00	0.00	0	0		
									point598	598	37,309,336.0	12,269,097.0	192.00	55.00	0.00	0	0		
									point599	599	37,309,332.0	12,269,061.0	192.00	55.00	0.00	0	0		
									point600	600	37,309,304.0	12,269,064.0	192.00	55.00	0.00	0	0		
									point601	601	37,309,296.0	12,269,065.0	192.00	55.00	0.00	0	0		
									point597	597	37,309,300.0	12,269,076.0	192.00	55.00					
Parking Structure	W	0.00	99.99	0.00				0.00	point603	603	37,309,540.0	12,269,052.0	204.00	50.00	0.00	0	0		
									point605	605	37,309,708.0	12,269,001.0	204.00	50.00	0.00	0	0		
									point606	606	37,309,708.0	12,269,006.0	204.00	50.00	0.00	0	0		
									point607	607	37,309,736.0	12,268,998.0	204.00	50.00	0.00	0	0		
									point608	608	37,309,736.0	12,268,993.0	204.00	50.00	0.00	0	0		
									point609	609	37,309,752.0	12,268,988.0	204.00	50.00	0.00	0	0		
									point610	610	37,309,808.0	12,268,984.0	204.00	50.00	0.00	0	0		
									point611	611	37,309,800.0	12,268,897.0	204.00	50.00	0.00	0	0		
									point612	612	37,309,776.0	12,268,874.0	204.00	50.00	0.00	0	0		
									point613	613	37,309,656.0	12,268,950.0	204.00	50.00	0.00	0	0		
									point604	604	37,309,520.0	12,268,992.0	204.00	50.00					
Bldg A - 8	W	0.00	99.99	0.00				0.00	point614	614	37,309,444.0	12,269,087.0	192.00	55.00	0.00	0	0		
									point615	615	37,309,476.0	12,269,083.0	192.00	55.00	0.00	0	0		
									point616	616	37,309,468.0	12,269,044.0	192.00	55.00	0.00	0	0		
									point617	617	37,309,440.0	12,269,048.0	192.00	55.00					
Office / Rec Room	W	0.00	99.99	0.00				0.00	point618	618	37,309,868.0	12,269,103.0	192.00	35.00	0.00	0	0		
									point619	619	37,309,884.0	12,269,079.0	192.00	35.00	0.00	0	0		
									point620	620	37,309,848.0	12,269,057.0	192.00	35.00	0.00	0	0		
									point621	621	37,309,840.0	12,269,069.0	192.00	35.00	0.00	0	0		
									point622	622	37,309,800.0	12,269,071.0	192.00	35.00					

Dudek			**28 July 2018**	
M Greene / S Tang			**TNM 2.5**	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	**9641**			
RUN:	**Solana Trrnce MF Resi - FutWP 0118**			
Terrain Line	**Points**			
Name	**No.**	**Coordinates (ground)**		
		X	**Y**	**Z**
		ft	ft	ft
Terrain Line15	129	37,309,780.0	12,269,203.0	190.50
	130	37,309,804.0	12,269,204.0	190.50
	131	37,309,820.0	12,269,206.0	190.50
	132	37,309,836.0	12,269,197.0	190.50
	133	37,309,864.0	12,269,135.0	190.50
	134	37,309,872.0	12,269,118.0	190.50
	135	37,309,888.0	12,269,079.0	190.50
	136	37,309,848.0	12,269,055.0	190.50
	137	37,309,840.0	12,269,067.0	190.50
Terrain Line16	138	37,309,860.0	12,269,008.0	193.00
	139	37,309,920.0	12,269,042.0	193.00
	140	37,309,924.0	12,269,036.0	193.00
	141	37,309,940.0	12,269,034.0	193.00
	142	37,310,008.0	12,268,936.0	193.00
Terrain Line17	143	37,310,000.0	12,268,924.0	193.00
	144	37,310,012.0	12,268,930.0	193.00
	145	37,310,064.0	12,268,860.0	193.00
Terrain Line19	158	37,310,048.0	12,268,768.0	0.00
	159	37,310,000.0	12,268,768.0	0.00
	160	37,309,976.0	12,268,768.0	0.00
	161	37,309,948.0	12,268,764.0	0.00
	162	37,309,860.0	12,268,777.0	0.00
	163	37,309,784.0	12,268,810.0	0.00
	164	37,309,776.0	12,268,824.0	0.00

	165	37,309,680.0	12,268,872.0	0.00
	166	37,309,664.0	12,268,869.0	0.00
	167	37,309,580.0	12,268,917.0	0.00
	168	37,309,504.0	12,268,961.0	0.00
	169	37,309,436.0	12,268,959.0	0.00
Terrain Line20	170	37,310,060.0	12,268,707.0	210.00
	171	37,310,016.0	12,268,707.0	220.00
	172	37,309,988.0	12,268,707.0	240.00
	173	37,309,964.0	12,268,703.0	260.00
	174	37,309,876.0	12,268,722.0	280.00
	175	37,309,800.0	12,268,749.0	300.00
	176	37,309,788.0	12,268,763.0	330.00
	177	37,309,696.0	12,268,811.0	360.00
	178	37,309,676.0	12,268,808.0	380.00
	179	37,309,596.0	12,268,856.0	380.00
	180	37,309,516.0	12,268,899.0	380.00
	181	37,309,452.0	12,268,899.0	380.00
	182	37,309,384.0	12,268,914.0	380.00
	184	37,309,352.0	12,268,920.0	380.00
	183	37,309,312.0	12,268,952.0	380.00

Dudek
M Greene / S Tang
28 July 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 9641
RUN: Solana Trrnce MF Resi - FutWP 0118
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST3 - Resi Area E. of Proj.	429	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
ST4 - Resi Area N. of Proj.	430	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R56 - Resi's northeast of Proj.	485	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
R1 - Outdoor community area rooftop deck	668	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R2 - Outdoor community area rooftop deck	669	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R3 - Outdoor area Bldg B	670	1	0.0	41.9	66	41.9	10	----	41.9	0.0	8	-8.0
R4 - Outdoor area Bldg B west side	671	1	0.0	40.4	66	40.4	10	----	40.4	0.0	8	-8.0
R5 - Outdoor area Bldg B west side	672	1	0.0	46.5	66	46.5	10	----	46.5	0.0	8	-8.0
R6 - Outdoor area Bldg A west side	673	1	0.0	28.7	66	28.7	10	----	28.7	0.0	8	-8.0
R7 - Outdoor area Bldg A west side	674	1	0.0	28.8	66	28.8	10	----	28.8	0.0	8	-8.0
R8 - Outdoor area Bldg C	675	1	0.0	33.3	66	33.3	10	----	33.3	0.0	8	-8.0
R9 - Outdoor area Bldg C south side	676	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
R10 - Outdoor area Bldg C southwest side	677	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R11 - Pool / Rec Area at Parking Structure	678	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0
R12 - Pool / Rec Area at Parking Structure	679	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R13 - Pool / Rec Area at Parking Structure	680	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R14 Bldg B 2nd Level	682	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
R15 Bldg B 2nd Level	683	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
R16 Bldg B 2nd Level	684	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
R17 Bldg B 2nd Level	685	1	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	8	-8.0
R18 Bldg B 2nd Level	686	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
R19 Bldg B 2nd Level	687	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0
R20 Bldg B 2nd Level	688	1	0.0	72.5	66	72.5	10	Snd Lvl	72.5	0.0	8	-8.0
R21 Bldg B 2nd Level	689	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0

R22 Bldg B 2nd Level	690	1	0.0	72.9	66	72.9	10	Snd Lvl	72.9	0.0	8	-8.0
R23 Bldg B 2nd Level	691	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R24 Bldg B 2nd Level	692	1	0.0	42.6	66	42.6	10	----	42.6	0.0	8	-8.0
R25 Bldg B 2nd Level	693	1	0.0	43.6	66	43.6	10	----	43.6	0.0	8	-8.0
R26 Bldg B 2nd Level	694	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
R27 Bldg B 2nd Level	695	1	0.0	40.1	66	40.1	10	----	40.1	0.0	8	-8.0
R28 Bldg B 2nd Level	696	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R29 Bldg B 2nd Level	697	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R30 Bldg B 2nd Level	698	1	0.0	43.3	66	43.3	10	----	43.3	0.0	8	-8.0
R31 Bldg B 2nd Level	699	1	0.0	32.2	66	32.2	10	----	32.2	0.0	8	-8.0
R32 Bldg B 2nd Level	700	1	0.0	40.9	66	40.9	10	----	40.9	0.0	8	-8.0
R33 Bldg B 2nd Level	701	1	0.0	45.6	66	45.6	10	----	45.6	0.0	8	-8.0
R34 Bldg B 2nd Level	702	1	0.0	47.2	66	47.2	10	----	47.2	0.0	8	-8.0
R35 Bldg A 2nd Level	703	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R36 Bldg A 2nd Level	704	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
R37 Bldg A 2nd Level	705	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
R38 Bldg A 2nd Level	706	1	0.0	34.8	66	34.8	10	----	34.8	0.0	8	-8.0
R39 Bldg A 2nd Level	707	1	0.0	38.2	66	38.2	10	----	38.2	0.0	8	-8.0
R40 Bldg C 2nd Level	708	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
R41 Bldg C 2nd Level	709	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
R42 Bldg C 2nd Level	710	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
R43 Bldg C 2nd Level	711	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
R44 Bldg C 2nd Level	712	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0
R45 Bldg C 2nd Level	713	1	0.0	67.5	66	67.5	10	Snd Lvl	67.5	0.0	8	-8.0
R46 Bldg C 2nd Level	714	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R47 Bldg C 2nd Level	715	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
R48 Bldg C 2nd Level	716	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
R49 Bldg C 2nd Level	717	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
R50 Bldg C 2nd Level	718	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R51 Bldg C 2nd Level	719	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0
R52 Bldg C 2nd Level	721	1	0.0	38.0	66	38.0	10	----	38.0	0.0	8	-8.0
R53 Bldg C 2nd Level	722	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R54 Bldg C 2nd Level	723	1	0.0	42.3	66	42.3	10	----	42.3	0.0	8	-8.0
R55 Bldg C 2nd Level	724	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
R14 Bldg B 3rd Level	725	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R15 Bldg B 3rd Level	726	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
R16 Bldg B 3rd Level	727	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
R17 Bldg B 3rd Level	728	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
R18 Bldg B 3rd Level	729	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
R19 Bldg B 3rd Level	730	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
R20 Bldg B 3rd Level	731	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0

R21 Bldg B 3rd Level	732	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
R22 Bldg B 3rd Level	733	1	0.0	72.5	66	72.5	10	Snd Lvl	72.5	0.0	8	-8.0
R23 Bldg B 3rd Level	734	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R24 Bldg B 3rd Level	735	1	0.0	43.8	66	43.8	10	----	43.8	0.0	8	-8.0
R25 Bldg B 3rd Level	736	1	0.0	44.1	66	44.1	10	----	44.1	0.0	8	-8.0
R26 Bldg B 3rd Level	737	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
R27 Bldg B 3rd Level	738	1	0.0	39.6	66	39.6	10	----	39.6	0.0	8	-8.0
R28 Bldg B 3rd Level	739	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R29 Bldg B 3rd Level	740	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R30 Bldg B 3rd Level	741	1	0.0	44.9	66	44.9	10	----	44.9	0.0	8	-8.0
R31 Bldg B 3rd Level	742	1	0.0	35.5	66	35.5	10	----	35.5	0.0	8	-8.0
R32 Bldg B 3rd Level	743	1	0.0	41.9	66	41.9	10	----	41.9	0.0	8	-8.0
R33 Bldg B 3rd Level	744	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0
R34 Bldg B 3rd Level	745	1	0.0	49.4	66	49.4	10	----	49.4	0.0	8	-8.0
R35 Bldg A 3rd Level	746	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R36 Bldg A 3rd Level	747	1	0.0	51.6	66	51.6	10	----	51.6	0.0	8	-8.0
R37 Bldg A 3rd Level	748	1	0.0	47.5	66	47.5	10	----	47.5	0.0	8	-8.0
R38 Bldg A 3rd Level	749	1	0.0	34.2	66	34.2	10	----	34.2	0.0	8	-8.0
R39 Bldg A 3rd Level	750	1	0.0	39.4	66	39.4	10	----	39.4	0.0	8	-8.0
R40 Bldg C 3rd Level	751	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
R41 Bldg C 3rd Level	752	1	0.0	72.4	66	72.4	10	Snd Lvl	72.4	0.0	8	-8.0
R42 Bldg C 3rd Level	753	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0
R43 Bldg C 3rd Level	754	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
R44 Bldg C 3rd Level	755	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0
R45 Bldg C 3rd Level	756	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
R46 Bldg C 3rd Level	757	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R47 Bldg C 3rd Level	758	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
R48 Bldg C 3rd Level	759	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R49 Bldg C 3rd Level	760	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
R50 Bldg C 3rd Level	761	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R51 Bldg C 3rd Level	762	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R52 Bldg C 3rd Level	764	1	0.0	40.3	66	40.3	10	----	40.3	0.0	8	-8.0
R53 Bldg C 3rd Level	765	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R54 Bldg C 3rd Level	766	1	0.0	45.1	66	45.1	10	----	45.1	0.0	8	-8.0
R55 Bldg C 3rd Level	767	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
R14 Bldg B 4th Level	768	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R15 Bldg B 4th Level	769	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R16 Bldg B 4th Level	770	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
R17 Bldg B 4th Level	771	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
R18 Bldg B 4th Level	772	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
R19 Bldg B 4th Level	773	1	0.0	71.7	66	71.7	10	Snd Lvl	71.7	0.0	8	-8.0

R20 Bldg B 4th Level	774	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
R21 Bldg B 4th Level	775	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
R22 Bldg B 4th Level	776	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
R23 Bldg B 4th Level	777	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R24 Bldg B 4th Level	778	1	0.0	48.5	66	48.5	10	----	48.5	0.0	8	-8.0
R25 Bldg B 4th Level	779	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
R26 Bldg B 4th Level	780	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
R27 Bldg B 4th Level	781	1	0.0	42.2	66	42.2	10	----	42.2	0.0	8	-8.0
R28 Bldg B 4th Level	782	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R29 Bldg B 4th Level	783	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R30 Bldg B 4th Level	784	1	0.0	45.2	66	45.2	10	----	45.2	0.0	8	-8.0
R31 Bldg B 4th Level	785	1	0.0	35.7	66	35.7	10	----	35.7	0.0	8	-8.0
R32 Bldg B 4th Level	786	1	0.0	42.8	66	42.8	10	----	42.8	0.0	8	-8.0
R33 Bldg B 4th Level	787	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
R34 Bldg B 4th Level	788	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R35 Bldg A 4th Level	789	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R36 Bldg A 4th Level	790	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
R37 Bldg A 4th Level	791	1	0.0	49.4	66	49.4	10	----	49.4	0.0	8	-8.0
R38 Bldg A 4th Level	792	1	0.0	35.8	66	35.8	10	----	35.8	0.0	8	-8.0
R39 Bldg A 4th Level	793	1	0.0	43.1	66	43.1	10	----	43.1	0.0	8	-8.0
R40 Bldg C 4th Level	794	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0
R41 Bldg C 4th Level	796	1	0.0	72.4	66	72.4	10	Snd Lvl	72.4	0.0	8	-8.0
R42 Bldg C 4th Level	797	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
R43 Bldg C 4th Level	798	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
R44 Bldg C 4th Level	799	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
R45 Bldg C 4th Level	800	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
R46 Bldg C 4th Level	801	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R47 Bldg C 4th Level	802	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
R48 Bldg C 4th Level	803	1	0.0	64.2	66	64.2	10	----	64.2	0.0	8	-8.0
R49 Bldg C 4th Level	804	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R50 Bldg C 4th Level	805	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R51 Bldg C 4th Level	806	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R52 Bldg C 4th Level	808	1	0.0	42.1	66	42.1	10	----	42.1	0.0	8	-8.0
R53 Bldg C 4th Level	809	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R54 Bldg C 4th Level	810	1	0.0	48.0	66	48.0	10	----	48.0	0.0	8	-8.0
R55 Bldg C 4th Level	811	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
R14 Bldg B 5th Level	812	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R15 Bldg B 5th Level	813	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
R16 Bldg B 5th Level	814	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
R17 Bldg B 5th Level	815	1	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	8	-8.0
R18 Bldg B 5th Level	816	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0

R19 Bldg B 5th Level	817	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
R20 Bldg B 5th Level	818	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
R21 Bldg B 5th Level	819	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
R22 Bldg B 5th Level	821	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
R23 Bldg B 5th Level	822	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
R24 Bldg B 5th Level	823	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R25 Bldg B 5th Level	824	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
R26 Bldg B 5th Level	825	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R27 Bldg B 5th Level	826	1	0.0	45.7	66	45.7	10	----	45.7	0.0	8	-8.0
R28 Bldg B 5th Level	827	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R29 Bldg B 5th Level	828	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R30 Bldg B 5th Level	829	1	0.0	46.9	66	46.9	10	----	46.9	0.0	8	-8.0
R31 Bldg B 5th Level	830	1	0.0	41.5	66	41.5	10	----	41.5	0.0	8	-8.0
R32 Bldg B 5th Level	831	1	0.0	45.1	66	45.1	10	----	45.1	0.0	8	-8.0
R33 Bldg B 5th Level	832	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
R34 Bldg B 5th Level	833	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
R35 Bldg A 5th Level	834	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R36 Bldg A 5th Level	835	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
R37 Bldg A 5th Level	836	1	0.0	52.4	66	52.4	10	----	52.4	0.0	8	-8.0
R38 Bldg A 5th Level	837	1	0.0	37.0	66	37.0	10	----	37.0	0.0	8	-8.0
R39 Bldg A 5th Level	838	1	0.0	43.2	66	43.2	10	----	43.2	0.0	8	-8.0
R40 Bldg C 5th Level	839	1	0.0	68.4	66	68.4	10	Snd Lvl	68.4	0.0	8	-8.0
R41 Bldg C 5th Level	840	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
R42 Bldg C 5th Level	841	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
R43 Bldg C 5th Level	842	1	0.0	71.6	66	71.6	10	Snd Lvl	71.6	0.0	8	-8.0
R44 Bldg C 5th Level	843	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
R45 Bldg C 5th Level	844	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
R46 Bldg C 5th Level	845	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
R47 Bldg C 5th Level	846	1	0.0	71.6	66	71.6	10	Snd Lvl	71.6	0.0	8	-8.0
R48 Bldg C 5th Level	848	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
R49 Bldg C 5th Level	849	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R50 Bldg C 5th Level	851	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R51 Bldg C 5th Level	852	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
R52 Bldg C 5th Level	854	1	0.0	44.5	66	44.5	10	----	44.5	0.0	8	-8.0
R53 Bldg C 5th Level	855	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
R54 Bldg C 5th Level	856	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
R55 Bldg C 5th Level	857	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0

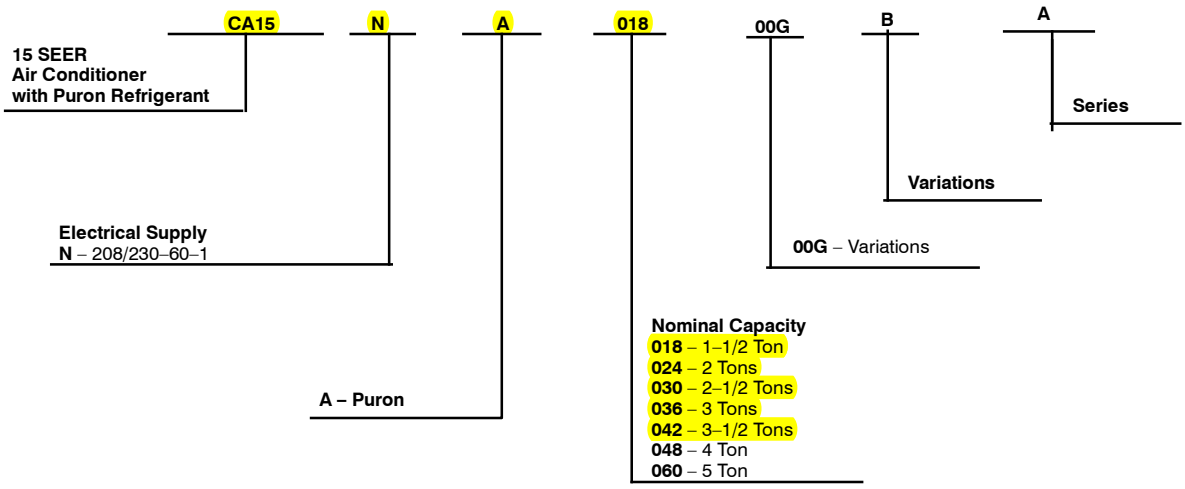
Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		184	0.0	0.0	0.0

All Impacted		62	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

APPENDIX F

Heating, Ventilation and Air Conditioning (HVAC) Noise Specifications

PRODUCT NUMBER NOMENCLATURE



Puron

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Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

c UL US

PHYSICAL DATA

UNIT SIZE	18–A	24–A	30–A	36–A	42–A	48–A	60–A
Compressor Type	Scroll						
REFRIGERANT	Puron® (R–410A)						
Control	TXV (Puron Hard Shutoff)						
Charge (lb)	3.20 (1.45)	4.60 (2.09)	5.67 (2.57)	6.40 (2.90)	7.46 (3.38)	8.31 (3.77)	9.39 (4.26)
COND FAN	Propeller Type, Direct Drive						
Air Discharge	Vertical						
Air Qty (CFM)	1700	1881	2614	3365	3700	3545	3700
Motor HP	1/12	1/12	1/10	1/5	1/4	1/4	1/4
Motor RPM	1100	1100	1100	1100	1100	1110	1100
COND COIL							
Face Area (Sq ft)	9.85	11.2	17.24	19.4	15.1	15.1	17.25
Fins per In.	25	25	25	25	20	20	25
Rows	1	1	1	1	2	2	2
Circuits	3	5	4	5	6	6	8
VALVE CONNECT. (In. ID)							
Vapor	3/4	3/4	3/4	7/8	7/8	7/8	7/8
Liquid	3/8						
REFRIGERANT TUBES (In. OD)							
Rated Vapor*	3/4	3/4	3/4	7/8	7/8	7/8	1–1/8
Max Liquid Line	3/8						

* Units are rated with 25 ft (7.6 m) of lineset length. See Vapor Line Sizing and Cooling Capacity Loss table when using other sizes and lengths of lineset.
Note: See unit Installation Instruction for proper installation.

† See *Liquid Line Sizing For Cooling Only Systems with Puron Refrigerant* tables.

ELECTRICAL DATA

UNIT SIZE – SERIES	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MAX FUSE† or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		
18–A	208/230/1–60	253	197	47.5	9.0	0.40	11.7	20
24–A				62.9	10.9	0.50	14.1	20
30–A				67.8	12.8	0.75	16.8	25
36–A				79.0	13.6	1.10	18.1	30
42–A				109.0	16.7	1.40	22.3	35
48–A				105.7	15.6	1.40	20.9	35
60–A				127.1	20.8	1.52	27.5	40

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† Time–Delay fuse.

FLA – Full Load Amps
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps
NOTE: Control circuit is 24V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

Complies with 2010 requirements of ASHRAE Standards 90.1

A–WEIGHTED SOUND POWER (dBA)

UNIT SIZE – SERIES	Standard Rating (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–A	75	46.0	55.0	59.5	64.0	60.5	54.5	48.5
24–A	71	50.5	53.5	58.5	60.5	60.0	56.5	52.5
30–A	73	49.5	56.0	62.5	64.0	60.5	57.5	53.5
36–A	75	49.0	57.0	62.5	66.0	61.0	58.5	52.0
42–A	75	52.5	63.0	64.0	63.0	62.0	58.0	52.0
48–A	76	53.0	61.0	64.0	65.5	62.0	59.5	50.5
60–A	75	53.5	57.0	62.5	63.5	61.5	57.5	51.0

NOTE: Tested in compliance with AHRI 270–1995 (not listed with AHRI)

A–WEIGHTED SOUND POWER (dBA) WITH SOUND SHIELD

UNIT SIZE – SERIES	Standard Rating (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–A	75	46.5	55.5	59.5	63.5	60.0	54.0	47.0
24–A	71	47.5	53.5	58.0	59.5	60.0	55.5	49.0
30–A	72	49.0	56.5	61.5	62.5	60.0	57.0	52.0
36–A	73	49.5	57.0	62.0	64.0	60.0	58.0	51.0
42–A	74	53.5	64.0	64.0	62.5	61.0	56.5	50.5
48–A	73	54.5	61.0	63.5	62.5	60.0	56.5	47.5
60–A	73	53.5	59.0	63.0	62.5	59.5	56.0	48.0

NOTE: Tested in compliance with AHRI 270–1995 (not listed with AHRI)

METERING DEVICE

UNIT SIZE – SERIES	INDOOOR	REQUIRED SUBCOOLING °F (°C)
18–A	TXV*	13 (7.22)
24–A		10 (5.56)
30–A		12 (6.67)
36–A		11 (6.11)
42–A		11 (6.11)
48–A		11 (6.11)
60–A		13 (7.22)

* TXV must be ordered separately when indoor coil is not equipped with a TXV. TXV must be hard–shutoff type.

APPENDIX G

Rooftop Deck and
Parking Structure Calculations

On-Site Operational Noise

Rooftop Deck Activity Noise

Primary Criteria: Daytime = 50 dBA (7 a.m. to 10 p.m.); Nighttime standard not applicable (deck closed from 10 p.m. to 7 a.m.)

Raised male voice at 1 m. 65 dBA at 3.28 feet

Reference: Harris, 1979

Assuming Max. 220 people all male raised voice					
Receiver Description	**Receiver Distance (feet)**	**Raised Male Voices (dBA)**	**Acoustical Shielding (if any)**	**Resultant (dBA L_{eq})**	**Applicable Region 3 Standard (50 dBA[1]) Exceeded?**
Nearest Residential P/L (24648 Via Valmonte)	484	45.0	5.3	40	No
2nd Nearest Residential P/L (24660 Via Valmonte)	654	42.0	7.4	35	No
3rd nearest Residential P/L (24704 Via Valmonte	710	41.3	0.0	41	No
4th nearest Residential P/L (24704 Via Valmonte	711	41.3	0.0	41	No

Parking Structure Noise

Using Measured L_{eq} of 63 dBA at 30 feet (ref. Dudek 2016)

Daytime								
Receiver Description	**Receiver Distance to Parking Structure (feet)**	**Parking Structure Noise**	**Acoustical Shielding (if any)**	**Resultant (dBA L_{eq})**	**Pool Deck Noise**	**HVAC Noise**	**Combined Parking Structure, Pool Deck and HVAC Noise (dBA L_{eq})**	**Applicable Region 3 Daytime Standard (50 dBA L_{eq}) Exceeded?**
Nearest Residential P/L (24648 Via Valmonte)	418	40.1	12.0	28.1	39.8	43.8	45	No
2nd Nearest Residential P/L (24660 Via Valmonte)	575	37.3	7.6	29.8	34.6	40.0	41	No
3rd nearest Residential P/L (24704 Via Valmonte	642	36.4	6.0	30.4	41.3	37.7	43	No
4th nearest Residential P/L (24706 Via Valmonte	706	35.6	0.0	35.6	41.3	35.4	43	No

Nighttime (N/A because peak-hour occurs between 7 AM and 9 AM per Derek Empey)

Lmax Noise Levels

Using Measured L_{max} of 72 dBA at 30 feet (ref. Dudek 2016)

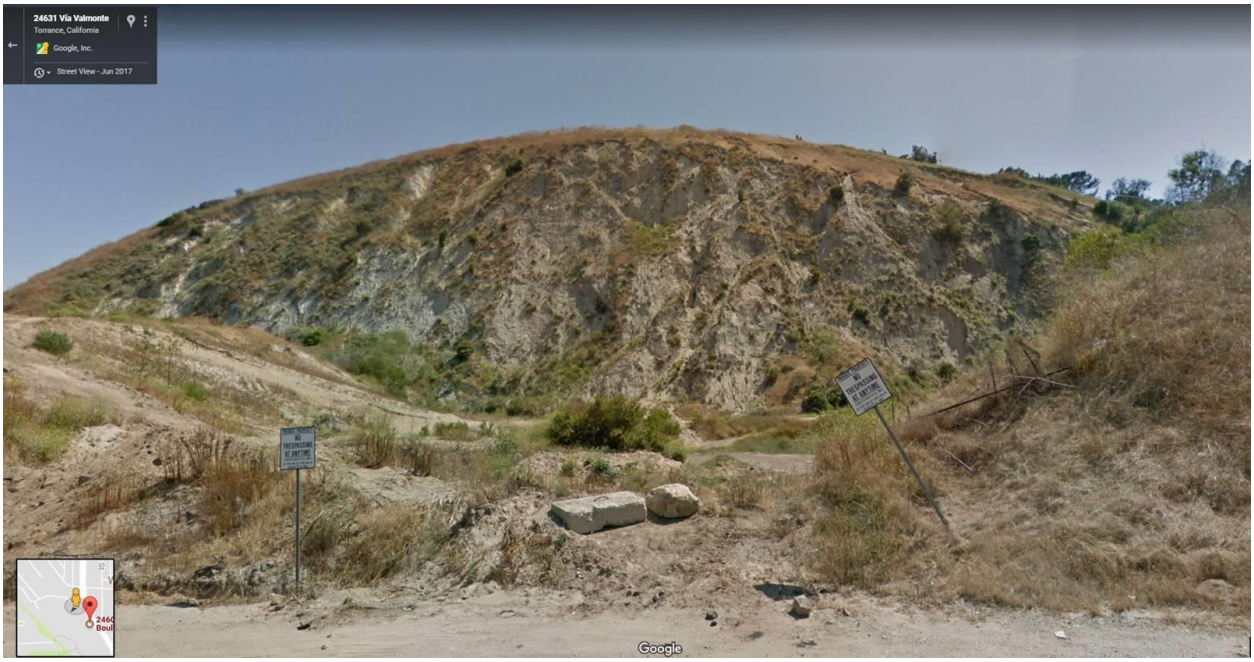
Receiver Description	Receiver Distance to Parking Structure (feet)	Parking Structure Noise	Acoustical Shielding (if any)	Resultant (dBA L_{eq})	Applicable Region 3 Daytime Standard (65 dBA for short-term / instantaneous noise) Exceeded?
Nearest Residential P/L (24648 Via Valmonte)	418	49.1	12.0	37	No
2nd Nearest Residential P/L (24660 Via Valmonte)	575	46.3	7.6	39	No
3rd nearest Residential P/L (24704 Via Valmonte	642	45.4	6.0	39	No
4th nearest Residential P/L (24706 Via Valmonte	706	44.6	0.0	45	No

APPENDIX H

Photos of Slope to the South of Project Site

APPENDIX H
Photos of Slope to the South of Project Site

View (from the north, looking south) of project site and slope to the south



Detailed view (from the north, looking south) of project site and slope to the south

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