NOISE AND VIBRATION TECHNICAL STUDY

West Valley Connector Project

sbcta

OmniTrans
Connecting Our Community.

April 2018
(Updated January 2020)

Revision Log

Date	Description
April 2018	Original report prepared
January 2020	Project schedule update FTA guidance update Mitigation measures update

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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
BRT	Bus-Rapid Transit
CEQA	California Environmental Quality Act
dB	decibel
dBA	A-weighted decibel
EA	Environmental Assessment
EIR	Environmental Impact Report
FTA	Federal Transit Administration
L_{dn}	Day Night Average Noise Level
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Noise Level
mph	miles per hour
NEPA	National Environmental Policy Act
PA	Public Address
PPV	Peak Particle Velocity
RMS	Root Mean Square
ROW	Right-of-Way
SEL_{ref}	Single Event Level Reference
TNM	Traffic Noise Model
TSP	Transit Signal Priority
VdB	Velocity Levels of Decibels

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1.0 INTRODUCTION

This Noise and Vibration Technical Study analyzes the potential noise and vibration impacts along the West Valley Connector Bus Rapid Transit (BRT) Project (the project). The objectives of this analysis are to describe the existing noise and vibration environments at sensitive receptor locations along the project corridor, describe the potential noise and vibration effects/changes that would result from implementation of the project, and determine whether those changes would result in any noise and vibration impacts per Federal Transit Administration (FTA) guidelines.

The San Bernardino County Transportation Authority (SBCTA), in cooperation with the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana, proposes construction of the West Valley Connector Project, a 35-mile-long Bus Rapid Transit BRT project that will decrease travel times and improve the existing public transit system within the corridor.

In January 2017, SBCTA entered into a cooperative agreement with Omnitrans designating SBCTA as the lead agency for the proposed WVC Project. SBCTA intends to construct the WVC, which will then be operated by Omnitrans. SBCTA has the authority to allocate Federal Transit Administration (FTA) funds; however, it does not have the ability to receive funds directly from the FTA. Omnitrans is the direct FTA grantee for the San Bernardino Valley. As a result, SBCTA and Omnitrans have developed a successful direct recipient/sub-recipient working relationship to deliver projects with FTA funds. The current relationship allows the delivery of FTA-funded projects that meet FTA requirements without duplicating staff, assuring the best use of limited public funds available. Omnitrans and SBCTA executed Memorandum of Understanding (MOU) 15-1001289 in October 2015, setting forth the roles and responsibilities of the recipient/sub-recipient relationship.

The project is subject to state and federal environmental review requirements because it involves the use of federal funds from the FTA. An Environmental Impact Report (EIR)/Environmental Assessment (EA) has been prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). SBCTA is the CEQA lead agency, and FTA is the NEPA lead agency. This Noise and Vibration Technical Study has been prepared as part of the technical analysis required to support the EIR/EA.

1.1 Project Location and Setting

The proposed project is located primarily along Holt Avenue/ Boulevard and Foothill Boulevard that would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project limits extend from Main Street in the city of Pomona on the west side to Sierra Avenue in the city of Fontana on the east side and Church Street in the city of Rancho Cucamonga on the north side to Ontario International Airport on the south side (see Figures 1-1 and 1-2). The proposed project area is primarily urban, and generalized land uses include low-, medium-, and medium-high-density residential, commercial, industrial, open space and recreation, transportation and utilities, agriculture, vacant, public facilities, airport, educational facilities, and offices.

1.2 Purpose and Need

The purpose of the proposed project is to improve corridor mobility and transit efficiency in the western San Bernardino Valley from the city of Pomona, in Los Angeles County, to the city of Fontana, in San Bernardino County, with an enhanced, state-of-the-art BRT system (i.e., the system that includes off-board fare vending, all-door boarding, TSP, optimized operating plans, and stations that consist of a branded shelter/canopy, security cameras, benches, lighting, and variable message signs).

The proposed project would address the growing traffic congestion and travel demands of the nearly one million people that would be added to Los Angeles and San Bernardino County by 2040 per SCAG 2016 RTP/SCS growth forecast. Improved rapid transit along the project corridor would help Omnitrans/SBCTA achieve its long-range goals to cost effectively enhance lifeline mobility and accessibility, improve transit operations, increase ridership, support economic growth and redevelopment, conserve nonrenewable resources, and improve corridor safety.

Recognizing the importance of the WVC transit corridor, SBCTA is proposing a project that is designed to achieve the following objectives:

- Improve transit service by better accommodating high existing bus ridership.
- Improve ridership by providing a viable and competitive transit alternative to the automobile.
- Improve efficiency of transit service delivery while lowering Omnitrans' operating costs per rider.
- Support local and regional planning goals to organize development along transit corridors and around transit stations.

The project purpose and objectives stated above would respond to the following needs:

- Current and future population and employment conditions establish a need for higher-quality transit service.
- Current and future transportation conditions establish a need for an improved transit system.
- Transit-related opportunities exist in the project area.

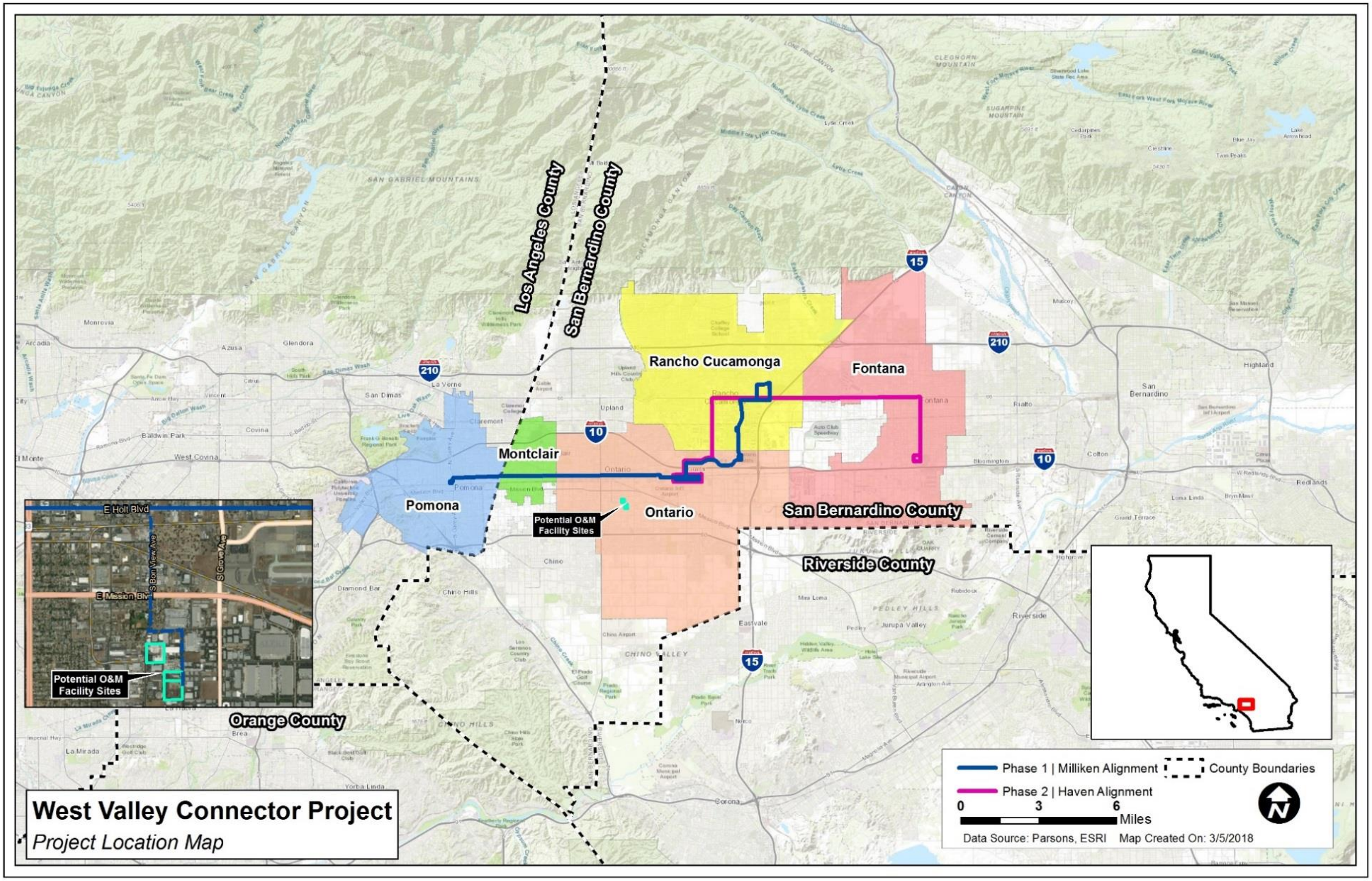


Figure 1-1: Project Location Map

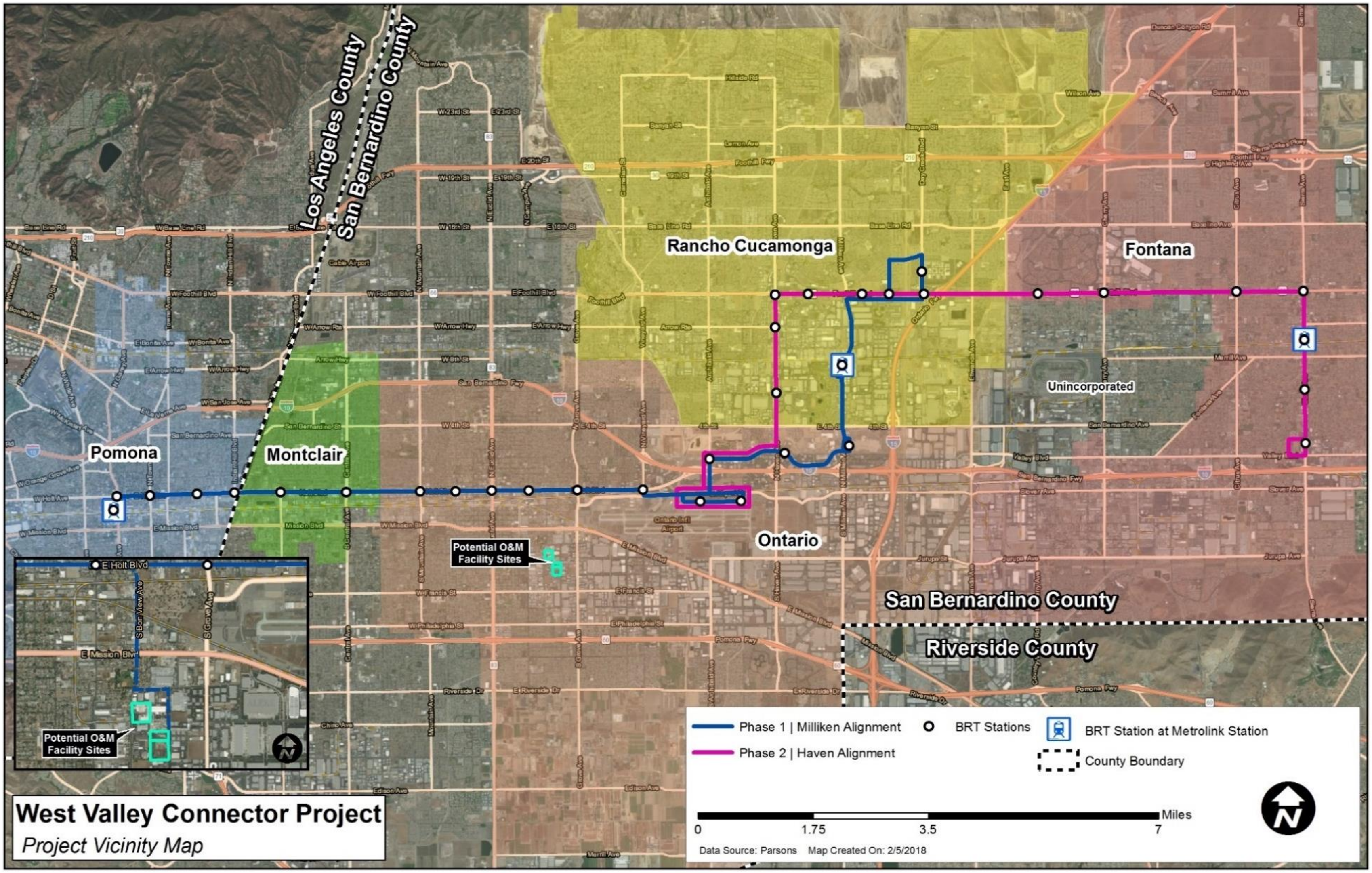


Figure 1-2: Project Vicinity Map

2.0 PROJECT DESCRIPTION

2.1 Proposed Project

The WVC Project is a 35-mile-long BRT corridor project located primarily along Holt Avenue /Boulevard and Foothill Boulevard that would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project proposes limited stops, providing speed and quality improvements to the public transit system within the corridor. The project includes BRT stations at up to 33 locations/major intersections and associated improvements, premium transit service, Transit Signal Priority (TSP) and queue jump lanes, dedicated lanes, and integration with other bus routes.

The project alignment consists of two phases. Phase I of the project would construct the "Milliken Alignment," from the Pomona Regional Transit Center (downtown Pomona Metrolink station) to Victoria Gardens in Rancho Cucamonga. Phase II of the project would construct the "Haven Alignment," from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. The Phase I Milliken Alignment would begin construction in 2019 and is proposed to have 10-minute peak and 15-minute off-peak headways. Phase II is intended to be constructed immediately following completion of Phase I, depending on the availability of funding.

Phase I/Milliken Alignment

Phase I of the project would construct the Milliken Alignment, from the western boundary limit in Pomona to Victoria Gardens in Rancho Cucamonga. In Pomona, the alignment starts from the Pomona Regional Transit Center station, travels along Holt Avenue and into Montclair.

In Montclair, the alignment runs on Holt Boulevard between Mills Avenue and Benson Avenue and into Ontario.

In Ontario, the alignment continues on Holt Boulevard, starting from Benson Avenue, and then continues to Vineyard Avenue and into Ontario International Airport (loop through Terminal Way). From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right and travels east on Inland Empire Boulevard.

On Inland Empire Boulevard, the alignment goes straight into Ontario Mills (loop through Mills Circle) and then heads north on Milliken Avenue into Rancho Cucamonga.

In Rancho Cucamonga, the alignment makes a loop into the Rancho Cucamonga Metrolink Station off Milliken Avenue and then continues up Milliken Avenue and turns east onto Foothill Boulevard.

The alignment continues east on Foothill Boulevard, turns north onto Day Creek Boulevard, and then terminates with a layover at Victoria Gardens at Main Street. From Victoria Gardens, the bus line begins a return route by continuing north on Day Creek Boulevard, turns west onto Church Street, turns south onto Rochester Avenue, and then turns west back onto Foothill Boulevard.

Phase II/Haven Alignment

Phase II of the project would construct the Haven Alignment, from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. In Ontario, the alignment makes a loop through Terminal Way at Ontario International Airport. From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right to go east on Inland Empire Boulevard.

From Inland Empire Boulevard, the alignment turns left to go north up Haven Avenue into Rancho Cucamonga, then turns right to go east onto Foothill Boulevard and into Fontana.

In Fontana, the alignment continues east on Foothill Boulevard until turning south onto Sierra Avenue. The alignment follows Sierra Avenue, including a stop at the Fontana Metrolink Station, and then continues until turning west onto Marygold Avenue, where the bus line would begin a turn-around movement by heading south onto Juniper Avenue, east onto Valley Boulevard, and north back onto Sierra Avenue to Kaiser Permanente Medical Center before heading northward for the return trip.

2.2 Project Alternatives

Many alternatives were considered during the project development phase of the project. A No Build Alternative and two build alternatives (Alternatives A and B) are being analyzed in the EIR/EA.

2.2.1 No Build Alternative

The No Build Alternative proposes no improvements to the existing local bus services. Under the No Build Alternative, the existing local bus service on Routes 61 and 66 would maintain current service of 15-minute headways (total of four buses per hour in each direction).

2.2.2 Build Alternatives

Figure 2-1 presents the map of both build alternatives. All design features of both build alternatives are the same, as described in more details in Section 2.3, with the exception of the following:

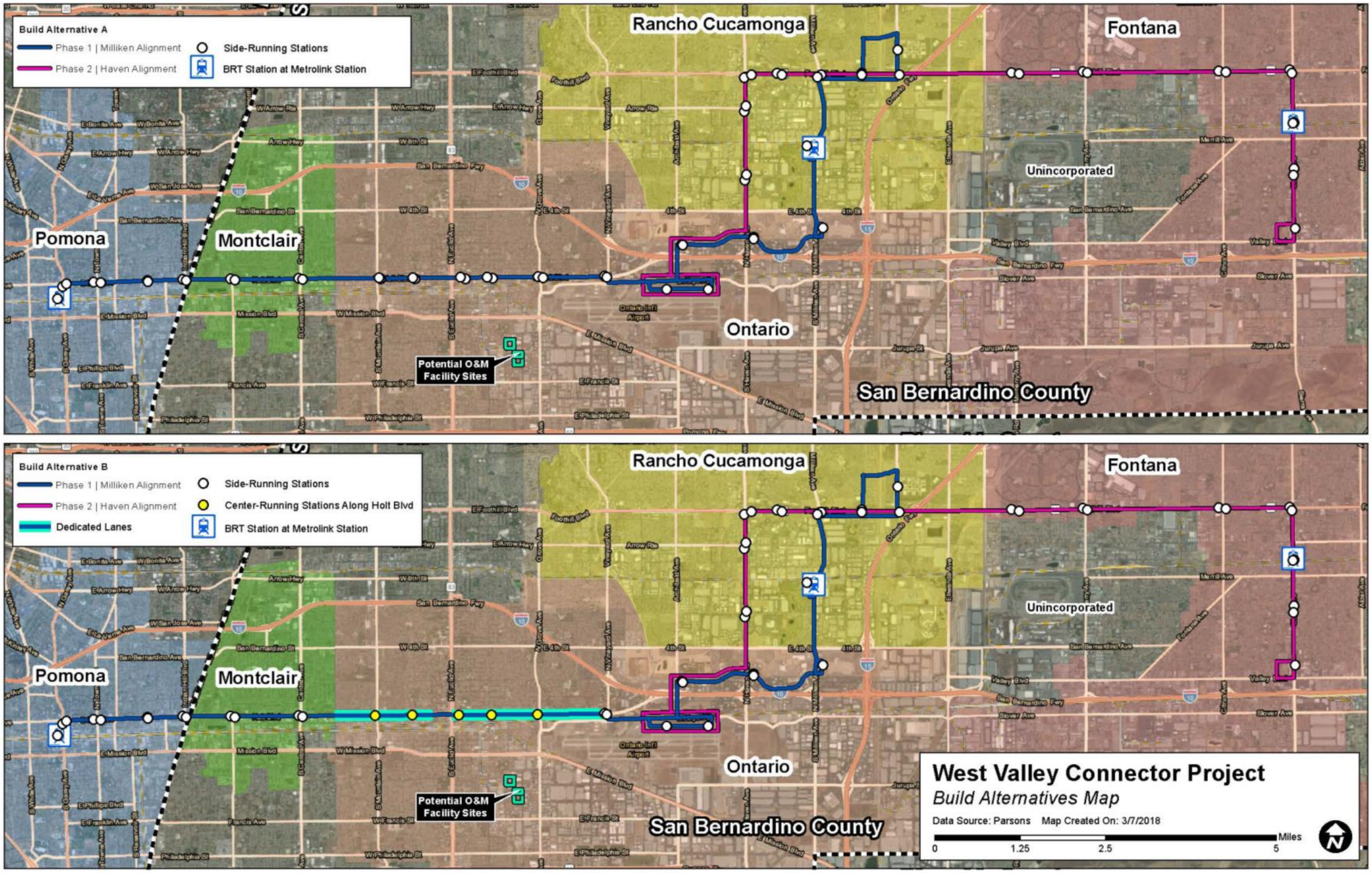


Figure 2-1: Build Alternatives Map

Alternative A – Full BRT with no Dedicated Bus-only Lanes

Alternative A would include the 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/ Haven Alignment, and 60 side-running stations at up to 33 locations/major intersections. The BRT buses will operate entirely in the mixed-flow lanes. The right-of-way (ROW) limits and travel lane width vary in other segments of the corridor. Implementation of Build Alternative A will not require permanent or temporary ROW acquisition.

Alternative B – Full BRT with 3.5 miles of Dedicated Bus-only Lanes in Ontario

Alternative B would include the full 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/ Haven Alignment, 3.5 miles of dedicated bus-only lanes, and five center-running stations and 50 side-running stations at up to 33 locations/major intersections. The dedicated lanes segment would include two mixed-flow lanes and one transit lane in each direction and five center-running stations. To accommodate the dedicated lanes, roadway widening and additional utilities, such as electrical and fiber-optic lines, would require permanent and temporary ROW acquisition. In addition, some areas of the project corridor would require reconfiguration, relocation, or extension of adjacent driveways, curbs, medians, sidewalks, parking lots, and local bus stops.

2.3 Design Features of Build Alternatives

2.3.1 Bus Rapid Transit Stations

BRT stations at 33 locations/major intersections and associated improvements are proposed to be located approximately 0.5 to 1 mile apart to facilitate higher operating speeds by reducing dwell time (see Figure 1-2 and Figure 2-1 for station locations). Table 2-1 lists the BRT stations to be constructed as part of Phase I/Milliken Alignment. Note that under Alternative A, all 21 stations will be side-running stations. Under Alternative B, five center platform stations are proposed as follows:

- Holt Boulevard/Mountain Avenue
- Holt Boulevard/San Antonio Avenue
- Holt Boulevard/Euclid Avenue
- Holt Boulevard/Campus Avenue
- Holt Boulevard/Grove Avenue

As part of Phase II/Haven Alignment, an additional 12 side-running stations will be constructed for both build alternatives as list in Table 2-2.

Table 2-1: Stations along Phase I/Milliken Alignment

City	Stations
Pomona	• Pomona Regional Transit Center Station • Holt Avenue/Garey Avenue • Holt Avenue/Towne Avenue • Holt Avenue/Clark Avenue • Holt Avenue/Indian Hill Boulevard
Montclair	• Holt Boulevard/Ramona Avenue • Holt Boulevard/Central Avenue
Ontario	• Holt Boulevard/Mountain Avenue • Holt Boulevard/San Antonio Avenue • Holt Boulevard/Euclid Avenue • Holt Boulevard/Campus Avenue • Holt Boulevard/Grove Avenue • Holt Boulevard/Vineyard Avenue • Ontario International Airport • Inland Empire Boulevard/Archibald Way • Inland Empire Boulevard/Porsche Way • Ontario Mills
Rancho Cucamonga	• Rancho Cucamonga Metrolink Station • Foothill Boulevard/Milliken Avenue • Foothill Boulevard/Rochester Avenue • Victoria Gardens between North and South Main Street
Note: * denotes the center-running stations to be constructed under Alternative B.	

Source: 30% Preliminary Engineering Design, Parsons 2017

Table 2-2: Additional Stations to be Constructed as Part of Phase II/Haven Alignment

City	Stations
Rancho Cucamonga	• Haven Avenue/6th Street • Haven Avenue/Arrow Route • Haven Avenue/Foothill Boulevard • Foothill Boulevard/Spruce Avenue • Foothill Boulevard/Day Creek Boulevard
Fontana	• Foothill Boulevard/Mulberry Avenue • Foothill Boulevard/Cherry Avenue • Foothill Boulevard/Citrus Avenue • Foothill Boulevard/Sierra Avenue • Fontana Metrolink Station • Sierra Avenue/Randall Avenue • Sierra Avenue/Kaiser Permanente

Source: 30% Preliminary Engineering Design, Parsons 2017

Side-Running Stations

Side-running stations would typically be located on the far side of an intersection to facilitate transit priority and to avoid a stopped bus from blocking those turning right from the corridor. Where curb cuts for driveways and other conditions do not provide enough space along the curbside for both the sbX and the local bus on the far side of the intersection, the local buses would be located on the near side of the intersection.

In the side-running condition, stations may include new or improved shelters with passenger amenities, or only an sbX-branded pylon with signature light. Proposed shelters would be approximately 18 feet in length and a width that would fit a 10-foot-wide-minimum sidewalk. Passenger amenities at the side platform stations would include benches, bicycle racks, trash receptacles, variable message signs, security cameras, and lighting integrated with the shelter. There would be no fare collection equipment on the sidewalks or shelters when the available ROW is less than 10 feet, and the passengers may pay the fee on the bus. Side-running stations would also include various amenities.

For all stations in Rancho Cucamonga, only an sbX-branded pylon with signature light is proposed. Should shelters be implemented in the future, coordination between the City of Rancho Cucamonga and SBCTA would be required to environmentally clear the shelters at a later time.

Center Platform Stations

As indicated in Section 2.3.1, five center platform stations are proposed to be constructed as part of Phase I/Milliken Alignment (in Ontario) under Alternative B.

The center platform stations would be located in the center of the street ROW on a raised platform with an end-block crossing. Access would be provided by crosswalks at intersections and Americans with Disabilities Act (ADA)-compliant ramps to the station platforms. Center platforms would be placed as close to the intersection as possible while still maintaining left-turn pockets, where required.

In the optimum center platform configuration, the platform would accommodate a canopy with its seating area, passenger amenities, fare equipment, and a ramp to comply with relevant accessibility requirements and provide clearance in front of ticket vending machines. Stations would include amenities that can be assembled and laid out to suit the functionality of the station and fit with the surrounding land uses.

2.3.2 sbX Bus Operations

The proposed project would require 18 buses during the Phase I operation and increase to 27 buses for the Phase I and Phase II operation to serve the designed headways and have sufficient spare vehicles.

Under Alternative A, sbX buses would operate entirely in mixed-flow lanes along the proposed 35 miles of the Phase I and Phase II alignments. For Alternative B, sbX buses will operate in mixed flow lanes similar to Alternative A except where dedicated bus-only lanes (3.5 miles) are proposed along Holt Boulevard, between Benson Avenue and Vine Avenue and between Euclid Avenue and Vineyard Avenue, in Ontario.

Roadway sections where the sbX would operate in mixed-flow lanes would generally be kept as existing conditions, although some modifications, such as relocated curb and gutter, may be necessary near the stations to provide sufficient room for bus stopping and loading. Reconstruction of curb and gutters would only be required for the segment where dedicated bus-only lanes are proposed. Vehicular lanes where the sbX buses would operate in dedicated bus-only lanes would feature concrete roadways, painted or striped to visually separate the exclusive lanes from mixed-flow lanes. Transition areas from mixed-flow to exclusive lanes would be provided at each end of an exclusive lane location. Such transitions would be clearly marked to separate bus movements from other vehicular traffic. Reinforced concrete bus pad in the pavement would be placed at all station locations for the sbX buses.

sbX buses would operate from 6:00 a.m. to 8:00 p.m. with peak headways for 4 hours and off-peak headways for 10 hours per day for a total span of service of 14 hours per day, Monday through Friday. From the Pomona Metrolink Transit Center station to Inland Empire Boulevard, the sbX buses would operate on 10-minute peak headways and 15-minute off-peak headways. Additional service hours, including weekend service, may be added if additional operating funds become available in the future.

2.3.3 Operations and Maintenance

Fleet Composition

The proposed project's fleet would be comprised of 60-foot-long articulated compressed natural gas (CNG) propulsion buses. sbX buses would hold approximately 96 passengers at maximum capacity with up to 8 bicycles on board. Today, the average local bus operating speeds are only 12 to 15 mph, and they are getting slower as corridor congestion worsens. In calculating run times, it was assumed that the average dwell time at stations would be 30 seconds (peak service), and average overall speed would be 20 mph. The average speed for sbX buses will be 18 mph.

Maintenance Requirements and Associated Facilities

Omnitrans operates and maintains its existing bus fleets from two major Operations and Maintenance (O&M) facilities: East Valley Vehicle Maintenance Facility (EVVMF), located at 1700 W. 5th Street in the City of San Bernardino and West Valley Vehicle Maintenance Facility (WVVMF), located at 4748 E. Arrow Highway in the City of Montclair. EVVMF is a

Level III facility capable of full maintenance of buses and WVVMF is a Level II facility suitable for light maintenance. Neither facility has sufficient capacity to accommodate the additional maintenance and storage requirements of the bus fleet associated with the proposed WVC Project.

The purpose of the new O&M facility is to provide operations and maintenance support to the existing full-service EVVMF. The new facility would be designed and constructed to provide Level I service maintenance with a capacity to be upgraded to provide Level II service maintenance. Heavy repair functions and administrative functions would remain exclusively with the EVVMF in San Bernardino.

Facility Components

Conceptually, the new O&M facility would be built on an approximate 5-acre site. The Level I facility would include a parking area, bus washing area, fueling area, and a personnel and storage building. As needs arise, the facility could be upgraded to provide Level II service, which will include the addition of a maintenance shop and a larger administrative building. Landscaping and irrigation would be provided to enhance the comfort of employees and the appearance of the facility, and to help screen maintenance facilities and operations from offsite viewpoints within the community. Figure 2-2 shows the conceptual site plan of the Level II facility.

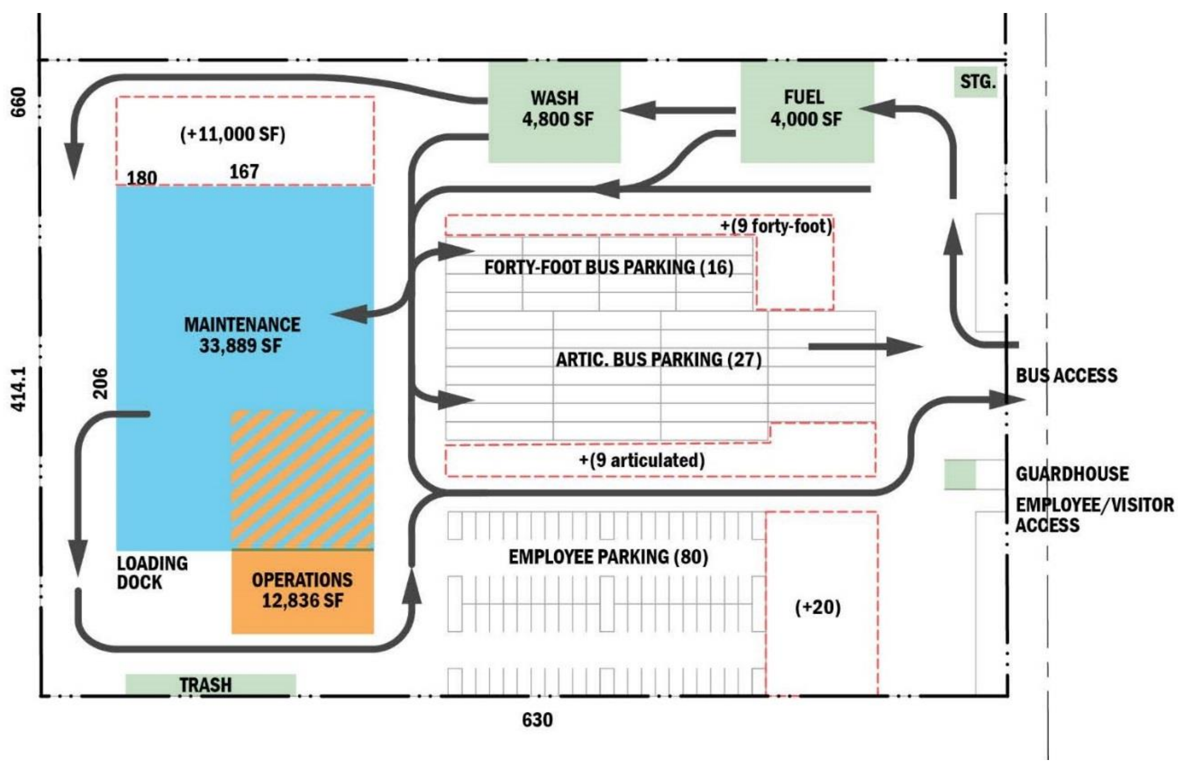


Figure 2-2: O&M Facility Conceptual Site Plan

Depending on the service level to be performed, approximately 50-100 staff would be using this facility including bus operators and O&M staff.

Potential Sites

Three sites are being considered for the placement of the new O&M facility (see Figure 2-3). All are owned by the City of Ontario and are located in the industrial zoned area, slightly more than a mile from the proposed BRT corridor alignment on Holt Boulevard:

- Site 1: 1516 S. Cucamonga Avenue, Ontario (APN 1050-131-03-0000 and APN 1050-131-02-0000). The current use of this property is public works storage yard. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.0 acres.
- Site 2: 1440 S. Cucamonga Avenue, Ontario (APN 1050-141-07-0000). The current use of this property is compressed natural gas fueling station. If selected, the O&M facility will utilize the entire parcel encompassing an area of approximately 4.8 acres.
- Site 3: 1333 S. Bon View Avenue, Ontario (APN 1049-421-01-0000 and APN 1049-421-02-0000). The current use of this property is municipal utility and customer service center. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.6 acres.

Buses coming to and from the new facility could use nearby access roads that directly connect to the BRT corridor such as South Campus Avenue, South Bon View Avenue, and South Grove Avenue.

The O&M facility will be constructed during the same period as the Phase I/Milliken Alignment and would be open for operation at the same time as the Phase I alignment. Construction duration is estimated at 12 months.

2.4 Implementation Schedule

Implementation of the proposed project is planned over the next 5 years and would entail many activities, including:

- Completion of the environmental compliance phase (March 2020)
- Completion of Preliminary Engineering (March 2020)
- Completion of Final Design (May 2021) and begin construction in early 2022.
- Completion of O&M facility (December 2023)
- Completion of Construction of Phase I/Milliken Alignment and testing (December 2023)
- System operation (begin revenue operation in December 2023)
- Construction of Phase II/Haven Alignment is scheduled to occur after completion of the Phase I/Milliken Alignment pending funding availability

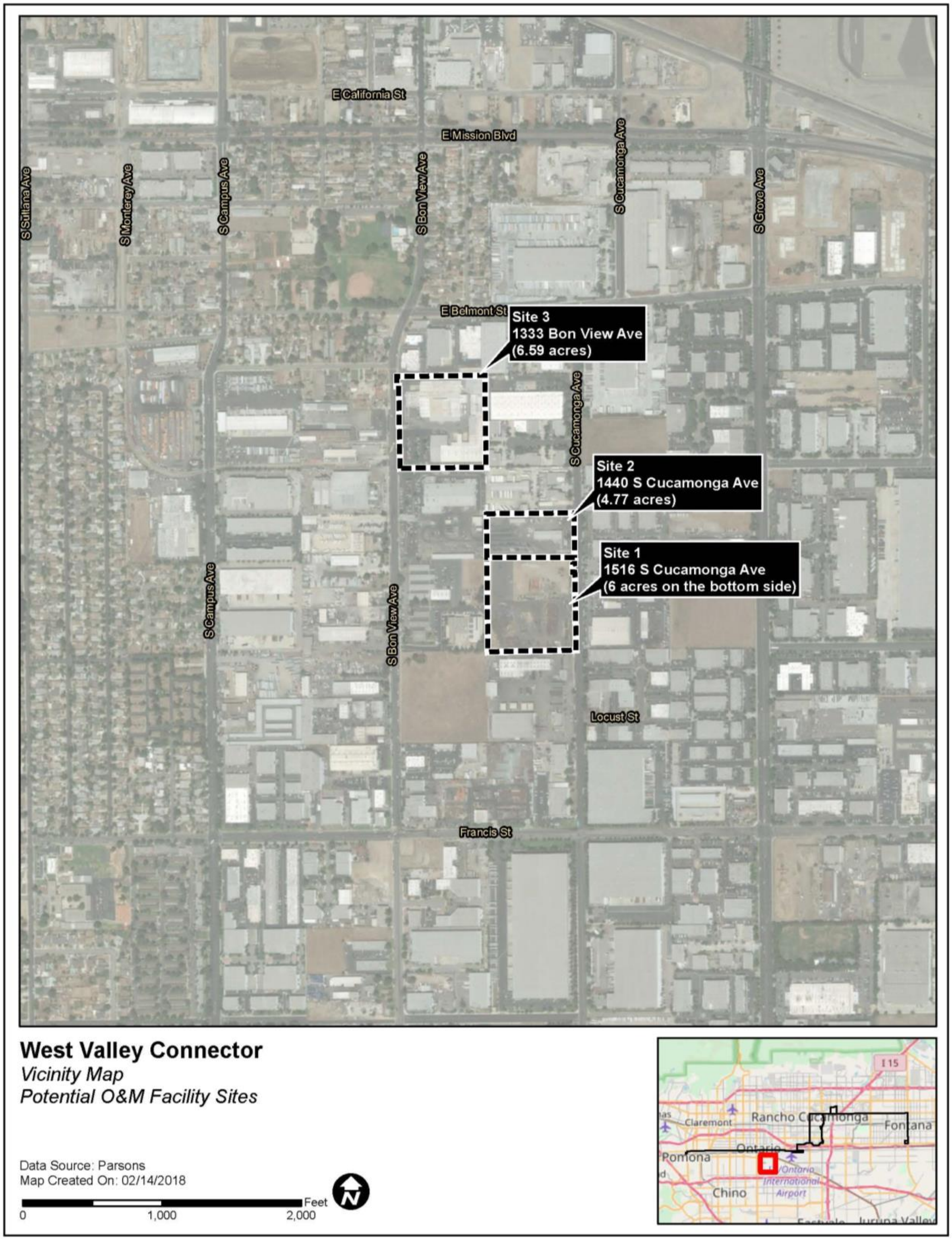


Figure 2-3: Potential Operations and Maintenance Facility Sites

3.0 BASIC NOISE AND GROUND-BORNE VIBRATION CONCEPTS

This section discusses the basic concepts of transit noise and ground-borne vibration.

3.1 Fundamentals of Noise

Noise is generally considered to be unwanted sound. Sound is what we hear when our ears are exposed to small pressure fluctuations in the air. There are many ways in which pressure fluctuations are generated, but typically they are caused by vibrating movement of a solid object. This manual uses the terms ‘noise’ and ‘sound’ interchangeably since there is no physical difference between them. Noise can be described in terms of three variables: amplitude (loud or soft); frequency (pitch); and time pattern (variability).

3.1.1 Amplitude

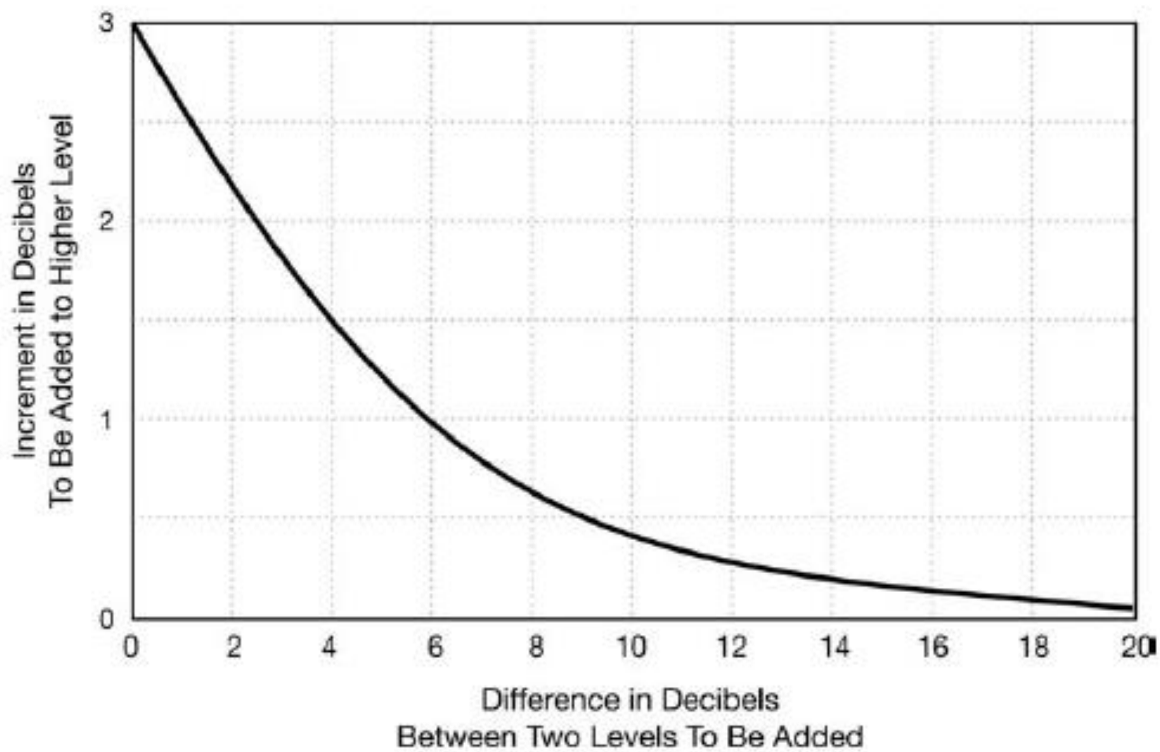
Loudness of a sound depends on the amplitude of the fluctuations above and below atmospheric pressure associated with a particular sound wave. The mean value of the alternating positive and negative pressure fluctuations is the static atmospheric pressure, not a useful descriptor of sound. However, the effective magnitude of the sound pressure in a sound wave can be expressed by the “root-mean-square” (rms) of the oscillating pressure measured in Pascals. In calculation of the ‘rms’, the values of sound pressure are squared to make them all positive and time-averaged to smooth out variations. The ‘rms’ pressure is the square root of this time-averaged value.

The quietest sound that can be heard by most humans, the “threshold of hearing," is a sound pressure of about 20 microPascals, and the loudest sounds typically found in our environment range up to 20 million microPascals. Because of the difficulty in dealing with such an extreme range of numbers, acousticians use a compressed scale based on logarithms of the ratios of the sound energy contained in the wave related to the square of sound pressures instead of the sound pressures themselves, resulting in the “sound pressure level” in decibels (dB).

3.1.2 Decibel Addition

The combination of two or more sound pressure levels at a single location involves ‘decibel addition’ or the addition of logarithmic quantities. The quantities that are added are the sound energies. For example, a doubling of identical sound sources results in a 3 dB increase:

For example, if the noise from one bus resulted in a sound pressure level of 70 dB, the noise from two buses would be 73 dB. Figure 3-1 provides a handy graph that can be used to add sound levels in decibels. For example, if two sound levels of 64 dB and 60 dB are to be added, the difference in decibels between the two levels to be added is 4 dB. The curve intersects the “4” where the increment to be added to the higher level is “1.5.” Therefore the sum of the two levels is 65.5 dB.



Source: FTA, 2006.

Figure 3-1: Graph to Approximate Decibel Addition

3.1.3 Frequency

Sound is a fluctuation of air pressure. The number of times the fluctuation occurs in one second is called its frequency. In acoustics, frequency is quantified in cycles per second, or Hertz (abbreviated Hz). Some sounds, like whistles, are associated with a single frequency; this type of sound is called a “pure tone.” Most often, however, noise is made up of many frequencies, all blended together in a spectrum. Human hearing covers the frequency range of 20 Hz to 20,000 Hz. If the spectrum is dominated by many low frequency components, the noise will have a characteristic like the rumble of thunder.

Our human hearing system does not respond equally to all frequencies of sound. For sounds normally heard in our environment, low frequencies below 250 Hz and very high frequencies above 10,000 Hz are less audible than the frequencies in between. Acoustical scientists measured and developed frequency response functions that characterize the way people respond to different frequencies. These are the so-called A-, B-and C-weighted curves, representing the way people respond to sounds of normal, very loud and extremely loud sounds, respectively. Environmental noise generally falls into the “normal” category so that the A-weighted sound level is considered best to represent the human response.

3.1.4 Time Pattern

The third important characteristic of noise is its variation in time. Environmental noise generally derives, in part, from a conglomeration of distant noise sources. Such sources may include distant traffic, wind in trees, and distant industrial or farming activities, all part of our daily lives. These distant sources create a low-level "background noise" in which no particular individual source is identifiable. Background noise is often relatively constant from moment to moment, but varies slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this low-level, slowly varying background noise is a succession of identifiable noisy events of relatively brief duration. These events may include single-vehicle passbys, aircraft flyovers, screeching of brakes, and other short-term events, all causing the noise level to fluctuate significantly from moment to moment.

It is possible to describe these fluctuating noises in the environment using single-number descriptors. To do this allows manageable measurements, computations, and impact assessment. The search for adequate single-number noise descriptors has encompassed hundreds of attitudinal surveys and laboratory experiments, plus decades of practical experience with many alternative descriptors.

3.2 Descriptors for Transit Noise

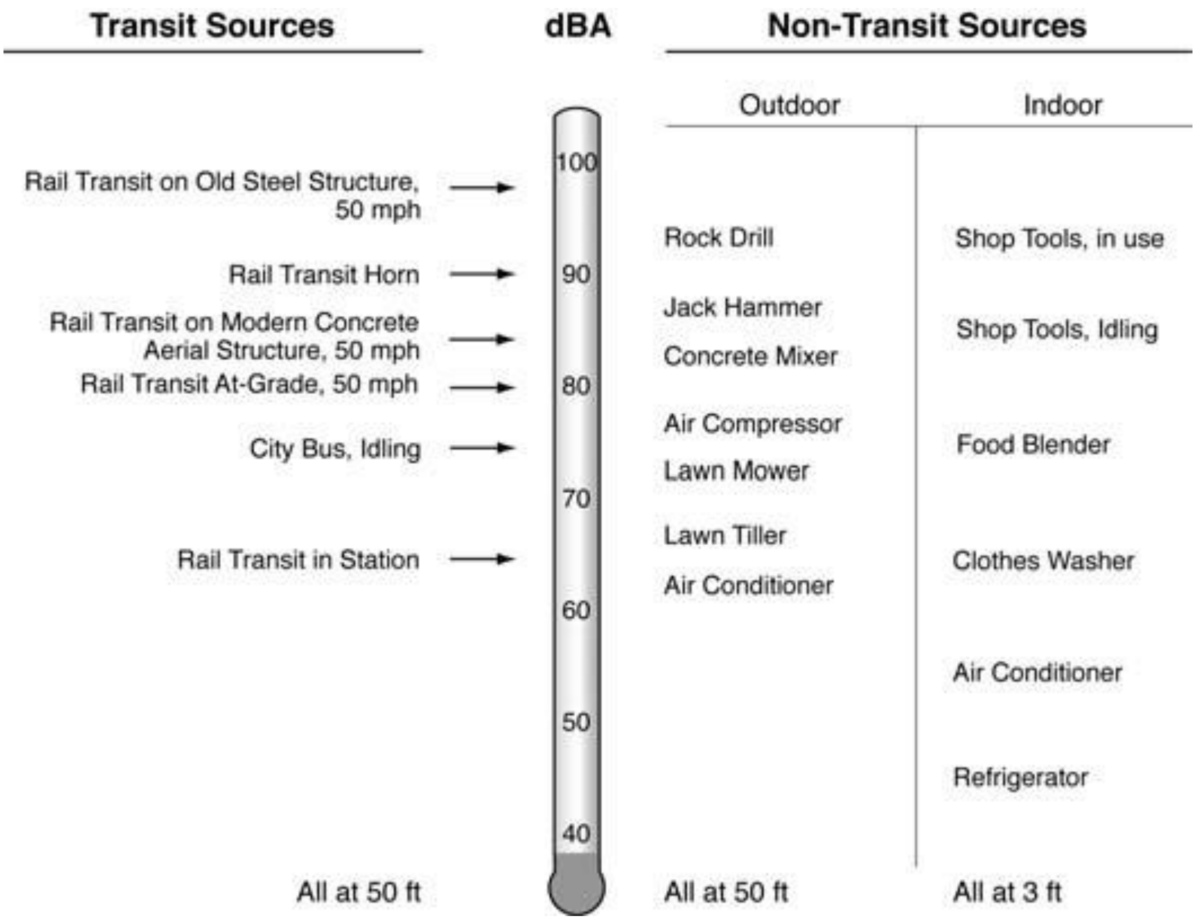
The following noise descriptors are for the computation and assessment of transit noise:

3.2.1 A-weighted Sound Level

The basic noise unit for transit noise is the A-weighted Sound Level. It describes a receiver's noise at any moment in time. Figure 3-2 shows some typical A-weighted Sound Levels for both transit and non-transit sources.

3.2.2 Maximum Sound Level (L_{max}) During a Single Event

As a transit vehicle approaches, passes by, and then recedes into the distance, the A-weighted sound level rises, reaches a maximum, and then fades into the background noise. The maximum A-weighted sound level reached during this passby is called the Maximum Sound Level, abbreviated here as "L_{max}."



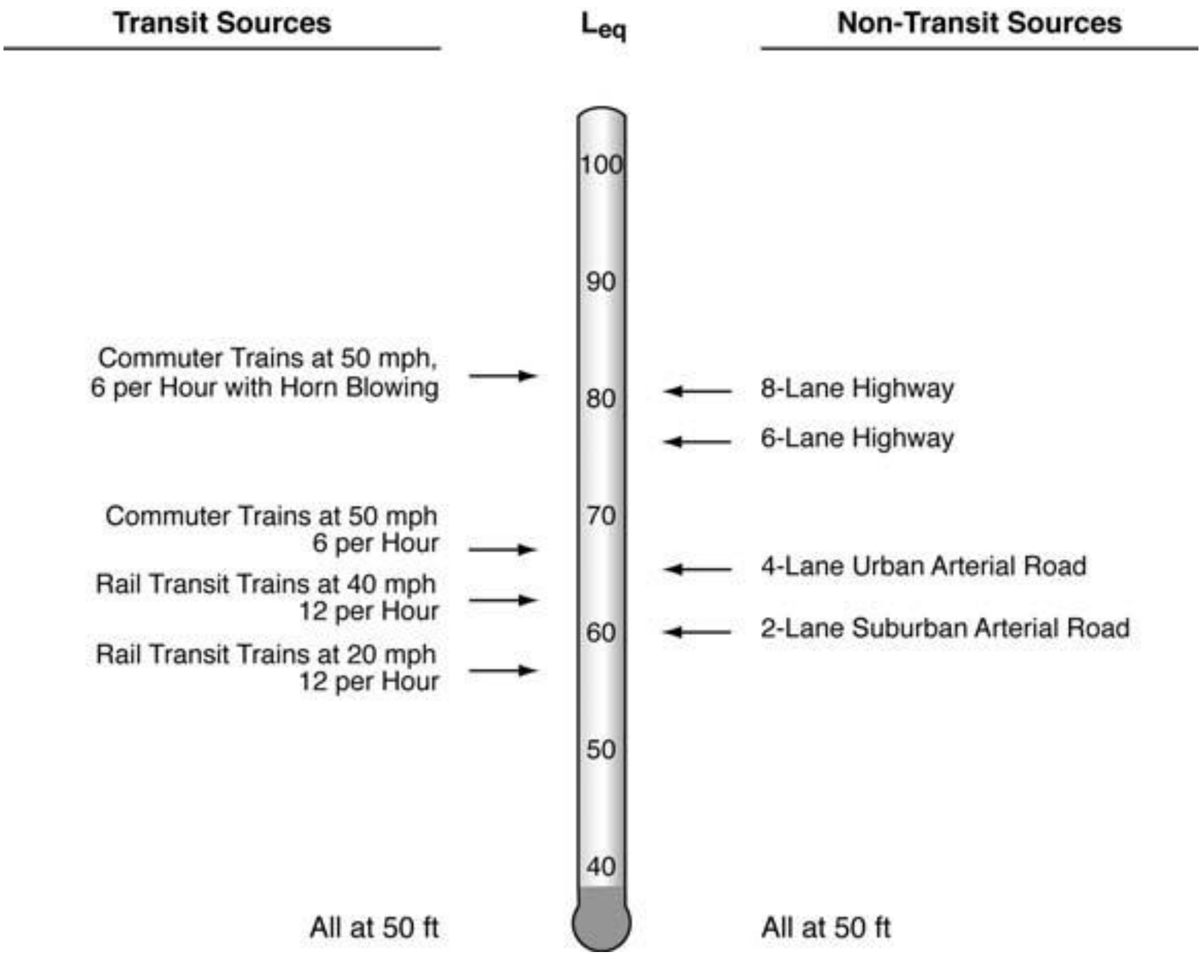
Source: FTA, 2006.

Figure 3-2: Typical A-weighted Sound Levels

3.2.3 Hourly Equivalent Sound Level (L_{eq}(h))

The descriptor for cumulative one-hour exposure is the Hourly Equivalent Sound Level, abbreviated here as "L_{eq}(h)." It is an hourly measure that accounts for the moment-to-moment fluctuations in A-weighted sound levels due to all sound sources during that hour, combined. Hourly L_{eq} is adopted here as the measure of cumulative noise impact for non-residential land uses (those not involving sleep).

Figure 3-3 shows some typical hourly L_{eq}'s, both for transit and non-transit sources. As is apparent from the figure, typical hourly L_{eq}'s range from the 40s to the 80s.



Source: FTA, 2006.

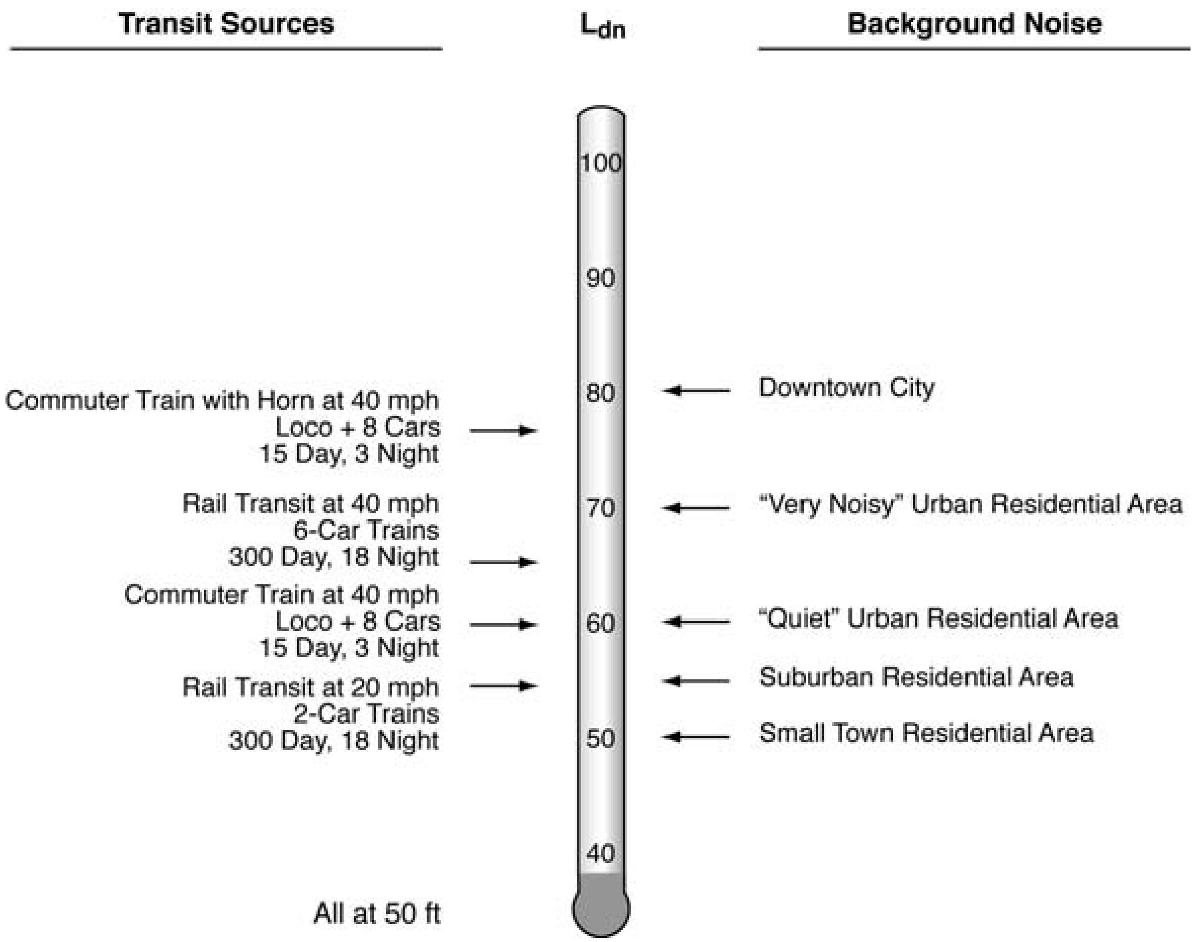
Figure 3-3: Typical Hourly L_{eq}s

3.2.4 Day-Night Sound Level (L_{dn}): The Cumulative 24-Hour Exposure from All Events

The descriptor for cumulative 24-hour exposure is the Day-Night Sound Level, abbreviated here as "L_{dn}." It is a 24-hour measure that accounts for the moment-to-moment fluctuations in A-Levels due to all sound sources during 24 hours, combined.

It may be thought of as a noise dose, totaled after increasing all nighttime A-Levels (between 10pm and 7am) by 10 decibels. Every noise event during the 24-hour period increases this dose, louder ones more than quieter ones, and ones that stretch out in time more than shorter ones. L_{dn} is adopted here as the measure of cumulative noise impact for residential land uses (those involving sleep).

Figure 3-4 shows some typical L_{dn}'s, both for transit and non-transit sources. As is apparent from the figure, typical L_{dn}'s range from the 50s to the 70s – where 50 is a quiet 24-hour period and 70 is an extremely loud one.



Source: FTA, 2006.

Figure 3-4: Typical L_{dn}s

3.3 Descriptors of Ground-Borne Vibration

The following noise descriptors are for the computation and assessment of ground-borne vibration:

3.3.1 Vibratory Motion

Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration. Because the motion is oscillatory, there is no net movement of the vibration element and the average of any of the motion descriptors is zero. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed.

3.3.2 Amplitude Descriptors

Vibration consists of rapidly fluctuating motions with an average motion of zero. Several descriptors can be used to quantify vibration amplitude.

The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring of blasting vibration since it is related to the stresses that are experienced by buildings.

Although peak particle velocity is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to an average vibration amplitude. Because the net average of a vibration signal is zero, the root mean square (rms) amplitude is used to describe the "smoothed" vibration amplitude. The root mean square of a signal is the square root of the average of the squared amplitude of the signal. The average is typically calculated over a one-second period. The rms amplitude is always less than the PPV and is always positive.

The PPV and rms velocity are normally described in inches per second in the USA and meters per second in the rest of the world. Although it is not universally accepted, the abbreviation "VdB" is commonly used for vibration decibels to reduce the potential for confusion with sound decibels. Decibel notation acts to compress the range of numbers required to describe vibration.

3.3.3 Ground-Borne Noise

The rumbling sound caused by the vibration of room surfaces is called ground-borne noise. The annoyance potential of ground-borne noise is usually characterized with the A-weighted sound level. Although the A-weighted level is almost the only metric used to characterize community noise, there are potential problems when characterizing low-frequency noise using A-weighting. This is because of the non-linearity of human hearing which causes sounds dominated by low-frequency components to seem louder than broadband sounds that have the same A-weighted level. The result is that ground-borne noise with a level of 40 dBA sounds louder than 40 dBA broadband noise. This is accounted for by setting the limits for ground-borne noise lower than would be the case for broadband noise.

3.4 Human Perception of Ground-Borne Vibration and Noise

This section gives some general background on human response to different levels of building vibration, laying the groundwork for the criteria for ground-borne vibration and noise.

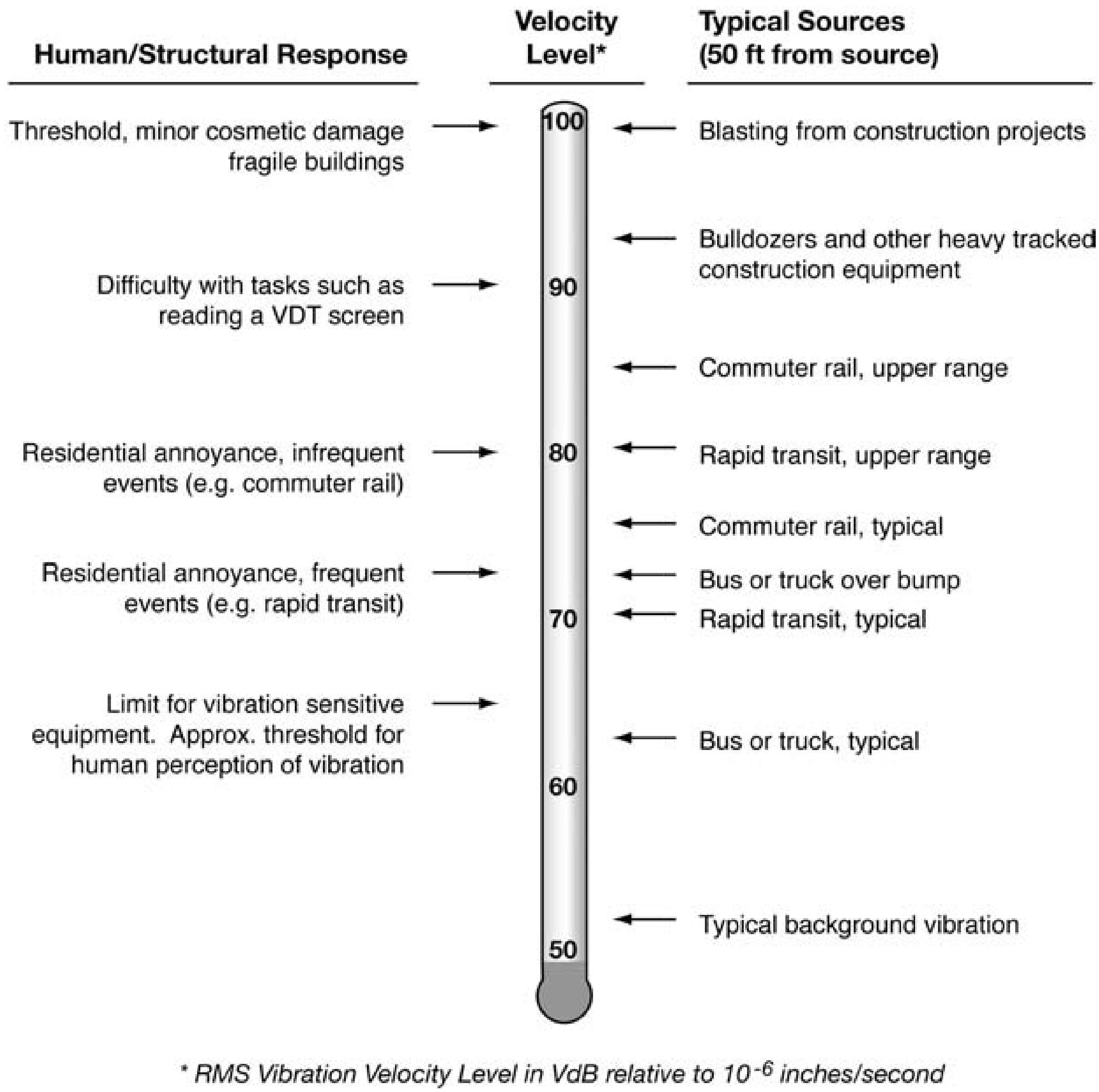
3.4.1 Typical Levels of Ground-Borne Vibration and Noise

In contrast to airborne noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Figure 3-5 illustrates common vibration sources and the human and structural response to ground-borne vibration. The range of interest is from approximately 50 VdB to 100 VdB. Background vibration is usually well below the threshold of human perception and is of concern only when the vibration affects very sensitive manufacturing or research equipment.

Although the perceptibility threshold is about 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB. Rapid transit or light rail systems typically generate vibration levels of 70 VdB or more near their tracks. On the other hand, buses and trucks rarely create vibration that exceeds 70 VdB unless there are bumps in the road. Because of the heavy locomotives on diesel commuter rail systems, the vibration levels average about 5 to 10 decibels higher than rail transit vehicles.

The relationship between ground-borne vibration and ground-borne noise depends on the frequency content of the vibration and the acoustical absorption of the receiving room. The more acoustical absorption in the room, the lower will be the noise level. For a room with average acoustical absorption, the unweighted sound pressure level is approximately equal to the average vibration velocity level of the room surfaces. Hence, the A-weighted level of ground-borne noise can be estimated by applying A-weighting to the vibration velocity spectrum. Since the A-weighting at 31.5 Hz is -39.4 dB, if the vibration spectrum peaks at 30 Hz, the A-weighted sound level will be approximately 40 decibels lower than the velocity level. Correspondingly, if the vibration spectrum peaks at 60 Hz, the A-weighted sound level will be about 25 decibels lower than the velocity level.



Source: FTA, 2006.

Figure 3-5: Typical Levels of Ground Borne Vibration

3.4.2 Quantifying Human Response to Ground-Borne Vibration

Table 3-1 describes the human response to different levels of ground-borne noise and vibration. The first column is the vibration velocity level, and the next two columns are for the corresponding noise level assuming that the vibration spectrum peaks at 30 Hz or 60 Hz. As discussed above, the A-weighted noise level will be approximately 40 dB less than the vibration velocity level if the spectrum peak is around 30 Hz, and 25 dB lower if the spectrum peak is around 60 Hz. Table 3-1 illustrates that achieving either the acceptable vibration or acceptable noise levels does not guarantee that the other will be acceptable. For example, the noise caused by vibrating structural components may be very annoying even though the vibration cannot be felt. Alternatively, a low-frequency vibration could be annoying while the ground-borne noise level it generates is acceptable.

Table 3-1: Human Response to Different Levels of Ground-Borne Noise and Vibration

Vib. Velocity Level	Noise Level		Human Response
	Low Freq[1]	Low Freq[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 vdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas, mid-frequency noise annoying even for infrequent events with institutional land uses such as schools and churches.

Notes:
1. Approximate noise level when vibration spectrum peak is near 30 Hz.
2. Approximate noise level when vibration spectrum peak is near 60 Hz.

Source: FTA, 2006.

4.0 REGULATORY CONTEXT

This section presents the guidelines, criteria, and regulations used to assess noise and vibration impacts associated with the proposed project.

4.1 Operation Noise Impact Criteria

The criteria in FTA's *Transit Noise and Vibration Impact Assessment* (FTA, 2006) were used to assess existing ambient noise levels and future noise impacts from BRT operations. They are founded on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale. The amount that transit projects are allowed to change the overall noise environment is reduced with increasing levels of existing noise.

The FTA Noise Impact Criteria applicable to three categories of land use are summarized in Table 4-1.

Table 4-2: Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric, dBA	Description of Land Use Category
1	Outdoor $L_{eq}(h)$*	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)$*	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls fall into this category. Places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities are also included.
Note: * L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.		

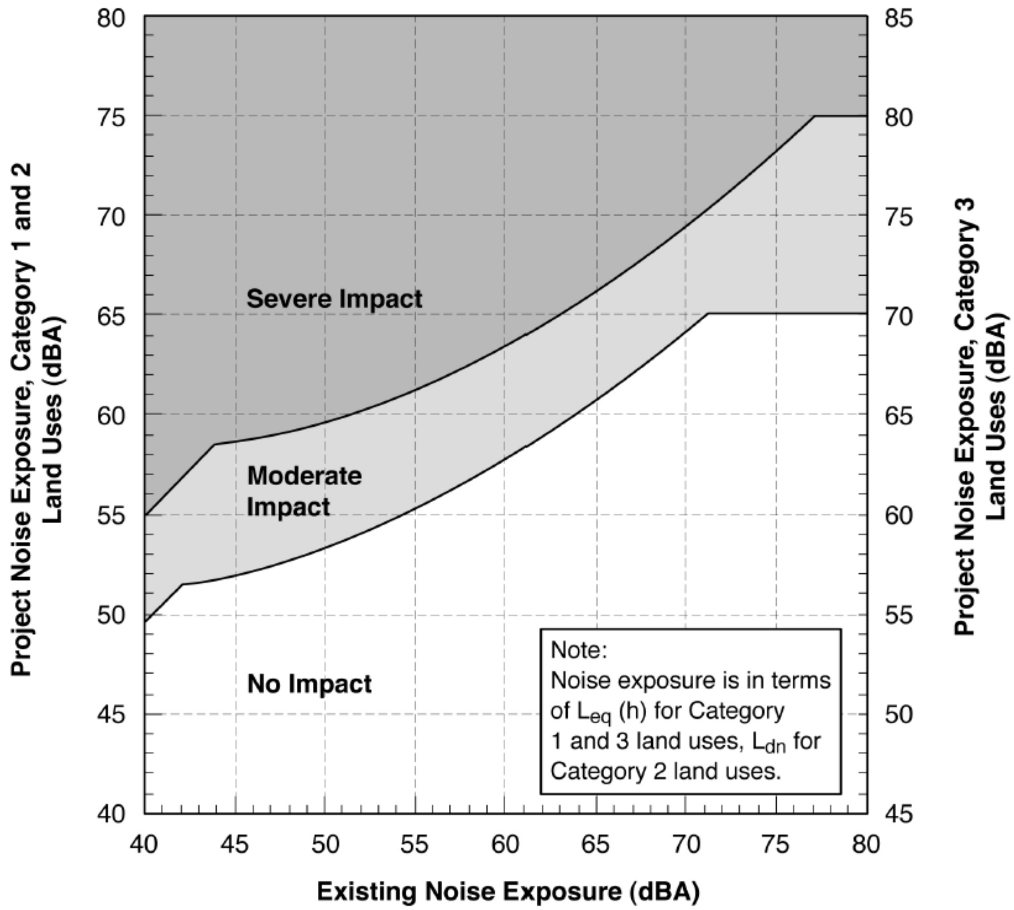
Source: FTA, 2006.

Day night average noise level (L_{dn}) is used to characterize noise exposure for residential areas, hotels, and hospitals where people normally sleep (Category 2). The maximum 1-hour average hourly equivalent noise level (L_{eq}) during the period that the facility is in use is used for other noise-sensitive land uses such as schools, libraries, churches, and parks (Category 3). The noise impact criteria for human annoyance are based on comparison of the existing outdoor noise levels and the future outdoor noise levels from a proposed transit project. They incorporate activity interference caused by the transit project alone and annoyance due to the change in the noise environment caused by the project. There are two levels of impact included in the FTA criteria, as shown in Figure 4-1. The interpretations of these two levels of impact are summarized as follows:

- *Severe Impact*: Project noise above the upper curve is considered to cause Severe Impact because a significant percentage of people would be highly annoyed by the new noise. This curve flattens out at 75 decibels (dB) for Category 1 and 2 land use, a level associated with an unacceptable living environment.
- *Moderate Impact:* The change in the cumulative noise level is noticeable to most people, but it may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the existing level, predicted level of increase over existing noise levels, and the types and numbers of noise-sensitive land uses affected.

The horizontal axis in Figure 4-1 is the existing L_{dn} or L_{eq} without any project-related noise. The vertical axis on the left side is the L_{dn} at residential land uses and hotels caused by a project, whereas the axis on the right side is the L_{eq} at schools, churches, and parks. Figure 4-1 illustrates that a project noise level of L_{dn} of 61 A-weighted decibels (dBA) at a Category 2 receptor would be considered as “moderate impact” if the existing L_{dn} of a selected residence is 65 dBA. If the project noise level reaches an L_{dn} of 67 dBA, the project noise level would be considered as “severe impact” to the Category 2 receptor.

Although the curves in Figure 4-1 are defined in terms of the project noise exposure and the existing noise exposure, it is important to emphasize that the increase in the cumulative noise – when the project noise is added to existing noise – is the basis for the criteria. Figure 4-1 shows the noise impact criteria for Category 1 and 2 land uses in terms of the allowable increase in the cumulative noise exposure.

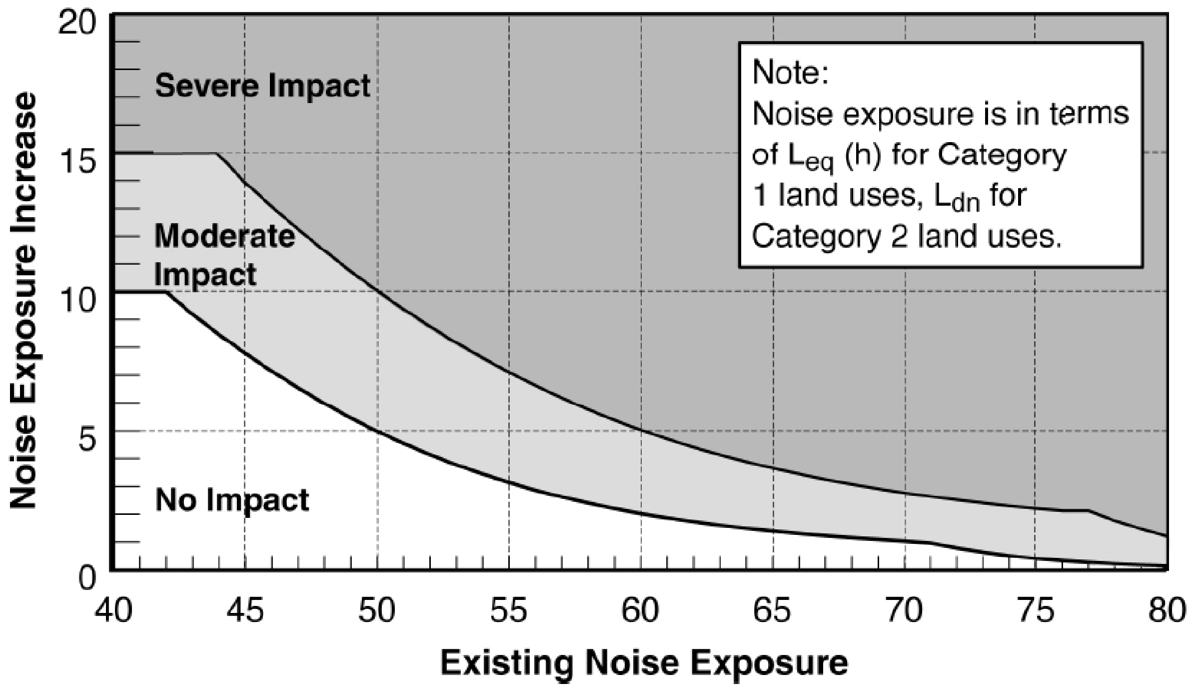


Source: FTA, 2006.

Figure 4-1: Noise Impact Criteria for Transit Projects

Figure 4-2 shows that the criterion for moderate impact allows a noise exposure increase of 10 dB, if the existing noise exposure is 42 dBA or less, but only a 1-dB increase when the existing noise exposure is 70 dBA. As the existing level of ambient noise increases, the allowable level of project noise increases, but the total allowable increase in community noise exposure is reduced. This reduction accounts for the unexpected result – project noise exposure levels that are less than the existing noise exposure can still cause moderate impact.

For residential land use, the noise criteria are to be applied outside the building locations at noise-sensitive areas with frequent human use, including outdoor patios. If none is present, the criteria should be applied near building doors and windows. For parks and other significant outdoor use, the criteria are to be applied at the property lines; however, for locations where land use activities are solely indoors, noise impact may be less significant if the outdoor-to-indoor reduction is greater than for typical buildings (approximately 25 dB with windows closed or 12 dBA with windows open). Thus, if it can demonstrated that there would only be indoor activities, mitigation may not be needed.



Source: FTA, 2006.

Figure 4-2: Increase in Cumulative Noise Levels Allowed by Criteria

4.2 Operation Vibration Impact Criteria

The criteria in the *Transit Noise and Vibration Impact Assessment* (FTA, 2006) were used to evaluate vibration impacts from transit operations. The evaluation of vibration impacts can be divided into two categories: (1) human annoyance and (2) building damage.

Generally, human annoyance criteria are used to assess potential impacts associated with operational vibration, whereas building damage criteria are used to estimate vibration impacts due to construction activities.

4.2.1 Human Annoyance Criteria

The ground-borne vibration impact criteria describe human response to vibration and potential interference as relates to the operation of vibration-sensitive equipment. The criteria for acceptable ground-borne vibration are expressed in terms of root mean square (RMS) velocity levels in decibels (VdB) and are based on the maximum levels for a single event (L_{max}). Table 4-2 presents the criteria for various land use categories, as well as the frequency of events.

Table 4-2: Ground-Borne Vibration Impact Criteria for Human Annoyance

Land Use Category	Ground-Borne Vibration Impact Levels, VdB*		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes:
1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as more than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
* Root-mean-square velocity in decibels (VdB) re: 1 micro-inch per second.

Source: FTA, 2006.

Sensitive receptors within the project boundary include residences, hotels, schools, churches, library, and hospital. These receptors fall under Category 2, places where people normally sleep including hotels and hospitals and Category 3, schools, churches, and parks with primarily daytime use. Because the number of proposed operations is up to 128 buses per weekday, FTA classifies the proposed service under "Frequent Events." According to Table 4-2, the maximum vibration level cannot exceed 72 VdB for Category 2 land uses and 75 VdB for Category 3 land uses.

4.2.2 Building Damage Criteria

Vibration resulting from bus operations on city streets would not cause building damage.

Construction activities can result in varying degrees of ground vibration, depending on the equipment and method employed. The vibration associated with typical bus transit construction is not likely to damage building structures, but it could cause cosmetic building damage.

Vibrations generated by construction activities are mainly in the form of surface or Raleigh waves. Studies have shown that the vertical component of construction-generated vibrations is the strongest, and that peak particle velocity (PPV) correlates best with building damage and complaints. Table 4-3 summarizes the construction vibration limits shown in FTA guidelines for structures located near the ROW of a transit project.

Table 4-3: Construction Vibration Damage Criteria

Building Category	Peak Particle Velocity, in/sec	Approximate Lv*, VdB
I. Reinforced-concrete, steel, or timber (no plaster)	0.50	102
II. Engineered concrete and masonry (no plaster)	0.30	98
III. Non-engineered timber and masonry buildings	0.20	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
Note: * Root-mean-square velocity in decibels (VdB) re: 1 micro-inch per second.		

Source: FTA, 2006.

4.3 Construction Noise and Vibration Ordinances

4.3.1 Construction Noise Ordinances

Construction impacts to sensitive neighborhoods, although temporary in nature, can significantly affect residents and/ or compromise building structures. This is recognized by most municipal governments who establish and enforce limits for construction noise and vibration disturbance.

There are various jurisdictions along the proposed project alignment, each with different construction noise and vibration limits. Some municipalities have specific construction noise and vibration limits in their ordinances. The following are brief descriptions of the construction noise and vibration ordinances in various municipal codes:

- **City of Pomona:** Noise sources associated with or vibration created by construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, are exempt from City noise provisions provided such activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday, and provided the noise level created by such activities does not exceed the noise standard of 65 dB(A) plus the limits specified in Section 18-311(b) below as measured on residential property and any vibration created does not endanger the public health, welfare, and safety.

  Section 18-311 (b):

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

1) The noise standard for a cumulative period of more than 30 minutes in any hour;
2) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour;
3) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour;
4) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour; or
5) The noise standard plus 20 dB(A) for any period of time.

- **City of Montclair:** Noise sources associated with construction, repair, remodeling, or grading of any real property, are exempt from City noise provisions provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on any given day and provided that the Building Official determines that the public health and safety will not be impaired. Industrial or commercial construction or public improvements, not otherwise feasible except between these hours, may be approved on a limited, short-term basis, subject to the approval of the Director of Community Development.
- **City of Ontario:** No person, while engaged in construction, remodeling, digging, grading, demolition, or any other related building activity, shall operate any tool, equipment, or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.
- **City of Rancho Cucamonga:** Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, are permitted provided said activities:

  a. When adjacent to a residential land use, school, church, or similar type of use, the noise-generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the basic noise level of a maximum of 65 dBA when measured at the adjacent property line.
  b. When adjacent to a commercial or industrial use, the noise-generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the basic noise level of a maximum of 70 dBA when measured at the adjacent property line.

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

a) Basic noise level for a cumulative period of not more than 15 minutes in any one hour; or
b) Basic noise level plus five dBA for a cumulative period of not more than ten minutes in any one hour; or
c) Basic noise level plus 14 dBA for a cumulative period of not more than five minutes in any one hour; or
d) Basic noise level plus 15 dBA at any time.

- **City of Fontana:** Construction or repairing of buildings or structures. The erection (including excavating), demolition, alteration, or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety are not allowed.

The proposed West Valley Connector Project spans the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana. Compliance with each separate set of construction noise guidelines would require adherence with varying limits under different jurisdictions that would prove difficult and impractical. As a result, FTA daytime and nighttime construction noise level thresholds should be applied for the entire project. Table 4-4 presents the recommended noise limits for the proposed project. These limits are for 8-hour average noise levels (L_{eq}) as applies at the property line of the nearest location to the construction site.

Table 4-4: FTA Construction Noise Impact Criteria

Land Use	8-hour L_{eq}, dBA		L_{dn}, dBA
	Day	Night	30-day Average
Residential	80	70	75[1]
Commercial	85	85	80[2]
Industrial	90	90	85[2]

Notes:
1. In urban areas with very high ambient noise levels (L_{dn}>65), L_{dn} from construction operations should not exceed existing ambient +10 dB.
2. 24-hour L_{eq}, not L_{dn}.
3. Daytime hours are 7:00 a.m. to 10:00 p.m.; nighttime hours are 10:00 p.m. to 7:00 a.m.

Source: FTA, 2006.

The FTA *Transit Noise and Vibration Impact Assessment* manual suggests 8-hour L_{eq} and 30-day averaged L_{dn} for consideration where construction noise is involved. Table 4-4 may then be used as a general guide in interpreting the significance of the measured construction noise levels.

4.3.2 Construction Vibration Ordinances

Municipal guidelines on allowable construction-induced vibration levels were not identified other than the City of Pomona, which prohibits any vibration created that would endanger the public health, welfare, and safety and the City of Rancho Cucamonga which states that vibrations from temporary construction/demolition are exempt from the City's vibration provisions. Thus, FTA guidelines, previously summarized in Tables 4-2 and 4-3, will be applied.

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5.0 EXISTING CONDITIONS

Parsons personnel visited the proposed project site on May 12 and 13, 2016, to identify noise and vibration-sensitive land uses. Noise monitoring was conducted from June 7 through 14, June 29 through 30, July 26 through 27, and October 5 through 6 2016. The monitoring sites include noise-sensitive locations, such as residences, hotels, and public recreation areas.

This section describes the existing noise and vibration environment along the proposed alignment and summarizes the monitoring results.

5.1 Existing Environment – Noise

The project sits primarily at the eastern end of Los Angeles County in the City of Pomona and at the southwestern end of San Bernardino County in the cities of Montclair, Ontario, Rancho Cucamonga, and Fontana. The project site is generally located along Holt Boulevard/Avenue and Foothill Boulevard. The project area is bounded on the north by Foothill Boulevard, on the west by Main Street, on the east by Sierra Avenue, and on the south by Valley Boulevard (see Figures 1-1 and 1-2). The project is located within an urban setting with primarily commercial and residential development. Land uses in the project vicinity include residential, commercial, hotels/motels, airport, schools, recreation, utility, office buildings, civic, hospital, industrial, and vacant land.

The existing noise along the proposed BRT corridor is largely dominated by local traffic on surface roads.

Characteristics of neighborhoods remain relatively constant from the western end to the eastern end of the alignment. The alignment travels through primarily commercial land uses, including retail, restaurants, offices, and auto dealerships interspersed with single-family and multi-family residential land uses, hotels/motels, schools, churches, parks, a library, and a hospital. The exception to this is the area north of Foothill Boulevard along Day Creek Boulevard, Church Street, and Rochester Avenue in which the land use is primarily residential.

Noise-sensitive receptors that may be affected by the project include single- and multi-family residences, hotels/motels, schools, churches, parks, a library, and a hospital located near the project corridor. Noise monitoring was conducted at various sites to assess the existing noise conditions along the alignment.

Table 5-1 presents the locations and descriptions of the representative noise-sensitive sites. These locations are shown in figures included in Appendix A.

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R1	North				Church	Victory Outreach Church, 177 W Monterey Avenue, Pomona
R2 / LT1	North	●				157 W. Monterey Avenue, Pomona
R3	East		●			120 E. Monterey Avenue, Pomona
R4	North		●			159 E. Holt Avenue, Pomona
R4A	South				Church	First Presbyterian Church, 401 N. Gibbs Street, Pomona
R5 / ST1	South		●			250 E. Holt Avenue, Pomona
R6 / LT2	North	●				368 E. Holt Avenue, Pomona
R7	North		●			527 E. Holt Avenue, Pomona
R8	South	●				768 E. Holt Avenue, Pomona
R9 / ST2	North				Park	Garfield Park, Pomona
R10	North			●		Pala Motel 987 E. Holt Avenue, Pomona
R11	South				Church	Fountain of Love Christian Center 1100 E. Holt Avenue, Pomona
R12A	South				Church	Church of Christ 4159 E. Holt Avenue, Montclair
R12	North	●				4213 Via Aida, Montclair
R13 / LT3	South	●				4288 Appaloosa Way, Montclair
R14 / ST3	North				Mobile Homes	Sunset Trailer Grove 4400 Holt Boulevard # 15, Montclair
R15 / LT4	North		●			4537 Bodega Court, Montclair
R16	North				School	Monterey Elementary School, 4825 Bandera Street, Montclair
R17 / ST3A	South	●				4981 Holt Boulevard, Montclair
R18	North				Mobile Homes	Paradise Trailer Park, 5034 Holt Boulevard, Montclair

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R19	South				School	David Chaffey West Community Day School, 5033 Holt Boulevard, Montclair
R20	South			●		Ontario Inn 5361 Holt Boulevard, Montclair
R21	North			●		Valley Vista Motel 5650 Holt Boulevard, Montclair
R22 / LT6	North	●				763 W. B Street, Ontario
R23	South			●		Golden Bear Inn 661 W. Holt Boulevard, Ontario
R24 / ST4	South	●				108 S. Vine Avenue, Ontario
R25	North				Church	First Christian Church 110 N. Vine Avenue, Ontario
R26	South				Park	San Bernardino County Public Health Clinics 150 E. Holt Boulevard, Ontario
R27 / ST5	North		●			105 North Starling Privado #1018, Ontario
R28 / ST5A	North	●				545 E. Holt Boulevard #2, Ontario
R29	North	●				759 E. Holt Boulevard, Ontario
R30	South	●				1042 E. Holt Boulevard, Ontario
R31 / ST6	North				Mobile Homes	Sky Villa Trailer Park, 1061 E. Holt Boulevard #1, Ontario
R32	North				Church	Joyful Nations Church, 1101 E. Holt Boulevard, Ontario
R33	North	●				1175 E. Holt Boulevard, Ontario
R34	North		●			1315 E. Holt Boulevard, Ontario
R35 / LT8	North				Mobile Homes	1405 E. Holt Boulevard #1, Ontario
R36	South	●				1670 E. Holt Boulevard, Ontario

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R37 / ST7	North			●		Comfort Suites, 1811 E. Holt Boulevard, Ontario
R38 / ST8	North	●				2710 Inland Empire Boulevard, Ontario
R39	North		●			3161 Inland Empire Boulevard, Ontario
R40 / LT9	North		●			850 N. Center Avenue #12D, Ontario
R41	South			●		Ontario Airport Motel, 700 N. Haven Avenue, Ontario
R42	North			●		La Quinta Inn, 3555 Inland Empire Boulevard, Ontario
R43 / LT10	North		●			11210 Fourth Street #4115, Rancho Cucamonga
R44	South			●		Holiday Inn, 9589 Milliken Avenue, Rancho Cucamonga
R45 / ST9	West		●			9200 Milliken Avenue, Rancho Cucamonga
R46 / LT11	South	●				11929 E. Foothill Boulevard Rancho Cucamonga
R47	North			●		Four Point Hotel, 11960 E. Foothill Boulevard, Rancho Cucamonga
R48 / ST10	North		●			8090 Cornwall Court #61, Rancho Cucamonga
R49 / LT12	South	●				13022 Vine Street, Rancho Cucamonga
R50 / ST11	South		●			13247 E. Foothill Boulevard, Rancho Cucamonga
R51 / ST12	South	●				13529 E. Foothill Boulevard, Fontana
R51A	South	●				13985 Historic Route 66, Fontana
R52 / LT13	North	●				14103 Casablanca Court, Fontana
R53	South	●				14389 E. Foothill Boulevard, Fontana

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R54 / LT14	South	●				14552 Vine Street, Fontana
R55 / ST13	North	●				14622 E. Foothill Boulevard, Fontana
R56	North				Mobile Homes	Sunset Gardens Park, 15114 E. Foothill Boulevard, Fontana
R57 / ST14	South			●		La Villa Motel, 15211 E. Foothill Boulevard, Fontana
R58	South	●				15357 E. Foothill Boulevard, Fontana
R59	North			●		Fontana Inn, 15706 E. Foothill Boulevard, Fontana
R60 / LT15	South	●				15920 Mission Avenue, Fontana
R61	South		●			16171 Foothill Boulevard, Fontana
R62 / ST15	North		●			16270 E. Foothill Boulevard, Fontana
R63 / ST16	South	●				8153 Date Street, Fontana
R64 / LT16	North	●				16536 E Foothill Boulevard, Fontana
R65 / ST17	North	●				16809 Paine Street, Fontana
R66 / LT17	East	●				8217 Sierra Avenue, Fontana
R66A	West				Church	Fontana Community Church, 8316 Sierra Avenue, Fontana
R67	East				Library	Lewis Library, 8437 Sierra Avenue, Fontana
R68	West		●			8684 Sierra Avenue, Fontana
R69 / ST18	East		●			16901 Orange Way, Fontana
R70	West				Park	Santa Fe Park, Fontana
R71	East		●			16946 Ceres Avenue, Fontana
R72	East	●				9107 Sierra Avenue, Fontana

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R73	West				Church	First Methodist Church, 9116 Sierra Avenue, Fontana
R73A	West				School	Westech College, 9460 Sierra Avenue, Fontana
R74	East				Hospital	Kaiser Permanente, 9961 Sierra Avenue, Fontana
R75 / ST19	North	●				Americas Best Value Inn & Suites, 16780 Valley Boulevard, Fontana
R76 / ST20	East		●			10033 Juniper Avenue, Fontana
R77 / ST21	West		●			9910 Juniper Avenue, Fontana
R78 / LT19	West	●				16683 Mallory Drive, Fontana
R79 / ST22	North		●			16700 Marygold Avenue, Fontana
R80 / LT20	West		●			3410 E. 4th Street, Ontario
R81 / ST23	West				School	Universal Technical Institute, 9494 Haven Avenue, Rancho Cucamonga
R86/LT21	East	●				7866 Henbane Street, Rancho Cucamonga
R87/LT21A	West	●				7741 Danbury Drive, Rancho Cucamonga
R88 / ST25	North	●				7686 Hyssop Drive, Rancho Cucamonga
R89	South		●			12212 Chantrelle Drive, Rancho Cucamonga
R90	North	●				12231 Dry Creek Drive, Rancho Cucamonga
R91	East		●			7666 Papyrus Place, Rancho Cucamonga
R92 / LT22	West		●			7713 Hess Place, Rancho Cucamonga
R93 / ST26	West		●			7922 Day Creek Boulevard, Rancho Cucamonga

Table 5-1: Description of Representative Sensitive Receptor Sites

Site Number / Measurement	Side of Alignment[1]	Land Use				Address
		SFR	MFR	Hotel	Other	
R94	East				School	Baldy View ROP Career Training Center 1501 S. Bon View Avenue, Ontario
R95 / ST27	West	●				1314 S. Bon View Avenue, Ontario

Notes:
1. Receptor location in relation to proposed alignment.
2. SFR = Single Family Residence, MFR = Multiple Family Residence.
3. LT = long-term noise measurement site, ST = short-term noise measurement site.

Noise measurements were conducted at 49 locations within the project limits. The primary objectives of the measurements are to evaluate the existing noise environment and use them in determining the appropriate impact criteria per FTA guidelines. Transit projects are allowed to change the overall noise environment in a community only to the extent established by FTA based on existing noise levels. The impact criteria published by FTA dictate the suitability and noise mitigation needs of a project.

Short-term noise measurements, each lasting 1 hour in duration, were conducted at 29 measurement sites. Long-term noise measurements were conducted for a minimum of 24 hours at 20 locations. The L_{dn} levels at long-term measurement locations were calculated subsequently by applying nighttime-hour noise weightings to the measured data. Nighttime noise weightings are the addition of 10 dB from the hours of 10:00 p.m. through 7:00 a.m. At short-term locations, L_{dn} levels were estimated by comparing the short-term measured noise levels to results obtained from nearby long-term measurement locations that were in progress concurrently or from long-term measurement sites with similar land use makeup. The difference or delta between the measured short-term levels and the simultaneous nearby long-term 1-hour interval is applied to the calculated L_{dn} of the long-term measurement site to estimate the L_{dn} of the short-term site. The peak-hour noise level (L_{eq}) for the short-term measurement sites were also estimated by applying the delta to the peak-hour noise level of the nearby long-term measurement site.

Results for the long-term and short-term measurements are presented in Table 5-2. Also included in the table are the date, time, and duration of each measurement.

The following instruments were used for noise measurements:

- Integrating Sound Level Meter – Larson Davis Models 812, 820, 824, 870, and LxT1 integrating sound level meters.
- Microphone Systems –
  - Larson Davis 812 and 820 System – Larson Davis model PRM 828 microphone preamp; Larson Davis model 2560, ½-inch pressure microphone.
  - Larson Davis 824 System – Larson Davis model PRM902 microphone preamps; PCB model 377A02, ½-inch pressure microphone.
  - Larson Davis 870 System – Larson Davis model 900B microphone preamps; Larson Davis model 2559, ½-inch pressure microphone.
  - Larson Davis LxT1 System – Larson Davis model PRMLxT1 microphone preamps; PCB model 377B02, ½-inch pressure microphone.
- Acoustic Field Calibrator – Larson Davis Models CA250 and CAL200 constant pressure microphone calibrator.

Table 5-2: Measured Existing Noise Levels

Measurement Site[1]	Date, mm/dd/yy	Start Time[2]	Duration, hh:mm	Measured L_{eq}, dBA	Ref[3]	L_{dn} / (L_{eq}[4]), dBA
LT1	06/07/16 – 06/08/16	09:00	24:00	--	--	66 / (69)
ST1	06/07/16	14:00	1:00	67	LT2	70 / (69)
LT2[W]	06/07/16 – 06/08/16	10:00	26:00	--	--	67 / (66)
ST2	06/07/16	14:00	1:00	62	LT2	65 / (64)
LT3[W]	06/07/16 – 06/08/16	11:00	27:00	--	--	63 / (63)
ST3	06/07/16	15:40	1:00	67	LT4	68 / (70)
LT4[W]	06/07/16 – 06/08/16	12:00	26:00	--	--	65 / (66)
ST3A	06/07/16	15:20	1:00	61	LT4	63 / (64)
LT6[W]	06/09/16 – 06/10/16	12:00	25:00	--	--	61 / (58)
ST4	06/09/16	12:00	1:00	66	LT8	70 / (68)
ST5[W]	06/09/16	13:20	1:00	61	LT8	64 / (62)
ST5A	06/09/16	14:40	1:00	70	LT8	72 / (70)
ST6	06/08/16	16:00	1:00	70	LT8	72 / (71)
LT8	06/08/16 – 06/19/16	10:00	30:00	--	--	70 / (68)
ST7[W]	06/18/16	10:40	1:00	62	LT8	65 / (63)

Table 5-2: Measured Existing Noise Levels

Measurement Site[1]	Date, mm/dd/yy	Start Time[2]	Duration, hh:mm	Measured L_{eq}, dBA	Ref[3]	L_{dn} / (L_{eq}[4]), dBA
ST8	06/29/16	14:40	1:00	67	LT9	64 / (66)
LT9	06/29/16	11:00	26:00	--	--	66 / (69)
LT10	06/09/16 – 06/10/16	11:00	26:00	--	--	66 / (64)
ST9	06/10/16	08:40	1:00	67	LT10	70 / (67)
LT11[W]	07/26/16 – 07/27/16	08:00	32:00	--	--	67 / (66)
ST10[W]	06/10/16	08:20	1:00	56	LT12	61 / (59)
LT12[W]	06/09/16 – 06/10/16	12:00	27:00	--	--	63 / (61)
ST11	06/13/16	15:00	1:00	62	LT13	65 / (63)
ST12	06/13/16	15:00	1:00	68	LT13	70 / (69)
LT13[W]	06/13/16 – 16/14/16	14:00	27:00	--	--	64 / (63)
LT14[W]	06/13/16 – 16/14/16	14:00	27:00	--	--	56 / (59)
ST13	06/14/16	08:00	1:00	63	LT13	65 / (64)
ST14	06/14/16	08:00	1:00	65	LT16	66 / (65)
LT15	06/09/16 – 06/10/16	15:00	26:00	--	--	57 / (59)
ST15	06/14/16	09:20	1:00	66	LT16	68 / (66)
ST16	06/14/16	09:20	1:00	53	LT16	55 / (53)
LT16	06/13/16 – 06/14/16	10:00	30:00	--	--	69 / (68)
ST17	06/14/16	11:00	1:00	55	LT16	56 / (55)
LT17	06/29/16	12:00	26:00	--	--	63 / (62)
ST18	06/29/16	13:00	1:00	73	LT17	76 / (75)
ST19	06/14/16	12:40	1:00	66	LT19	69 / (69)
ST20	06/14/16	13:00	1:00	59	LT19	63 / (62)
ST21	06/14/16	14:00	1:00	61	LT19	65 / (65)
LT19[W]	06/13/16 – 06/14/16	12:00	30:00	--	--	58 / (58)
ST22[W]	06/14/16	16:40	1:00	56	LT19	58 / (57)
LT20	10/05/16 – 10/06/16	9:00	28:00	--	--	68 / (65)
ST23	10/05/16	12:40	1:00	67	LT20	73 / (70)

Table 5-2: Measured Existing Noise Levels

Measurement Site[1]	Date, mm/dd/yy	Start Time[2]	Duration, hh:mm	Measured L_{eq}, dBA	Ref[3]	L_{dn} / (L_{eq}[4]), dBA
LT21[W]	09/20/17 – 09/21/17	16:00	24:00	--	--	60/ (61)
LT21A[W]	09/20/17 – 09/21/17	17:00	24:00	--	--	59/ (59)
ST25	10/06/16	10:20	1:00	63	LT22	67 / (64)
LT22	10/05/16 – 10/06/16	12:00	26:00	--	--	66 / (64)
ST26	10/06/16	9:00	1:00	65	LT22	69 / (67)
ST27	02/22/18	8:00	1:00	68	LT8	70 / (68)
		12:00		66		
		16:00		67		
ST28	02/23/18	8:00	1:00	63	LT8	66 / (64)

Notes:
1. LT = long-term noise measurement site, ST = short-term noise measurement site.
2. Start time for long-term measurements corresponds to first full hour of recorded data.
3. Long-term measurement result used to estimate L_{dn} for the short-term measurement site.
4. Peak-hour L_{eq} is provided for nearby Category 3 receptors.
W. Measurement was located behind a property wall.

5.2 Existing Environment – Vibration

No significant vibration sources exist along most of the proposed BRT corridor. Typical bus or truck pass-by on a rough surface along local roadways would be the only perceptible vibration source along most of the alignment. The other vibration source is located at three areas of the project alignment where the Metrolink (Los Angeles to San Bernardino service) operations cross Haven Avenue and Milliken Avenue just south of Jersey Boulevard and cross Sierra Avenue between Orange Way and Ceres Avenue.

The FTA vibration impact criteria are not based on the existing vibration levels measured at adjacent structures to the proposed alignment. They are based on the frequency of the proposed transit service and the type of proposed transit vehicle only. This is in contrast to the FTA noise impact criteria, which are directly determined by the existing measured ambient noise. Therefore, no background vibration measurements were conducted along the project alignment.

5.3 Noise and Vibration Impact Analysis Methodology

5.3.1 Noise

In calculating the noise impacts associated with the proposed BRT service, the entire service alignment was screened to determine if significant increase to the overall noise level in the vicinity would be expected using future projected traffic volumes for the year 2023 and year 2040 obtained from the Traffic Operation Analysis (Iteris, 2017). A noise simulation model was created to assess potential noise impacts to the surrounding neighborhoods given the proposed BRT service.

The Federal Highway Administration's Traffic Noise Model (TNM) Version 2.5 was used to estimate the noise effects of the proposed BRT service at peak service hours. The peak-hour scenario was selected to provide an evaluation of the worst-case scenario given the greater number of operating buses and vehicles during peak hours.

A simple TNM roadway model was created to simulate traffic noise with and without the proposed peak-hour BRT operations. The model was then manipulated to determine the maximum hourly roadway traffic volume for which the proposed additional peak-hour BRT service would result in a 1 dB overall noise level increase along each roadway segment on which the BRT service would operate. The models were segmented by posted speed limits. The maximum speed for buses is 45 miles per hour (mph) as defined in the Basis of Design Report.

The vehicle type distribution of the modeled traffic volumes is based on existing vehicle classification percentages of the entire corridor, provided by Iteris , the traffic analysis team for the WVC Corridor Project. Because lower truck percentages would result in a higher volume at the modeled speed, the lowest truck percentage identified for each segment at each speed was used for the analysis. This is the conservative approach. For example, four segments of the corridor on four different roadways of the corridor, each with a unique vehicle mix, would be traveling at 45 mph. For analysis purposes, the vehicle mix of the segment which would yield the highest volume traveling at 45 mph was used.

Furthermore, articulated buses are typically quieter than TNM buses; therefore, in utilizing the TNM bus in our model analysis, a conservative analysis approach is adopted.

The results of the simulation in TNM are tabulated in Table 5-3 which lists the roadway traffic volumes where the addition of the projected number of buses would result in a 1-dBA increase in noise. The noise levels were calculated for each vehicle mix, speed, and number of busses that would be added to the alignment.

The addition of 12 total buses per hour was analyzed for the segment of the alignment with 10 minute peak headways in each direction (Pomona Metrolink Transit Center station to

Inland Empire Boulevard) and the addition of six total buses per hour was analyzed for the segment of the alignment with 20 minute peak headways in each direction (Inland Empire Boulevard to Victoria Gardens and Inland Empire Boulevard to Kaiser Permanente).

The TNM model demonstrated that an addition of 12 buses per hour would increase the noise levels by 1-dB for traffic volumes of 400 vehicles per hour or less operating at 35 mph. Alternatively, roadways with existing traffic volumes of more than 400 vehicles per hour would have a sufficiently high overall traffic-generated noise level (without any buses) that would not be perceivably increased by the addition of 12 buses per hour.

Table 5-3: Simulated Noise Impact of Additional Buses

Roadway Hourly Traffic Volume	Percent Cars	Percent Medium Trucks	Percent Heavy Trucks	Speed (mph)	Additional Number of Buses/ hour	Overall Noise Level (Leq) at 90 feet from Center of Roadway (dBA)		
						No Buses	with Buses	Change
400	98.1	1.4	0.5	35	12	54.4	55.4	1
300	98.5	1.2	0.3	40	12	54.8	55.8	1
220	99.1	0.6	0.3	45	12	55.0	56.0	1
260	99.1	0.6	0.3	30	6	50.9	51.9	1
170	98.1	1.4	0.5	35	6	51.1	52.1	1
140	98.5	1.2	0.3	40	6	51.9	52.9	1
100	99.1	0.6	0.3	45	6	52.2	53.2	1
70	99.1	0.6	0.3	50	6	52.3	53.3	1
40	99.1	0.6	0.3	55	6	51.9	52.9	1

Similarly, it was shown that overall noise levels resulting from maximum traffic volumes of 300 and 220 vehicles per hour would increase by 1 dB if an addition of 12 buses per hour operating at 40 and 45mph were to occur, respectively. An addition of six buses per hour would increase the noise levels by 1 dB for maximum traffic volumes of 260, 170, 140, 100, 70, and 40 vehicles per hour at speeds of 30, 35, 40, 45, 50, and 55 mph, respectively.

Therefore, less than 1 dB increase in traffic noise levels would occur with any traffic volume that exceeds those listed in Table 5-3 at the corresponding speed and number of buses.

To facilitate the traffic volume screening process, the BRT service route was divided into 21 sections based on posted speed limits. The lowest projected traffic volume within each segment was selected to reflect the segment's future traffic noise environment. The reason for this decision is that roadway segments with lower traffic volumes would have a noise environment that is more vulnerable to an increase in noise caused by the addition of new bus traffic.

The entire roadway network of the BRT service route was subsequently reviewed by comparing opening year (year 2023) and future projected (year 2040) peak-hour traffic volumes with impact thresholds as previously calculated.

As an additional dimension of the operational noise impact analysis, the conventional FTA transit noise impact analysis procedure was used. The posted speed limits were used in the FTA analysis except in areas where the speed limit exceeds 45 mph, in which the maximum operating speed of the BRT vehicles would be 45 mph.

Articulated bus pass-by noise measurements were conducted to determine the reference noise levels for the actual buses that would be in operation for this project. The maximum noise level (L_{max}) was measured at a distance of 25 feet at various speeds. This L_{max} was then converted to the single event level reference (SEL_{ref}) because the FTA Transit Noise and Vibration Impact Assessment Manual uses SEL_{ref} to calculate noise impacts. The average SEL_{ref} level at 50 feet for bus noise was determined to be 83 dBA, which is the same SEL_{ref} for hybrid buses listed in the FTA noise assessment manual; therefore, in determining noise impacts using FTA procedures, the hybrid bus option was selected in the FTA general noise assessment spreadsheet. The results of the articulated bus pass-by noise measurements and SEL_{ref} calculations are shown in Table 5-4.

Table 5-4: Bus Pass-by Noise Measurement Results

Bus Pass-by Event[1]	Distance (feet)	Speed (mph)	Measured Maximum Noise Level (L_{max}), dBA	Calculated Reference SEL (SEL_{ref}), dBA	Average Reference SEL (SEL_{ref}), dBA
1	25	24	78.0	83.2	83
2	25	27	78.1	82.1	
3	25	32	80.0	82.1	
4	25	33	80.7	82.5	
6	25	35	82.4	83.6	
8	25	35	82.7	83.9	
9	25	35	82.1	83.3	
10	25	25	77.7	82.5	

Note:
1. Pass-by events 5 and 7 have been removed due to interruption of bus pass-by.

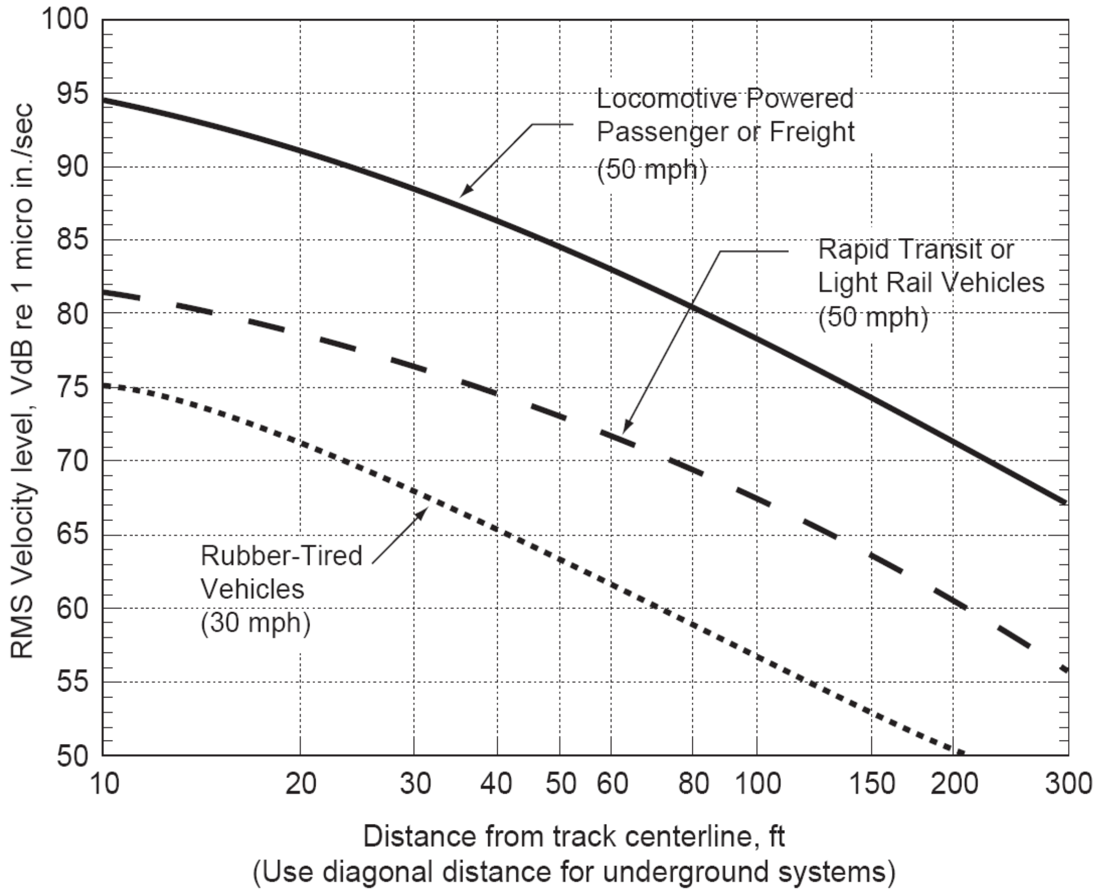
5.3.2 Vibration

Procedures outlined in FTA's *Transit Noise and Vibration Impact Assessment* (FTA, 2006) were used to predict West Valley Connector BRT operation vibration levels along the proposed alignment. Building damage due to operation of the BRT would be highly improbable; however, annoyance due to its operation would warrant closer examination.

In assessing transit operation vibration impact, Figure 5-1 would be used to determine the average unadjusted vibration level to be expected at a specified distance for the appropriate transit vehicle type. Adjustment factors for maximum operational speed would then be applied to determine the predicted average vibration level at the sensitive receptor. The final calculated vibration level would determine if vibration impact is anticipated when interpreted against FTA's vibration impact threshold for human annoyance provided in Table 4-2.

The FTA guidelines state that actual levels of ground-borne vibration will sometimes differ from the projections, and some care must be taken when interpreting the projections; therefore, interpretation of results should adhere to the following guidelines:

- *"No Impact"* – Project vibration is below the impact threshold. Vibration impact is unlikely to occur in this case.
- *"Impact" with zero to 5 dB greater than the impact threshold* – In this case range, there is still a significant chance that actual ground-borne vibration levels would be below the impact threshold. In this case, the impact would be reported in the environmental document as exceeding the applicable threshold, and a commitment would be made to conduct more detailed studies to refine the vibration impact analysis during final design and determine appropriate mitigation, if necessary. A site-specific Detailed Analysis may show that vibration control measures are not needed.
- *"Impact" with 5 dB or more greater than the impact threshold* – Vibration impact is probable, and Detailed Analysis will be needed during final design to help determine appropriate vibration control measures.



Source: FTA, 2006

Figure 5-1: Generalized Ground Surface Vibration Curves

6.0 IMPACTS ANALYSIS

6.1 Operational Impacts

6.1.1 No Build Alternative

The No Build Alternative would not implement any significant changes to existing bus services in the proposed corridor. There would be no changes to the existing bus vehicles, service hours, route(s), or frequency. According to FTA's transit operation noise impact criteria, no noise or vibration impact would result if existing conditions are maintained.

6.1.2 Alternatives A and B

Under Alternative A, the proposed BRT service includes a proposed bus route spanning the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana.

Bus service would begin at 6:00 a.m. and end at 8:00 p.m. on weekdays where the peak service hours are between 6:00 a.m. and 8:00 a.m. and between 4:00 p.m. and 6:00 p.m. Headway times for peak hours are 10 minutes and off-peak hours are 15 minutes from Pomona Metrolink Transit Center station to Inland Empire Boulevard. Headway times for peak hours are 20 minutes and off-peak hours are 30 minutes from Inland Empire Boulevard to Victoria Gardens and from Inland Empire Boulevard to Kaiser Permanente. The total span of service would be 14 hours per day, Monday through Friday. There would not be any weekend service. However, additional service hours, including weekend service, may be added if additional operating funds become available in the future.

Alternative B would be the same as Alternative A with the exception of the segment of Holt Boulevard from Benson Avenue to Vineyard Avenue. There would be a dedicated bus lane constructed for this segment of the alignment. Therefore, analysis of Alternative B only includes Holt Boulevard from Benson Avenue to Vineyard Avenue.

Noise

Operations

The results from the traffic volume impact threshold screening process is provided in Tables 6-1 and 6-2 for opening year 2023 volumes under project Alternatives A and B, respectively, and Tables 6-3 and 6-4 for future year 2040 volumes under project Alternatives A and B, respectively. Tables 6-1 and 6-2 as well as Tables 6-3 and 6-4 show that the proposed BRT alignment, in areas near noise-sensitive receptors, would include sufficiently high levels of non-BRT traffic in both year 2023 and 2040, respectively, such that the addition of the proposed bus service would not result in an appreciable increase in overall noise levels for all of the alignment. Only roadways with adjacent noise-sensitive receptors have been included in this analysis. Figures 1 through 24 in Appendix A show the portions of the alignment with noise-sensitive land uses.

Less than 1-dB increases in the overall noise level are expected along all of the screened portions of the proposed BRT alignment. This suggests that the addition of the proposed BRT service would not modify the noise environment in both 2023 and 2040 in any appreciable manner.

The conventional FTA transit noise impact analysis procedure was also applied to the alignment using the measured existing noise levels along the project corridor. The results of this assessment are provided in Tables 6-5 and 6-6 for Alternatives A and B, respectively. Figures 1 through 24 in Appendix A show the noise sensitive receptors.

Results of this assessment show that no BRT operational noise impacts are anticipated at any of the receptors along the proposed alignment; therefore, no noise impacts resulting from the proposed West Valley Connector Project operations are anticipated.

Stationary Sources

Stationary noise sources can sometimes result in noise complaints from nearby residents. These sources may include public address (PA) systems at passenger stations and an operations and maintenance (O&M) facility.

PA systems, a considered station feature, could generate sufficient noise to affect nearby noise-sensitive land uses. This is especially applicable in areas where stations abut residential properties. Depending on the exact placement of the PA system, these residences could be exposed to intermittent noise.

There are only two stations located adjacent to residential land uses where a PA system could cause adverse effects. These stations are located on westbound Foothill Boulevard just east of East Avenue and on northbound Sierra Avenue between Orange Way and Ceres Avenue; both stations are in the City of Fontana. The City of Fontana defines the maximum allowable exterior noise limits as specified in their municipal code to be 65 dBA for all hours of the day.

Using the maximum allowable noise level of 65 dBA at the property line and the distance between the station and property line of the residences, it was determined that the noise level of the PA system should not exceed 74 dBA at 10 feet from the PA system in the direction of the residential land uses at the station on Foothill Boulevard. The noise level of the PA system should not exceed 71 dBA at 10 feet from the PA system in the direction of the residential land use at the station on Sierra Avenue. These levels are calculated based on a 6-dB noise reduction per doubling of distance from point sources such as PA systems.

The proposed O&M facility could also generate sufficient noise that would affect nearby noise-sensitive land uses. Proposed O&M Sites 1 and 2, located at 1440 and 1516 South Cucamonga Avenue, respectively, would be positioned near the Baldy View ROP Career Training Center. Proposed Site 3, located at 1333 South Bon View Avenue, would be situated across the street from single-family residences. All three proposed O&M facility sites could generate noise levels that would disrupt normal activities. Figure 2-3 shows the proposed O&M facility sites.

The conventional FTA transit noise impact analysis procedure was applied to the career center and residences near the proposed O&M facilities using the measured existing noise levels and operational assumptions based on existing O&M facilities. It is assumed that the average number of buses that would be washed and possible preventive maintenance and repairs conducted in a given hour would be six buses, and that the hours in which most buses would be washed and maintained after the buses returned from service would be between 10:00 p.m. and 6:00 a.m. It is also assumed that the O&M facility would have a perimeter wall.

The results of this assessment are provided in Table 6-7. Figure 25 in Appendix A shows the noise-sensitive receptors. Results of this assessment show that no O&M operational noise impacts are anticipated at any of the receptors closest to the proposed O&M facilities; therefore, no noise impacts would occur as a result of the operations of the proposed O&M facility.

Table 6-1: Opening Year 2023 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative A

Alignment Segment	Roadway	Segment		Peak-Hour 2023 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
1	Monterey Avenue	Main Street	Garey Avenue	539	533	12	35	400	No
2	Holt Avenue	Garey Avenue	Mills Avenue	1,451	1,870	12	35	400	No
3	Holt Boulevard	Mills Avenue	San Antonio Avenue	1,282	1,508	12	45	220	No
4	Holt Boulevard	San Antonio Avenue	Grove Avenue	1,645	1,511	12	40	300	No
5	Holt Boulevard	Grove Avenue	Vineyard Avenue	2,127	1,881	12	45	220	No
6	Inland Empire Boulevard	Archibald Avenue	Milliken Avenue	622	1,073	6	45	100	No
7	Milliken Avenue	Inland Empire Boulevard	Foothill Boulevard	1,367	2,877	6	50	70	No
8	Foothill Boulevard	Milliken Avenue	Etiwanda Avenue	1,878	2,621	6	50	70	No
9	Foothill Boulevard	Etiwanda Avenue	East Avenue	2,135	2,218	6	55	40	No
10	Foothill Boulevard	East Avenue	Hemlock Avenue	1,800	2,023	6	50	70	No
11	Foothill Boulevard	Hemlock Avenue	Sierra Avenue	1,386	1,970	6	45	100	No
12	Sierra Avenue	Foothill Boulevard	Merrill Avenue	1,386	1,821	6	30	260	No
13	Sierra Avenue	Merrill Avenue	Valley Boulevard	1,665	2,333	6	35	170	No
14	Marygold Avenue	Sierra Avenue	Juniper Avenue	410	1,008	6	30	260	No
15	Juniper Avenue	Marygold Avenue	Valley Boulevard	2,652	3,192	6	35	170	No
16	Valley Boulevard	Juniper Avenue	Sierra Avenue	1,107	1,879	6	40	140	No
17	Haven Avenue	Inland Empire Boulevard	Foothill Boulevard	2,445	2,921	6	50	70	No

Table 6-1: Opening Year 2023 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative A

Alignment Segment	Roadway	Segment		Peak-Hour 2023 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
18	Foothill Boulevard	Haven Avenue	Milliken Avenue	1,613	2,707	6	50	70	No
19	Day Creek Boulevard	Foothill Boulevard	Church Street	1,134	1,616	6	45	100	No
20	Church Street	Day Creek Boulevard	Rochester Avenue	1,297	1,609	6	45	100	No
21	Rochester Avenue	Church Street	Foothill Boulevard	1,427	1,697	6	45	100	No

Notes:

a - Maximum background traffic volume at vehicle speed shown for which noise impact from proposed BRT service could be anticipated.

b - Noise impact is determined if one or both values under Peak-Hour 2023 Traffic Volume does not exceed the corresponding Maximum Hourly Traffic Volume figure shown in the table.

Table 6-2: Opening Year 2023 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative B

Alignment Segment[c]	Roadway	Segment		Peak-Hour 2023 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
3	Holt Boulevard	Benson Avenue	San Antonio Avenue	1,358	1,559	12	45	220	No
4	Holt Boulevard	San Antonio Avenue	Grove Avenue	1,655	1,580	12	40	300	No
5	Holt Boulevard	Grove Avenue	Vineyard Avenue	2,127	1,881	12	45	220	No

Notes:
a - Maximum background traffic volume at vehicle speed shown for which noise impact from proposed BRT service could be anticipated.
b - Noise impact is determined if one or both values under Peak-Hour 2040 Traffic Volume does not exceed the corresponding Maximum Hourly Traffic Volume figure shown in the table.
c - Alternative B would be the same as Alternative A except for the segment of Holt Boulevard from Benson Avenue to Vineyard Avenue where there would be a dedicated bus lane constructed for this segment of the alignment. Therefore, only this area is considered for Alternative B.

Table 6-3: Future Year 2040 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative A

Alignment Segment	Roadway	Segment		Peak-Hour 2040 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
1	Monterey Avenue	Main Street	Garey Avenue	616	607	12	35	400	No
2	Holt Avenue	Garey Avenue	Mills Avenue	1,668	2,145	12	35	400	No
3	Holt Boulevard	Mills Avenue	San Antonio Avenue	1,473	1,726	12	45	220	No
4	Holt Boulevard	San Antonio Avenue	Grove Avenue	1,891	1,721	12	40	300	No
5	Holt Boulevard	Grove Avenue	Vineyard Avenue	2,400	2,053	12	45	220	No
6	Inland Empire Boulevard	Archibald Avenue	Milliken Avenue	710	1,233	6	45	100	No
7	Milliken Avenue	Inland Empire Boulevard	Foothill Boulevard	1,495	3,076	6	50	70	No
8	Foothill Boulevard	Milliken Avenue	Etiwanda Avenue	2,148	2,893	6	50	70	No
9	Foothill Boulevard	Etiwanda Avenue	East Avenue	2,457	2,338	6	55	40	No
10	Foothill Boulevard	East Avenue	Hemlock Avenue	2,072	2,173	6	50	70	No
11	Foothill Boulevard	Hemlock Avenue	Sierra Avenue	1,593	2,201	6	45	100	No
12	Sierra Avenue	Foothill Boulevard	Merrill Avenue	1,549	2,026	6	30	260	No
13	Sierra Avenue	Merrill Avenue	Valley Boulevard	1,916	2,549	6	35	170	No
14	Marygold Avenue	Sierra Avenue	Juniper Avenue	470	1,162	6	30	260	No
15	Juniper Avenue	Marygold Avenue	Valley Boulevard	3,055	3,515	6	35	170	No
16	Valley Boulevard	Juniper Avenue	Sierra Avenue	1,273	2,165	6	40	140	No
17	Haven Avenue	Inland Empire Boulevard	Foothill Boulevard	2,891	3,228	6	50	70	No

Table 6-3: Future Year 2040 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative A

Alignment Segment	Roadway	Segment		Peak-Hour 2040 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
18	Foothill Boulevard	Haven Avenue	Milliken Avenue	1,907	3,160	6	50	70	No
19	Day Creek Boulevard	Foothill Boulevard	Church Street	1,301	1,860	6	45	100	No
20	Church Street	Day Creek Boulevard	Rochester Avenue	1,491	1,853	6	45	100	No
21	Rochester Avenue	Church Street	Foothill Boulevard	1,639	1,930	6	45	100	No

Notes:
a - Maximum background traffic volume at vehicle speed shown for which noise impact from proposed BRT service could be anticipated.
b - Noise impact is determined if one or both values under Peak-Hour 2040 Traffic Volume does not exceed the corresponding Maximum Hourly Traffic Volume figure shown in the table.

Table 6-4: Future Year 2040 Roadway Traffic Volume Screening for Potential BRT Noise Impact – Alternative B

Alignment Segment[c]	Roadway	Segment		Peak-Hour 2040 Traffic Volume		Number of Proposed Buses per Hour	Minimum Roadway Speed, mph	Hourly Traffic Threshold Volume[a]	Potential Noise Impact[b]
		From	To	AM	PM				
3	Holt Boulevard	Benson Avenue	San Antonio Avenue	1,560	1,777	12	45	220	No
4	Holt Boulevard	San Antonio Avenue	Grove Avenue	1,901	1,721	12	40	300	No
5	Holt Boulevard	Grove Avenue	Vineyard Avenue	2,400	2,053	12	45	220	No

Notes:

a - Maximum background traffic volume at vehicle speed shown for which noise impact from proposed BRT service could be anticipated.

b - Noise impact is determined if one or both values under Peak-Hour 2040 Traffic Volume does not exceed the corresponding Maximum Hourly Traffic Volume figure shown in the table.

c - Alternative B would be the same as Alternative A except for the segment of Holt Boulevard from Benson Avenue to Vineyard Avenue where there would be a dedicated bus lane constructed for this segment of the alignment. Therefore, only this area is considered for Alternative B.

Table 6-5: Operational Noise Impact Analysis at Representative Receptors – Alternative A

Receptor Number	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R1	3	32 / 55	(69)	69-74 / >74	(56)	(69)	0	No
R2 / LT1	2	47 / 67	66	62-67 / >67	54	66	0	No
R3	2	56 / 114	66	62-67 / >67	52	66	0	No
R4	2	57 / 97	70	65-69 / >69	52	70	0	No
R4A	3	39 / 80	(69)	69-74 / >74	(55)	(69)	0	No
R5 / ST1	2	57 / 97	70	65-69 / >69	52	70	0	No
R6 / LT2	2	38 / 79	67	63-67 / >67	49	67	0	No
R7	2	40 / 83	70	65-69 / >69	54	70	0	No
R8	2	40 / 83	70	65-69 / >69	54	70	0	No
R9 / ST2	3	90 / 137	(64)	66-70 / >70	(50)	(64)	0	No
R10	2	40 / 83	70	65-69 / >69	54	70	0	No
R11	3	90 / 137	(64)	66-70 / >70	(50)	(64)	0	No
R12A	3	85 / 145	(70)	70-74 / >74	(52)	(70)	0	No
R12	2	70 / 125	68	63-68 / >68	53	68	0	No
R13 / LT3	2	51 / 108	63	60-65 / >65	50	63	0	No
R14 / ST3	2	70 / 125	68	63-68 / >68	53	68	0	No
R15 / LT4	2	47 / 100	65	61-66 / >66	50	65	0	No
R16	3	85 / 145	(70)	70-74 / >74	(52)	(70)	0	No
R17 / ST3A	2	92 / 147	63	60-65 / >65	51	63	0	No
R18	2	40 / 98	68	63-68 / >68	56	68	0	No

Table 6-5: Operational Noise Impact Analysis at Representative Receptors – Alternative A

Receptor Number	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R19	3	85 / 145	(70)	70-74 / >74	(52)	(70)	0	No
R20	2	60 / 119	63	60-65 / >65	54	63	0	No
R21	2	40 / 98	68	63-68 / >68	56	68	0	No
R22 / LT6	2	212 / 259	61	59-64 / >64	46	61	0	No
R23	2	42 / 76	72	66-71 / >71	55	72	0	No
R24 / ST4	2	75 / 120	70	65-69 / >69	52	70	0	No
R25	3	36 / 78	(70)	70-74 / >74	(56)	(70)	0	No
R26	3	50 / 94	(68)	68-73 / >73	(55)	(68)	0	No
R27 / ST5	2	57 / 112	64	61-65 / >65	48	64	0	No
R28 / ST5A	2	27 / 63	72	66-71 / >71	57	72	0	No
R29	2	42 / 76	72	66-71 / >71	55	72	0	No
R30	2	42 / 82	72	66-71 / >71	55	72	0	No
R31 / ST6	2	33 / 72	72	66-71 / >71	56	72	0	No
R32	3	36 / 78	(70)	70-74 / >74	(56)	(70)	0	No
R33	2	42 / 82	72	66-71 / >71	55	72	0	No
R34	2	54 / 100	70	65-69 / >69	54	70	0	No
R35 / LT8	2	46 / 94	70	65-69 / >69	55	70	0	No
R36	2	54 / 100	70	65-69 / >69	54	70	0	No
R37 / ST7	2	136 / 188	65	61-66 / >66	49	65	0	No
R38 / ST8	2	60 / 110	64	61-65 / >65	50	64	0	No

Table 6-5: Operational Noise Impact Analysis at Representative Receptors – Alternative A

Receptor Number	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R39	2	60 / 110	64	61-65 / >65	50	64	0	No
R40 / LT9	2	65 / 127	66	62-67 / >67	50	66	0	No
R41	2	222 / 300	66	62-67 / >67	43	66	0	No
R42	2	112 / 178	66	62-67 / >67	47	66	0	No
R43 / LT10	2	45 / 122	66	62-67 / >67	52	66	0	No
R44	2	104 / 182	66	62-67 / >67	47	66	0	No
R45 / ST9	2	69 / 93	70	65-69 / >69	50	70	0	No
R46 / LT11	2	28 / 109	67	63-67 / >67	49	67	0	No
R47	2	81 / 155	65	61-66 / >66	48	65	0	No
R48 / ST10	2	88 / 147	61	59-64 / >64	43	61	0	No
R49 / LT12	2	42 / 111	63	60-65 / >65	47	63	0	No
R50 / ST11	2	65 / 126	65	61-66 / >66	50	65	0	No
R51 / ST12	2	47 / 126	70	65-69 / >69	51	70	0	No
R51A	2	47 / 126	70	65-69 / >69	51	70	0	No
R52 / LT13	2	68 / 146	64	61-65 / >65	44	64	0	No
R53	2	50 / 129	65	61-66 / >66	51	65	0	No
R54 / LT14	2	260 / 344	56	56-62 / >62	37	56	0	No
R55 / ST13	2	50 / 129	65	61-66 / >66	51	65	0	No
R56	2	30 / 84	69	64-69 / >69	54	69	0	No
R57 / ST14	2	77 / 125	66	62-67 / >67	49	66	0	No

Table 6-5: Operational Noise Impact Analysis at Representative Receptors – Alternative A

Receptor Number	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})^2, dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})^2, dBA	Cumulative Noise, L_{dn} (L_{eq})^2, dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R58	2	42 / 85	66	62-67 / >67	53	66	0	No
R59	2	42 / 85	66	62-67 / >67	53	66	0	No
R60 / LT15	2	200 / 278	57	57-62 / >62	43	57	0	No
R61	2	61 / 114	68	63-68 / >68	50	68	0	No
R62 / ST15	2	61 / 114	68	63-68 / >68	50	68	0	No
R63 / ST16	2	192 / 240	55	56-61 / >61	44	56	1	No
R64 / LT16	2	49 / 97	69	64-69 / >69	52	69	0	No
R65 / ST17	2	275 / 325	56	56-62 / >62	41	56	0	No
R66 / LT17	2	89 / 133	63	60-65 / >65	45	63	0	No
R66A	3	52 / 95	(62)	64-69 / >69	(49)	(62)	0	No
R67	3	52 / 95	(62)	64-69 / >69	(49)	(62)	0	No
R68	2	49 / 94	76	66-74 / >74	48	76	0	No
R69 / ST18	2	77 / 122	76	66-74 / >74	45	76	0	No
R70	3	80 / 124	(75)	71-78 / >78	(46)	(75)	0	No
R71	2	49 / 94	76	66-74 / >74	48	76	0	No
R72	2	52 / 99	63	60-65 / >65	49	63	0	No
R73	3	39 / 83	(62)	64-69 / >69	(52)	(62)	0	No
R73A	3	39 / 83	(62)	64-69 / >69	(52)	(62)	0	No
R74	2	144 / 203	63	60-65 / >65	43	63	0	No
R75 / ST19	2	37 / 110	69	64-69 / >69	52	69	0	No

Table 6-5: Operational Noise Impact Analysis at Representative Receptors – Alternative A

Receptor Number	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R76 / ST20	2	61 / 96	63	60-65 / >65	48	63	0	No
R77 / ST21	2	39 / 67	65	61-66 / >66	51	65	0	No
R78 / LT19	2	98 / 122	58	57-62/ >62	46	58	0	No
R79 / ST22	2	101 / 127	58	57-62/ >62	39	58	0	No
R80 / LT20	2	82 / 183	68	63-68 / >68	48	68	0	No
R81 / ST23	3	50 / 125	(70)	70-74 / >74	(52)	(70)	0	No
R86 / LT21	2	45 / 81	60	58-63 / >63	47	60	0	No
R87 / LT21A	2	48 / 82	59	58-63 / >63	47	59	0	No
R88 / ST25	2	68 / 111	67	63-67 / >67	50	67	0	No
R89	2	57 / 100	68	63-68 / >68	51	68	0	No
R90	2	52 / 96	61	59-64 / >64	46	61	0	No
R91	2	61 / 141	66	62-67 / >67	45	66	0	No
R92 / LT22	2	80 / 164	66	62-67 / >67	48	66	0	No
R93 / ST26	2	56 / 138	69	64-69 / >69	50	69	0	No

Notes:
1 - Category 2 – Includes residences, hotels/motels, and hospitals; Category 3 – Includes schools, parks, churches, and library.
2 - Noise levels shown within parentheses represent 1-hour L_{eq}. L_{eq} is applied rather than L_{dn} for Category 3 land uses. The L_{eq} values provided here represent 1-hour periods.

Table 6-6: Operational Noise Impact Analysis at Representative Receptors – Alternative B

Receptor Number[3]	Land Use Category[1]	Distance to Bus Lane Near Lane / Far Lane (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R22 / LT6	2	226 / 246	61	59-64 / >64	45	61	0	No
R23	2	57 / 81	72	66-71 / >71	54	72	0	No
R24 / ST4	2	93 / 112	70	65-69 / >69	51	70	0	No
R25	3	45 / 62	(70)	70-74 / >74	(56)	(70)	0	No
R26	3	64 / 80	(68)	68-73 / >73	(54)	(68)	0	No
R27 / ST5	2	72 / 102	64	61-65 / >65	47	64	0	No
R28 / ST5A	2	45 / 68	72	66-71 / >71	55	72	0	No
R29	2	62 / 82	72	66-71 / >71	53	72	0	No
R30	2	45 / 66	72	66-71 / >71	55	72	0	No
R31 / ST6	2	45 / 66	72	66-71 / >71	55	72	0	No
R32	3	51 / 73	(70)	70-74 / >74	(55)	(70)	0	No
R33	2	47 / 73	72	66-71 / >71	55	72	0	No
R34	2	56 / 77	70	65-69 / >69	54	70	0	No
R35 / LT8	2	56 / 77	70	65-69 / >69	54	70	0	No
R36	2	67 / 92	70	65-69 / >69	53	70	0	No
R37 / ST7	2	143 / 188	65	61-66 / >66	48	65	0	No

Notes:

1 - Category 2 – Includes residences, hotels/motels, and hospitals; Category 3 – Includes schools, parks, churches, and library.

2 - Noise levels shown within parentheses represent 1-hour L_{eq}. L_{eq} is applied rather than L_{dn} for Category 3 land uses. The L_{eq} values provided here represent 1-hour periods.

3 - Alternative B would be the same as Alternative A except for the segment of Holt Boulevard from Benson Avenue to Vineyard Avenue where there would be a dedicated bus lane constructed for this segment of the alignment. Therefore, only receptors located in this area are considered for Alternative B.

Table 6-7: O&M Noise Impact Analysis at Representative Receptor

Receptor Number[3]	Land Use Category[1]	Nearest O&M Site No.	Distance to Center of Bus Wash and Maintenance Stations (feet)	Existing Noise Level L_{dn} (L_{eq})[2], dBA	Criteria, Moderate / Severe, dBA	Project Noise Level, L_{dn} (L_{eq})[2], dBA	Cumulative Noise, L_{dn} (L_{eq})[2], dBA	Increase in Cumulative Noise, dB	Noise Impact (FTA Criteria)
R94	3	1	290	(68)	68-73 / >73	46	68	0	No
		2	500	(68)	68-73 / >73	40	68	0	No
R95 / ST27	2	3	535	70	65-69 / >69	45	70	0	No

Notes:
1 - Category 2 – Includes residences, hotels/motels, and hospitals; Category 3 – Includes schools, parks, churches, and library.
2 - Noise levels shown within parentheses represent 1-hour L_{eq}. L_{eq} is applied rather than L_{dn} for Category 3 land uses. The L_{eq} values provided here represent 1-hour periods.

Vibration

Vibration impact from rubber tire-fitted vehicles is extremely rare. This is because rubber tire-fitted vehicles are not as massive as railway vehicles. Additionally, they are typically well isolated by the vehicle suspension design and rubber tires, which act as a highly effective barrier to vibration transmission from the vibration-generating carriage and the main propagation medium for vibration excitation – the ground. Potential vibration impact for building damage from rubber tire-fitted vehicles such as those proposed for the West Valley Connector Project can be reasonably dismissed under general conditions. No further assessment is needed.

In terms of vibration impact for human annoyance, the RMS velocity level from a rubber-tired transit vehicle at 30 mph is given in Figure 5-1 at 63 VdB, at a distance of 50 feet from the alignment center line. Compensating for the maximum operating speed (45 mph) of the proposed BRT service, the estimated RMS vibration velocity level ranges from 65.5 to 67.4 VdB at 50 feet. This is more than 4 dB below the impact threshold for human annoyance vibration impact for residential (Land Use Category 2) buildings and more than 7 dB below the impact threshold for institutional (Land Use Category 3) buildings without any adjustments for environmental factors such as effective propagation soil conditions. Although these conditions do sometimes exist, they are not typically presumed unless evidence demonstrating the contrary is apparent.

Under general geologic conditions, erosion of an impact margin of 4 dB is highly unlikely, especially considering the conservative building-to-alignment distance used in this estimation. It is therefore reasonable to conclude that human annoyance vibration impact would not be anticipated as a result of the proposed West Valley Connector Project.

6.2 Construction Impacts

6.2.1 No Build Alternative

There would be no construction activities associated with this alternative; therefore, no impacts are anticipated.

6.2.2 Alternatives A and B

Under Alternative A, the only proposed construction would be the construction of station platforms and the O&M facility. Alternative B would include roadway widening, building demolition, and additional utilities, such as electrical and fiber-optic lines.

Construction Noise

Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Many of these factors are subject to the contractor's discretion. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors.

Overall, construction noise levels are governed primarily by the noisiest pieces of equipment. The engine, which is usually diesel, is the dominant noise source for most construction equipment.

Table 6-8 summarizes the available data on noise emission levels of construction equipment from FTA's *Transit Noise and Vibration Impact Assessment* and Parsons' recent experiences with major construction projects. It is worthwhile to note that actual noise levels experienced could vary significantly from the values provided; however, due to variation in manufacturer, manner of operation, or condition of equipment. Using typical sound emission levels in Table 6-8, and the estimated time duration of operation, an estimate of L_{eq} can be calculated at various relevant distances for each stage of construction.

The calculation used to determine average construction noise exposure for each piece of equipment is based on the following equation:

$$L_{eq} = L_{max} + 10\ Log(UF) - 20\ Log(D/50)$$

Where;

L_{eq} is the 8-hour average noise level in A-weighted decibels, dBA,

L_{max} is the maximum noise level at 50 feet in A-weighted decibels, dBA,

UF is the Usage Factor or the ratio of time equipment is in operation each hour,

D is the distance from the geometric center of construction site, feet.

The estimated construction noise levels for various construction phases in Table 6-8 were compared to FTA's suggested construction noise limits to identify any potential noise-impacted areas. Although the construction process undoubtedly affects the noise environment at certain areas, the noise impact would be temporary. The subsequent paragraphs analyze the construction noise impacts by construction stage:

- **Site Clearing and Demolition:** The West Valley Connector Project includes vehicle travel in dedicated lanes under Alternative B. Dedicated center-running lanes, beginning at Benson Avenue along Holt Boulevard to Vineyard Avenue, would feature concrete roadway surfaces and require site preparation or demolition in some places. Mixed-flow lanes would generally be kept as existing conditions.
- **Utility Relocation:** Modifications to the existing roadway curbs in portions of the project alignment under Alternative B would require the relocation of any intervening utility infrastructure. These structures may include gutters, sewage pipes, or utility poles.

Table 6-8: Predicted Construction Equipment Noise Emission Levels

Construction Activity Equipment	Number of Equipment Used	Sound Level at 50 ft (dBA)	Usage Factor[1]	Effective Usage Factor[2]	Leq, dBA[3, 4] @ 50 ft	Leq, dBA[3, 4] @ 100 ft
Site Cleaning & Demolition						
Grading/Demolition						
Loader	1	85	0.5	0.15	77	71
Dump Truck	2	88	0.5	0.30	83	77
Roller	1	74	0.3	0.30	69	63
Backhoe	1	80	0.3	0.09	70	64
Utility Truck	1	84	0.5	0.15	76	70
Compressor	1	81	0.5	0.50	78	72
			Overall Leq =		**85**	**79**
			Noise Impact Distance[5] = 95 ft			
Utility Relocation						
Utility Removal/Installation						
Backhoe	1	80	0.5	0.15	72	66
Utility Truck	1	84	0.5	0.15	76	70
Dump Truck	1	88	0.2	0.06	76	70
Compressor	1	81	0.5	0.50	78	72
Compactor	1	82	0.3	0.09	72	66
			Overall Leq =		**82**	**76**
			Noise Impact Distance[5] = 65 ft			
Roadway Construction						
Concrete Paving						
Concrete Mixer	2	85	0.5	0.30	80	74
Utility Truck	2	84	0.5	0.30	79	73
			Overall Leq =		**82**	**76**
			Noise Impact Distance[5] = 65 ft			
Asphalt Concrete Paving						
Dump Truck	3	88	0.5	0.45	85	79
Grader	1	85	0.5	0.15	77	71
Roller	2	74	0.5	1.00	74	68
Utility Truck	1	84	0.5	0.15	76	70
			Overall Leq =		**86**	**80**
			Noise Impact Distance[5] = 105 ft			
Concrete Roadway						
Utility Truck	2	84	0.5	0.30	79	73
Concrete Mixer	1	85	0.5	0.15	77	71
			Overall Leq[5] =		**81**	**75**
			Noise Impact Distance[5] = 55 ft			
Station Construction						
Foundation						
Utility Truck	2	84	0.5	0.30	79	73
Compressor	1	81	0.3	0.25	75	69
Concrete Mixer	2	85	0.5	0.30	80	74
			Overall Leq =		**83**	**77**
			Noise Impact Distance[5] = 75 ft			
Station Finishes						
Crane, Derrick	1	88	0.5	0.15	80	74
Compressor	1	81	0.2	0.20	74	68
Flatbed Truck	1	85	0.1	0.03	70	64
Utility Truck	2	84	0.5	0.30	79	73
Welding Machine	1	82	0.5	0.15	74	68
			Overall Leq =		**84**	**78**
			Noise Impact Distance[5] = 80 ft			

Table 6-8: Predicted Construction Equipment Noise Emission Levels

Construction Activity Equipment	Number of Equipment Used	Sound Level at 50 ft (dBA)	Usage Factor[1]	Effective Usage Factor[2]	Leq, dBA[3, 4] @ 50 ft	Leq, dBA[3, 4] @ 100 ft
O&M Facilty Construction						
Demolition of Existing Facility						
Pavement Breaker	2	82	0.3	0.15	74	68
Front-end loader	2	79	0.5	0.30	74	68
Dozer	1	80	0.5	0.15	72	66
Dump Truck	2	88	0.3	0.15	80	74
			Overall Leq =		**82**	**76**
			Noise Impact Distance[5] = 60 ft			
Removal of Pavement						
Pavement Breaker	2	82	0.5	0.30	77	71
Dozer	1	80	0.3	0.08	69	63
Dump Truck	2	88	0.3	0.15	80	74
			Overall Leq =		**82**	**76**
			Noise Impact Distance[5] = 60 ft			
Excavation and Site Grading						
Backhoe	2	80	0.5	0.30	75	69
Compactor	2	82	0.3	0.15	74	68
Grader	1	85	0.5	0.15	77	71
Front-end loader	2	79	0.3	0.15	71	65
			Overall Leq =		**81**	**75**
			Noise Impact Distance[5] = 55 ft			
Foundation						
Utility Truck	2	84	0.3	0.15	76	70
Concrete Mixer	1	85	0.5	0.15	77	71
Saw	2	78	0.3	0.15	70	64
			Overall Leq =		**80**	**74**
			Noise Impact Distance[5] = 50 ft			
Structure Construction						
Crane, Derrick	1	88	0.5	0.15	80	74
Saw	2	78	0.3	0.15	70	64
Utility Truck	2	84	0.5	0.30	79	73
			Overall Leq =		**83**	**77**
			Noise Impact Distance[5] = 65 ft			

Notes:

1 - Usage factor is a percentage of time of the 8-hour construction period through which a hypothetical receptor would be noise impacted by the piece of equipment concerned. This value cannot exceed 0.5 in practical terms.

2 - Assuming that the equipment are operating at, or near, their maximum sound levels 30 percent of the time during operation except for the compressor, roller, and generator. These 3 pieces of equipment were assumed to be operational 100 percent of the time

3 - Calculated noise levels do not assume any mitigation measures.

4 - Distance is measured from the geometric center of construction activities.

5 - Based on the construction noise limit criteria of 80 dBA for daytime hours at residential land uses. Distances are measured from the center of the noise producing activities associated with the construction phase.

Source: Parsons

- **Roadway Construction:** New dedicated bus lanes, as previously described as part of Alternative B, would require new roadway construction where medians or curbs and pedestrian walkways now stand. Additionally, traffic control systems would need to be replaced or upgraded to accommodate the new proposed bus service.
- **Station Construction:** There are proposed bus stations at 33 station locations/major intersections for the West Valley Connector Project. These stations are proposed to be approximately 0.5 to 1 mile apart along the alignment, which measures roughly 35 miles in length. The stations would be constructed under both Alternatives A and B.
- **O&M Facility Construction:** There is a proposed O&M facility for the West Valley Connector Project. This facility is proposed to be approximately 5.2 acres in size, which would include approximately 65,500 square feet of interior space and approximately 93,900 square feet of parking. The facility would be constructed under both Alternatives A and B.

To assess the extent of impacts, a series of calculations was performed to determine the distance from construction activities previously described where an 80-dBA exposure level would occur over an 8-hour period. This exposure level represents the limit for daytime construction noise at residential land uses. Table 6-8 shows the results of these calculations.

Construction noise impacts would occur along the project corridor at residential noise-sensitive locations if construction activities take place within the distances shown in Table 6-8 and remain within that distance for at least an 8-hour period.

When these conditions occur, construction noise impacts could result. Construction noise is typically temporary, intermittent, and limited to weekday daytime hours when many residents would normally not be home. Mitigation is often not necessary for these reasons.

Construction activities occurring during nighttime hours would notably increase the number of potentially impacted residences because the nighttime criterion is 10 dB lower, at 70 dBA. Nighttime construction operations are not recommended in the vicinity of residences; however, it may be beneficial to conduct nighttime construction in industrial and commercial areas with no sensitive nighttime use because some businesses may prefer to avoid construction-related disruptions during normal business hours.

Another area where construction noise impacts may occur would be at sensitive land uses that are adjacent to construction lay-down or staging areas. These are areas where construction equipment and materials are stored and accessed during the construction period. No information on construction staging areas is yet available at the time of writing. It should be noted that selection of the construction staging area should be made with care. The chosen site should be as far away as possible from any sensitive residential areas to minimize the potential for construction noise impacts.

Construction Vibration

Building Damage

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods employed. Operation of construction equipment causes vibration that spreads through the ground and diminishes in strength with distance. Buildings founded on the soil in the vicinity of the construction site respond to these vibrations, with varying results ranging from no perceptible effects at the lowest levels, low rumbling sounds, perceptible vibration at moderate levels, and potential damage at the highest levels.

The heaviest pieces of equipment, such as a pile driver or a vibratory roller, would be the dominant sources of overall construction vibration. The vibration levels created by the normal movement of vehicles, including graders, front loaders, and backhoes, are the same order-of-magnitude as the ground-borne vibration created by heavy vehicles traveling on streets and highways.

Table 6-9 presents the average vibration levels for various types of construction equipment under a wide variety of construction activities. PPV levels at 25 feet provided by FTA are shown for construction equipment likely to be used for the construction efforts for the West Valley Connector Project. Most of the single- or multi-family residential buildings along the proposed corridor are assumed to be traditional wood-frame structures on a concrete slab or a raised foundation. These residential structures fall under Building Category III, as shown in Table 6-9. Commercial buildings are assumed to fall under Building Category II and Section 4(f) buildings fall under Building Category IV. Vibration impact distances were calculated using the following FTA-recommended propagation adjustment formula using average construction equipment vibration levels:

$$PPVequipment = PPVref \times \left(\frac{25}{D}\right)^{1.5}$$

Where:
PPVequipment is the PPV in inches per second of the equipment adjusted for distance.
PPVref is the reference vibration level in inches per second at 25 feet.
D is the distance from the equipment to the receptor, feet.

As summarized in Table 6-9, operation of the vibratory roller is the dominant source of construction vibration. The anticipated vibration would exceed the FTA building damage thresholds for Building Categories II, III, and IV (engineered concrete and masonry buildings, non-engineered timber and masonry buildings, and buildings extremely susceptible to vibration damage) buildings situated within 20, 26, and 36 feet, respectively, of the construction areas.

Under Alternative B, there are several residential and commercial buildings within the area on Holt Boulevard between Benson Avenue and Vineyard Avenue that are located less than 20 feet from anticipated construction areas along the West Valley Connector BRT alignment. Therefore, structural damage from vibration associated with anticipated construction-related activities could be expected at residential buildings located within 20 feet and commercial buildings located within 26 feet from construction activities along the project corridor.

Table 6-9: Construction Vibration Impact Distances for Building Damage

Equipment	Peak Particle Velocity at 25 feet (inches/second)	Approximate Lv[1] at 25 feet	Building Damage Impact Distance for Building Category, feet		
			II	III	IV
Vibratory Roller	0.210	94	20	26	36
Loaded Trucks	0.076	86	10	13	18
Small Bulldozer	0.003	58	<10	<10	<10

Note:
1. RMS velocity in decibels (VdB), re: 1 micro-inch per second
2. This is the distance at which PPV is 0.3 inches per second for Building Category II and 0.2 inches per second for Building Category III-type buildings.

Source: FTA, 2006.

Human Annoyance

Construction vibration impacts during some construction activities would be sufficient to cause some annoyance at residential locations (FTA Land Use Category III) that are within 107 feet from the construction activity based on the impact assessment presented in Table 6-10. Construction vibration impacts causing human annoyance are typically temporary, intermittent, and limited to weekday daytime hours when many residents would normally not be home. For these reasons, mitigation measures for human annoyance are often not justified or necessary.

Table 6-10: Construction Vibration Impact Distances for Human Annoyance

Equipment	Peak Particle Velocity at 25 feet (inches/second)	Approximate Lv[1] at 25 feet	Human Annoyance Impact Distance[2] for Land Use Category, feet:	
			II	III
Vibratory Roller	0.210	94	135	107
Loaded Trucks	0.076	86	73	58
Small Bulldozer	0.003	58	9	7

Note:

1. RMS velocity in decibels (VdB), re: 1 micro-inch per second.
2. This is the distance at which the RMS amplitude velocity level is 72 VdB for Land Use Category II and 75 VdB for Category III inside the building structure. When propagating from the ground surface to the building structure foundation, there is a vibratory coupling loss of 5 dB; however, this loss is offset by the building amplification in light-frame construction. Thus, no additional adjustments are applied.

Source: FTA, 2006.

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7.0 MITIGATION MEASURES

7.1 Operational Mitigation Measures

No Build Alternative. The No Build Alternative would require no mitigation measures because there would be no modifications to existing transit services; therefore, changes to existing noise and vibration settings would not occur.

Alternatives A and B. The proposed BRT service under both Alternatives A and B is not expected to cause any operation noise or vibration impacts to sensitive receptors adjacent to the proposed alignment; therefore, no mitigation measures would be necessary.

7.2 Stationary Source Mitigation Measures

No Build Alternative. The No Build Alternative would require no mitigation measures because there would be no modifications to existing transit services; therefore, changes to existing noise and vibration settings would not occur.

Alternatives A and B. The proposed BRT service under both Alternatives A and B is not expected to cause any operation stationary source noise impacts to sensitive receptors adjacent to the proposed alignment; however, noise impacts are possible due to the public address (PA) systems at the two passenger stations on westbound Foothill Boulevard just east of East Avenue and on northbound Sierra Avenue between Orange Way and Ceres Avenue; both in the City of Fontana. To avoid noise impacts from the public address (PA) systems, the noise level from the PA system at the station on Foothill Boulevard should not exceed 74 dBA at 10 feet in the direction of the residential land uses and the noise level of the PA system at the station on Sierra Avenue should not exceed 71 dBA at 10 feet in the direction of the residential land use.

7.3 Construction Mitigation Measures

No Build Alternative. The No Build Alternative would require no mitigation measures because there would be no modifications to existing transit services; therefore, changes to existing noise and vibration settings would not occur.

Alternatives A and B. To minimize noise and vibration impacts at nearby sensitive receptor sites, construction activities would be conducted during daytime hours to the extent feasible. Nighttime construction could be unobtrusive and therefore preferable in some locations (e.g., in commercial districts where most businesses do not operate at night). Nighttime construction may also be necessary to avoid unacceptable disruptions to roadway traffic during daytime hours.

There are many measures that can be considered to reduce intrusion without placing unreasonable constraints on the construction process or substantially increasing costs. These measures include noise and vibration monitoring to ensure that contractors take all reasonable steps to minimize impacts when operating near sensitive areas; noise testing and inspections of equipment to ensure that all equipment on the site is in good condition and effectively muffled; and an active community liaison program. The community liaison program should keep residents informed about construction plans so they can plan around noise or vibration impacts; it should also provide a conduit for residents to express any concerns or complaints.

The following is a listing of procedures that have been shown to minimize noise disturbances at sensitive areas during construction:

1. All equipment shall have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the jobsite without an appropriate muffler.

2. Construction methods or equipment that will provide the lowest level of noise impact (e.g., avoid impact pile driving near residences and consider alternative methods that are also suitable for the soil condition) shall be used.

3. Idling equipment shall be turned off.

4. Truck loading, unloading, and hauling operations shall be restricted through residential neighborhoods to the greatest possible extent.

5. Temporary noise barriers shall be used, as necessary and practicable, to protect sensitive receptors against excessive noise from construction activities.

6. Newer equipment with improved noise muffling shall be used, and all equipment items shall have the manufacturers' recommended noise abatement measures (e.g., mufflers, engine covers, and engine vibration isolators) intact and operational. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers and shrouding).

7. Construction activities shall be minimized in residential areas during evening, nighttime, weekend, and holiday periods. Coordination with each city shall occur before construction can be performed in noise-sensitive areas.

8. Construction lay-down or staging areas shall be selected in industrially zoned districts. If industrially zoned areas are not available, commercially zoned areas may

be used, or locations that are at least 200 feet from any noise-sensitive land use (e.g., residences).

9. Perform noise and vibration monitoring during construction. The Contractor shall perform independent monitoring to check compliance in particularly sensitive areas. Contractors must modify and/or reschedule construction activities if monitoring determines that maximum limits are exceeded at residential land uses.

It is anticipated that ground-borne vibration from construction activities could exceed the building damage criteria along the BRT corridor on Holt Boulevard between Benson Avenue and Vineyard Avenue under Alternative B. Although processes such as the use of vibratory compaction rollers can create vibration that causes building damage, there should only be isolated cases where it is necessary to use this type of equipment in close proximity to buildings. Following are some procedures that can be used to minimize the potential for building damage and annoyance from construction vibration:

1. Hours of vibration-intensive activities, such as vibratory rollers, shall be restricted to minimize adverse impacts to the residents (e.g., weekdays during daytime hours only).

2. When possible, the use of construction equipment that creates high vibration levels, such as vibratory rollers operating within 20 feet of commercial buildings, within 26 feet of residential buildings, and within 36 feet of sensitive land uses, such as historic properties, shall be limited.

3. Contractors will be required to have a plan in place to use alternative procedures of construction, selecting the proper combination of equipment and techniques to generate the least overall vibration, in those cases where vibration from construction activities would exceed the established thresholds for buildings susceptible to vibration damage.

4. Conduct a preconstruction building inspection/survey to document the preconstruction condition of building structures that are located within approximately 30 feet of planned construction activities that could generate high vibration levels (e.g., activities associated with vibratory rollers).

5. Conduct vibration monitoring at nearest buildings (within approximately 30 feet of activity) during vibration-intensive construction activities.

6. To the extent practicable, construction activities near the school shall be scheduled outside of school hours.

A combination of the mitigation techniques for equipment noise and vibration control, as well as administrative measures, when properly implemented, would provide the most effective means of minimizing the impacts of construction activities. Application of these mitigation measures will reduce construction impacts; however, temporary increases in noise and vibration would likely exceed applicable limits at some locations.

8.0 REFERENCES

FTA, 2018. Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidance Manual, FTA Report No. 0123. September.

Iteris. 2018. Traffic Operations Analysis: West Valley Connector Bus Rapid Transit Project. December.

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APPENDIX A: SENSITIVE RECEPTOR LOCATIONS

LEGEND

- ⌖ LT – LONGTERM MEASUREMENT
- ⌖ ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
- – CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

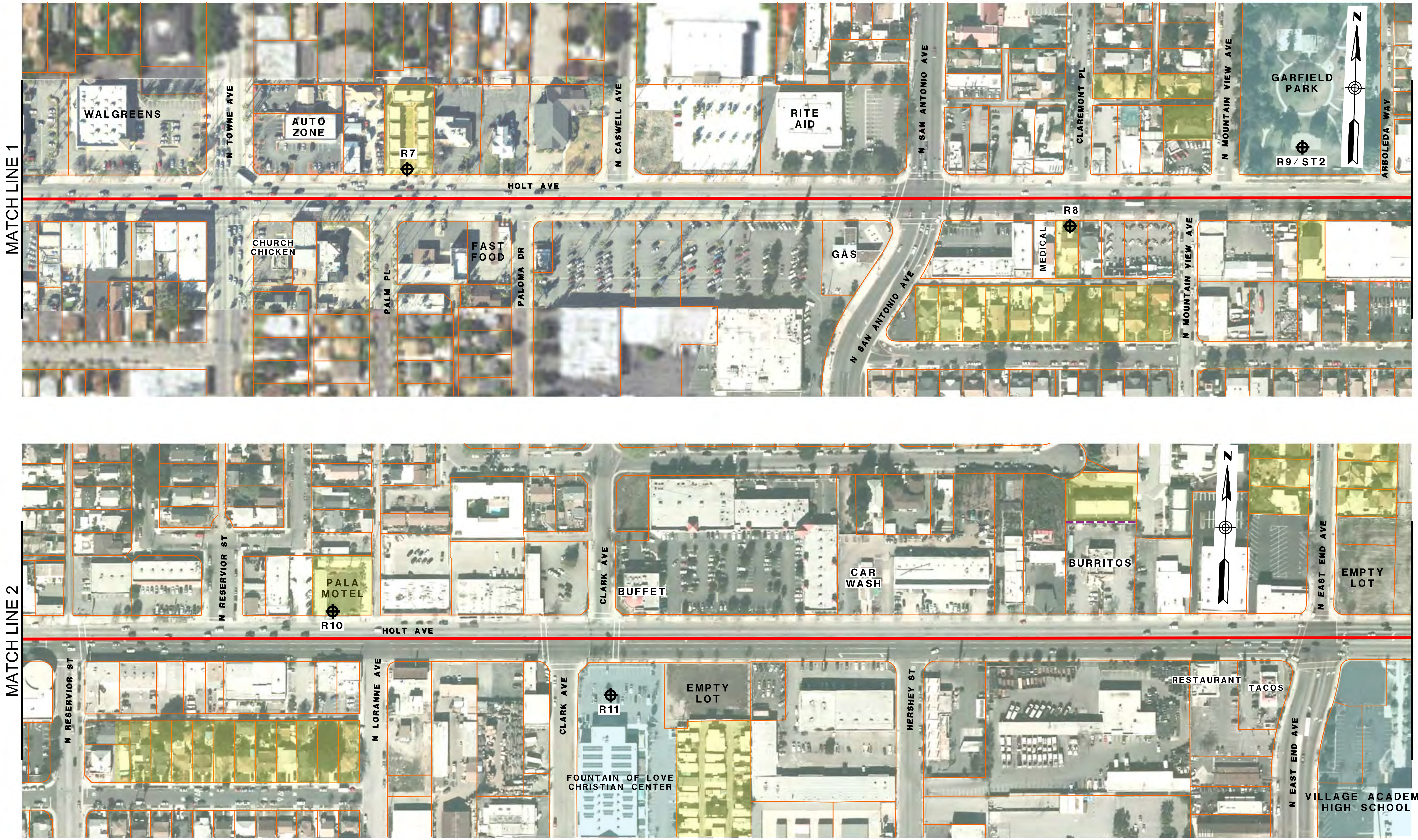
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 1



LEGEND

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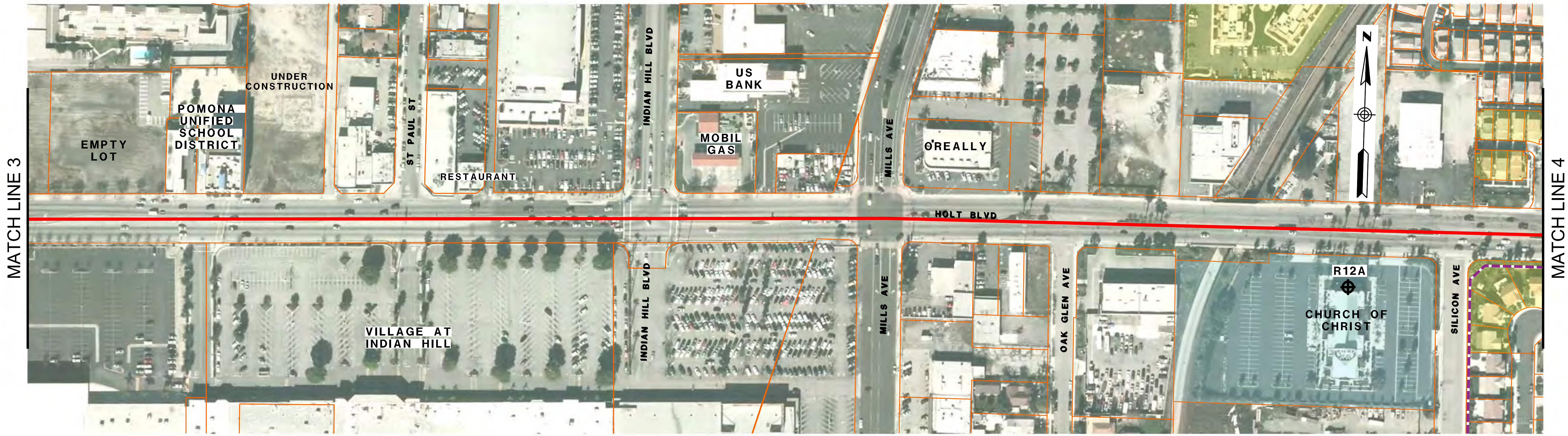
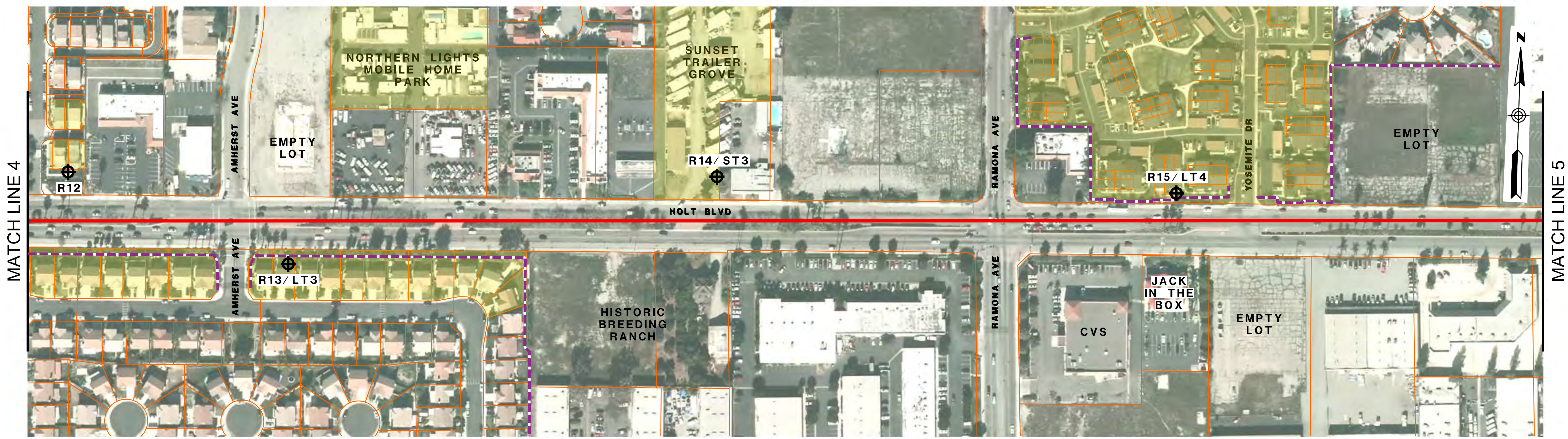
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 2





LEGEND

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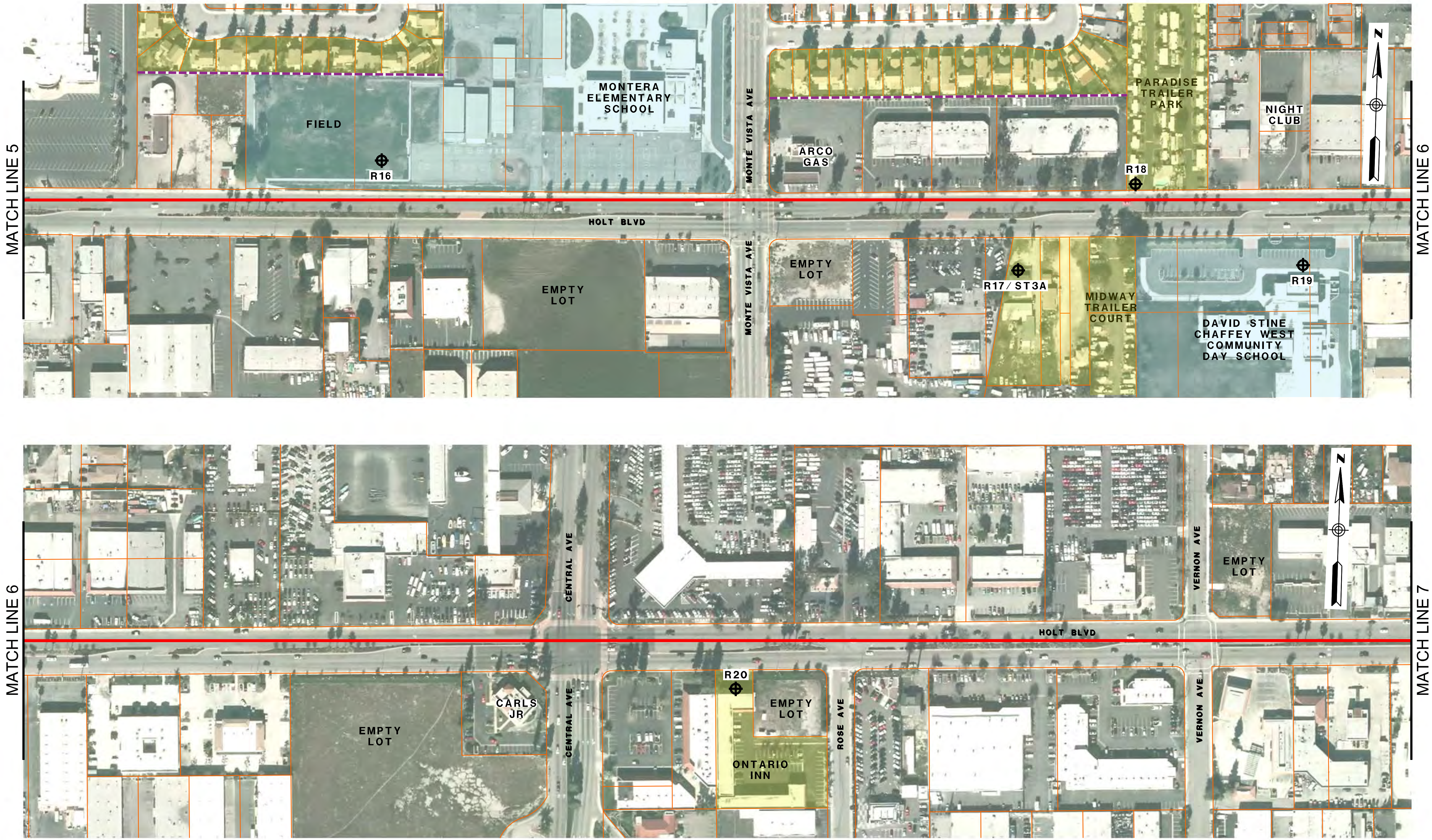
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 3



LEGEND

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- ⊕ ST – SHORT-TERM MEASUREMENT
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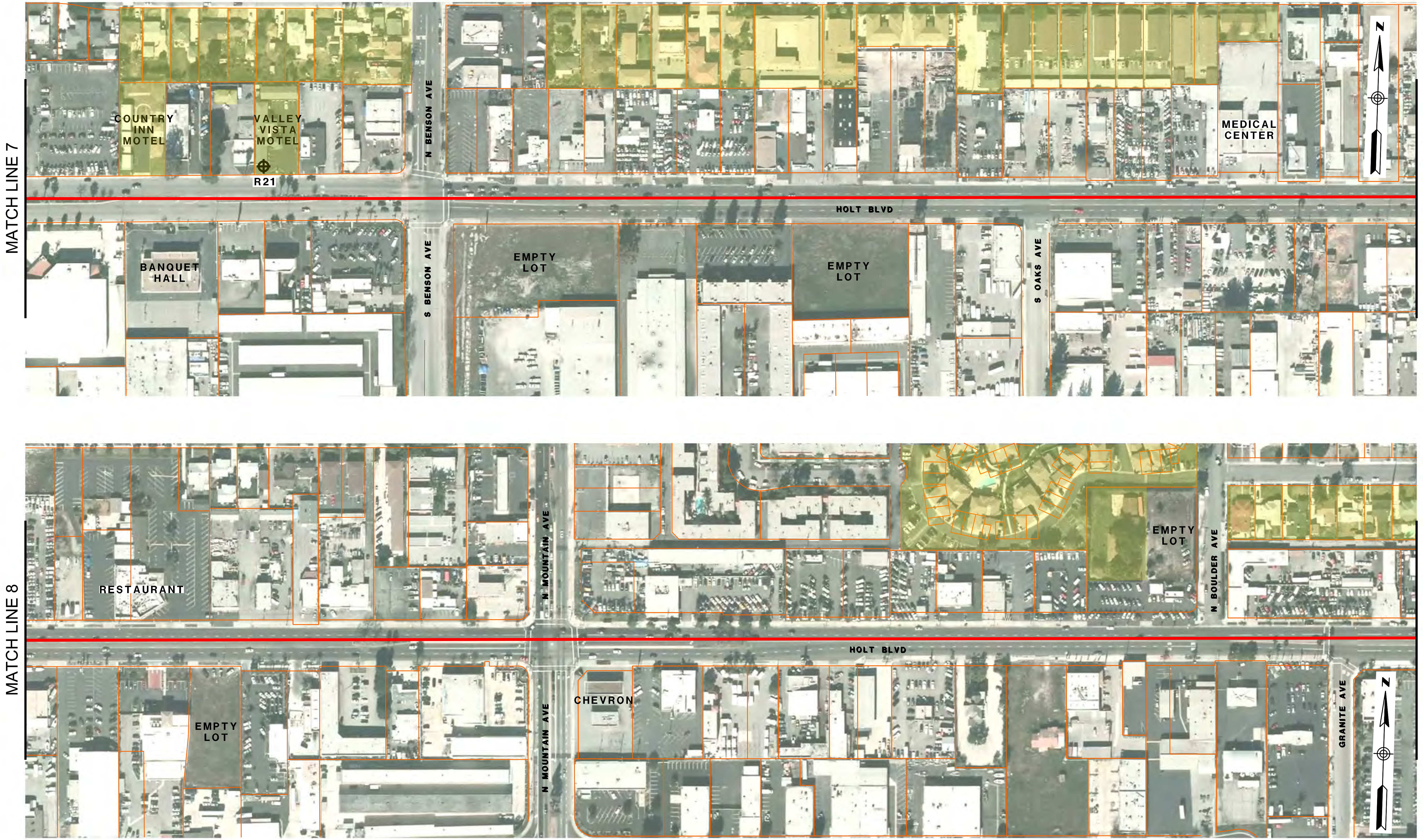
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 4



LEGEND

⊕ LT	– LONGTERM MEASUREMENT	COMM	– COMMERCIAL
⊕ ST	– SHORT-TERM MEASUREMENT		– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
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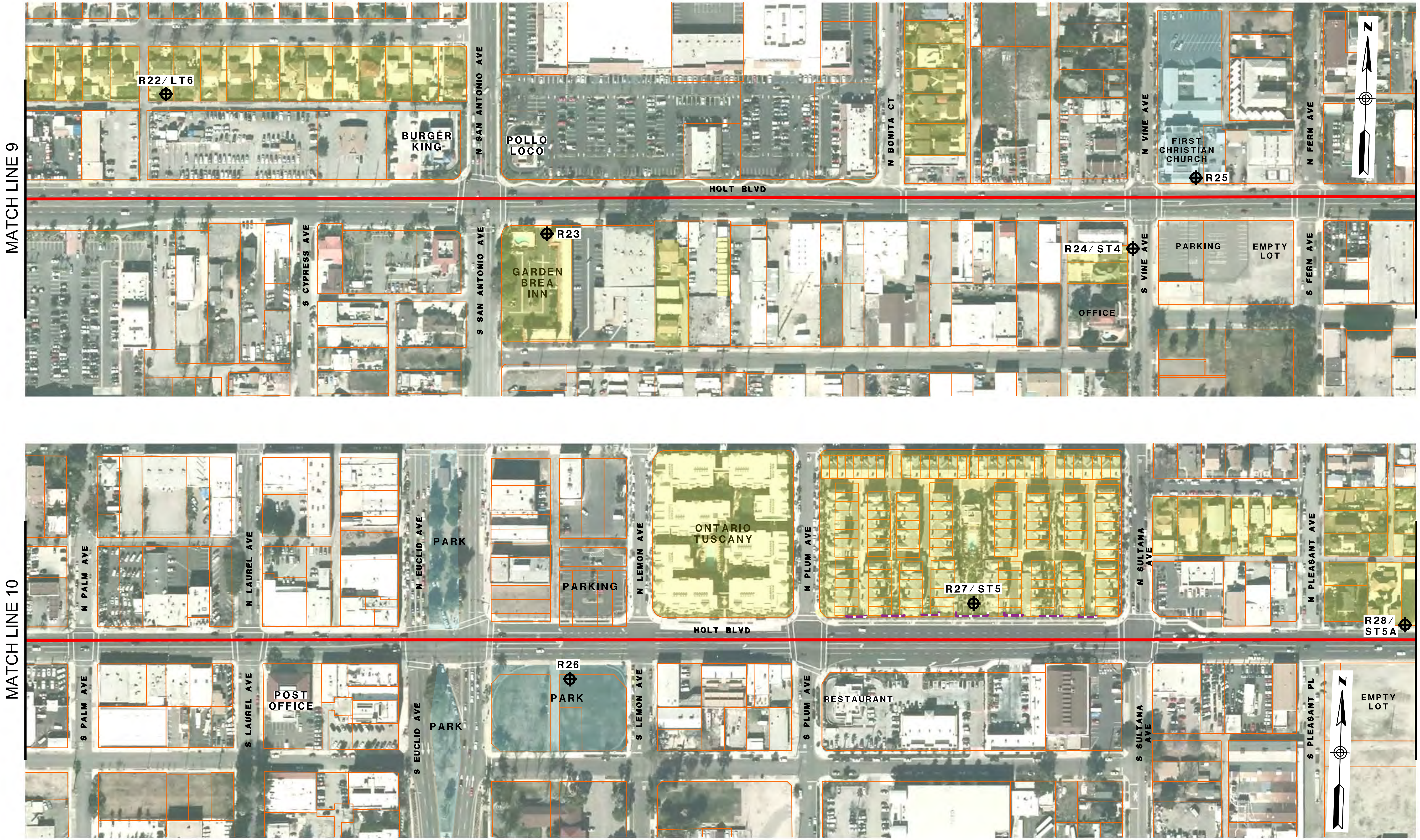
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 5



LEGEND

⊕ LT – LONGTERM MEASUREMENT

⊕ ST – SHORT-TERM MEASUREMENT

- - - – EXISTING WALL

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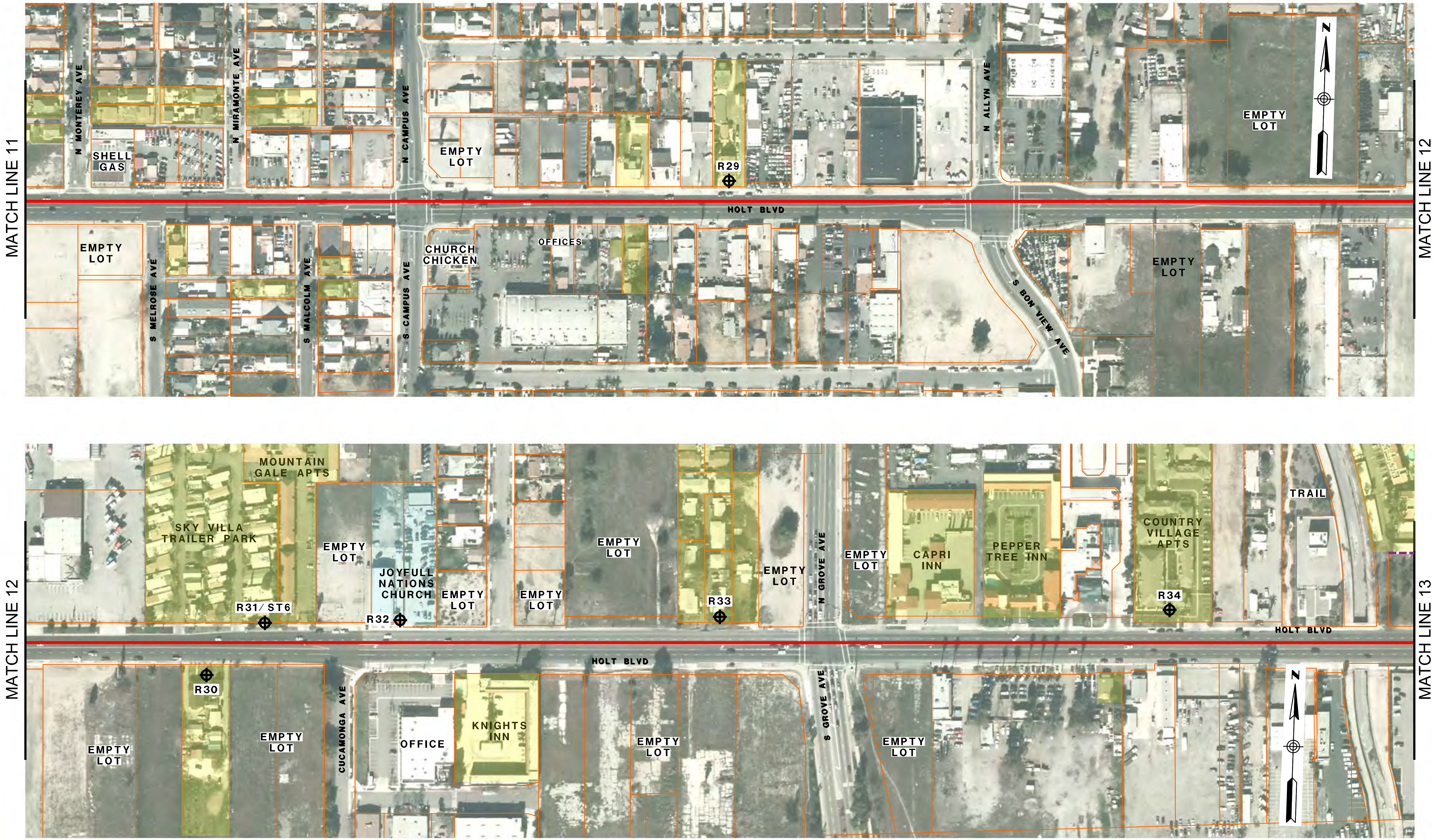
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 6



LEGEND

⊕ LT – LONGTERM MEASUREMENT

⊕ ST – SHORT-TERM MEASUREMENT

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WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 7

LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL

COMM – COMMERCIAL

- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
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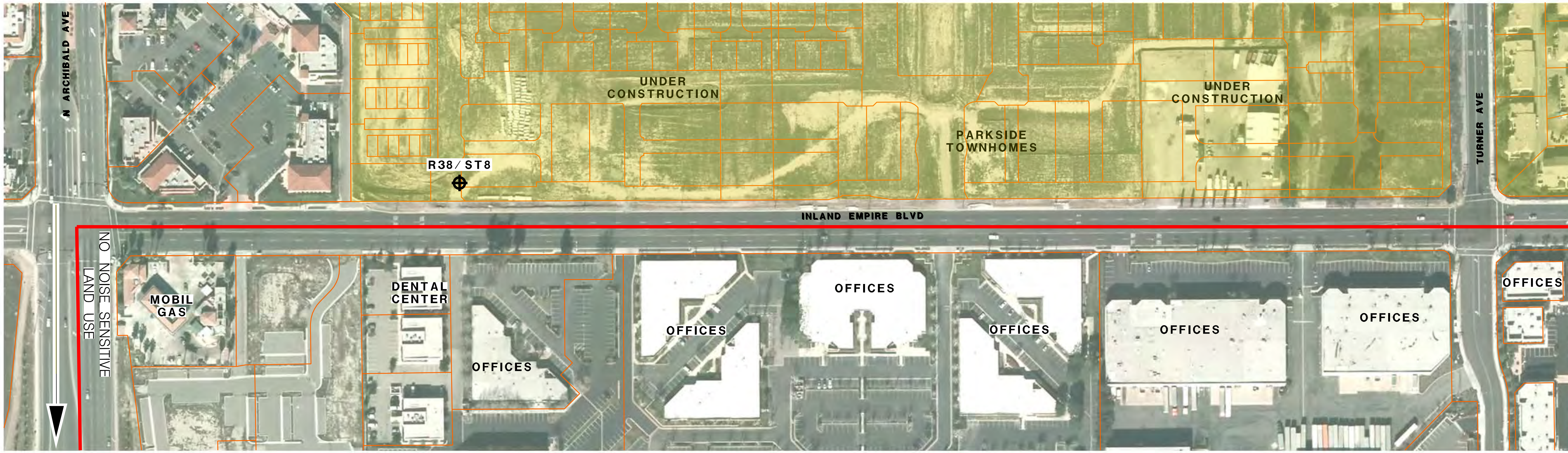
WEST VALLEY CONNECTOR CORRIDOR
SENSITIVE RECEPTOR AND
NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 8



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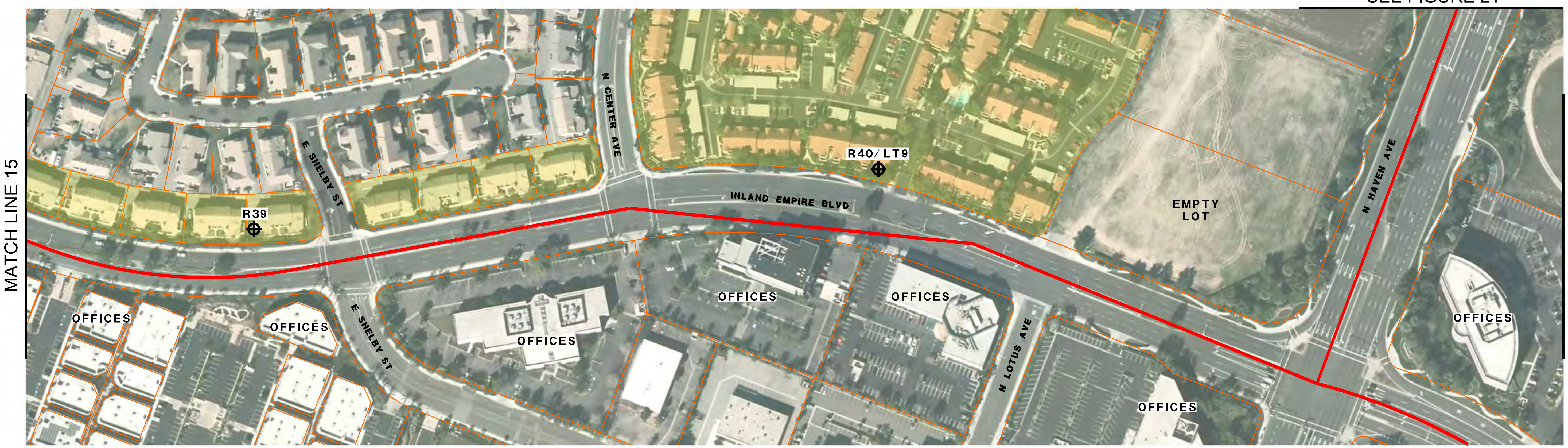

LEGEND

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- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL

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WEST VALLEY CONNECTOR CORRIDOR
SENSITIVE RECEPTOR AND
NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017 | FIGURE 9

LEGEND

- ⊕LT – LONGTERM MEASUREMENT
- ⊕ST – SHORT-TERM MEASUREMENT
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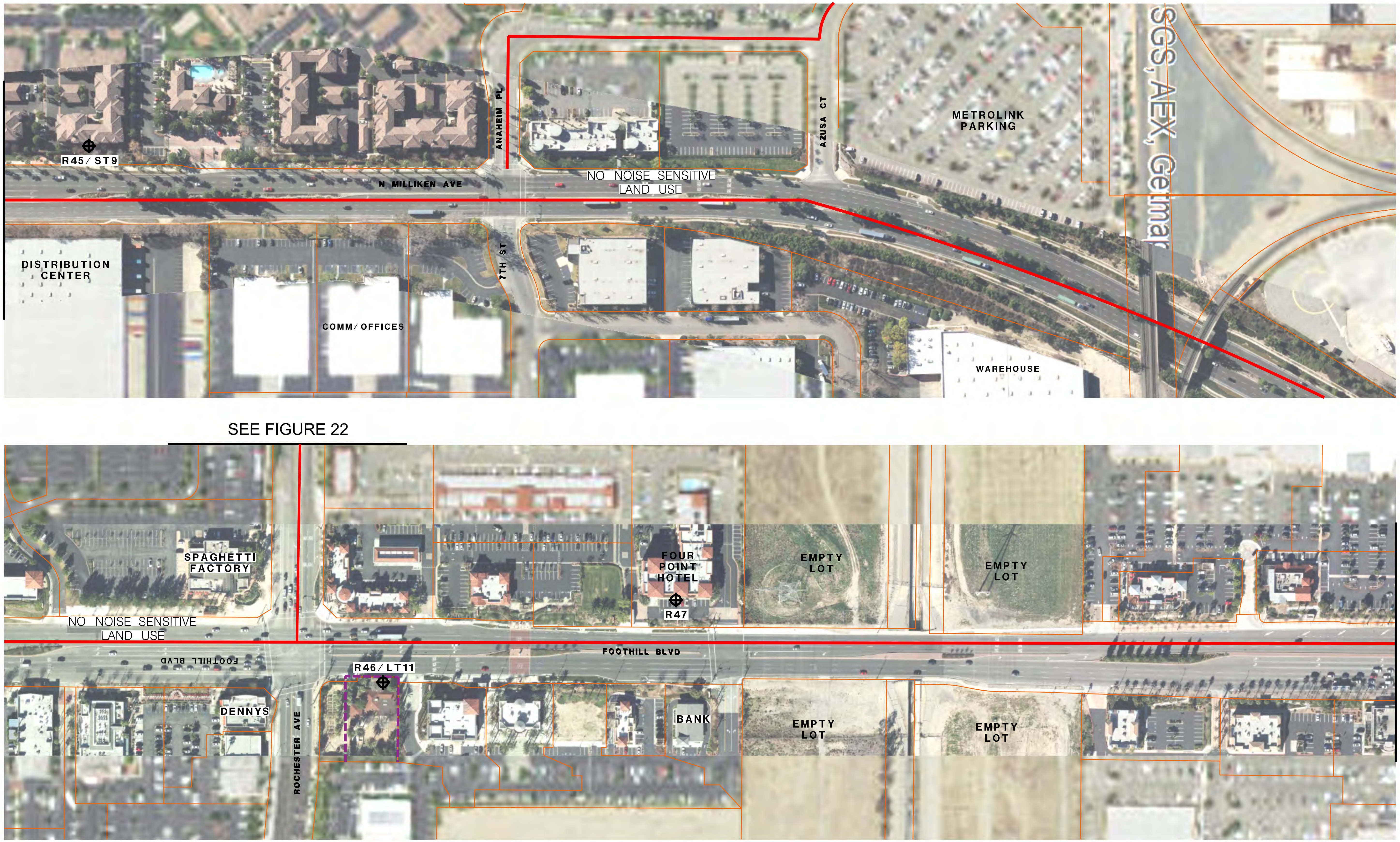
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 10



LEGEND

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- ST – SHORT-TERM MEASUREMENT
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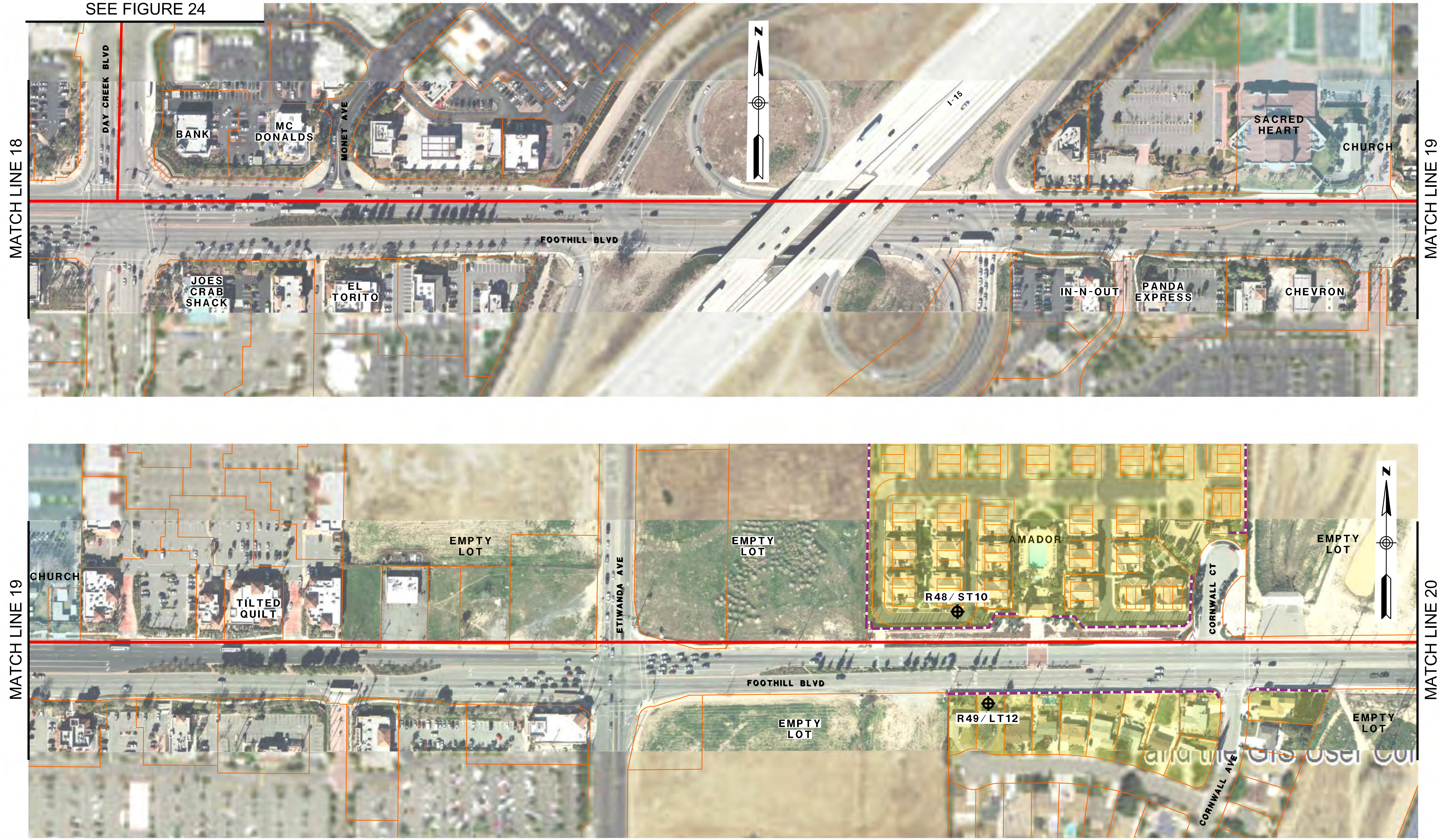
WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 11



LEGEND

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- ST – SHORT-TERM MEASUREMENT
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- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
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0 ft 100ft 200ft 300ft

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WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 12

LEGEND

⊕LT – LONGTERM MEASUREMENT

⊕ST – SHORT-TERM MEASUREMENT

– EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

0 ft 100ft 200ft 300ft

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WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 13

LEGEND

- ⊕ LT – LONGTERM MEASUREMENT
- ⊕ ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
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1in : 200ft

0 ft 100ft 200ft 300ft

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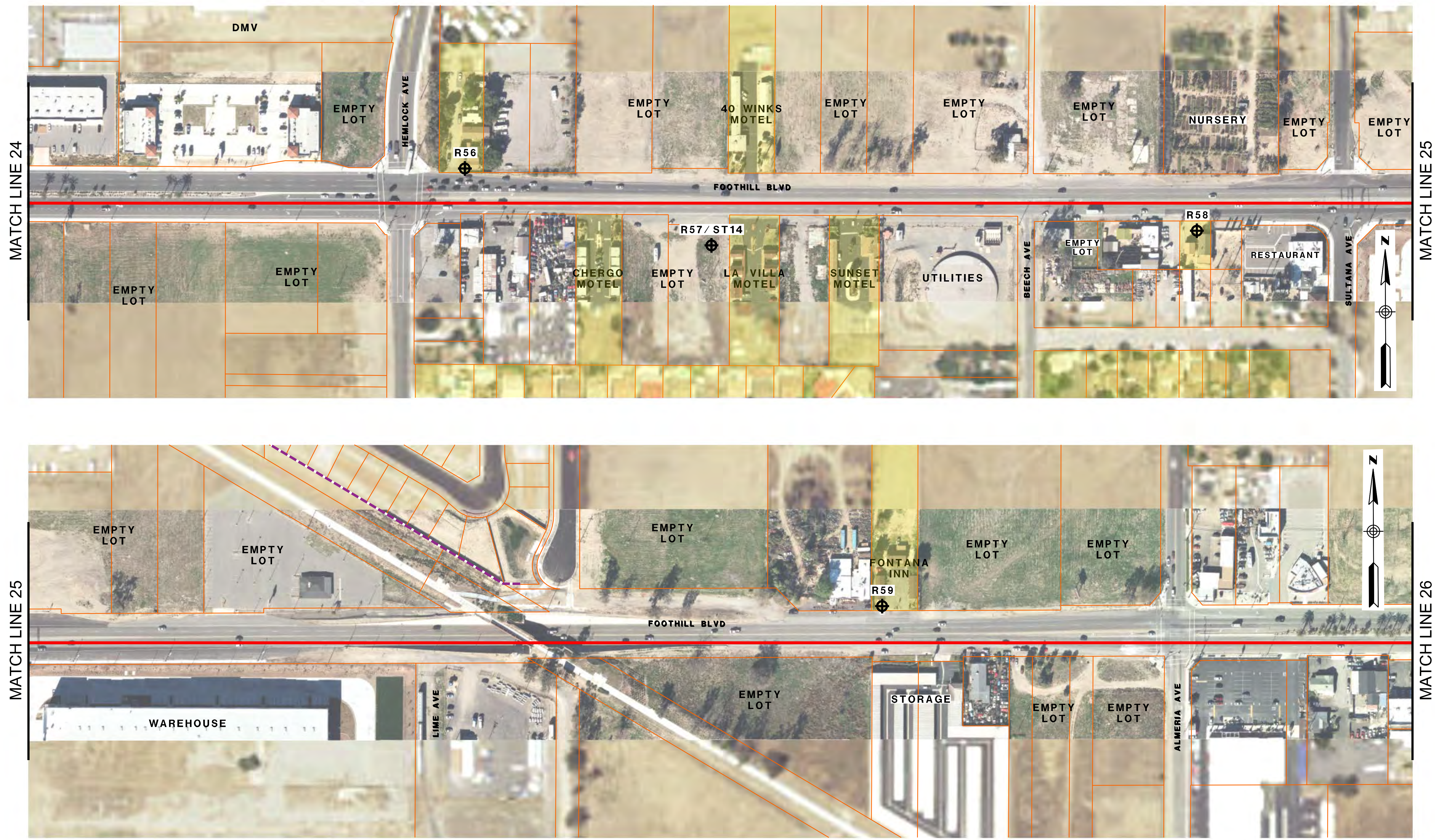
WEST VALLEY CONNECTOR CORRIDOR
SENSITIVE RECEPTOR AND
NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 14



LEGEND

⊕ LT – LONGTERM MEASUREMENT

⊕ ST – SHORT–TERM MEASUREMENT

- - - – EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

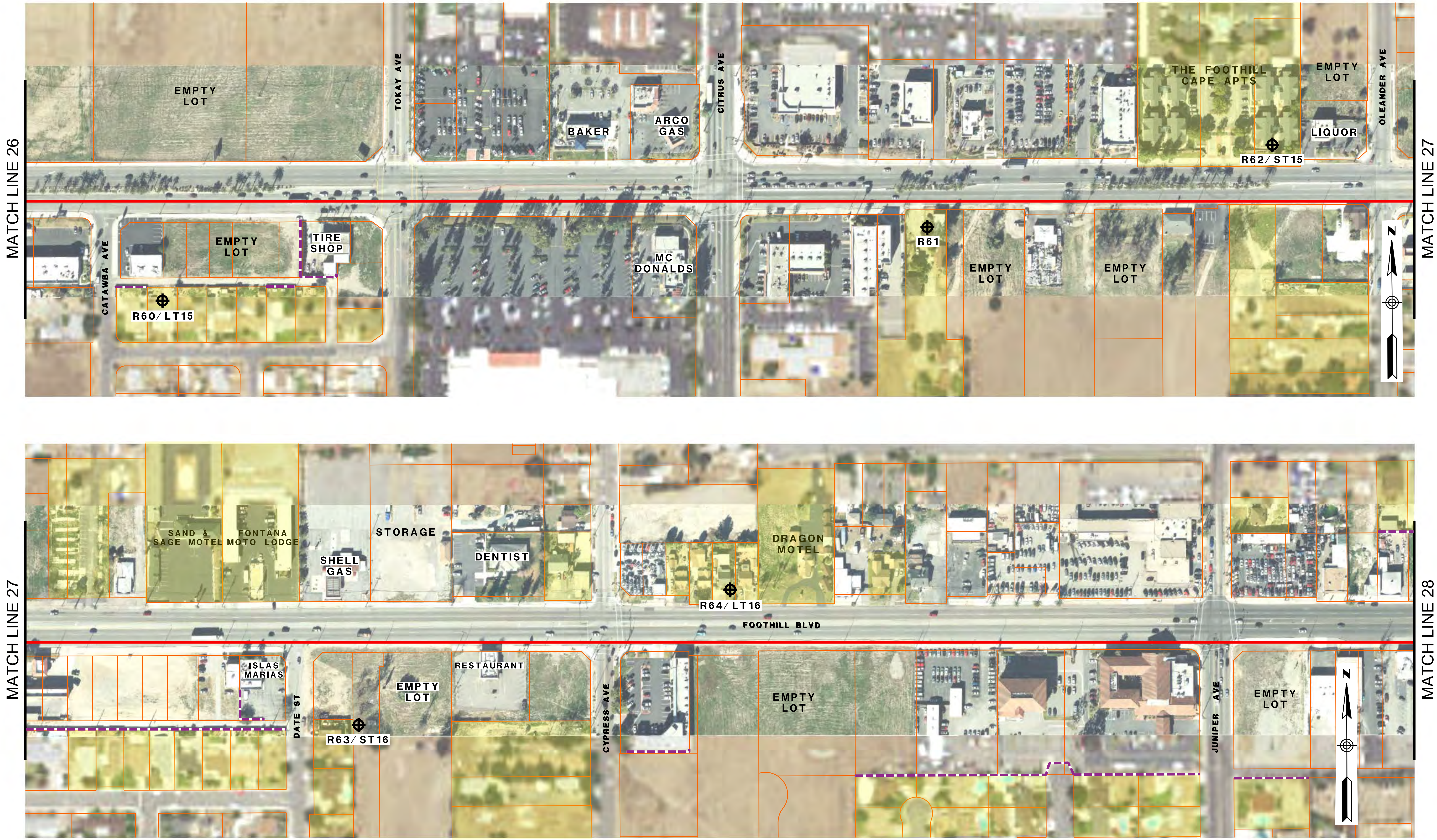
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 15



LEGEND

⊕ LT – LONGTERM MEASUREMENT

⊕ ST – SHORT-TERM MEASUREMENT

– – – EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

0 ft 100ft 200ft 300ft

PARSONS

100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 16

LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
- – CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

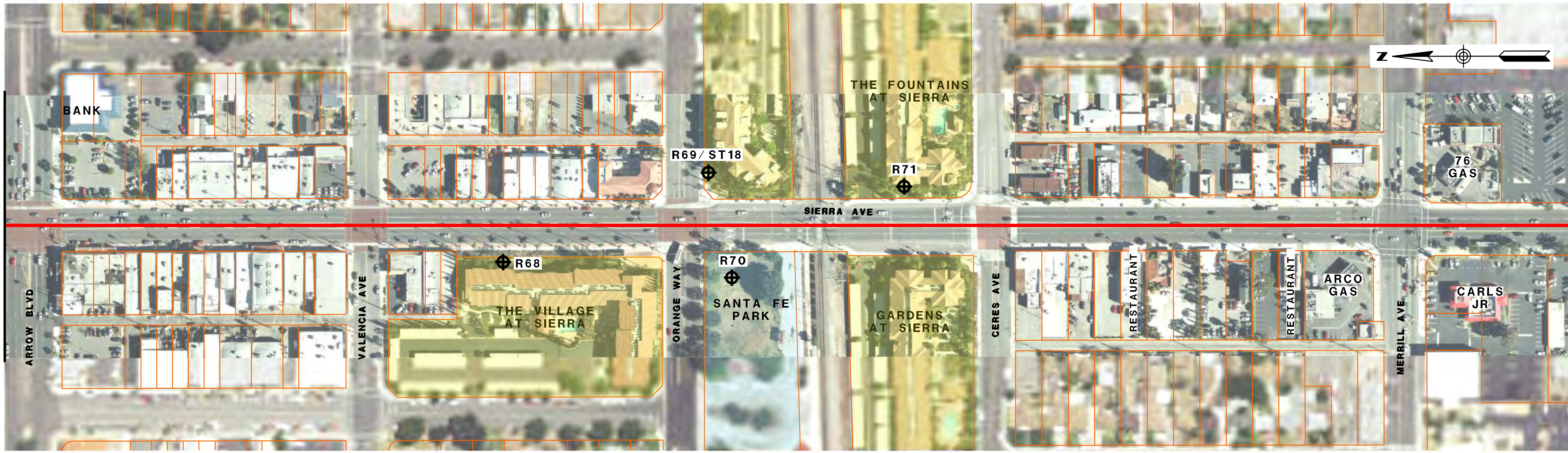
0 ft 100ft 200ft 300ft

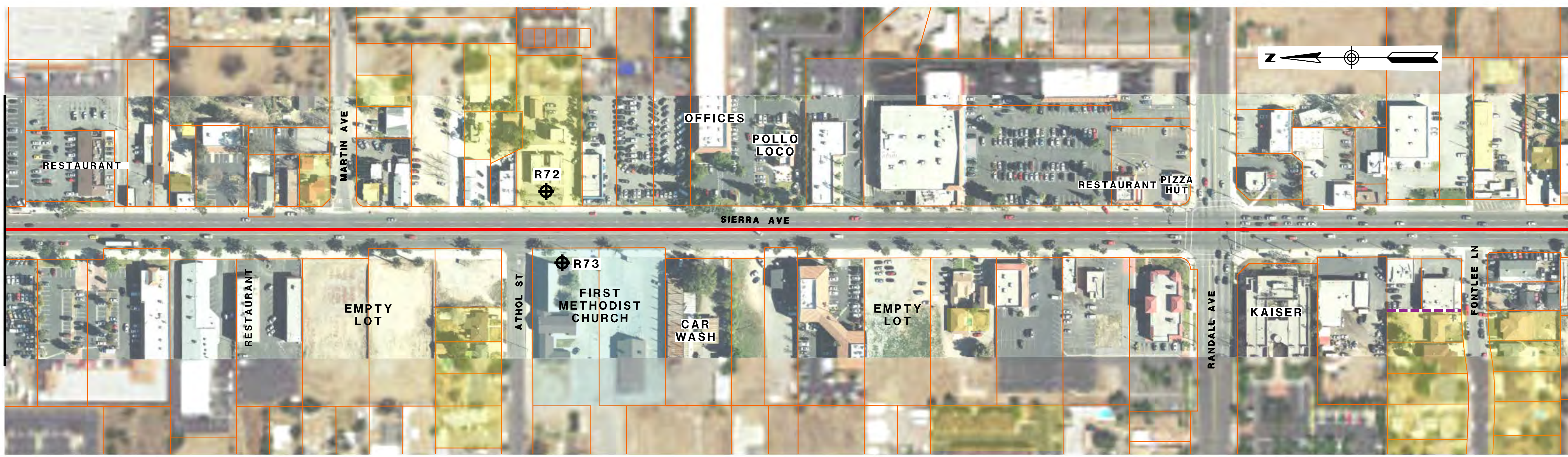
PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR
SENSITIVE RECEPTOR AND
NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 17





LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

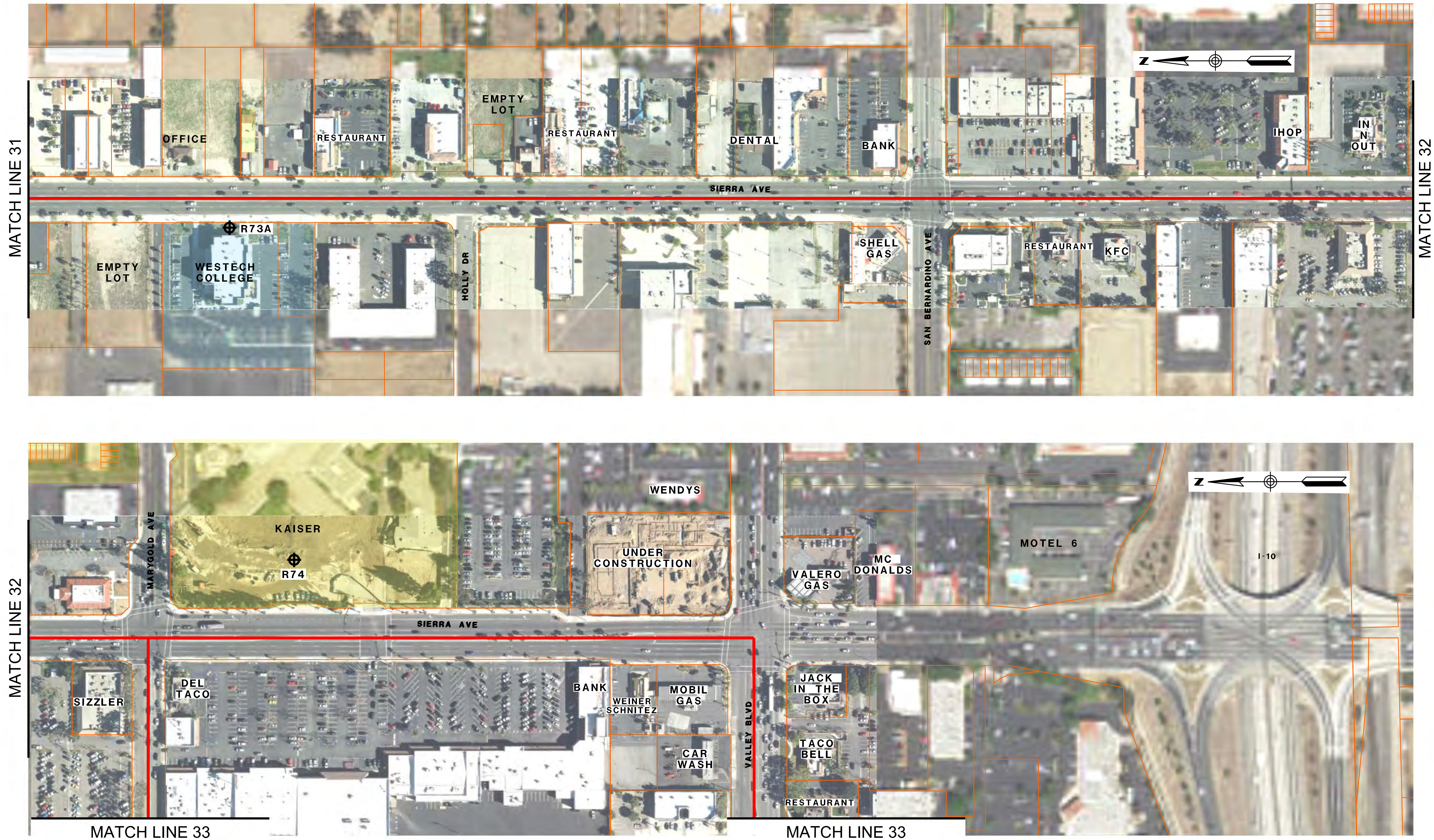
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 18



LEGEND

⌖ LT – LONGTERM MEASUREMENT

⌖ ST – SHORT–TERM MEASUREMENT

– EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

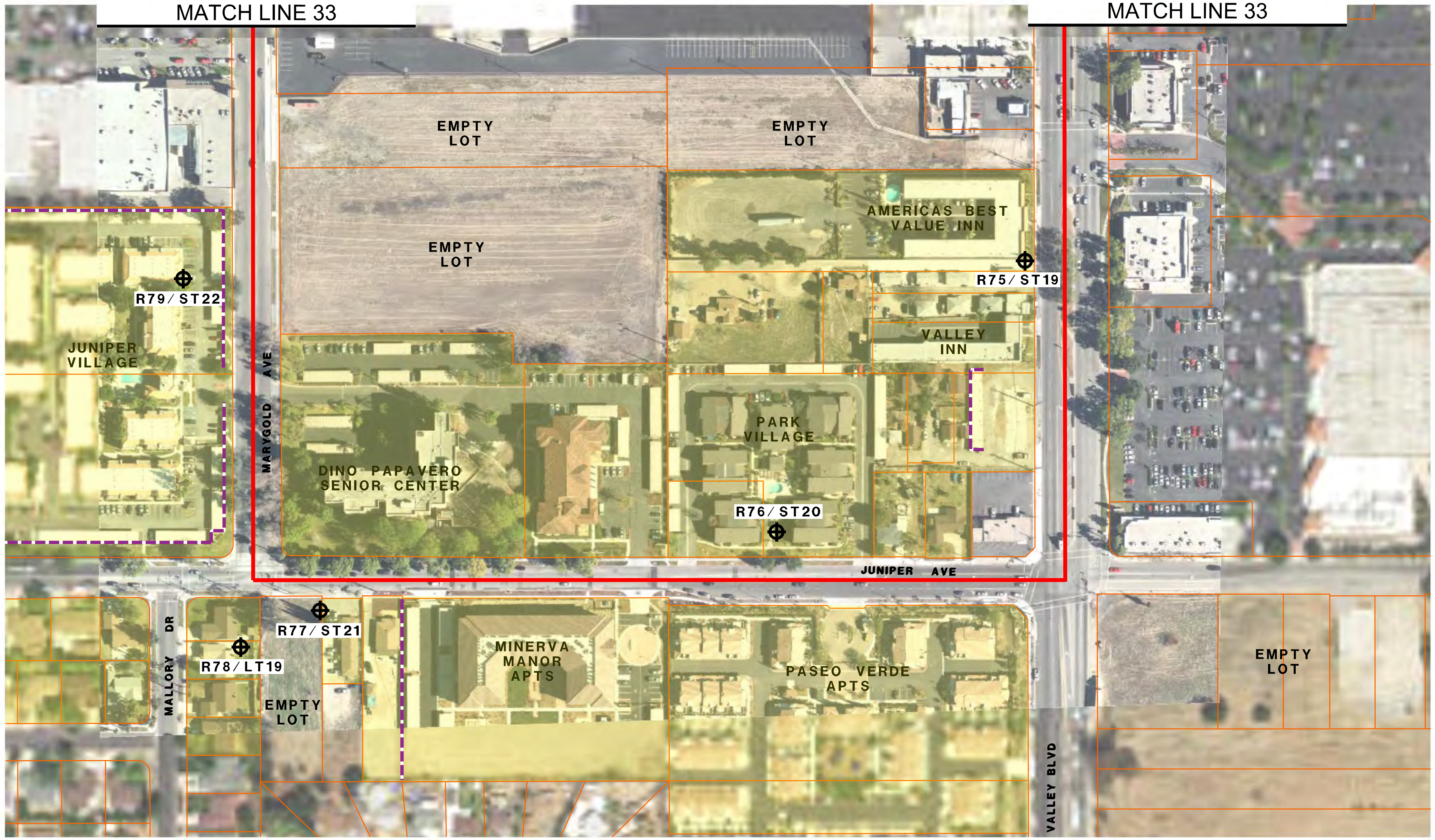
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 19



LEGEND

LT – LONGTERM MEASUREMENT
ST – SHORT-TERM MEASUREMENT
– EXISTING WALL
COMM – COMMERCIAL
– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 20

LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
- – CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

0 ft 100ft 200ft 300ft

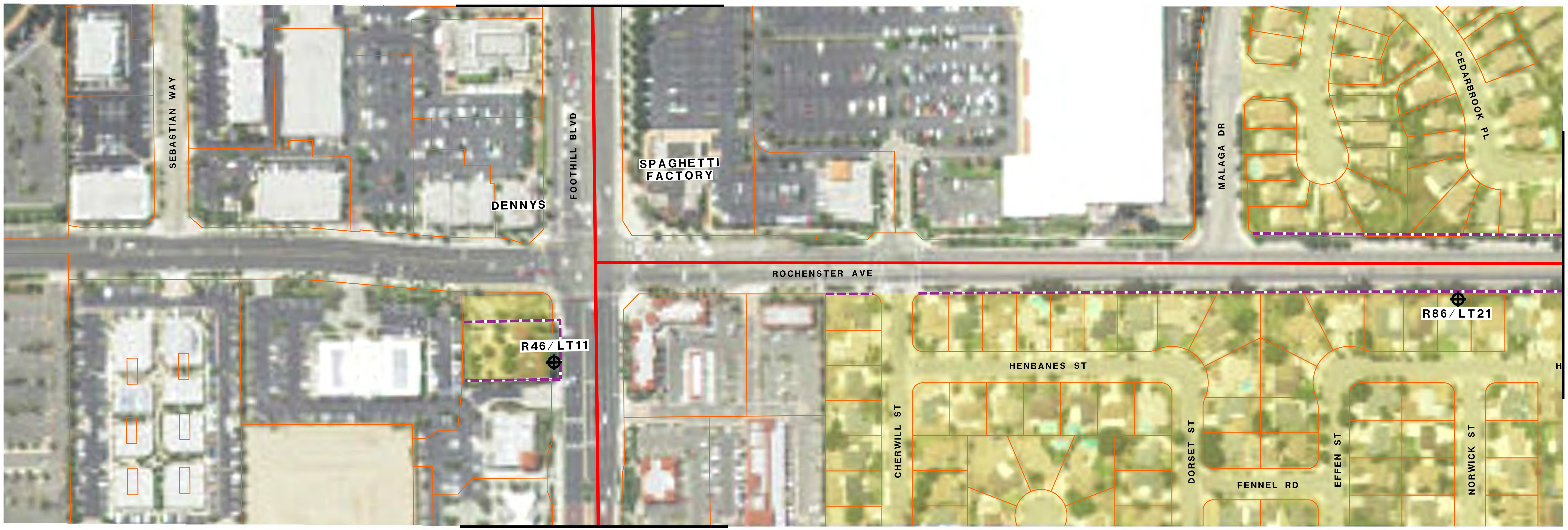
PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 21

SEE FIGURE 11



SEE FIGURE 11

LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
- – CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR
SENSITIVE RECEPTOR AND
NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 22

SEE FIGURE 24

MATCH LINE 35

LEGEND

LT – LONGTERM MEASUREMENT

ST – SHORT-TERM MEASUREMENT

– EXISTING WALL

COMM – COMMERCIAL

– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)

– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 23

LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- COMM – COMMERCIAL
- – CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
- – CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft

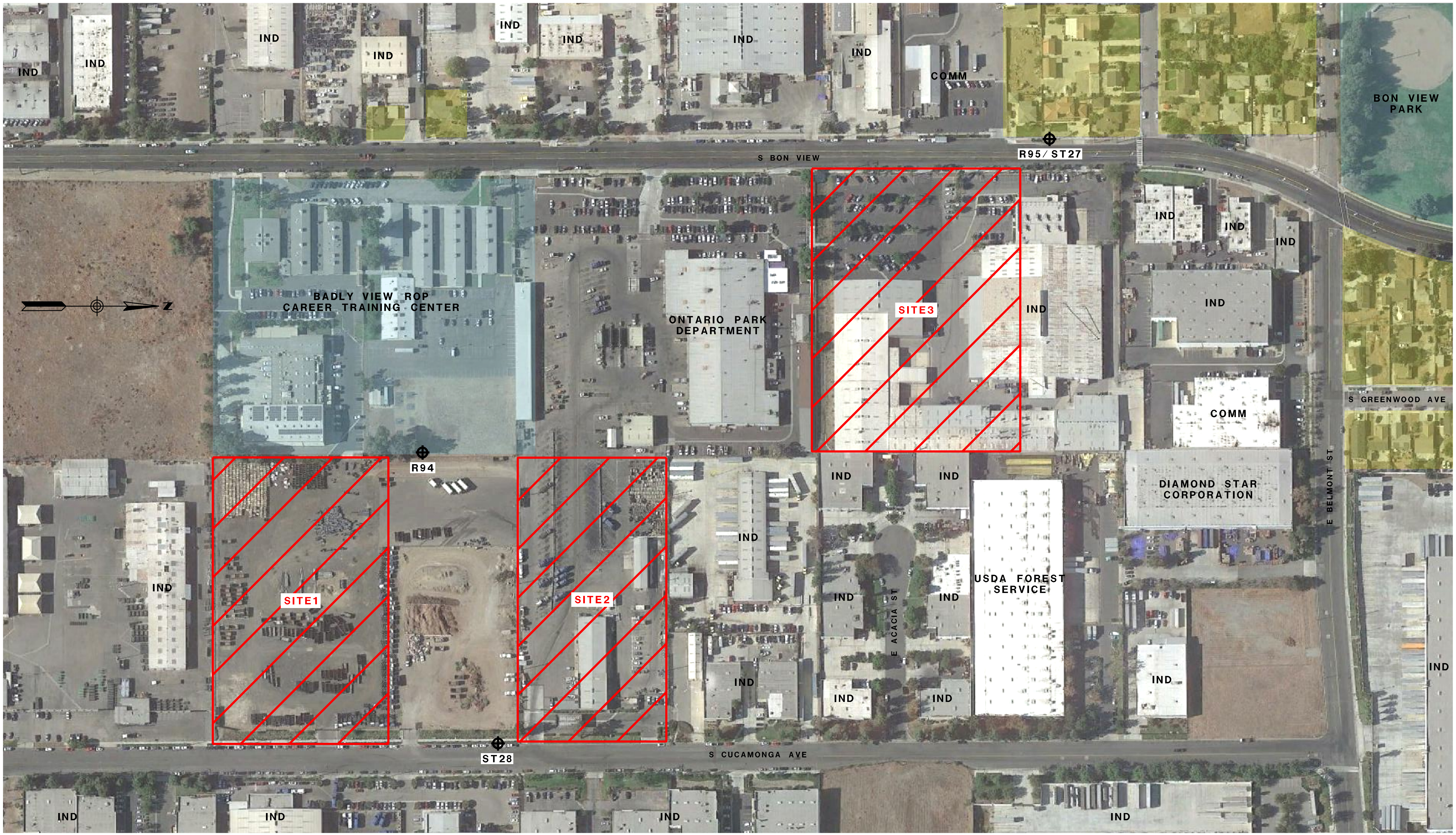
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

SEPTEMBER 25, 2017

FIGURE 24



LEGEND

- LT – LONGTERM MEASUREMENT
- ST – SHORT-TERM MEASUREMENT
- – EXISTING WALL
- – POTENTIAL OPERATIONS AND MAINTENANCE FACILITY

IND – INDUSTRIAL
COMM – COMMERCIAL
– CATEGORY 2 LAND USE (RESIDENTIAL, HOTELS/MOTELS, HOSPITAL)
– CATEGORY 3 LAND USE (SCHOOLS, CHURCHS, PARKS)

1in : 200ft
0 ft 100ft 200ft 300ft

PARSONS
100 WEST WALNUT ST.
PASADENA, CA 91124
(626) 440-2000

WEST VALLEY CONNECTOR CORRIDOR SENSITIVE RECEPTOR AND NOISE MEASUREMENT LOCATIONS

APRIL 2, 2017

FIGURE 25

APPENDIX B: FIELD MEASUREMENT DATA SHEETS AND GRAPHS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector		ENGINEER: Urenda / Berg	DATE: 6/7/16
MEASUREMENT ADDRESS: 157 Monterey Ave	CITY: Pomona	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT1

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☒ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 4714

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 132453

PRE AMP: ☐ LD-900 ☒ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 28028

CALIBRATOR: ☐ LD CA250 ☒ LD CA200 ☐ B&K 4231 ☐ ________
S/N 11080
Freq, Hz.: ☐ 250 ☒ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 0.04 / 8:41
After 114.0 / 114.0 / 0.1 / 9:03

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

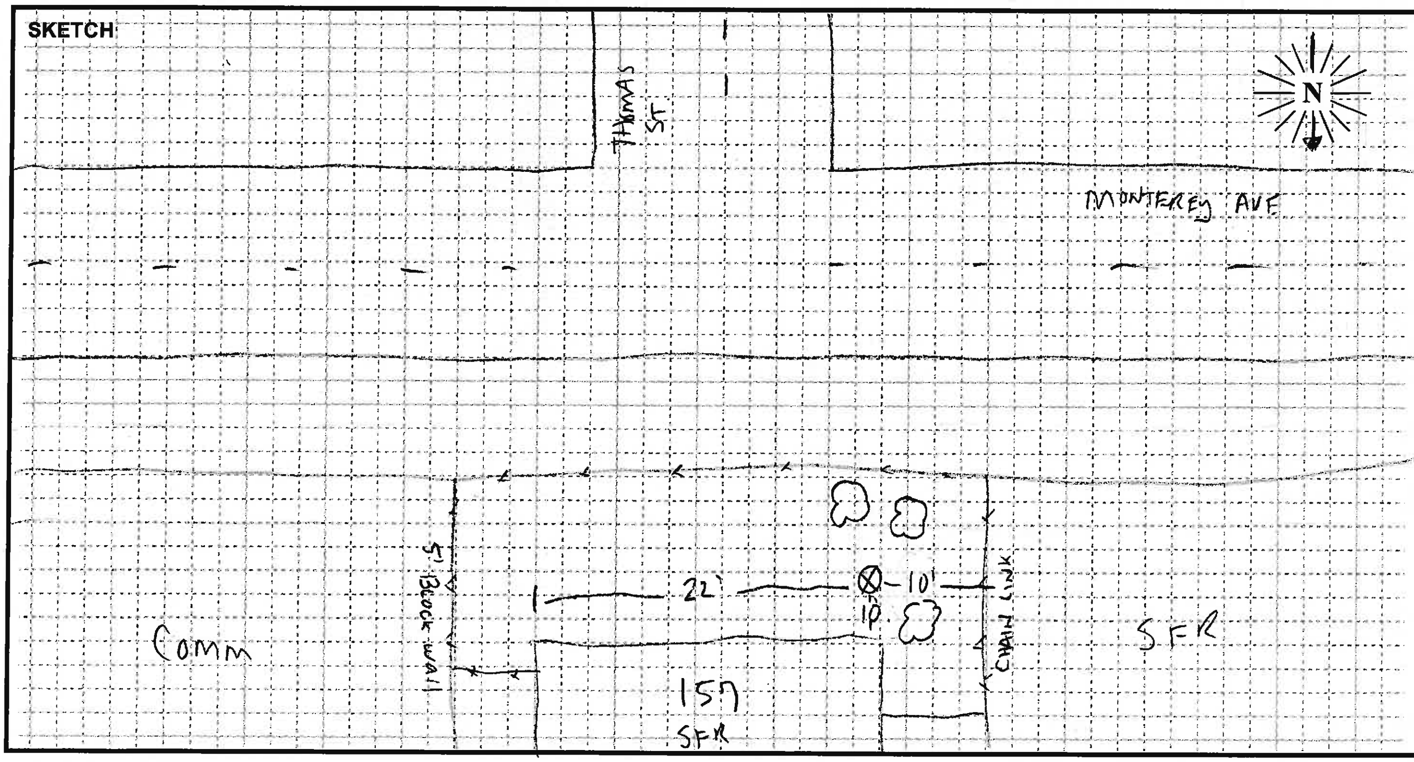
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ________ MPH
TOWARD (DIR): ________
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	8:52											
6/8		901										

SKETCH



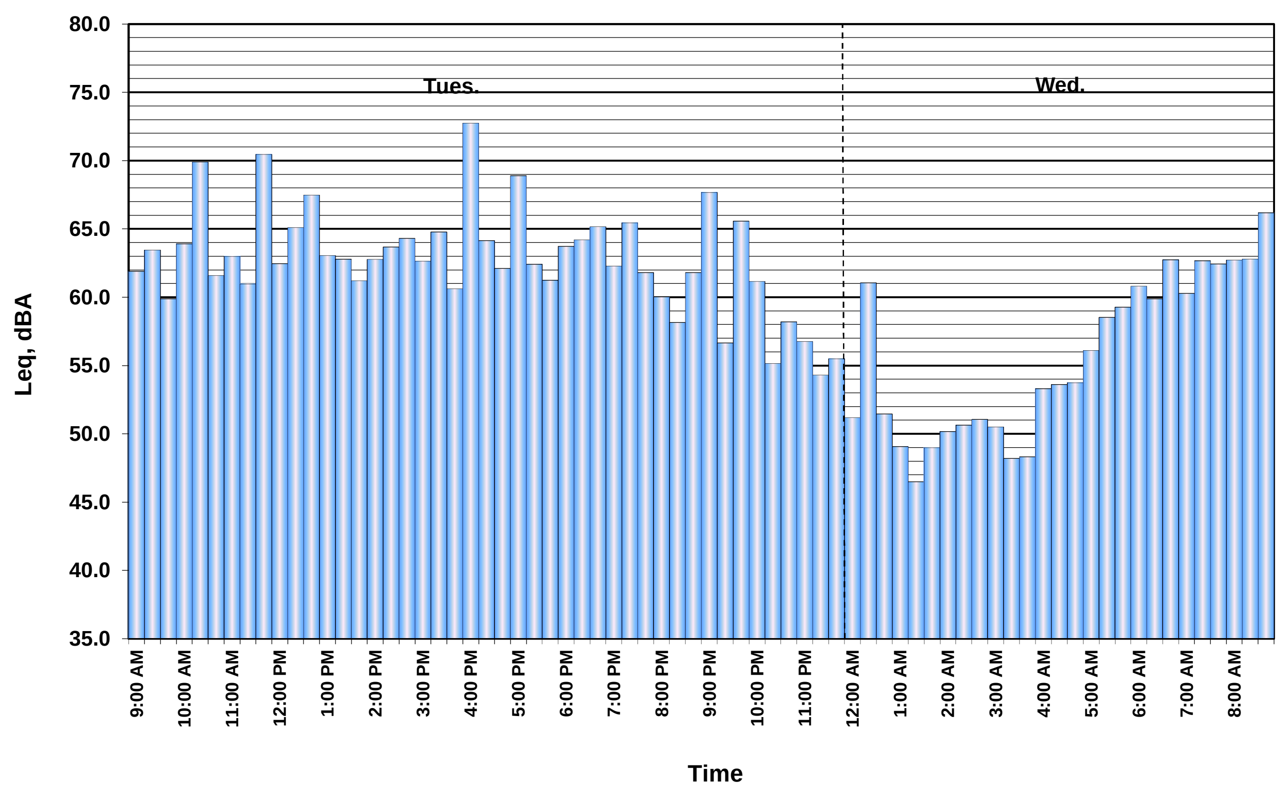
PARSONS

Site LT1 Hourly Noise Levels, Leq(h)

Location: 157 Monterey Avenue, Pomona
Position: Front Yard
Sources: Traffic
Date: 6/7/16 - 6/8/16

Notes: Spikes in noise measurement are due to nearby ambulance company.
See attached Noise Measurement Form.

TIME	6/7 - 6/8 Leq(h) dBA
09:00 - 10:00 AM	62
10:00 - 11:00 AM	67
11:00 - 12:00 PM	67
12:00 - 01:00 PM	65
01:00 - 02:00 PM	62
02:00 - 03:00 PM	64
03:00 - 04:00 PM	63
04:00 - 05:00 PM	69
05:00 - 06:00 PM	66
06:00 - 07:00 PM	64
07:00 - 08:00 PM	63
08:00 - 09:00 PM	60
09:00 - 10:00 PM	65
10:00 - 11:00 PM	59
11:00 - 12:00 AM	56
12:00 - 01:00 AM	57
01:00 - 02:00 AM	48
02:00 - 03:00 AM	51
03:00 - 04:00 AM	49
04:00 - 05:00 AM	54
05:00 - 06:00 AM	58
06:00 - 07:00 AM	61
07:00 - 08:00 AM	62
08:00 - 12:00 AM	64
Ldn:	66



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/7/16

MEASUREMENT ADDRESS: #368 HOLT BLVD

CITY: Pomona

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: LT2

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0639

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3159

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1629

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ______ MPH

TOWARD (DIR): ______

SKIES: CLEAR

CAMERA: RUBEN PHONE

PHOTO NOs. ______

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

	Input, dB	Reading, dB	Offset, dB	Time
Before	114.0	114.0	7.1	9:41am
After	114.0	114.1	7.1	12:12

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

3214 CODE

NOTES:

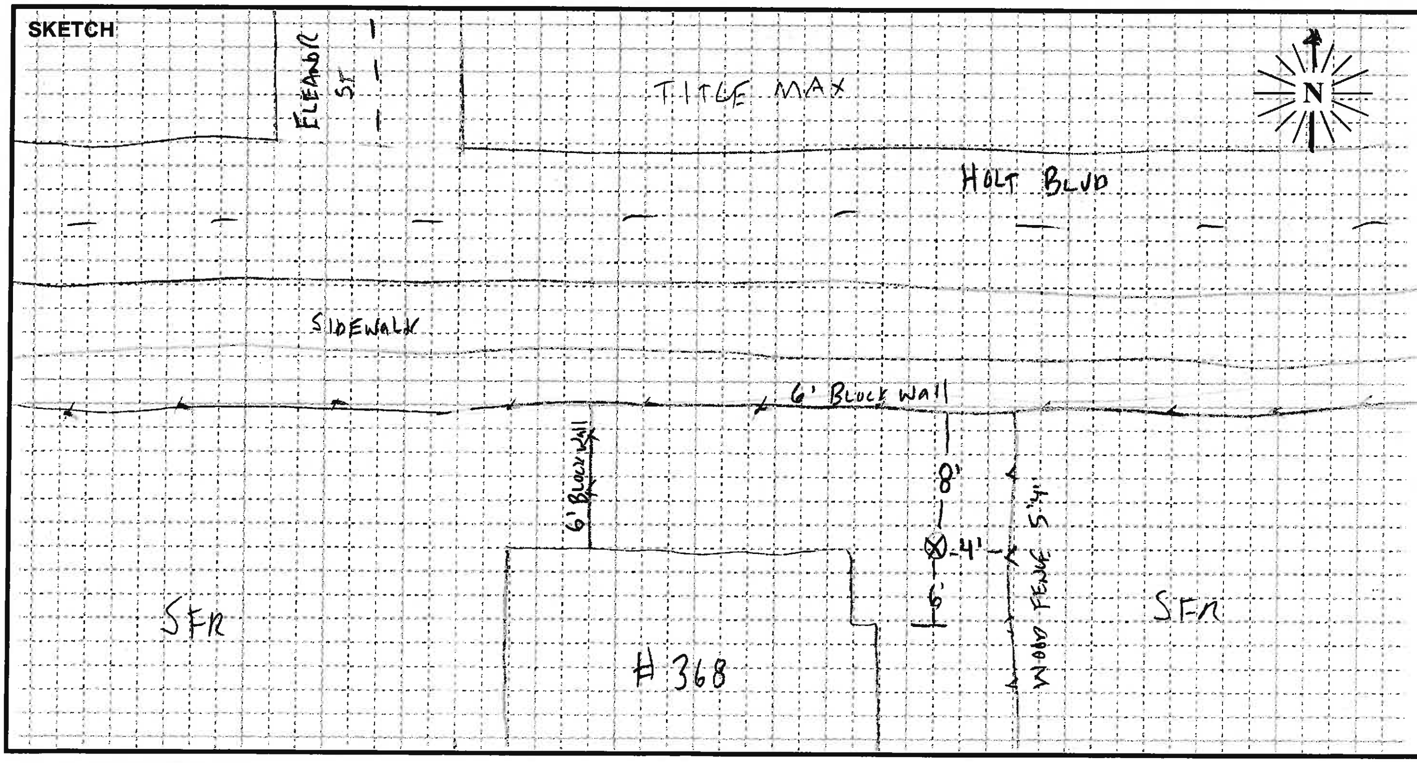
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	9:42											
6/8		12:10										

SKETCH



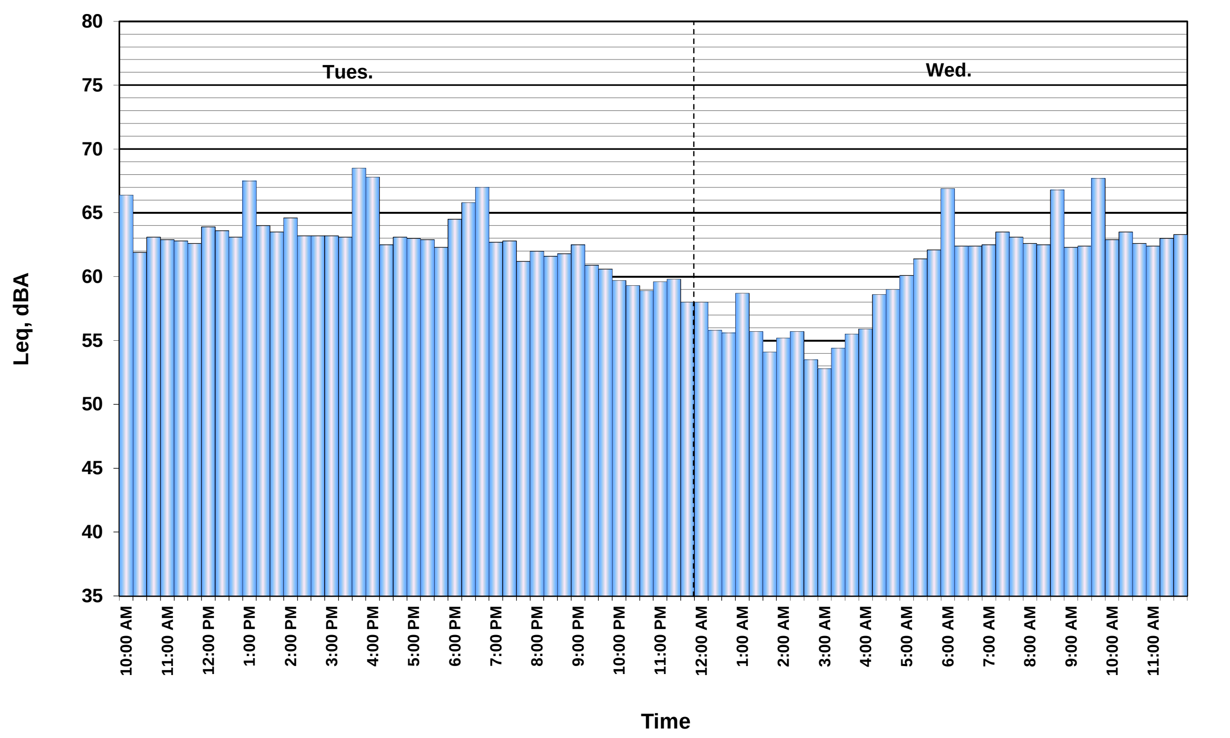
PARSONS

Site LT2 Hourly Noise Levels, Leq(h)

Location: 368 Holt Boulevard, Pomona
Position: Back Yard
Sources: Traffic
Date: 6/7/16 - 6/8/16

Notes: Measurement was located behind 6-foot high property wall.
See attached Noise Measurement Form.

TIME	6/7 - 6/8 Leq(h) dBA	6/8 Leq(h) dBA
10:00 - 11:00 AM	64	63
11:00 - 12:00 PM	63	63
12:00 - 01:00 PM	64	
01:00 - 02:00 PM	65	
02:00 - 03:00 PM	64	
03:00 - 04:00 PM	66	
04:00 - 05:00 PM	65	
05:00 - 06:00 PM	63	
06:00 - 07:00 PM	66	
07:00 - 08:00 PM	62	
08:00 - 09:00 PM	62	
09:00 - 10:00 PM	61	
10:00 - 11:00 PM	59	
11:00 - 12:00 AM	59	
12:00 - 01:00 AM	57	
01:00 - 02:00 AM	57	
02:00 - 03:00 AM	55	
03:00 - 04:00 AM	54	
04:00 - 05:00 AM	58	
05:00 - 06:00 AM	61	
06:00 - 07:00 AM	64	
07:00 - 08:00 AM	63	
08:00 - 09:00 AM	64	
09:00 - 10:00 AM	65	
Ldn:	67	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: Urenda	DATE: 6/7/16
MEASUREMENT ADDRESS: 4288 Appaloosa Way	CITY: Montclair	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT3

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0659

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3378

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 2330

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

	Input, dB / Reading, dB / Offset, dB / Time
Before	114.0, 114.0, 7.4, 10:36
After	114.0, 113.8, –, 14:11

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ____________

SKIES: Clear

CAMERA Ruben Pham

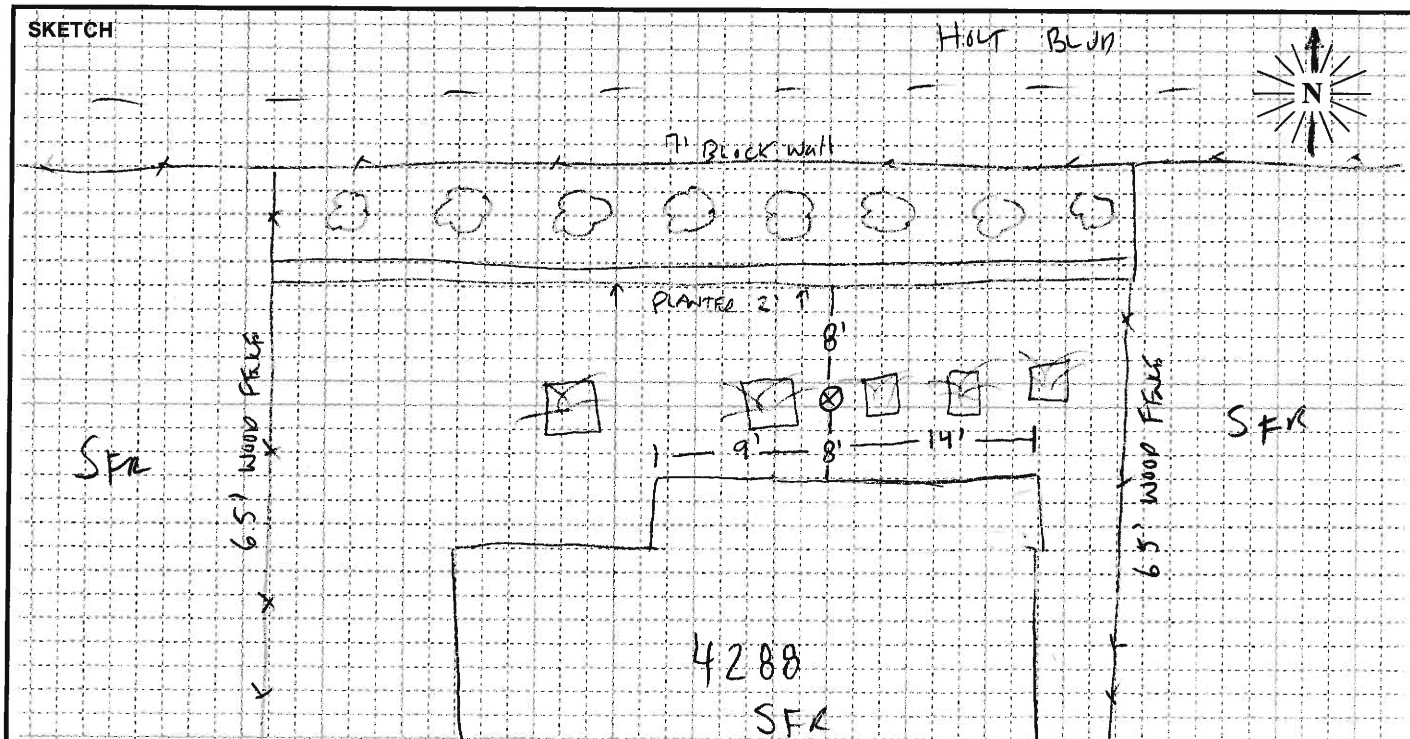
PHOTO NOs. ____________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	10:38											
6/8		1407										

SKETCH



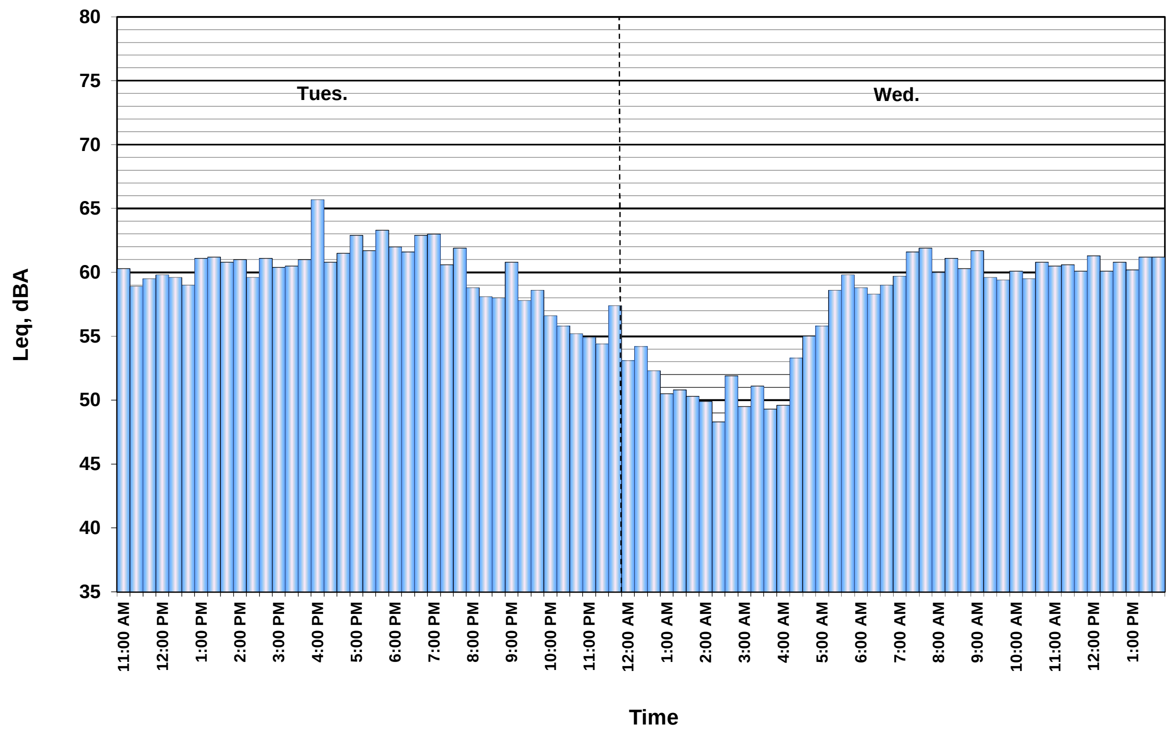
PARSONS

Site LT3 Hourly Noise Levels, Leq(h)

Location: 4288 Appalossa Way, Montclair
Position: Back Yard
Sources: Traffic
Date: 6/7/16 - 6/8/16

Notes: Measurement was located behind 7-foot high property wall.
See attached Noise Measurement Form.

TIME	6/7 - 6/8 Leq(h) dBA	6/8 Leq(h) dBA
11:00 - 12:00 PM	60	60
12:00 - 01:00 PM	59	61
01:00 - 02:00 PM	61	61
02:00 - 03:00 PM	61	
03:00 - 04:00 PM	61	
04:00 - 05:00 PM	63	
05:00 - 06:00 PM	63	
06:00 - 07:00 PM	62	
07:00 - 08:00 PM	62	
08:00 - 09:00 PM	58	
09:00 - 10:00 PM	59	
10:00 - 11:00 PM	56	
11:00 - 12:00 AM	56	
12:00 - 01:00 AM	53	
01:00 - 02:00 AM	51	
02:00 - 03:00 AM	50	
03:00 - 04:00 AM	50	
04:00 - 05:00 AM	53	
05:00 - 06:00 AM	58	
06:00 - 07:00 AM	59	
07:00 - 08:00 AM	61	
08:00 - 09:00 AM	60	
09:00 - 10:00 AM	60	
10:00 - 11:00 AM	60	
Ldn:	63	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: UMENA

DATE: 6/7/16

MEASUREMENT ADDRESS: 4537 Bodega CT

CITY: MONTCLAIR

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: LT 4

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0638

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3155

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1891

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F **R.H.:** ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ______________

SKIES: CLEAR

CAMERA RUBEN PHONE

PHOTO NOs. ______________

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 17.8 / 11:07

After 114.0 / 114.4 / ______ / 14:30

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

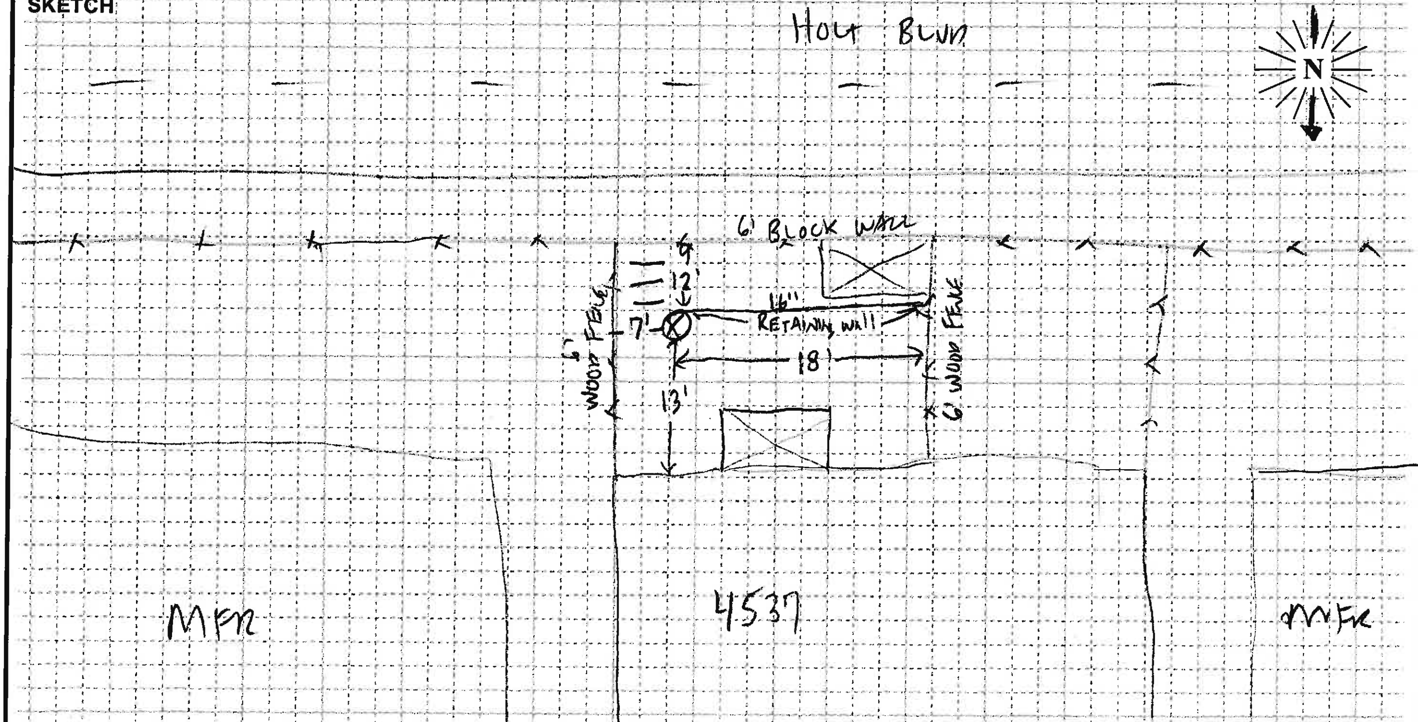
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	11:08											
6/8		14:22										

SKETCH



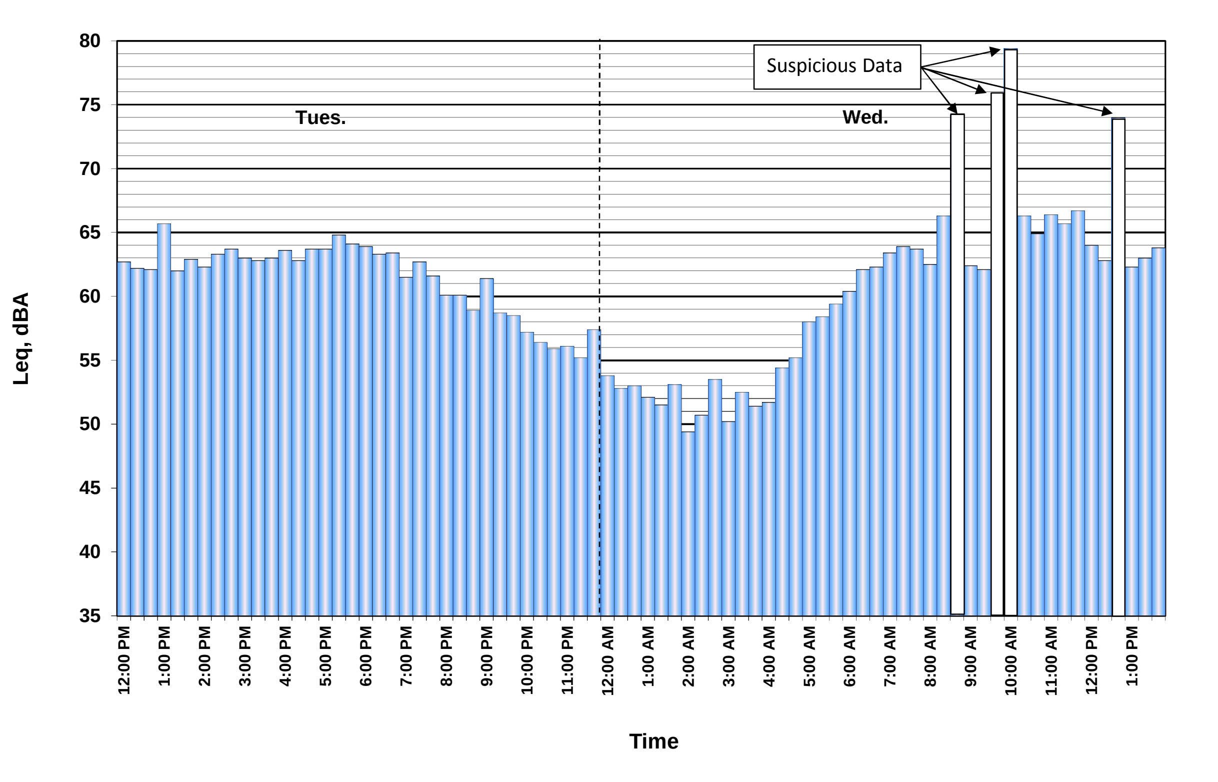
PARSONS

Site LT4 Hourly Noise Levels, Leq(h)

Location: 4537 Bodega Court, Montclair
Position: Back Yard
Sources: Traffic
Date: 6/7/16 - 6/8/16

Notes: Measurement was located behind 6-foot high property wall.
Several suspicious 20 minute data intervals have been removed from measurement as marked below.
See attached Noise Measurement Form.

TIME	6/7 - 6/8 Leq(h) dBA	6/8 Leq(h) dBA
12:00 - 01:00 PM	62	63
01:00 - 02:00 PM	64	63
02:00 - 03:00 PM	63	
03:00 - 04:00 PM	63	
04:00 - 05:00 PM	63	
05:00 - 06:00 PM	64	
06:00 - 07:00 PM	64	
07:00 - 08:00 PM	62	
08:00 - 09:00 PM	60	
09:00 - 10:00 PM	60	
10:00 - 11:00 PM	57	
11:00 - 12:00 AM	56	
12:00 - 01:00 AM	53	
01:00 - 02:00 AM	52	
02:00 - 03:00 AM	52	
03:00 - 04:00 AM	51	
04:00 - 05:00 AM	54	
05:00 - 06:00 AM	59	
06:00 - 07:00 AM	62	
07:00 - 08:00 AM	64	
08:00 - 09:00 AM	65	
09:00 - 10:00 AM	62	
10:00 - 11:00 AM	66	
11:00 - 12:00 PM	66	
Ldn:	65	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector		ENGINEER: URENDA	DATE: 6/9/16
MEASUREMENT ADDRESS: 763 W B STREET	CITY: ONTARIO	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT 6

SOUND LEVEL METER: ☒ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 0844

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 1785

PRE AMP: ☒ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 3202

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 22.5 / 11 04
After 114.0 / 114.2 / 22.5 / 13:14

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

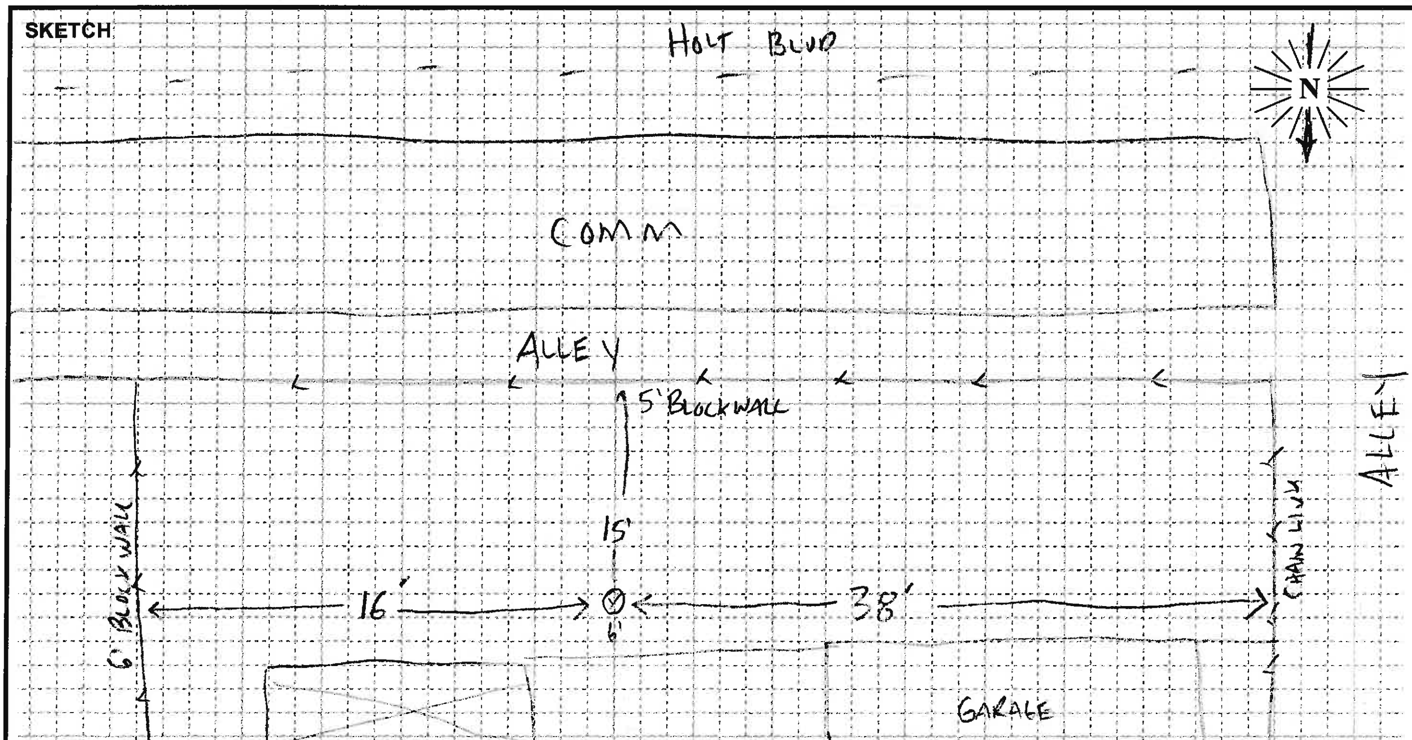
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ______ MPH
TOWARD (DIR): ______
SKIES: CLEAR
CAMERA RUBEN PHONE
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	11:45											
6/10		13:11										

SKETCH



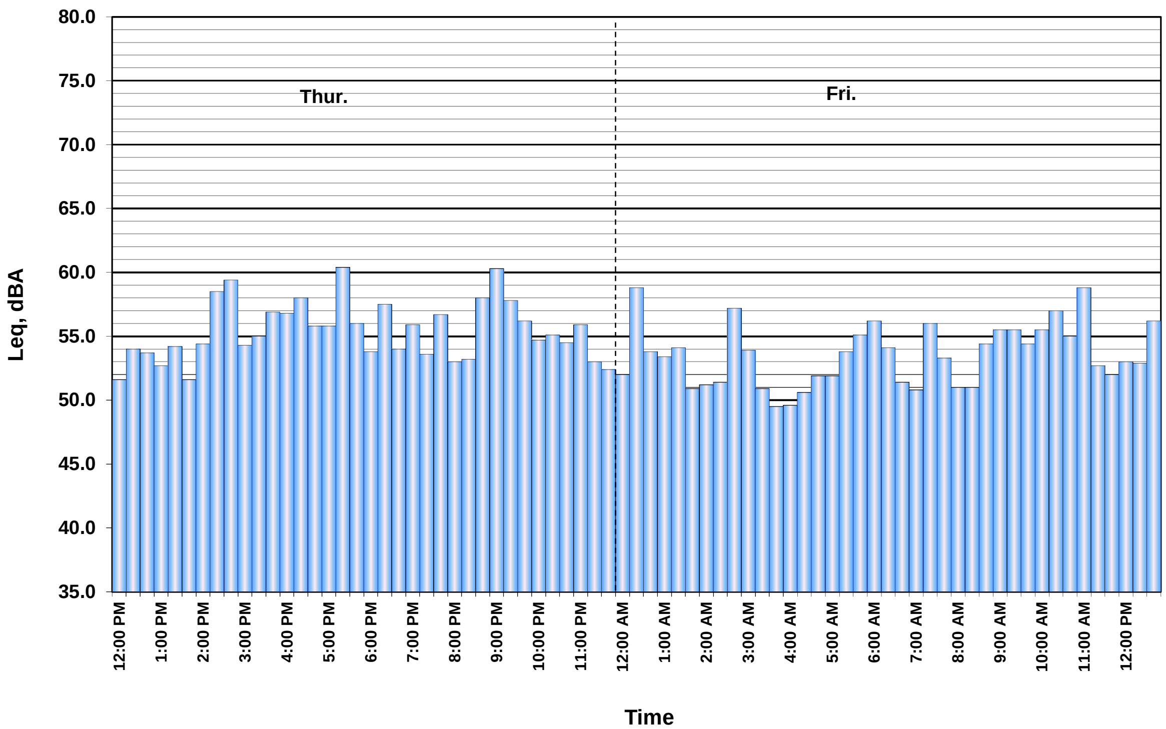
PARSONS

Site LT6 Hourly Noise Levels, Leq(h)

Location: 763 W. B Street, Ontario
Position: Back Yard
Sources: Traffic
Date: 6/9/16 - 6/10/16

Notes: Measurement was located behind 5-foot high property wall.
See attached Noise Measurement Form.

TIME	6/9 - 6/10 Leq(h) dBA	6/10 Leq(h) dBA
12:00 - 01:00 PM	53	54
01:00 - 02:00 PM	53	
02:00 - 03:00 PM	58	
03:00 - 04:00 PM	56	
04:00 - 05:00 PM	57	
05:00 - 06:00 PM	58	
06:00 - 07:00 PM	55	
07:00 - 08:00 PM	56	
08:00 - 09:00 PM	55	
09:00 - 10:00 PM	58	
10:00 - 11:00 PM	55	
11:00 - 12:00 AM	54	
12:00 - 01:00 AM	56	
01:00 - 02:00 AM	53	
02:00 - 03:00 AM	54	
03:00 - 04:00 AM	52	
04:00 - 05:00 AM	51	
05:00 - 06:00 AM	54	
06:00 - 07:00 AM	54	
07:00 - 08:00 AM	54	
08:00 - 09:00 AM	52	
09:00 - 10:00 AM	55	
10:00 - 11:00 AM	56	
11:00 - 12:00 PM	56	
Ldn:	61	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: VRENDA	DATE: 6/8/16
MEASUREMENT ADDRESS: #1 1405 E. HOLT BLVD / CITY: ONTARIO	☐ Single-Family ☐ Multi-Family ✓ MOBILE HOME ☐ Recreational ☐ Commercial	SITE NO.: LT 8

SOUND LEVEL METER: ☒ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0128

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2313

PRE AMP: ☒ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 2661

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2480

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

	Input, dB	Reading, dB	Offset, dB	Time
Before	114.0	114.0	22.7	10:01am
After	114.0	113.7	—	16:00

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ____________

SKIES: CLEAR

CAMERA RUBEN PHONE

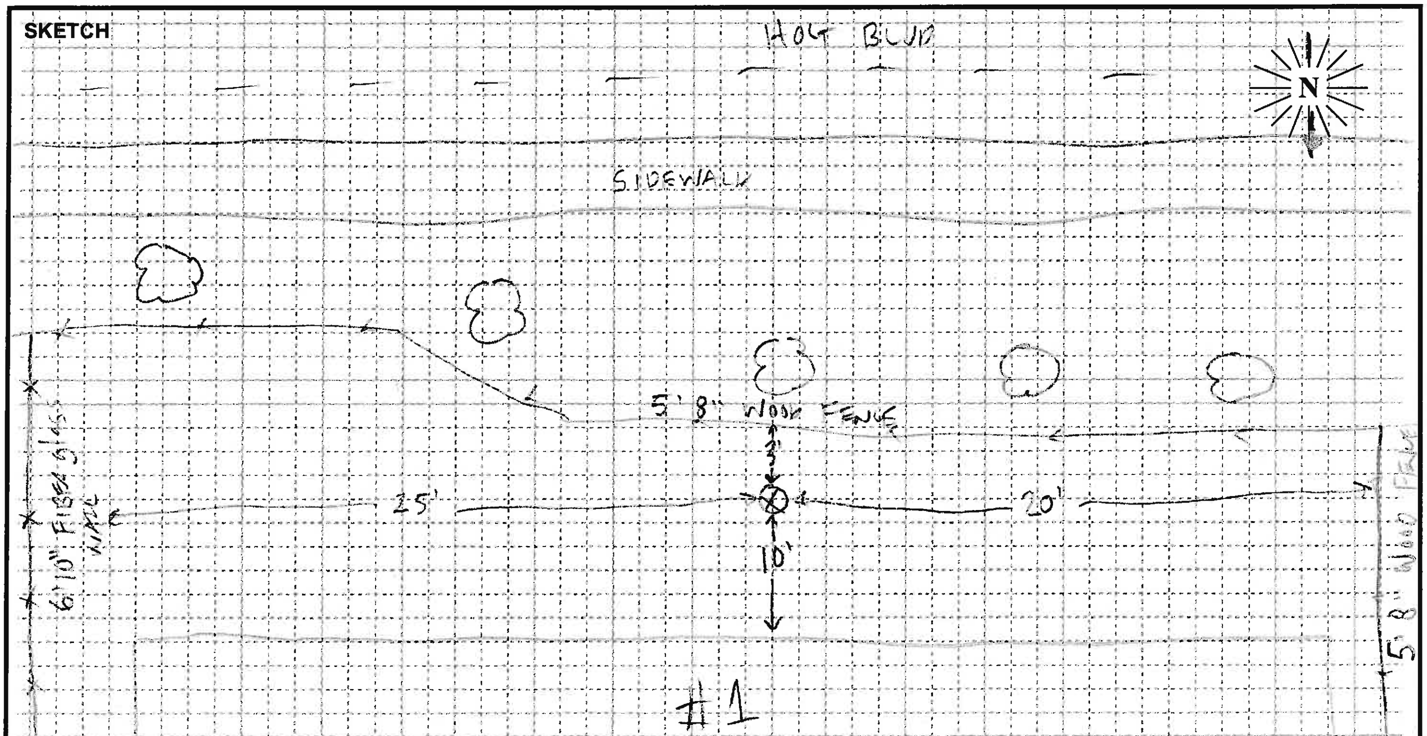
PHOTO NOs. ____________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/8	10:03											
6/9		15:54										

SKETCH



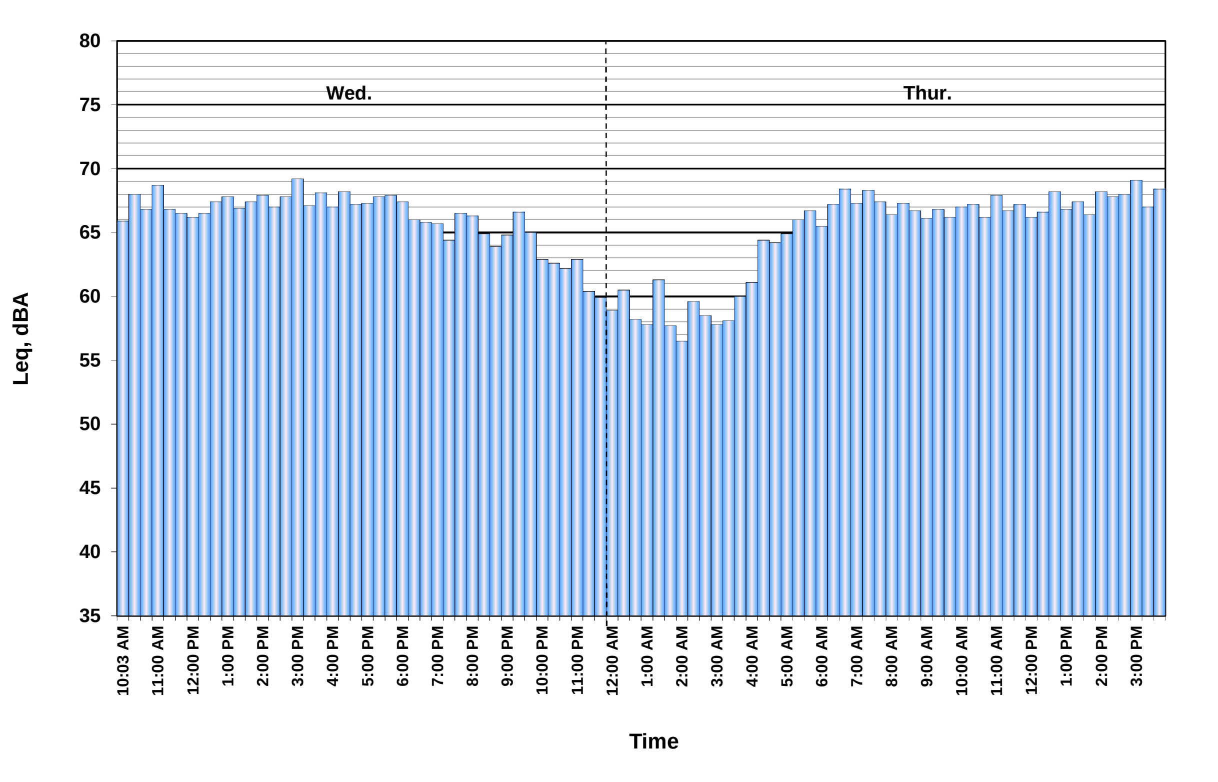
PARSONS

Site LT8 Hourly Noise Levels, Leq(h)

Location: 1405 E. Holt Boulevard, Lot #1, Ontario
Position: Back Yard
Sources: Traffic
Date: 6/8/16 - 6/9/16

Notes: See attached Noise Measurement Form.

TIME	6/8 - 6/9 Leq(h) dBA	6/9 Leq(h) dBA
10:00 - 11:00 AM	67	67
11:00 - 12:00 PM	67	67
12:00 - 01:00 PM	67	67
01:00 - 02:00 PM	67	67
02:00 - 03:00 PM	68	68
03:00 - 04:00 PM	68	68
04:00 - 05:00 PM	67	
05:00 - 06:00 PM	68	
06:00 - 07:00 PM	66	
07:00 - 08:00 PM	66	
08:00 - 09:00 PM	65	
09:00 - 10:00 PM	66	
10:00 - 11:00 PM	63	
11:00 - 12:00 AM	61	
12:00 - 01:00 AM	59	
01:00 - 02:00 AM	59	
02:00 - 03:00 AM	58	
03:00 - 04:00 AM	59	
04:00 - 05:00 AM	63	
05:00 - 06:00 AM	66	
06:00 - 07:00 AM	67	
07:00 - 08:00 AM	68	
08:00 - 09:00 AM	67	
09:00 - 10:00 AM	66	
Ldn:	70	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector	**ENGINEER:** URENDA	**DATE:** 6/29/16
MEASUREMENT ADDRESS: 850 N CENTER AVE #120	**CITY:** ONTARIO	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial
SITE NO.: LT9		

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 0638

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 3378

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 1901

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 8.1 / 10:35
After 114.0 / 113.9 / — / 12:47

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ______ MPH
TOWARD (DIR): ______
SKIES: CLEAR
CAMERA RUBEN PHONE
PHOTO NOs. ______

NOTES: MIC 7' HIGH

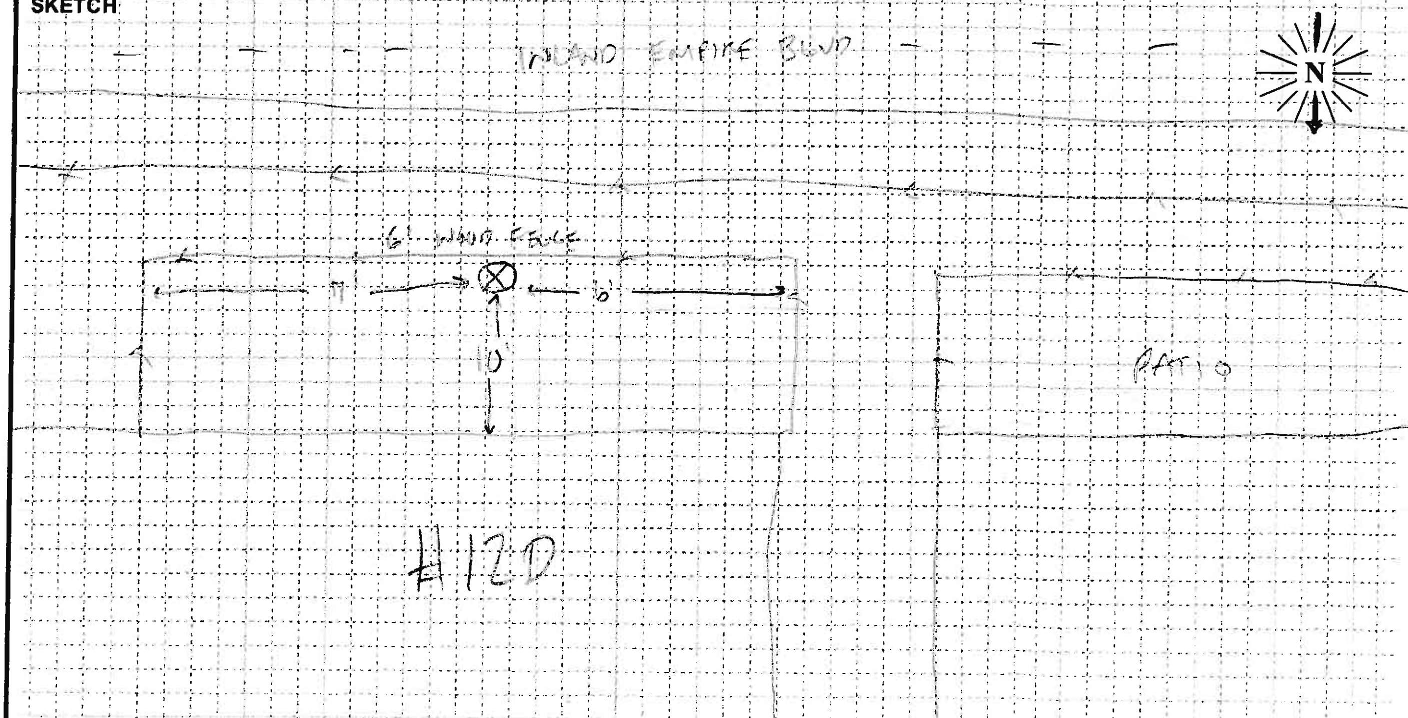
Dist. to Center ______ ☐ Video ☐ Radar
Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

MIC 7' High

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/29	10:38											
6/30		12:45										

SKETCH



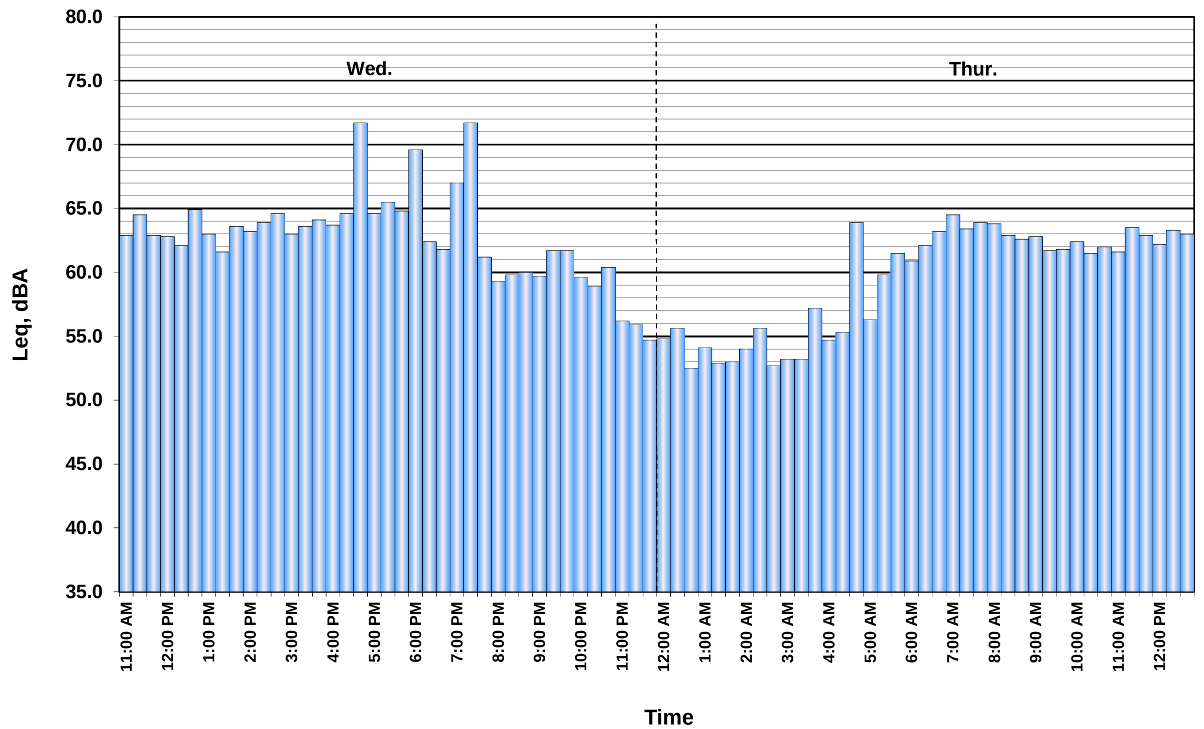
PARSONS

Site LT9 Hourly Noise Levels, Leq(h)

Location: 850 N. Center Avenue, Unit #12D, Ontario
Position: Patio
Sources: Traffic
Date: 6/29/16 - 6/30/16

Notes: See attached Noise Measurement Form.

TIME	6/29 - 6/30 Leq(h) dBA	6/30 Leq(h) dBA
11:00 - 12:00 PM	64	63
12:00 - 01:00 PM	63	63
01:00 - 02:00 PM	63	
02:00 - 03:00 PM	64	
03:00 - 04:00 PM	64	
04:00 - 05:00 PM	68	
05:00 - 06:00 PM	65	
06:00 - 07:00 PM	66	
07:00 - 08:00 PM	68	
08:00 - 09:00 PM	60	
09:00 - 10:00 PM	61	
10:00 - 11:00 PM	60	
11:00 - 12:00 AM	56	
12:00 - 01:00 AM	54	
01:00 - 02:00 AM	53	
02:00 - 03:00 AM	54	
03:00 - 04:00 AM	55	
04:00 - 05:00 AM	60	
05:00 - 06:00 AM	60	
06:00 - 07:00 AM	62	
07:00 - 08:00 AM	64	
08:00 - 09:00 AM	63	
09:00 - 10:00 AM	62	
10:00 - 11:00 AM	62	
Ldn:	66	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector		**ENGINEER:** URENDA	**DATE:** 6/9/16
MEASUREMENT ADDRESS: 11210 #4115 4th Street	**CITY:** Rancho Cucamonga	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	**SITE NO.:** LT10

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☒ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ____________

SERIAL #: 4715

MICROPHONE: ☐ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☐ WIND SCREEN

SERIAL #: 138381

PRE AMP: ☐ LD-900 ☒ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 28027

CALIBRATOR: ☐ LD CA250 ☒ LD CA200 ☐ B&K 4231 ☐ ________

S/N 11080

Freq, Hz.: ☐ 250 ☒ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 0.01 / 10:40am

After 114.0 / 114.0 / 0.14 / 12:47

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ______________

SKIES: CLEAR

CAMERA RUBEN PHONE

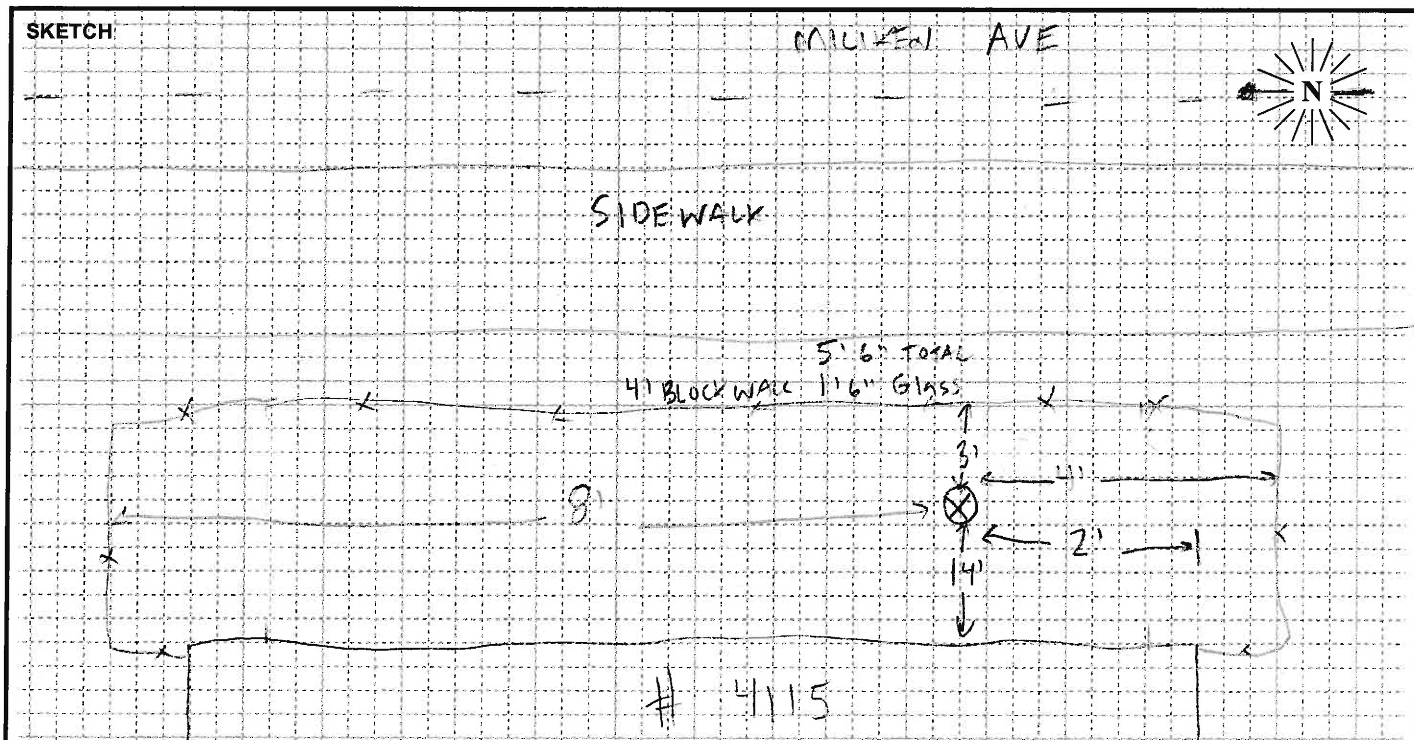
PHOTO NOs. ______________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	10:44											
6/10		12'40										

SKETCH



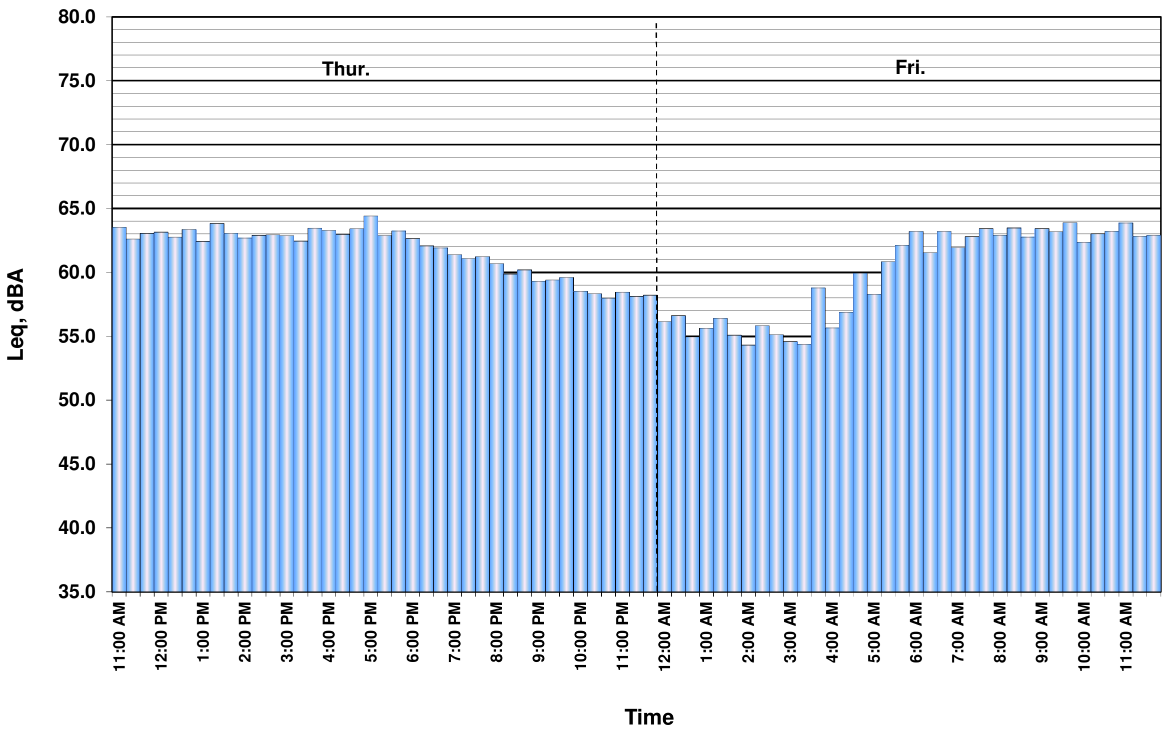
PARSONS

Site LT10 Hourly Noise Levels, $L_{eq}(h)$

Location: 11210 4th Street, Unit #4115, Rancho Cucamonga
Position: Patio
Sources: Traffic
Date: 6/9/16 - 6/10/16

Notes: See attached Noise Measurement Form.

TIME	6/9 - 6/10 $L_{eq(h)}$ dBA	6/10 $L_{eq(h)}$ dBA
11:00 - 12:00 PM	63	63
12:00 - 01:00 PM	63	
01:00 - 02:00 PM	63	
02:00 - 03:00 PM	63	
03:00 - 04:00 PM	63	
04:00 - 05:00 PM	63	
05:00 - 06:00 PM	64	
06:00 - 07:00 PM	62	
07:00 - 08:00 PM	61	
08:00 - 09:00 PM	60	
09:00 - 10:00 PM	59	
10:00 - 11:00 PM	58	
11:00 - 12:00 AM	58	
12:00 - 01:00 AM	56	
01:00 - 02:00 AM	56	
02:00 - 03:00 AM	55	
03:00 - 04:00 AM	56	
04:00 - 05:00 AM	58	
05:00 - 06:00 AM	61	
06:00 - 07:00 AM	63	
07:00 - 08:00 AM	63	
08:00 - 09:00 AM	63	
09:00 - 10:00 AM	64	
10:00 - 11:00 AM	63	
L_{dn}:	66	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: Urenda

DATE: 7/26/16

MEASUREMENT ADDRESS: 11929 Foothill Blvd

CITY: Rancho Cucamonga

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: LT11

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0639

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1901

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 7.3 / 7:40am

After 114.0 / 113.5 / 7.3 / 15:50

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 84.1 °F R.H.: 48.1 %

WIND SPEED: 0 MPH

TOWARD (DIR): ________

SKIES: Clear

CAMERA Rubes Phone

PHOTO NOs. ________

NOTES:

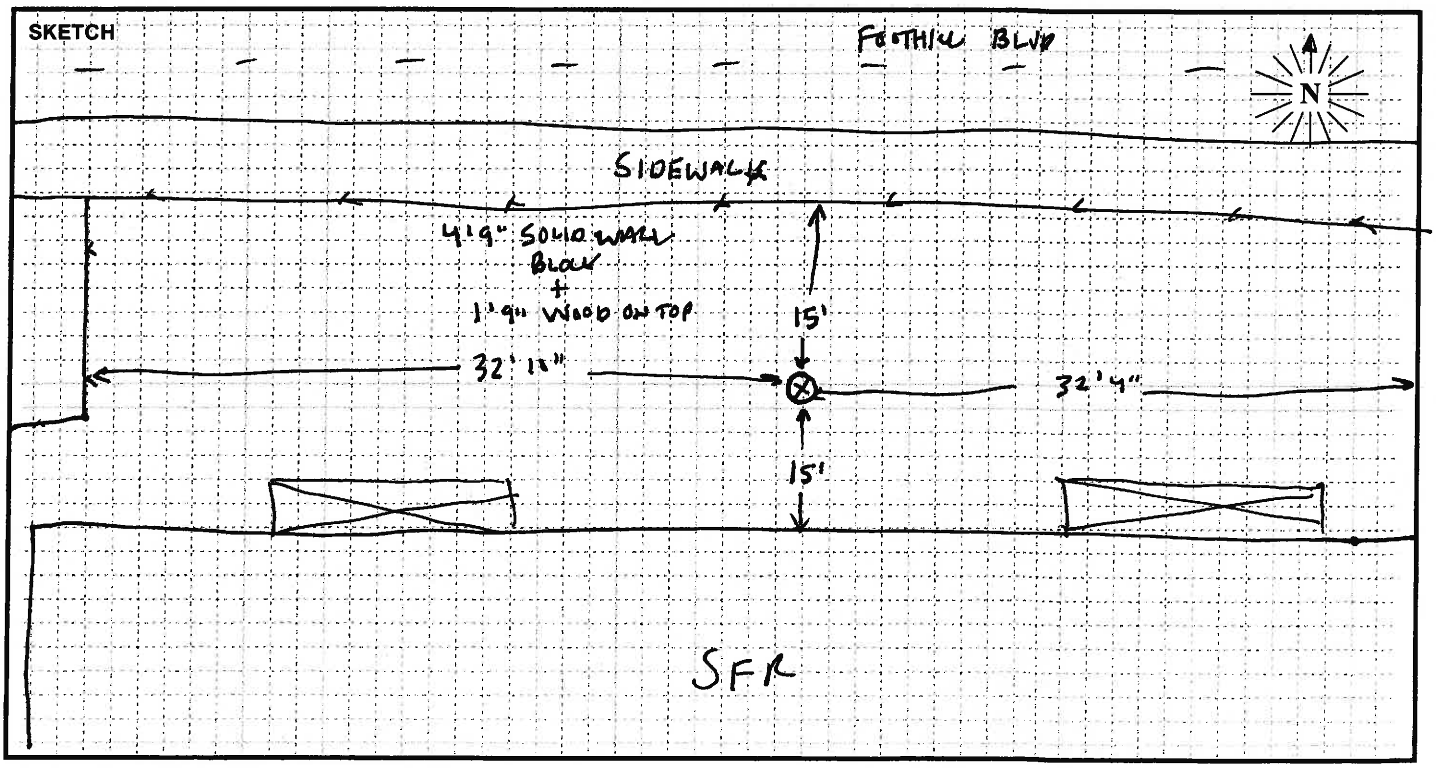
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
7/26	7:42											
7/26		15:46										

SKETCH



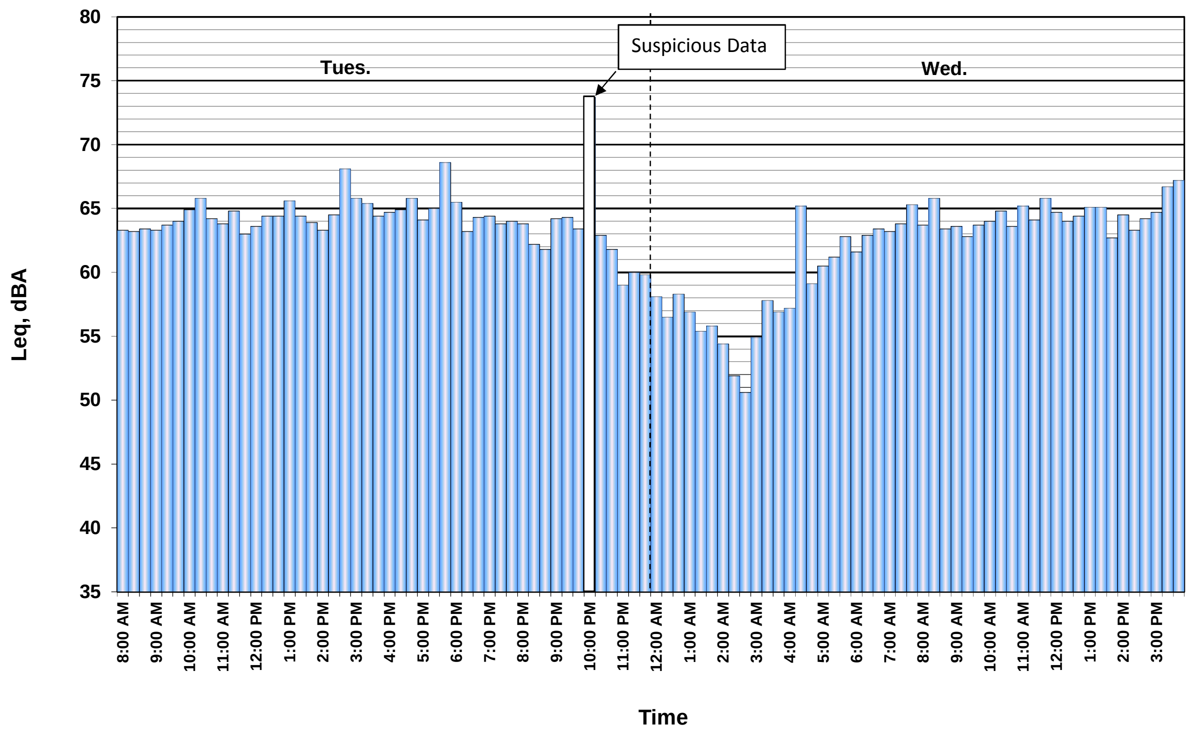
PARSONS

Site LT11 Hourly Noise Levels, Leq(h)

Location: 11929 Foothill Boulevard, Rancho Cucamongo
Position: Front Yard
Sources: Traffic
Date: 7/26/16 - 7/27/16

Notes: Measurement was located behind 6.5-foot high property wall.
Suspicious 20 minute data has been removed from measurement as marked below.
See attached Noise Measurement Form.

TIME	7/26 - 7/27 Leq(h) dBA	7/27 Leq(h) dBA
08:00 - 09:00 AM	63	64
09:00 - 10:00 AM	64	63
10:00 - 11:00 AM	65	64
11:00 - 12:00 PM	64	65
12:00 - 01:00 PM	64	64
01:00 - 02:00 PM	65	64
02:00 - 03:00 PM	66	64
03:00 - 04:00 PM	65	66
04:00 - 05:00 PM	65	
05:00 - 06:00 PM	66	
06:00 - 07:00 PM	64	
07:00 - 08:00 PM	64	
08:00 - 09:00 PM	63	
09:00 - 10:00 PM	64	
10:00 - 11:00 PM	62	
11:00 - 12:00 AM	60	
12:00 - 01:00 AM	58	
01:00 - 02:00 AM	56	
02:00 - 03:00 AM	53	
03:00 - 04:00 AM	57	
04:00 - 05:00 AM	62	
05:00 - 06:00 AM	62	
06:00 - 07:00 AM	63	
07:00 - 08:00 AM	64	
Ldn:	67	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: Urenda	DATE: 6/9/16
MEASUREMENT ADDRESS: 13022 VINE ST	CITY: Rancho Cucamonga	☒ Single-Family ☐ Recreational ☐ Multi-Family ☐ Commercial	SITE NO.: LT12

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 0639

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 3159

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 1629

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2480

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 6.9 / 11:29

After 114.0 / 114.1 / 6.9 / 14:53

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ______ MPH

TOWARD (DIR): ______

SKIES: CLEAR

CAMERA Ruben Phone

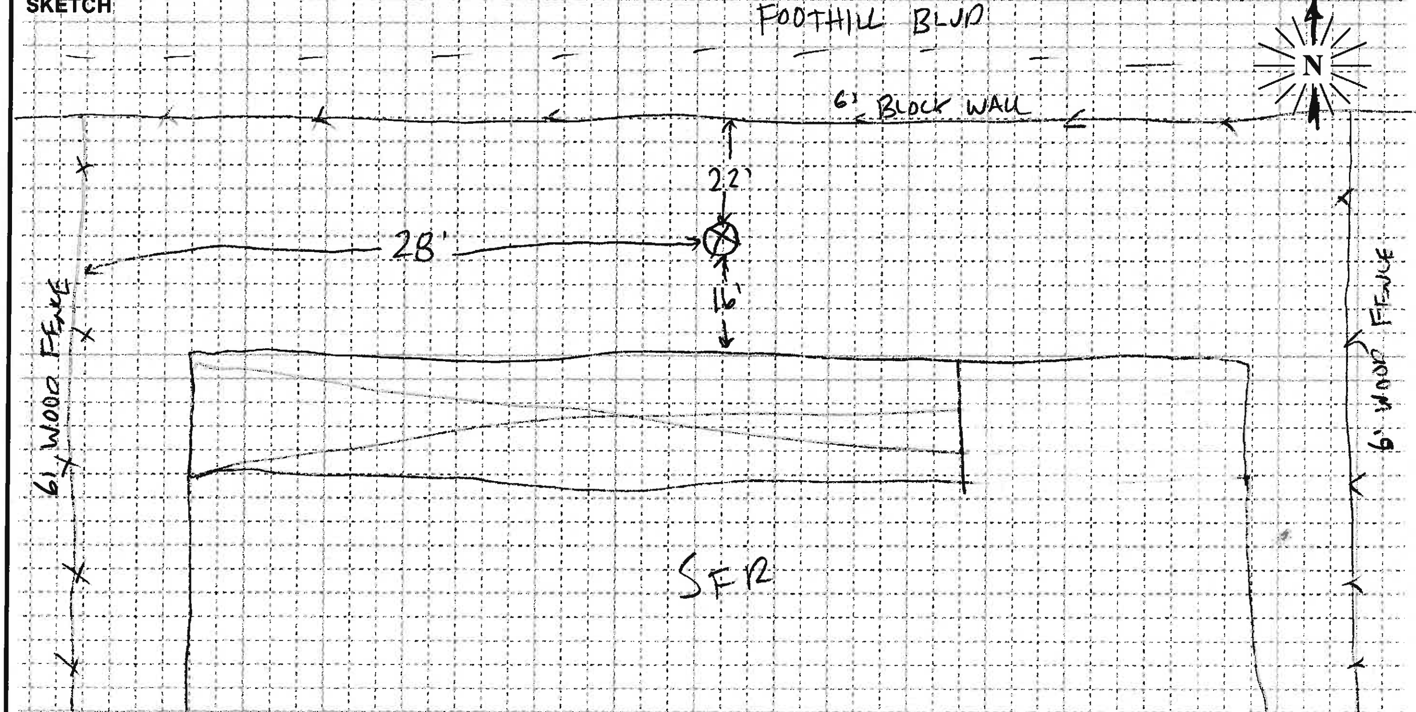
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	11:33											
6/10		14:44										

SKETCH



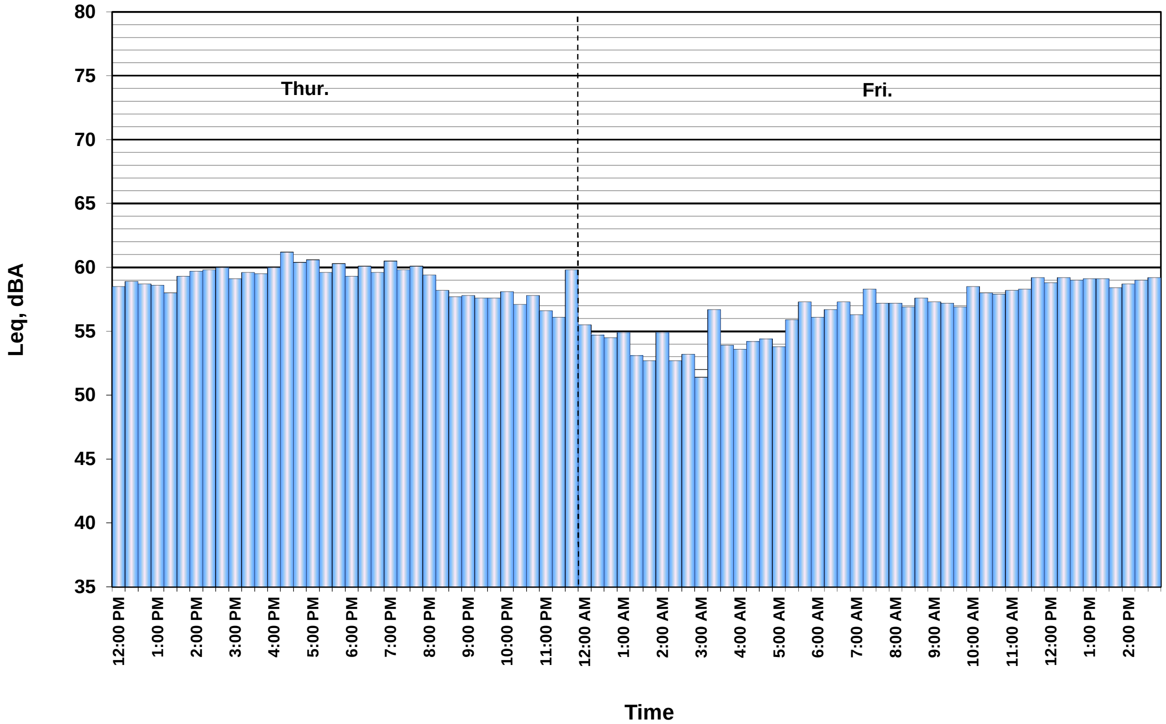
PARSONS

Site LT12 Hourly Noise Levels, Leq(h)

Location: 13022 Vine Street, Ranch Cucamongo
Position: Back Yard
Sources: Traffic
Date: 6/9/16 - 6/10/16

Notes: Measurement was located behind 6-foot high property wall.
See attached Noise Measurement Form.

TIME	6/9 - 6/10 Leq(h) dBA	6/10 Leq(h) dBA
12:00 - 01:00 PM	59	59
01:00 - 02:00 PM	59	59
02:00 - 03:00 PM	60	59
03:00 - 04:00 PM	59	
04:00 - 05:00 PM	61	
05:00 - 06:00 PM	60	
06:00 - 07:00 PM	60	
07:00 - 08:00 PM	60	
08:00 - 09:00 PM	58	
09:00 - 10:00 PM	58	
10:00 - 11:00 PM	58	
11:00 - 12:00 AM	58	
12:00 - 01:00 AM	55	
01:00 - 02:00 AM	54	
02:00 - 03:00 AM	54	
03:00 - 04:00 AM	55	
04:00 - 05:00 AM	54	
05:00 - 06:00 AM	56	
06:00 - 07:00 AM	57	
07:00 - 08:00 AM	57	
08:00 - 09:00 AM	57	
09:00 - 10:00 AM	57	
10:00 - 11:00 AM	58	
11:00 - 12:00 PM	59	
Ldn:	63	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: URENDA	DATE: 6/13/16
MEASUREMENT ADDRESS: 14103 Casablanca Ct	CITY: Fontana	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT13

SOUND LEVEL METER: ☒ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 0344

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 1785

PRE AMP: ☒ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 3202

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 22.3 / 13:43
After 114.0 / 114.0 / ______ / 1649

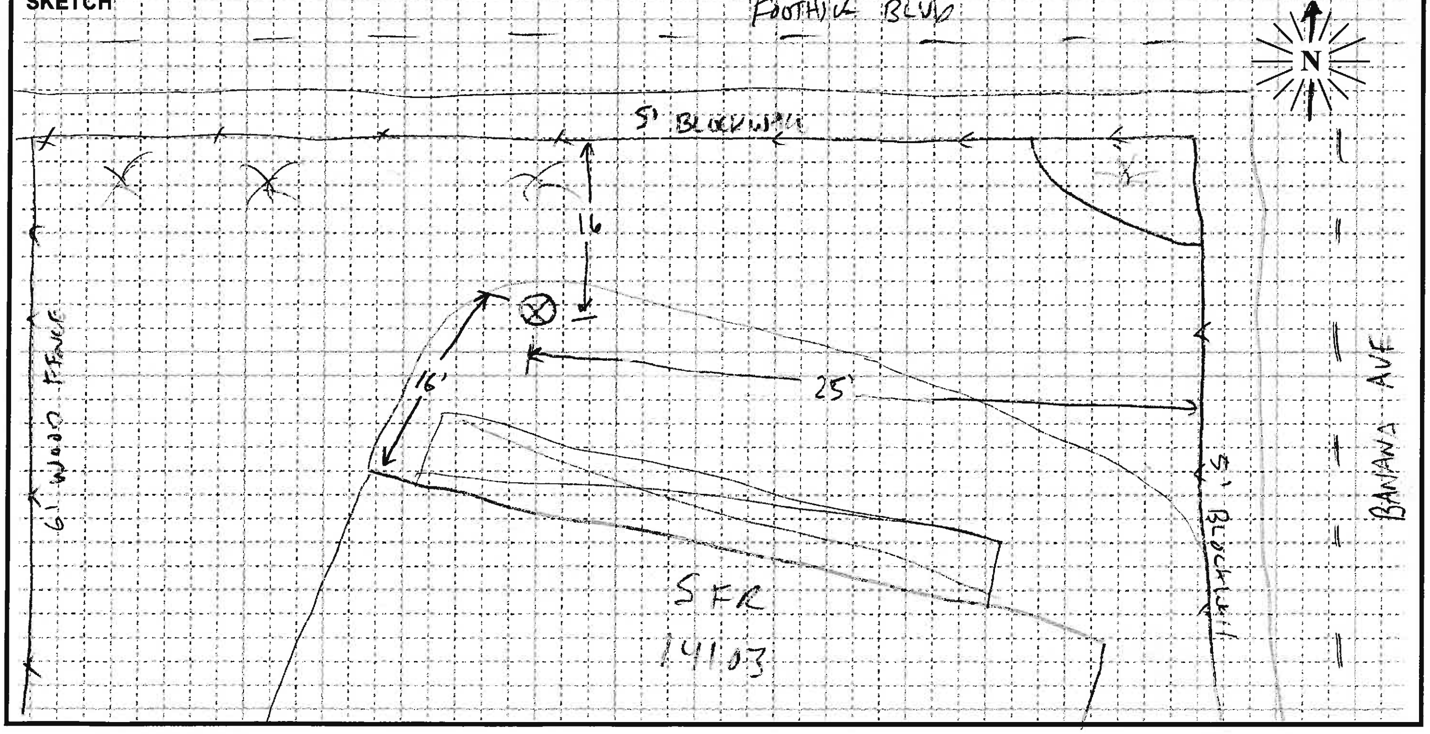
METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ______ MPH
TOWARD (DIR): ______
SKIES: CLEAR
CAMERA: RUBEN PHONE
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT
MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	13:45											
6/14		16:49										

SKETCH



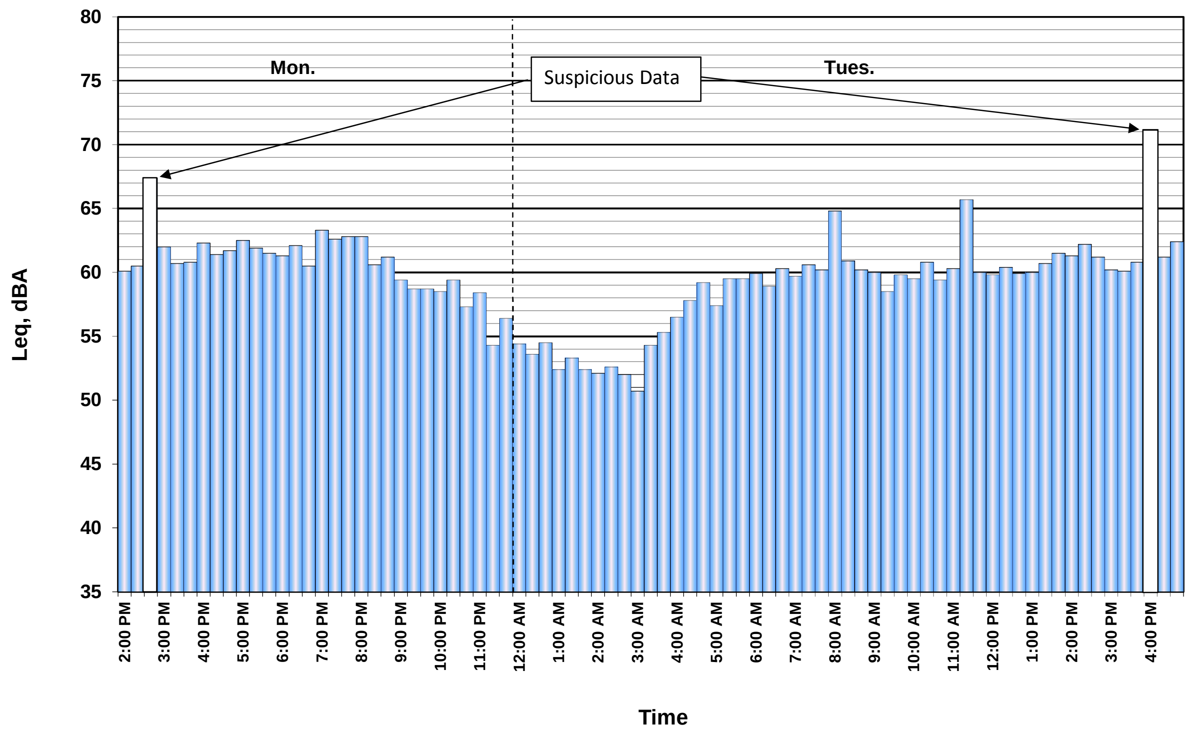
PARSONS

Site LT13 Hourly Noise Levels, Leq(h)

Location: 14103 Casablanca Court, Fontana
Position: Back Yard
Sources: Traffic
Date: 6/13/16 - 6/14/16

Notes: Measurement was located behind 5-foot high property wall.
Suspicious 20 minute data intervals have been removed from measurement as marked below.
See attached Noise Measurement Form.

TIME	6/13 - 6/14 Leq(h) dBA	6/14 Leq(h) dBA
02:00 - 03:00 PM	60	62
03:00 - 04:00 PM	61	60
04:00 - 05:00 PM	62	62
05:00 - 06:00 PM	62	
06:00 - 07:00 PM	61	
07:00 - 08:00 PM	63	
08:00 - 09:00 PM	62	
09:00 - 10:00 PM	59	
10:00 - 11:00 PM	58	
11:00 - 12:00 AM	57	
12:00 - 01:00 AM	54	
01:00 - 02:00 AM	53	
02:00 - 03:00 AM	52	
03:00 - 04:00 AM	54	
04:00 - 05:00 AM	58	
05:00 - 06:00 AM	59	
06:00 - 07:00 AM	60	
07:00 - 08:00 AM	60	
08:00 - 09:00 AM	62	
09:00 - 10:00 AM	59	
10:00 - 11:00 AM	60	
11:00 - 12:00 PM	63	
12:00 - 01:00 PM	60	
01:00 - 02:00 PM	61	
Ldn:	64	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: URENDA	DATE: 6/13/16
MEASUREMENT ADDRESS: 14552 VINE ST	CITY: FONTANA	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT 14

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0638

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3155

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1891

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 7.9 / 14:07

After 114.0 / 114.2 / – / 1708

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ________ °F R.H.: ________ %

WIND SPEED: ________ MPH

TOWARD (DIR): ________

SKIES: CLEAR

CAMERA RUBEN PHONE

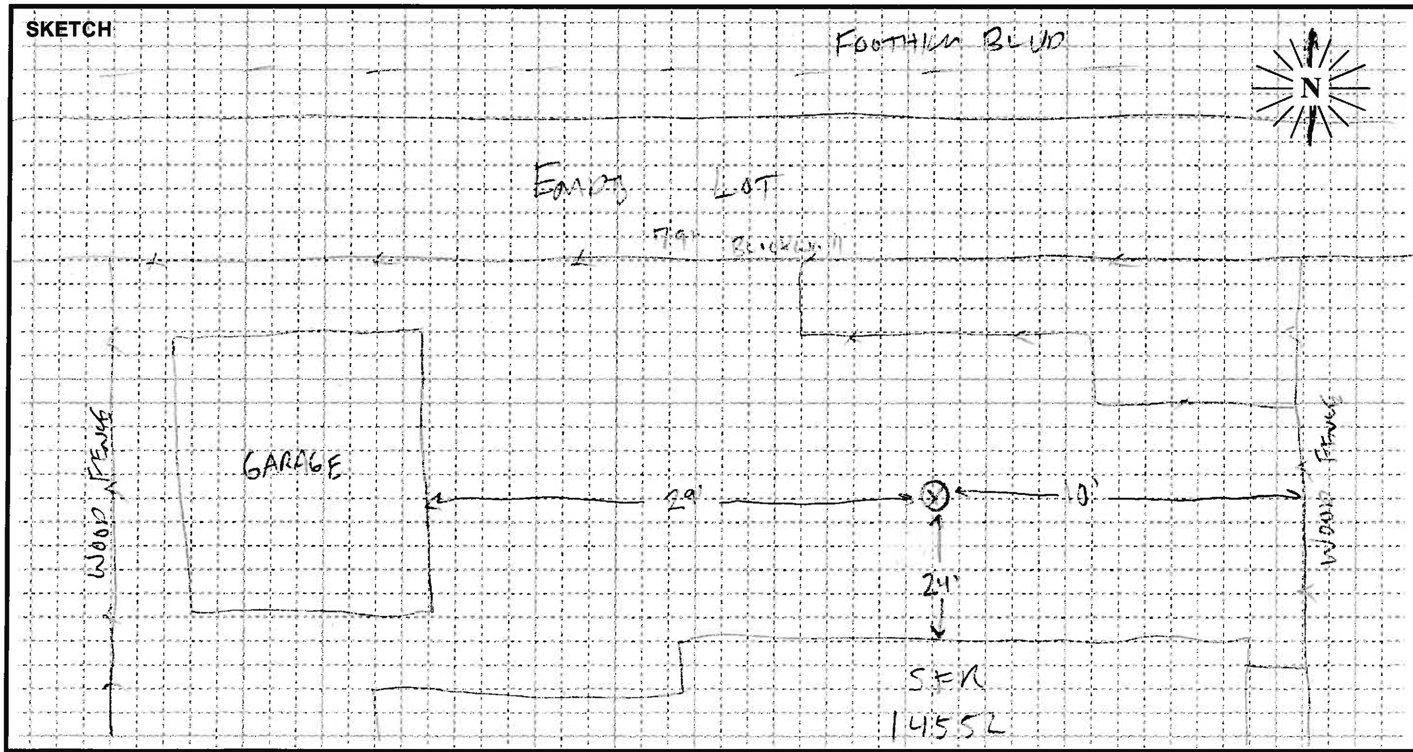
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	14:09											
6/14		17:08										

SKETCH



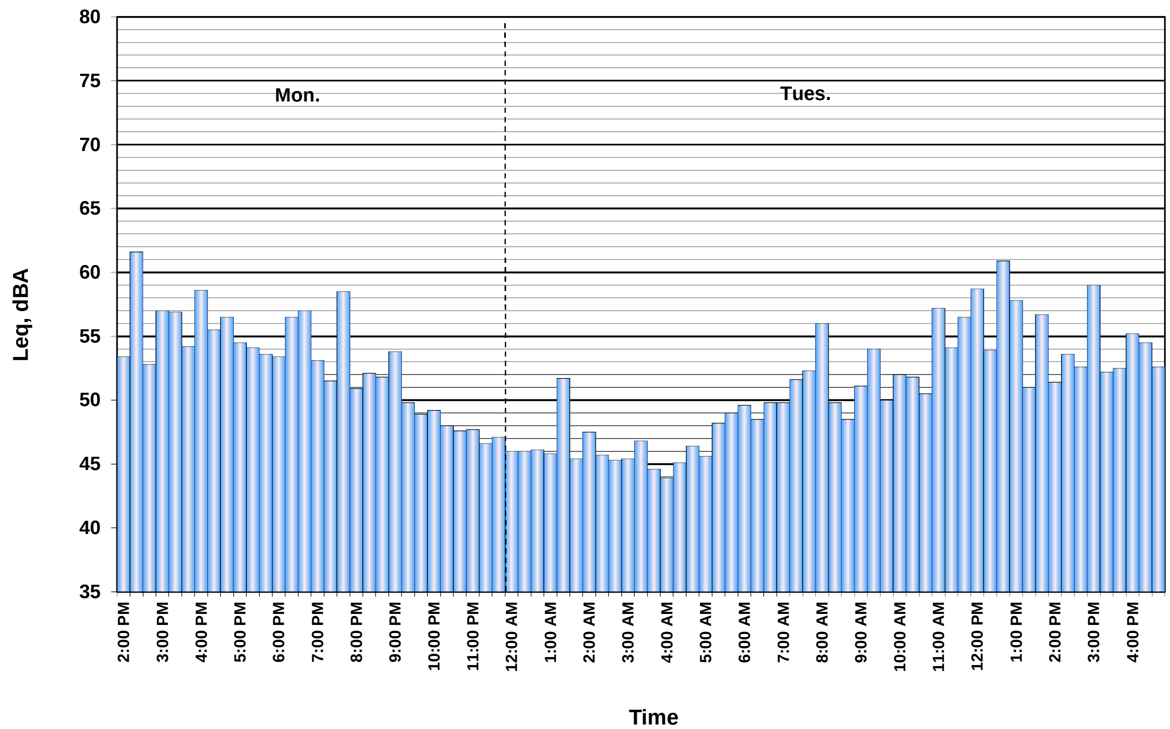
PARSONS

Site LT14 Hourly Noise Levels, Leq(h)

Location: 14552 Vine Street, Fontana
Position: Back Yard
Sources: Traffic
Date: 6/13/16 - 6/14/16

Notes: Measurement was located behind 6.5-foot high property wall.
See attached Noise Measurement Form.

TIME	6/13 - 6/14 Leq(h) dBA	6/14 Leq(h) dBA
02:00 - 03:00 PM	58	53
03:00 - 04:00 PM	56	56
04:00 - 05:00 PM	57	54
05:00 - 06:00 PM	54	
06:00 - 07:00 PM	56	
07:00 - 08:00 PM	55	
08:00 - 09:00 PM	52	
09:00 - 10:00 PM	51	
10:00 - 11:00 PM	48	
11:00 - 12:00 AM	47	
12:00 - 01:00 AM	46	
01:00 - 02:00 AM	49	
02:00 - 03:00 AM	46	
03:00 - 04:00 AM	46	
04:00 - 05:00 AM	45	
05:00 - 06:00 AM	48	
06:00 - 07:00 AM	49	
07:00 - 08:00 AM	51	
08:00 - 09:00 AM	53	
09:00 - 10:00 AM	52	
10:00 - 11:00 AM	51	
11:00 - 12:00 PM	56	
12:00 - 01:00 PM	59	
01:00 - 02:00 PM	56	
Ldn:	56	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: URENDA	DATE: 6/9/16
MEASUREMENT ADDRESS: 15920 MISSION AVE	CITY: FONTANA	[x] Single-Family [ ] Recreational [ ] Multi-Family [ ] Commercial	SITE NO.: LT15

SOUND LEVEL METER: [ ] LD-870 [ ] LD-820 [ ] LD-LxT [ ] LD-824 [x] LD-812 [ ] B&K-2250 [ ] LD-2900 [ ] ________

SERIAL #: 0659

MICROPHONE: [x] NON-POLAR [ ] POLARIZED [x] 1/2-INCH [ ] FREEFIELD [ ] 1-INCH [ ] RANDOM [x] WIND SCREEN

SERIAL #: 3378

PRE AMP: [ ] LD-900 [ ] LD-LxT [x] LD-828 [ ] ZC-0032 [ ] LD-902 [ ] ________

SERIAL #: 2330

CALIBRATOR: [x] LD CA250 [ ] LD CA200 [ ] B&K 4231 [ ] ________

S/N 2480

Freq, Hz.: [x] 250 [ ] 1000 [ ] 84 [ ] ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 7.4 / 14:19

After 114.0 / 114.1 / 7.4 / 15:50

METER SETTINGS: [x] A-WTD [ ] LINEAR [x] SLOW [ ] 1/1 OCT [x] INTERVALS 20 - MINUTE [ ] C-WTD [ ] IMPULSE [ ] FAST [ ] 1/3 OCT [x] L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: [x] BAT [ ] AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ____________

SKIES: CLEAR

CAMERA RUBEN PHONE

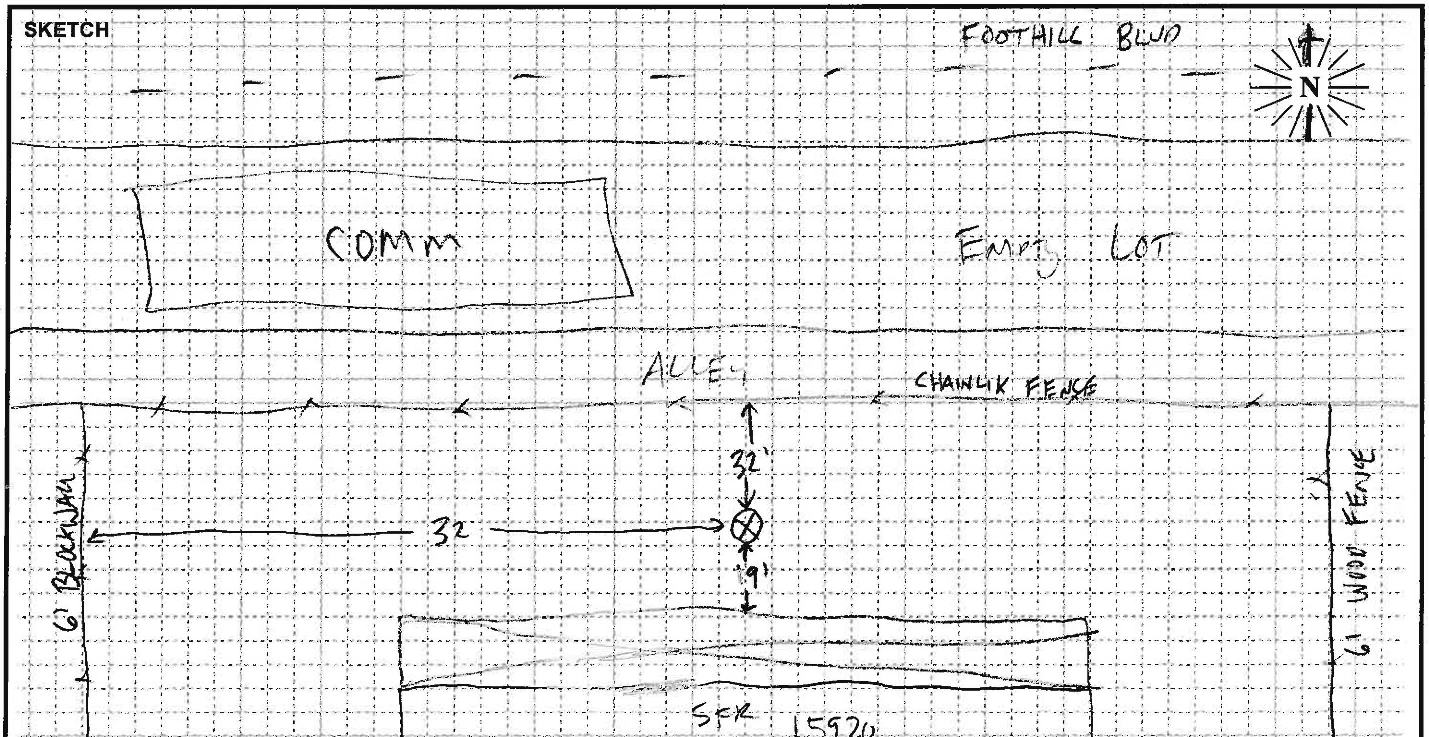
PHOTO NOs. ____________

NOTES: Dist. to Center ______ [ ] Video [ ] Radar Counts AT MT HT

MEAS. TYPE: [x] Long Term [ ] Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	14:20											
6/10		15:44										

SKETCH

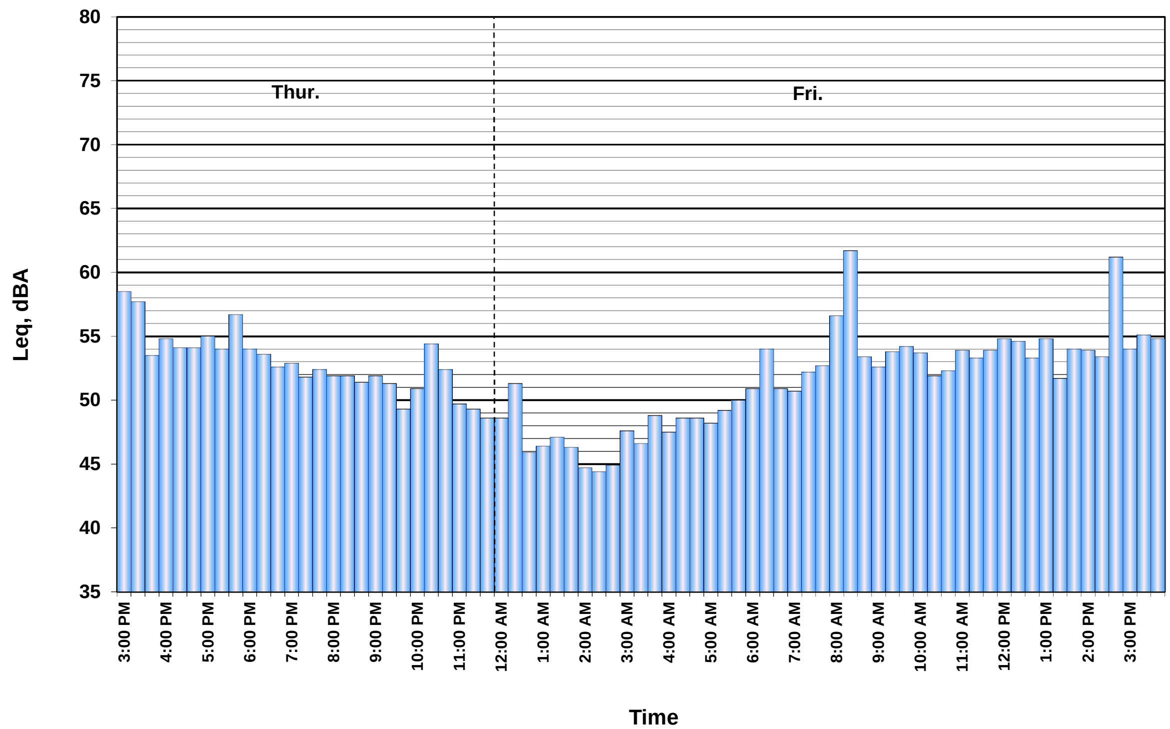


Site LT15 Hourly Noise Levels, Leq(h)

Location: 15920 Nission Avenue, Fontana
Position: Back Yard
Sources: Traffic
Date: 6/9/16 - 6/10-16

Notes: See attached Noise Measurement Form.

TIME	6/9 - 6/10 Leq(h) dBA	6/10 Leq(h) dBA
03:00 - 04:00 PM	57	55
04:00 - 05:00 PM	54	
05:00 - 06:00 PM	55	
06:00 - 07:00 PM	53	
07:00 - 08:00 PM	52	
08:00 - 09:00 PM	52	
09:00 - 10:00 PM	51	
10:00 - 11:00 PM	53	
11:00 - 12:00 AM	49	
12:00 - 01:00 AM	49	
01:00 - 02:00 AM	47	
02:00 - 03:00 AM	45	
03:00 - 04:00 AM	48	
04:00 - 05:00 AM	48	
05:00 - 06:00 AM	49	
06:00 - 07:00 AM	52	
07:00 - 08:00 AM	52	
08:00 - 09:00 AM	59	
09:00 - 10:00 AM	54	
10:00 - 11:00 AM	53	
11:00 - 12:00 PM	54	
12:00 - 01:00 PM	54	
01:00 - 02:00 PM	54	
02:00 - 03:00 PM	58	
Ldn:	57	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/13/16

MEASUREMENT ADDRESS: 16536 E FOOTHILL BLVD

CITY: FONTANA

☒ Single-Family ☐ Recreational
☐ Multi-Family ☐ Commercial

SITE NO.: LT16

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0659

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3378

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 2330

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ________ °F R.H.: ________ %

WIND SPEED: ________ MPH

TOWARD (DIR): ________

SKIES: CLEAR

CAMERA: RUBEN PHONE

PHOTO NOs. ________

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

	Input, dB	Reading, dB	Offset, dB	Time
Before	114.0	114.0	7.3	9:57 am
After	114.0	113.8	—	16:34

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

NOTES:

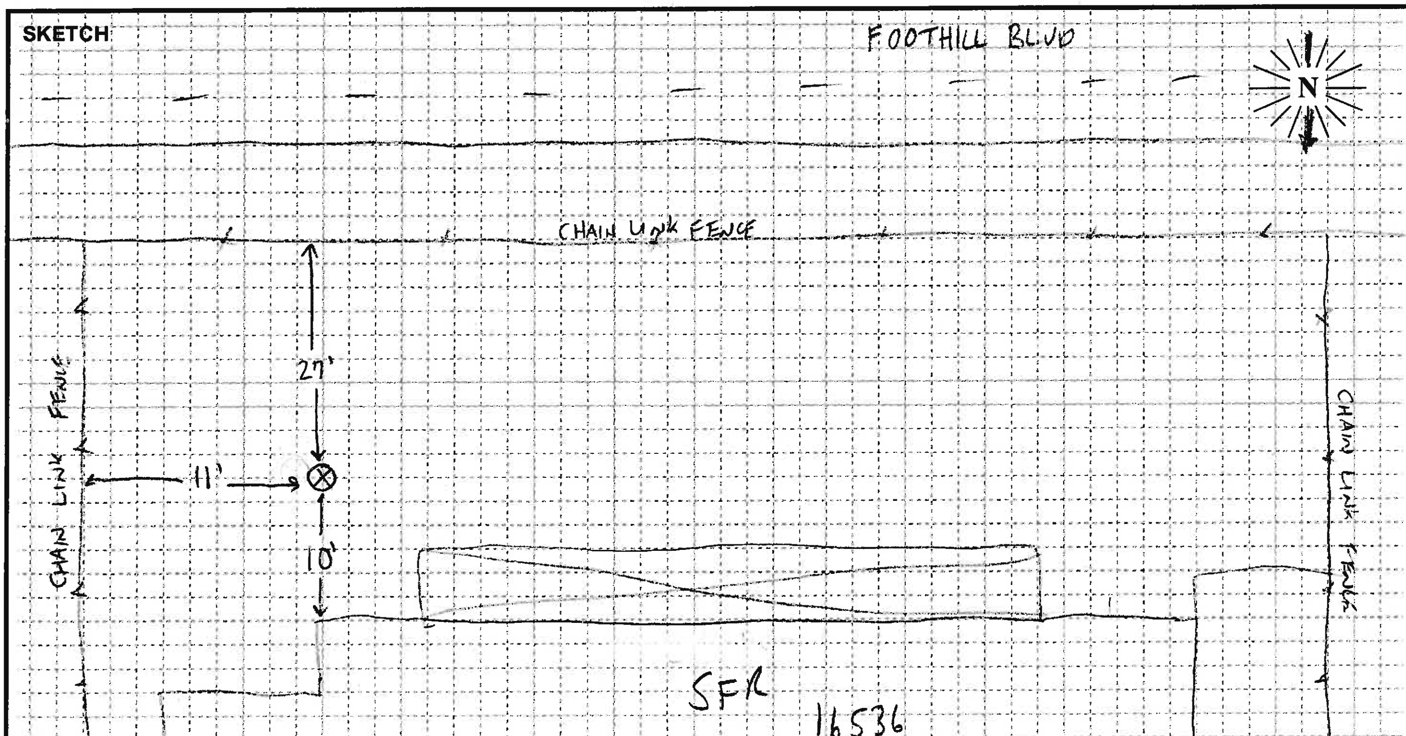
Dist. to Center ________ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	9:57											
6/14		16 33										

SKETCH



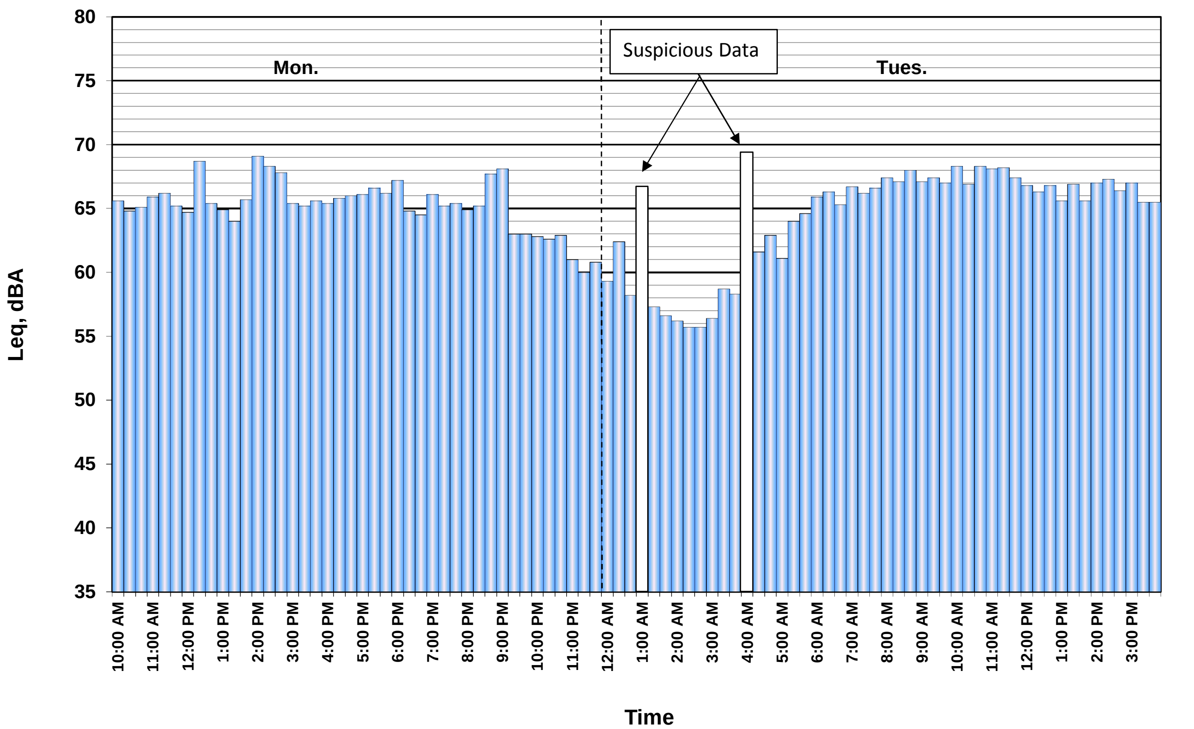
PARSONS

Site LT16 Hourly Noise Levels, Leq(h)

Location: 16536 E. Foothill Boulevard, Fontana
Position: Front Yard
Sources: Traffic
Date: 6/13/16 - 6/14/16

Notes: Suspicious 20 minute data intervals have been removed from measurement as marked below. See attached Noise Measurement Form.

TIME	6/13 - 6/14 Leq(h) dBA	6/14 Leq(h) dBA
10:00 - 11:00 AM	65	68
11:00 - 12:00 PM	66	68
12:00 - 01:00 PM	67	67
01:00 - 02:00 PM	65	66
02:00 - 03:00 PM	68	67
03:00 - 04:00 PM	65	66
04:00 - 05:00 PM	66	
05:00 - 06:00 PM	66	
06:00 - 07:00 PM	66	
07:00 - 08:00 PM	66	
08:00 - 09:00 PM	66	
09:00 - 10:00 PM	65	
10:00 - 11:00 PM	63	
11:00 - 12:00 AM	61	
12:00 - 01:00 AM	60	
01:00 - 02:00 AM	57	
02:00 - 03:00 AM	56	
03:00 - 04:00 AM	58	
04:00 - 05:00 AM	62	
05:00 - 06:00 AM	63	
06:00 - 07:00 AM	66	
07:00 - 08:00 AM	67	
08:00 - 09:00 AM	68	
09:00 - 10:00 AM	67	
Ldn:	69	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/29/16

MEASUREMENT ADDRESS: 8217 SIERRA HWY

CITY: FONTANA

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: LT17

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 0659

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 3155

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1629

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: ______ °F R.H.: ______ %

WIND SPEED: ________ MPH

TOWARD (DIR): ______________

SKIES: CLEAR

CAMERA: RUBEN PHONE

PHOTO NOs. ______________

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 7.2 / 11:55

After 114.0 / 114.0 / — / 14:34

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

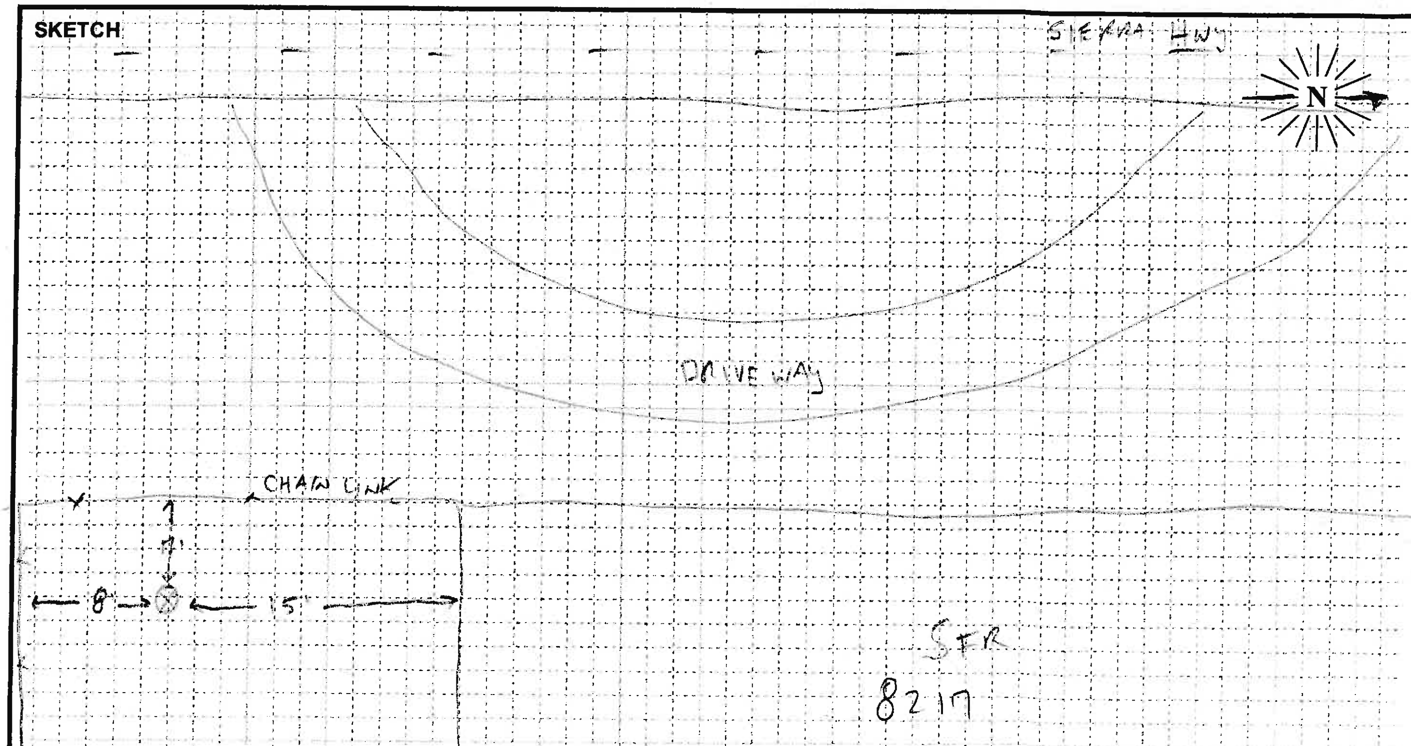
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/29	11:57											
		14:33										

SKETCH



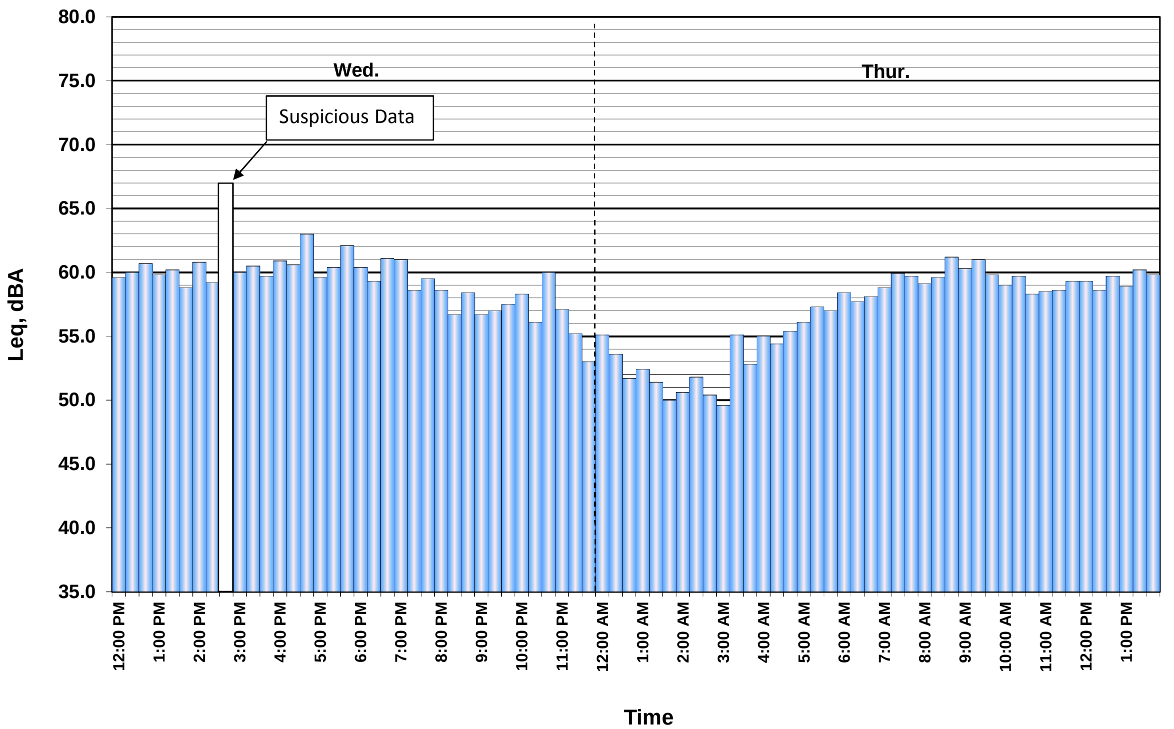
PARSONS

Site LT17 Hourly Noise Levels, Leq(h)

Location: 8217 Sierra Avenue, Fontana
Position: Side Yard
Sources: Traffic
Date: 6/29/16 - 6/30/16

Notes: Suspicious 20 minute data has been removed from measurement as marked below.
See attached Noise Measurement Form.

TIME	6/29 - 6/30 Leq(h) dBA	6/30 Leq(h) dBA
12:00 - 01:00 PM	60	59
01:00 - 02:00 PM	60	60
02:00 - 03:00 PM	60	
03:00 - 04:00 PM	60	
04:00 - 05:00 PM	62	
05:00 - 06:00 PM	61	
06:00 - 07:00 PM	60	
07:00 - 08:00 PM	60	
08:00 - 09:00 PM	58	
09:00 - 10:00 PM	57	
10:00 - 11:00 PM	58	
11:00 - 12:00 AM	55	
12:00 - 01:00 AM	54	
01:00 - 02:00 AM	51	
02:00 - 03:00 AM	51	
03:00 - 04:00 AM	53	
04:00 - 05:00 AM	55	
05:00 - 06:00 AM	57	
06:00 - 07:00 AM	58	
07:00 - 08:00 AM	59	
08:00 - 09:00 AM	60	
09:00 - 10:00 AM	60	
10:00 - 11:00 AM	59	
11:00 - 12:00 PM	59	
Ldn:	63	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector	**ENGINEER:** UKENDA	**DATE:** 6/13/16
MEASUREMENT ADDRESS: 16683 MALLORY DR	**CITY:** FONTANA	☒ Single-Family ☐ Recreational ☐ Multi-Family ☐ Commercial — **SITE NO.:** LT19

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☐ LD-LxT
☐ LD-824 ☒ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ ________
SERIAL #: 0639

MICROPHONE:
☒ NON-POLAR ☐ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☐ RANDOM
☒ WIND SCREEN
SERIAL #: 3159

PRE AMP:
☐ LD-900 ☐ LD-LxT
☒ LD-828 ☐ ZC-0032
☐ LD-902 ☐ ________
SERIAL #: 1629

CALIBRATOR:
☒ LD CA250 ☐ LD CA200
☐ B&K 4231 ☐ ________
S/N 2479

Freq, Hz.
☒ 250
☐ 1000
☐ 84
☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 6.9 / 11:56
After 114.0 / 113.7 / — / 17:50

METER SETTINGS:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

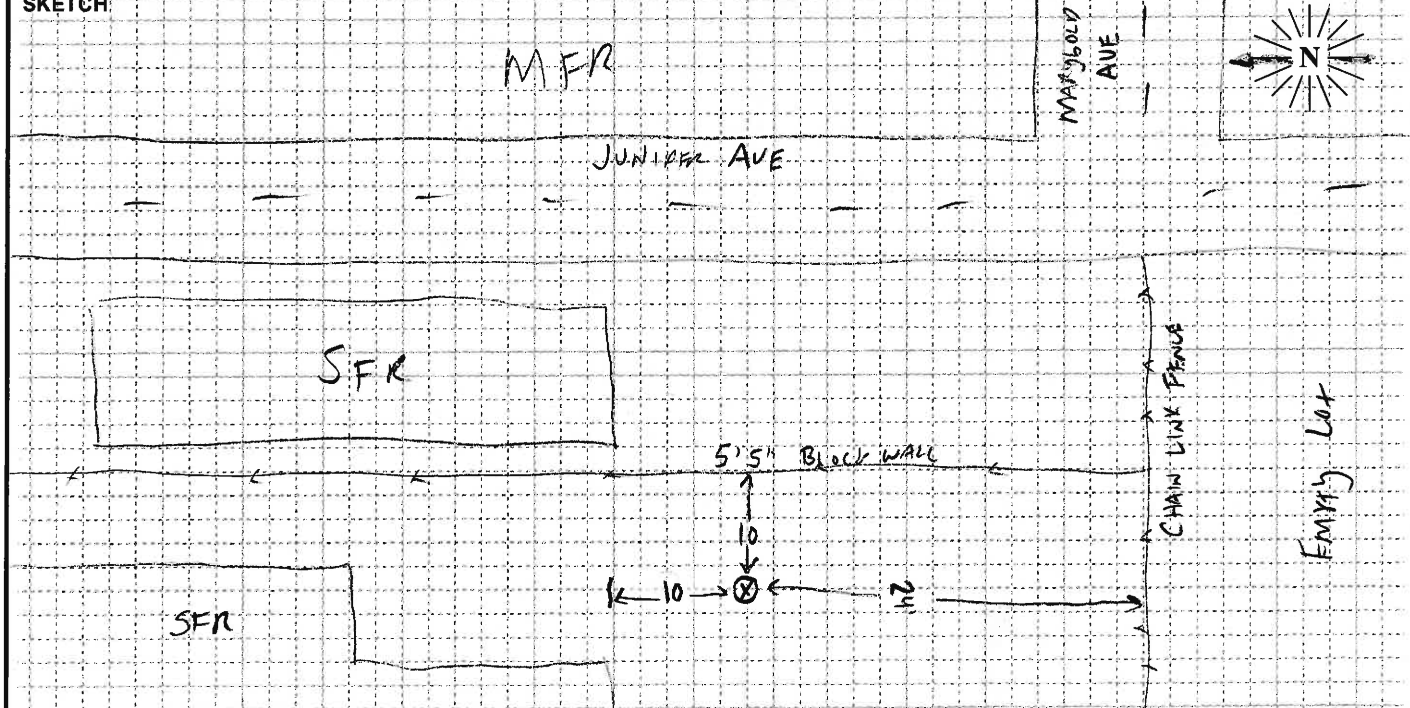
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ________ MPH
TOWARD (DIR): ____________
SKIES: Overcast
CAMERA Ruben Phone
PHOTO NOs. ____________

NOTES: **Dist. to Center** ______ ☐ Video ☐ Radar — Counts AT MT HT

MEAS. TYPE:
☒ Long Term
☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	11:58											
6/14		1750										

SKETCH:



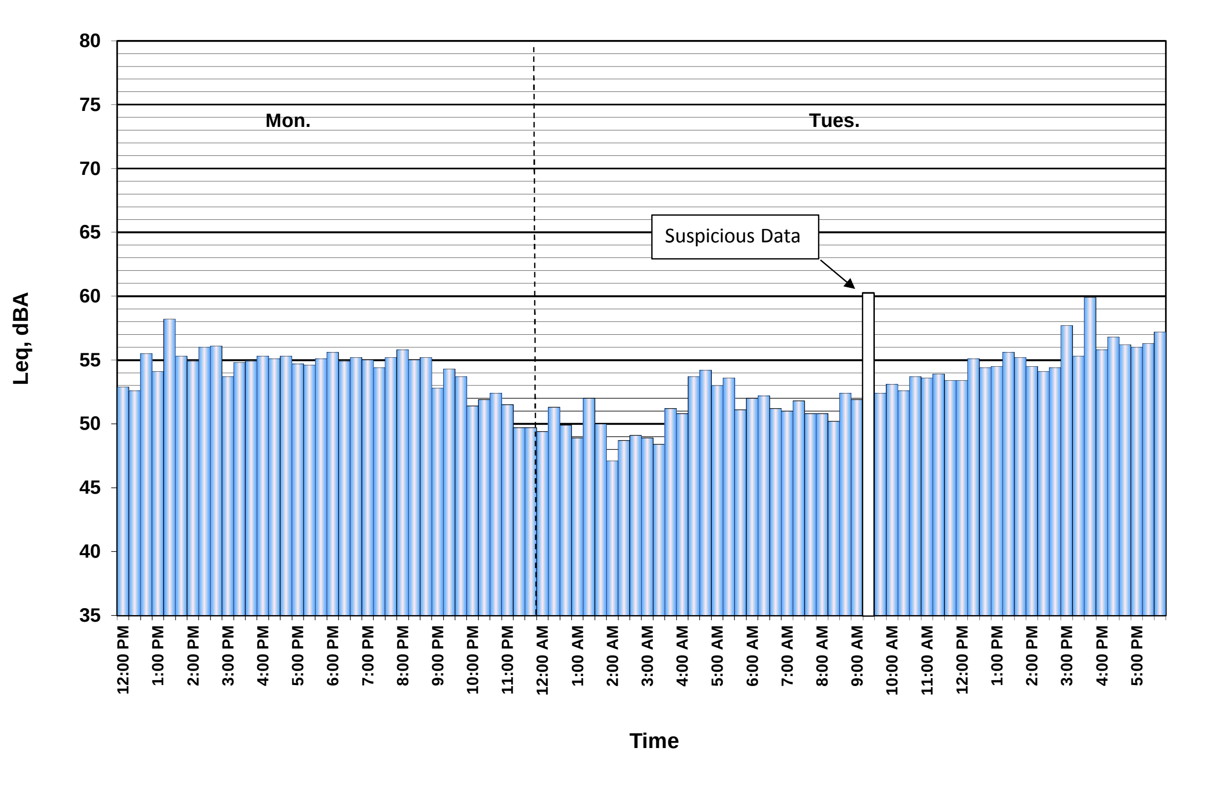
PARSONS

Site LT19 Hourly Noise Levels, Leq(h)

Location: 16683 Mallory Drive, Fontana
Position: Back Yard
Sources: Traffic
Date: 6/13/16 - 6/14/16

Notes: Measurement was located behind 5.5-foot high property wall.
Suspicious 20 minute data has been removed from measurement as marked below.
See attached Noise Measurement Form.

TIME	6/13 - 6/14 Leq(h) dBA	6/14 Leq(h) dBA
12:00 - 01:00 PM	54	54
01:00 - 02:00 PM	56	55
02:00 - 03:00 PM	56	54
03:00 - 04:00 PM	54	58
04:00 - 05:00 PM	55	56
05:00 - 06:00 PM	55	57
06:00 - 07:00 PM	55	
07:00 - 08:00 PM	55	
08:00 - 09:00 PM	55	
09:00 - 10:00 PM	54	
10:00 - 11:00 PM	52	
11:00 - 12:00 AM	50	
12:00 - 01:00 AM	50	
01:00 - 02:00 AM	50	
02:00 - 03:00 AM	48	
03:00 - 04:00 AM	50	
04:00 - 05:00 AM	53	
05:00 - 06:00 AM	53	
06:00 - 07:00 AM	52	
07:00 - 08:00 AM	51	
08:00 - 09:00 AM	51	
09:00 - 10:00 AM	52	
10:00 - 11:00 AM	53	
11:00 - 12:00 PM	54	
Ldn:	58	



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: URENDA	DATE: 10/5/16
MEASUREMENT ADDRESS: UNIT H1061 3410 E 4th STREET	CITY: ONTARIO	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial — SITE NO.: LT20

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 0638

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 3378

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1901

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2127
Freq, Hz.: ☐ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 7.7 / 8:30am
After 114.0 / 113.6 / 7.7 / 12:51

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

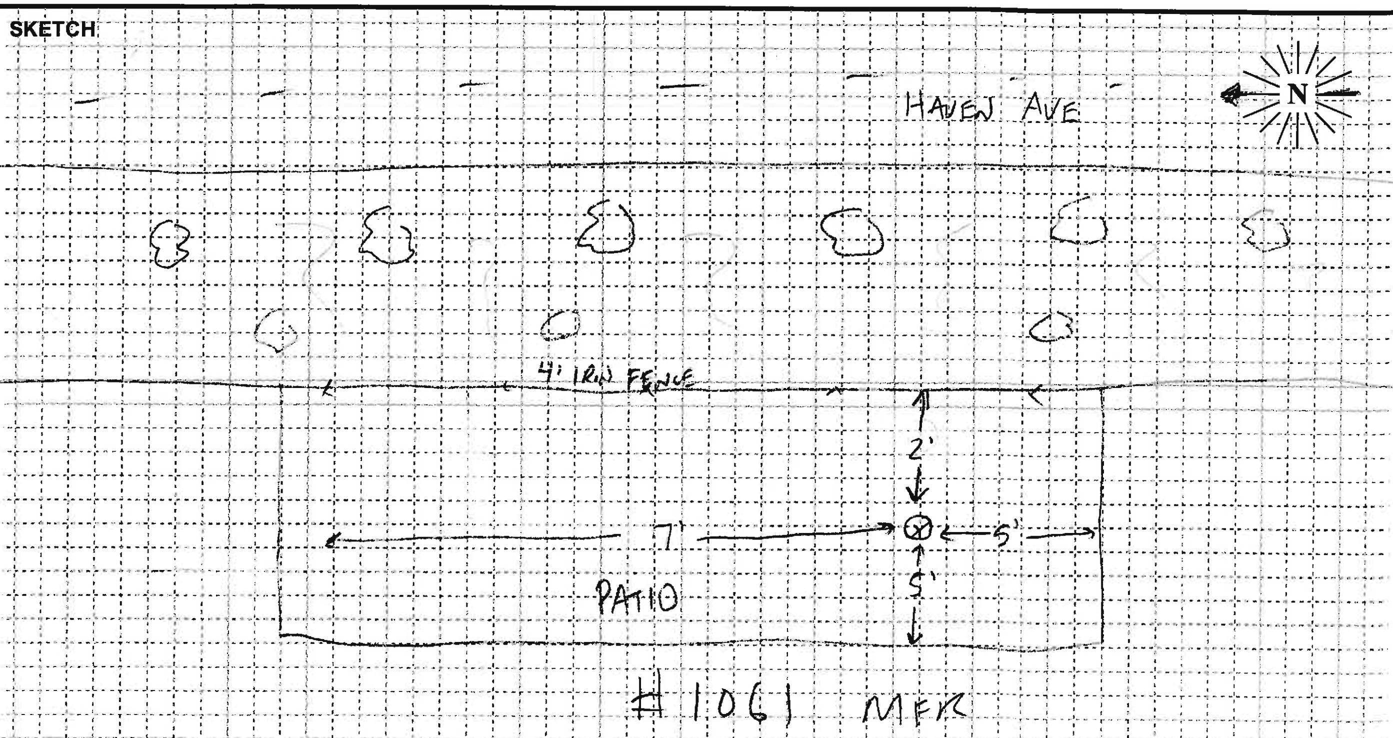
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ______ MPH
TOWARD (DIR): ______
SKIES: CLOUDY
CAMERA: RUBEN PHONE
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/5	8:33											
10/6		12:49										

SKETCH:



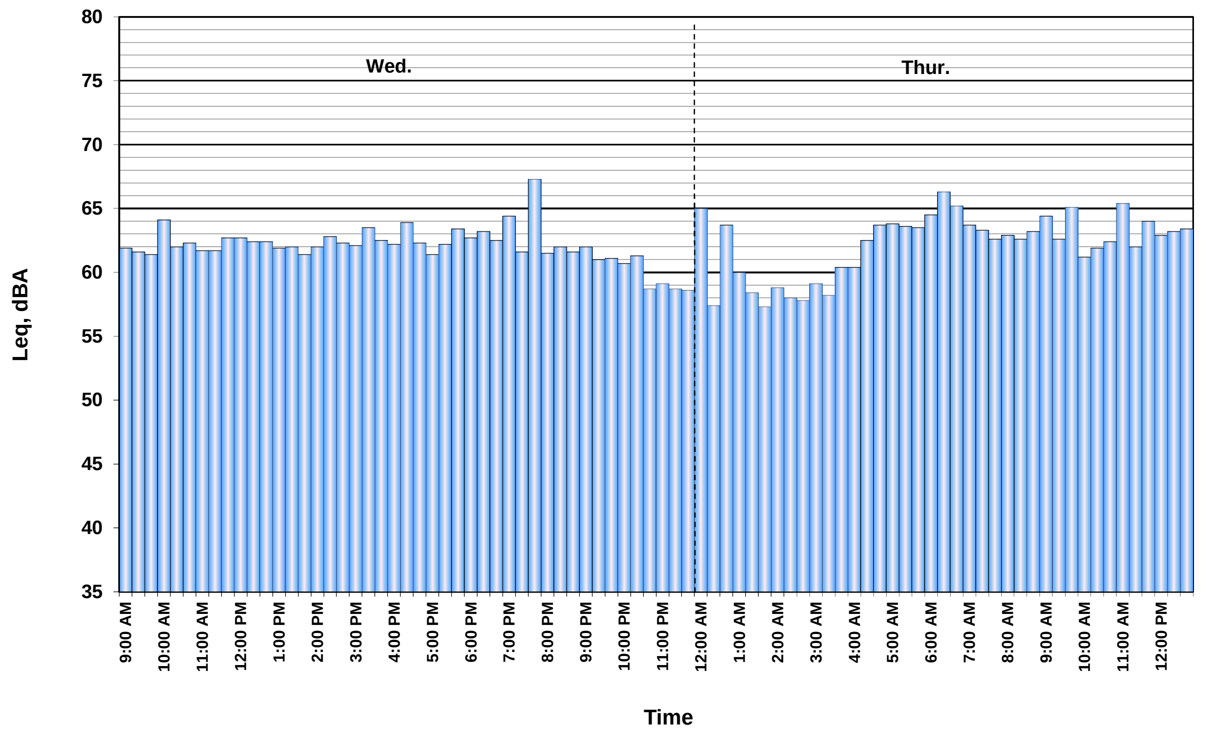
PARSONS

Site LT20 Hourly Noise Levels, L_{eq}(h)

Location: 3410 E. 4th Street, Ontario
Position: Patio
Sources: Traffic
Date: 10/5/16 - 10/6/16

Notes: See attached Noise Measurement Form.

TIME	10/5 - 10-6 $L_{eq(h)}$ dBA	10/6 $L_{eq(h)}$ dBA
09:00 - 10:00 AM	62	64
10:00 - 11:00 AM	63	62
11:00 - 12:00 PM	62	64
12:00 - 01:00 PM	63	63
01:00 - 02:00 PM	62	
02:00 - 03:00 PM	62	
03:00 - 04:00 PM	63	
04:00 - 05:00 PM	63	
05:00 - 06:00 PM	62	
06:00 - 07:00 PM	63	
07:00 - 08:00 PM	65	
08:00 - 09:00 PM	62	
09:00 - 10:00 PM	61	
10:00 - 11:00 PM	60	
11:00 - 12:00 AM	59	
12:00 - 01:00 AM	63	
01:00 - 02:00 AM	59	
02:00 - 03:00 AM	58	
03:00 - 04:00 AM	59	
04:00 - 05:00 AM	62	
05:00 - 06:00 AM	64	
06:00 - 07:00 AM	65	
07:00 - 08:00 AM	63	
08:00 - 09:00 AM	63	
L_{dn}:	68	



FIELD SURVEY FORM

PROJECT: **West Valley Connector**		ENGINEER: Ogden	DATE: 9/20/17
MEASUREMENT ADDRESS: 7866 Henbane St	CITY: Rancho Cucamonga	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: LT21

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☒ RANDOM ☒ WIND SCREEN
SERIAL #: LD2560 3155

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 1901

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114 / 114.0 / 7.7 / 15:36:30
After 114 / 113.8 / — / 16:25

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

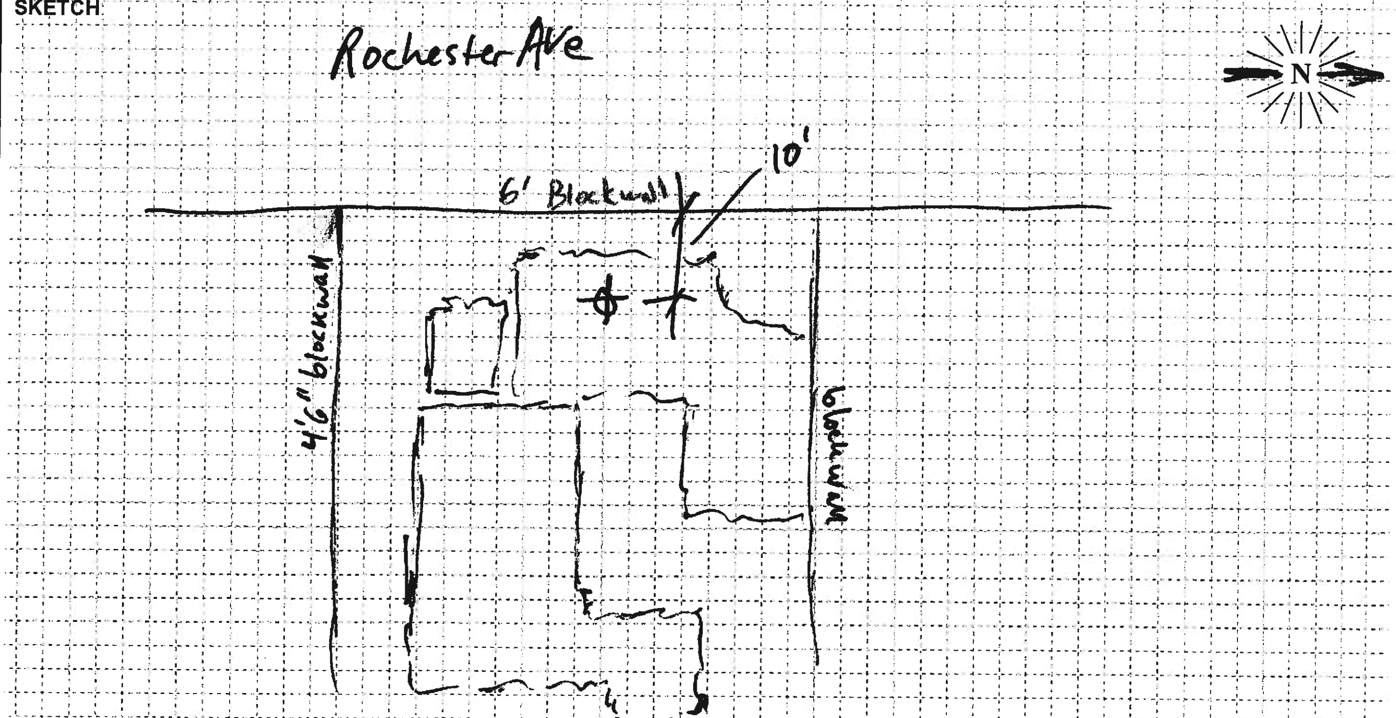
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations during measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ______ MPH
TOWARD (DIR): ______
SKIES: Cloudy
CAMERA ______
☐ VIDEO ☐ RADAR

NOTES:

MEASUREMENT TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
9/20	15:41											
9/21		16:24										

SKETCH:



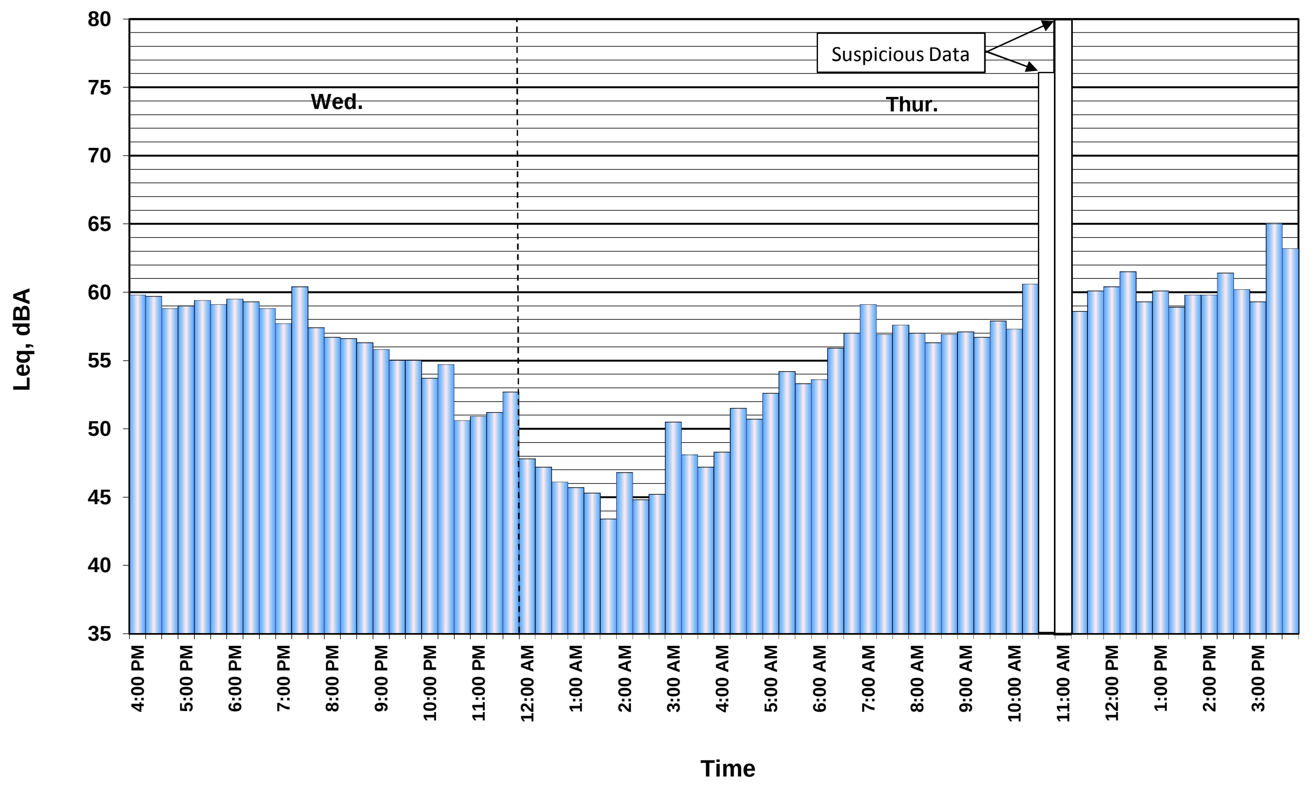
PARSONS

Site LT21 Hourly Noise Levels, Leq(h)

Location: 7866 Henbane Street, Rancho Cucamonga
Position: Back Yard
Sources: Traffic
Date: 9/20/17 - 9/21/17

Notes: Measurement was located behind 6-foot high property wall. See attached Noise Measurement Form.

TIME	9/20 - 9/21 Leq(h) dBA
04:00 - 05:00 PM	59
05:00 - 06:00 PM	59
06:00 - 07:00 PM	59
07:00 - 08:00 PM	58
08:00 - 09:00 PM	57
09:00 - 10:00 PM	55
10:00 - 11:00 PM	53
11:00 - 12:00 AM	52
12:00 - 01:00 AM	47
01:00 - 02:00 AM	45
02:00 - 03:00 AM	46
03:00 - 04:00 AM	49
04:00 - 05:00 AM	50
05:00 - 06:00 AM	53
06:00 - 07:00 AM	56
07:00 - 08:00 AM	58
08:00 - 09:00 AM	57
09:00 - 10:00 AM	57
10:00 - 11:00 AM	59
11:00 - 12:00 PM	59
12:00 - 01:00 PM	60
01:00 - 02:00 PM	60
02:00 - 03:00 PM	61
03:00 - 04:00 PM	59
Ldn:	60



FIELD SURVEY FORM

PROJECT: West Valley Connector

ENGINEER: OGDEN

DATE: 9/20/17

MEASUREMENT ADDRESS: 7741 Danbury Dr

CITY: Rancho Cucamonga

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: LT21A

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ____

SERIAL #: 0659

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☒ RANDOM ☒ WIND SCREEN

SERIAL #: LD2560 3159

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ____

SERIAL #: 1629

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ____

S/N 2479

Freq, Hz. ☒ 250 ☐ 1000 ☐ 84 ☐ ____

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114 / 114.0 / 7.3 / 16:58:51

After 114 / 114.0 / — / 17:02

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations during measurement)

TEMP: ____ °F R.H.: ____ %

WIND SPEED: ____ MPH

TOWARD (DIR): ____

SKIES: ____

CAMERA ____

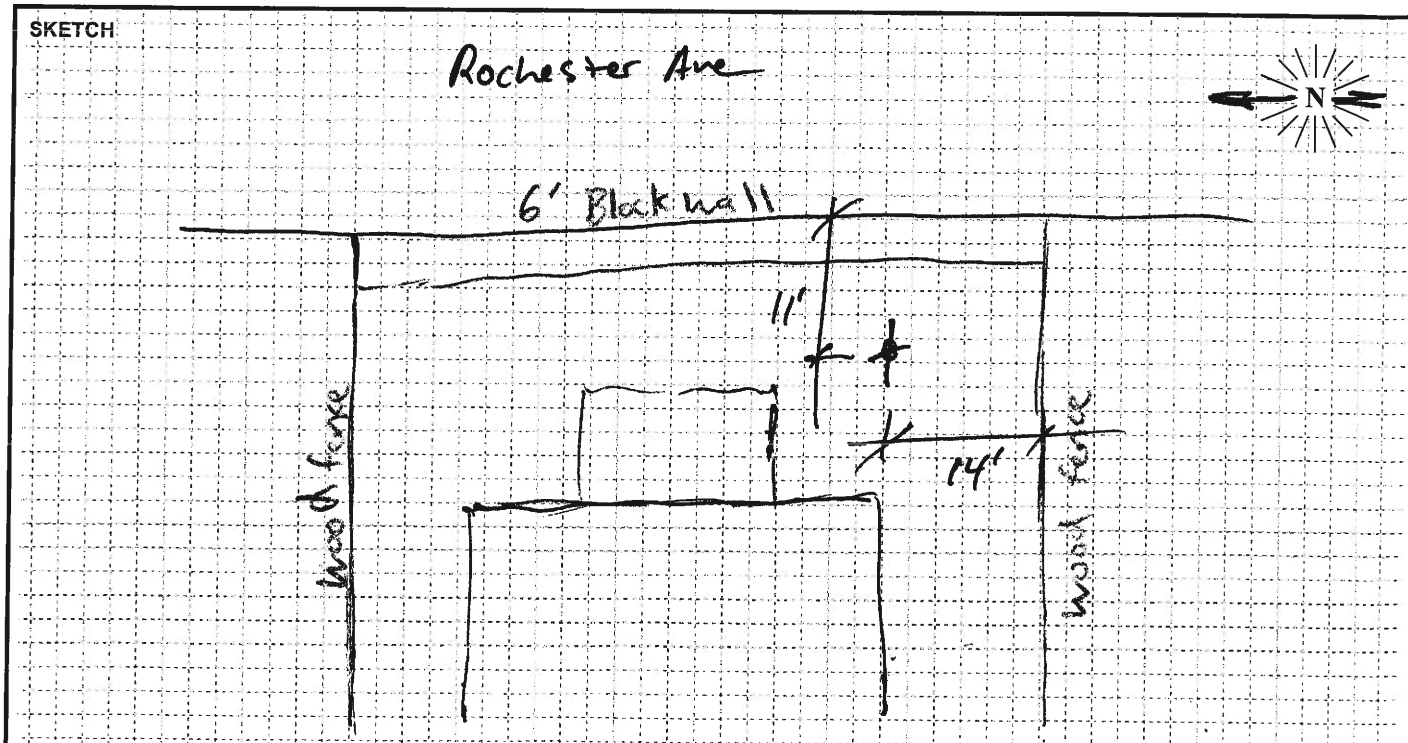
☐ VIDEO ☐ RADAR

NOTES:

MEASUREMENT TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
9/20	17:02											
9/21		17:00										

SKETCH



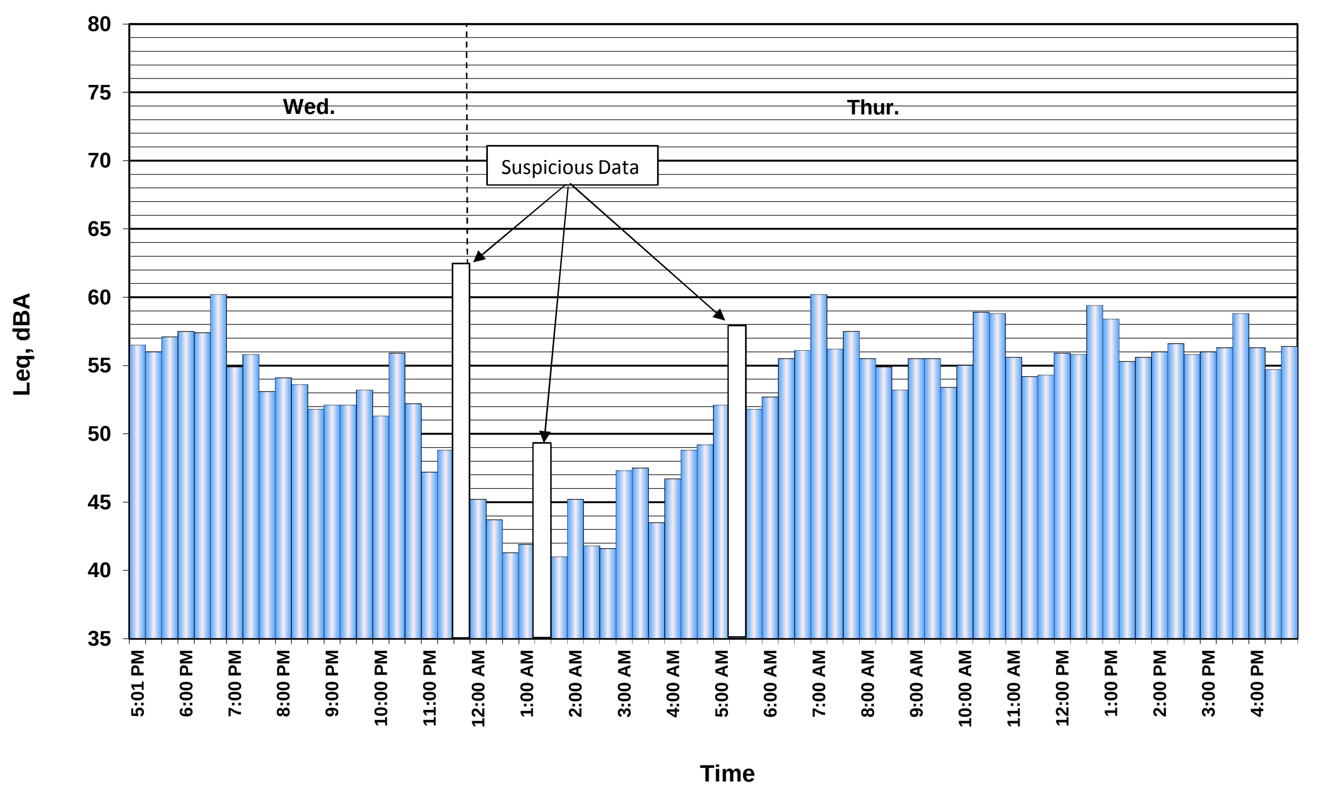
PARSONS

Site LT21A Hourly Noise Levels, Leq(h)

Location: 7741 Danbury Drive, Rancho Cucamonga
Position: Back Yard
Sources: Traffic
Date: 9/20/17 - 9/21/17

Notes: Measurement was located behind 6-foot high property wall.
See attached Noise Measurement Form.

TIME	9/20 - 9/21 Leq(h) dBA
05:00 - 06:00 PM	57
06:00 - 07:00 PM	57
07:00 - 08:00 PM	55
08:00 - 09:00 PM	55
09:00 - 10:00 PM	52
10:00 - 11:00 PM	52
11:00 - 12:00 AM	58
12:00 - 01:00 AM	44
01:00 - 02:00 AM	41
02:00 - 03:00 AM	43
03:00 - 04:00 AM	46
04:00 - 05:00 AM	48
05:00 - 06:00 AM	52
06:00 - 07:00 AM	55
07:00 - 08:00 AM	57
08:00 - 09:00 AM	55
09:00 - 10:00 AM	55
10:00 - 11:00 AM	58
11:00 - 12:00 PM	57
12:00 - 01:00 PM	59
01:00 - 02:00 PM	57
02:00 - 03:00 PM	56
03:00 - 04:00 PM	57
04:00 - 05:00 PM	61
Ldn:	59



FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: URENDA	DATE: 10/5/16
MEASUREMENT ADDRESS: Unit #2 7713 Hess Pl	CITY: Rancho Cucamonga	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial — SITE NO.: LT22

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 0659

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 3159

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 1891

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2127
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 7.2 / 11:15
After 114.0 / 113.8 / 7.2 / 13:36

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☐ L_N PERCENTILE VALUES

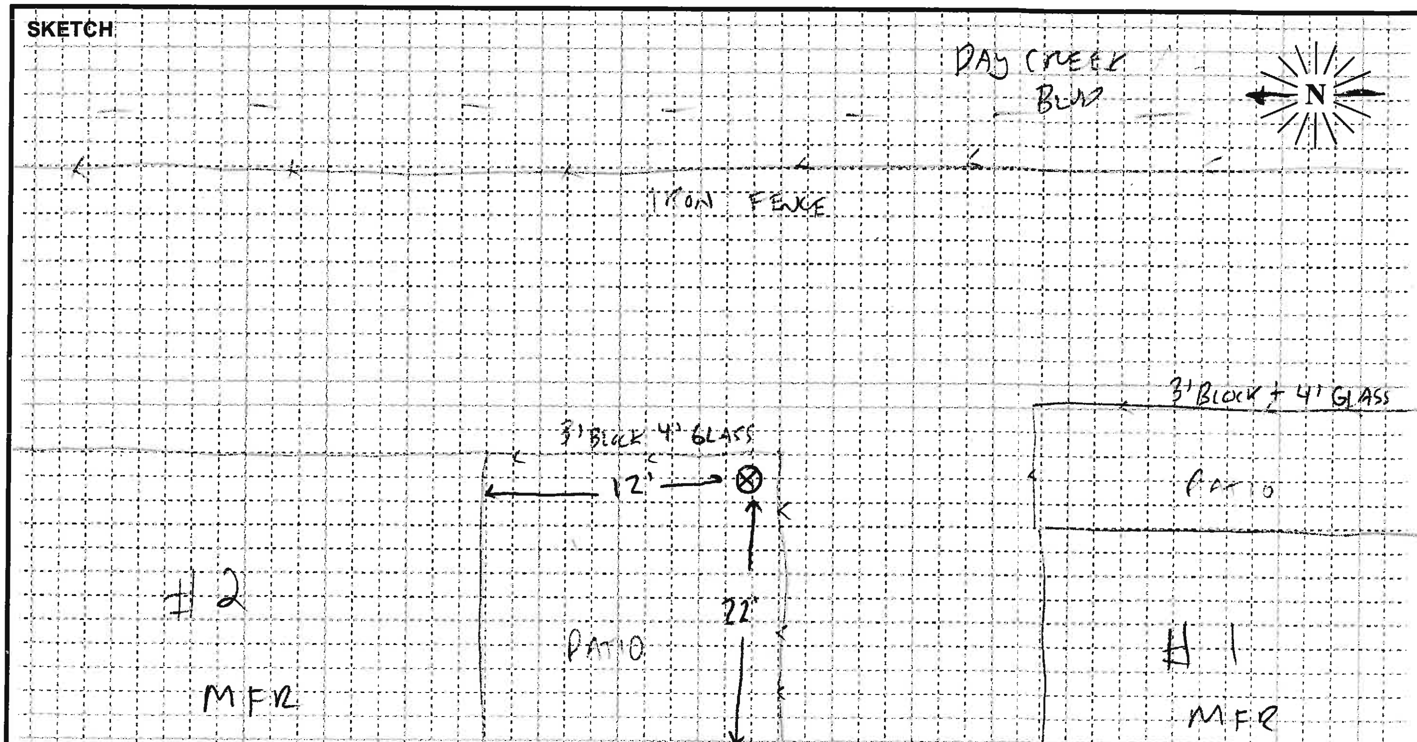
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: ______ °F R.H.: ______ %
WIND SPEED: ________ MPH
TOWARD (DIR): ______________
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ______________

NOTES: MIC 8' 6" HIGH
Dist. to Center ______ ☐ Video ☐ Radar
Counts AT MT HT

MEAS. TYPE: ☒ Long Term ☐ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/5	11:21											
10/6		13:35										

SKETCH:



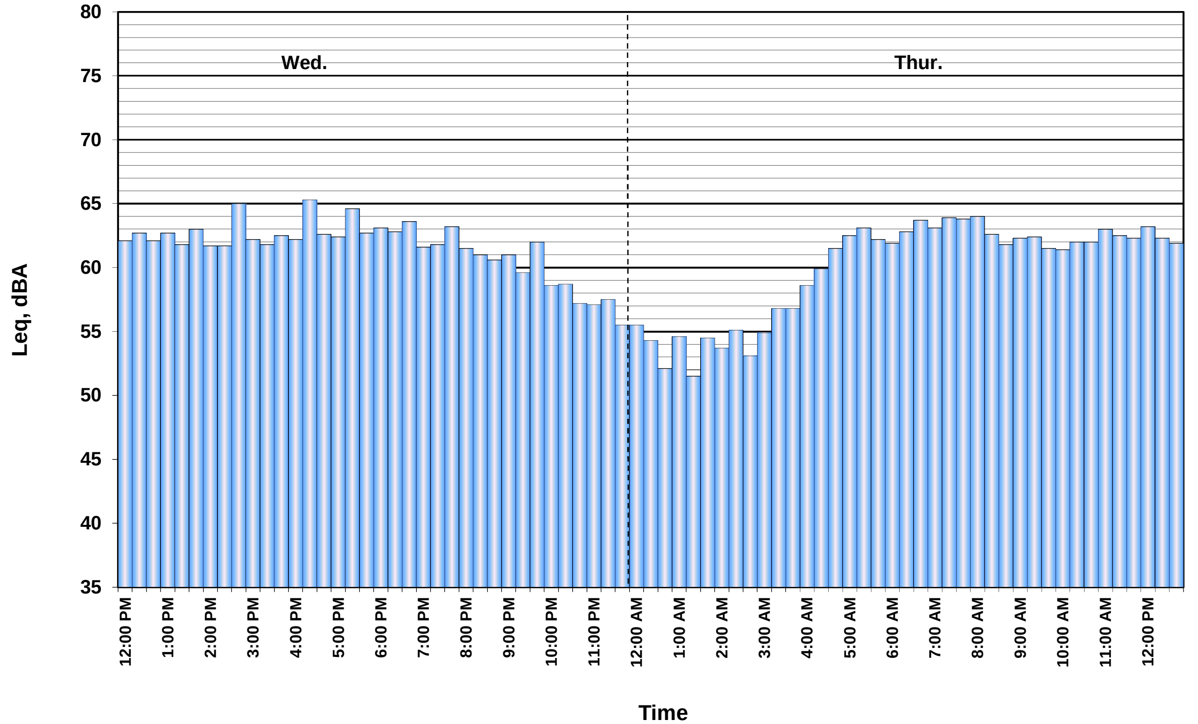
PARSONS

Site LT22 Hourly Noise Levels, Leq(h)

Location: 7713 Hess Place, Rancho Cucamonga
Position: Patio
Sources: Traffic
Date: 10/5/16 - 10/6/16

Notes: See attached Noise Measurement Form.

TIME	10/5 - 10-6 Leq(h) dBA	10/6 Leq(h) dBA
12:00 - 01:00 PM	62	63
01:00 - 02:00 PM	63	60
02:00 - 03:00 PM	63	
03:00 - 04:00 PM	62	
04:00 - 05:00 PM	64	
05:00 - 06:00 PM	63	
06:00 - 07:00 PM	63	
07:00 - 08:00 PM	62	
08:00 - 09:00 PM	61	
09:00 - 10:00 PM	61	
10:00 - 11:00 PM	58	
11:00 - 12:00 AM	57	
12:00 - 01:00 AM	54	
01:00 - 02:00 AM	54	
02:00 - 03:00 AM	54	
03:00 - 04:00 AM	56	
04:00 - 05:00 AM	60	
05:00 - 06:00 AM	63	
06:00 - 07:00 AM	63	
07:00 - 08:00 AM	64	
08:00 - 09:00 AM	63	
09:00 - 10:00 AM	62	
10:00 - 11:00 AM	62	
11:00 - 12:00 PM	63	
Ldn:	66	



FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: G. Berg

DATE: 6/7/16

MEASUREMENT ADDRESS: 250 Holt Blvd

CITY: Pomona

☐ Single-Family ☒ Multi-Family ☒ Frat House ☐ Recreational ☐ Commercial

SITE NO.: ST1

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☐ LD-LxT
☒ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ ________

SERIAL #: 3119

MICROPHONE:
☐ NON-POLAR ☒ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☐ RANDOM
☒ WIND SCREEN

SERIAL #: 52820

PRE AMP:
☐ LD-900 ☐ LD-LxT
☐ LD-828 ☐ ZC-0032
☒ LD-902 ☐ ________

SERIAL #: 3274

CALIBRATOR:
☒ LD CA250 ☐ LD CA200
☐ B&K 4231 ☐ ________
S/N 2479

Freq, Hz.
☒ 250
☐ 1000
☐ 84
☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, 47.4, 13:55
After 114.0, 114.1, —, 16:43

METER SETTINGS:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 81 °F R.H.: 46 %

WIND SPEED: 1 MPH

TOWARD (DIR): ________

SKIES: Clear

CAMERA ________

PHOTO NOs. ________

NOTES:
14:13 Sirens

Dist. to Center ________

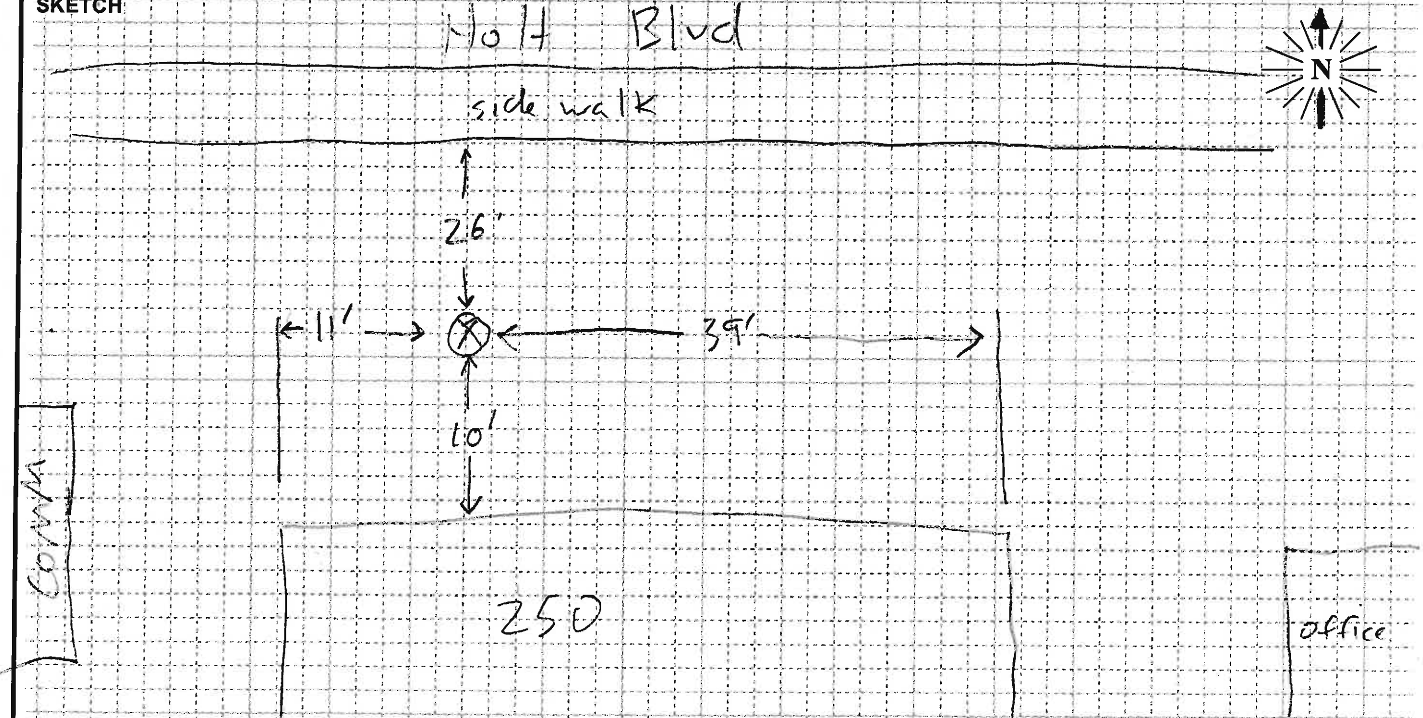
☐ Video
☐ Radar

Counts
AT MT HT

MEAS. TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	1400	14:20	49.9	51.6	57.5	65.5	67.8	69.9	77.7	85.0	67.8	Slow 33
	14:20	14:40	51.2	52.6	58.4	65.0	67.4	69.1	74.5	87.0	66.9	
	1440	1500	51.7	52.8	58.2	65.6	68.1	70.1	74.4	82.2	67.2	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: UREJOA

DATE: 6/7/16

MEASUREMENT ADDRESS: Garfield Park

CITY: Pomona

☐ Single-Family ☒ Recreational
☐ Multi-Family ☐ Commercial

SITE NO.: ST2

SOUND LEVEL METER:
☐ LD-870 ☒ LD-820 ☐ LD-LxT
☐ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ ____________

SERIAL #: 1616

MICROPHONE:
☒ NON-POLAR ☐ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☐ RANDOM
☒ WIND SCREEN

SERIAL #: 2916

PRE AMP:
☐ LD-900 ☐ LD-LxT
☒ LD-828 ☐ ZC-0032
☐ LD-902 ☐ ________

SERIAL #: 1938

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 84.3 °F R.H.: 60 %

WIND SPEED: 2.3 MPH

TOWARD (DIR): ____________

SKIES: CLEAR

CAMERA: RUBEN Phone

PHOTO NOs. ____________

CALIBRATOR:
☒ LD CA250 ☐ LD CA200
☐ B&K 4231 ☐ ________
S/N 2480

Freq, Hz.
☒ 250
☐ 1000
☐ 84
☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 8.3 / 13:56

After 114.0 / 113.9 / 8.3 / 15:03

METER SETTINGS:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

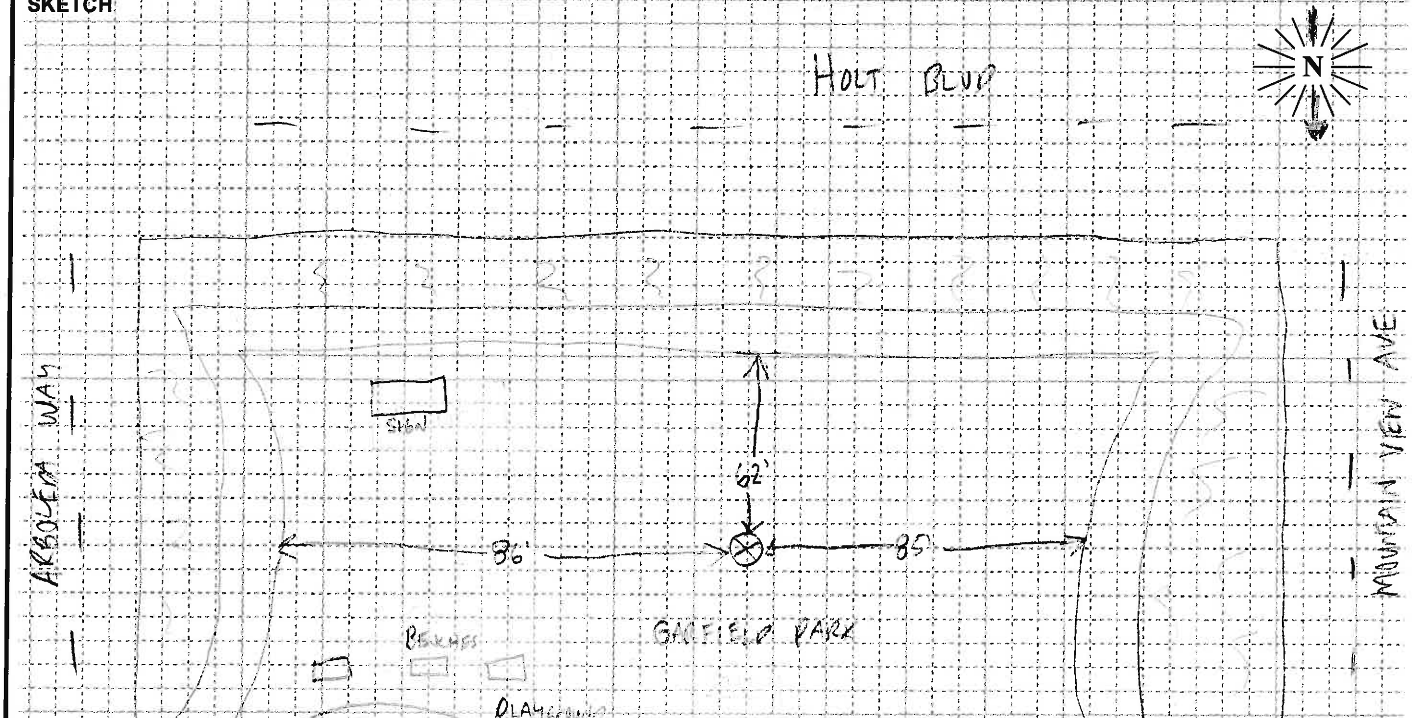
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	14:00	14:20	48.1	49.7	53.5	58.7	61.5	64.7	73.8	77.3	62.3	SIRENS
	14:20	14:40	49.2	50	54	58.8	61	64.3	70.4	73.5	61.1	
	14:40	15:00	51.1	52	55.4	59.5	61.7	64.5	71	80.3	62	Loud Exhaust, Honk

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: G. Berg	DATE: 6/7/16
MEASUREMENT ADDRESS: 4400 Holt Blvd #15	CITY: Montclair	☐ Single-Family ☐ Multi-Family X Mobile Homes ☐ Recreational ☐ Commercial	SITE NO.: ST3

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ________
SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, 47.4, 13:55
After 114.0, 114.1, —, 16:43

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

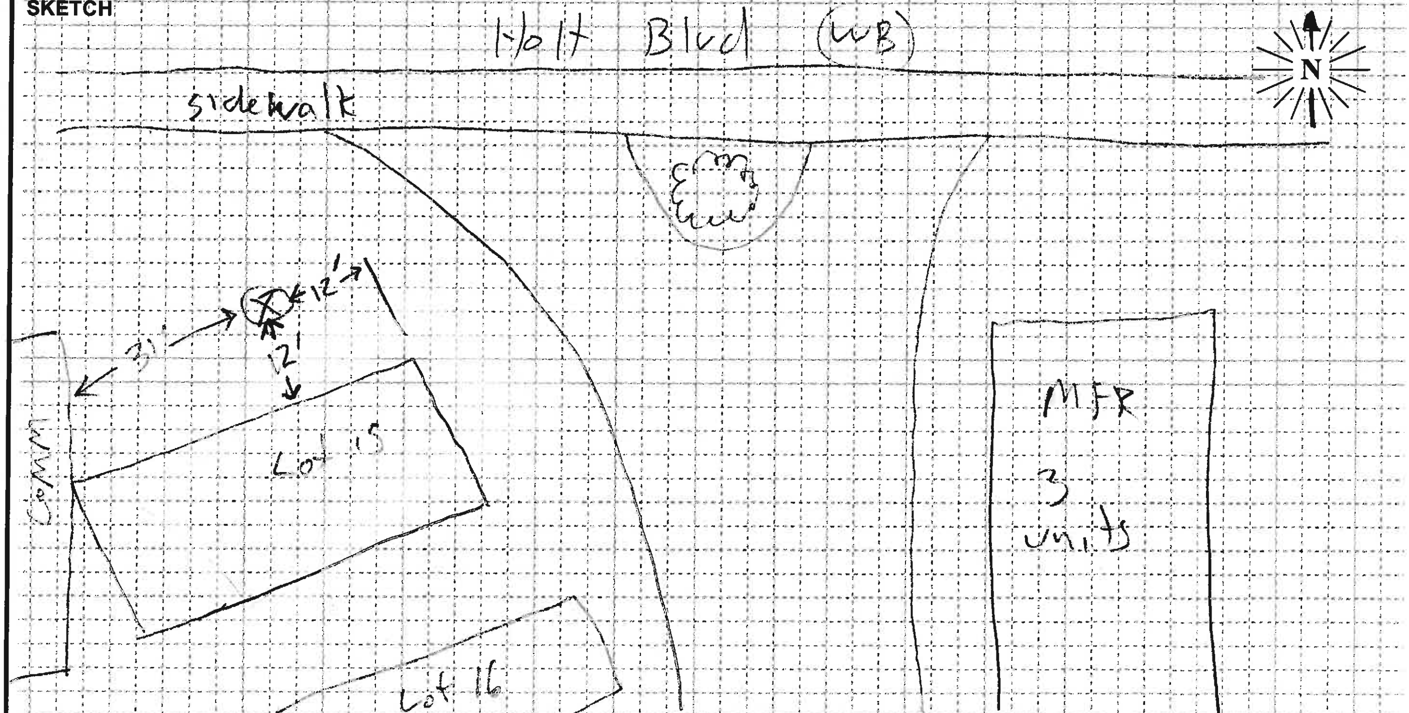
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 87 °F R.H.: 43 %
WIND SPEED: 2 MPH
TOWARD (DIR): ________
SKIES: Clear
CAMERA ________
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	15:40	16:00	50.9	52.4	57.9	64.7	68.0	70.0	72.7	76.8	66.4	Store 34
6/7	16:00	16:20	47.8	51.3	58.5	64.8	68.0	70.5	73.5	83.5	67.0	
6/7	16:20	16:40	51.8	54.5	58.3	64.2	67.4	69.6	73.6	80.9	66.4	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: URENDA	DATE: 6/7/16
MEASUREMENT ADDRESS: 4891 HOLT BLVD	CITY: MONTCLAIR	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST3A

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2480
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 113.9 / 8.3 / 15:03
After 114.0 / 113.9 / 8.3 / 16:21

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

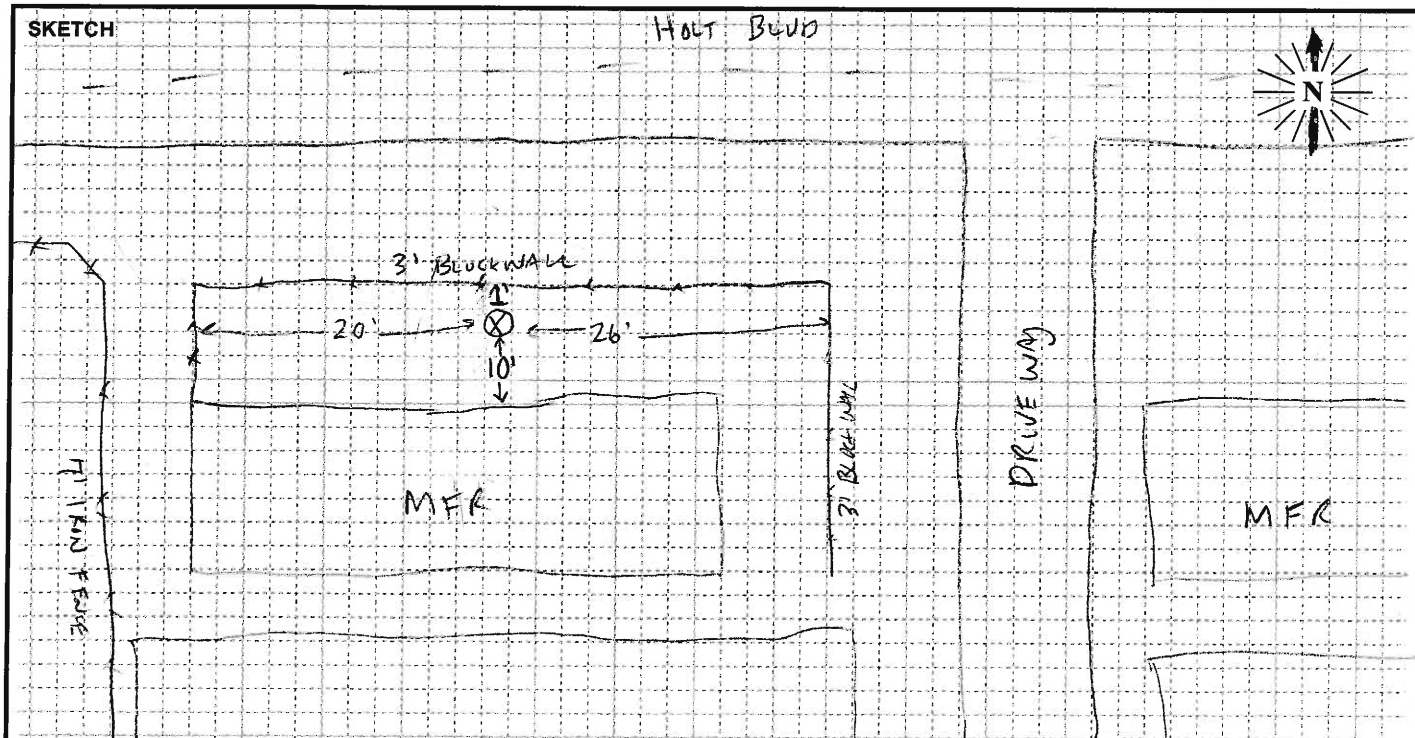
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 92.3 °F R.H.: 62 %
WIND SPEED: 0.8 MPH
TOWARD (DIR): ________
SKIES: CLEAR
CAMERA RUBEN PHONE
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/7	15:20	15:40	50.3	50.3	52	57.7	60.7	62.9	68.9	76.4	60.1	
	15:40	16:00	50.7	51.1	53.2	58.7	61.8	64.1	69.8	73.4	61	
	16:00	16:20	46.6	47	49.5	56.1	60.1	64	72.6	81.7	61.5	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: G. Berg

DATE: 6/9/16

MEASUREMENT ADDRESS: 108 Vine AVE

CITY: Ontario

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST4

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______

SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ______

SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______

S/N 2479

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0, 113.6, —, 1152

After 114.0, 113.9, , 1303

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☐ BAT ☐ AC

(observations at start of measurement)

TEMP: 82 °F R.H.: 49 %

WIND SPEED: 1 MPH

TOWARD (DIR): ______

SKIES: part cloudy

CAMERA ______

PHOTO NOs. ______

NOTES:
12:40 Freight train
12:54 " "

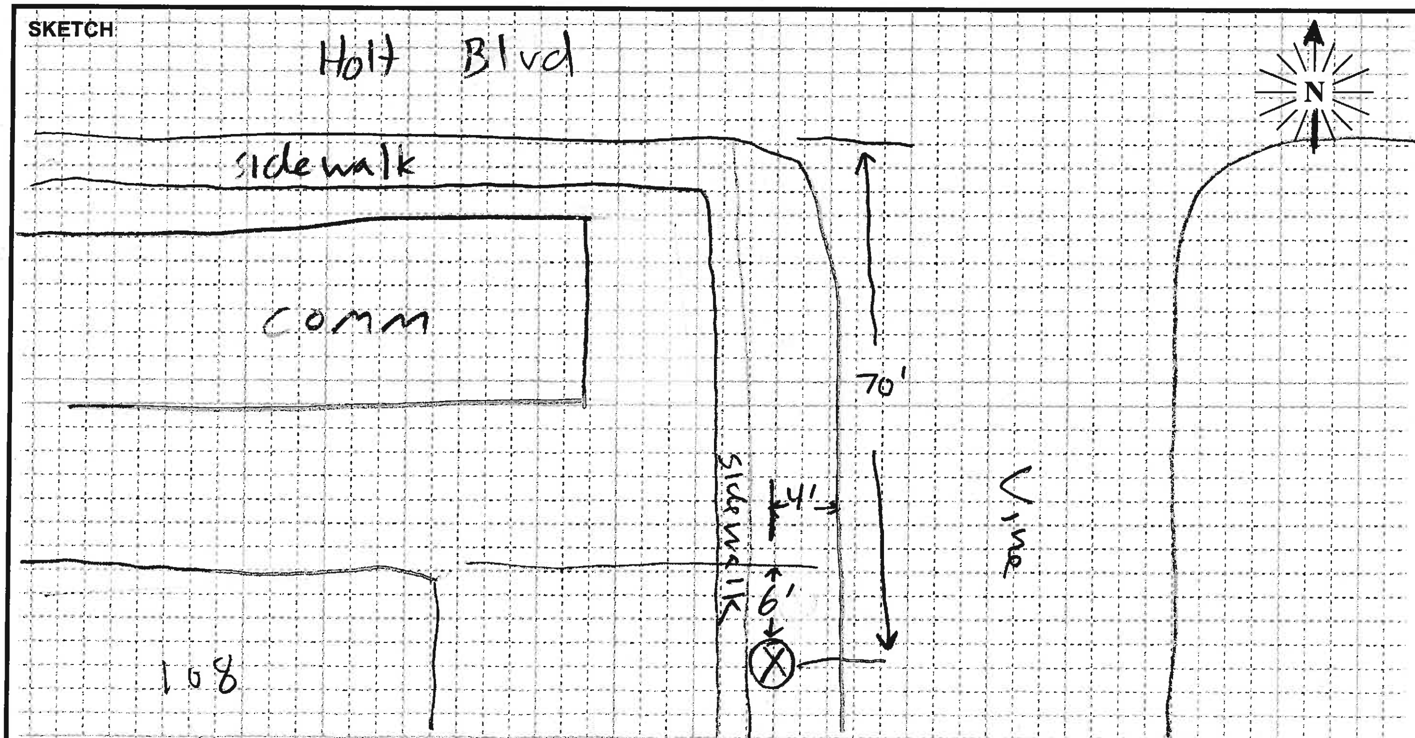
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	12:00	12:20	50.7	52.2	54.9	61.9	65.2	69.1	76.1	83.5	65.9	Store 38
6/9	12:20	12:40	49.5	50.7	54.6	61.7	64.9	68.9	75.5	88.2	66.0	
6/9	12:40	13:00	49.3	51.2	55.9	62.6	66.5	70.1	77.8	85.6	67.2	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: G, Bera	DATE: 6/9/16
MEASUREMENT ADDRESS: #101 101 N. Starling Private — CITY: Ontario	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST5

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ______
SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 113.9, —, 1303
After 114.0, 113.7, —, 15:44

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

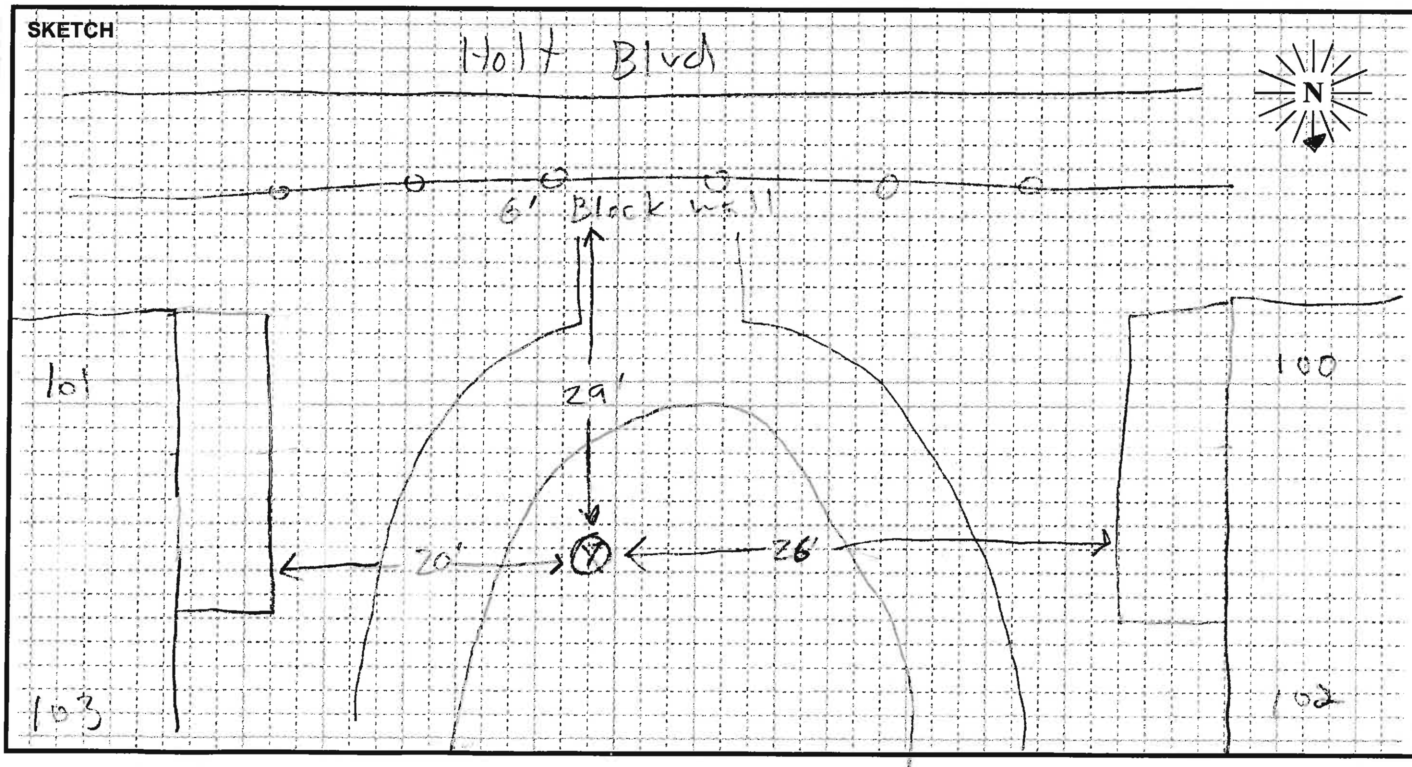
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 80 °F R.H.: 54 %
WIND SPEED: 2 MPH
TOWARD (DIR): ______
SKIES: Clear
CAMERA ______
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	1320	1340	47.0	47.6	51.5	57.7	60.8	63.8	71.6	76.7	61.0	Stor 39
6/9	1340	14:00	45.9	47.2	50.0	56.6	59.7	62.0	68.1	78.2	59.5	
6/9	14:00	14:20	46.4	47.9	52.1	57.6	60.1	63.1	72.7	76.6	61.3	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**

ENGINEER: G. Berg

DATE: 6/9/16

MEASUREMENT ADDRESS: 545 Holt Blvd #2

CITY: Pomona

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST5A

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ________

SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2479

Freq, Hz. ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0, 113.9, –, 13:03

After 114.0, 113.7, , 15:44

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 82 °F R.H.: 55 %

WIND SPEED: 2 MPH

TOWARD (DIR): ________

SKIES: Clear

CAMERA ________

PHOTO NOs. ________

NOTES:
14:51 Freight Train
15:25 " "
15:39 " "

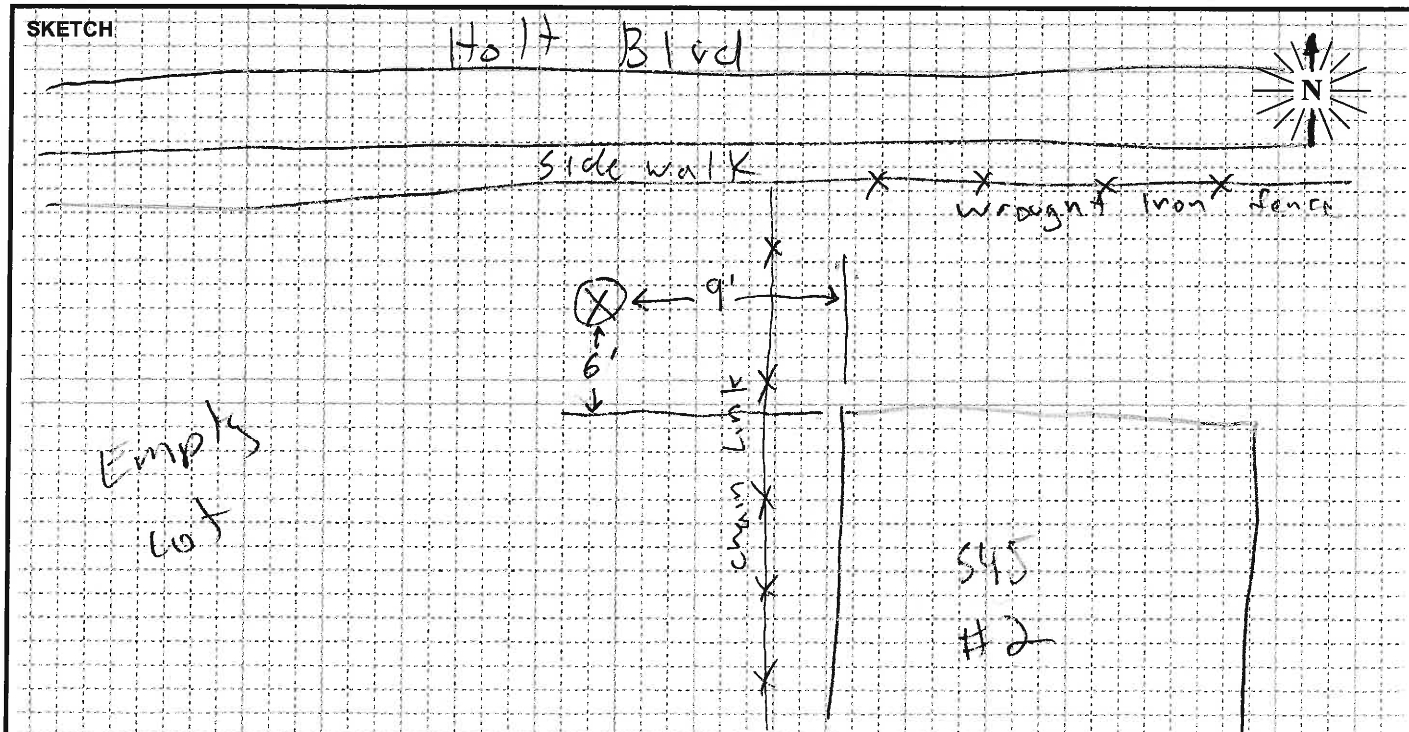
Dist. to Center ______ ☐ Video ☐ Radar

Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/9	14:40	15:00	51.4	52.3	58.2	66.7	69.6	72.5	78.9	85.1	69.3	
6/9	15:00	15:20	49.8	51.4	56.4	66.1	69.3	71.6	76.2	85.3	68.3	
6/9	15:20	15:40	50.1	52.6	57.5	67.2	70.3	73.0	82.0	89.4	71.0	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: URENDA	DATE: 6/8/16
MEASUREMENT ADDRESS: Sky Villa Trailer Park 1601 E Holt Blvd #1 — CITY: Ontario	☐ Single-Family ☐ Recreational ☐ Multi-Family ☐ Commercial ✓ Mobile Home	SITE NO.: ST6

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2480
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

	Input, dB	Reading, dB	Offset, dB	Time
Before	114.0	113.9	8.8	15:48
After	114.0	113.9	8.3	17:02

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

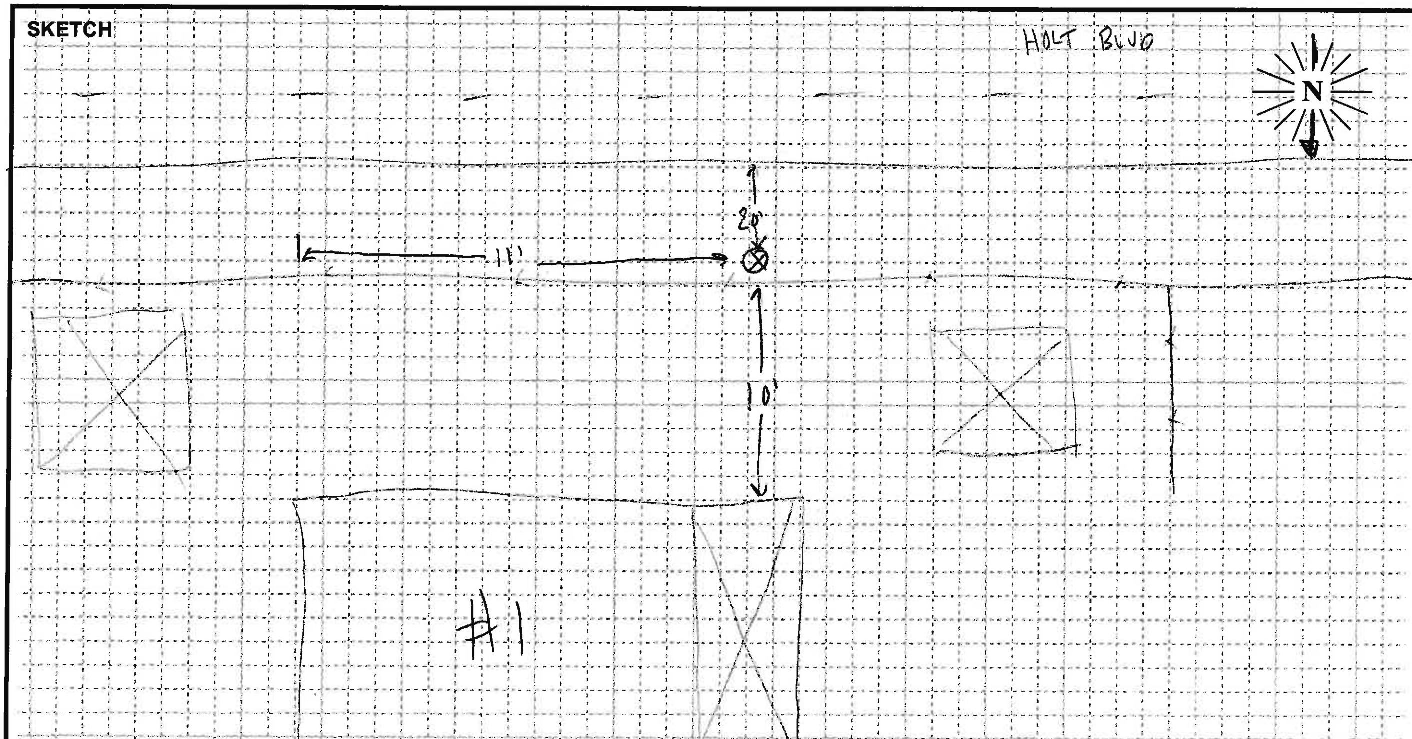
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 95.8 °F R.H.: 62 %
WIND SPEED: 3.0 MPH
TOWARD (DIR): ________
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ________

NOTES: Dist. to Center ________ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/8	16:00	16:20	50.1	51.5	58	67	70.4	72.5	77	80.3	68.9	train Horn 16:20
	16:20	16:40	49.1	51.6	58.9	68	70.9	73.1	80.1	86.4	70.4	train Horn 16:20, 16:34
	16:40	17:00	48.6	49.7	57.9	67.7	70.7	73	77.2	85.6	69.7	train Horn 16:57

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: G. Berg	DATE: 6/8/16
MEASUREMENT ADDRESS: Comfort Suites 1811 E Holt Blvd / CITY: Ontario	☐ Single-Family ☐ Multi-Family ☐ Recreational ☒ Commercial	SITE NO.: ST7

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ________
SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, 47.8, 10:29
After 114.0, 114.0, —, 11:43

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

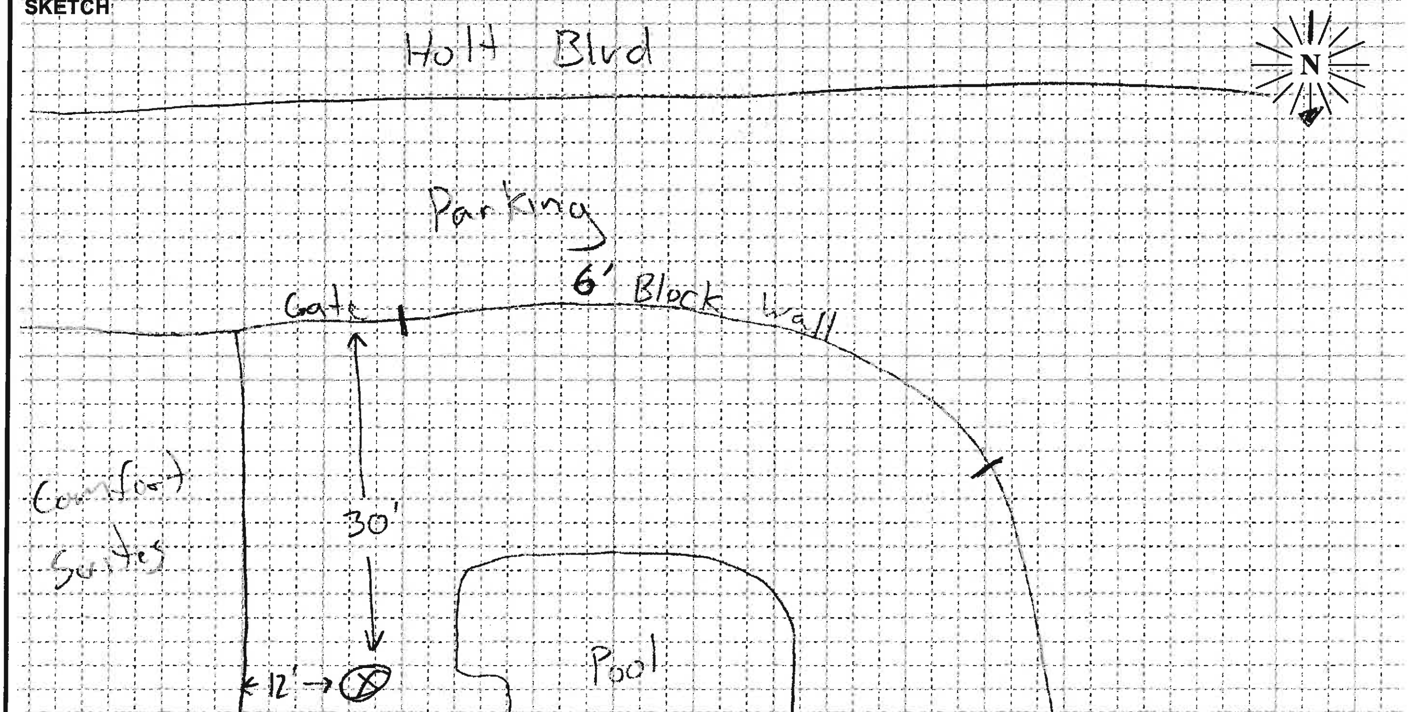
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 73 °F R.H.: 58 %
WIND SPEED: 1 MPH
TOWARD (DIR): ________
SKIES: overcast
CAMERA ________
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/8	10:40	11:00	54.5	55.0	57.1	60.1	62.1	65.4	68.9	73.5	61.9	Store 35
6/8	11:00	11:20	54.1	54.7	57.0	60.2	62.0	64.2	70.7	79.3	62.4	
6/8	11:20	11:40	54.2	54.8	56.9	60.3	62.3	64.0	67.7	69.6	61.4	

SKETCH:



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/29/16

MEASUREMENT ADDRESS: 2710 INLAND EMPIRE BLVD

CITY: ONTARIO

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST8

SOUND LEVEL METER:
☐ LD-870 ☐ LD-820 ☐ LD-LxT
☐ LD-824 ☒ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ ______

SERIAL #: 0639

MICROPHONE:
☒ NON-POLAR ☐ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☐ RANDOM
☒ WIND SCREEN

SERIAL #: 2916

PRE AMP:
☐ LD-900 ☐ LD-LxT
☒ LD-828 ☐ ZC-0032
☐ LD-902 ☐ ______

SERIAL #: 1991

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 100 °F **R.H.:** 37.5 %

WIND SPEED: 2.5 MPH

TOWARD (DIR): ______

SKIES: CLEAR

CAMERA RUBEN PHONE

PHOTO NOs. ______

CALIBRATOR:
☒ LD CA250 ☐ LD CA200
☐ B&K 4231 ☐ ______
S/N 2479

Freq, Hz.
☒ 250
☐ 1000
☐ 84
☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.8 / 17.4 / 14:40

After 114.0 / 113.7 / 17.4 / 15:41

METER SETTINGS:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

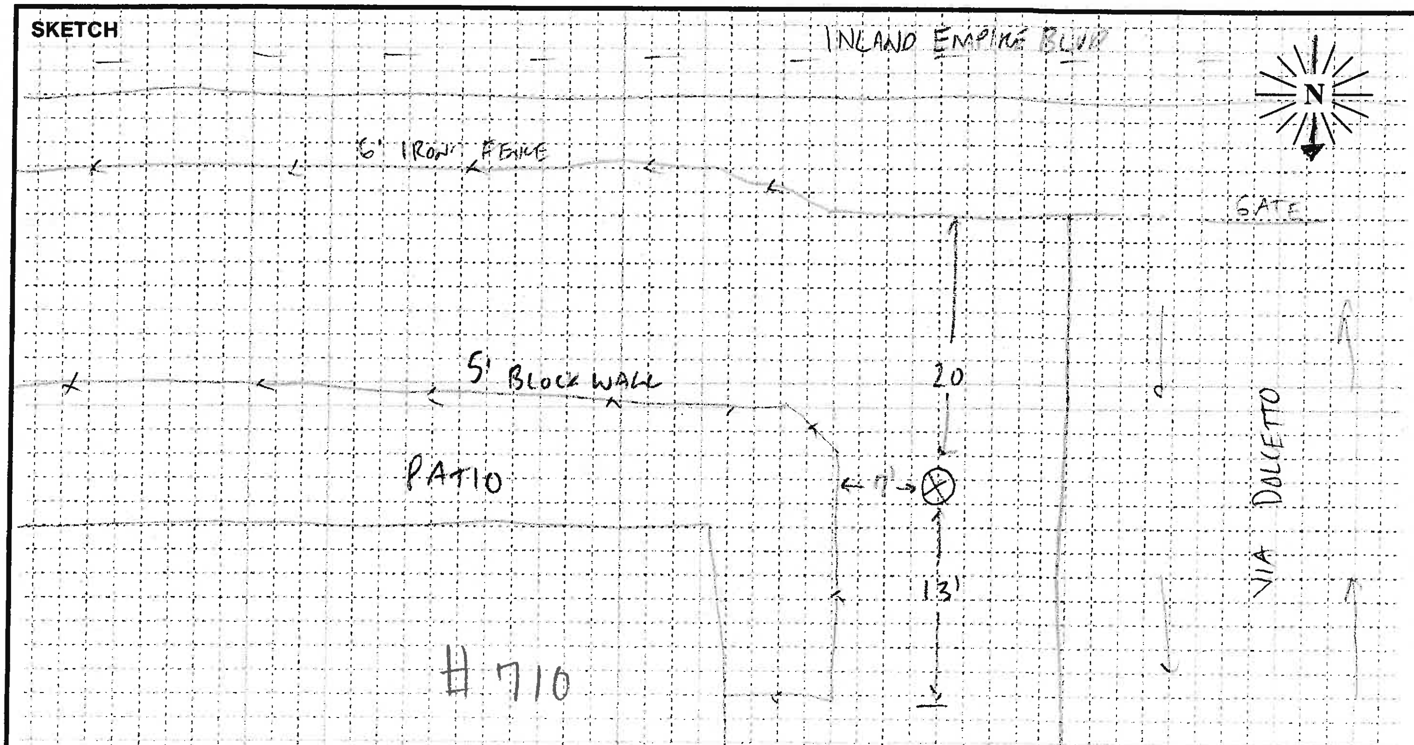
Dist. to Center ______ ☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/29	14:40	15:00	54.8		57.1	59.6	61.6	64.0		76.7	62.0	
	15:00	15:20	55		57	59.7	61.6	63.2		74.6	60.9	
	15:20	15:40	55		56.8	59.6	61.6	63.6		73.3	61.1	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: G. Bera	DATE: 6/10/16
MEASUREMENT ADDRESS: 9200 Milliken Ave	CITY: Rancho Cucamonga	☐ Single-Family ☐ Recreational ☒ Multi-Family ☐ Commercial — SITE NO.: ST9

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52920

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ______
SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

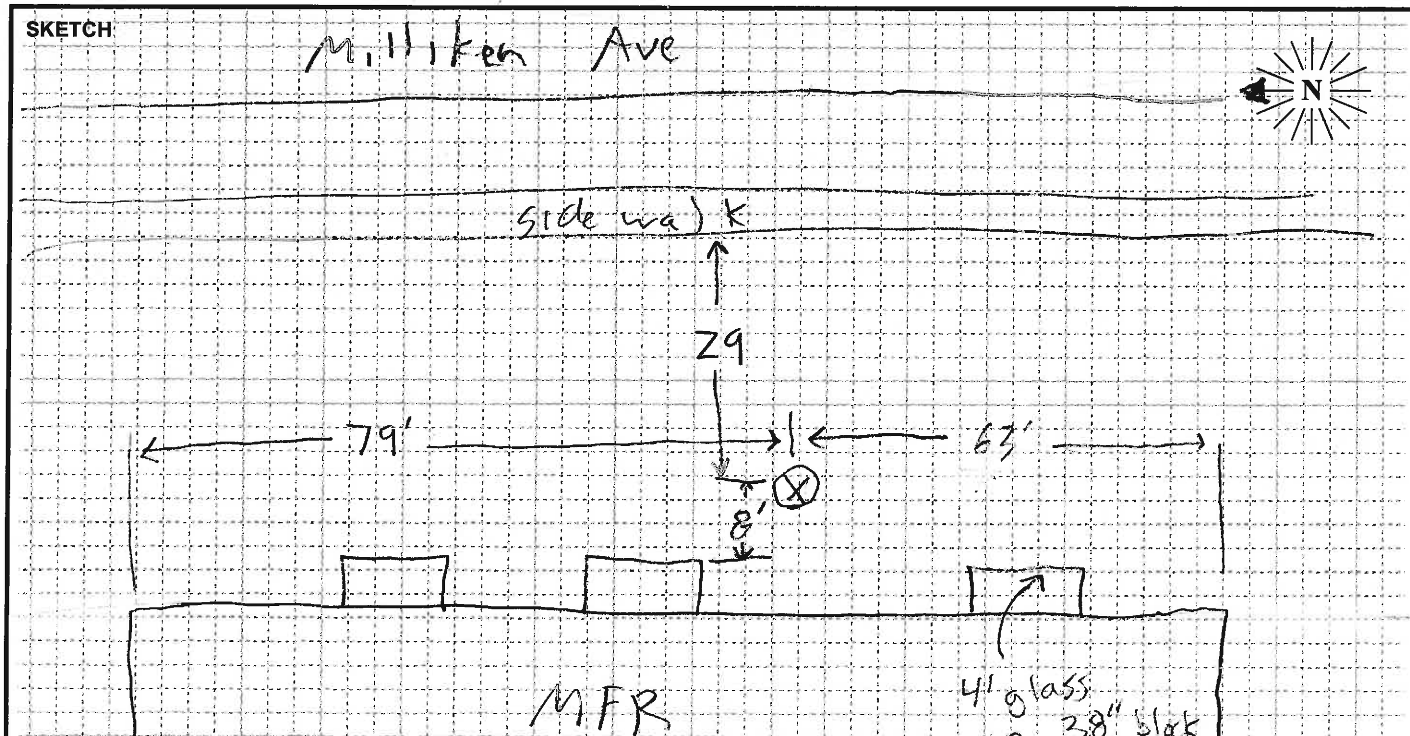
CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, -47.8, 834
After 114.0, 113.9, —, 11:45

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 70 °F R.H.: 73 %
WIND SPEED: 0 MPH
TOWARD (DIR): ______
SKIES: Overcast
CAMERA ______
PHOTO NOs. ______

NOTES: 9:00 Siren
Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT
MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/10	8:40	9:00	47.8	49.1	54.4	62.1	65.4	67.7	71.1	75.3	64.0	Store 41
6/10	9:00	9:20	49.1	50.8	54.0	62.8	66.4	69.4	78.7	92.9	69.8	
6/10	9:20	9:40	46.9	48.2	51.9	62.0	65.7	68.0	72.4	75.3	64.4	

SKETCH:


PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector
ENGINEER: URENDA
DATE: 6/10/16

MEASUREMENT ADDRESS: AMADOR 8090 Cornwall Ct #61
CITY: RANCHO CUCAMONGA
☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial
SITE NO.: ST10

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2480
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / 8.3 / 8:07 am
After 114.0 / 114.0 / 8.3 / 9:24 am

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

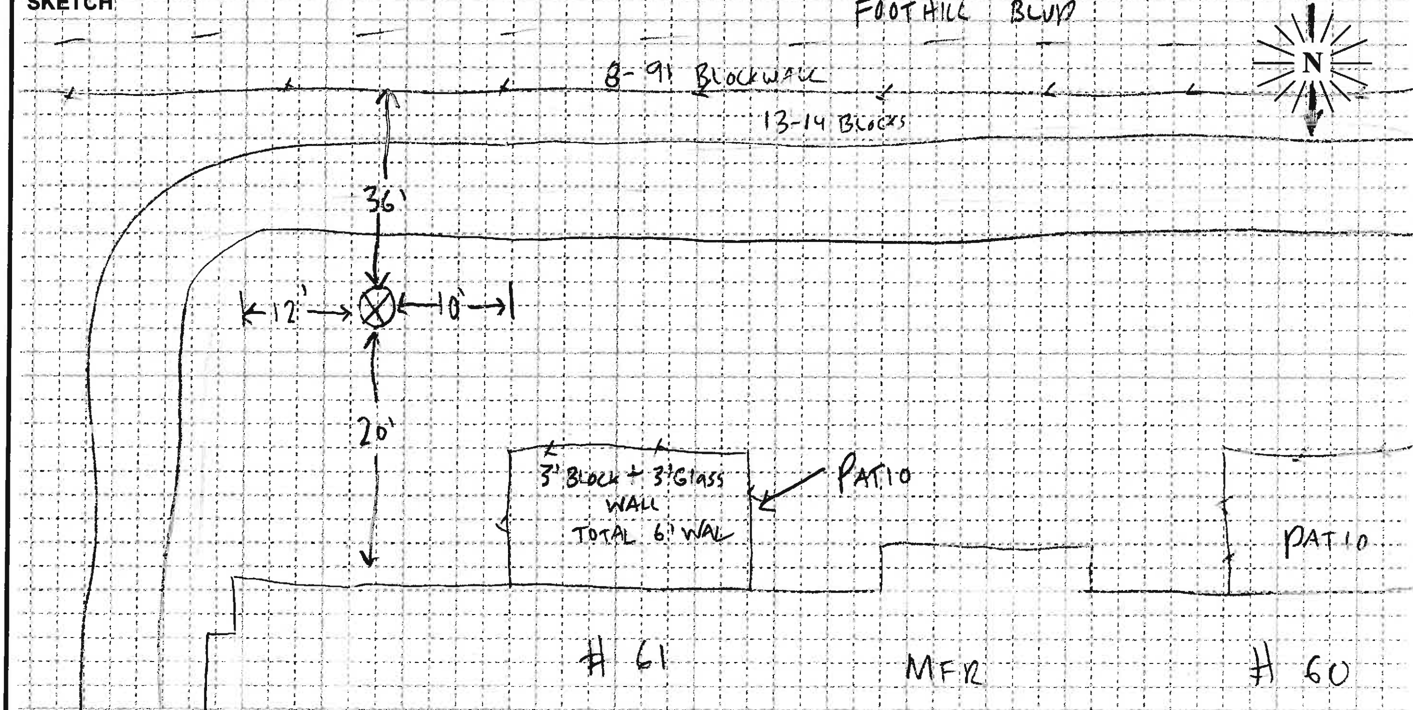
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 73.9 °F R.H.: 37 %
WIND SPEED: 0.4 MPH
TOWARD (DIR): ________
SKIES: CLOUDY
CAMERA RUBEN PHONE
PHOTO NOs. ________

NOTES:
Dist. to Center ______ ☐ Video ☐ Radar
Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/10	8:20	8:40	42.7	44.6	48.1	54.8	57.2	58.9	62.6	75.5	56.1	
	8:40	9:00	42.5	44.1	48.2	54.4	56.8	58.5	62.6	71.9	55.8	
	9:00	9:20	42.7	43.8	47.2	53.8	56.1	58.1	61.3	66	54.9	

SKETCH:



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: Urenda	DATE: 6/13/16
MEASUREMENT ADDRESS: 13247 E. Foothill Blvd #102	CITY: Rancho Cucamonga	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST11

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2480
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 113.9 / 8.2 / 14:56
After 114.0 / 113.8 / 8.2 / 15:03

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

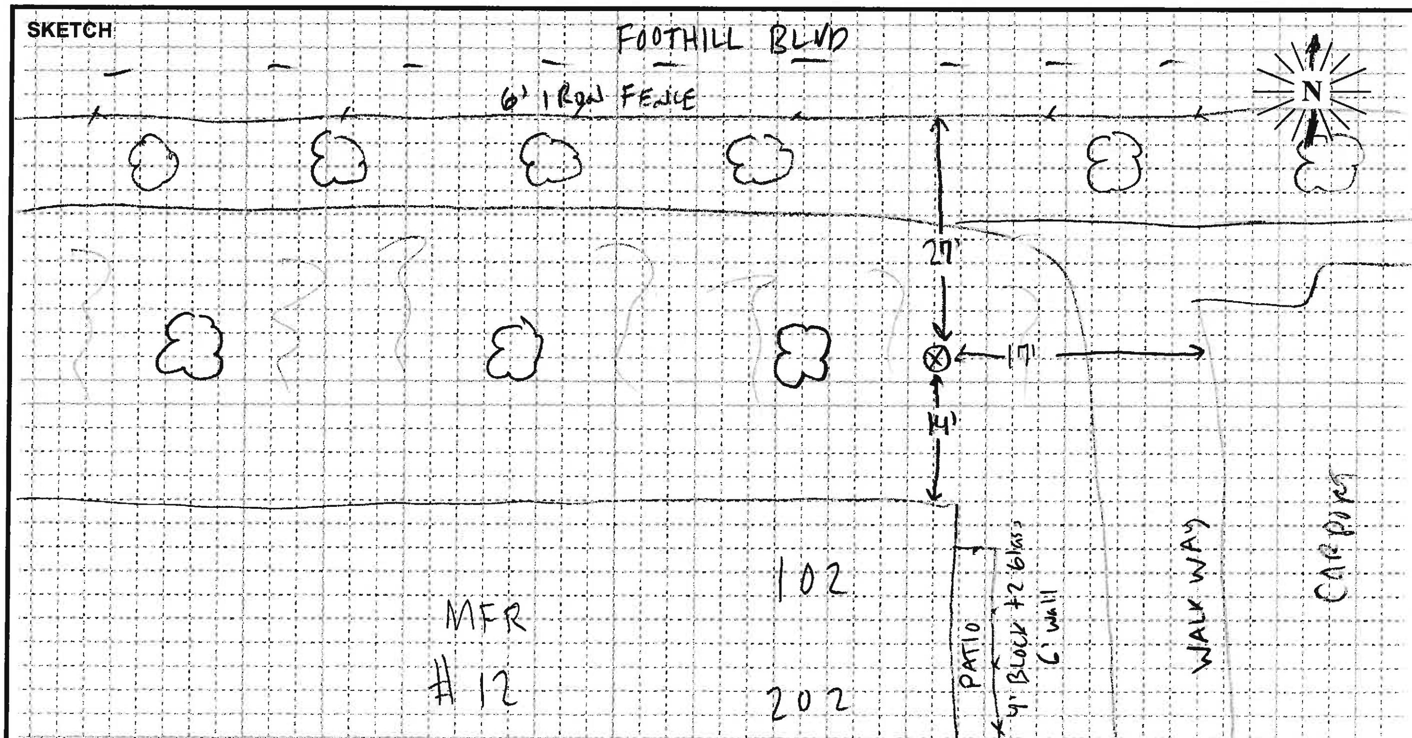
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 75.9 °F R.H.: 100 %
WIND SPEED: 2.4 MPH
TOWARD (DIR): ________
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	15:00	15:20	42.7	44.4	49.8	59.1	62.5	64.9	69.9	75.8	61.4	
	15:20	15:40	43.7	44.8	49.1	58.6	62.4	65.1	68.9	75.7	61.2	
	15:40	16:00	45.6	47.2	52.4	59.5	62.6	64.7	69.1	81.3	62.1	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: G. Berg

DATE: 6/13/16

MEASUREMENT ADDRESS: 13529 Foothill Blvd

CITY: Fontana

☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST12

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ________

SERIAL #: 3274

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 74 °F R.H.: 53 %

WIND SPEED: 2 MPH

TOWARD (DIR): ____________

SKIES: Clear

CAMERA ____________

PHOTO NOs. ____________

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2749

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0, 114.0, 47.7, 1501

After 114.0, 114.3, –, 1603

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

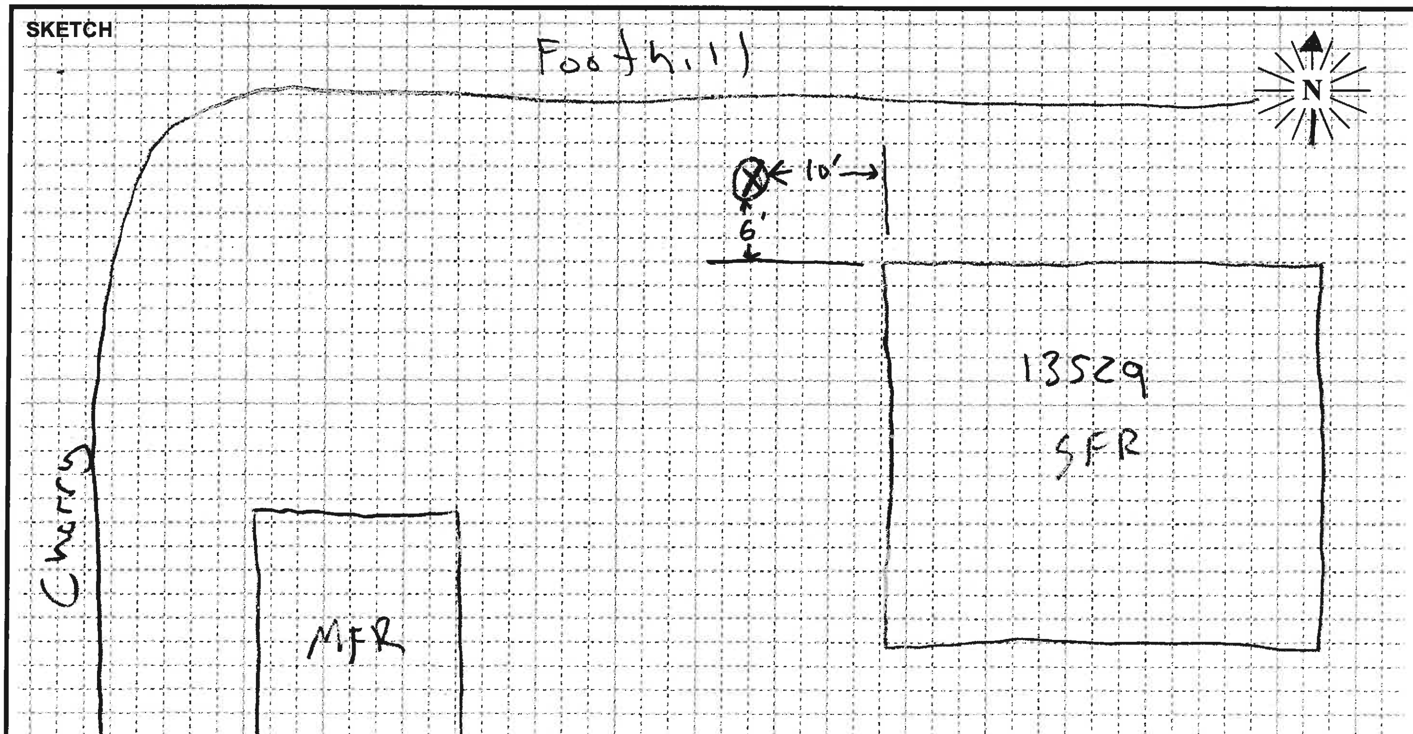
NOTES:

Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/13	1500	1520	46.2	47.1	52.3	62.9	67.4	70.3	76.6	80.6	66.6	Store 58
6/13	15:20	15:40	46.7	48.4	53.8	64.1	68.0	70.5	78.1	91.7	69.0	
6/13	15:40	16:00	47.3	49.6	53.3	63.4	67.7	70.4	73.9	77.0	66.2	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: G. Berg		DATE: 6/14/16
MEASUREMENT ADDRESS: 14622 Foothill Blvd	CITY: Fontana	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST13

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ________
SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2749
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.0 / -47.8 / 7:58
After 114.0 / 113.8 / — / 10:48

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

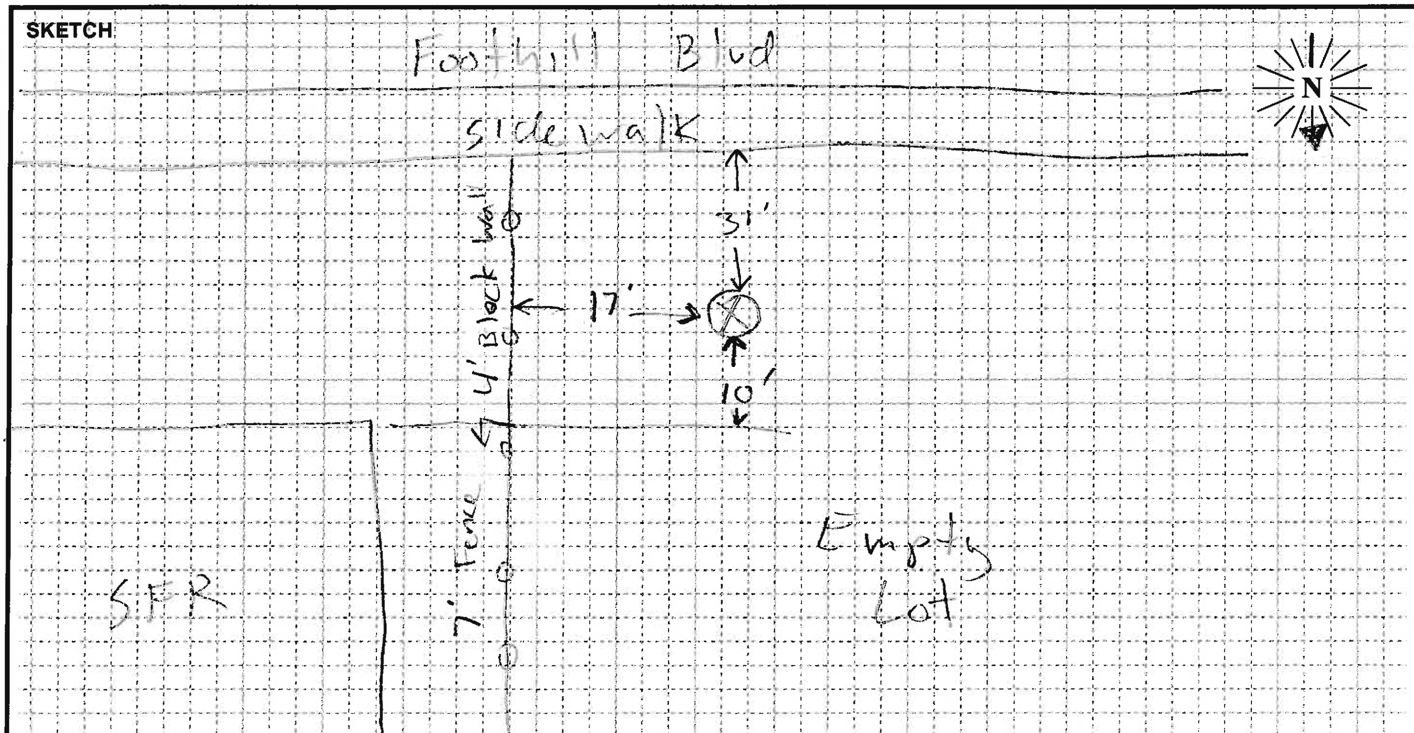
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 65 °F R.H.: 69 %
WIND SPEED: 1 MPH
TOWARD (DIR): ____________
SKIES: Cloudy
CAMERA ____________
PHOTO NOs. ____________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	8:00	8:20	50.2	51.1	52.9	58.8	64.3	67.1	71.4	75.4	63.0	Store 59
6/14	8:20	8:40	45.9	47.0	50.8	59.5	64.1	67.2	71.9	78.5	63.2	
6/14	8:40	9:00	44.1	45.2	49.5	59.1	64.4	67.4	71.8	75.7	63.2	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/14/16

MEASUREMENT ADDRESS: 15211 E FOOTHILL BLVD LA VILLA MOTEL

CITY: FONTANA

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST14

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______

SERIAL #: 1938

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 70 °F **R.H.:** 100 %

WIND SPEED: 0.5 MPH

TOWARD (DIR): ______

SKIES: Overcast

CAMERA Ruben Phone

PHOTO NOs. ______

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______

S/N 2480

Freq, Hz. ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.9 / 8.2 / 7:50 am

After 114.0 / 113.9 / 8.2 / 9:01 am

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

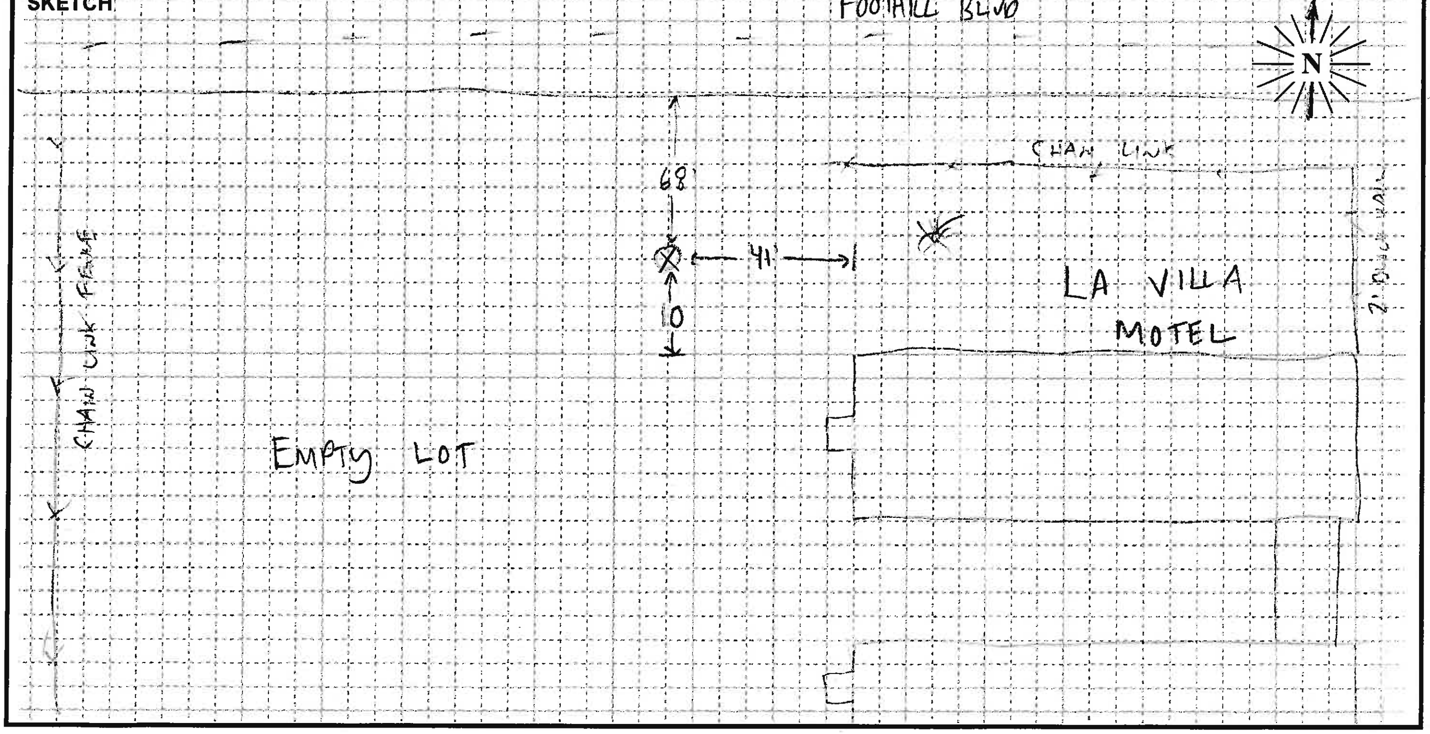
NOTES:

Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	8:00	8:20	40.3	42.2	50.8	63	66.8	68.8	72.7	77.6	65.1	
	8:20	8:40	41.6	42.2	49.8	61.4	64.9	67.7	72.3	76.9	63.9	
	8:40	9:00	41.7	50.8	51.9	58.5	61.3	63	64	76.7	64.7	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 6/14/16

MEASUREMENT ADDRESS: 16270 E FOOTHILL BLVD

CITY: FONTANA

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST15

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ____________

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2480

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.9 / 8.2 / 9:14am

After 114.0 / 113.9 / 8.2 / 10:22am

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 69.3 °F R.H.: 100 %

WIND SPEED: 0.3 MPH

TOWARD (DIR): ________________

SKIES: CLEAR

CAMERA Ruben Phone

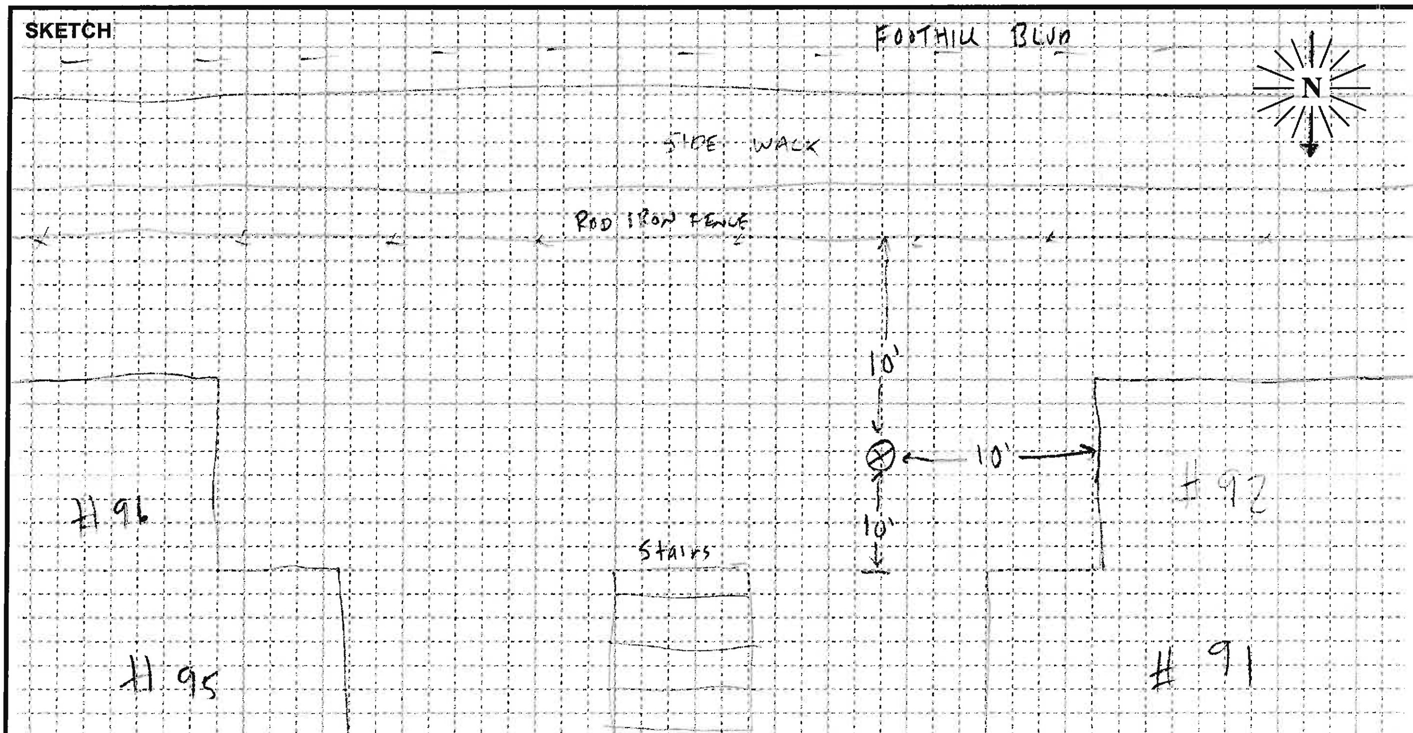
PHOTO NOs. ________________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	9:20	9:40	43.3	45.2	49.8	63.5	67.8	70.1	74.6	77.8	66.2	
	9:40	10:00	43.7	45.1	48.4	62.4	67.4	69.7	74	80.6	65.8	
	10:00	10:20	46.1	49.4	55.3	63.9	67.6	69.9	74.5	78.5	66.3	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector
ENGINEER: G. Bera
DATE: 6/14/16

MEASUREMENT ADDRESS: 8153 Date St
CITY: Fontana
☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial
SITE NO.: ST16

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ____
SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ____
SERIAL #: 3274

NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 73 °F R.H.: 58 %
WIND SPEED: 1 MPH
TOWARD (DIR): ____
SKIES: CLEAR
CAMERA ____
PHOTO NOs. ____

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ____
S/N 2749
Freq, Hz. ☒ 250 ☐ 1000 ☐ 84 ☐ ____

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0, 114.0, -47.8, 7:58
After 114.0, 113.8, —, 10:48

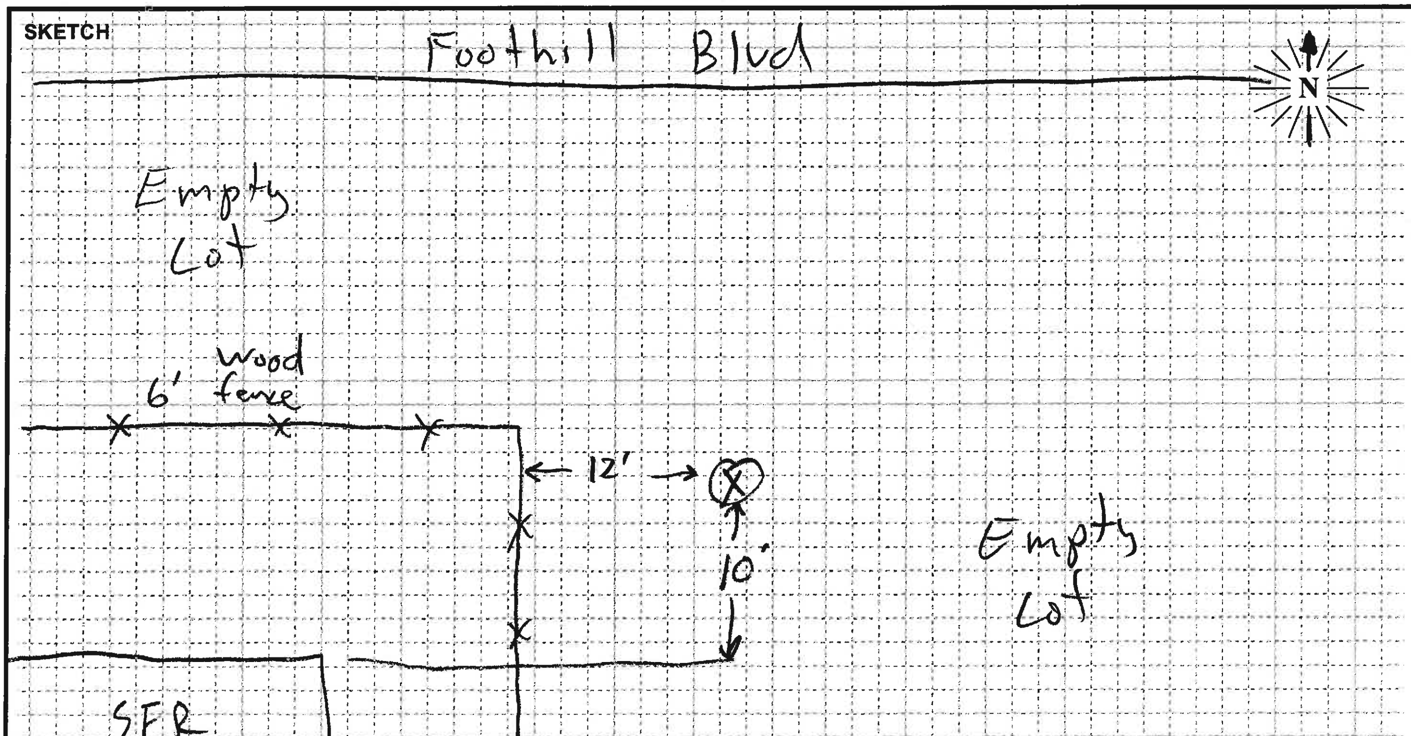
METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

NOTES: Dist. to Center ____ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	9:20	9:40	41.3	43.8	46.2	51.0	53.7	55.9	60.9	66.2	52.9	Store 60
6/14	9:40	10:00	41.0	42.5	45.8	50.9	53.6	56.1	60.9	67.4	53.0	
6/14	10:00	10:20	40.6	43.1	46.3	51.4	53.9	55.9	60.7	64.4	53.0	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**	ENGINEER: UREÑA
DATE: 6/14/16	SITE NO.: ST 17
MEASUREMENT ADDRESS: 16809 PAINE St	CITY: FONTANA

☒ Single-Family ☐ Recreational ☐ Multi-Family ☐ Commercial

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 1939

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2480
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 113.9 / 8.2 / 10:48am
After 114.0 / 113.9 / 8.2 / 12:05

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☒ 1/3 OCT ☐ L_N PERCENTILE VALUES

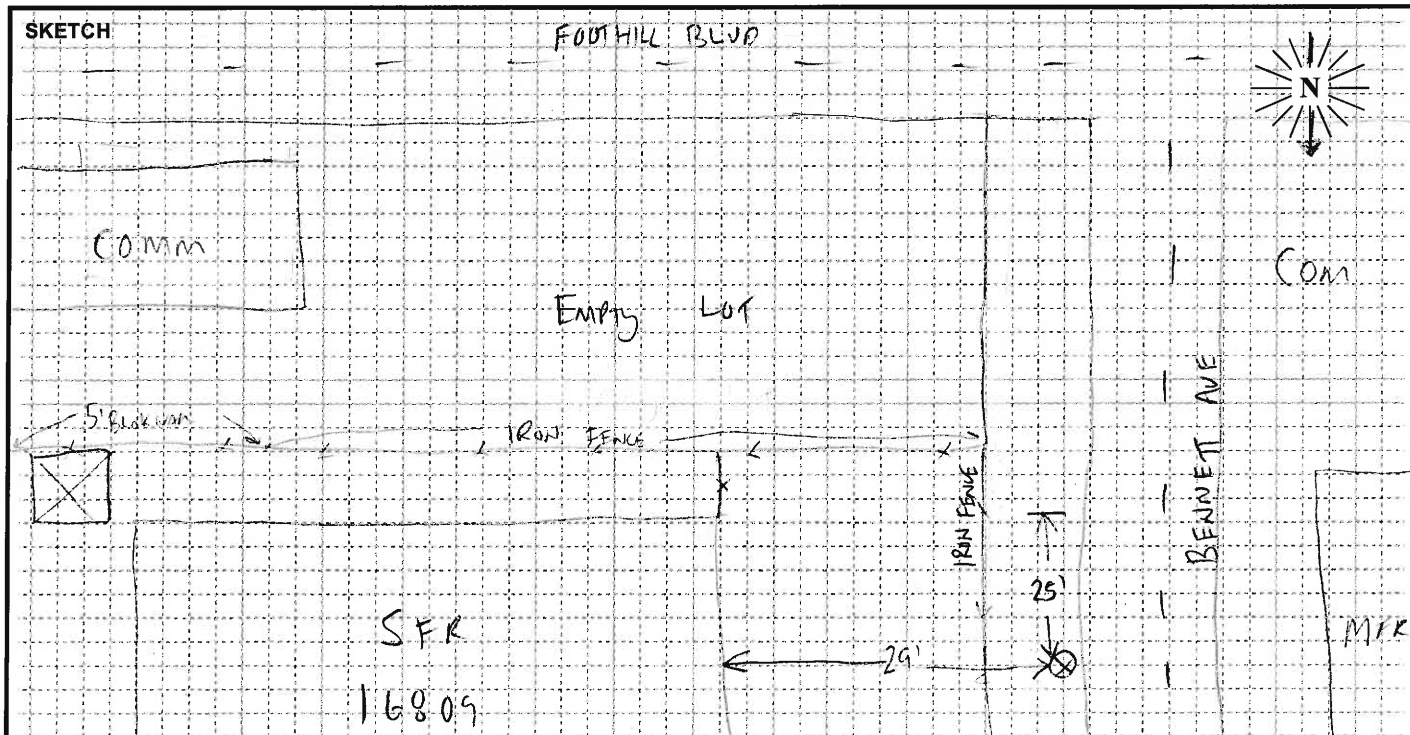
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 77.3 °F R.H.: 100 %
WIND SPEED: 1.6 MPH
TOWARD (DIR): ______
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	11:00	11:20	43.5	45.6	47.1	50.8	54.7	61.3	67.4	69.7	56.8	
	11:20	11:40	45.1	45.6	47.8	50.3	52.1	54.1	62.4	68.4	52.8	
	11:40	12:00	45.8	46.3	48	51	53.5	56	64.1	70.7	53.9	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: OREJOA	DATE: 6/29/16
MEASUREMENT ADDRESS: PLAZA AT SIERRA 16901-16921 ORANGE WAY	CITY: FONTANA	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST18

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☐ LD-824 ☒ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 0639

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1891

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2479
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

	Input, dB / Reading, dB / Offset, dB / Time
Before	114.0 / 113.8 / 7.4 / 12:56
After	114.0 / 113.6 / 7.4 / 14:05

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

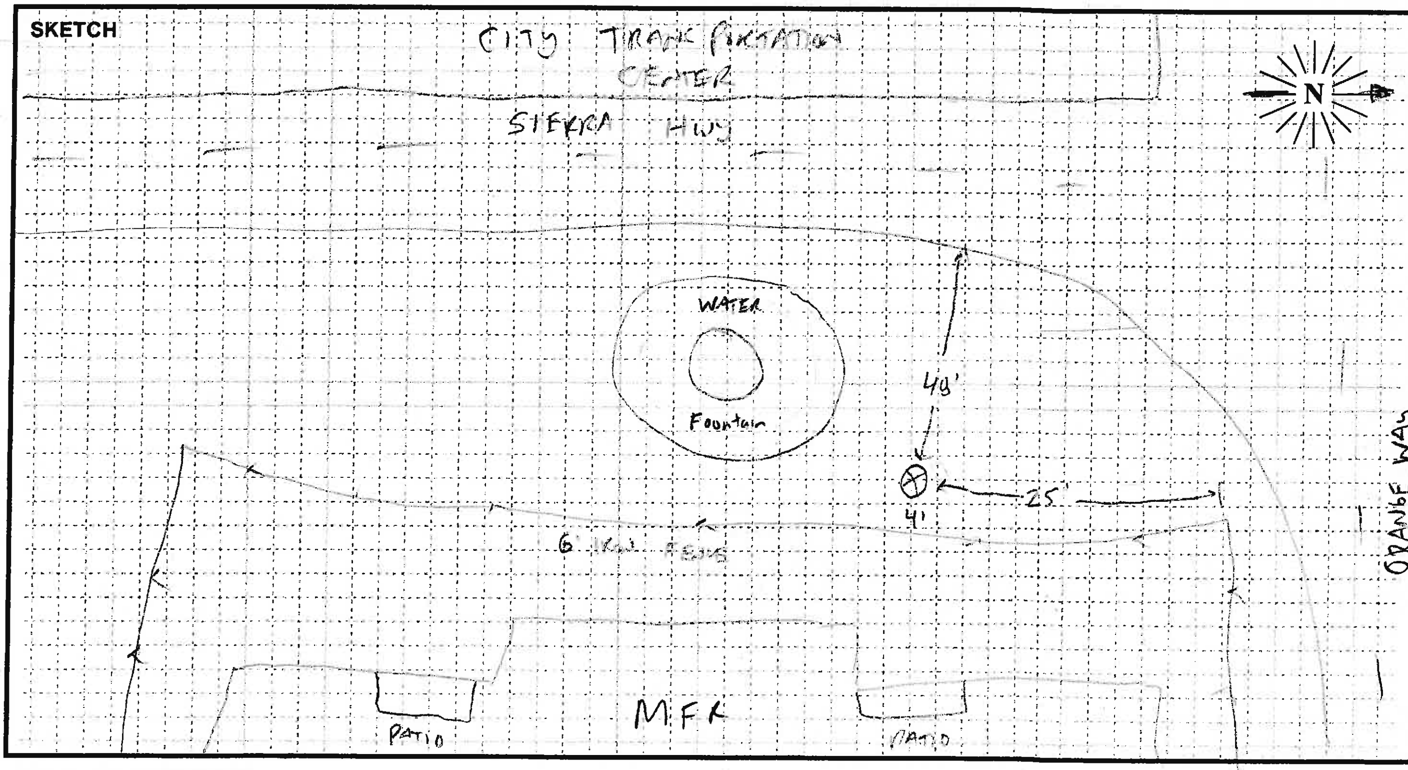
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 104 °F R.H.: 29.2 %
WIND SPEED: 0.7 MPH
TOWARD (DIR): ________
SKIES: CLEAR
CAMERA: RUBEN PHONE
PHOTO NOs. ________

NOTES:
Dist. to Center ________ ☐ Video ☐ Radar
Counts: AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/29	13:00	13:20	59.6		61	65.7	68.5	71.5		99.6	76.1	13:05 TRAIN
	13:20	13:40	59.8		60.7	64.6	67	69.3		79.5	66.2	
	13:40	14:00	59.8		60.6	64.8	67.1	69.2		96.3	70.5	13:49 TRAIN

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: G. Berg	DATE: 6/14/16
MEASUREMENT ADDRESS: 16780 Valley Blvd	CITY: Fontana	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST19

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______

SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ______

SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

S/N 2749

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.8 / — / 10:48

After 114.0 / 113.7 / — / 15:01

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 76 °F R.H.: 53 %

WIND SPEED: 2 MPH

TOWARD (DIR): ______

SKIES: Clear

CAMERA ______

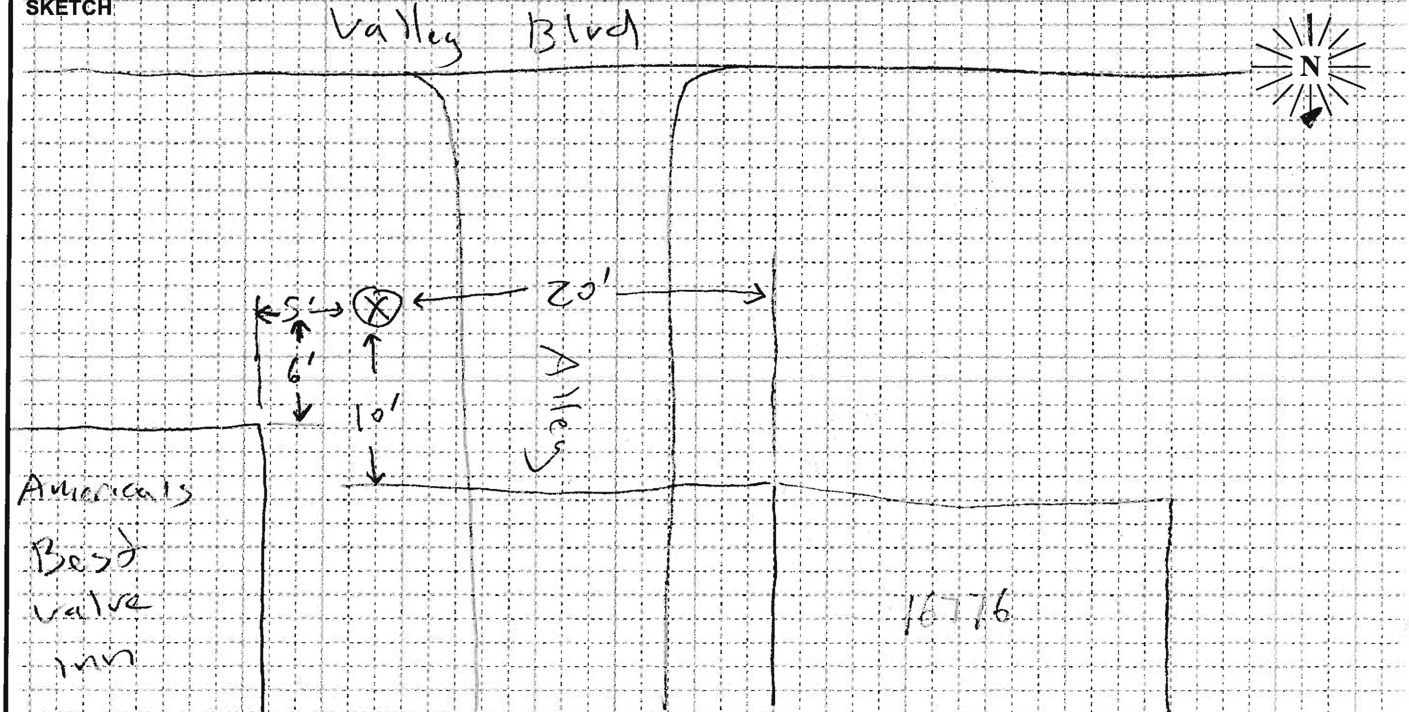
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	12:40	13:00	57.9	58.3	59.7	62.9	66.6	69.0	73.8	84.4	65.9	
6/14	13:00	13:20	55.1	55.6	58.2	62.1	65.5	69.0	73.6	83.9	65.6	
6/14	13:20	13:40	54.8	55.4	57.4	62.0	65.8	68.7	74.0	79.2	65.3	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**

ENGINEER: URENDA

DATE: 6/14/16

MEASUREMENT ADDRESS: 10033 Juniper Ave

CITY: FONTANA

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST20

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2480

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.8 / 8.2 / 12:58

After 114.0 / 113.8 / 8.2 / 14:04

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 78.1 °F R.H.: 62 %

WIND SPEED: 1.5 MPH

TOWARD (DIR): ________

SKIES: CLEAR

CAMERA Ruben Phone

PHOTO NOs. \

NOTES:

Dist. to Center ________

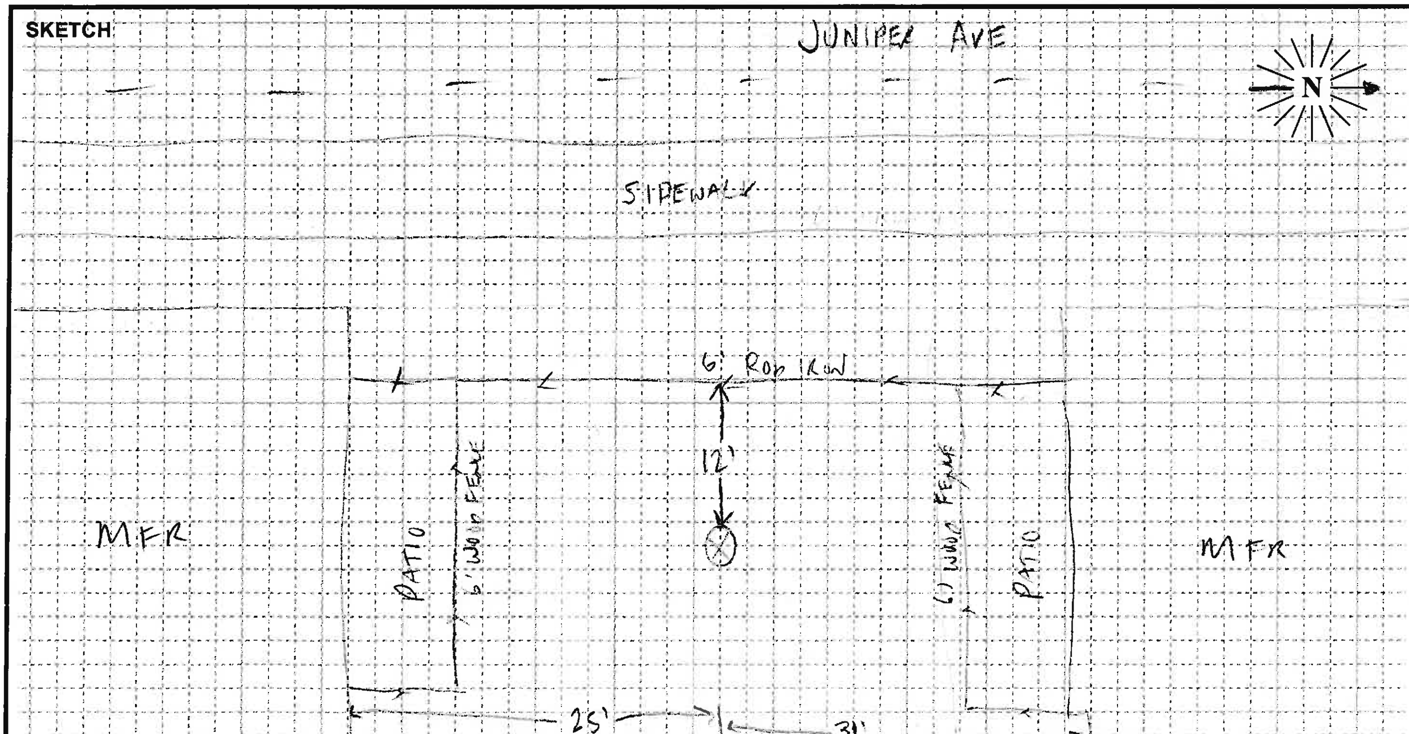
☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	13:00	13:20	48.4	49.3	51.3	55.6	58.6	61.2	68.5	76.6	58.6	
	13:20	13:40	48.4	48.8	51.4	55.8	58.5	60.8	73	80.5	60.4	
	13:40	14:00	50.6	51.1	53.1	57	59.4	61.3	68.9	73.1	59.1	

SKETCH:



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**

ENGINEER: G. Berg

DATE: 6/14/16

MEASUREMENT ADDRESS: 9910 Juniper

CITY: Fontana

☐ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST21

SOUND LEVEL METER: ☐ LD-870 ☐ LD-820 ☐ LD-LxT ☒ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______

SERIAL #: 3119

MICROPHONE: ☐ NON-POLAR ☒ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 52820

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☒ LD-902 ☐ ______

SERIAL #: 3274

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______

S/N 2749

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 , 113.8 , — , 10:48

After 114.0 , 113.7 , , 15:01

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 80 °F R.H.: 45 %

WIND SPEED: 2 MPH

TOWARD (DIR): ______

SKIES: Clear

CAMERA ______

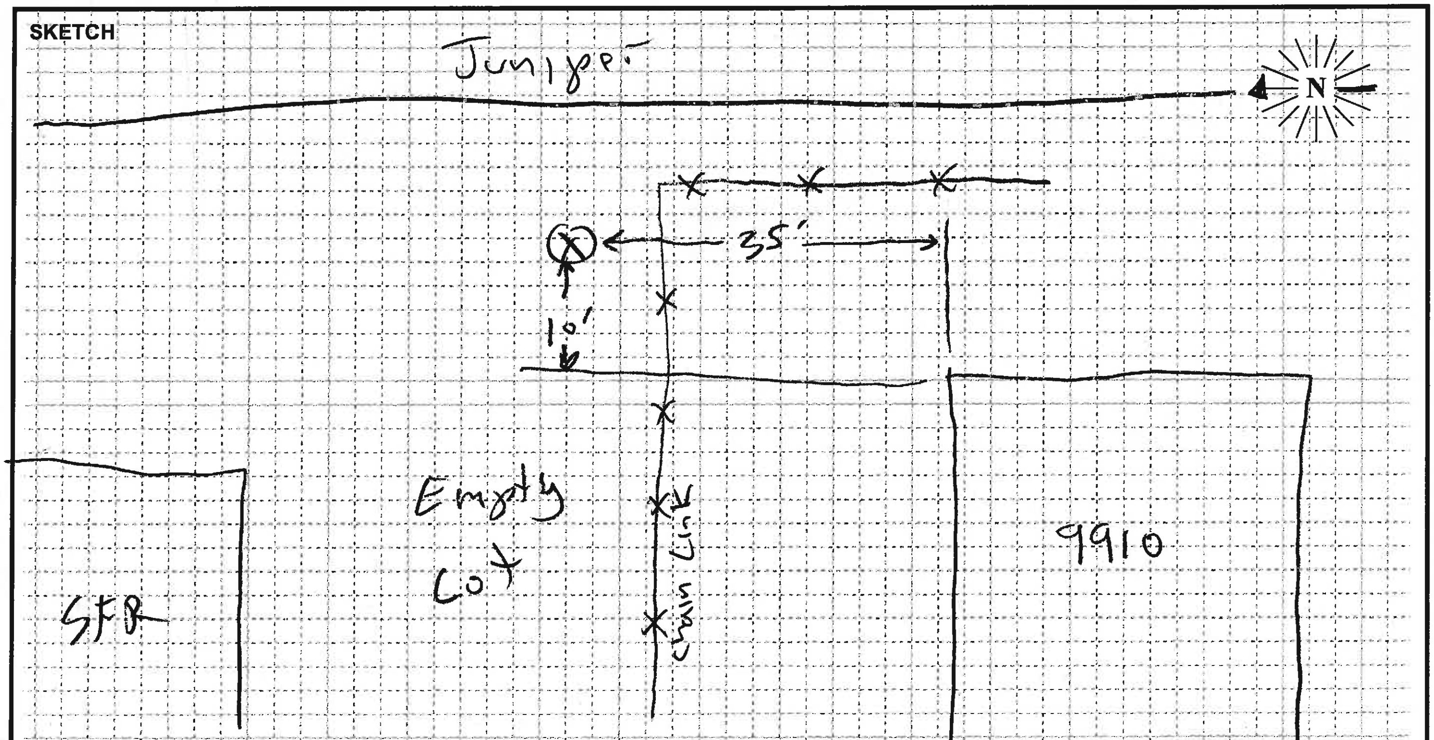
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	14:00	14:20	50.0	51.0	53.1	58.2	61.6	64.4	69.9	78.8	61.3	Store 62
6/14	14:20	14:40	50.8	51.2	52.7	57.3	61.0	65.2	69.3	71.1	60.8	
6/14	14:40	15:00	51.8	52.2	53.7	58.0	61.2	64.5	71.7	79.0	61.7	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**		ENGINEER: Urenda	DATE: 6/14/16
MEASUREMENT ADDRESS: Juniper Village 16700 Marygold Ave	CITY: Fontana	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST22

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 1938

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2480

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.8 / 8.2 / 16:37

After 114.0 / 113.9 / 8.2 / 17:42

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 78.9 °F R.H.: 60 %

WIND SPEED: 3.9 MPH

TOWARD (DIR): ________

SKIES: Clear

CAMERA Ruben Phone

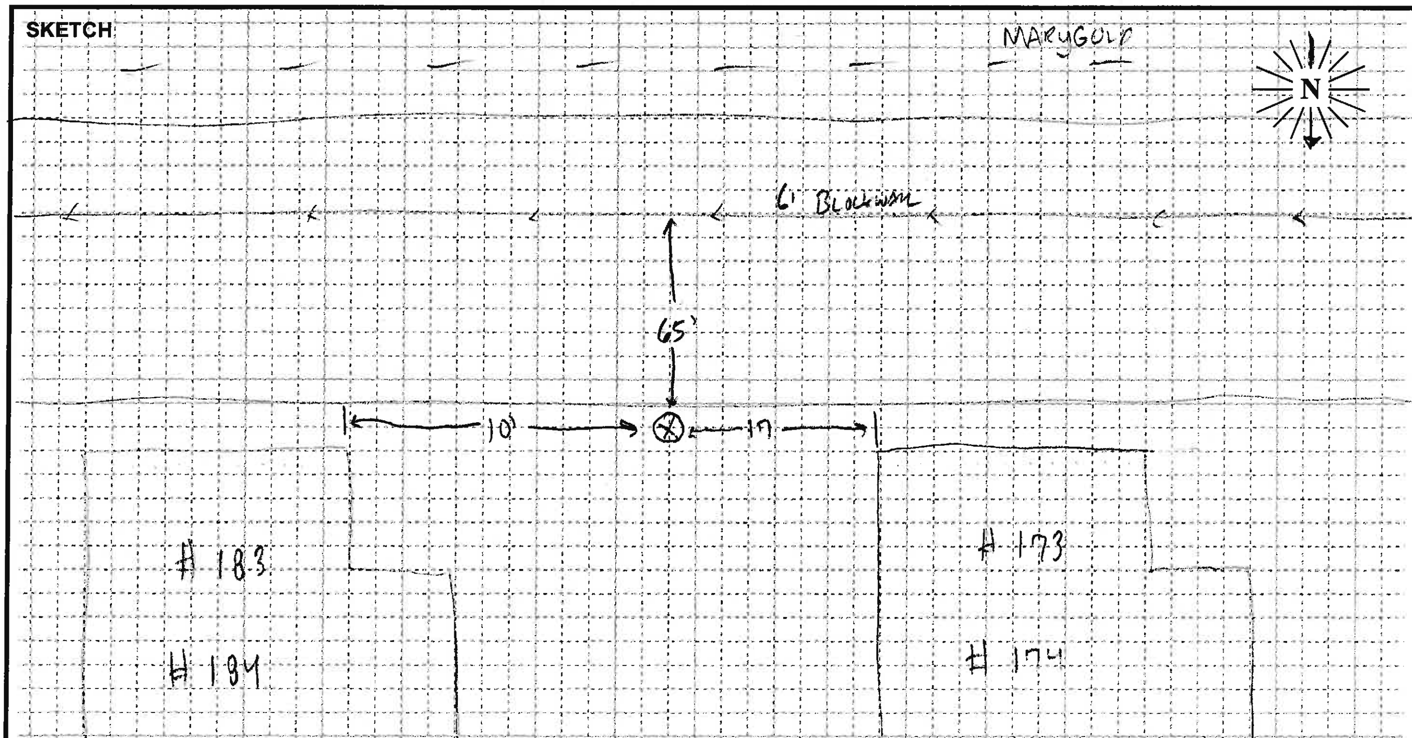
PHOTO NOs. ________

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
6/14	16:40	17:00	49.2	49.8	51.3	53.6	55.1	56.9	61.8	69.4	54.8	
	17:00	17:20	50	51.1	52.6	54.5	55.6	57	65.1	72.5	56.1	
	17:20	17:40	50.2	50.7	52.6	54.5	55.1	56.8	62.6	68.7	55.4	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: **Omnitrans West Valley Connector**

ENGINEER: URENDA

DATE: 10/5/16

MEASUREMENT ADDRESS: 9494 HAVEN AVE UNIVERSITY TECHNICAL INSTITUTE

CITY: RANCHO CUCAMONGA

☐ Single-Family ☐ Multi-Family ☐ Recreational ☒ Commercial ✕ SCHOOL

SITE NO.: ST23

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 2330

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________

S/N 2127

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 8.8 / 12:29

After 114.0 / 113.9 / 8.8 / 14:13

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 72.1 °F R.H.: 49.3 %

WIND SPEED: 2.0 MPH

TOWARD (DIR): ________

SKIES: CLEAR

CAMERA RUBEN

PHOTO NOs. ________

NOTES:

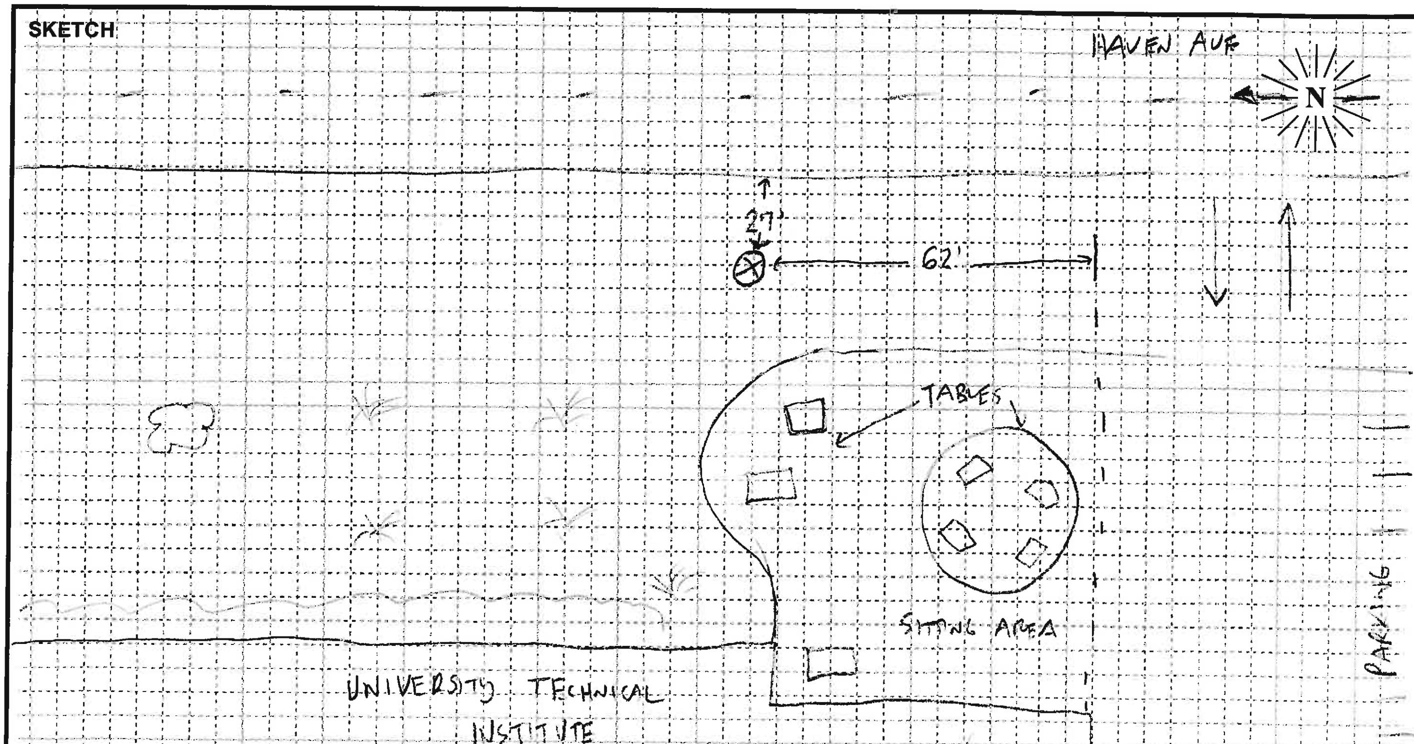
Dist. to Center ______ ☐ Video ☐ Radar

Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/5	12:40	1:00	48.4	49.8	55.1	63.7	67.3	69.7	74.8	85.4	66.7	LOUD MOTORCYCLE = LMAX
	1:00	1:20	48.6	49.8	53.9	63	67.9	70.8	74.5	79.1	66.5	
	1:20	1:40	48.9	49.7	54.1	63.4	67.6	70.2	74.5	77.4	66.3	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector

ENGINEER: URENDA

DATE: 10/5/16

MEASUREMENT ADDRESS: UNIT # 597 TIERRA VISTA 11660 CHURCH ST HOMECOMING AT

CITY: RANCHO CUCAMONGA

☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial

SITE NO.: ST24

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ____

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ____

SERIAL #: 2330

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 78.6 °F **R.H.:** 43.8 %

WIND SPEED: 1.8 MPH

TOWARD (DIR): ____

SKIES: CLEAR

CAMERA: RUBEN PHONE

PHOTO NOs. ____

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ____

S/N 2127

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ____

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.9 / 8.8 / 14:13

After 114.0 / 113.8 / 8.8 / 15:41

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

NOTES: BLOCKWALL STEPS UP 3'-4"

Dist. to Center ____

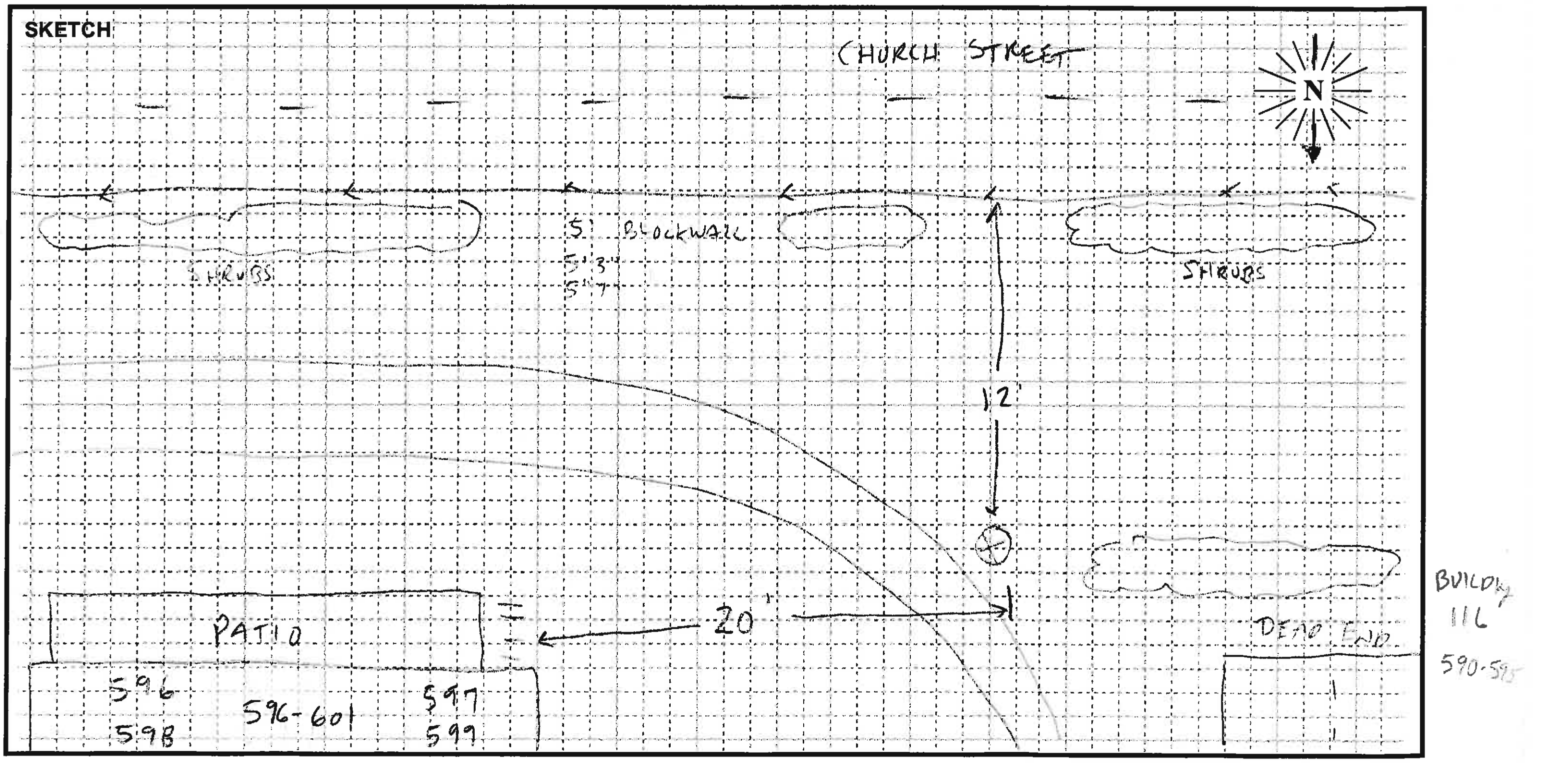
☐ Video ☐ Radar

Counts: AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/5	14:20	14:40	43.1	43.4	49.1	57.9	61	63	64.8	66.6	59.3	14:40-15:00 METER BATT DIED
	15:00	15:20	41.5	43.2	50.5	59.1	61.4	63	65.8	67.9	59.8	
	15:20	15:40	43.1	44.9	50.6	58.1	61.3	63.1	65.9	70.8	59.6	

SKETCH



PARSONS Building 117

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector		**ENGINEER:** Urena	**DATE:** 10/6/16
MEASUREMENT ADDRESS: 7686 Hyssop Dr	**CITY:** Rancho Cucamonga	☒ Single-Family ☐ Multi-Family ☐ Recreational ☐ Commercial	**SITE NO.:** ST25

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 2330

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2127

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:

	Input, dB / Reading, dB / Offset, dB / Time
Before	114.0 / 114.0 / 8.8 / 10:12
After	114.0 / 113.7 / 8.8 / 11:28

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations at start of measurement)

TEMP: 77.5 °F **R.H.:** 52.6 %

WIND SPEED: 0.6 MPH

TOWARD (DIR): ________

SKIES: CLEAR

CAMERA RUBEN PHONE

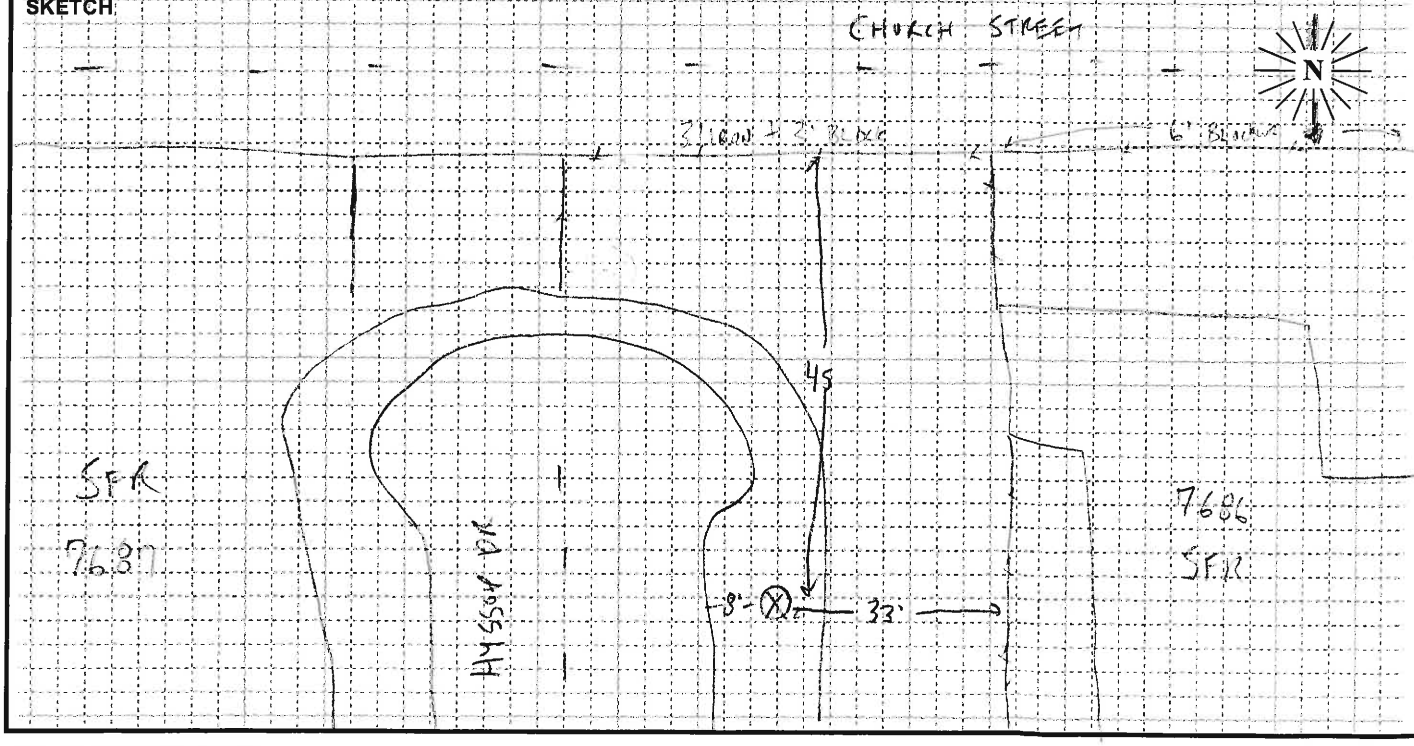
PHOTO NOs. ________

NOTES: **Dist. to Center** ______ ☐ Video ☐ Radar **Counts** AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/6	10:20	10:40	444	45	49.9	62.7	67.2	69.7	72.2	73.8	65.3	
	10:40	11:00	43.8	44.7	48.0	58.6	62.5	65.3	70.7	72.4	61.5	
	11:00	11:20	45	45.6	48.1	58.1	61.9	63.9	66.9	71.4	60.1	

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: Omnitrans West Valley Connector		ENGINEER: URENDA	DATE: 10/6/16
MEASUREMENT ADDRESS: AMLI VICTORIA ARBORS	CITY: RANCHO CUCAMONGA	☐ Single-Family ☒ Multi-Family ☐ Recreational ☐ Commercial	SITE NO.: ST26

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ______
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☐ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ______
SERIAL #: 2330

CALIBRATOR: ☒ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ______
S/N 2127
Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ______

CALIBRATION RECORD:
Input, dB / Reading, dB / Offset, dB / Time
Before 114.0 / 114.1 / 8.8 / 8:46 am
After ____ / ____ / ____ / ____

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

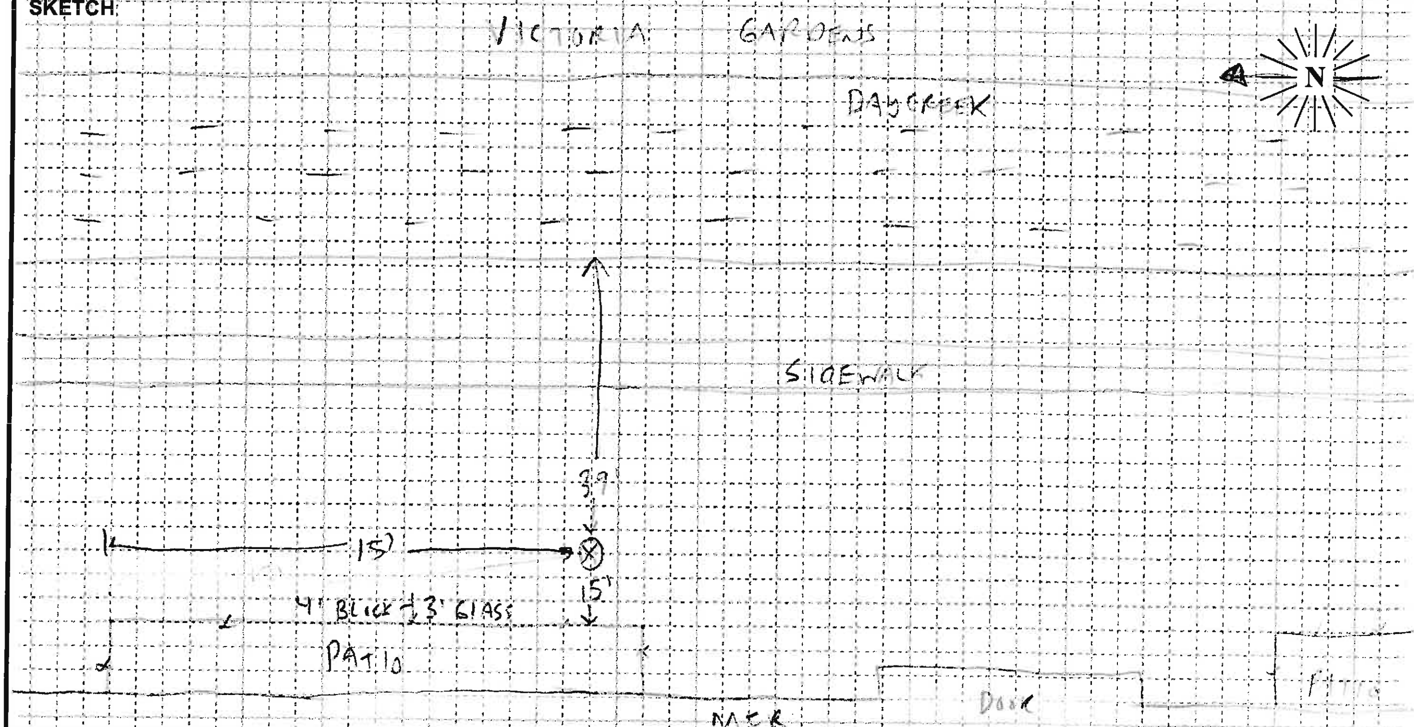
NOTES:
SYSTEM PWR: ☒ BAT ☐ AC
(observations at start of measurement)
TEMP: 66 °F R.H.: 52.9 %
WIND SPEED: 0.9 MPH
TOWARD (DIR): ______
SKIES: CLEAR
CAMERA Ruben Phone
PHOTO NOs. ______

NOTES: Dist. to Center ______ ☐ Video ☐ Radar Counts AT MT HT

MEAS. TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
10/6	9:00	9:20	49.4	50.1	54.4	62.8	66.5	69.7	72.7	74.5	65.3	
	9:20	9:40	50.3	51	53.6	61.1	65.8	69.4	73.2	77.9	64.9	
	9:40	10:00	49.3	49.6	52.5	62.1	66.8	69.3	72.4	75.4	65.1	

SKETCH:



PARSONS

FIELD SURVEY FORM

PROJECT: WVC

ENGINEER: UMENDA

DATE: 2/22/18

MEASUREMENT ADDRESS: 1314 S BON VIEW AVE

CITY: ONTARIO

☒ Single-Family ☐ Multi-Family ☐ School ☐ Recreational ☐ Commercial ☐ Church

SITE NO.: ST27

SOUND LEVEL METER:
☐ LD-870 ☒ LD-820 ☐ LD-LxT
☐ LD-824 ☐ LD-812 ☐ B&K-2250
☐ LD-2900 ☐ ______

SERIAL #: 1616

MICROPHONE:
☒ NON-POLAR ☐ POLARIZED
☒ 1/2-INCH ☐ FREEFIELD
☐ 1-INCH ☐ RANDOM
☒ WIND SCREEN

SERIAL #: 2916

PRE AMP:
☐ LD-900 ☐ LD-LxT
☒ LD-828 ☐ ZC-0032
☐ LD-902 ☐ ______

SERIAL #: 2330

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations during measurement)

TEMP: 47.5 °F **R.H.:** 30.4 %

WIND SPEED: 1.5 MPH

TOWARD (DIR): ______

SKIES: CLOUDY

CAMERA RUBEN PHONE

☐ VIDEO ☐ RADAR

CALIBRATOR:
☒ LD CA250 ☐ LD CA200
☐ B&K 4231 ☐ ______
S/N 2127

Freq, Hz.
☒ 250
☐ 1000
☐ 84
☐ ______

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 114.0 / 8.4 / 7:40am

After 114.0 / 113.7 / — / 8:50am

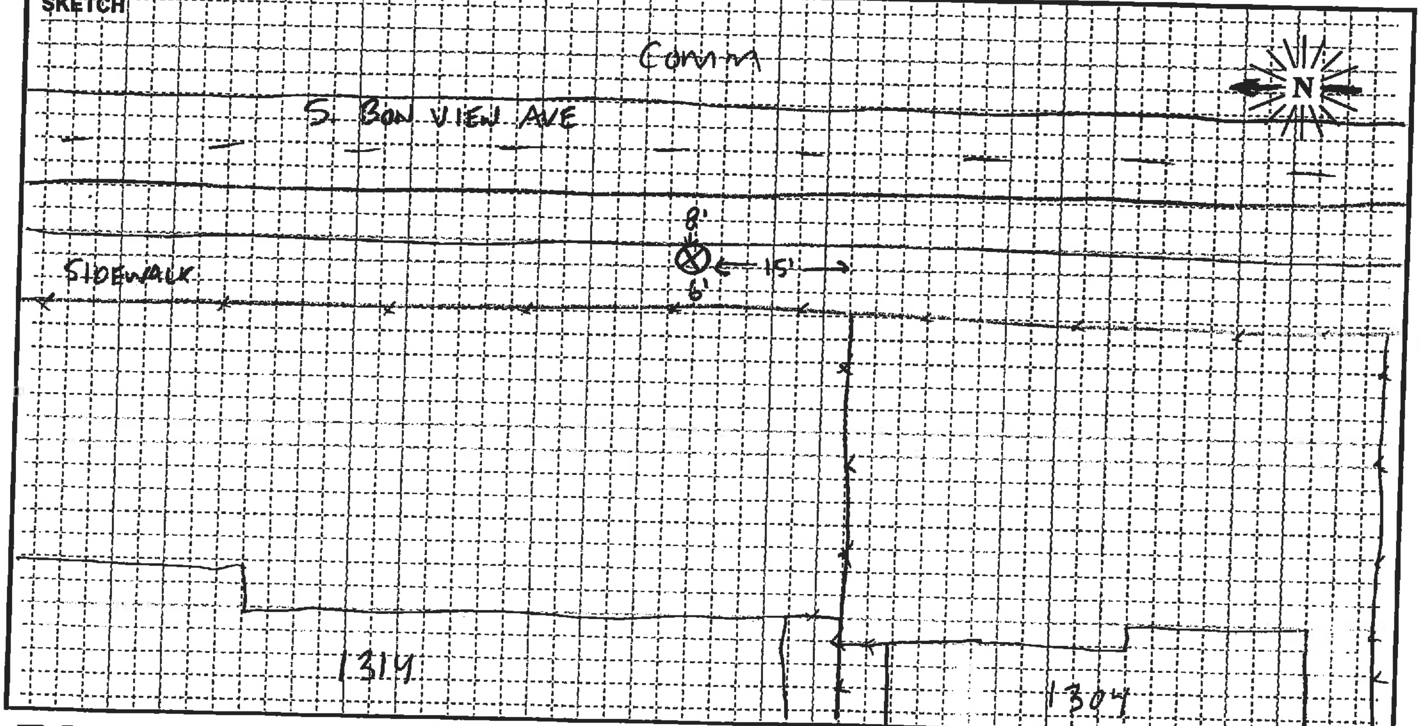
METER SETTINGS:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

NOTES:

MEASUREMENT TYPE:
☐ Long Term
☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
2/22	8:00	8:20	42.8	44.1	47.2	59.8	67.3	71.8	80.1	89.6	68.7	PLANE 8:07-8:09 TRASH TRUCK 8:14-8:15
	8:20	8:40	43.5	44.1	46.9	58.8	66.0	71.6	78.8	82.7	67.4	TRAIN 8:24-8:25 8:36-8:37 PLANE 8:31-8:32 8:34-8:35
	8:40	9:00	44.3	44.9	46.9	59.4	65.1	70.6	77.8	81.9	66.6	TRAIN 8:47-8:49 TIRE NOISE 8:44am

SKETCH



PARSONS

FIELD SURVEY FORM

PROJECT: WVC

ENGINEER: Urenda

DATE: 2/22/18

MEASUREMENT ADDRESS: 1314 S Bon View Ave

CITY: Ontario

- [x] Single-Family
- [ ] Multi-Family
- [ ] School
- [ ] Recreational
- [ ] Commercial
- [ ] Church

SITE NO.: ST27

SOUND LEVEL METER:
- [ ] LD-870
- [x] LD-820
- [ ] LD-LxT
- [ ] LD-824
- [ ] LD-812
- [ ] B&K-2250
- [ ] LD-2900
- [ ] ________

SERIAL #: 1616

MICROPHONE:
- [x] NON-POLAR
- [ ] POLARIZED
- [x] 1/2-INCH
- [ ] FREEFIELD
- [ ] 1-INCH
- [ ] RANDOM
- [x] WIND SCREEN

SERIAL #: 2916

PRE AMP:
- [ ] LD-900
- [ ] LD-LxT
- [x] LD-828
- [ ] ZC-0032
- [ ] LD-902
- [ ] ________

SERIAL #: 2330

CALIBRATOR:
- [x] LD CA250
- [ ] LD CA200
- [ ] B&K 4231
- [ ] ________

S/N 2127

Freq, Hz.
- [x] 250
- [ ] 1000
- [ ] 84
- [ ] ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.9 / 8.4 / 11:45am

After 114.0 / 113.6 / — / 13:02

METER SETTINGS:
- [x] A-WTD
- [ ] LINEAR
- [x] SLOW
- [ ] 1/1 OCT
- [x] INTERVALS 20 - MINUTE
- [ ] C-WTD
- [ ] IMPULSE
- [ ] FAST
- [ ] 1/3 OCT
- [ ] L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: [x] BAT [ ] AC

(observations during measurement)

TEMP: 62.7 °F R.H.: 43 %

WIND SPEED: 2.5 MPH

TOWARD (DIR): ________

SKIES: Cloudy

CAMERA Ruben Phone

- [ ] VIDEO
- [ ] RADAR

NOTES:

MEASUREMENT TYPE:
- [ ] Long Term
- [x] Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
2/22	12:00	12:20	45.5	46.2	48.3	58.7	65.6	70.4	78.1	83.0	66.5	TRASH TRUCK 12:03-12:04 PLANE 12:07-12:09
	12:20	12:40	46.5	47.5	50.0	60.8	66.1	70.0	76.0	81.9	66.0	PLANE 12:29-12:30 12:32-12:33
	12:40	13:00	45.9	46.4	49.5	58.3	65.4	70.5	77.0	83.1	66.4	PLANE 12:43-12:44

SKETCH

See 8:00 Sketch

N

PARSONS

FIELD SURVEY FORM

PROJECT: WVC

ENGINEER: URENDA

DATE: 2/22/18

MEASUREMENT ADDRESS: 1314 S Bon View Ave

CITY: Ontario

☒ Single-Family ☐ Multi-Family ☐ School ☐ Recreational ☐ Commercial ☐ Church

SITE NO.: ST27

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________

SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN

SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________

SERIAL #: 2330

NOTES:

SYSTEM PWR: ☒ BAT. ☐ AC

(observations during measurement)

TEMP: 66 °F R.H.: 31 %

WIND SPEED: 3.3 MPH

TOWARD (DIR): ________

SKIES: Cloudy

CAMERA: Ruben Phone

☐ VIDEO ☐ RADAR

CALIBRATOR: ☒ LD CA250 ☒ LD CA200 ☐ B&K 4231 ☐ ________ S/N ________

Freq, Hz.: ☒ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0 / 113.7 / 8.4 / 15:47

After 114.0 / 113.8 / — / 17:04

METER SETTINGS: ☒ A-WTD ☐ C-WTD ☐ LINEAR ☐ IMPULSE ☒ SLOW ☐ FAST ☐ 1/1 OCT ☐ 1/3 OCT ☒ INTERVALS 20 - MINUTE ☐ L_N PERCENTILE VALUES

NOTES:

MEASUREMENT TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
2/22	16:00	16:20	47.4	48.3	55.4	64.5	67.9	72.0	79.0	83.8	68.6	Plane 16:18 – 16:19
	16:20	16:40	48.2	49.4	53.1	62.8	66.7	70.2	77.2	82.9	66.7	
	16:40	17:00	47.5	48.4	52.0	60.3	65.0	68.8	77.6	87.0	66.3	

SKETCH

See 8:00 sketch

N

PARSONS

FIELD SURVEY FORM

PROJECT: WVC
ENGINEER:
DATE: 2/23/18

MEASUREMENT ADDRESS: 1455 S. CUCAMONGA AVE
CITY: ONTARIO

☐ Single-Family ☐ Multi-Family ☐ School ☐ Recreational ☒ Commercial ☐ Church

SITE NO.: ST28

SOUND LEVEL METER: ☐ LD-870 ☒ LD-820 ☐ LD-LxT ☐ LD-824 ☐ LD-812 ☐ B&K-2250 ☐ LD-2900 ☐ ________
SERIAL #: 1616

MICROPHONE: ☒ NON-POLAR ☐ POLARIZED ☒ 1/2-INCH ☐ FREEFIELD ☐ 1-INCH ☐ RANDOM ☒ WIND SCREEN
SERIAL #: 2916

PRE AMP: ☐ LD-900 ☐ LD-LxT ☒ LD-828 ☐ ZC-0032 ☐ LD-902 ☐ ________
SERIAL #: 2330

CALIBRATOR: ☐ LD CA250 ☐ LD CA200 ☐ B&K 4231 ☐ ________
S/N 2127

Freq, Hz. ☐ 250 ☐ 1000 ☐ 84 ☐ ________

CALIBRATION RECORD:

Input, dB / Reading, dB / Offset, dB / Time

Before 114.0, 114.1, 84, 7:39am

After 114.0, 113.9, —, 9:02am

METER SETTINGS: ☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS 20 - MINUTE ☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

NOTES:

SYSTEM PWR: ☒ BAT ☐ AC

(observations during measurement)

TEMP: 49.7 °F R.H.: 67.5 %

WIND SPEED: 2.1 MPH

TOWARD (DIR): ________

SKIES: CLOUDY

CAMERA RUBEN PHONE

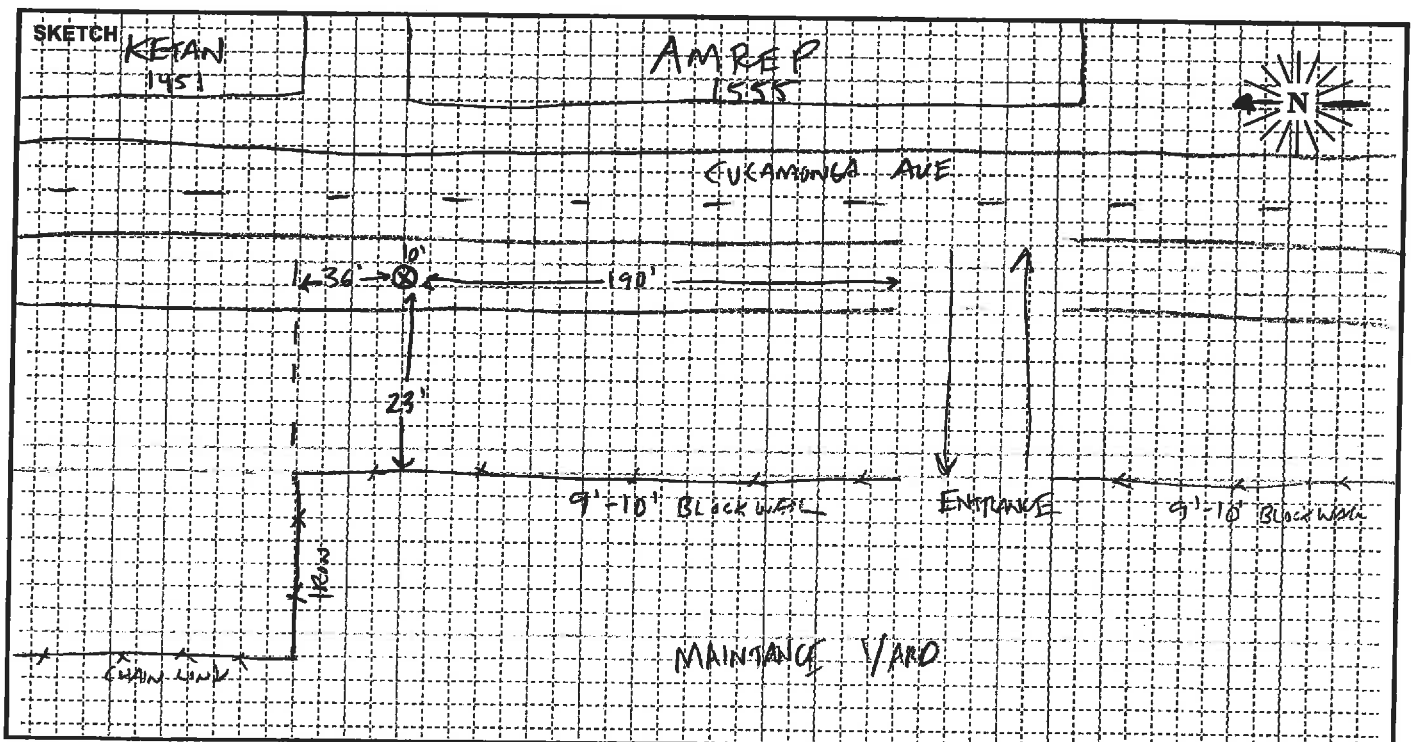
☐ VIDEO ☐ RADAR

NOTES:

MEASUREMENT TYPE: ☐ Long Term ☒ Short Term

DATE	START TIME	STOP TIME	L_{MIN}	L_{99}	L_{90}	L_{50}	L_{25}	L_{10}	L_{01}	L_{MAX}	L_{EQ}	NOTES:
2/23	8:00	8:20	45.2	46.1	49.2	56.0	61.7	66.7	76.7	80.6	63.9	Constant PLANE FLYING BY BACKHOE Honked 8:05 SIREN 8:13
	8:20	8:40	48.5	49.2	51.0	56.4	62.0	66.0	71.6	78.4	62.0	BACKHOE SIRENS, constant PLANE
	8:40	9:00	49.5	50.1	51.7	55.5	60.6	65.6	74.5	79.8	62.7	Consistent PLANE FLYING By BACKHOE SIRENS

SKETCH



PARSONS