Shinohara Industrial Center Project

Noise Impact Study

City of Chula Vista, CA

517 Shinohara Lane

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Sound Solutions for Planning and Design

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

The purpose of this noise impact study is to evaluate the potential noise impacts for the project study area and compare results to City and CEQA thresholds. The assessment was conducted and compared to the noise standards set forth by the Federal, State and Local agencies. Consistent with the California Environmental Quality Act (CEQA) and CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An evaluation of the existing ambient noise environment
- An analysis of stationary noise impacts from the project site to adjacent land uses
- Construction noise and vibration evaluation

1.2 Site Location and Study Area

The project site is located at 517 Shinohara Lane near Main Street between Oleander Avenue and Brandywine Avenue in the City of Chula Vista, San Diego County, California as shown in Exhibit A. The site is currently designated Limited Industrial (IL) according to the City of Chula Vista General Plan Land Use Diagram and the proposed use is industrial. Land uses surrounding the site include Residential to the north and west, and Industrial to the south and east.

1.3 Proposed Project Description

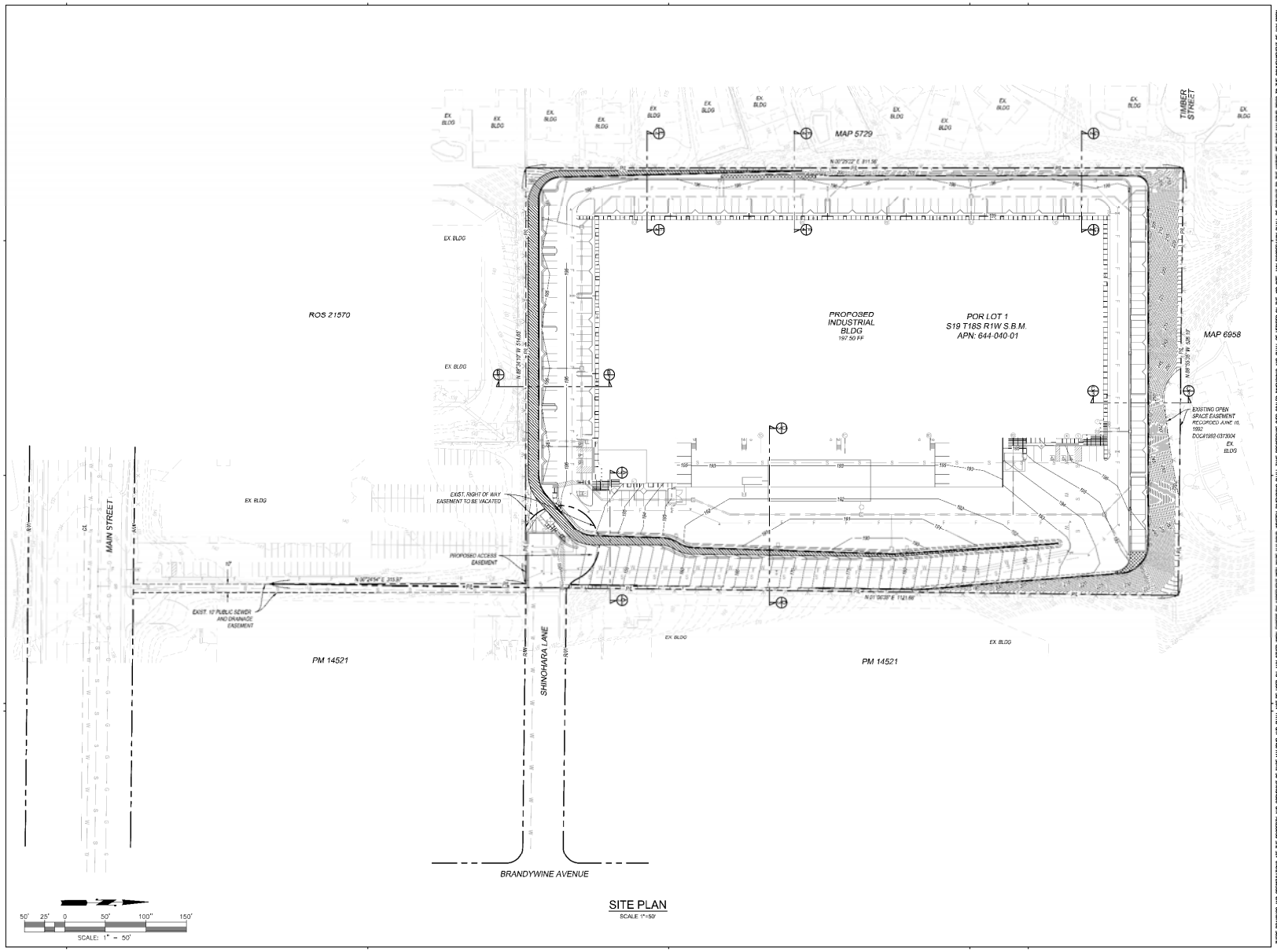
The approximately 9.72-acre project site is proposed to be develop with a 168,926 square foot warehouse and distribution center with 4,506 square feet of office space and 4,724 square feet of mezzanine space. The parking lot proposed considers 221 total spaces, between regular, accessible, and electric cars spaces. Finally, the project proposes 25 loading docks on the east side. Exhibit B demonstrates the site plan for the project.

The closest existing sensitive receptors (to the site area) are the residential condominiums (multi-family) located approximately 40 feet to the north and the single-family residential uses located approximately 30 feet to the west of property line. These receivers are considered regarding the noise propagation.

Exhibit A
Location Map

Exhibit B

Site Plan



2.0 Fundamentals of Noise

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

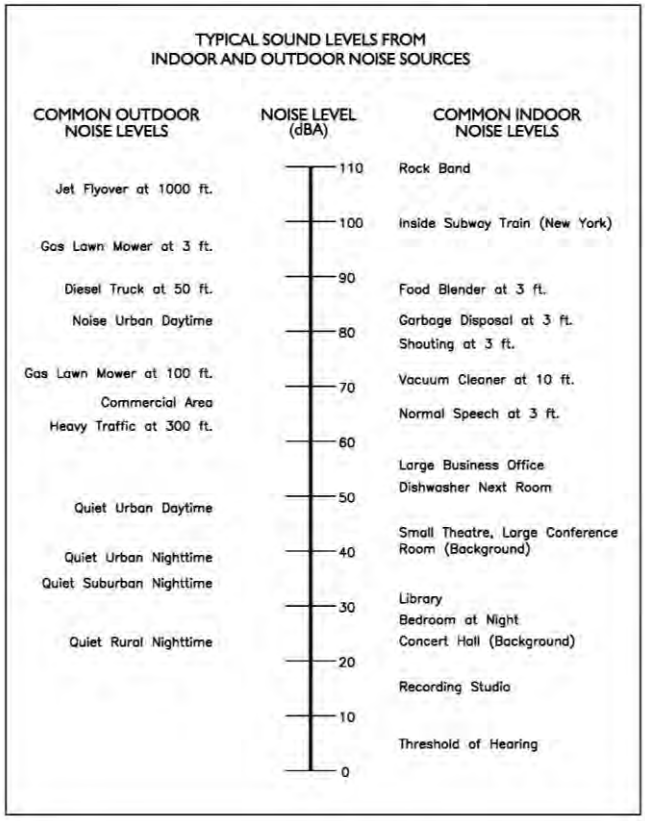
2.1 Sound, Noise and Acoustics

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

2.2 Frequency and Hertz

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

Exhibit C: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter ($\mu N/m^2$), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

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

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

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

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

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

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

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

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

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

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

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

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

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

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2–3 axle) and heavy truck percentage (4 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.8 Sound Propagation

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

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver.

Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

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

3.0 Ground-Borne Vibration Fundamentals

3.1 Vibration Descriptors

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

Several different methods are used to quantify vibration amplitude.

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

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

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

3.2 Vibration Perception

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

3.3 Vibration Propagation

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

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

4.0 Regulatory Setting

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

4.1 Federal Regulations

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

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

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high noise areas.

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

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

4.2 State Regulations

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

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan.

The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The City's guidelines rank noise land use compatibility as illustrated in Exhibit D.

4.3 City of Chula Vista Noise Regulations

The City of Chula Vista outlines their noise regulations and standards within the Municipal Code Chapter 19.68 and Chapter 9 of the Environmental Element of the City of Chula Vista General Plan.

City of Chula Vista Municipal Code

SEC. 19.68.030 – Exterior noise limits

19.68.030(A)(4) No person shall operate, or cause to be operated, any source of sound at any location within the City or allow the creation of any noise on property owned, leased occupied or otherwise controlled by such person which causes the noise level to exceed the environmental and/or nuisance interpretation of the applicable limits given in Table III.

Table 1: Table III Exterior Noise Limits[1,2]

Sound Level Standards (dBA Leq)*

Receiving Land Use Category	Noise Level [dB(A)]	
	10 p.m. to 7 a.m. (Weekdays)	7 a.m. to 10 p.m. (Weekdays)
	10 p.m. to 8 a.m. (Weekends)	8 a.m. to 10 p.m. (Weekends)
All residential (except multiple dwelling)	45	55
Multiple dwelling residential	50	60
Commercial	60	65
Light industry - I-R and I-L zone	70	70
Heavy industry – I zone	80	80

1 Environmental Noise – Leq in any hour

2 Nuisance Noise – Not to be exceeded any time. (Ord. 2790, 1999; Ord. 2276 § 2, 1988; Ord. 2101 § 3, 1985)

SEC. 19.68.040 – Interior noise limits.

No person shall operate, or cause to be operated, any source of sound within a residential dwelling unit or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed the environmental and/or nuisance interpretation of the applicable limits given in Table IV.

Table 2: Table IV Maximum permissible dwelling interior sound levels

		Noise Level [dB(A)]		
Type of Land Use	Time Interval	Any time	1 min in 1 hr	5 min in 1 hr
Multifamily	10 pm – 7 am	45	40	35
Residential	7 am – 10 pm	55	50	45

Sec. 19.68.060(C) - Exemptions.

Exemption from Exterior Noise Standards. The provisions of CVMC 19.68.030 shall not apply to activities covered by the following sections:
(2) Construction/demolition.

City of Chula Vista General Plan

Chapter 9. Environmental from the City's General Plan includes Section 3.5 Noise. Section 3.5.1 describes noise planning and standards, and the exterior land use/noise compatibility guidelines. The City's guidelines rank noise land use compatibility as illustrated in Exhibit D.

Exhibit D: Land Use Compatibility Guidelines

TABLE 9-2
EXTERIOR LAND USE/NOISE COMPATIBILITY GUIDELINES

	Annual CNEL in Decibels					
Land Use	50	55	60	65	70	75
Residential						
Schools, Libraries, Daycare Facilities, Convalescent Homes, Outdoor Use Areas, and Other Similar Uses Considered Noise Sensitive						
Neighborhood Parks, Playgrounds						
Community Parks, Athletic Fields						
Offices and Professional						
Places of Worship (excluding outdoor use areas)						
Golf Courses						
Retail and Wholesale Commercial, Restaurants, Movie Theaters						
Industrial, Manufacturing						

The General Plan includes objectives and policies with the goal of protecting the community from noise impacts.

Objective – E 21: Protect people from excessive noise through careful land use planning and the incorporation of appropriate mitigation techniques

E 21.1 Apply the exterior land use-noise compatibility guidelines listed in Table 9-2 of this Environmental Element to new development, where applicable, and in light of project-specific considerations

E 21.1 Where applicable, the assessment and mitigation of interior noise levels shall adhere to the applicable requirements of the California Building Code with local amendments and other applicable established City standards.

E 21.3 Promote the use of available technologies in building construction to improve noise attenuation capacities.

E 21.4 Continue to implement and enforce the City's noise control ordinance.

Objective – E 22 Protect the community from the effects of transportation noise.

E 22.1 Work to stabilize traffic volumes in residential neighborhoods by limiting throughways and by facilitating the use of alternative routes around, rather than through, Neighborhoods.

E 22.2 Explore the feasibility of using new technologies to minimize traffic noise, such as use of rubberized asphalt in road surface materials.

E 22.3 Employ traffic calming measures, where appropriate, such as narrow roadways and on-street parking, in commercial and mixed use districts.

E 22.4 Encourage walking; biking; carpooling; use of public transit; and other alternative modes of transportation to minimize vehicular use and associated traffic noise.

E 22.5 Require projects to construct appropriate mitigation measures in order to attenuate existing and projected traffic noise levels, in accordance with applicable standards, including the exterior land use/noise compatibility guidelines listed in Table 9-2 of this Environmental Element.

Brown Field Airport

The project is located in Area 2 of the Brown Field Airport Land Use Compatibility. However, the project is outside the noise contours of the Brown Field Airport and will not be impacted by the airport.

Construction

Section 17.24.040 (C)(8) states that the use of any tools, power machinery, or equipment or the conduct of construction and building work in residential zones so as to cause noises disturbing to the peace, comfort, and quiet enjoyment of property of any person residing or working in the vicinity between the hours of 10:00 p.m. and 7:00 a.m., Monday through Friday, and between the hours of 10:00 p.m. and 8:00 a.m., Saturday and Sunday, except when the work is necessary for emergency repairs required for the health and safety of any member of the community;

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

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

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

MD conducted the sound level measurements in accordance to Federal Highway Transportation (FHWA) and Caltrans (TeNS) technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed 5-feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on “A” and slow response
- Results of the long-term noise measurements were recorded on field data sheets
- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawn mowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Locations

Noise monitoring locations were selected based on the nearest sensitive receptors relative to the proposed onsite noise sources. Three (3) long-term 24-hours noise measurements were conducted at or near the project site and are illustrated in Exhibit E. Appendix A includes photos, field sheet, and measured noise data.

5.3 Stationary Noise Modeling

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP’s software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (parking spaces, truck loading dock with an idling semi-truck, and truck climbing over the entrance ramp). The model assumes approximately 221 parking spaces and 25 loading docks on the east side of the building. Additionally, the topography of the site is included, which involves the elevations for noise sources and receivers and the project retaining and screening walls. The project retaining and screening walls include a six (6) foot tall wall on the northwest corner of the site as shown in detail in Appendix F Concept Grading for the project.

Each idling truck was located at the loading docks 10 feet over the ground and calibrated to 74 dBA sound power level. The idling time was set to 5 minutes every hour. Also, each idling truck includes a reverse siren running for 5 minutes every hour. The access ramp was modeled with 20 heavy trucks passing by every hour. In addition, the parking lot was modeled with 1 car movement per parking space per hour. Finally, typical HVAC equipment was included as a point source over the roof of the office areas. Although the HVAC equipment has not been defined at this point, it was included as an example. The reference sound level data is provided in Appendix B and the model sources summary is in Table 3.

Table 3: Reference Sound Level Measurements for SoundPlan Model

Source	Source Type	Reference Level (Lw dBA)	Descriptor
Idling Trucks	Point Source	74	10 ft
Reverse Sirens	Point Source	100	3 ft
Truck driving up the ramp	Line Source	91	20 trucks per hr
Parking	Area (SP Parking Tool)	77	1 car per hr
HVAC equipment	Point	80	2 rooftop units

The SP model assumes that all noise sources are operating simultaneously (worst-case scenario), when in actuality the noise will be intermittent and lower in noise level. SP modeling inputs and outputs are provided in Appendix C.

5.4 FHWA Traffic Noise Prediction Model

Traffic noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model predicts a noise level increment of 3 dB per doubling the traffic volume. Roadway volumes and percentages correspond to the project's traffic scoping agreement as prepared by Linscott, Law & Greenspan, Engineers, The City's traffic counts, and roadway classification.

The traffic study approach considers two scenarios; a warehouse use, and a distribution facility use. Therefore, both noise impacts are presented. The warehouse use would generate 1,088 daily trips and the distribution use would generate 4,881 daily trips. The referenced traffic data was screened out of VMT analysis, and no further analysis is required. The traffic data is included in Appendix D.

Table 4 indicates the roadway parameters and vehicle distribution utilized for this study.

Table 4: Roadway Parameters and Vehicle Distribution

Roadway	Segment	Existing ADT[1]	Existing Plus Project ADT Warehouse	Existing Plus Project ADT Distribution	Speed (MPH)	Site Conditions
Brandywine Ave	Shinohara Ln to Main St	7,500	8,500	12,500	35	Hard
Vehicle Distribution (Truck Mix)[2]						
Motor-Vehicle Type		**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**	
Automobiles		77.5	12.9	9.6	97.42	
Medium Trucks		84.8	4.9	10.3	1.84	
Heavy Trucks		86.5	2.7	10.8	0.74	

Notes:
[1] Traffic counts provided by Sandag City of Chula Vista.

5.5 FHWA Roadway Construction Noise Model

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

The project was analyzed based on the different construction phases. Construction noise is expected to be loudest during the grading, concrete and building phases of construction. The construction noise calculation output worksheet is located in Appendix E. The following assumptions relevant to short-term construction noise impacts were used:

- It is estimated that construction will occur over a 8 to 10-month time period. Construction noise is expected to be the loudest during the grading, concrete, and building phases.

Exhibit E
Measurement Locations

= long-term Monitoring Location

6.0 Existing Noise Environment

Three (3) 24-hour ambient noise measurement were conducted at the project site. Noise measurements were taken to determine the existing ambient noise levels. Noise data indicates that the industrial facility along south property line and traffic from surrounding street and highways are the primary sources of noise impacting the site and the surrounding area.

6.1 Long-Term Noise Measurement Results

To compare the equivalent ambient levels with the operational noise levels, the quietest hour of the day was selected assuming the project will run 24-hours as a worst-case scenario. The quietest levels from the long-term noise data for each location are presented in Table 5.

Table 5: Long-Term Noise Measurement Data[1]

Date	Location	Adjacent Land use	Label	Leq (dBA)
7/2/2021	South	Industrial	LT-1	59
7/2/2021	West	Residential	LT-2	44
7/2/2021	North	Residential	LT-3	43

Notes:
[1.] Long-term noise monitoring locations (LT1, LT2, & LT3) are illustrated in Exhibit E.

Noise data indicates that the equivalent noise level Leq for the quietest ambient noise levels (worst-case) measured ranges from 43 to 59 dBA at the project site. Measurement location LT-1 represents an industrial land use, and LT-2 & LT-3 represents residential uses. Additional field notes and photographs are provided in Appendix A.

For this evaluation, MD has utilized the quietest level measured Leq and has compared the project's projected noise levels to this level.

7.0 Future Noise Environment Impacts

This assessment analyzes future noise impacts as a result of the project. The analysis details the estimated exterior noise levels. Stationary noise impacts are analyzed from the on-site noise sources such as truck movement and parking lot.

7.1 Future Exterior Noise

The following outlines the exterior noise levels associated with the proposed project.

7.1.1 Noise Impacts to Off-Site Receptors Due to Stationary Sources

Sensitive receptors that may be affected by project operational noise includes residential uses to the north and west. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software.

For this study, project activities are assumed to be continuously operational when the noise is intermittent in reality. As a worst-case scenario, the project evaluates the loading dock noise for a total of twenty (25) trucks distributed over loading docks at the east side of the building. Besides, the entrance ramp assumes 20 heavy trucks passing by every hour. Exhibit B shows the site plan with the layout. The project assumes that the industrial facilities will be running 24-hours.

A total of four (4) receptors were modeled to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent either a property line or a sensitive receptor such as an outdoor sensitive area (courtyard, patio, backyard, etc).

This study compares the Project's operational noise levels to two (2) different noise assessment scenarios: 1) Project Only operational noise level projections, 2) Project plus ambient noise level projections for the quietest hour of the day.

Project Operational Noise Levels
Exhibit F shows the "project only" operational noise levels at the site and illustrates how the noise will propagate at the property lines and/or sensitive receptor area. Operational noise levels at the adjacent uses are anticipated to range between 30 dBA to 41 dBA Leq (depending on the location). The model also considered the elevations differences between the project site and the adjacent residential land uses. Exhibit G shows the 3D rendering of the project site situation relative to the surrounding land uses.

Project Plus Ambient Operational Noise Levels
Table 6 demonstrates the project plus the ambient noise levels. Project plus ambient noise level projections are anticipated to range between 44 to 59 dBA Leq depending on location.

Exhibit F

Operational Noise Levels Leq(h)

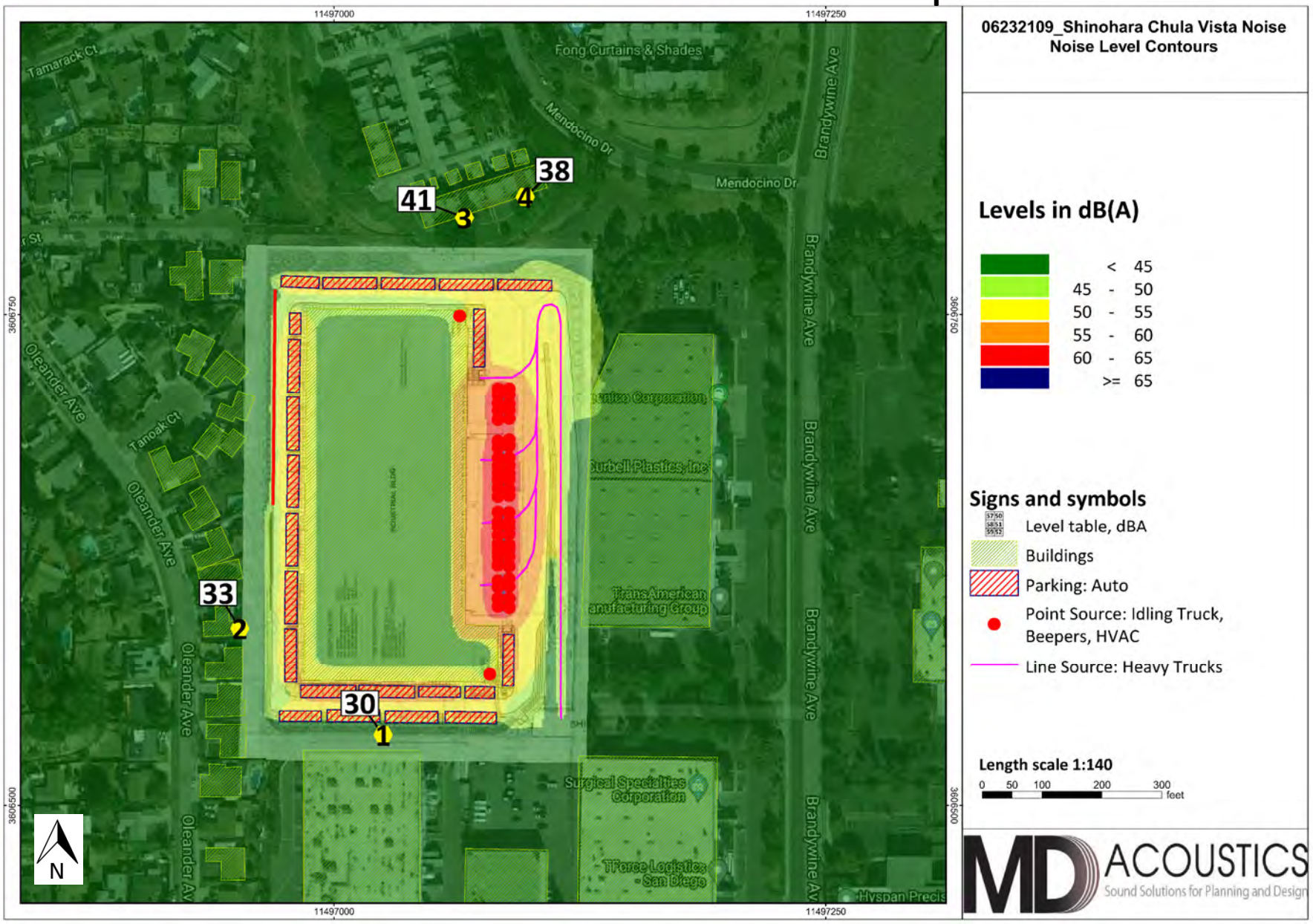


Exhibit G

Operational Noise Levels Leq(h) 3D Rendering

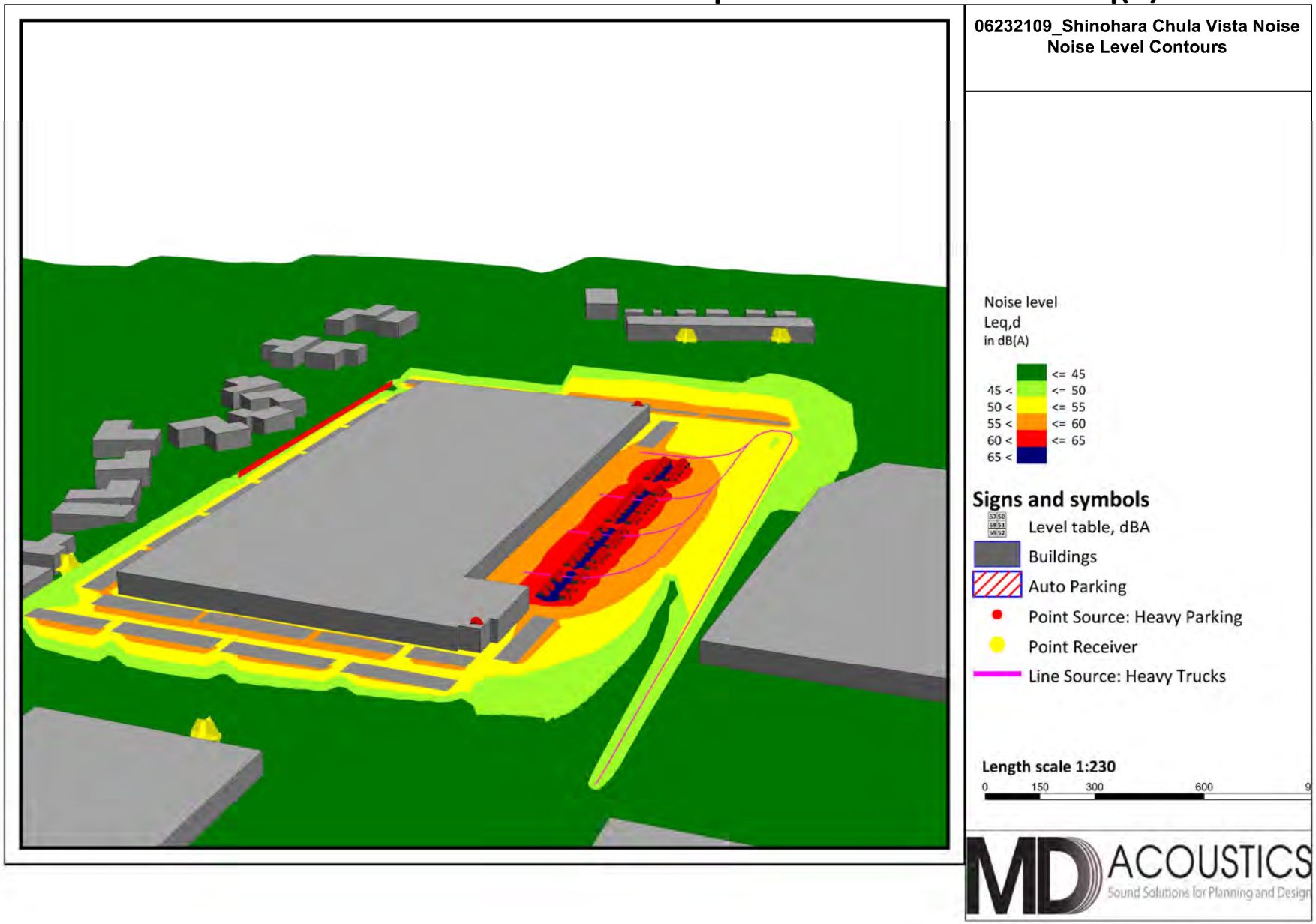


Table 6: Worst-case Predicted Operational Leq

Receptor[1]	Floor	Existing Ambient Noise Level (dBA, Leq)[2]	Project Noise Level (dBA, Leq)[3]	Total Combined Noise Level (dBA, Leq)	Daytime (7AM – 10 PM) Stationary Noise Limit (dBA,Leq)[4]	Nighttime (10PM – 7AM) Stationary Noise Limit (dBA, Leq)[4]	Change in Noise Level as Result of Project
1	1	59	30	59	**70**	**70**	0
2	1	44	33	44	**55**	**45**	0
3	1	43	41	45	**55**	**45**	2
4	1	43	38	44	**55**	**45**	1

Notes:
[1.] Receptors 1 & 5 represents industrial, and receptor 2 thru 4 represents single family residential.
[2.] Existing ambient taken as 24-hour measurement.
[3.] See Exhibit F for the operational noise level projections at said receptors.
[4.] Per the city of Chula Vista municipal code 19.68.030(B)(4), if the Ambient level exceeds the limit the ambient becomes the limit.

As shown in Table 6, the project will meet the City's standard of 45 dBA Leq for residential nighttime operation and 70 dBA for industrial limit.

Table 7 provides the characteristics associated with changes in noise levels.

Table 7: Change in Noise Level Characteristics[1]

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud

https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

The change in noise level at receivers would fall within the "Not Perceptible" to "Just perceptible" acoustic characteristic for all receiver's location in a worst-case scenario.

7.1.2 Noise Impacts to On/Off-Site Receptors Due to Project Generated Traffic

A worst-case project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated 50 feet from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference in with and without project conditions. In addition, the noise contours for 60, 65 and 70 dBA CNEL were calculated. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions.

Existing Year (Plus Project Warehouse use): This scenario refers to existing year + project traffic noise conditions for a warehouse building use.

Existing Year (Plus Project Distribution use): This scenario refers to existing year + project traffic noise conditions for a distribution facility use.

Table 8 compares the without and with project scenario and shows the change in traffic noise levels as a result of the proposed project. It takes a change of 3 dB or more to hear a perceptible difference. As demonstrated in Table 8, the project is anticipated to change the noise by 2 dBA CNEL in the worst-case scenario.

Although there is an increase in traffic noise levels the impact is considered to have no impact as the noise levels at or near any existing proposed sensitive receptor would be 66.1 dBA CNEL or less and the change in noise level is 2 dBA or less.

Table 8: Existing Scenario - Noise Levels Along Roadways (dBA CNEL)

Existing Without Project Exterior Noise Levels

Roadway	Segment	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Brandywine Ave	Shinohara Ln to Main St	63.9	12	39	122	385

Existing With Project Exterior Noise Levels

Roadway	Segment	Project Use	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Brandywine Ave	Shinohara Ln to Main St	Warehouse	64.4	14	44	138	437
Brandywine Ave	Shinohara Ln to Main St	Distribution	66.1	20	64	203	642

Change in Existing Noise Levels as a Result of Project

Roadway[1]	Segment	Project Use	CNEL at 50 Feet dBA[2]			
			Existing Without Project	Existing With Project	Change in Noise Level	Potential Significant Impact
Brandywine Ave	Shinohara Ln to Main St	Warehouse	63.9	64.4	0.5	No
Brandywine Ave	Shinohara Ln to Main St	Distribution	63.9	66.1	2.2	No

Notes:
[1] Exterior noise levels calculated at 5 feet above ground level.
[2] Noise levels calculated from centerline of subject roadway.

8.0 Construction Noise Impact

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Noise levels associated with the construction will vary with the different phases of construction.

8.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise generated characteristics of typical construction activities. The data is presented in Table 9.

Table 9: Typical Construction Equipment Noise Levels[1]

Type	Lmax (dBA) at 50 Feet
Backhoe	80
Truck	88
Concrete Mixer	85
Pneumatic Tool	85
Pump	76
Saw, Electric	76
Air Compressor	81
Generator	81
Paver	89
Roller	74

Notes:
[1] Referenced Noise Levels from FTA noise and vibration manual.

Construction noise is considered a short-term impact and it is considered exempt from the exterior noise standard per City's code 19.68.060(C)(2). Construction is anticipated to occur during the daytime hours. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing within the project vicinity. Furthermore, noise reduction measures are provided to further reduce construction noise. The impact is considered to have no impact however construction noise level projections are provided.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during grading phase. A likely worst-case construction noise scenario during grading assumes the use of 1-grader, 1-dozer, 1-excavators, 1-scrapers and 3-backhoes operating at 293 feet from the nearest sensitive receptor, located adjacent to the west property line. The distance to the nearest sensitive receptor is taken from the center of the project site in order to average the work area where the noise will be produced.

Assuming a usage factor of 40 percent for each piece of equipment, unmitigated noise levels at 293 feet have the potential to reach 68 dBA L_{eq} at the nearest sensitive receptors during grading. Noise levels for the other construction phases would be lower, approximately 65 dBA.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bulldozer. A large bulldozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^n$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 10 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 10: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 11 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 11: Vibration Source Levels for Construction Equipment[1]

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

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

Considering the adjacent residential to the west, at a distance of 293 feet from the project site's center, a large bulldozer would yield a worst-case 0.006 PPV (in/sec). Additionally, during grading along property lines of the project site, and at 30 feet from the property line, the vibration level is about 0.073 in/sec PPV. This vibration level may be perceptible for short periods of time but is below any threshold of damage. The project will have no impact and no mitigation is required.

8.3 Construction Noise Reduction Policies

Construction operations must follow the City's General Plan and the Noise Ordinance, which states that construction, repair, or excavation work performed must occur within the permissible hours. To further ensure that construction activities do not disrupt the adjacent land uses, the following policies shall be taken and will be applied as conditions of approval:

1. Construction should occur during the permissible hours (7AM to 10PM on weekdays and 8AM to 10PM Saturday and Sunday) as defined in Section 17.24.040(C)(8) of the City's Municipal Code.
2. During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices such as mufflers, silencers, and other original equipment devices.
3. The contractor should locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.
4. Idling equipment should be turned off when not in use.
5. Equipment shall be maintained so that vehicles and their loads are secured from rattling and banging.

9.0 References

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

City of Chula Vista: General Plan Environmental Element. Chapter 9.

City of Chula Vista: Municipal Code. Chapter 19.68 Performance Standards and Noise Control

Federal Highway Administration. Noise Barrier Design Handbook. June 2017.

Federal Transit Administration. Transit Noise and Vibration Impact Assessment Manual. September 2018.

Appendix A:

Photographs and Field Measurement Data

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AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet

Project: Shinohara Industrial Project
Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911
Date: 7/1/2021 to 7/2/2021
Field Tech/Engineer: Jason Schuyler

Site Observations: Clear sky, measurements were performed on the site and measured the baseline noise conditions. Winds 3-5MPH, from S.W. A police Helicopter flew overhead during ST1, the effect was minimal.

General Location:
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-min, 24-hour duration
Meteorological Con.: Temps in the hi 70's, minimal wind, west-southwest, 5mphs
Site ID: LT-1

Site Topo: Slopes hill
Ground Type: tall grasses & scrub brush

Noise Source(s) w/ Distance:
1 - 9' from South limit property line

Figure 1: LT Monitoring Locations

Figure 2: LT-1 Photo

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Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-1

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
7/2/2021	12:00 AM	1:00 AM	64.6	76.9	61.4	72.0	66.2	63.5	63.0	62.3
7/2/2021	1:00 AM	2:00 AM	62.1	74.4	58.9	69.5	63.7	61.0	60.5	59.8
7/2/2021	2:00 AM	3:00 AM	60.9	73.2	57.7	68.3	62.5	59.8	59.3	58.6
7/2/2021	3:00 AM	4:00 AM	59.1	71.4	55.9	66.5	60.7	58.0	57.5	56.8
7/2/2021	4:00 AM	5:00 AM	60.1	72.4	56.9	67.5	61.7	59.0	58.5	57.8
7/2/2021	5:00 AM	6:00 AM	63.9	76.2	60.7	71.3	65.5	62.8	62.3	61.6
7/2/2021	6:00 AM	7:00 AM	70.3	82.6	67.1	77.7	71.9	69.2	68.7	68.0
7/2/2021	7:00 AM	8:00 AM	72.6	84.9	69.4	80.0	74.2	71.5	71.0	70.3
7/2/2021	8:00 AM	9:00 AM	70.7	83.0	67.5	78.1	72.3	69.6	69.1	68.4
7/2/2021	9:00 AM	10:00 AM	69.7	82.0	66.5	77.1	71.3	68.6	68.1	67.4
7/2/2021	10:00 AM	11:00 AM	69.6	81.9	66.4	77.0	71.2	68.5	68.0	67.3
7/2/2021	11:00 AM	12:00 PM	69.8	82.1	66.6	77.2	71.4	68.7	68.2	67.5
7/2/2021	12:00 PM	1:00 PM	69.9	82.2	66.7	77.3	71.5	68.8	68.3	67.6
7/2/2021	1:00 PM	2:00 PM	70.0	82.3	66.8	77.4	71.6	68.9	68.4	67.7
7/2/2021	2:00 PM	3:00 PM	70.3	82.6	67.1	77.7	71.9	69.2	68.7	68.0
7/2/2021	3:00 PM	4:00 PM	71.4	83.7	68.2	78.8	73.0	70.3	69.8	69.1
7/2/2021	4:00 PM	5:00 PM	73.0	85.3	69.8	80.4	74.6	71.9	71.4	70.7
7/2/2021	5:00 PM	6:00 PM	72.6	84.9	69.4	80.0	74.2	71.5	71.0	70.3
7/2/2021	6:00 PM	7:00 PM	70.9	83.2	67.7	78.3	72.5	69.8	69.3	68.6
7/2/2021	7:00 PM	8:00 PM	69.5	81.8	66.3	76.9	71.1	68.4	67.9	67.2
7/2/2021	8:00 PM	9:00 PM	68.4	80.7	65.2	75.8	70.0	67.3	66.8	66.1
7/2/2021	9:00 PM	10:00 PM	67.7	80.0	64.5	75.1	69.3	66.6	66.1	65.4
7/2/2021	10:00 PM	11:00 PM	66.7	79.0	63.5	74.1	68.3	65.6	65.1	64.4
7/2/2021	11:00 PM	12:00 AM	66.1	78.4	62.9	73.5	67.7	65.0	64.5	63.8

CNEL 73.3

24-Hour Continuous Noise Measurement Datasheet - Cont.

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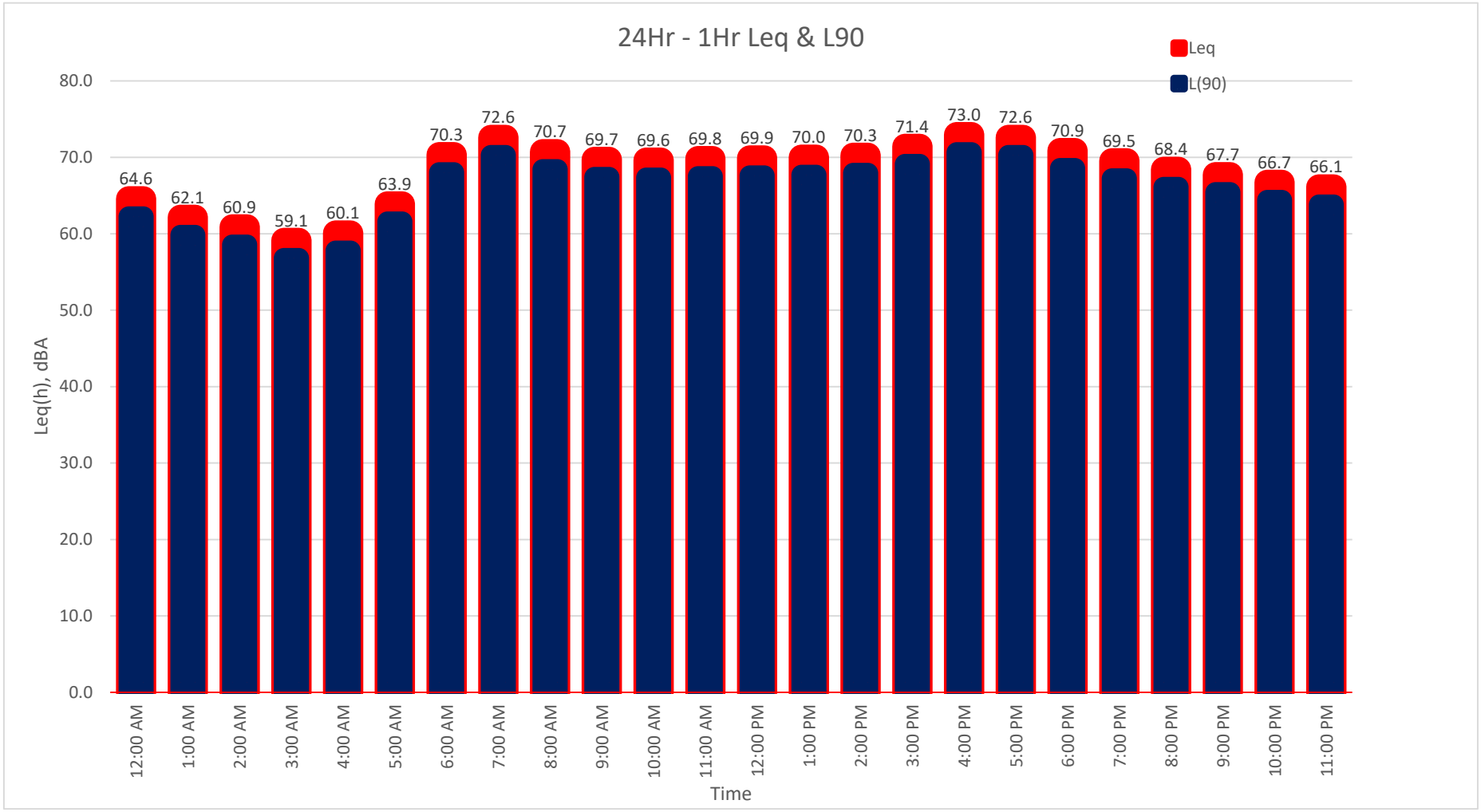
CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-1



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24-Hour Continuous Noise Measurement Datasheet

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Date: 7/1/2021 to 7/2/2021
Field Tech/Engineer: Jason Schuyler

Site Observations: Clear sky, measurements were performed on the site and measured the baseline noise conditions. Winds 3-5MPH, from S.W.

General Location:
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-min, 24-hour duration
Meteorological Con.: Temps in the hi 70's, minimal wind, west-southwest, 5mphs
Site ID: LT-2

Site Topo: Slopes hill
Ground Type: tall grasses & scrub brush

Noise Source(s) w/ Distance:
2 - 5' from Southwest limit property line

Figure 1: LT Monitoring Locations

Figure 2: LT-2 Photo

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24-Hour Noise Measurement Datasheet - Cont.

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-2

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
7/2/2021	12:00 AM	1:00 AM	49.7	66.8	43.6	57.4	49.1	47.5	46.7	45.4
7/2/2021	1:00 AM	2:00 AM	47.3	64.4	41.2	55.0	46.7	45.1	44.3	43.0
7/2/2021	2:00 AM	3:00 AM	46.0	63.1	39.9	53.7	45.4	43.8	43.0	41.7
7/2/2021	3:00 AM	4:00 AM	44.3	61.4	38.2	52.0	43.7	42.1	41.3	40.0
7/2/2021	4:00 AM	5:00 AM	45.2	62.3	39.1	52.9	44.6	43.0	42.2	40.9
7/2/2021	5:00 AM	6:00 AM	49.0	66.1	42.9	56.7	48.4	46.8	46.0	44.7
7/2/2021	6:00 AM	7:00 AM	55.5	72.6	49.4	63.2	54.9	53.3	52.5	51.2
7/2/2021	7:00 AM	8:00 AM	57.7	74.8	51.6	65.4	57.1	55.5	54.7	53.4
7/2/2021	8:00 AM	9:00 AM	55.9	73.0	49.8	63.6	55.3	53.7	52.9	51.6
7/2/2021	9:00 AM	10:00 AM	54.9	72.0	48.8	62.6	54.3	52.7	51.9	50.6
7/2/2021	10:00 AM	11:00 AM	54.8	71.9	48.7	62.5	54.2	52.6	51.8	50.5
7/2/2021	11:00 AM	12:00 PM	55.0	72.1	48.9	62.7	54.4	52.8	52.0	50.7
7/2/2021	12:00 PM	1:00 PM	55.1	72.2	49.0	62.8	54.5	52.9	52.1	50.8
7/2/2021	1:00 PM	2:00 PM	55.1	72.2	49.0	62.8	54.5	52.9	52.1	50.8
7/2/2021	2:00 PM	3:00 PM	55.4	72.5	49.3	63.1	54.8	53.2	52.4	51.1
7/2/2021	3:00 PM	4:00 PM	56.6	73.7	50.5	64.3	56.0	54.4	53.6	52.3
7/2/2021	4:00 PM	5:00 PM	58.1	75.2	52.0	65.8	57.5	55.9	55.1	53.8
7/2/2021	5:00 PM	6:00 PM	57.7	74.8	51.6	65.4	57.1	55.5	54.7	53.4
7/2/2021	6:00 PM	7:00 PM	56.0	73.1	49.9	63.7	55.4	53.8	53.0	51.7
7/2/2021	7:00 PM	8:00 PM	54.7	71.8	48.6	62.4	54.1	52.5	51.7	50.4
7/2/2021	8:00 PM	9:00 PM	53.6	70.7	47.5	61.3	53.0	51.4	50.6	49.3
7/2/2021	9:00 PM	10:00 PM	52.9	70.0	46.8	60.6	52.3	50.7	49.9	48.6
7/2/2021	10:00 PM	11:00 PM	51.9	69.0	45.8	59.6	51.3	49.7	48.9	47.6
7/2/2021	11:00 PM	12:00 AM	51.3	68.4	45.2	59.0	50.7	49.1	48.3	47.0

CNEL 58.5

24-Hour Continuous Noise Measurement Datasheet - Cont.

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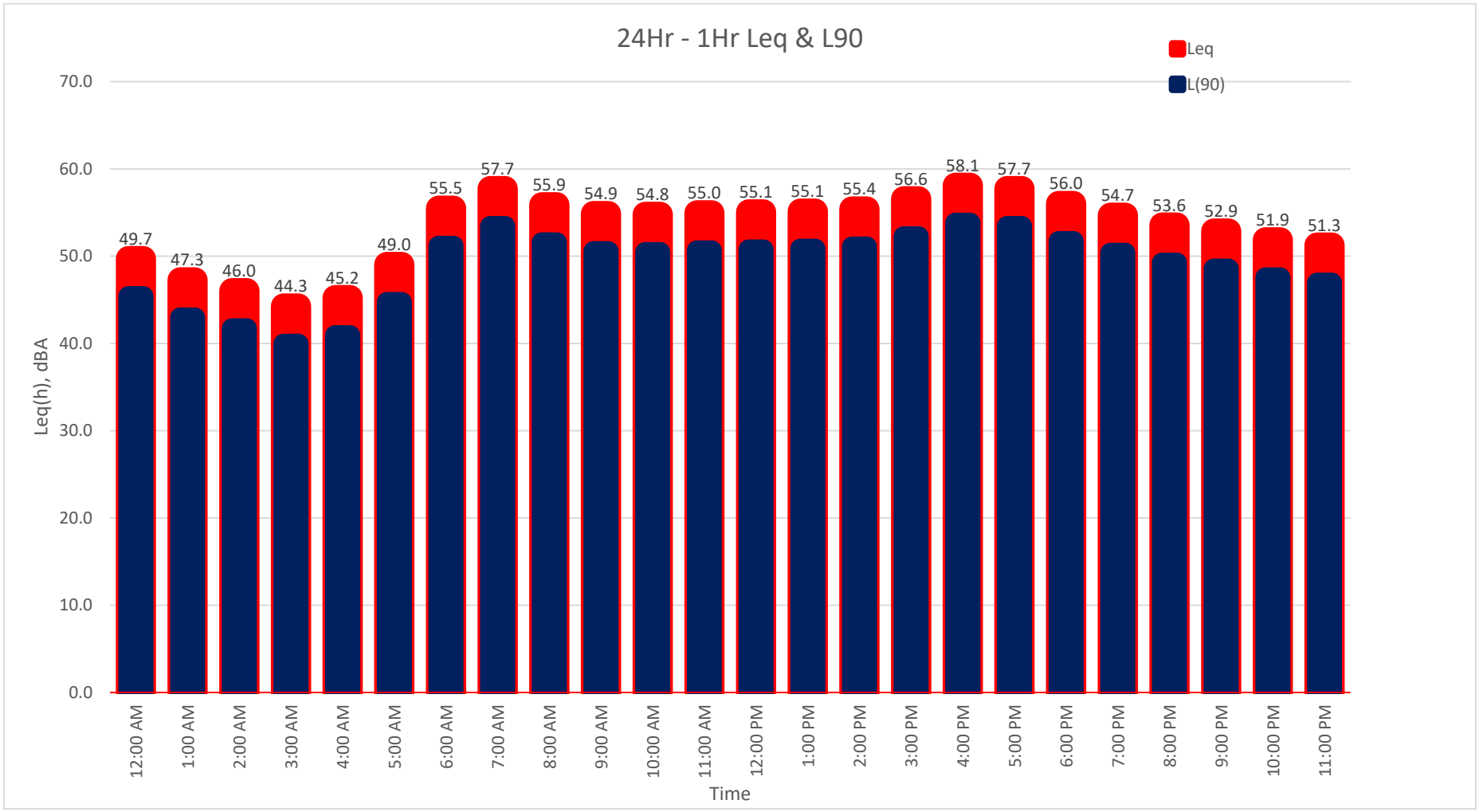
Simi Valley, CA 93065

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-2



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24-Hour Continuous Noise Measurement Datasheet

Project: Shinohara Industrial Project
Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911
Date: 7/1/2021 to 7/2/2021
Field Tech/Engineer: Jason Schuyler

Site Observations: Clear sky, measurements were performed on the site and measured the baseline noise conditions. Winds 3-5MPH, from S.W.

General Location:
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-min, 24-hour duration
Meteorological Con.: Temps in the hi 70's, minimal wind, west-southwest, 5mphs
Site ID: LT-3

Site Topo: Slopes hill
Ground Type: tall grasses & scrub brush

Noise Source(s) w/ Distance:
3- 3' from North limit property line

Figure 1: LT Monitoring Locations

Figure 2: LT-3 Photo

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AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-3

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
7/2/2021	12:00 AM	1:00 AM	48.4	63.7	44.3	53.9	49.7	48.2	47.3	45.7
7/2/2021	1:00 AM	2:00 AM	46.0	61.3	41.9	51.5	47.3	45.8	44.9	43.3
7/2/2021	2:00 AM	3:00 AM	44.8	60.1	40.7	50.3	46.1	44.6	43.7	42.1
7/2/2021	3:00 AM	4:00 AM	43.0	58.3	38.9	48.5	44.3	42.8	41.9	40.3
7/2/2021	4:00 AM	5:00 AM	44.0	59.3	39.9	49.5	45.3	43.8	42.9	41.3
7/2/2021	5:00 AM	6:00 AM	47.8	63.1	43.7	53.3	49.1	47.6	46.7	45.1
7/2/2021	6:00 AM	7:00 AM	54.2	69.5	50.1	59.7	55.5	54.0	53.1	51.5
7/2/2021	7:00 AM	8:00 AM	56.5	71.8	52.4	62.0	57.8	56.3	55.4	53.8
7/2/2021	8:00 AM	9:00 AM	54.6	69.9	50.5	60.1	55.9	54.4	53.5	51.9
7/2/2021	9:00 AM	10:00 AM	53.6	68.9	49.5	59.1	54.9	53.4	52.5	50.9
7/2/2021	10:00 AM	11:00 AM	53.5	68.8	49.4	59.0	54.8	53.3	52.4	50.8
7/2/2021	11:00 AM	12:00 PM	53.7	69.0	49.6	59.2	55.0	53.5	52.6	51.0
7/2/2021	12:00 PM	1:00 PM	53.8	69.1	49.7	59.3	55.1	53.6	52.7	51.1
7/2/2021	1:00 PM	2:00 PM	53.9	69.2	49.8	59.4	55.2	53.7	52.8	51.2
7/2/2021	2:00 PM	3:00 PM	54.1	69.4	50.0	59.6	55.4	53.9	53.0	51.4
7/2/2021	3:00 PM	4:00 PM	55.3	70.6	51.2	60.8	56.6	55.1	54.2	52.6
7/2/2021	4:00 PM	5:00 PM	56.8	72.1	52.7	62.3	58.1	56.6	55.7	54.1
7/2/2021	5:00 PM	6:00 PM	56.5	71.8	52.4	62.0	57.8	56.3	55.4	53.8
7/2/2021	6:00 PM	7:00 PM	54.8	70.1	50.7	60.3	56.1	54.6	53.7	52.1
7/2/2021	7:00 PM	8:00 PM	53.4	68.7	49.3	58.9	54.7	53.2	52.3	50.7
7/2/2021	8:00 PM	9:00 PM	52.3	67.6	48.2	57.8	53.6	52.1	51.2	49.6
7/2/2021	9:00 PM	10:00 PM	51.6	66.9	47.5	57.1	52.9	51.4	50.5	48.9
7/2/2021	10:00 PM	11:00 PM	50.6	65.9	46.5	56.1	51.9	50.4	49.5	47.9
7/2/2021	11:00 PM	12:00 AM	50.0	65.3	45.9	55.5	51.3	49.8	48.9	47.3

CNEL: 57.2

24-Hour Continuous Noise Measurement Datasheet - Cont.

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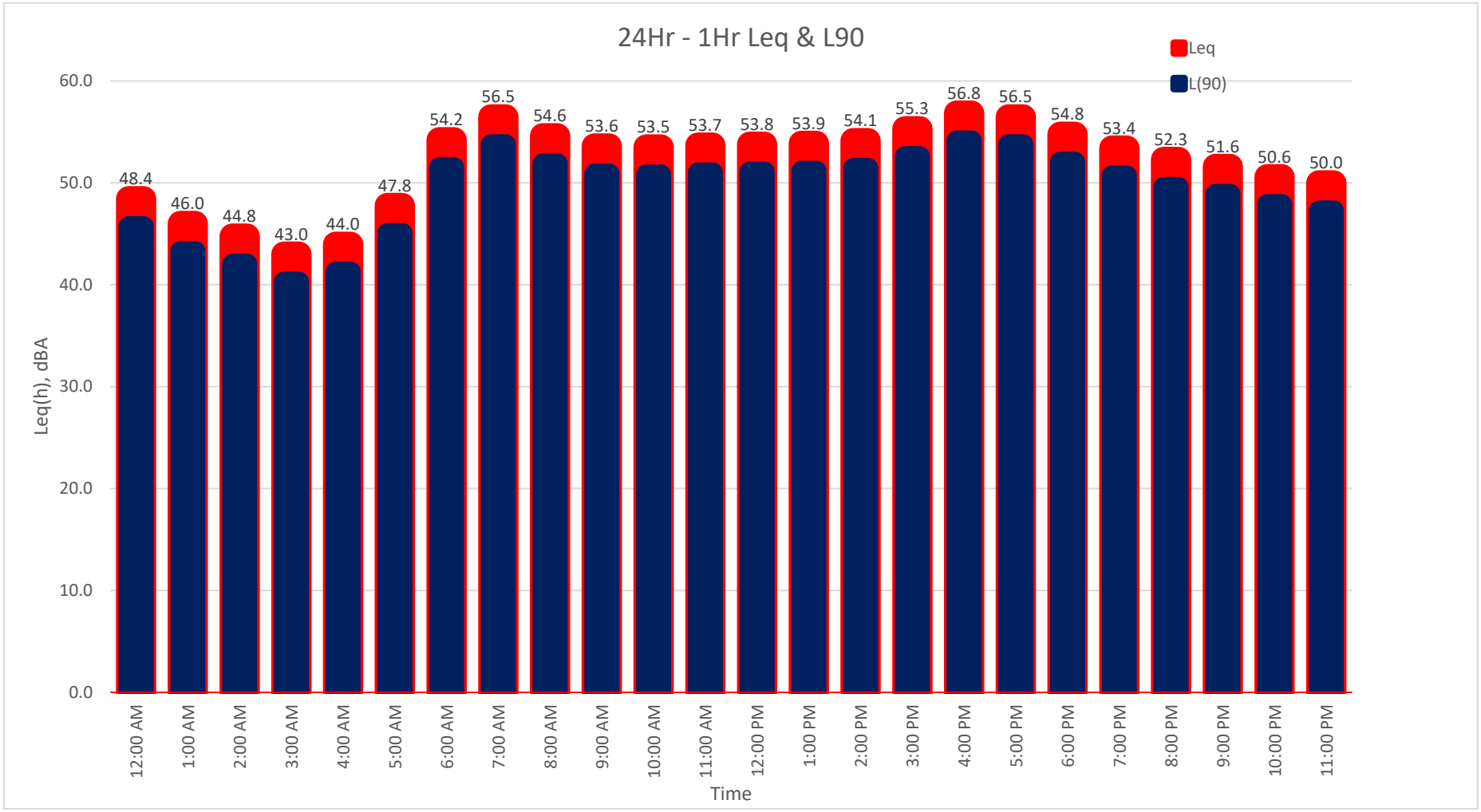
Simi Valley, CA 93065

Project: Shinohara Industrial Project **Day:** 1 of 1

Site Address/Location: 517 Shinohara Lane, Chula Vista, CA 91911

Site ID: LT-3



Appendix B:

Reference Sound Level

MD ACOUSTICS
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Simi Valley, CA 93065
p. (805) 426-4477

Project: N/A
Site Location: MD Acoustics and Labs 170 S. William Dillard Dr. Suite 103
Date: 8/11/2020
Field Tech/Engineer: Shon Baldwin
Source/System: Semi Truck

Site Observations:
Clear sky, 95 degrees, F

Location: Loading dock
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, fast, 1-sec, 30-sec duration
Meteorological Cond.: N/A

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																																
			20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Semi-Truck Idle	Semi-Truck	73.8	16	21	25	30	32	36	41	46	61	50	53	54	57	60	61	62	63	68	63.1	63	63	61	58	57	55	52	48	44	41	36	32

Figure 1: Semi Truck

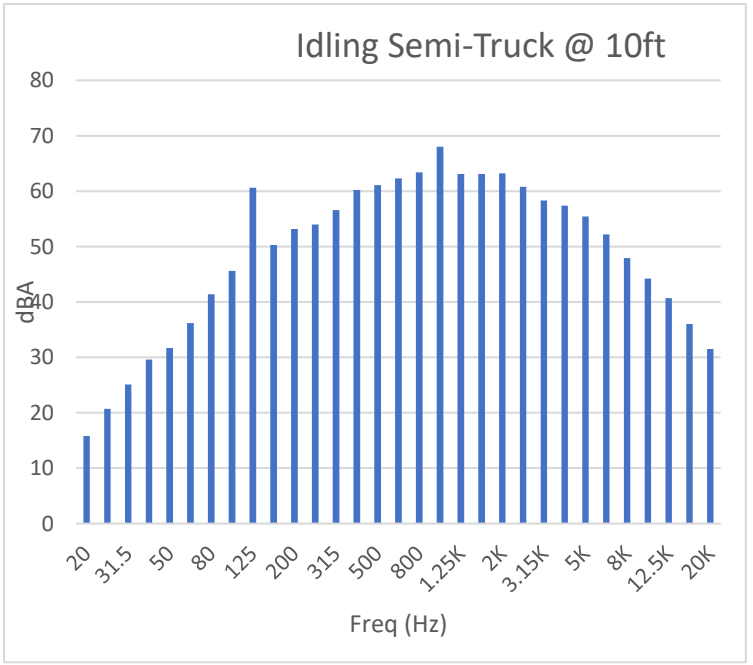

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Table 2: SPL Measurements

Position	Location	Overall dB(A)	3rd Octave Band Data (dBA)																														
			20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
	1	73.8	16	21	25	30	32	36	41	46	61	50	53	54	57	60	61	62	63	68	63.1	63	63	61	58	57	55	52	48	44	41	36	32

Appendix C:

SoundPlan Input/Output

Shinohara Chula Vista Noise
Octave spectra of the sources in dB(A) - 002 - Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
	Line	83.05			40.3	59.5	0.0	0.0		0	20 events per hr	Idiling Semi-Truck 2	12.6	24.0	47.0	43.2	50.2	55.8	53.6	49.6	42.6
	Line	67.36			40.3	58.6	0.0	0.0		0	20 events per hr	Idiling Semi-Truck 2	11.7	23.0	46.1	42.3	49.3	54.9	52.7	48.7	41.7
	Line	68.17			40.3	58.7	0.0	0.0		0	20 events per hr	Idiling Semi-Truck 2	11.8	23.1	46.2	42.4	49.4	54.9	52.7	48.7	41.7
	Line	276.95			40.3	64.7	0.0	0.0		0	20 events per hr	Idiling Semi-Truck 2	17.9	29.2	52.3	48.5	55.5	61.0	58.8	54.8	47.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
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Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
Back Up Alarm	Point				83.4	83.4	0.0	0.0		0	Back up Alarm	Back up Beeper	68.6	63.0	65.0	72.1	70.8	82.4	66.4	59.1	45.8
HVAC North	Point				80.0	80.0	0.0	0.0		0	100%/24h	Carrier 50TFQ0006 - 5 Ton	56.3	62.9	67.9	72.7	74.4	74.2	71.2	66.9	55.1

Shinohara Chula Vista Noise
Octave spectra of the sources in dB(A) - 002 - Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
HVAC South	Point				80.0	80.0	0.0	0.0		0	100%/24h	Carrier 50TFQ0006 - 5 Ton	56.3	62.9	67.9	72.7	74.4	74.2	71.2	66.9	55.1
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 1	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 5	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 5	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 15	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 16	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 19	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Loading Dock 20	Point				91.4	91.4	0.0	0.0		0	Back up Alarm	Idiling Heavy Diesel Truck	60.6	78.3	77.1	83.5	88.1	84.8	79.8	71.8	59.6
Parking 1	PLot	113.77			55.5	76.0	0.0	0.0		0	1 event per hr	Typical spectrum	59.4	71.0	63.5	68.0	68.1	68.5	65.8	59.6	46.8
Parking 2	PLot	160.77			54.9	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 3	PLot	158.63			55.0	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7

Shinohara Chula Vista Noise
Octave spectra of the sources in dB(A) - 002 - Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Parking 4	PLot	152.52			55.2	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 5	PLot	147.32			55.3	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 5	PLot	91.07			53.4	73.0	0.0	0.0		0	1 event per hr	Typical spectrum	56.4	68.0	60.5	65.0	65.1	65.5	62.8	56.6	43.8
Parking 6	PLot	179.11			54.5	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 7	PLot	176.10			54.5	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 8	PLot	114.41			55.4	76.0	0.0	0.0		0	1 event per hr	Typical spectrum	59.4	71.0	63.5	68.0	68.1	68.5	65.8	59.6	46.8
Parking 9	PLot	165.93			54.8	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 10	PLot	165.29			54.8	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 11	PLot	161.72			54.9	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 12	PLot	156.60			55.1	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 13	PLot	167.14			54.8	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 14	PLot	163.99			54.9	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 15	PLot	168.77			54.3	76.5	0.0	0.0		0	1 event per hr	Typical spectrum	59.9	71.5	64.0	68.5	68.6	69.0	66.3	60.1	47.3
Parking 15	PLot	59.12			55.3	73.0	0.0	0.0		0	1 event per hr	Typical spectrum	56.4	68.0	60.5	65.0	65.1	65.5	62.8	56.6	43.8
Parking 19	PLot	107.99			55.1	75.5	0.0	0.0		0	1 event per hr	Typical spectrum	58.8	70.4	62.9	67.4	67.5	67.9	65.2	59.0	46.2
Parking 20	PLot	154.65			55.1	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 21	PLot	154.59			55.1	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 22	PLot	151.56			55.2	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7
Parking 23	PLot	146.58			55.3	77.0	0.0	0.0		0	1 event per hr	Typical spectrum	60.3	71.9	64.4	68.9	69.0	69.4	66.7	60.5	47.7

Shinohara Chula Vista Noise
Contribution level - 002 - Outdoor SP

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Receiver Receiver 1 Fl G dB(A) Leq,d 30.4 dB(A)						
Parking 3	Default parking lot noise	PLot		25.2	0.0	
Parking 2	Default parking lot noise	PLot		24.8	0.0	
Parking 7	Default parking lot noise	PLot		19.9	0.0	
Parking 1	Default parking lot noise	PLot		19.2	0.0	
Parking 4	Default parking lot noise	PLot		18.8	0.0	
Parking 6	Default parking lot noise	PLot		17.7	0.0	
Parking 8	Default parking lot noise	PLot		16.4	0.0	
Parking 5	Default parking lot noise	PLot		10.2	0.0	
Parking 9	Default parking lot noise	PLot		9.3	0.0	
HVAC South	Default industrial noise	Point		8.1	0.0	
Parking 5	Default parking lot noise	PLot		7.5	0.0	
Loading Dock 5	Default industrial noise	Point		5.7	0.0	
Loading Dock 5	Default industrial noise	Point		5.7	0.0	
Loading Dock	Default industrial noise	Point		5.4	0.0	
Loading Dock	Default industrial noise	Point		5.0	0.0	
Loading Dock	Default industrial noise	Point		4.7	0.0	
Loading Dock 20	Default industrial noise	Point		4.2	0.0	
Parking 10	Default parking lot noise	PLot		4.2	0.0	
Loading Dock	Default industrial noise	Point		3.9	0.0	
Loading Dock	Default industrial noise	Point		3.7	0.0	
Loading Dock	Default industrial noise	Point		3.4	0.0	
Loading Dock	Default industrial noise	Point		3.1	0.0	
Loading Dock	Default industrial noise	Point		2.8	0.0	
Loading Dock 16	Default industrial noise	Point		2.7	0.0	
Loading Dock	Default industrial noise	Point		2.3	0.0	
Loading Dock	Default industrial noise	Point		1.8	0.0	
Loading Dock 19	Default industrial noise	Point		1.6	0.0	
Loading Dock	Default industrial noise	Point		1.3	0.0	
Loading Dock	Default industrial noise	Point		1.1	0.0	
Parking 11	Default parking lot noise	PLot		1.0	0.0	
Loading Dock	Default industrial noise	Point		0.9	0.0	
Loading Dock	Default industrial noise	Point		0.7	0.0	
Loading Dock	Default industrial noise	Point		0.4	0.0	
Loading Dock 15	Default industrial noise	Point		0.2	0.0	
Parking 12	Default parking lot noise	PLot		-0.4	0.0	
Loading Dock	Default industrial noise	Point		-0.4	0.0	
Loading Dock	Default industrial noise	Point		-0.6	0.0	
Loading Dock	Default industrial noise	Point		-0.8	0.0	
Loading Dock	Default industrial noise	Point		-1.0	0.0	
Loading Dock 1	Default industrial noise	Point		-1.2	0.0	
Back Up Alarm	Default industrial noise	Point		-1.7	0.0	
Parking 13	Default parking lot noise	PLot		-2.0	0.0	
Back Up Alarm	Default industrial noise	Point		-2.0	0.0	
25	Default industrial noise	Line		-2.3	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Back Up Alarm	Default industrial noise	Point		-2.3	0.0	
Back Up Alarm	Default industrial noise	Point		-2.6	0.0	
Back Up Alarm	Default industrial noise	Point		-3.0	0.0	
Parking 14	Default parking lot noise	PLot		-3.0	0.0	
Back Up Alarm	Default industrial noise	Point		-3.3	0.0	
Back Up Alarm	Default industrial noise	Point		-3.5	0.0	
HVAC North	Default industrial noise	Point		-3.6	0.0	
Back Up Alarm	Default industrial noise	Point		-3.7	0.0	
Back Up Alarm	Default industrial noise	Point		-4.1	0.0	
Back Up Alarm	Default industrial noise	Point		-4.3	0.0	
Back Up Alarm	Default industrial noise	Point		-4.5	0.0	
Back Up Alarm	Default industrial noise	Point		-4.8	0.0	
Parking 15	Default parking lot noise	PLot		-5.2	0.0	
Back Up Alarm	Default industrial noise	Point		-5.3	0.0	
Back Up Alarm	Default industrial noise	Point		-5.5	0.0	
Parking 22	Default parking lot noise	PLot		-5.7	0.0	
Parking 23	Default parking lot noise	PLot		-5.8	0.0	
Back Up Alarm	Default industrial noise	Point		-5.8	0.0	
Parking 20	Default parking lot noise	PLot		-5.9	0.0	
Parking 21	Default parking lot noise	PLot		-6.0	0.0	
Back Up Alarm	Default industrial noise	Point		-6.0	0.0	
Back Up Alarm	Default industrial noise	Point		-6.2	0.0	
Back Up Alarm	Default industrial noise	Point		-6.4	0.0	
Back Up Alarm	Default industrial noise	Point		-6.7	0.0	
Back Up Alarm	Default industrial noise	Point		-6.9	0.0	
28	Default industrial noise	Line		-7.3	0.0	
Parking 19	Default parking lot noise	PLot		-7.5	0.0	
Back Up Alarm	Default industrial noise	Point		-7.5	0.0	
Back Up Alarm	Default industrial noise	Point		-7.7	0.0	
Back Up Alarm	Default industrial noise	Point		-7.9	0.0	
Back Up Alarm	Default industrial noise	Point		-8.1	0.0	
Back Up Alarm	Default industrial noise	Point		-8.3	0.0	
Parking 15	Default parking lot noise	PLot		-9.0	0.0	
27	Default industrial noise	Line		-9.4	0.0	
26	Default industrial noise	Line		-10.7	0.0	
Receiver Receiver 2 Fl G dB(A) Leq,d 33.0 dB(A)						
Parking 9	Default parking lot noise	PLot		28.0	0.0	
Parking 10	Default parking lot noise	PLot		27.8	0.0	
Parking 11	Default parking lot noise	PLot		23.6	0.0	
Parking 1	Default parking lot noise	PLot		20.3	0.0	
Parking 12	Default parking lot noise	PLot		19.2	0.0	
Parking 6	Default parking lot noise	PLot		18.9	0.0	
Parking 2	Default parking lot noise	PLot		16.6	0.0	
Parking 13	Default parking lot noise	PLot		15.0	0.0	
Parking 14	Default parking lot noise	PLot		11.5	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Parking 7	Default parking lot noise	PLot		10.8	0.0	
Parking 3	Default parking lot noise	PLot		10.1	0.0	
Parking 4	Default parking lot noise	PLot		7.6	0.0	
Parking 8	Default parking lot noise	PLot		7.3	0.0	
Parking 19	Default parking lot noise	PLot		6.4	0.0	
HVAC South	Default industrial noise	Point		6.3	0.0	
Parking 15	Default parking lot noise	PLot		6.0	0.0	
Loading Dock 5	Default industrial noise	Point		5.6	0.0	
Loading Dock 5	Default industrial noise	Point		5.6	0.0	
Loading Dock	Default industrial noise	Point		5.6	0.0	
Loading Dock	Default industrial noise	Point		5.5	0.0	
Loading Dock	Default industrial noise	Point		5.5	0.0	
Loading Dock 20	Default industrial noise	Point		5.5	0.0	
Loading Dock	Default industrial noise	Point		5.4	0.0	
Loading Dock	Default industrial noise	Point		5.4	0.0	
Loading Dock	Default industrial noise	Point		5.3	0.0	
Loading Dock	Default industrial noise	Point		5.1	0.0	
Loading Dock	Default industrial noise	Point		5.0	0.0	
Loading Dock 16	Default industrial noise	Point		4.9	0.0	
Loading Dock	Default industrial noise	Point		4.8	0.0	
Loading Dock	Default industrial noise	Point		4.7	0.0	
Loading Dock 19	Default industrial noise	Point		4.6	0.0	
Parking 5	Default parking lot noise	PLot		4.5	0.0	
Loading Dock	Default industrial noise	Point		4.5	0.0	
Loading Dock	Default industrial noise	Point		4.4	0.0	
HVAC North	Default industrial noise	Point		4.3	0.0	
Loading Dock	Default industrial noise	Point		4.3	0.0	
Loading Dock 15	Default industrial noise	Point		4.2	0.0	
Loading Dock	Default industrial noise	Point		4.2	0.0	
Loading Dock	Default industrial noise	Point		4.1	0.0	
Loading Dock	Default industrial noise	Point		4.0	0.0	
Loading Dock	Default industrial noise	Point		3.9	0.0	
Loading Dock	Default industrial noise	Point		3.8	0.0	
Loading Dock 1	Default industrial noise	Point		3.7	0.0	
Loading Dock	Default industrial noise	Point		3.4	0.0	
Parking 20	Default parking lot noise	PLot		3.3	0.0	
Parking 5	Default parking lot noise	PLot		2.7	0.0	
Parking 23	Default parking lot noise	PLot		2.4	0.0	
Parking 15	Default parking lot noise	PLot		2.1	0.0	
Parking 21	Default parking lot noise	PLot		2.0	0.0	
Parking 22	Default parking lot noise	PLot		1.3	0.0	
Back Up Alarm	Default industrial noise	Point		-0.8	0.0	
Back Up Alarm	Default industrial noise	Point		-0.9	0.0	
Back Up Alarm	Default industrial noise	Point		-0.9	0.0	
Back Up Alarm	Default industrial noise	Point		-0.9	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Back Up Alarm	Default industrial noise	Point		-0.9	0.0	
Back Up Alarm	Default industrial noise	Point		-1.0	0.0	
Back Up Alarm	Default industrial noise	Point		-1.0	0.0	
Back Up Alarm	Default industrial noise	Point		-1.2	0.0	
Back Up Alarm	Default industrial noise	Point		-1.3	0.0	
Back Up Alarm	Default industrial noise	Point		-1.4	0.0	
Back Up Alarm	Default industrial noise	Point		-1.5	0.0	
Back Up Alarm	Default industrial noise	Point		-1.6	0.0	
Back Up Alarm	Default industrial noise	Point		-1.7	0.0	
Back Up Alarm	Default industrial noise	Point		-1.8	0.0	
Back Up Alarm	Default industrial noise	Point		-1.9	0.0	
Back Up Alarm	Default industrial noise	Point		-1.9	0.0	
25	Default industrial noise	Line		-1.9	0.0	
Back Up Alarm	Default industrial noise	Point		-2.0	0.0	
Back Up Alarm	Default industrial noise	Point		-2.6	0.0	
Back Up Alarm	Default industrial noise	Point		-2.7	0.0	
Back Up Alarm	Default industrial noise	Point		-2.7	0.0	
Back Up Alarm	Default industrial noise	Point		-2.7	0.0	
Back Up Alarm	Default industrial noise	Point		-2.8	0.0	
Back Up Alarm	Default industrial noise	Point		-2.8	0.0	
Back Up Alarm	Default industrial noise	Point		-2.9	0.0	
Back Up Alarm	Default industrial noise	Point		-3.4	0.0	
28	Default industrial noise	Line		-6.9	0.0	
26	Default industrial noise	Line		-7.5	0.0	
27	Default industrial noise	Line		-7.7	0.0	
Receiver Receiver 3 Fl G dB(A) Leq,d 40.8 dB(A)						
Loading Dock 1	Default industrial noise	Point		26.9	0.0	
Loading Dock	Default industrial noise	Point		26.8	0.0	
Loading Dock	Default industrial noise	Point		26.8	0.0	
Loading Dock	Default industrial noise	Point		26.5	0.0	
HVAC North	Default industrial noise	Point		26.4	0.0	
Loading Dock	Default industrial noise	Point		26.2	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock 20	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock 5	Default industrial noise	Point		25.5	0.0	
Loading Dock 5	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock	Default industrial noise	Point		25.5	0.0	
Loading Dock 15	Default industrial noise	Point		25.4	0.0	
Loading Dock	Default industrial noise	Point		25.2	0.0	
Loading Dock	Default industrial noise	Point		25.0	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Loading Dock	Default industrial noise	Point		24.8	0.0	
Loading Dock	Default industrial noise	Point		24.7	0.0	
Loading Dock	Default industrial noise	Point		24.6	0.0	
Loading Dock 19	Default industrial noise	Point		24.5	0.0	
Loading Dock	Default industrial noise	Point		24.4	0.0	
Loading Dock	Default industrial noise	Point		24.3	0.0	
Loading Dock 16	Default industrial noise	Point		24.2	0.0	
Loading Dock	Default industrial noise	Point		24.2	0.0	
HVAC South	Default industrial noise	Point		21.9	0.0	
Parking 15	Default parking lot noise	PLot		21.7	0.0	
Back Up Alarm	Default industrial noise	Point		19.6	0.0	
Back Up Alarm	Default industrial noise	Point		19.3	0.0	
Back Up Alarm	Default industrial noise	Point		19.1	0.0	
Back Up Alarm	Default industrial noise	Point		19.1	0.0	
Back Up Alarm	Default industrial noise	Point		18.8	0.0	
Parking 5	Default parking lot noise	PLot		18.2	0.0	
Back Up Alarm	Default industrial noise	Point		18.2	0.0	
Back Up Alarm	Default industrial noise	Point		18.1	0.0	
Back Up Alarm	Default industrial noise	Point		18.0	0.0	
Back Up Alarm	Default industrial noise	Point		18.0	0.0	
Back Up Alarm	Default industrial noise	Point		17.9	0.0	
Back Up Alarm	Default industrial noise	Point		17.9	0.0	
Parking 22	Default parking lot noise	PLot		17.9	0.0	
Back Up Alarm	Default industrial noise	Point		17.8	0.0	
Back Up Alarm	Default industrial noise	Point		17.8	0.0	
Back Up Alarm	Default industrial noise	Point		17.8	0.0	
Back Up Alarm	Default industrial noise	Point		17.7	0.0	
Back Up Alarm	Default industrial noise	Point		17.7	0.0	
Back Up Alarm	Default industrial noise	Point		17.7	0.0	
Back Up Alarm	Default industrial noise	Point		17.5	0.0	
Parking 21	Default parking lot noise	PLot		17.5	0.0	
Back Up Alarm	Default industrial noise	Point		17.4	0.0	
Back Up Alarm	Default industrial noise	Point		17.3	0.0	
Back Up Alarm	Default industrial noise	Point		17.1	0.0	
Back Up Alarm	Default industrial noise	Point		17.0	0.0	
Back Up Alarm	Default industrial noise	Point		16.9	0.0	
Back Up Alarm	Default industrial noise	Point		16.8	0.0	
Back Up Alarm	Default industrial noise	Point		16.6	0.0	
Parking 20	Default parking lot noise	PLot		15.5	0.0	
26	Default industrial noise	Line		15.5	0.0	
Parking 13	Default parking lot noise	PLot		15.4	0.0	
Parking 14	Default parking lot noise	PLot		15.3	0.0	
25	Default industrial noise	Line		14.9	0.0	
27	Default industrial noise	Line		14.9	0.0	
28	Default industrial noise	Line		14.7	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Parking 12	Default parking lot noise	PLot		14.5	0.0	
Parking 23	Default parking lot noise	PLot		14.4	0.0	
Parking 11	Default parking lot noise	PLot		13.8	0.0	
Parking 10	Default parking lot noise	PLot		13.3	0.0	
Parking 9	Default parking lot noise	PLot		12.5	0.0	
Parking 4	Default parking lot noise	PLot		12.0	0.0	
Parking 19	Default parking lot noise	PLot		11.7	0.0	
Parking 3	Default parking lot noise	PLot		11.7	0.0	
Parking 2	Default parking lot noise	PLot		11.6	0.0	
Parking 1	Default parking lot noise	PLot		11.0	0.0	
Parking 15	Default parking lot noise	PLot		9.6	0.0	
Parking 7	Default parking lot noise	PLot		7.7	0.0	
Parking 6	Default parking lot noise	PLot		7.6	0.0	
Parking 8	Default parking lot noise	PLot		6.8	0.0	
Parking 5	Default parking lot noise	PLot		4.6	0.0	
Receiver Receiver 4 Fl G dB(A) Leq,d 37.7 dB(A)						
Loading Dock	Default industrial noise	Point		24.4	0.0	
Loading Dock 15	Default industrial noise	Point		24.1	0.0	
Loading Dock	Default industrial noise	Point		24.0	0.0	
Loading Dock	Default industrial noise	Point		23.8	0.0	
Loading Dock	Default industrial noise	Point		23.6	0.0	
Loading Dock	Default industrial noise	Point		23.4	0.0	
Loading Dock	Default industrial noise	Point		23.3	0.0	
Loading Dock	Default industrial noise	Point		23.2	0.0	
Loading Dock	Default industrial noise	Point		23.2	0.0	
Loading Dock	Default industrial noise	Point		23.1	0.0	
Loading Dock 19	Default industrial noise	Point		23.0	0.0	
Loading Dock	Default industrial noise	Point		22.8	0.0	
Loading Dock	Default industrial noise	Point		22.3	0.0	
Loading Dock 16	Default industrial noise	Point		22.0	0.0	
Loading Dock 1	Default industrial noise	Point		22.0	0.0	
Loading Dock	Default industrial noise	Point		21.9	0.0	
Loading Dock	Default industrial noise	Point		21.6	0.0	
HVAC North	Default industrial noise	Point		21.4	0.0	
Loading Dock	Default industrial noise	Point		21.3	0.0	
Loading Dock	Default industrial noise	Point		21.2	0.0	
Loading Dock	Default industrial noise	Point		21.0	0.0	
Loading Dock 20	Default industrial noise	Point		20.8	0.0	
HVAC South	Default industrial noise	Point		20.7	0.0	
Loading Dock	Default industrial noise	Point		20.5	0.0	
Loading Dock	Default industrial noise	Point		20.3	0.0	
Loading Dock	Default industrial noise	Point		20.1	0.0	
Loading Dock 5	Default industrial noise	Point		20.0	0.0	
Loading Dock 5	Default industrial noise	Point		20.0	0.0	
Parking 15	Default parking lot noise	PLot		18.9	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Back Up Alarm	Default industrial noise	Point		16.5	0.0	
Back Up Alarm	Default industrial noise	Point		16.5	0.0	
Back Up Alarm	Default industrial noise	Point		16.4	0.0	
Back Up Alarm	Default industrial noise	Point		16.3	0.0	
Parking 5	Default parking lot noise	PLot		16.2	0.0	
Back Up Alarm	Default industrial noise	Point		16.2	0.0	
Back Up Alarm	Default industrial noise	Point		16.0	0.0	
Back Up Alarm	Default industrial noise	Point		15.8	0.0	
Back Up Alarm	Default industrial noise	Point		15.6	0.0	
Back Up Alarm	Default industrial noise	Point		15.4	0.0	
Back Up Alarm	Default industrial noise	Point		14.9	0.0	
Back Up Alarm	Default industrial noise	Point		14.6	0.0	
Back Up Alarm	Default industrial noise	Point		14.5	0.0	
Back Up Alarm	Default industrial noise	Point		14.4	0.0	
Back Up Alarm	Default industrial noise	Point		14.4	0.0	
Parking 23	Default parking lot noise	PLot		14.3	0.0	
Back Up Alarm	Default industrial noise	Point		14.2	0.0	
Back Up Alarm	Default industrial noise	Point		14.1	0.0	
Back Up Alarm	Default industrial noise	Point		13.9	0.0	
Back Up Alarm	Default industrial noise	Point		13.7	0.0	
Parking 22	Default parking lot noise	PLot		13.6	0.0	
Back Up Alarm	Default industrial noise	Point		13.6	0.0	
Back Up Alarm	Default industrial noise	Point		13.4	0.0	
Back Up Alarm	Default industrial noise	Point		13.3	0.0	
Back Up Alarm	Default industrial noise	Point		13.1	0.0	
Back Up Alarm	Default industrial noise	Point		12.9	0.0	
25	Default industrial noise	Line		12.9	0.0	
Parking 21	Default parking lot noise	PLot		12.8	0.0	
Back Up Alarm	Default industrial noise	Point		12.7	0.0	
Back Up Alarm	Default industrial noise	Point		12.6	0.0	
26	Default industrial noise	Line		12.5	0.0	
Parking 4	Default parking lot noise	PLot		12.4	0.0	
27	Default industrial noise	Line		12.4	0.0	
Parking 11	Default parking lot noise	PLot		11.8	0.0	
Parking 12	Default parking lot noise	PLot		11.7	0.0	
Parking 3	Default parking lot noise	PLot		11.3	0.0	
Parking 14	Default parking lot noise	PLot		11.3	0.0	
Parking 10	Default parking lot noise	PLot		11.2	0.0	
Parking 2	Default parking lot noise	PLot		11.1	0.0	
28	Default industrial noise	Line		11.1	0.0	
Parking 20	Default parking lot noise	PLot		11.0	0.0	
Parking 9	Default parking lot noise	PLot		10.7	0.0	
Parking 1	Default parking lot noise	PLot		10.2	0.0	
Parking 13	Default parking lot noise	PLot		9.4	0.0	
Parking 7	Default parking lot noise	PLot		7.2	0.0	

Source	Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Parking 6	Default parking lot noise	PLot		7.1	0.0	
Parking 8	Default parking lot noise	PLot		6.4	0.0	
Parking 15	Default parking lot noise	PLot		6.1	0.0	
Parking 5	Default parking lot noise	PLot		5.4	0.0	
Parking 19	Default parking lot noise	PLot		4.9	0.0	

Appendix D:

Traffic Noise Modeling Output

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	Shinohara Industrial Project	JOB #:	0623-2021-09
ROADWAY:	Shinohara to Main	DATE:	18-May-22
LOCATION:	FACADE	ENGINEER:	F. Irarrazabal

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,500	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIS	0	
ROAD ELEVATION =	0.0	
GRADE =	1.0	%
PK HR VOL =	750	

RECEIVER INPUT DATA

RECEIVER DISTANCE =	50	
DIST C/L TO WALL =	0	
RECEIVER HEIGHT =	5.0	
WALL DISTANCE FROM RECEIVER	50	
PAD ELEVATION =	0.5	
ROADWAY VIEW: LF ANGLE=	-90	
RT ANGLE=	90	
DF ANGLE=	180	

SITE CONDITIONS

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

WALL INFORMATION

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

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCK	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	50.12	- -
MEDIUM TRUCKS	4.0	50.02	- -
HEAVY TRUCKS	8.0	50.06	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.9	61.0	59.3	53.2	61.8	62.4
MEDIUM TRUCKS	55.4	53.9	47.5	46.0	54.5	54.7
HEAVY TRUCKS	56.7	55.2	46.2	47.5	55.8	55.9
NOISE LEVELS (dBA)	64.4	62.7	59.7	54.8	63.4	63.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.9	61.0	59.3	53.2	61.8	62.4
MEDIUM TRUCKS	55.4	53.9	47.5	46.0	54.5	54.7
HEAVY TRUCKS	56.7	55.2	46.2	47.5	55.8	55.9
NOISE LEVELS (dBA)	64.4	62.7	59.7	54.8	63.4	63.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	12	39	122	385
LDN	11	35	109	345

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	Shinohara Industrial Project, Warehousing Model	JOB #:	0623-2021-09
ROADWAY:	Shinohara to Main	DATE:	18-May-22
LOCATION:	FACADE	ENGINEER:	F. Irarrazabal

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,500	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIS	0	
ROAD ELEVATION =	0.0	
GRADE =	1.0	%
PK HR VOL =	850	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		50
PAD ELEVATION =		0.5
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

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

WALL INFORMATION

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

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCK	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	50.12	- -
MEDIUM TRUCKS	4.0	50.02	- -
HEAVY TRUCKS	8.0	50.06	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.5	61.6	59.8	53.7	62.4	63.0
MEDIUM TRUCKS	56.0	54.4	48.1	46.5	55.0	55.2
HEAVY TRUCKS	57.2	55.8	46.8	48.0	56.4	56.5
NOISE LEVELS (dBA)	65.0	63.2	60.3	55.4	63.9	64.4

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.5	61.6	59.8	53.7	62.4	63.0
MEDIUM TRUCKS	56.0	54.4	48.1	46.5	55.0	55.2
HEAVY TRUCKS	57.2	55.8	46.8	48.0	56.4	56.5
NOISE LEVELS (dBA)	65.0	63.2	60.3	55.4	63.9	64.4

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	14	44	138	437
LDN	12	39	124	391

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	Shinohara Industrial Project, Distribution Model	JOB #:	0623-2021-09
ROADWAY:	Shinohara to Main	DATE:	18-May-22
LOCATION:	FACADE	ENGINEER:	F. Irarrazabal

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,500	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIS	0	
ROAD ELEVATION =	0.0	
GRADE =	1.0	%
PK HR VOL =	1,250	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		50
PAD ELEVATION =		0.5
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

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

WALL INFORMATION

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

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.9742
MEDIUM TRUCK	0.848	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0.027	0.108	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	50.12	- -
MEDIUM TRUCKS	4.0	50.02	- -
HEAVY TRUCKS	8.0	50.06	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.1	63.2	61.5	55.4	64.0	64.6
MEDIUM TRUCKS	57.6	56.1	49.8	48.2	56.7	56.9
HEAVY TRUCKS	58.9	57.5	48.4	49.7	58.0	58.2
NOISE LEVELS (dBA)	66.6	64.9	62.0	57.1	65.6	66.1

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.1	63.2	61.5	55.4	64.0	64.6
MEDIUM TRUCKS	57.6	56.1	49.8	48.2	56.7	56.9
HEAVY TRUCKS	58.9	57.5	48.4	49.7	58.0	58.2
NOISE LEVELS (dBA)	66.6	64.9	62.0	57.1	65.6	66.1

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	20	64	203	642
LDN	18	58	182	575

Appendix E:

Construction Noise Modeling Output

Activity	L_{eq} at 293 feet dBA	L_{Max} at 293 feet dBA
Grading	68	69
Building Construction	63	65
Paving	65	68

Equipment Summary	Reference (dBA) 50 ft Lmax
Rock Drills	96
Jack Hammers	82
Pneumatic Tools	85
Pavers	80
Dozers	85
Scrappers	87
Haul Trucks	88
Cranes	82
Portable Generators	80
Rollers	80
Tractors	80
Front-End Loaders	86
Hydraulic Excavators	86
Graders	86
Air Compressors	86
Trucks	86

Grading

Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Grader	86	1	40	293	0.5	0	66.8	62.8	1915649.06
2	Dozer	85	1	40	293	0.5	0	65.8	61.8	1521654.14
3	Excavator	86	1	40	293	0.5	0	66.8	62.8	1915649.06
4	Tractor/Backhoe	80	1	40	293	0.5	0	60.8	56.8	481189.289
							Lmax*	**69**	**Leq**	**68**
							Lw	**101**	**Lw**	**99**

Source: MD Acoustics, July 2018.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**68**	**67**	**66**	**65**	**64**	**63**	**62**	**61**	**60**	**59**	**58**	**57**	**56**	**55**	**54**	**53**
60	18.3	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
70	21.3	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
80	24.4	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
90	27.4	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
100	30.5	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
110	33.5	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
120	36.6	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
130	39.6	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
140	42.7	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
150	45.7	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
160	48.8	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
170	51.8	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
180	54.9	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
190	57.9	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
200	61.0	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
210	64.0	0.5	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
220	67.1	0.5	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
230	70.1	0.5	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
240	73.1	0.5	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
250	76.2	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
260	79.2	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
270	82.3	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
280	85.3	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
290	88.4	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
300	91.4	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
310	94.5	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
320	97.5	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
330	100.6	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
340	103.6	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
350	106.7	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
360	109.7	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
370	112.8	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31

Building Construction

Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Cranes	82	1	40	293	0.5	0	62.8	58.8	762633.628
2	Forklift/Tractor	80	1	40	293	0.5	0	60.8	56.8	481189.289
3	Generator	80	1	40	293	0.5	0	60.8	56.8	481189.289
4	Tractor/Backhoe	80	1	40	293	0.5	0	60.8	56.8	481189.289
							Lmax*	**65**	**Leq**	**63**
							Lw	**97**	**Lw**	**95**

Source: MD Acoustics, July 2018.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**63**	**62**	**61**	**60**	**59**	**58**	**57**	**56**	**55**	**54**	**53**	**52**	**51**	**50**	**49**	**48**
60	18.3	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
70	21.3	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
80	24.4	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
90	27.4	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
100	30.5	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
110	33.5	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
120	36.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
130	39.6	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
140	42.7	0.5	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
150	45.7	0.5	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
160	48.8	0.5	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
170	51.8	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
180	54.9	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
190	57.9	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
200	61.0	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
210	64.0	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
220	67.1	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
230	70.1	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
240	73.1	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
250	76.2	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
260	79.2	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
270	82.3	0.5	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
280	85.3	0.5	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
290	88.4	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
300	91.4	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
310	94.5	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
320	97.5	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
330	100.6	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
340	103.6	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
350	106.7	0.5	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27
360	109.7	0.5	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27
370	112.8	0.5	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27

Paving

Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Pavers	86	1	40	293	0.5	0	66.8	62.8	1915649.06
2	Rollers	80	1	40	293	0.5	0	60.8	56.8	481189.289
3	Paving Equipment	80	1	40	293	0.5	0	60.8	56.8	481189.289
							Lmax*	**68**	**Leq**	**65**
							Lw	**99**	**Lw**	**96**

Source: MD Acoustics, July 2018.
1- Percentage of time that a piece of equipment is operating at full power.
dBA – A-weighted Decibels
Lmax- Maximum Level
Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**65**	**64**	**63**	**62**	**61**	**60**	**59**	**58**	**57**	**56**	**55**	**54**	**53**	**52**	**51**	**50**
60	18.3	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
70	21.3	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
80	24.4	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
90	27.4	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
100	30.5	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
110	33.5	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
120	36.6	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
130	39.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
140	42.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
150	45.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
160	48.8	0.5	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
170	51.8	0.5	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
180	54.9	0.5	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
190	57.9	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
200	61.0	0.5	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
210	64.0	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
220	67.1	0.5	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
230	70.1	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
240	73.1	0.5	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
250	76.2	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
260	79.2	0.5	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
270	82.3	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
280	85.3	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
290	88.4	0.5	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
300	91.4	0.5	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
310	94.5	0.5	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
320	97.5	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
330	100.6	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
340	103.6	0.5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
350	106.7	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
360	109.7	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
370	112.8	0.5	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28

VIBRATION LEVEL IMPACT

Project:	517 Shinohara Lane Chula Vista	Date: 5/17/22
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Project Site	
Address:		

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	30.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.073**	IN/SEC	OUTPUT IN RED

VIBRATION LEVEL IMPACT

Project:	517 Shinohara Lane Chula Vista	Date: 7/30/21
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Project Site	
Address:		

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	293.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.006**	IN/SEC	OUTPUT IN RED

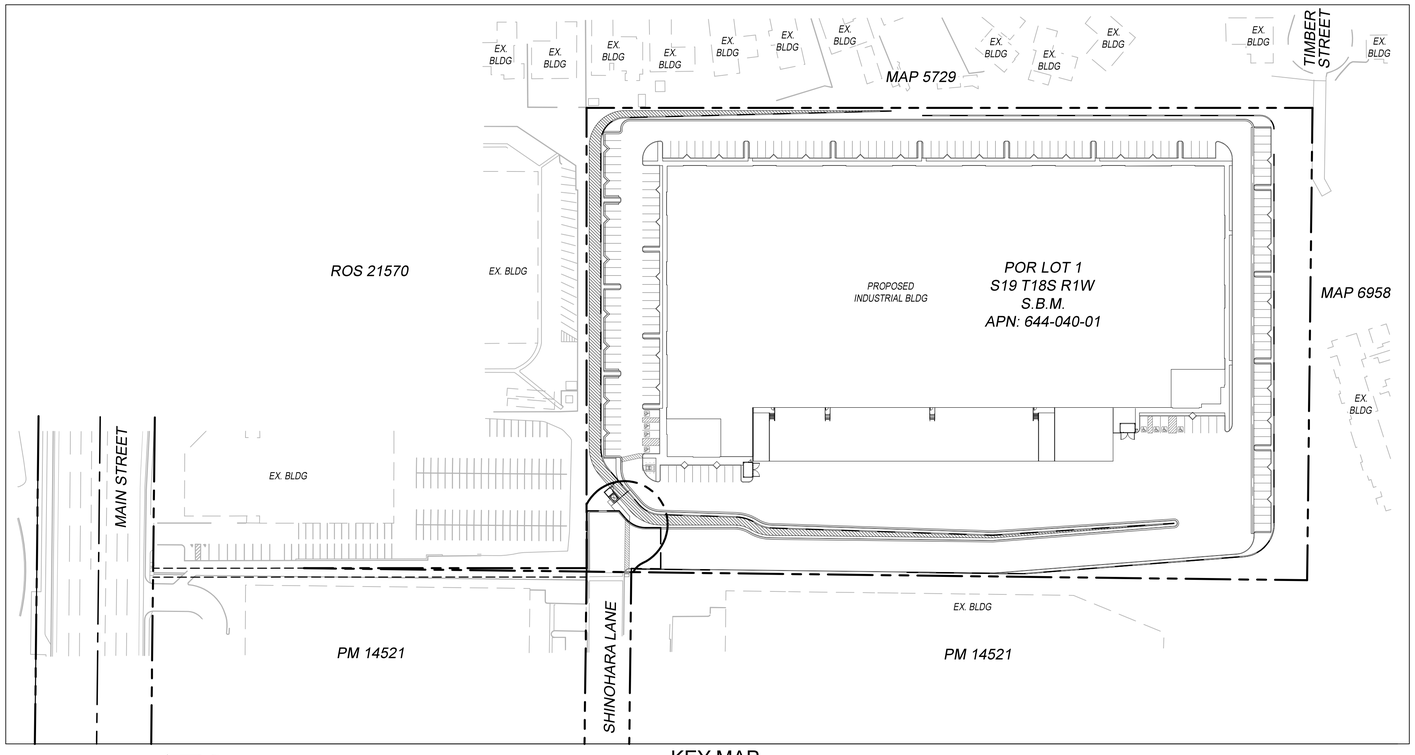
Appendix F:
Concept Grading

CAUTION: IF THIS SHEET IS NOT 24"x36" IT IS A REDUCED PRINT

DESIGN REVIEW FOR PROJECT SHINOHARA

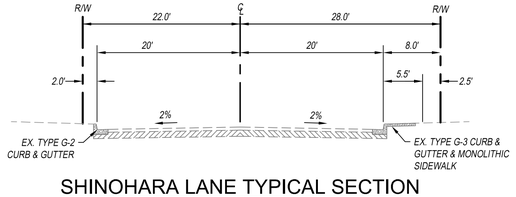
LEGEND

- RIGHT OF WAY
- PROPERTY LINE
- PROPOSED LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- 685 — EXISTING CONTOURS
- 685 — PROPOSED CONTOURS
- PROPOSED SLOPE (2:1 MAX)
- C / F — PROPOSED CUT/FILL LINE
- PROPOSED LIMIT OF GRADING
- PROPOSED AC PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED 6" CURB (PER SDRSD G-01)
- PROPOSED 6" CURB & GUTTER (PER SDRSD G-02)
- PROPOSED 3' RIBBON GUTTER
- PROPOSED RETAINING WALL
- PROPOSED BROW DITCH
- X X X — PROPOSED FENCE
- S S — EXISTING SEWER LINE
- S S — PROPOSED PRIVATE SEWER (PER C.O.C.V. SWR-05) & CLEANOUT (PER SDRSD SC-01)
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN (SIZE PER PLAN)
- W W — EXISTING WATER LINE
- W W — PROPOSED 2" PRIVATE WATER LINE
- F F — PROPOSED 8" PRIVATE FIRE LINE
- W W — PROPOSED 2" WATER METER, 2" WATER SERVICE & BACKFLOW (PER C.O.E. W-2-E & W-10-E)
- I W — PROPOSED 2" IRRIGATION SERVICE
- PROPOSED FIRE HYDRANT (PER W.A.S. WF-02)
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED POST INDICATOR VALVE
- PROPOSED GATE VALVE
- F F — PROPOSED THRUST BLOCK
- PROPOSED BACKFLOW PREVENTION ASSEMBLY (PER W.A.S. WR-02)
- (F) PROPOSED BUILDING FIRE POINT OF CONNECTION
- (S) PROPOSED BUILDING SEWER POINT OF CONNECTION
- (W) PROPOSED BUILDING WATER POINT OF CONNECTION
- (RD) PROPOSED ROOF DRAIN
- (P) PROPOSED PUMP
- PROPOSED CURB INLET (TYPE PER PLAN, PER SDRSD D-02)
- PROPOSED TYPE F CATCH BASIN
- PROPOSED TYPE A STORM DRAIN CLEANOUT (PER SDRSD D-09)
- PROPOSED TYPE G CATCH BASIN (TYPE PER PLAN, PER SDRSD D-08)
- EXISTING STREET LIGHT
- TRUNCATED DOMES (SDRSD G-30)
- PROPOSED BIOCLEAN MODULAR WETLAND SYSTEM
- PROPOSED STORMTRAP DETENTION SYSTEM
- PROPOSED TREE WELL

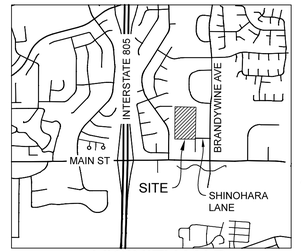


KEY MAP
SCALE: 1" = 80'

80' 40' 0 80' 160" 240'
SCALE: 1" = 80'



SHINOHARA LANE TYPICAL SECTION



VICINITY MAP
NOT TO SCALE

OWNERS

VWP-OP SHINOHARA OWNER, LLC
2390 E. CAMELBACK ROAD, SUITE 305
PHOENIX, AZ 85016

DEVELOPER

ONPOINT DEVELOPMENT
7514 GIRARD AVENUE, SUITE 1515
LA JOLLA, CA 92037
858-356-2291

CIVIL ENGINEER

PASCO LARET SUITER & ASSOCIATES
535 N. HIGHWAY 101, SUITE A
SOLANA BEACH, CA 92075
(858) 259-8212

SITE ADDRESS

517 SHINOHARA LANE
CHULA VISTA, CA 91911

APN

644-040-01

SHEET INDEX

C1.0 - TITLE SHEET
C2.0 - EXISTING CONDITIONS
C3.0 - SECTIONS
C4.0 - GRADING PLAN
C5.0 - UTILITY PLAN

ABREVIATIONS

AC	ACRE / ACREAGE
APN	ASSESOR PARCEL NO.
BMP	BEST MANAGEMENT PRACTICE
BO	BLOW-OFF
CAV	COMBINATION AIR VALVE
CB	CATCH BASIN
CL	CENTERLINE
CO	CLEANOUT
CSP	CORRUGATED STEEL PIPE
CY	CUBIC YARDS
C&G	CURB AND GUTTER
DIA	DIAMETER
DWY	DRIVEWAY
ESMT	EASEMENT
EX	EXISTING
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISHED SURFACE
GB	GRADE BREAK
GV	GATE VALVE
H	HEIGHT
IE	INVERT ELEVATION
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MWS	MODULAR WETLAND SYSTEM
PL	PROPERTY LINE
POC	POINT OF CONNECTION
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
RW	RETAINING WALL
SD	STORM DRAIN
SF	SQUARE FEET
SFM	SEWER FORCE MAIN
SSMH	SANITARY SEWER MANHOLE
SS	SANTIARY SEWER
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
W	WATER
WM	WATER METER

OWNER'S CERTIFICATE

WE HEREBY CERTIFY THAT WE ARE THE RECORD OWNERS OF THE PROPERTY SHOWN ON THE TENTATIVE MAP AND THAT SAID MAP SHOWS ALL OUR CONTIGUOUS OWNERSHIP IN WHICH WE HAVE ANY DEED OR TRUST INTEREST, WE UNDERSTAND THAT OUR PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS, OR RAILROAD RIGHTS-OF-WAY.

BY: _____ DATE: _____

BY: _____ DATE: _____

DEVELOPER

BY: _____ DATE: _____

ENGINEER OF WORK

_____ _____
GREGORY W. LANG, RCE NO. 68075 DATE

REGISTERED PROFESSIONAL ENGINEER
GREGORY W. LANG
No. RCE 68075
EXP. 06-30-23
Civil
STATE OF CALIFORNIA

PROJECT INFORMATION

PROPOSED LAND USE:	INDUSTRIAL
GENERAL PLAN DESIGNATION:	ILP - LIMITED INDUSTRIAL
EXISTING ZONING:	IL - LIMITED INDUSTRIAL PRECISE PLAN
PROPOSED ZONING:	IL - LIMITED INDUSTRIAL PRECISE PLAN
PARCEL AREA:	9.72 ACRES (423,779 SF)
AREA OF DISTURBANCE:	9.71 ACRES (423,173 SF)
EXISTING TOTAL NUMBER OF LOTS:	1
PROPOSED NUMBER OF LOTS:	1
WATER DISTRICT:	OTAY WATER DISTRICT
SEWER DISTRICT:	CITY OF CHULA VISTA
FIRE DISTRICT:	CITY OF CHULA VISTA FIRE DEPARTMENT
SCHOOL DISTRICT:	SWEETWATER UNION HIGH SCHOOL DISTRICT
TOPOGRAPHIC SOURCE:	TOPOGRAPHIC SURVEY DATED JUNE 20, 2021 (BY RANCHO LAND COMPANY)
TOTAL BUILDING SQUARE FOOTAGE:	179,530 SF
TOTAL BUILDING LOT COVERAGE:	42%

LEGAL DESCRIPTION

THAT PORTION OF LOT 1, SECTION 19, TOWNSHIP 18 SOUTH, RANGE 1 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID SECTION 19; THENCE SOUTH ALONG THE WEST LINE OF SAID SECTION, 812 FEET; THENCE EASTERLY AT RIGHT ANGLES TO SAID WEST LINE, 515 FEET; THENCE SOUTHERLY PARALLEL WITH SAID WEST LINE 508 FEET; THENCE EASTERLY AT RIGHT ANGLES 13 FEET; THENCE NORTHERLY PARALLEL WITH THE WEST LINE OF SAID SECTION, 1320 FEET TO THE NORTH LINE OF SAID SECTION; THENCE WEST ALONG SAID NORTH LINE, 528 FEET TO THE POINT OF BEGINNING.

PRELIMINARY GRADING QUANTITIES

GRADED AREA	9.71 [ACRES]		
CUT QUANTITIES	130,000 [CYD]	MAX. CUT DEPTH	50 [FT]
FILL QUANTITIES	134,000 [CYD]	MAX CUT SLOPE RATIO	2:1
ANTICIPATED SPOILS	4,000 [CYD]	MAX. FILL DEPTH	48 [FT]
EXPORT	0 [CYD]	MAX FILL SLOPE RATIO	2:1

NOTE:
THE GRADING QUANTITIES ABOVE ARE AN ESTIMATE FOR PERMITTING PURPOSES ONLY. THE QUANTITIES ABOVE DO NOT REFLECT SPOILS DUE TO LOSS FROM CLEARING AND GRUBBING, STRIPPING, SHRINKAGE, SWELL, BULKING, UNSUITABLE MATERIALS, REMEDIAL GRADING, UTILITY TRENCH SPOILS, UNDERGROUND STORM WATER VAULTS, RETAINING WALL BACKFILL, BUILDING FOUNDATIONS/FOOTINGS, ETC. SUBGRADE IS ASSUMED TO BE 1-FOOT BELOW PROPOSED FINISH GRADE, TO ACCOUNT FOR PAVEMENT AND SLAB THICKNESSES.

STANDARD DRAWINGS

CITY OF CHULA VISTA DESIGN AND CONSTRUCTION STANDARDS - 2017 (C.O.C.V.)
SAN DIEGO REGIONAL STANDARD DRAWINGS - 2018 (SDRSD)
WATER AGENCIES' STANDARDS (W.A.S.)

NOTES

GRADING AND IMPROVEMENTS SHALL BE IN ACCORDANCE WITH CITY OF CHULA VISTA DESIGN AND CONSTRUCTION STANDARDS.

EASEMENTS OF RECORD NOT SHOWN HEREON SHALL BE HONORED, ABANDONED AND/OR RELOCATED TO THE SATISFACTION OF ALL INTERESTED PARTIES, AND PUBLIC UTILITY EASEMENT NECESSARY TO SERVE THIS PROJECT WILL BE COORDINATED WITH SERVING UTILITY COMPANIES.

LOT DIMENSIONS AND AREAS SHOWN HEREON ARE APPROXIMATE. THE DIMENSIONS MAY BE ADJUSTED TO BE CONSISTENT WITH THE FINAL MAP.

ALL EXISTING UTILITIES ARE SHOWN PER AVAILABLE RECORDS. ACTUAL FIELD CONDITIONS MAY VARY.

PASCO LARET SUITER & ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

WARE MALCOMB
ARCHITECTURE PLANNING INTERIORS
CIVIL ENGINEERING BRANDING BUILDING MEASUREMENT
3911 Sorrento Valley Blvd, Suite #120
San Diego, CA, 92121
P 858.638.7277

SHINOHARA
517 SHINOHARA LANE
CHULA VISTA, CA 91911

TITLE SHEET

DATE	REMARKS

PA/PM:	GL
DRAWN BY::	MM
JOB NO.:	3690

SHEET
C1.0

10/28/2021 11:52:53 AM

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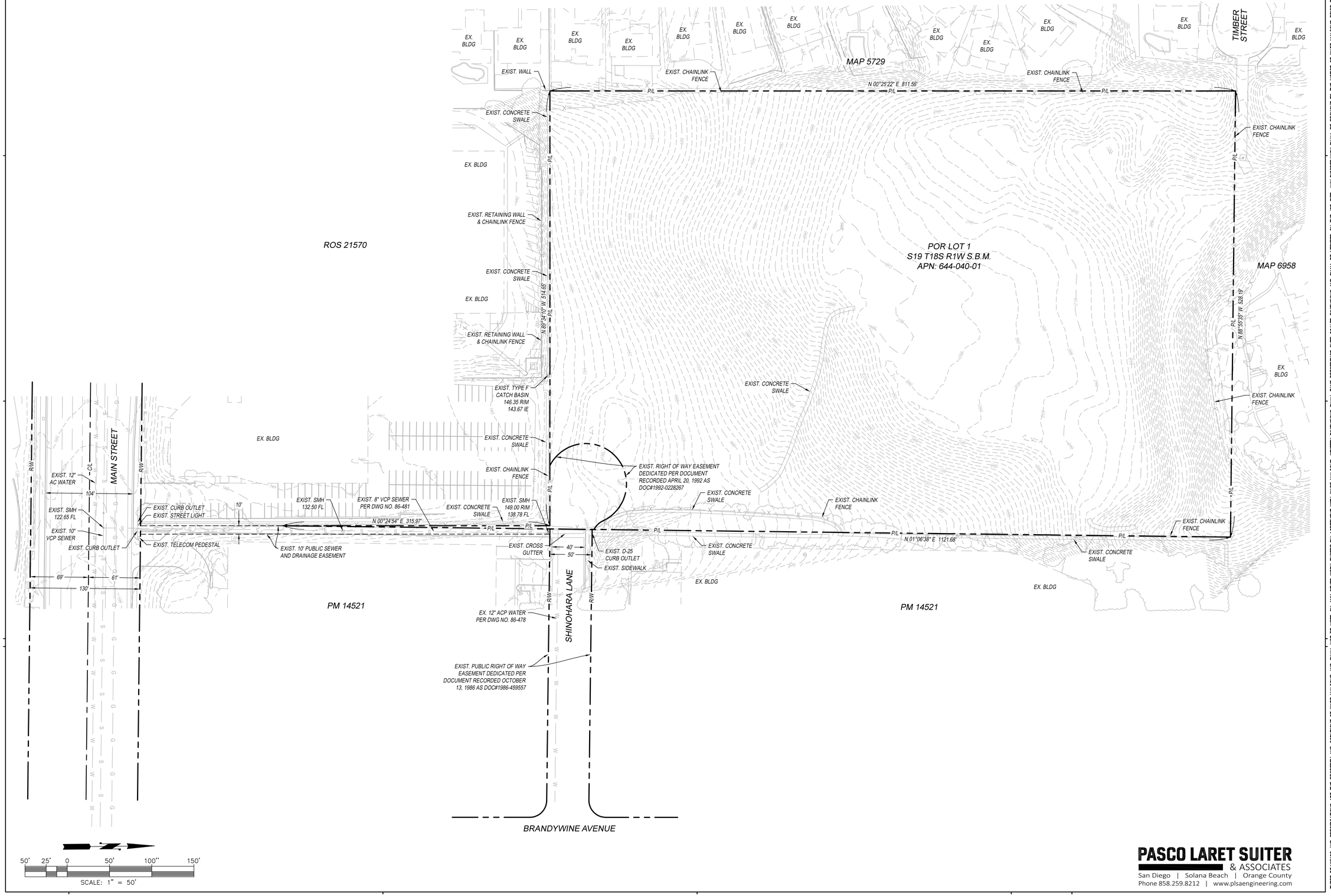

50' 25' 0 50' 100' 150'

SCALE: 1" = 50'

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SHINOHARA

517 SHINOHARA LANE
CHULA VISTA, CA 91911

EXISTING CONDITIONS

DATE	REMARKS

PA/PM:	GL
DRAWN BY::	MM
JOB NO.:	3690

SHEET
C2.0

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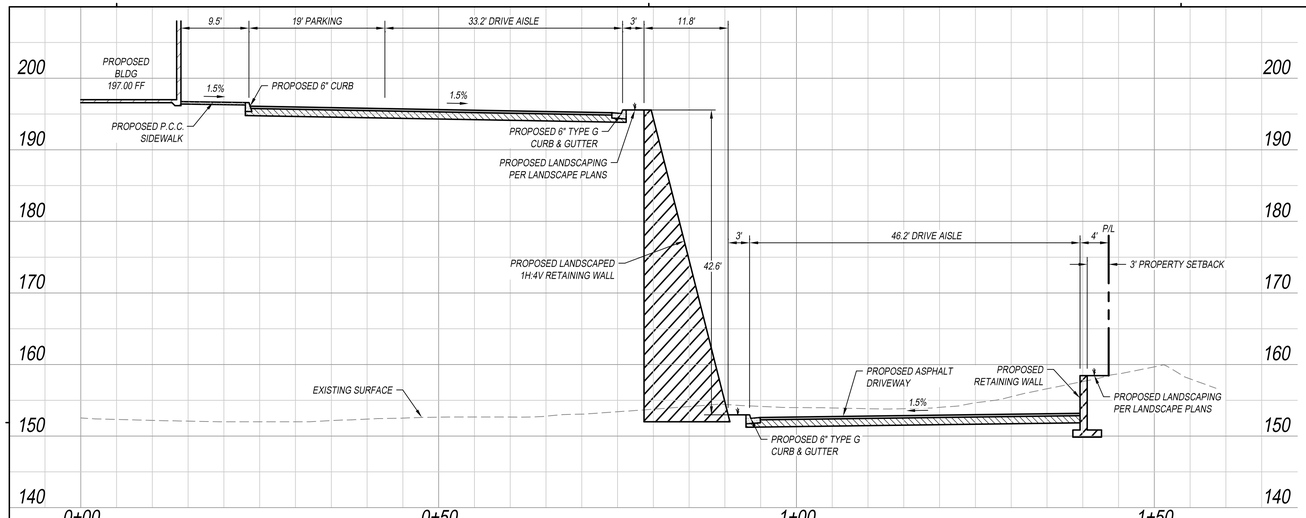
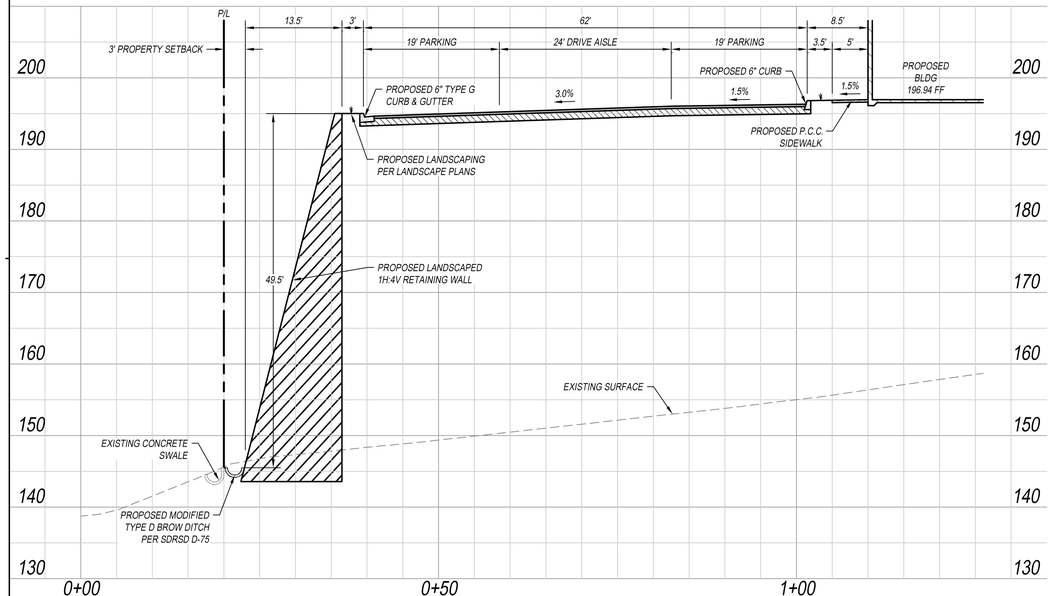


A SITE SECTION

SCALE 1" = 10'



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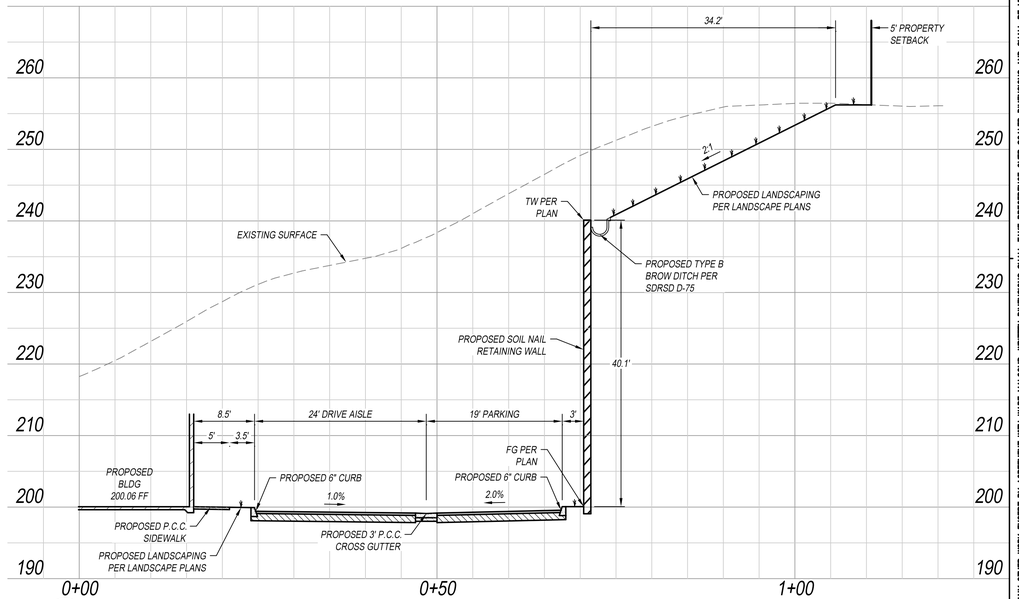
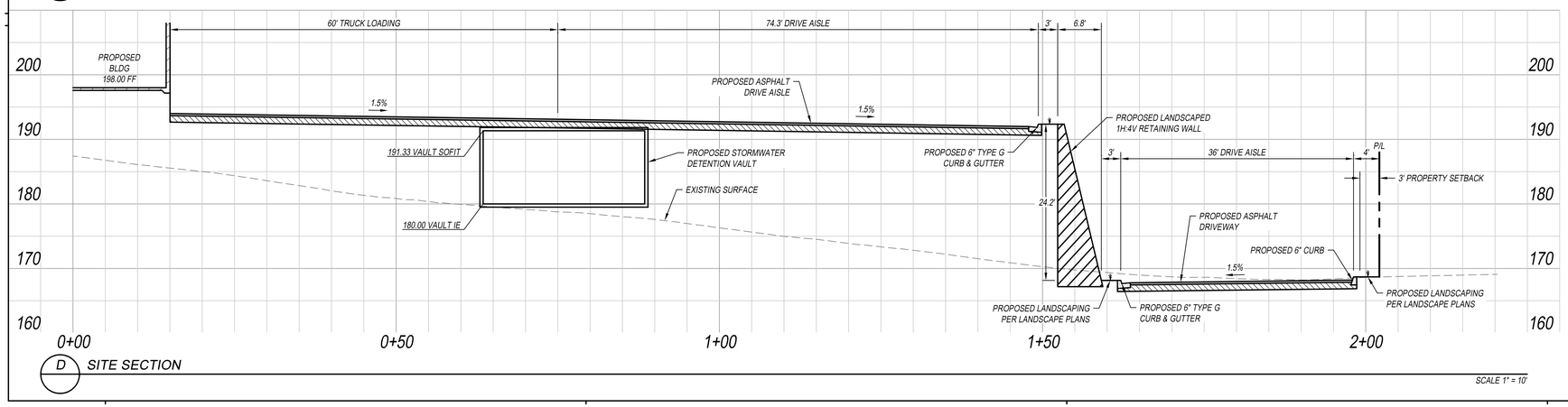


C SITE SECTION

SCALE 1" = 10'



D SITE SECTION

SCALE 1" = 10'

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SECTIONS

DATE	REMARKS

PA/PM:	GL
DRAWN BY:	MM
JOB NO.:	3690

SHEET
C3.0

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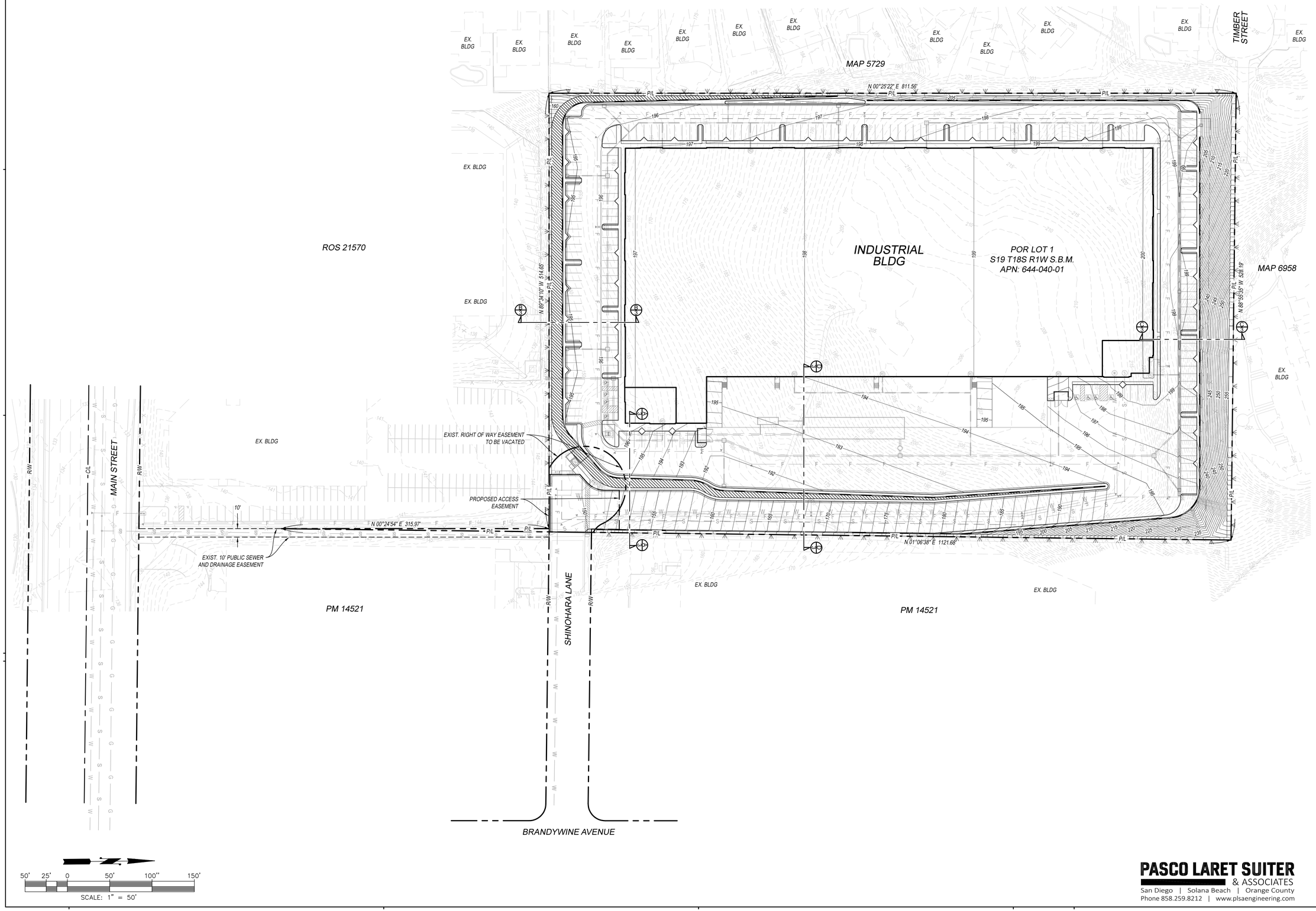

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SHINOHARA

517 SHINOHARA LANE
CHULA VISTA, CA 91911

SITE PLAN

DATE	REMARKS

PA/PM:	GL
DRAWN BY::	MM
JOB NO.:	3690

SHEET
C4.0

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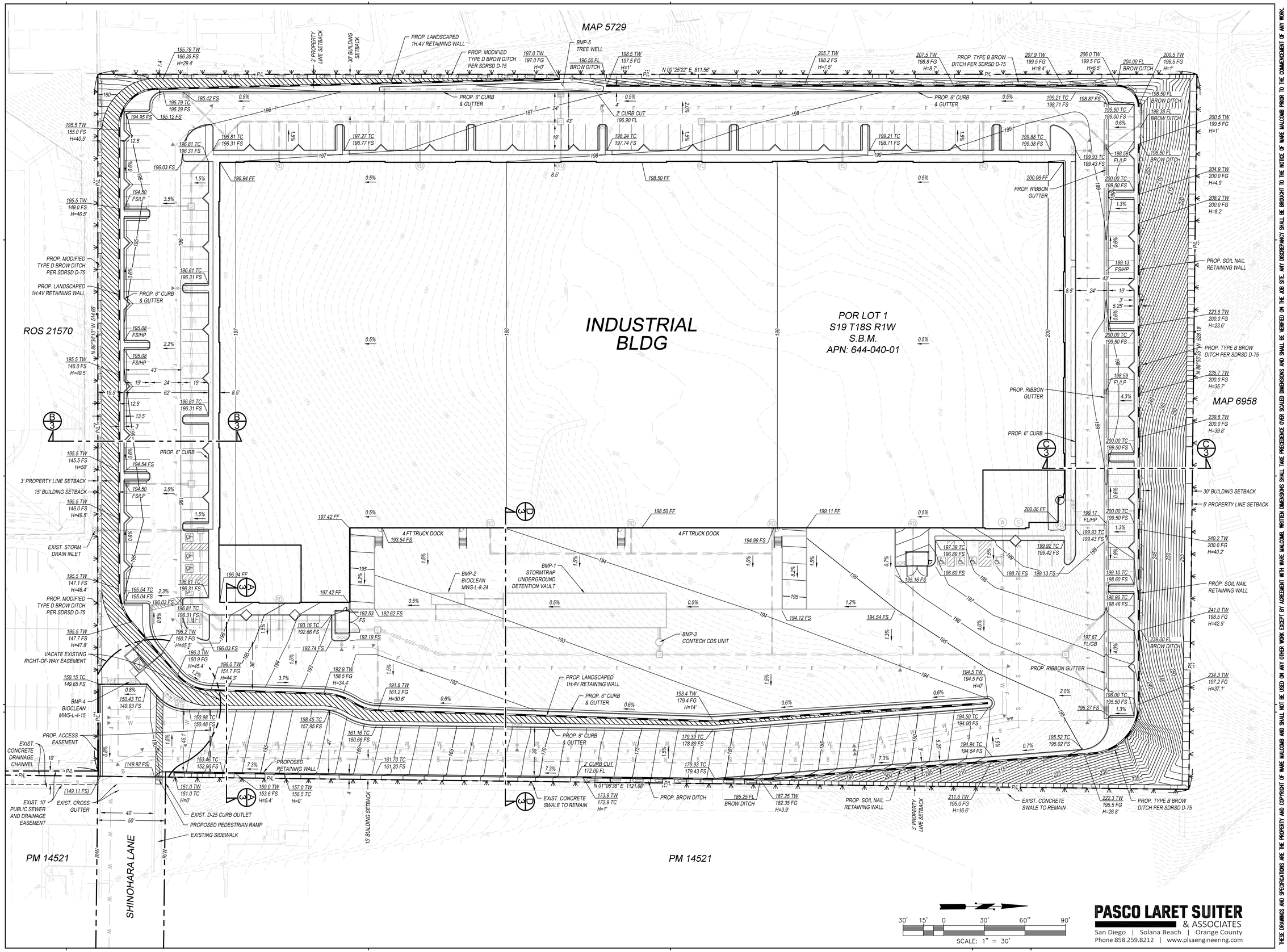

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3911 Sorrento Valley Blvd, Suite #120
San Diego, CA, 92121
P 858.6338.7277

SHINOHARA

517 SHINOHARA LANE
CHULA VISTA, CA 91911

GRADING PLAN

DATE	REMARKS

PA/PM:	GL
DRAWN BY:	MM
JOB NO.:	3690

SHEET
C5.0

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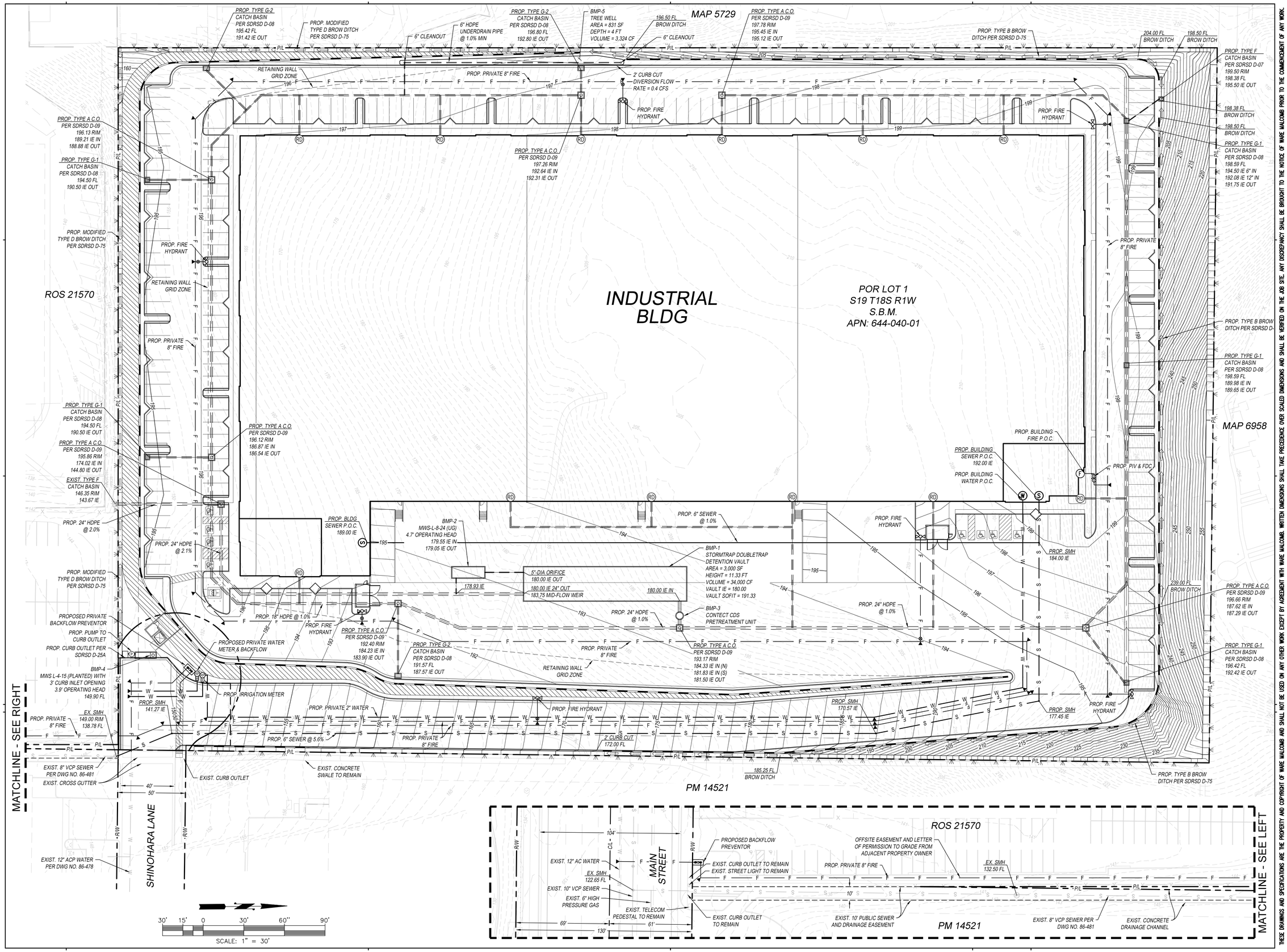

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SHINOHARA

517 SHINOHARA LANE
CHULA VISTA, CA 91911

UTILITY PLAN

DATE	REMARKS

PA/PM:	GL
DRAWN BY:	MM
JOB NO.:	3690

SHEET
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