TRAFFIC NOISE STUDY REPORT

State Route 118 & State Route 34

In Ventura County

Intersection Improvement

07- Ven-118 PM 10.72/11.80

07-Ven-34 PM 16.80/17.66

EA: 105960

Prepared By:	Fauzia Aziz, T.E.	Date:	Jan 6, 2010
	Inderjit Dhaliwal		
Phone Number	213-897-4253		
Office Name	Noise and Vibration Branch Office of Environmental Engineering and Corridor Studies		
District/Region	District 7		
Supervised By:	Jin S. Lee	Date:	Jan 6, 2010
	Senior T.E.,P.E.,P.M.P.		
Phone Number	213-897-3312		
Office Name	Noise and Vibration Branch Office of Environmental Engineering and Corridor Studies		
District/Region	District 7		

EXECUTIVE SUMMARY

This traffic noise study report evaluates potential traffic noise impacts that may result from the proposed project on the State Route (SR) 118 and State Route (SR) 34, located within the town of Somis in a primarily agricultural area of Ventura County. The project goal is to relieve traffic congestion, reduce delay time, and enhance safety at the intersection. Proposed improvements include modifying the existing intersection configuration, adding auxiliary lanes and turn lanes at the intersection, expanding existing lane lengths, and realigning Donlon Road westerly to replace the existing SR 118/SR 34 "T" intersection with a four-way intersection. The limits of this project are (Post Mile (PM) 10.72/11.80) on (SR118) and (PM 16.80/17.66) on (SR 34).

This traffic noise study report has been prepared to comply with the Code of Federal Regulations Title 23 Part 772, (23CFR772), "Procedures for Abatement of Highway Traffic Noise and Construction Noise", as described in the 2006 Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol).

This noise study report evaluates the entire area within the project limits. This report will be used to provide information for the environmental document that will be prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The physical characteristics of the abatement measures presented in this report are preliminary. If pertinent parameters change substantially during the final project design, the preliminary noise abatement may be changed or eliminated from the final project design. A final decision on the construction of the noise abatement will be made upon completion of the project design and public involvement process.

The SR 118 and SR 34 Intersection Improvement project is considered to fall under the Type I Project category as defined by the Code of Federal Regulations Title 23, Part 772 (23CFR772). A Type I project is defined as follows: a proposed Federal or Federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increase the number of through-traffic lanes.

This noise study was conducted for six Alternatives.

Alternative 1-No Build Alternative

The No-Build Alternative proposes to maintain the existing configuration at the intersection**.**

Alternative 2-Intersection Improvement Alternative

The Intersection Improvement Alternative proposes to widen and add a total of seven lanes at the SR 118/ SR 34 intersection approach. Three turn lanes and one auxiliary lane would be added on SR 118 as part of this proposed alternative. Additional lanes on SR 118 would include the following:

- One right-turn lane and one left-turn lane on eastbound SR 118.
- One left-turn on westbound SR 118 for movements onto southbound
- One auxiliary lane on the east leg of eastbound SR 118 to accommodate movements from northbound SR 34.

An auxiliary lane would also be added on southbound SR 34. Donlon Road would become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed through/left-turn lane at the intersection with SR 118 and the realigned northbound lane would remain a through lane at this location.

The realigned Donlon Road would run west of Coyote Canyon to avoid impacts to the creek at this location. A bridge structure would be constructed to cross over the Coyote Canyon Debris Basin spillway at which point the realigned roadway would reconnect to the existing Donlon Road.

The existing drainage culvert for Coyote Canyon Creek would be extended on both sides of the highway to accommodate the two additional lanes on the east leg of the SR 118. A 120-foot easement into Coyote Canyon is required for the new drainage facility.

Approximately 2.37 acres for roadway and utility relocation are required for the implementation of this project. The amount of farmland required is 1.79 acres and 0.1 acres of open space. Easements are required for utilities, slope and drainage.

Alternative 3- Save Our Somis (SOS) Alternative

The Save Our Somis Alternative proposes to widen and add a total of four lanes at the SR 118 / SR 34 intersection approaches. One right- turn lane and one left- turn lane would be added on eastbound SR 118.

Donlon Road would be realigned to become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed thru/left-turn/right-turn lane at the intersection with SR 118 and the realigned northbound lane would remain a through lane at this location.

The proposed alternative would also expand the existing 140 feet left-turn lane on westbound SR 118 to 556 feet. Also, an additional 200 feet of deceleration length would be included in an open-ended two-way left-turn lane prior to the beginning of the actual left turn-lane.

Approximately 3.33 acres for roadway and 0.44 acres for slope easement would be required for this alternative. The amount of farmland required is 2.3 acre and 0.1 acres of open space. This includes the acquisition of the former Alliance Somis Supply site and the relocation of high-tension power poles of Southern California Edison.

Alternative 4 - Roundabout Alternative

The Roundabout Alternative proposes to combine the two “T” intersections of SR 118/ SR 34 and SR 118/ Donlon Road and construct a roundabout that would replace the existing signalized intersection. Realigned Donlon Road would become the north leg of the roundabout. The roundabout would be constructed west of the existing SR 118/ SR 34 intersection and would consist of a one-way, one-lane circulatory roadway with a width of 24 feet.

The east leg of SR 118 would consist of four lanes, two lanes on eastbound SR 118 and two lanes on westbound SR118. The west leg of SR 118 would consist of three lanes, one lane on eastbound SR 118 and two lanes on westbound SR 118. SR 34 would consist of three lanes, two lanes on northbound SR 34 and 1 lane on southbound SR 34. The realigned Donlon Road would consist of two lanes, one lane on northbound Donlon Road and one lane on southbound Donlon Road.

Approximately 3.33 acres for roadway and 0.44 acres for slope easement would be required for this alternative. The amount of farmland required is 2.3 acre and 0.1 acres of

open space. This includes the acquisition of former Alliance Somis Supply site and the relocation of high-tension power poles of Southern California Edison.

Alternative 5 - Somis Bypass Alternative

The Somis Bypass Alternative proposes to construct a new two-lane roadway that would connect SR 34 to SR 118 approximately one half mile east of the existing SR 118/SR 34 intersection. The new roadway would begin at the southern end of Somis, at the intersection of West Street and SR 34. From this point, the proposed roadway would continue northeast, parallel to the Southern Pacific railroad on the north side of the tracks.

There are two signalized intersections being proposed as part of this alternative. The new intersections would be located at the southern and northern ends of the bypass. The intersection of the bypass with SR 118 would be a "T" intersection and the intersection of the bypass with SR 34 would be a four-way intersection.

The required land (44+ acres) for this alternative is composed of open space, agricultural (majority), residential and commercial land uses with utilities running adjacent to the railroad tracks. A bridge structure would be required for the Coyote Canyon/Fox Barranca area with a large amount of imported material. Also a drainage structure would be required at Sand Canyon.

Alternative 6 - Bridge Alternative

The Bridge Alternative proposes the same intersection improvements as the Intersection Improvement Alternative (Alternative 2).

Additional lanes on SR 118 would include the following:

- One right-turn lane and one left-turn lane on eastbound SR 118 and one left-turn on westbound SR 118 for movements onto southbound SR 34.
- One auxiliary lane on the east leg of eastbound SR 118 to accommodate movements from northbound SR 34.

An auxiliary lane would also be added on SR 34. Donlon Rd. would become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed through/left-turn/right-turn lane at the intersection with SR 118 and the realigned northbound lane would remain a through lane at this location.

Based on the analysis, the proposed project will result in traffic noise impacts at three receivers where noise levels approached the NAC. Also, considered abatement measures in the form of soundwalls were determined to be not reasonable and acoustically not feasible, and therefore, noise abatement measures are not recommended for the proposed project.

A field noise investigation was conducted to determine existing noise levels and gather information to develop and calibrate the traffic noise model that was used for predicting future noise levels. Existing short-term noise levels were recorded at 18 locations. These locations are acoustically representative of the noise environment and land uses within the limits of the project. The existing ambient noise levels measured were between 53 and 67 decibels (dBA). Five long-term (24-hour) noise level readings were conducted to determine the noisiest hour within the project limits. The community background noise levels were taken at 2 locations within the project limits and ranged from 50 to 57 dBA-Leq(h).

Sound level readings, traffic counts and pertinent field data such as traffic flow speed and topography of the locations were used to develop the computer traffic noise model for each analysis site. The computer traffic noise model was then used to predict future noise levels in order to identify traffic noise impacts and recommend abatement for the impacted area. The computer program Traffic Noise Model (TNM 2.5), FHWA's Traffic Noise Prediction Model (FHWA-RD-77-108), was used in this analysis to develop the traffic noise model for both existing and design year conditions. It was determined that traffic noise would increase by 0 to 2 decibels over the existing worst-hour noise levels. The future noise levels have been predicted to be in the range of 53 – 70 dBA-Leq(h). Table 2 in Appendix A provides a summary of the traffic noise modeling results.

The traffic noise analysis indicates that some residences within the project limits will be impacted after project is completed under build Alternatives [i.e. the noise level will approach or exceed FHWA Noise Abatement Criteria (NAC)]. NAC's are given in Table 4-1. Since traffic noise impacts have been identified, noise abatement has been considered for the impacted receivers. As stated in 23 CFR 772 and in Caltrans Protocol, noise abatement is considered where noise impacts are predicted and where frequent human use occurs and where a lowered noise level would be of benefit.

It was determined that feasible traffic noise abatement cannot be provided for the impacted residential land uses within the project limits. The presence of access driveways, local street intersection and commercial developments adjacent to the

impacted area do not allow continuous soundwalls that can provide effective noise reduction. Soundwalls were determined to be not reasonable and acoustically not feasible and therefore, noise abatement measures are not recommended for this intersection improvement project. Layouts L-1A through L-10 and Attachment-1 through Attachment-8 show land uses, site locations, existing and future worst-hour noise levels. Table 2 (Appendix A) shows the Traffic Noise Measurements & Modeling Results.

Table of Contents

Chapter 1. Introduction 1
1.1. Purpose of the Noise Study Report 1
1.2. Project Purpose and Need 2
Chapter 2. Project Description 3
2.1. No-Build Alternative – Alternative 1 3
2.2. Build Alternative 3
Chapter 3. Fundamentals of Traffic Noise 8
3.1. Sound, Noise, and Acoustics 8
3.2. Frequency 9
3.3. Sound Pressure Levels and Decibels 9
3.4. Addition of Decibels 9
3.5. A-Weighted Decibels 10
3.6. Human Response to Changes in Noise Levels 10
3.7. Noise Descriptors 13
3.8. Sound Propagation 13
3.8.1. Geometric Spreading 14
3.8.2. Ground Absorption 14
3.8.3. Atmospheric Effects 14
3.8.4. Shielding by Natural or Human-Made Features 14
Chapter 4. Federal Regulations and State Policies 16
4.1. Federal Regulations 16
4.1.1. 23 CFR 772 16
4.2. State Regulations and Policies 17
4.2.1. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects 17
4.2.2. Section 216 of the California Streets and Highways Code 18
Chapter 5. Study Methods and Procedures 19
5.1. Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations 19
5.2. Field Measurement Procedures 20
5.2.1. Short-Term Measurements 20
5.2.2. Long -Term Measurements 21
5.3. Traffic Noise Levels Prediction Methods 21
5.4. Methods for Identifying Traffic Noise Impacts and Consideration of Abatement 22
Chapter 6. Existing Noise Environment 24
6.1. Existing Land Uses 24
6.1.1. Existing Traffic Noise 24
6.2. Noise Measurement Results 25
6.2.1. Short-Term Monitoring 25
6.2.2. Long-Term Monitoring 25
Chapter 7. Future Noise Environment, Impacts, and Considered Abatement 30
7.1. Future Noise Environment and Impacts 30
7.1.1. Residential Areas 30
7.1.2. Motels Hotels 30
7.1.3. Churches, Temples and Places of Worship 31
7.1.4. Schools/Educational Uses 31

7.1.5. Commercial Developments 31
7.1.6. Cemeteries 31
7.2. Preliminary Noise Abatement Analysis 31
7.3. Conclusion 33
Chapter 8. Construction Noise 34
Chapter 9. References 38
Appendix A Predicted Future Noise Levels and Noise Barrier Analysis 37
Appendix B Supplemental Data..... 38

List of Tables

Table 4-1. Activity Categories and Noise Abatement Criteria 17
Table 1-1 Summary of Short-term Measurements 26, 27
Table 1-2 Summary of Long-term Measurements 28
Table 3 Summary of Background Noise Measurements 29

List of Figures

Figure 2-1. Project Location 7
Figure 3-1. Typical A-Weighted Noise Levels 12
Figure 8-1. Construction Equipment Noise Levels 37

List of Abbreviated Terms

CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
dB	Decibels
dBA	A-weighted decibels
FHWA	Federal Highway Administration
HOV	High Occupancy Vehicle
Hz	Hertz
kHz	Kilohertz
KP	Kilometer post
L_{dn}	Day-Night Level
L_{eq}	Equivalent Sound Level
$L_{eq(h)}$	Equivalent Sound Level over one hour
L_{max}	Maximum Sound Level
LOS	Level of Service
L_{xx}	Percentile-Exceeded Sound Level
Loudness	Amplitude
mPa	Micro-Pascals
mph	Miles per Hour
NAC	Noise Abatement Criteria
NADR	Noise Abatement Decision Report
NEPA	National Environmental Policy Act
NSR	Noise Study Reports
PM	Post Mile
Protocol	Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects
SPL	Sound Pressure Level
TeNS	Caltrans' Technical Noise Supplement
TNAP	Caltrans' Traffic Noise Analysis Protocol
TNM 2.5	FHWA Traffic Noise Model Version 2.5

Chapter 1. Introduction

1.1. Purpose of the Noise Study Report

The purpose of this Noise Study Report (NSR) is to evaluate traffic noise impacts and abatement under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise". 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards.

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2006) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing noise study reports. Noise impacts associated with this project under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) are evaluated in the Environmental document [Finding of No Significant Impact (FONSI)/Environmental Impact Report (EIR)].

The purpose of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772), "Procedures for Abatement of Highway Traffic Noise", is to provide procedures to help protect public health and welfare, supply noise abatement criteria (NAC), and establish requirements for information to be given to local officials for use in the planning and design of highways approved pursuant to 23 CFR 772.1. As such, 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards.

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2006) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing noise study reports.

1.2. Project Purpose and Need

The purpose of this NSR is to evaluate noise impacts consistent with the requirements of 23 CFR 772 and to determine whether proposed noise abatement satisfies Federal Highway Administration (FHWA) requirements.

This traffic noise report has been prepared in order to identify potential traffic noise impacts on sensitive receivers that may result from the proposed intersection improvement on SR 118 and SR 34, in the town of Somis in a primarily agricultural area of Ventura County, California. This intersection improvement project is considered Type I project as defined in the Traffic Noise Analysis Protocol (TNAP) for new highway construction and reconstruction projects.

The primary purpose of the project is to reduce traffic congestion on SR 118 and SR 34 within the limits of the project in order to improve traffic operation and safety.

Chapter 2. Project Description

The project proposes operational improvements to the "T" intersection of State Route 118 (Los Angeles Ave.) and State Route 34 (Somis Road) located in the community of Somis in Ventura County. The purpose of the project is to reduce delay time, relieve congestion and enhance safety at the intersection.

2.1. No-Build Alternative – Alternative 1

Under the No-Build Alternative, no changes would be made to the freeway in the project area.

2.2. Build Alternative

This noise study was conducted for five build Alternatives.

Alternative 2- Intersection Improvement Alternative

The Intersection Improvement Alternative proposes to widen and add a total of seven lanes at the SR 118/ SR 34 intersection approach. Three turn lanes and one auxiliary lane would be added on SR 118 as part of this proposed alternative. Additional lanes on SR 118 would include the following:

- One right-turn lane and one left-turn lane on eastbound SR 118.
- One left-turn on westbound SR 118 for movements onto southbound
- One auxiliary lane on the east leg of eastbound SR 118 to accommodate movements from northbound SR 34.

An auxiliary lane would also be added on southbound SR 34. Donlon Road would become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed through/left-turn lane at the intersection with SR 118 and the realigned northbound lane would remain a through lane at this location.

The realigned Donlon Road would run west of Coyote Canyon to avoid impacts to the creek at this location. A bridge structure would be constructed to cross over the Coyote Canyon Debris Basin spillway at which point the realigned roadway would reconnect to the existing Donlon Road.

The existing drainage culvert for Coyote Canyon Creek would be extended on both sides of the highway to accommodate the two additional lanes on the east leg of the SR 118. A 120-foot easement into Coyote Canyon is required for the new drainage facility.

lane on eastbound SR 118 and two lanes on westbound SR 118. SR 34 would consist of three lanes, two lanes on northbound SR 34 and 1 lane on southbound SR 34. The realigned Donlon Road would consist of two lanes, one lane on northbound Donlon Road and one lane on southbound Donlon Road.

Approximately 2.37 acres for roadway and utility relocation are required for the implementation of this project. The amount of farmland required is 1.79 acres and 0.1 acres of open space. Easements are required for utilities, slope and drainage.

Alternative 3- Save Our Somis (SOS) Alternative

The Save Our Somis Alternative proposes to widen and add a total of four lanes at the SR 118 / SR 34 intersection approaches. One right-turn lane and one left-turn lane would be added on eastbound SR 118.

Donlon Road would be realigned to become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed thru/left-turn/right-turn lane at the intersection with SR 118 and the realigned northbound lane would remain.

The proposed alternative would also expand the existing 140 feet left-turn lane on westbound SR 118 to 556 feet. Also, an additional 200 feet of deceleration length would be included in an open-ended two-way left-turn lane prior to the beginning of the actual left-turn lane.

Approximately 3.33 acres for roadway and 0.44 acres for slope easement would be required for this alternative. The amount of farmland required is 2.3 acre and 0.1 acres of open space. This includes the acquisition of the former Alliance Somis Supply site and the relocation of high-tension power poles of Southern California Edison.

Alternative 4 - Roundabout Alternative

The Roundabout Alternative proposes to combine the two “T” intersections of SR 118/ SR 34 and SR 118/ Donlon Road and construct a roundabout that would replace the existing signalized intersection. Realigned Donlon Road would become the north leg of the roundabout. The roundabout would be constructed west of the existing SR 118/ SR 34

intersection and would consist of a one-way, one-lane circulatory roadway with a width of 24 feet.

The east leg of SR 118 would consist of four lanes, two lanes on eastbound SR 118 and two lanes on westbound SR118. The west leg of SR 118 would consist of three lanes, one lane on eastbound SR 118 and two lanes on westbound SR 118. SR 34 would consist of three lanes, two lanes on northbound SR 34 and 1 lane on southbound SR 34. The realigned Donlon Road would consist of two lanes, one lane on northbound Donlon Road and one lane on southbound Donlon Road.

Approximately 3.33 acres for roadway and 0.44 acres for slope easement would be required for this alternative. The amount of farmland required is 2.3 acre and 0.1 acres of open space. This includes the acquisition of former Alliance Somis Supply site and the relocation of high-tension power poles of Southern California Edison.

Alternative 5-Somis Bypass Alternative

The Somis Bypass Alternative proposes to construct a new two-lane roadway that would connect SR 34 to SR 118 approximately one half mile east of the existing SR 118/34 intersection. The new roadway would begin at the southern end of Somis, at the intersection of West St./SR 34. From this point, the proposed roadway would continue northeast, parallel to the Southern Pacific railroad on the north side of the tracks.

There are two signalized intersections being proposed as part of this alternative. The new intersections would be located at the southern and northern ends of the bypass. The intersection of the bypass with SR 118 would be a “T” intersection and the intersection of the bypass with SR 34 would be a four-way intersection.

The required land (44+ acres) for this alternative is composed of open space, agricultural (majority), residential and commercial land uses with utilities running adjacent to the railroad tracks. A bridge structure would be required for the Coyote Canyon/Fox Barranca area with a large amount of imported material. Also a drainage structure would be required at Sand Canyon.

Alternative-6 Bridge Alternative

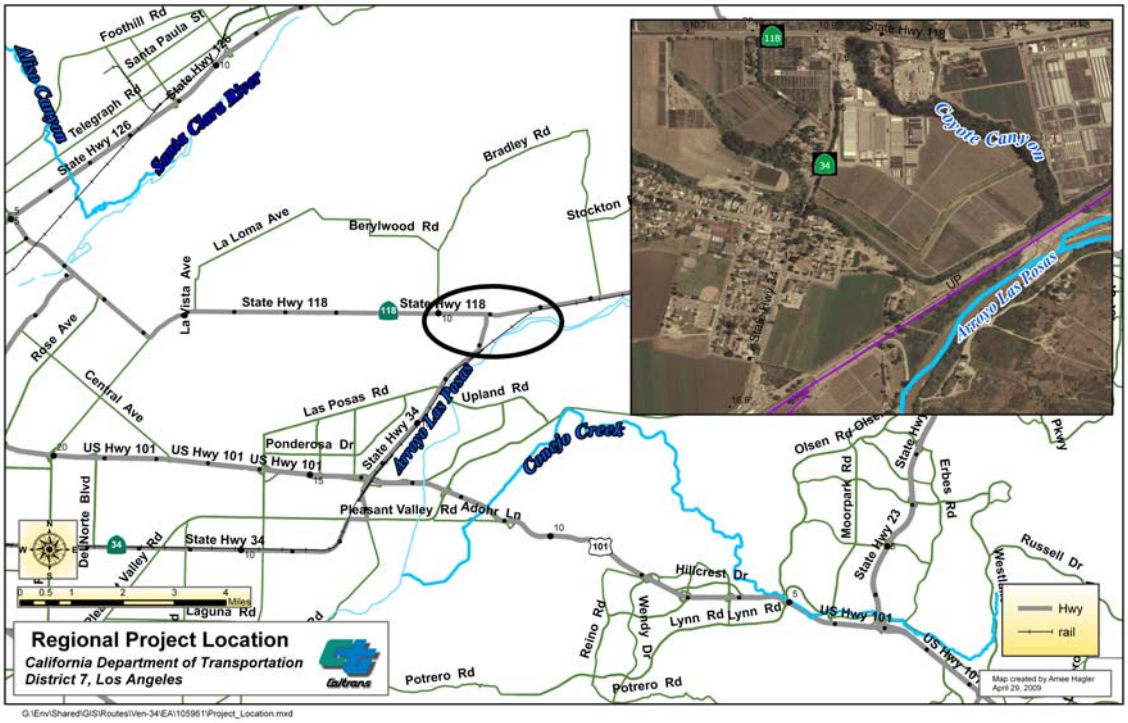
The Bridge Alternative proposes the same intersection improvements as the Intersection Improvement Alternative (Alternative 2).

Additional lanes on SR 118 would include the following:

- One right-turn lane and one left-turn lane on eastbound SR 118 and one left-turn on westbound SR 118 for movements onto southbound SR 34.
- One auxiliary lane on the east leg of eastbound SR 118 to accommodate movements from northbound SR 34.

An auxiliary lane would also be added on SB 34. Donlon Road. would become the north leg of the proposed four-way intersection. The realigned southbound lane would become a mixed thru/left-turn/right-turn lane at the intersection with SR 118 and the realigned northbound lane would remain a thru lane at this location. Based on the analysis, the proposed project will result in traffic noise impacts (not significant or substantial) at the assumed frequent human use area.

Figure 2-1. Project Location



Chapter 3. Fundamentals of Traffic Noise

The following is a brief discussion of fundamental traffic noise concepts. For a detailed discussion, please refer to Caltrans' Technical Noise Supplement (TeNS) (Caltrans 1998), a technical supplement to the Protocol, which is available on Caltrans Web site (http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf) or the FHWA Highway Noise Barrier Design Handbook available on the FHWA website (http://www.fhwa.dot.gov/environment/noise/Manual.htm).

3.1. Sound, Noise, and Acoustics

Sound is a vibratory disturbance created by a moving or vibrating source in a gaseous or liquid medium or in the elastic strain of a solid that is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. The medium of main concern is air. In absence of any other qualifying statements, sound will be considered airborne sound, as opposed to, for example, structureborne or earthborne sound.

Noise is defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Sound (and noise) is actually a process that consists of three components: 1) the sound source, 2) the sound path, and 3) the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there obviously is no sound. Likewise, without a medium to transmit sound pressure waves there is also no sound. And finally, sound must be received, i.e. a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receivers, instead of just one of each.

Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. The field is very broad, and transportation related noise and its abatement covers just a small, specialized part of acoustics.

Traffic noise typically results from the interaction of the sources (moving vehicles) and the roadway. A considerable portion of traffic noise derives from the sound emitted by the combustion engines of these vehicles. From the source to the receiver, noise varies both in level and frequency.

3.2. Frequency

Sound can be described by its frequency (pitch) and amplitude (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch, like the low notes on a piano, whereas high-frequency sounds are high in pitch, like the high notes on a piano. Frequency is expressed in terms of oscillations, or cycles per second. Cycles per second are commonly referred to as Hertz (Hz). A frequency of 250 cycles per second is referred to as 250 Hz. High frequencies are sometimes more conveniently expressed in units of kilo-Hertz (kHz), or thousands of Hertz. The extreme ranges of frequencies that can be heard by the healthiest human ears spans from 16–20 Hz on the low end to about 20,000 Hz (or 20 kHz) on the high end.

3.3. Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

3.4. Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

3.5. A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway-traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels or dBA. Figure 3-1 describes typical A-weighted noise levels for various noise sources and shows levels of noise associated with common activities and human response.

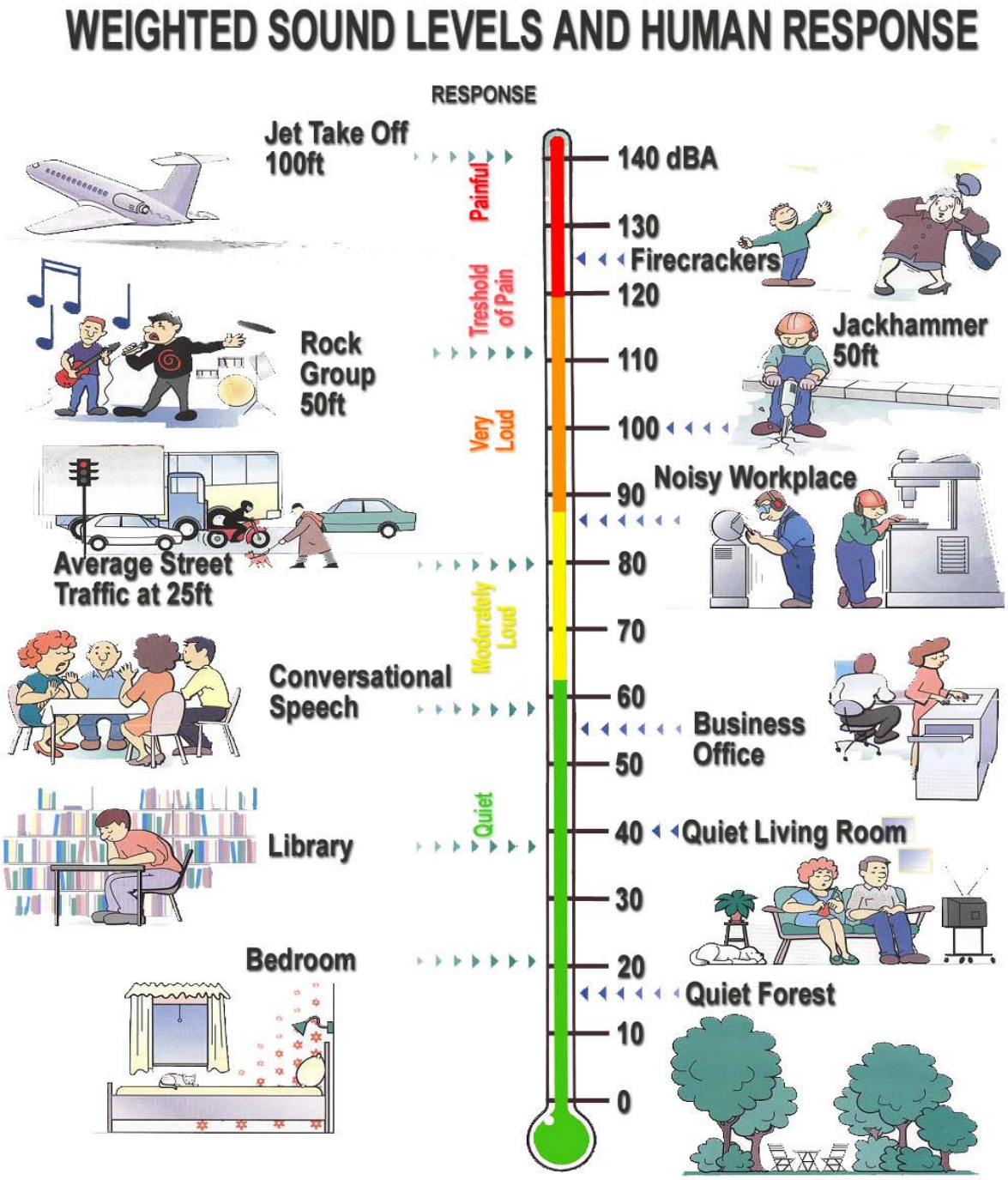
3.6. Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3-dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the midfrequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a

distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

Figure 3-1. Typical A-Weighted Noise Levels



3.7. Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a one-hour period, and is the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.

- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time).

- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.

- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.

- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m., and a 5-dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

3.8. Sound Propagation

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

3.8.1. Geometric Spreading

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

3.8.2. Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 decibels per doubling of distance.

3.8.3. Atmospheric Effects

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

3.8.4. Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often

constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

Chapter 4. Federal Regulations and State Policies

This report focuses on the requirements of 23 CFR 772, as discussed below.

4.1. Federal Regulations

4.1.1. 23 CFR 772

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I or Type II projects. FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.

Type I projects include those that create a completely new noise source, as well as those that increase the volume or speed of traffic or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway, or the widening an existing ramp by a full lane width for its entire length. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects, are not considered Type I projects.

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project sponsor “consider” noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (a “substantial” noise increase). 23 CFR 772 does not specifically define the terms “substantial increase” or “approach”; these criteria are defined in the Protocol, as described below.

Table 4-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Table 4-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA-L_{eq}[h])	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in categories A or B above
D	—	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

In identifying noise impacts, primary consideration is given to exterior areas of frequent human use. In situations where there are no exterior activities, or where the exterior activities are far from the roadway or physically shielded in a manner that prevents an impact on exterior activities, the interior criterion (Activity Category E) is used as the basis for determining a noise impact.

4.2. State Regulations and Policies

4.2.1. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The NAC specified in the Protocol are the same as those specified in 23 CFR 772. The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA. The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

The TeNS to the Protocol provides detailed technical guidance for the evaluation of highway traffic noise. This includes field measurement methods, noise modeling methods, and report preparation guidance.

4.2.2. Section 216 of the California Streets and Highways Code

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA-L_{eq}(h) in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or spaces. This requirement does not replace the "approach or exceed" NAC criterion for FHWA Activity Category E for classroom interiors, but it is a requirement that must be addressed in addition to the requirements of 23 CFR 772.

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA-L_{eq}(h). If the noise levels generated from freeway and non freeway sources exceed 52 dBA-L_{eq}(h) prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

Chapter 5. Study Methods and Procedures

5.1. Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed project. Land use in the project area were categorized by land use type, Activity Category as defined in Table 4-1, and the extent of frequent human use. As stated in the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Although all developed land uses are evaluated in this analysis, the focus is on locations of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined frequent human use areas, such as residences, schools, libraries, churches and temples, hospitals, recreation and sport areas, playgrounds, hotels, and motels. The geometry of the project relative to nearby existing and planned land uses was also identified.

Short-term measurement locations were selected to represent each major developed area within the project area. Long-term measurements are conducted in order to capture diurnal traffic noise level patterns in the project area. Short-term measurement locations were selected to serve as representative modeling locations.

For this project, Caltrans Noise and Vibration Branch personnel performed a field survey of the entire area within the limits of the project. The survey included visiting the project sites in order to identify land uses within the project limits and to select the noise measurement sites. The entire area within the project limits was acoustically represented by 25 noise measurement site locations.

The noise measurement sites were selected taking into consideration the following general site requirements:

1. Sites were acoustically representative of areas and conditions of interest. They were located at areas of human use.

2. Sites were clear of major obstructions between source and receiver. Microphone positions were more than 3 meters away from reflecting surfaces.

3. Sites were free of noise contamination by sources other than those of interest. Sites were not located near barking dogs, lawn mowers, pool pumps, air conditioners, etc.

4. Sites were not exposed to prevailing meteorological conditions that are beyond the constraints discussed in the Technical Noise Supplement.

5.2. Field Measurement Procedures

A field noise study was conducted in accordance with recommended procedures in TeNS. The following is a summary of the procedures used to collect short-term and long-term sound level data.

5.2.1. Short-Term Measurements

Short-term monitoring was conducted at 18 locations, using Metrosonics M3280 and Quest SoundPro DL sound level meters. Measurements were taken over a 10-minute and 20-minute period. Short-term monitoring was conducted at Activity Category B land uses. The short-term measurement locations are identified in Attachment-1 through Attachment-8 and Table 1-1 & Table1-2.

During the short-term measurements, field staff attended each meter. 10-minute/20-minute L_{eq} values collected during the measurement period were logged into the meter's internal memory, and dominant noise sources observed during each individual 10-minute/20 minute period were also identified and logged. Using this approach, other non-traffic noise sources (such as aircraft and lawn equipment) can be identified and excluded from the noise readings. The calibration of the meter was checked before and after the measurement using the corresponding calibrators for each meter.

Temperature, wind speed, and humidity were recorded manually during the short-term monitoring session using a Kestrel 3000 portable weather station. During the short-term measurements, wind speeds typically ranged from 1 to 4 miles per hour (mph). Temperatures ranged from 70 to 80°F, with fair weather conditions.

Traffic on SR-118 & SR-34 was classified and counted during short-term noise measurements. Vehicles were classified as automobiles, medium-duty trucks, or heavy-duty trucks. An automobile was defined as a vehicle with two axles and four tires that are designed primarily to carry passengers. Small vans and light trucks were included in this category. Medium-duty trucks included all cargo vehicles with two axles and six tires. Heavy-duty trucks included all vehicles with three or more axles. The posted speed on SR 118 is 50 mph. and on SR 34 is 40 mph.

Two community background noise readings were taken within the project limits. They range between 50 – 57 dBA-Leq(h). Background noise is the total of all noise generated

within a community and is measured away from the freeway where freeway traffic noise does not contribute to the total noise level. Background noise levels are typically measured to determine the acoustical feasibility (noise reducibility of 5 dBA) of noise abatement and to insure that noise reduction goals can be achieved. Noise abatement cannot reduce noise levels below background noise levels.

5.2.2. Long -Term Measurements

Long-term monitoring was conducted at 5 locations using Metrosonics db-3080 sound level meters. The purpose of these measurements was to identify variations in sound levels throughout the day. 24-hour readings were taken at locations representative of residential areas in order to determine the noisiest hour. A sound level meter was placed at the representative site and was left to run continuously monitoring and recording noise levels for a 24-hour period. The short-term noise levels were recorded within the 24-hour noise monitoring for that particular area. The noise level data collected was then analyzed and adjusted using the 24-hour noise readings to determine the noisiest hour. Please see Table 1-3 for all field data regarding each noise measurement sites.

5.3. Traffic Noise Levels Prediction Methods

Traffic noise levels were predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receivers. Three-dimensional representations of these inputs were developed using CAD drawings, aerials, and topographic contours provided by D7 Office of Design.

Traffic noise was evaluated under existing conditions, design year no-project conditions, and design year conditions with the project alternative. Loudest-hour traffic volumes, vehicle classification percentages, and traffic speeds under existing and design-year (2035) conditions were not available at the time of modeling. The loudest hour is generally characterized by free-flowing traffic at the highway design speed (i.e., Level of Service [LOS] C or better). Using worst noise hour traffic volumes under design-year (2035) condition, the traffic noise model was analyzed to predict worst noise hour noise levels for design-year condition. (AADTT) on the California State Highway System compiled by Traffic Data Branch was used for percentages of cars, medium trucks, and heavy trucks for modeling design-year conditions with and without the project alternative.

To validate the accuracy of the model, TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. For each receiver, traffic volumes counted during the short-term measurement periods were normalized to 1-hour volumes. These normalized volumes were assigned to the corresponding project area roadways to simulate the noise source intensity from the roadways during the actual measurement period. Modeled and measured sound levels were then compared to determine the accuracy of the model and if additional calibration of the model was necessary.

5.4. Methods for Identifying Traffic Noise Impacts and Consideration of Abatement

Traffic noise impacts are considered to occur at receiver locations where predicted design-year noise levels are at least 12 dBA greater than existing noise levels, or where predicted design year noise levels approach or exceed the NAC for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 CFR 772 and the Caltrans Protocol.

According to the Protocol, abatement measures are considered acoustically feasible if a minimum noise reduction of 5 dBA at impacted receiver locations is predicted with implementation of the abatement measures. In addition, barriers should be designed to intercept the line-of-sight from the exhaust stack of a truck to the first tier of receivers, as recommended by the Highway Design Manual, Chapter 1100. Other factors that affect feasibility include topography, access requirements for driveways and ramps, presence of local cross streets, utility conflicts, other noise sources in the area, and safety considerations. The overall reasonableness of noise abatement is determined by considering factors such as cost; absolute predicted noise levels; predicted future increase in noise levels; expected noise abatement benefits; build date of surrounding residential development along the highway; environmental impacts of abatement construction; opinions of affected residents; input from the public and local agencies; and social, legal, and technological factors.

The Protocol defines the procedure for assessing reasonableness of noise barriers from a cost perspective. A cost-per-residence allowance is calculated for each benefited residence (i.e., residences that receive at least 5 dBA of noise reduction from a noise barrier). The 2008 base allowance is $31,000. Additional allowance dollars are added to the base allowance based on absolute noise levels, the increase in noise levels resulting from the project, achievable noise reduction, and the date of building construction in the area. Total allowances are calculated by multiplying the cost-per-residence by the

number of benefited residences. If the total allowance for all evaluated noise barriers is more than 50% of the estimated project cost, the allowance per residence is modified to a reduced value.

Chapter 6. Existing Noise Environment

6.1. Existing Land Uses

A field investigation was conducted to identify noise sensitive land uses that could be subject to traffic and construction noise impacts from the proposed project. Single-family residences were identified as Activity Category B land use in the project area.

As required by the Protocol, all developed land uses are evaluated in this analysis. However noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards and common use areas at multi-family residences.

The proposed project is located within the town of Somis, in a primarily agricultural area of Ventura County. The Ventura County General Plan designates the area for agricultural, open space, rural and existing community land uses. Properties adjacent to SR 118 comprises of produce ranches, commercial nurseries, ranch style residences and a debris and catch basin. SR 34 passes through the commercial district of the community. The existing land use within project limits at SR 34 is comprised of residential, commercial and agricultural areas. Layouts L-1A through L-10 and Attachment-1 through Attachment-8 show the land use categories within the limits of the project.

6.1.1. Existing Traffic Noise

There are no existing soundwalls within project limits. A field noise investigation was conducted to determine existing noise levels and gather information to develop and calibrate the traffic noise model that was used for predicting future noise levels. Existing short-term noise levels were recorded at 18 locations, which are acoustically representative of the entire area within the limits of the project. The existing ambient noise levels measured were between 53 and 67 decibels (dBA). Five long-term (24-hour) noise level reading were conducted to determine the noisiest hour within the project limits. The community background noise levels were taken at 2 locations within the project limits (Table 3) and ranged from 50 to 57 dBA-Leq(h).

Table2 (Appendix A) summarizes sound level measurements taken in the project area and the noise modeling results for existing conditions. The noise measurement and analysis locations are shown on the aerial photographs in Attachment-1 through Attachment-8 and in Layouts L-1A through L-10 for the build alternatives.

6.2. Noise Measurement Results

The existing noise environment in the project area is summarized in Table 2 (Appendix A) and it is based on short-term and long-term noise monitoring at representative noise sensitive locations within the project limits.

6.2.1. Short-Term Monitoring

Table1-1 & Table1-2 summarizes the result of the short-term noise monitoring conducted in the project area.

6.2.2. Long-Term Monitoring

Long-term monitoring was conducted at 5 locations using MetroSonics model db-3080 Type 2 sound level meters. The purpose of these measurements was to capture variations in traffic noise levels throughout the day, rather than absolute noise levels at a specific receptor of concern. The long-term sound level data was collected over 144 consecutive 10-minute intervals over a 24-hour period. Table 1-3 summarizes the result of the long-term noise monitoring conducted in the project area.

Table 1-1 Summary of Short-Term Measurements (SR 118 EB & WB & SR 34 NB & SB)

Site	Address	Land Uses	Date	Start Time	Duration (minutes)	Measured L_{eq}	Freeway Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
R1	6754 Los AngelesAvenue	Residential	2/24/2009	12:45 PM	10	60.8	EB	50	3	14	0	0	45
							WB	71	5	17	0	3	45
R2	6580 La Cumbre Rd	Residential	3/10/2009	11:09 AM	20	60.3	EB	124	14	20	0	0	45
							WB	128	6	25	0	0	45
R3	6564 La Cumbre Rd	Residential	2/24/2009	12:22 PM	10	56.9	EB	84	2	24	0	0	45
							WB	76	8	15	0	0	45
R4	5696 Los Angeles Avenue	Residential	2/19/2009	11:41 AM	10	62.8	EB	55	6	15	0	0	45/50
							WB	73	4	9	0	0	45/50
R5	5470 Los Angeles Avenue	Residential	3/10/2009	12:01 PM	20	61.8	EB	153	9	21	0	0	40
							WB	131	15	25	0	1	40
R7	5487 La Cumbre Road	Residential	2/19/2009	11:07 AM	10	54	EB	55	9	7	0	2	45-50
							WB	69	6	8	0		45-50
R9	5306 Los Angeles Avenue	Residential	2/19/2009	1:04 PM	10	64.9	EB	47	4	5	0		45-50
							WB	57	5	10	0		45-50
R10	3186 Somis Road	Residential	2/19/2009	10:17 AM	10	64	NB	54	8	8	0	0	40/45
							SB	60	5	4	0	0	40/45
R11	5436 North St	Residential	3/9/2009	11:19 AM	20	62	NB	97	4	12	0	1	45
							SB	86	3	10	0	0	45

Table 1-2 Summary of Short-Term Measurements (SR 118 EB & WB &SR 34 NB & SB)

Site	Address	Land Uses	Date	Start Time	Duration (minutes)	Measured L_{eq}	Freeway Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
R12	3445 Somis Rd	Residential	2/19/2009	10:08 AM	10	67	NB	54	8	8	0	0	45
							SB	60	5	4	0	0	45
R13	3406 Rice St.	Residential	3/10/2009	1:21 PM	20	60	NB	119	15	7	0	0	40
							SB	121	8	4	0	0	40
R14	3318 West St	School	2/18/2009	11:43 AM	10	58	NB	59	2	6	0	0	40
							SB	71	1	2	0	0	40
R15	3356 Somis Rd.	Fire Station	2/18/2009	11:15 AM	10	64	NB	30	1	1	0	0	45
							SB	47	3	5	0	0	45
R16	2306 West St	Residential	2/18/2009	11:12 AM	10	63	NB	30	1	2	0	0	45
							SB	47	3	5	0	0	45
R17	Private Residence (farmland)	Residential	3/9/2009	11:19 AM	20	53	NB	97	4	12	0	1	50
							SB	86	3	10	0	0	50
R20	Private	farm/house	3/9/2009	1:10 PM	20	57	EB	119	15	39	0	0	50
							WB	130	18	28	0	0	50

TABLE 1-3 SUMMARY OF LONG-TERM (24 HOUR) MEASUREMENTS

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
R1	6754 Los Angeles Avenue	Residential	12:44 PM	02/24/2009	24	62.9	2:36 PM - 3:36 PM
R4	5696 Los Angeles Avenue		12:53 AM	03/09/2009	24	60.8	6:11 AM - 7:11 AM
R6	3970 Donlon Road		13:15 PM	02/18/2009	24	61.0	8:39 AM - 9:39 AM
R11	5436 North St.		10:35 AM	02/18/2009	24	63.6	6:25 AM - 7:25 AM
R18	3508 Rice St.		10:43 AM	03/09/2009	24	57.7	3:02 PM - 4:02 PM

Table 3. Summary of Background Noise Measurements

Site	Address	Freeway Direction	Land Uses	Start Time	Date	Duration (minutes)	Measured L_{eq}
BG1	5631 La Cumbre Rd	WB	Residential	13:58	3/10/2009	20	56.6
BG2	5120 Dodson St	SB	Residential	13:53	3/10/2009	20	49.8

Chapter 7. Future Noise Environment, Impacts, and Considered Abatement

7.1. Future Noise Environment and Impacts

Future noise levels were predicted using traffic characteristics that would yield the worst hourly traffic noise impact on a regular basis. Table 2 summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the project. Predicted design-year traffic noise levels with the project are compared to existing conditions and to design-year no-project conditions. The comparison to existing conditions is included in the analysis to identify traffic noise impacts under 23 CFR 772. The comparison to future no build condition indicates the traffic noise increase resulting from the project.

As stated in the TeNS, modeling results are rounded to the nearest decibel before comparisons are made. In some cases, this can result in relative changes that may not appear intuitive. An example would be a comparison between sound levels of 64.4 and 64.5 dBA. The difference between these two values is 0.1 dBA. However, after rounding, the difference is reported as 1 dBA.

Predicted increases in traffic noise under design-year conditions relative to existing worst-hour conditions are shown in Table 2. Traffic noise impacts are predicted to occur at Activity Category B land uses within the project area and noise abatement was considered. The following is a discussion of noise abatement considered for each evaluation area where traffic noise impacts are predicted.

7.1.1. Residential Areas

There are three impacted residences (R9, R12 & R15) within the project limits. These impacted receivers have commercial developments on either side. R9 is located on Ven-118 and is next to commercial nursery. R12 and R15 are located on Ven-34 that passes through the commercial district of the community. Considering the location of the impacted residences, it has been determined that a soundwall cannot be constructed for this area due to the presence of the driveways and local street. Therefore, no soundwall has been recommended as part of this intersection improvement project.

7.1.2. Motels Hotels

There are no hotel and motels within the project limits.

7.1.3. Parks/Recreational Areas

There are no parks or outdoor recreational areas within the project limits.

7.1.3. Churches, Temples and Places of Worship

There are no places of worship within the project limits.

7.1.4. Schools/Educational Uses

Somis School is located one block west of SR 34 on the West Street. Exterior outdoor noise measurement was taken (R14) and noise modeling result shows that the future predicted noise level of 53 dBA-Leq9h) was well below the noise abatement criteria of 67 dBA-Leq(h). Therefore, noise abatement was not considered for this area.

7.1.5. Commercial Developments

There are no commercial developments with exterior frequent human use within the project limits. The commercial developments consist of commercial nurseries, a welding shop, produce stand, a glass and screen store, barber- shop and a mini-complex with various businesses.

7.1.6. Cemeteries

There are no cemeteries within the project limits.

7.2. Preliminary Noise Abatement Analysis

In accordance with 23 CFR 772, noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Potential noise abatement measures identified in the Protocol include the following:

- Avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project;
- Constructing noise barriers;
- Acquiring property to serve as a buffer zone;
- Using traffic management measures to regulate types of vehicles and speeds; and
- Acoustically insulating public-use or nonprofit institutional structures.

All of these abatement options have been considered. It was determined that feasible traffic noise abatement cannot be provided for the impacted residential land uses within the project limits.

The presence of access driveways, local street intersections and commercial developments adjacent to the impacted areas do not allow continuous soundwalls that can provide effective noise reduction. Therefore, noise abatement measures are not recommended for the proposed project.

7.3. Conclusion

The intersection improvement project on SR 118 and SR 34 is located within the town of Somis in a primarily agricultural area of Ventura County. The land use within the project limits is comprised of commercial nurseries, ranch style residences and commercial and agricultural areas. The entire area within the limits of the project has been investigated for traffic noise impacts. It was determined that feasible traffic noise abatement cannot be provided for the impacted residential land uses within the project limits. The presence of access driveways, local street intersections and commercial developments adjacent to the impacted areas restricts continuous soundwalls that can provide effective noise reduction. Soundwalls were determined to be not reasonable and acoustically not feasible and therefore, noise abatement measures are not recommended for the proposed project.

Chapter 8. Construction Noise

23 CFR 772 requires that construction noise impacts be identified, but does not specify specific methods or abatement criteria for evaluating construction noise. However, the FHWA Roadway Construction Noise Model (Federal Highway Administration 2006) can be used to determine if construction would result in adverse construction noise impacts on land uses or activities in the project area.

During the construction phases of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by Caltrans standard specifications, Section 7-1.01I, Sound Control Requirements. These requirements state that noise levels generated during construction shall comply with applicable local, state, and federal regulations.

Figure 8-1 summarizes typical noise levels produced by construction equipment commonly used on roadway construction projects. As indicated, equipment involved in construction is expected to generate noise levels ranging from 70 to 90 dBA at a distance of 15 meters (50 feet). Noise produced by construction equipment would be reduced over distance at a rate of about 6 dBA per doubling of distance. Normally, construction noise levels should not exceed 86 dBA (Lmax) at a distance of 15 m. No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans standard specifications and would be short-term, intermittent, and dominated by local traffic noise. Implementing the following measures would minimize temporary construction noise impacts:

1. Equipment Noise Control should be applied to revising old equipment and designing new equipment to meet specified noise levels.

2. In-Use Noise Control where existing equipment is not permitted to produce noise levels in excess of specified limits.

3. Site Restrictions is an attempt to achieve noise reduction through modifying the time, place, or method of operation of a particular source.

4. Personal Training of operators and supervisors is needed to become more aware of the construction site noise problem, and are given instruction on methods that they can implement to improve conditions in the local community.

1. Equipment noise control is needed to reduce the noise emissions from construction sites by mandating a specified noise levels for design of new equipment, and updating old equipment with new noise control devices and techniques presented below:

- Mufflers are very effective devices, which reduce the noise emanating from the intake or exhaust of an engine, compressor, or pump. The fitting of effective mufflers on all new equipment and retrofitting of mufflers on existing equipment is necessary to yield an immediate noise reduction at all types of road construction sites.

- Sealed and lubricated tracks for crawler mounted equipment will lessen the sound radiated from the track assembly resulting from metal to soil and metal to metal contact. Contractors and site engineers and inspectors should ensure that the tracks are kept in excellent condition by periodic maintenance and lubrication.

- Lowering exhaust pipe exit height closer to the ground can result in an off-site noise reduction. Barriers are more effective in attenuating noise when the noise source is closer to ground level.

- General noise control technology can have substantially quieter construction equipment when manufacturers apply the state of the art technology to new equipment or repair old equipment to maintain original equipment noise levels.

2. In–use site noise control is necessary to prevent existing equipment from producing noise levels in excess of specified limits. Any equipment that produces noise levels less than the specified limits would not be affected. However, those exceeding the limit would be required to meet compliance by repair, retrofit, or elimination. New equipment with the latest noise sensitive components and noise control devices are generally quieter than older equipment, if properly maintained and inspected regularly. They should be repaired or replaced if necessary to maintain the in-use noise limit. All equipment applying the in-use noise limit would achieve an immediate noise reduction if properly enforced.

3. Site restrictions should be applied to achieve noise reduction through different methods, resulting in an immediate reduction of noise emitted to the community without requiring any modification to the source noise emissions. The methods include shielding with barriers for equipment and site, truck rerouting and traffic control, time scheduling, and equipment relocation. The effectiveness of each method depends on the type of construction involved and the site characteristics.

- Shielding with barriers should be implemented at an early stage of a project to reduce construction equipment noise. The placement of barriers must be carefully considered to reduce limitation of site access. Barriers may be natural or man-made, such as excess land fill used as a temporary berm strategically placed to act as a barrier.

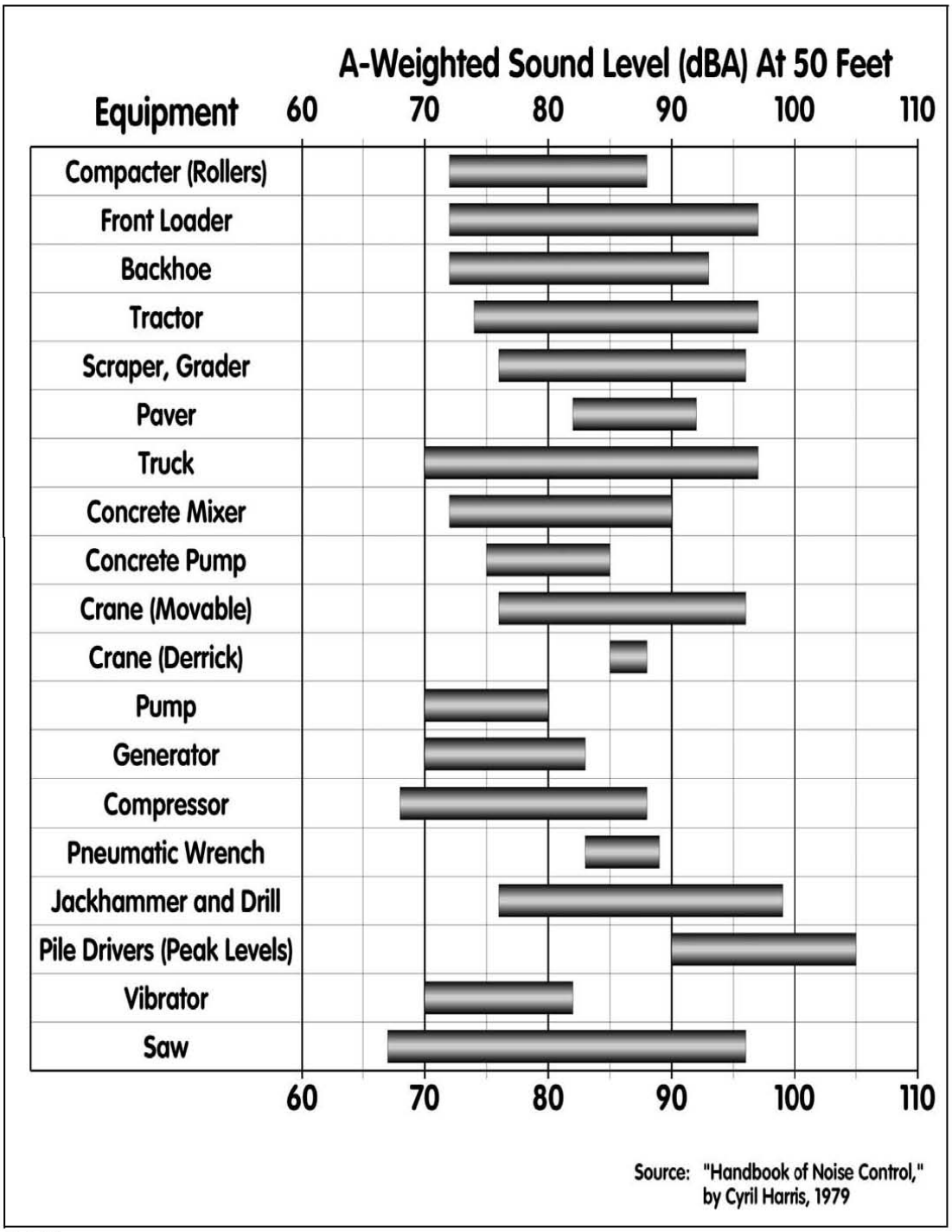
- Efficient rerouting of trucks and control of traffic activity on construction site will reduce noise due to vehicle idling, gear shifting and accelerating under load. Planning proper traffic control will result in efficient workflow and reduce noise levels. In addition, rerouting trucks does not reduce noise levels but transfer noise to other areas that are less sensitive to noise.

- Time scheduling of activities should be implemented to minimize noise impact on exposed areas. Local activity patterns and surrounding land uses must be considered in establishing site curfews. However, limiting working hours can decrease productivity. Sequencing the use of equipment with relatively low noise levels versus equipment with relatively high noise levels during noise sensitive periods is an effective noise control measure.

- Equipment location should be as far from noise sensitive land use areas as possible. The contractor should substitute quieter equipment or use quieter construction processes at or near noise sensitive areas.

4. Educating contractors and their employees to be sensitive to noise impact problems and noise control methods. This may be one of the most cost-effective ways to help operators and supervisors become more aware of the construction site noise problem, and implement the various methods of improving the conditions. A training program for equipment operators is recommended to instruct them in methods of operating their equipment to minimize environmental noise. Many training programs are presently given on the subject of job safety. This can be extended to include the impact due to noise and methods of abatement.

Figure 8-1. Construction Equipment Noise Levels



Chapter 9. References

Caltrans. 1998. Technical Noise Supplement. October. Sacramento, CA: Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office. Sacramento, CA. Available: (http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf).

———. 2006. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. August. Sacramento, CA.

Federal Highway Administration. 1998a. FHWA Traffic Noise Model, Version 1.0 User's Guide. January. FHWA-PD-96-009. Washington D.C.

———. 1998b. FHWA Traffic Noise Model, Version 1.0. February. FHWA-PD-96-010. Washington D.C.

———. 2006. Roadway Construction Noise Model. February, 15, 2006. Available: <http://www.rcnm.us/>.

Federal Transit Administration. 1995. *Transit noise and vibration impact assessment.* (DOT-T-95-16.) Office of Planning, Washington, DC. Prepared by Harris Miller Miller & Hanson, Inc. Burlington, MA.

California Department of Transportation. 2000. Traffic volumes on the California state highway system. Available: http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2000all.htm

2. "Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects", California Department of Transportation, Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office, October 1998.

3. "Technical Noise Supplement", California Department of Transportation, Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office, October 1998.

4. Federal Transit Administration. 1995. Transit noise and vibration impact assessment. Washington, DC.

5. Federal Highway Administration. 1995. Highway traffic noise analysis and abatement policy and guidance. Washington, DC.

6. "Highway Design Manual", California Department of Transportation, Fifth Edition.

7. Statutes Relating to the California Department of Transportation, 1999.

Appendix A Predicted Future Noise Levels and Noise Barrier Analysis

This appendix contains the tables that summarize the traffic noise modeling results for existing and design-year conditions with and without the project.

Table 2. Traffic Noise Measurements & Modeling Results - SR 118 & SR 34

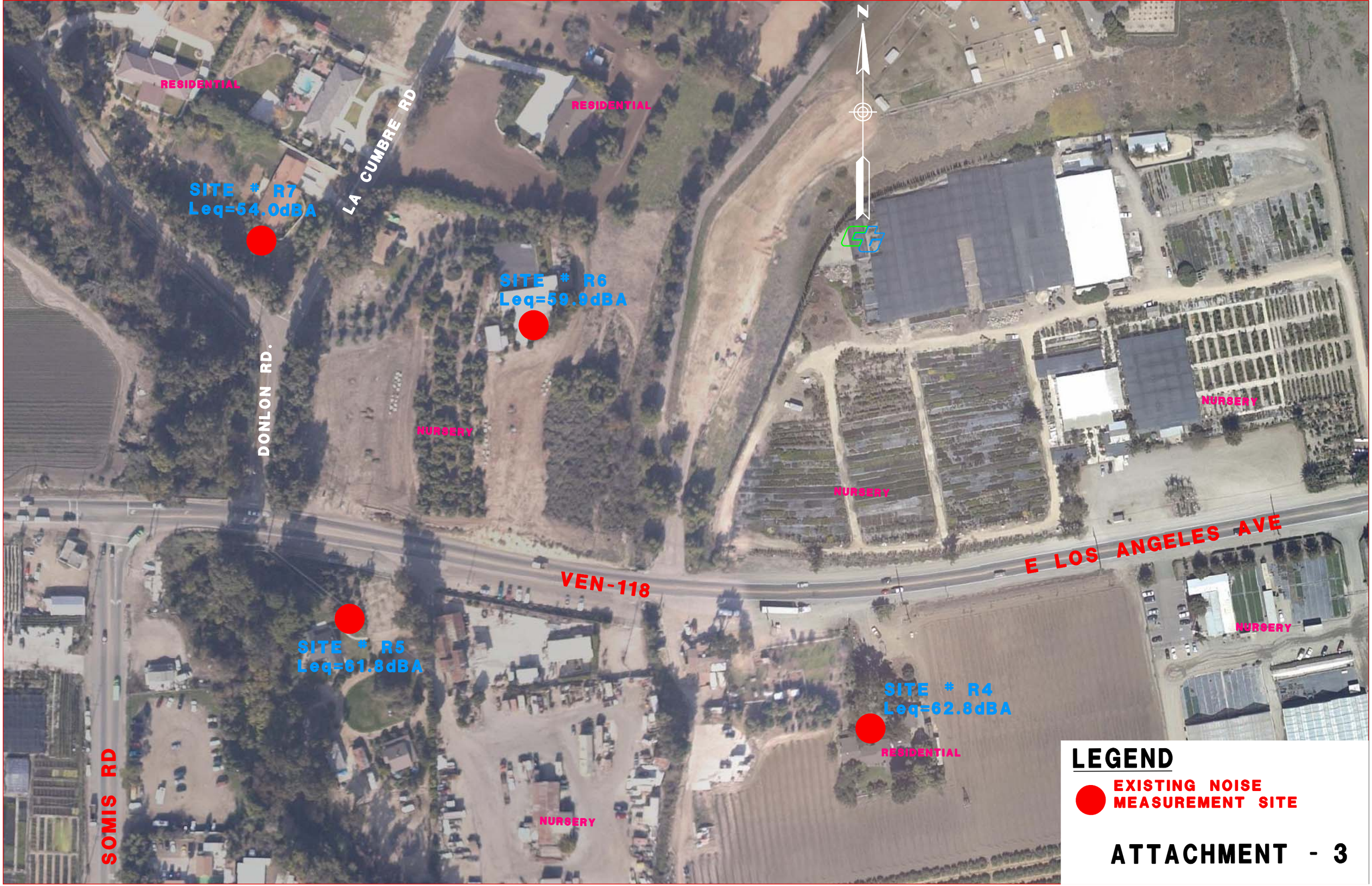
Receiver	Location	Type of Development	Noise Abatement Category	Field-Measured Noise Level dBA - Leq[h]	Modeled Noise Level dBA - Leq[h]	Calibration Factor dBA - Leq[h]	Existing Worst-Hour Noise Level dBA - Leq[h]	Future No Build Noise Levels dBA - Leq[h] Alternative 1	Noise Increase dBA - Leq[h]	Future Worst-Hour Noise Level dBA - Leq[h] Alternative 2	Impact Type N=No Impact A=Approaches E=Exceeds	Noise Increase dBA - Leq[h]	Future Worst-Hour Noise Level dBA - Leq[h] Alternative 3	Impact Type N=No Impact A=Approaches E=Exceeds	Noise Increase dBA - Leq[h]	Future Worst-Hour Noise Level dBA - Leq[h] Alternative 4	Impact Type N=No Impact A=Approaches E=Exceeds	Noise Increase dBA - Leq[h]	Future Worst-Hour Noise Level dBA - Leq[h] Alternative 5 Bypass	Impact Type N=No Impact A=Approaches E=Exceeds	Noise Increase dBA - Leq[h]	Future Worst-Hour Noise Level dBA - Leq[h] Alternative 6 Bypass	Impact Type N=No Impact A=Approaches E=Exceeds	Noise Increase dBA - Leq[h]
Site R1	6754 Los Angeles Avenue	Residential	B - 67 dBA - Leq(h)	60.8	62.8	-2.0	61.2	62.3	1.1	62.1	N	0.9	61.8	N	0.6	61.9	N	0.7				62.1	N	0.9
Site R2	6580 La Cumbre Rd.			60.3	62.2	-1.9	62.6	63.5	0.9	63.4	N	0.8	63.0	N	0.4	63.1	N	0.5				63.4	N	0.8
Site R3	6564 La Cumbre Rd			56.9	57.5	-0.6	59.1	59.3	0.2	59.1	N	0.0	59.1	N	0.0	59.1	N	0.0				59.1	N	0.0
Site R4	5696 Los Angeles Avenue			62.8	59.9	2.9	63.7	64.6	0.9	64.4	N	0.7	64.1	N	0.4	64.2	N	0.5				64.4	N	0.7
Stie R5	5470 Los Angeles Avenue			61.8	64.1	-2.3	63.4	63.7	0.3	63.6	N	0.2	63.4	N	0.0	63.4	N	0.0				63.6	N	0.2
Site R6	3970 Donlon Road			59.9	57.0	2.9	60.9	61.8	0.9	61.5	N	0.6	61.1	N	0.2	61.2	N	0.3				61.5	N	0.6
Site R7	5487 La Cumbre Road			54.0	56.2	-2.2	55.1	55.8	0.7	55.7	N	0.6	55.2	N	0.1	55.3	N	0.2				55.7	N	0.6
Site R9	5306 Los Angeles Avenue			64.9	65.1	-0.2	66.6	66.7	0.1	66.6	A	0.0	66.6	A	0.0	66.6	A	0.0				66.6	A	0.0
Site R10	3186 Somis Dr			64.0	62.4	1.6	64.9	64.9	0.0	64.9	N	0.0	64.9	N	0.0	64.9	N	0.0				64.9	N	0.0
Site R11	5436 North St.			62.3	62.2	0.1	63.6	65.3	1.7	65.1	N	1.5	65.1	N	1.5	65.3	N	1.7				65.1	N	1.5
Site R12	3445 Somis Road			67.2	66.6	0.6	68.1	69.5	1.4	69.3	E	1.2	69.3	E	1.2	70.0	E	1.9				69.3	E	1.2
Site R13	3406 Rice St.			60.3	60.4	-0.1	61.7	61.7	0.0	61.7	N	0.0	61.7	N	0.0	61.7	N	0.0				61.7	N	0.0
Site R14	3318 West St			57.7*	50.5	7.2	59.2	53.2	-6.0	52.5	N	-6.7	52.5	N	-6.7	52.7	N	-6.5				52.5	N	-6.7
Site R15	3356 Somis Rd			64.3	64.1	0.2	66	66.7	0.7	66.0	A	0.0	66.0	A	0.0	66.2	A	0.2				66.0	A	0.0
Site R16	2306 West St			62.8	61.8	1.0	64.5	64.5	0.0	64.5	N	0.0	64.5	N	0.0	64.6	N	0.1				64.5	N	0.0
BYPASS																								
Site R17	Private Res.			52.7															57.5	N	4.8			
R18	3508 Rice St			56.7															62.0	N	5.3			
R20	Private Rd			57.5															60.8	N	3.3			

* Contaminated by train noise.

ATTACHMENT - 1

aerial ven 118_34.dgn 1/5/2010 3:02:28 PM

aerial ven 118_34.dgn 1/5/2010 3:04:51 PM



ATTACHMENT - 3

aerial ven 118_34.dgn 1/5/2010 3:07:40 PM

ATTACHMENT - 4

aerial ven 118_34.dgn 1/5/2010 3:10:00 PM

ATTACHMENT - 5

aerial ven 118_34.dgn 1/5/2010 3:11:48 PM

aerial ven 118_34.dgn 1/5/2010 3:14:55 PM

LEGEND

● EXISTING NOISE MEASUREMENT SITE

ATTACHMENT - 7

aerial ven 118_34.dgn 1/5/2010 3:19:47 PM

ATTACHMENT - 8

aerial ven 118_34.dgn 1/5/2010 3:22:04 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

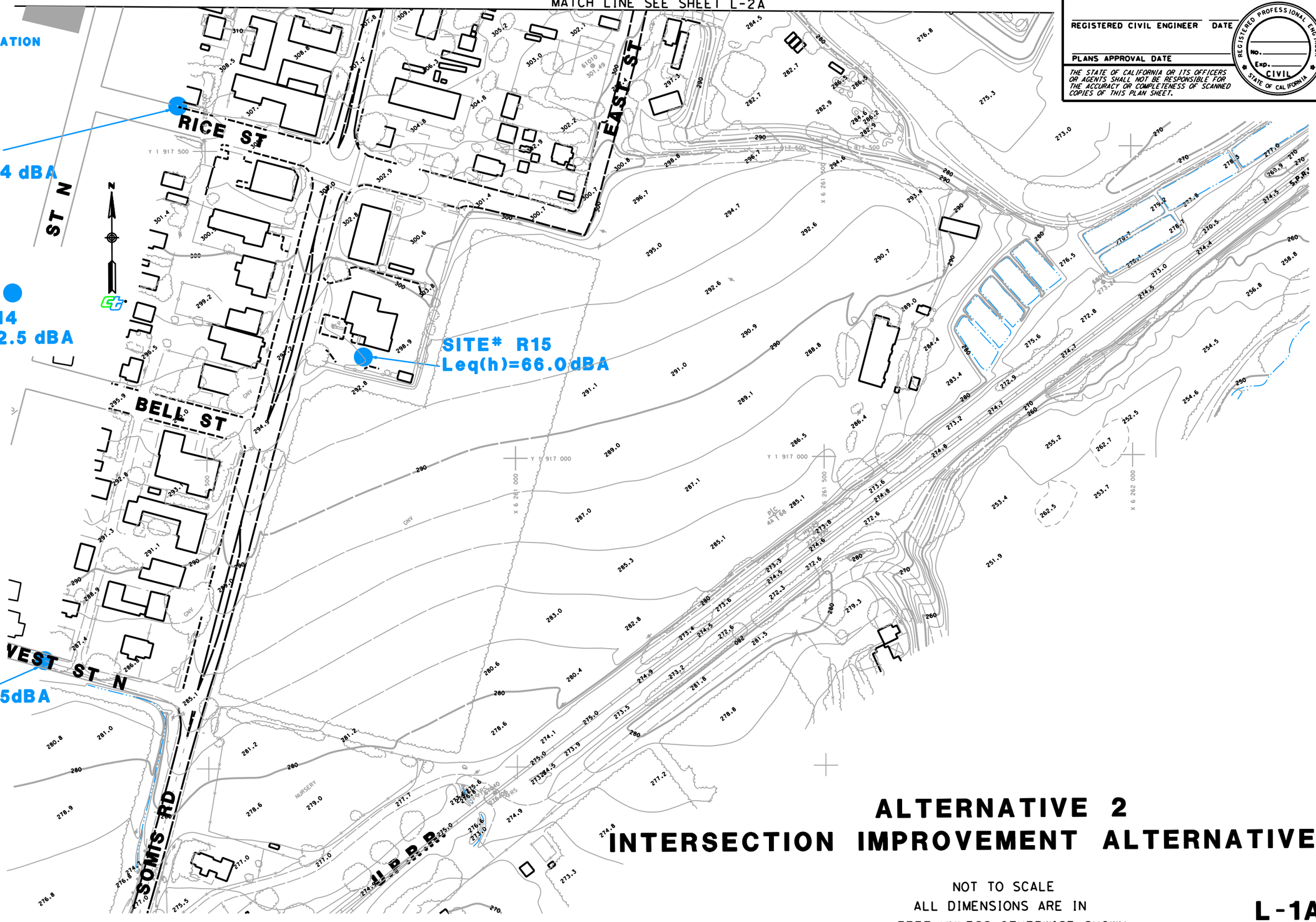
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

MATCH LINE SEE SHEET L-2A

LEGEND

SITE LOCATION



ALTERNATIVE 2
INTERSECTION IMPROVEMENT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-1A

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

1Layout 1alt2_3_4_6.dgn 1/5/2010 1:36:55 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

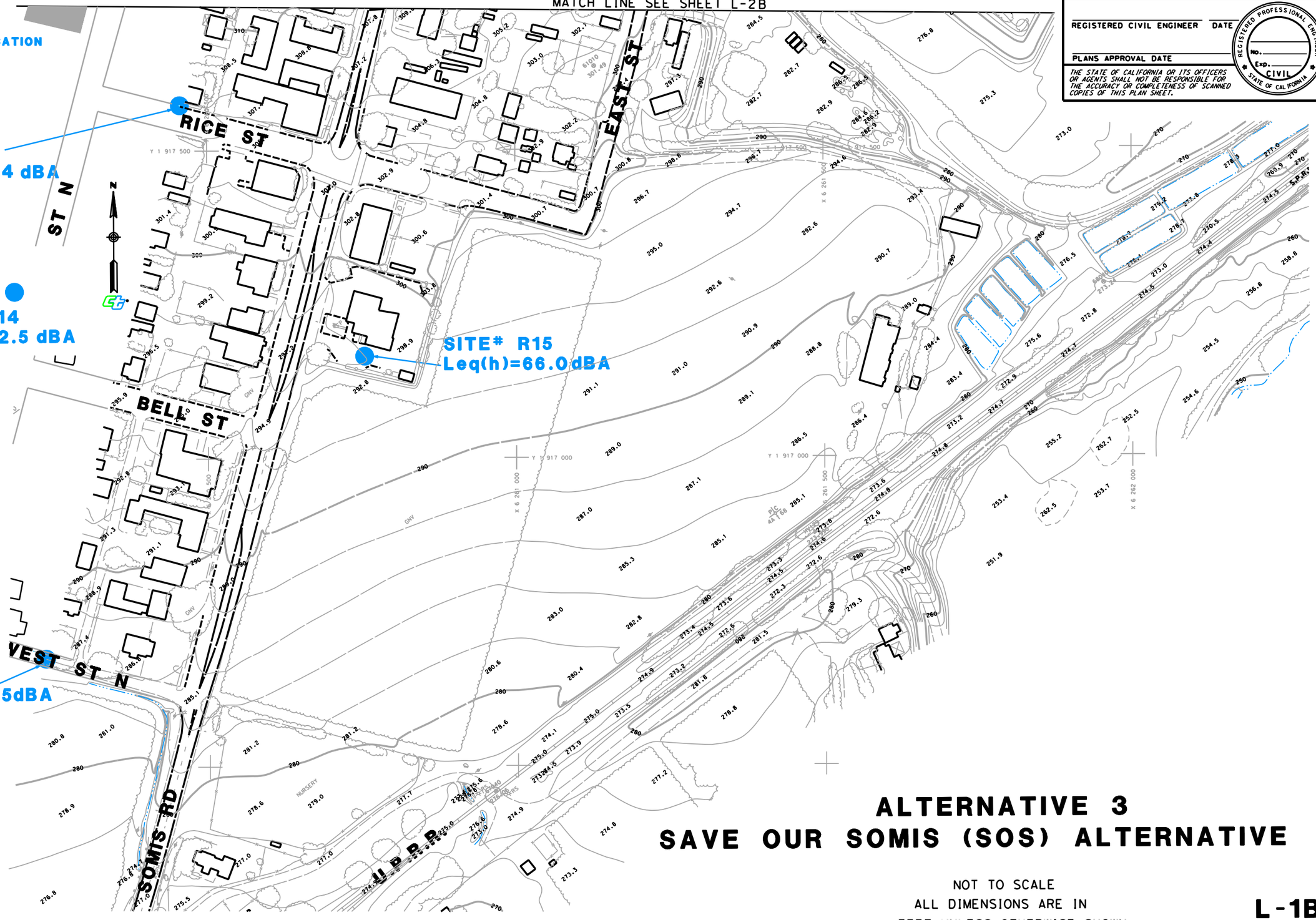
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

MATCH LINE SEE SHEET L-2B

LEGEND

SITE LOCATION



ALTERNATIVE 3
SAVE OUR SOMIS (SOS) ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-1B

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

1Layout 1alt2_3_4_6.dgn 1/5/2010 1:50:23 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

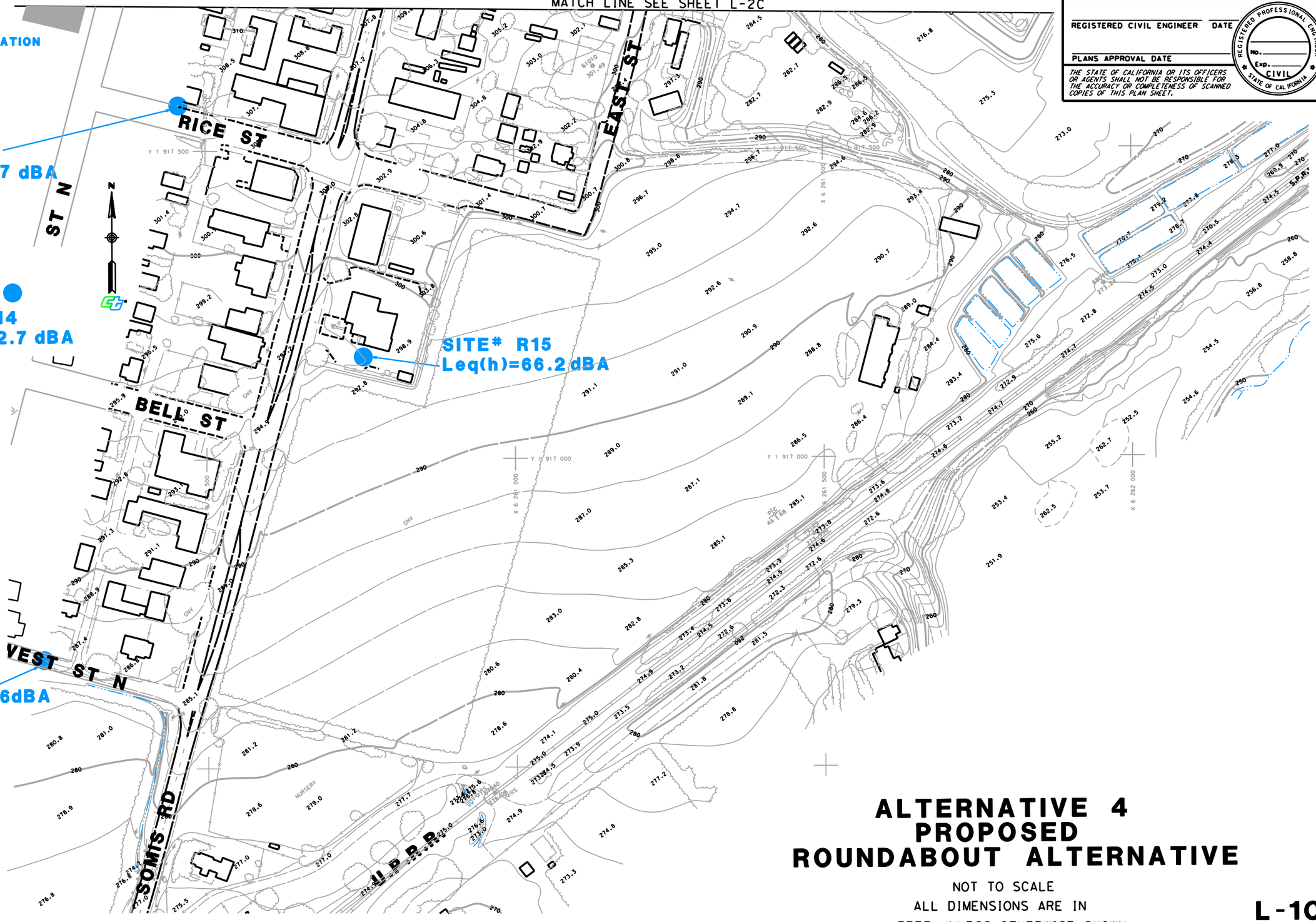
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

MATCH LINE SEE SHEET L-2C

LEGEND

SITE LOCATION



ALTERNATIVE 4
PROPOSED
ROUNDABOUT ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

L-1C

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE

TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER

DGN FILE => $REQUEST

CU 07332

EA 105960

1Layout 1alt2_3_4_6.dgn 1/5/2010 1:56:51 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

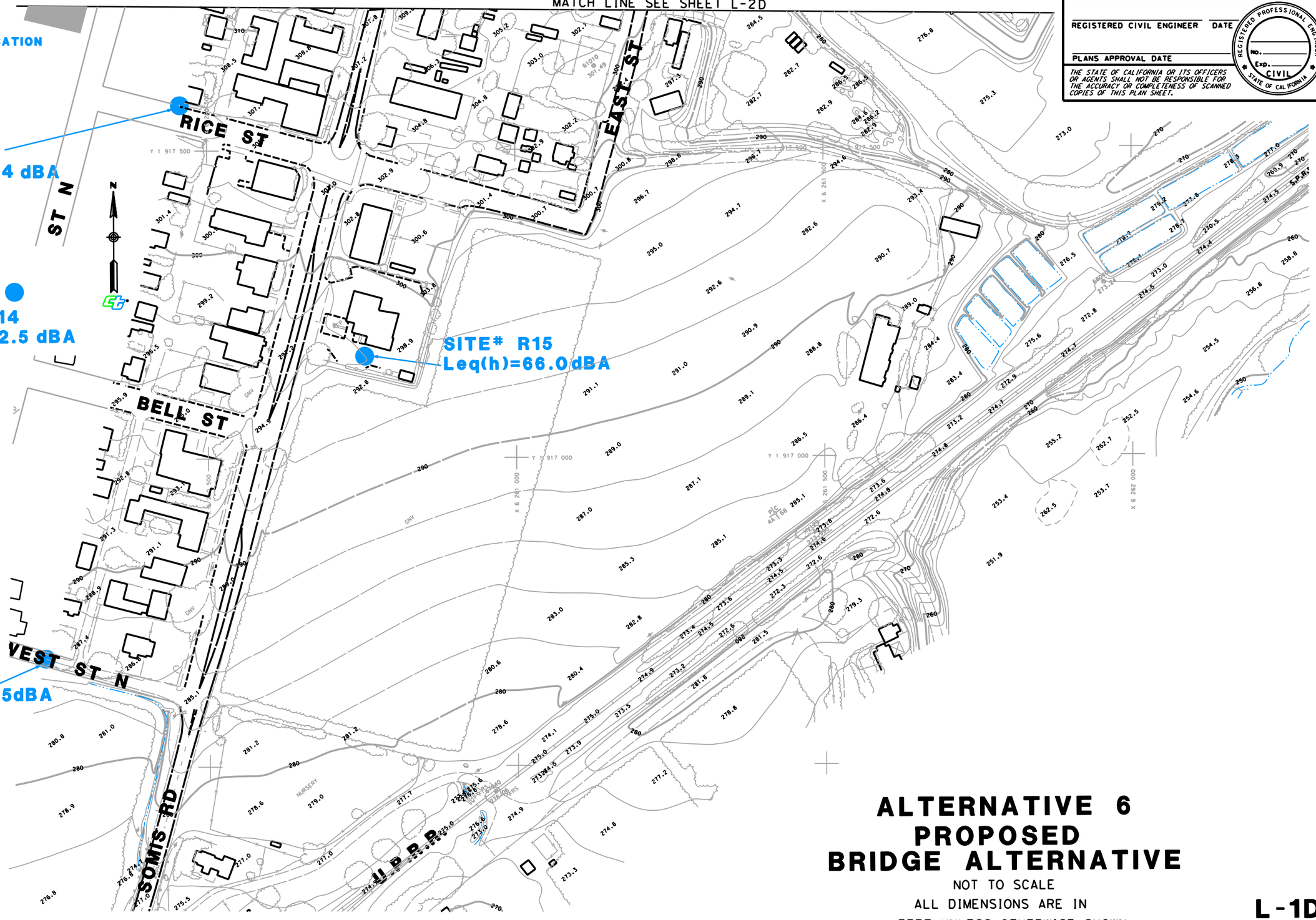
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

MATCH LINE SEE SHEET L-2D

LEGEND

SITE LOCATION



ALTERNATIVE 6
PROPOSED
BRIDGE ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

L-1D

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE

TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER

DGN FILE => $REQUEST

CU 07332

EA 105960

1Layout 1alt2_3_4_6.dgn 1/5/2010 1:59:13 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

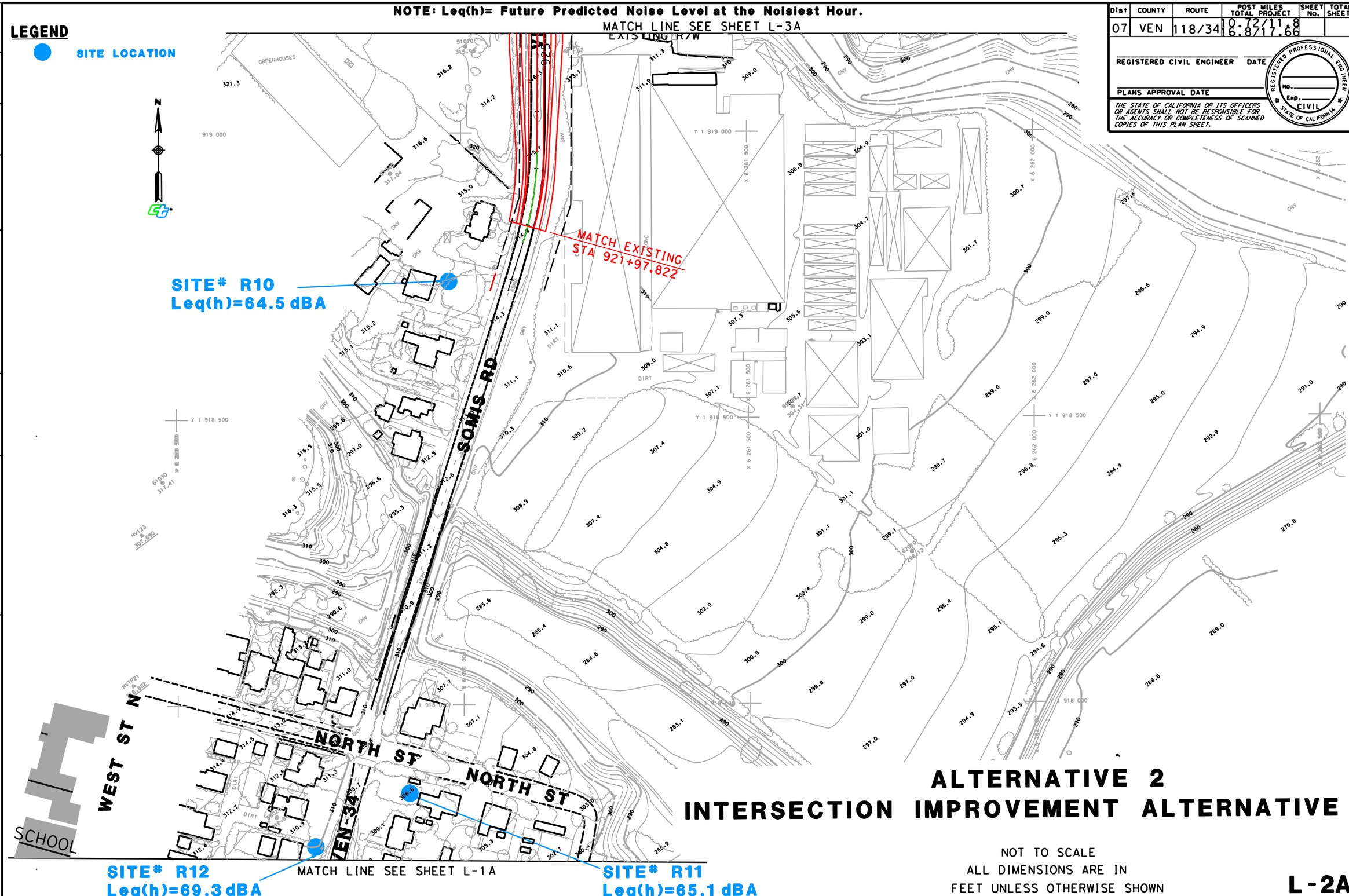
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 2
INTERSECTION IMPROVEMENT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-2A

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

2Layout 2alt2_3_4_6.dgn 1/5/2010 2:03:46 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

MATCH LINE SEE SHEET L-3B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

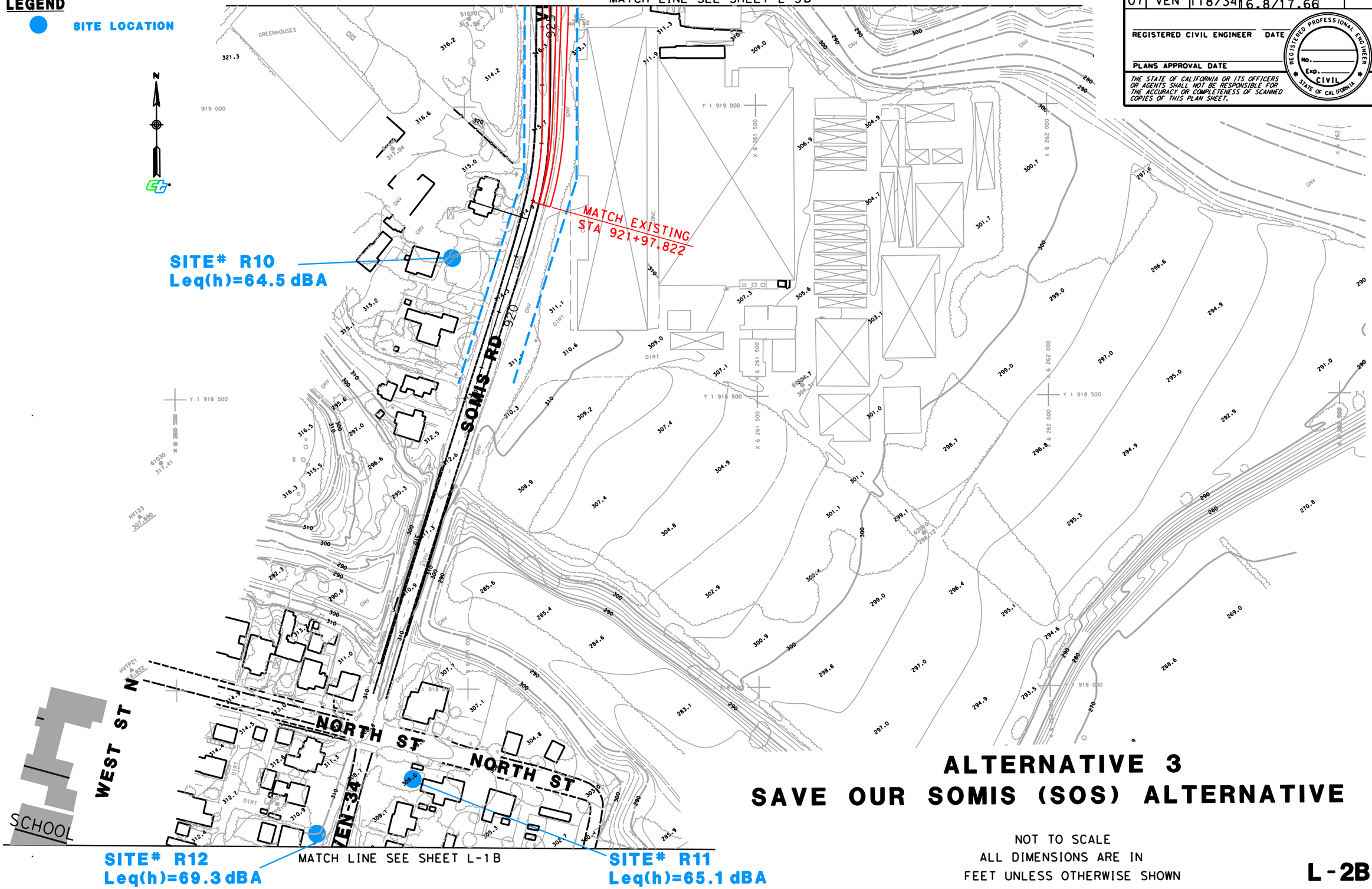
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION



MATCH LINE SEE SHEET L-1B

ALTERNATIVE 3
SAVE OUR SOMIS (SOS) ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-2B

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

2Layout 2alt2_3_4_6.dgn 1/5/2010 2:05:27 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

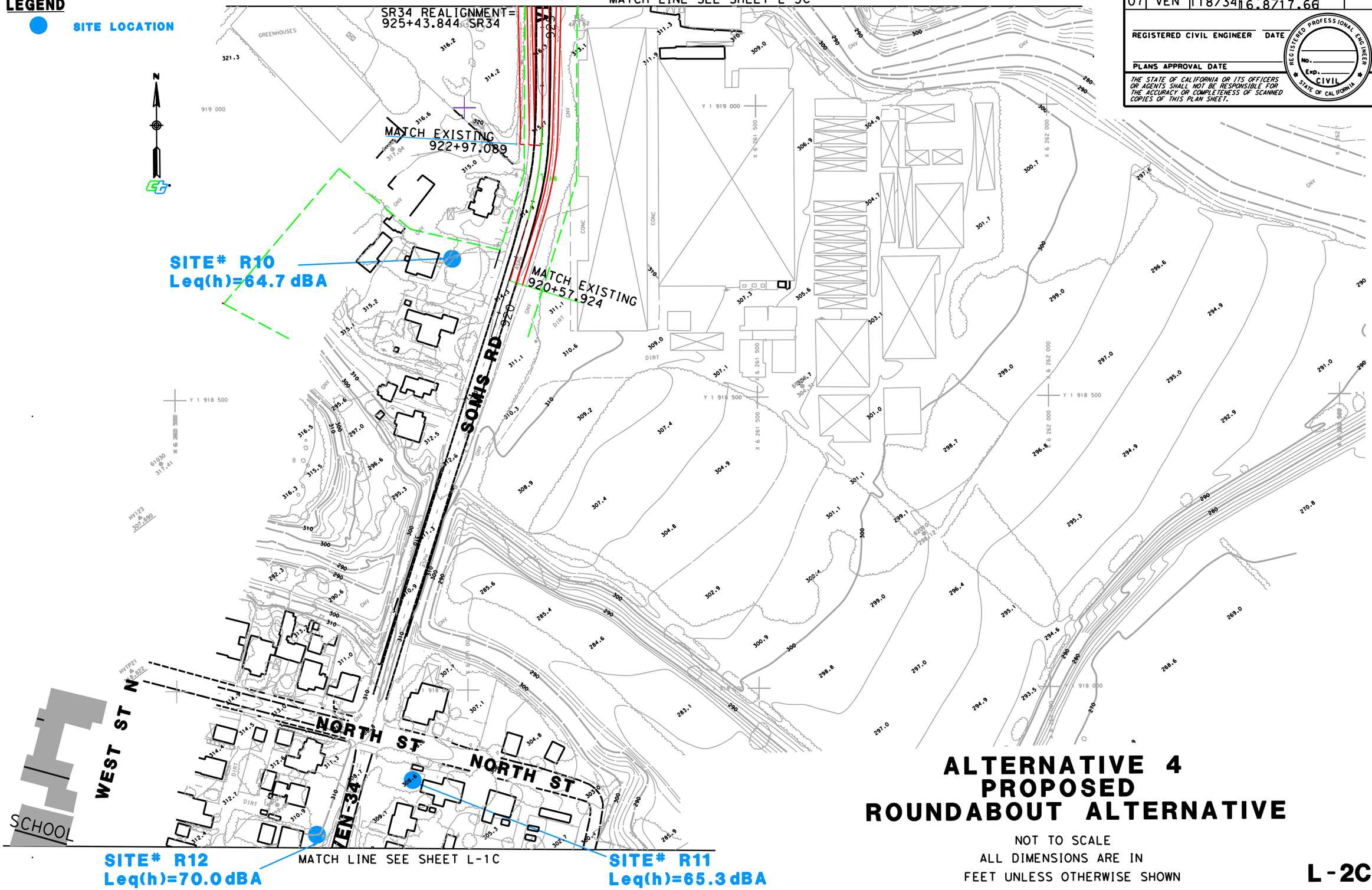
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 4
PROPOSED
ROUNDABOUT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-2C

REVISED BY | DATE REVISED
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

2Layout 2alt2_3_4_6.dgn 1/5/2010 2:06:57 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

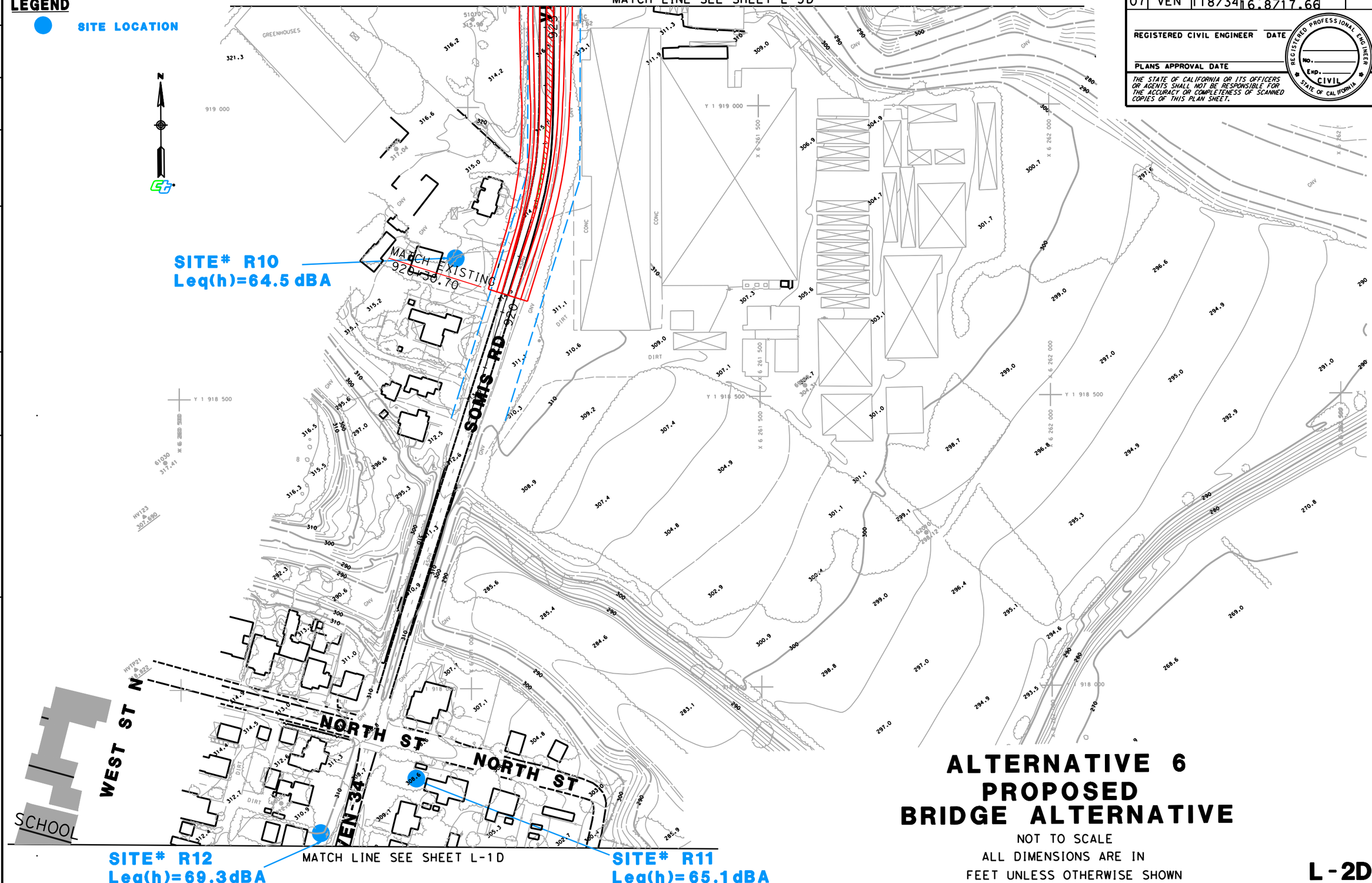
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 6
PROPOSED
BRIDGE ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-2D

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00
DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
USERNAME => $USER
DGN FILE => $REQUEST
CU 07332
EA 105960

2Layout 2alt2_3_4_6.dgn 1/5/2010 2:08:23 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

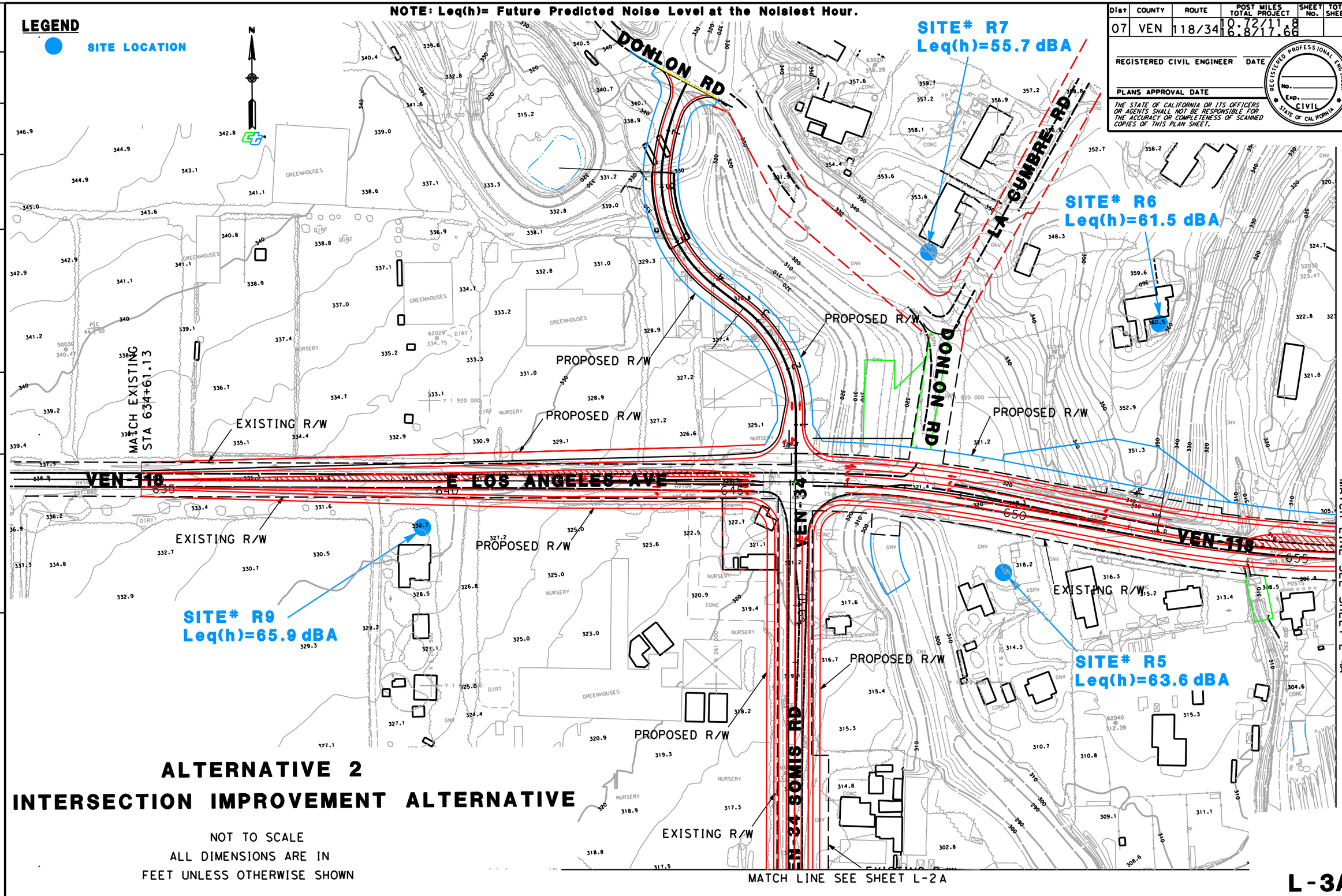
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 2

INTERSECTION IMPROVEMENT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-3A

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

3Layout 3alt2_3_4_6.dgn 1/5/2010 2:10:59 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

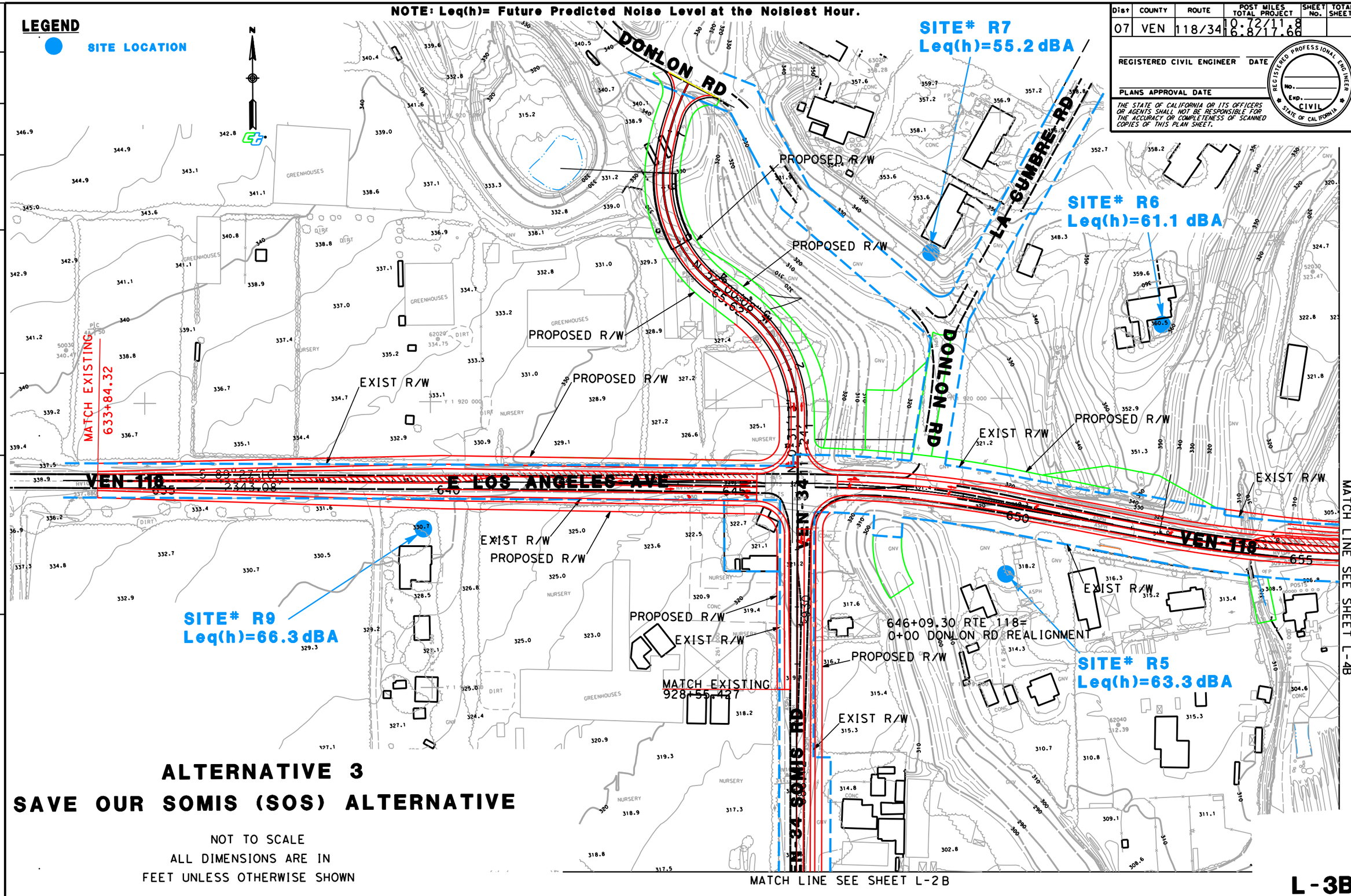
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 3

SAVE OUR SOMIS (SOS) ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-3B

REVISED BY | DATE REVISED
CALCULATED-DESIGNED BY | CHECKED BY
FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

3Layout 3alt2_3_4_6.dgn 1/5/2010 2:13:03 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

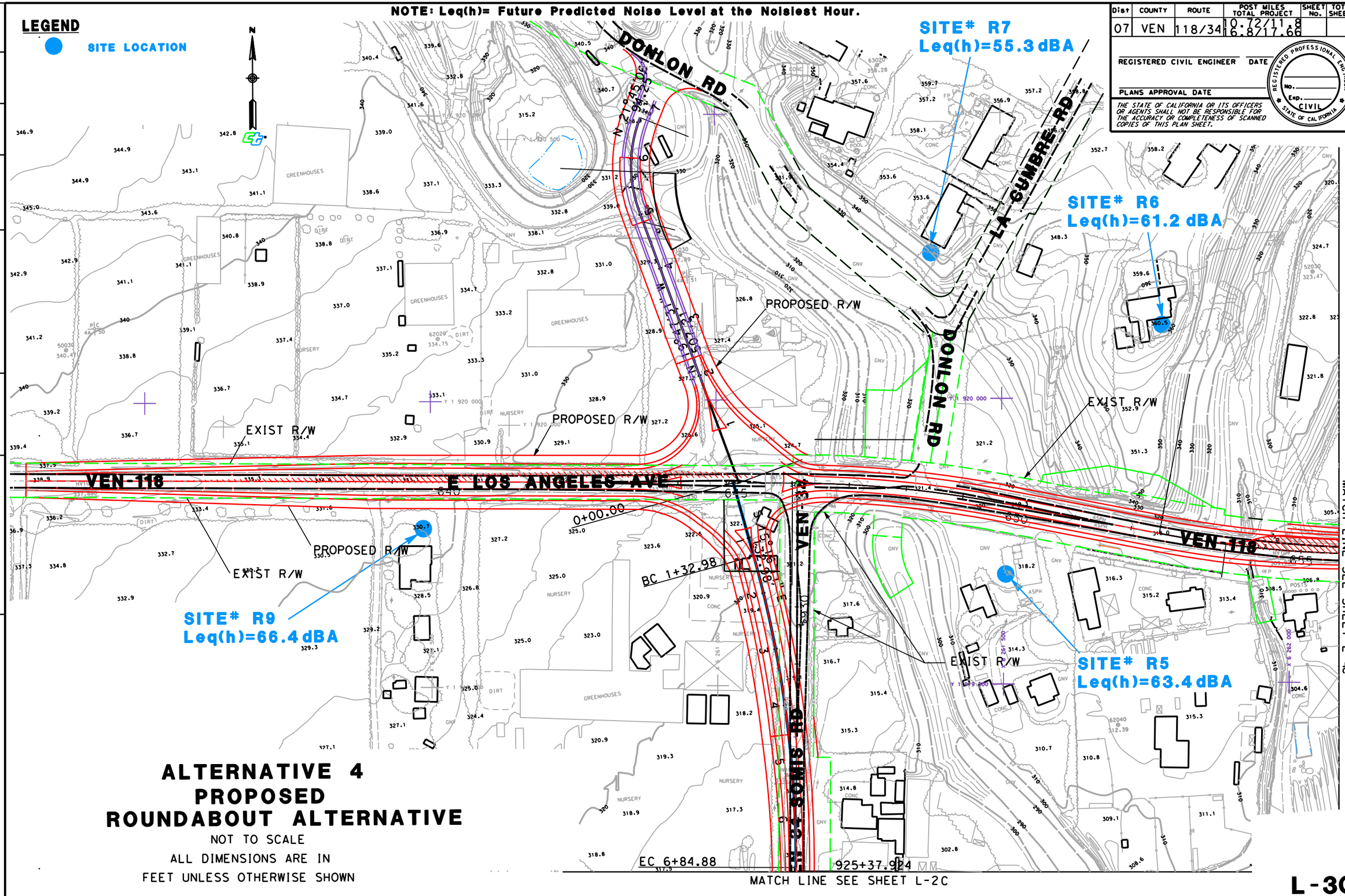
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 4
PROPOSED
ROUNDABOUT ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

L-3C

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

3Layout 3alt2_3_4_6.dgn 1/5/2010 2:15:07 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

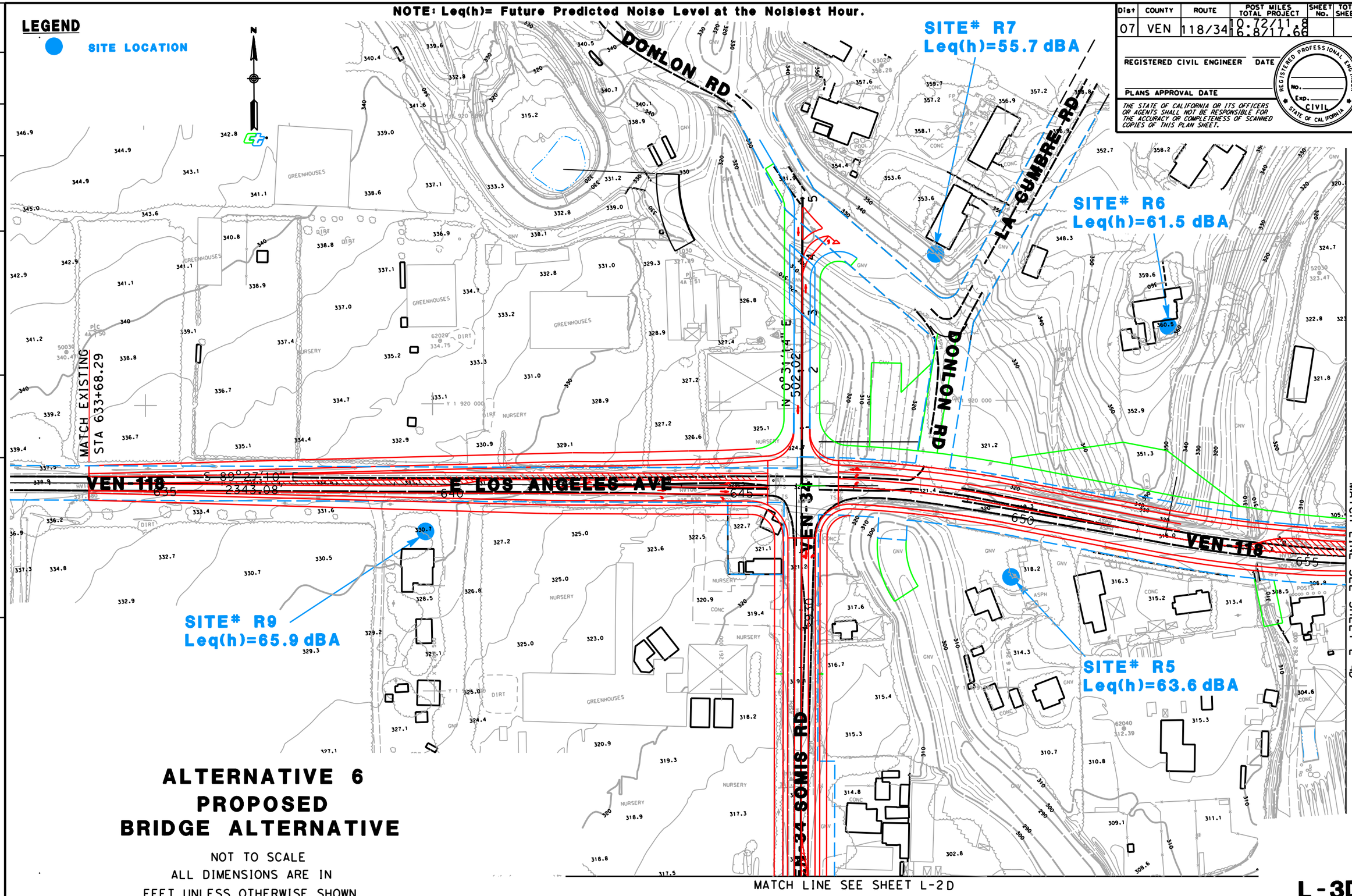
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 6
PROPOSED
BRIDGE ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-3D

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

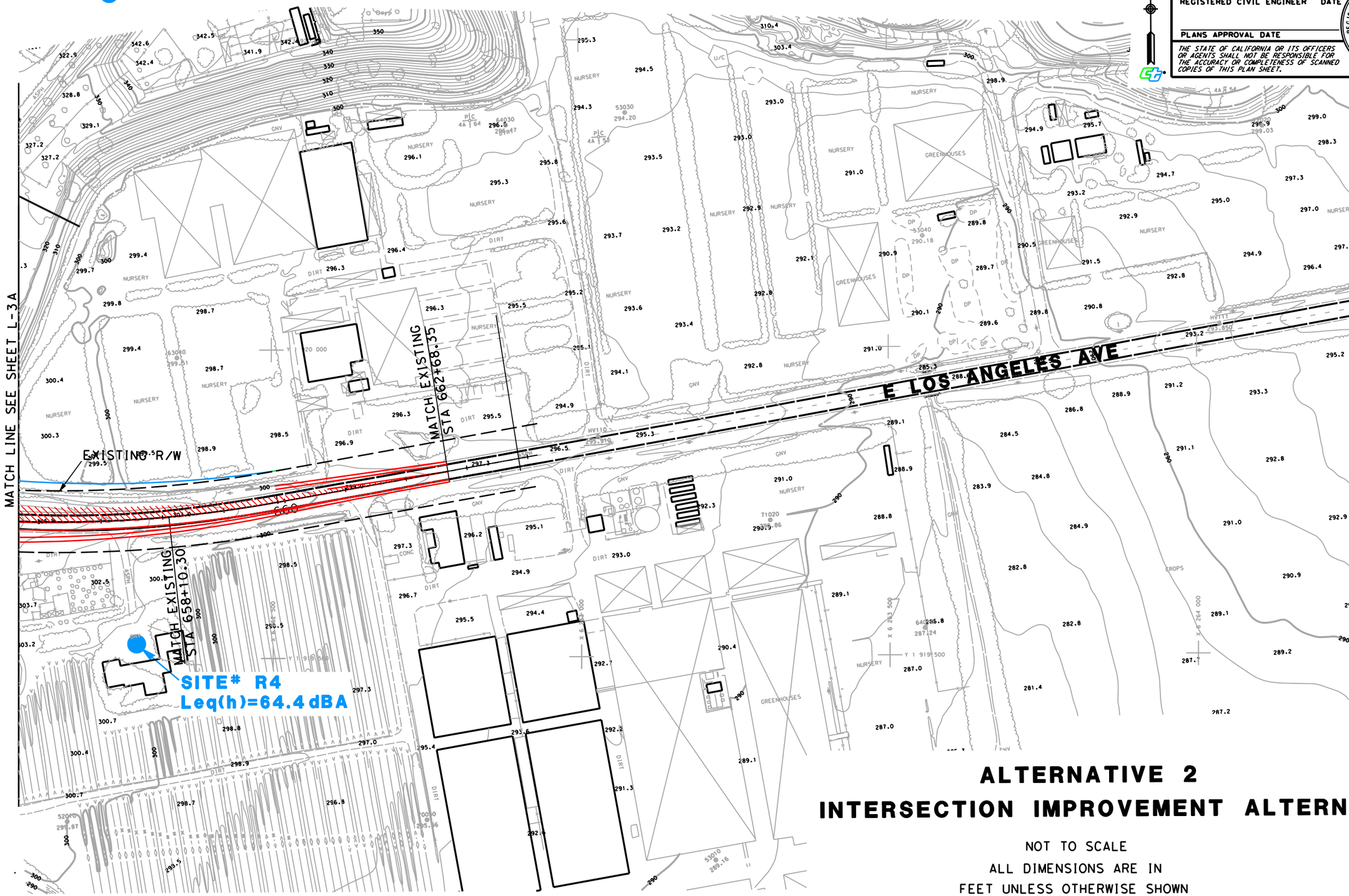
BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

3Layout 3alt2_3_4_6.dgn 1/5/2010 2:18:07 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

LEGEND

SITE LOCATION



ALTERNATIVE 2

INTERSECTION IMPROVEMENT ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

L-4A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

4Layout 4alt2_3_4_6.dgn 1/5/2010 2:22:40 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

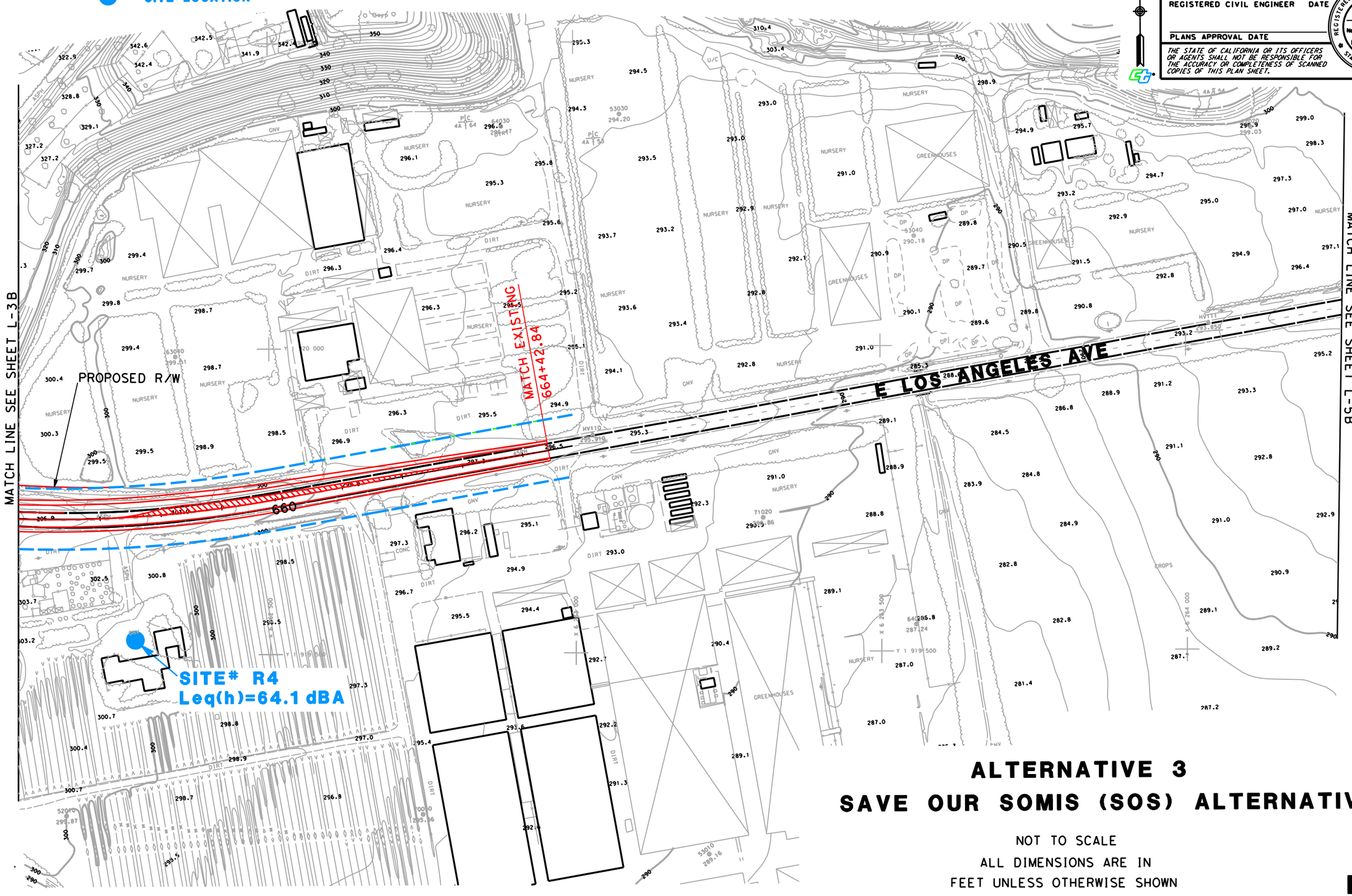
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION



ALTERNATIVE 3

SAVE OUR SOMIS (SOS) ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

L-4B

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

4Layout 4alt2_3_4_6.dgn 1/5/2010 2:24:06 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

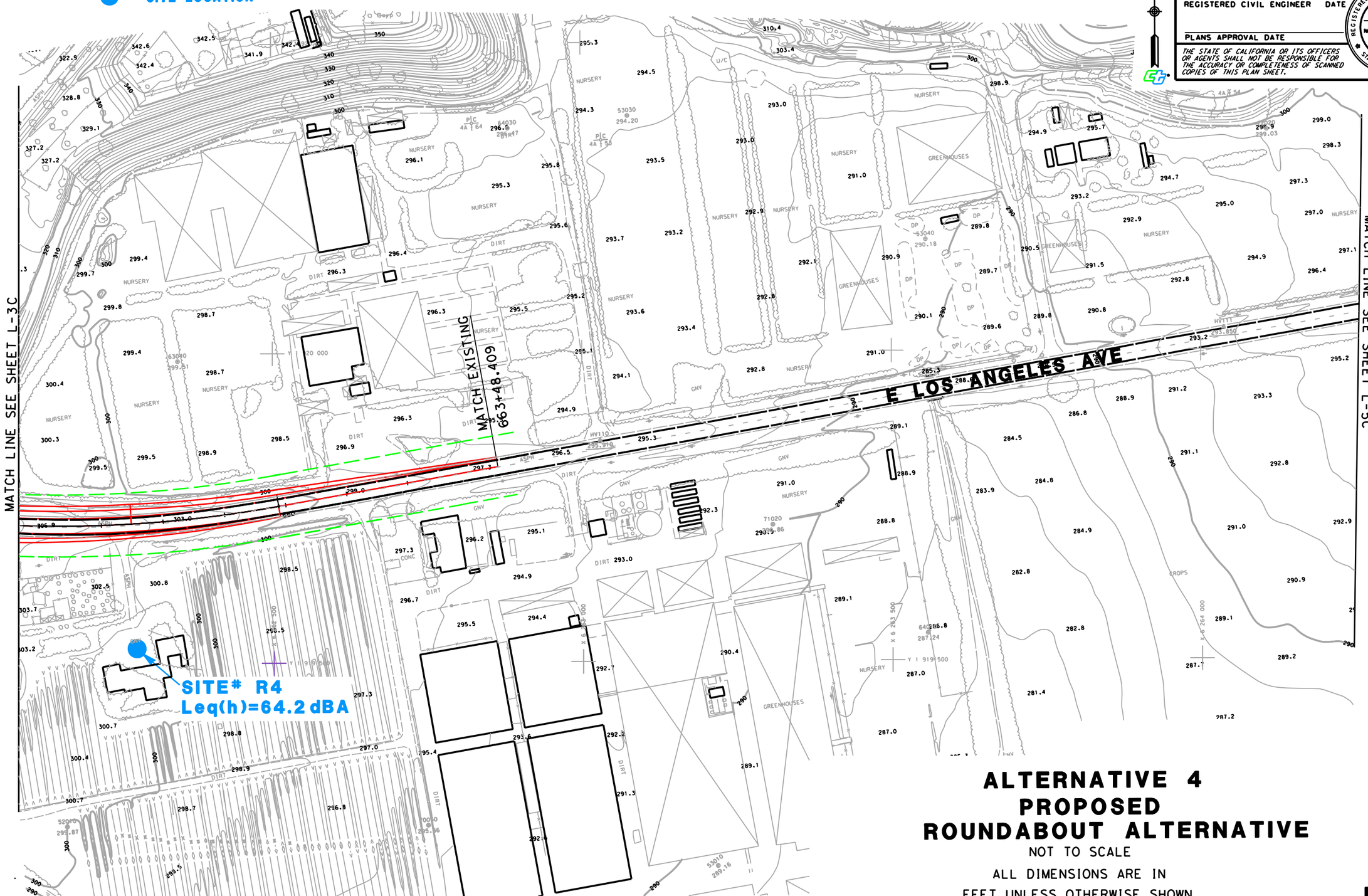
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION



ALTERNATIVE 4
PROPOSED
ROUNDABOUT ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

L-4C

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

4Layout 4alt2_3_4_6.dgn 1/5/2010 2:25:45 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

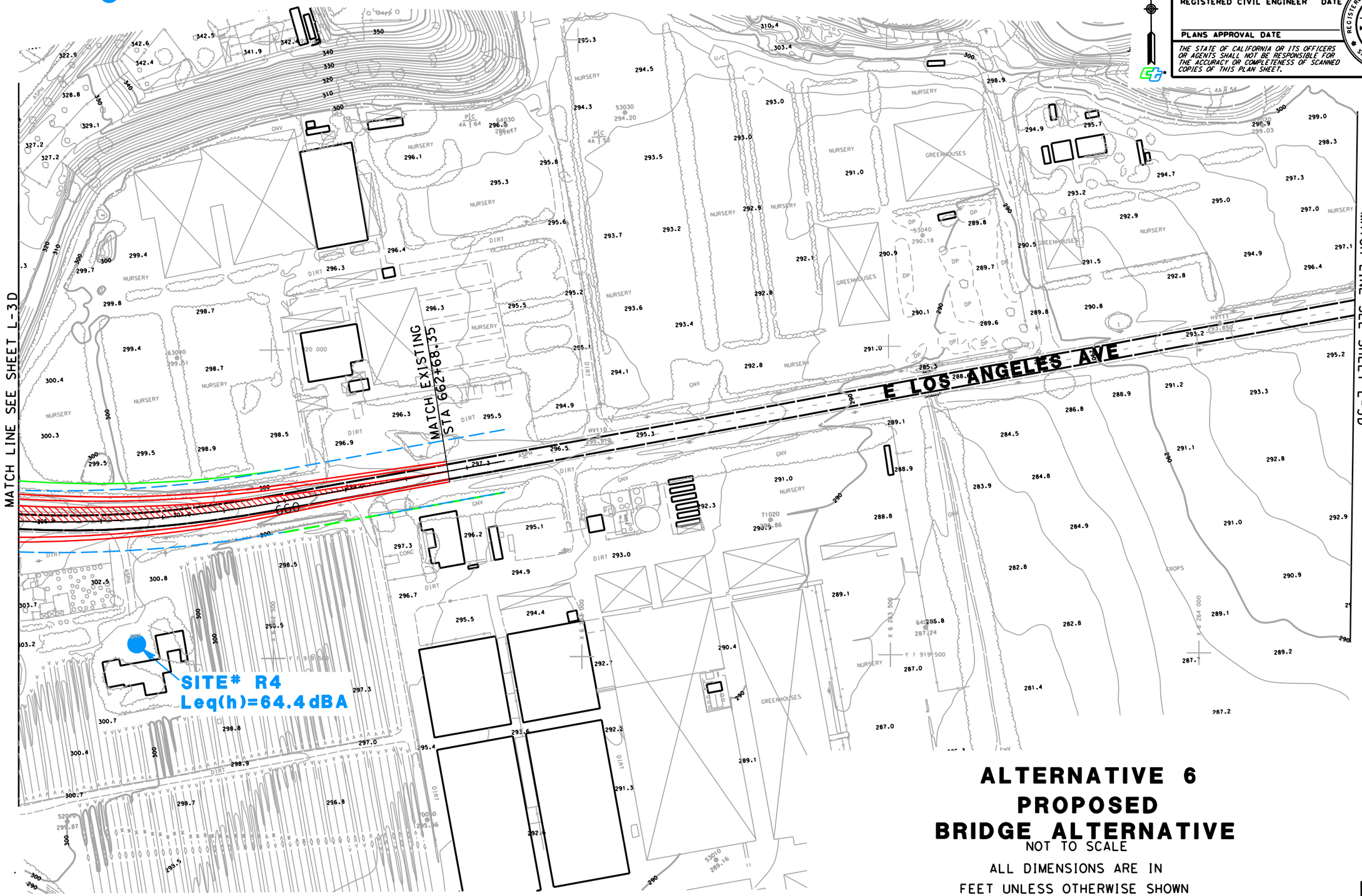
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 6
PROPOSED
BRIDGE ALTERNATIVE
NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-4D

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

4Layout 4alt2_3_4_6.dgn 1/5/2010 2:29:29 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

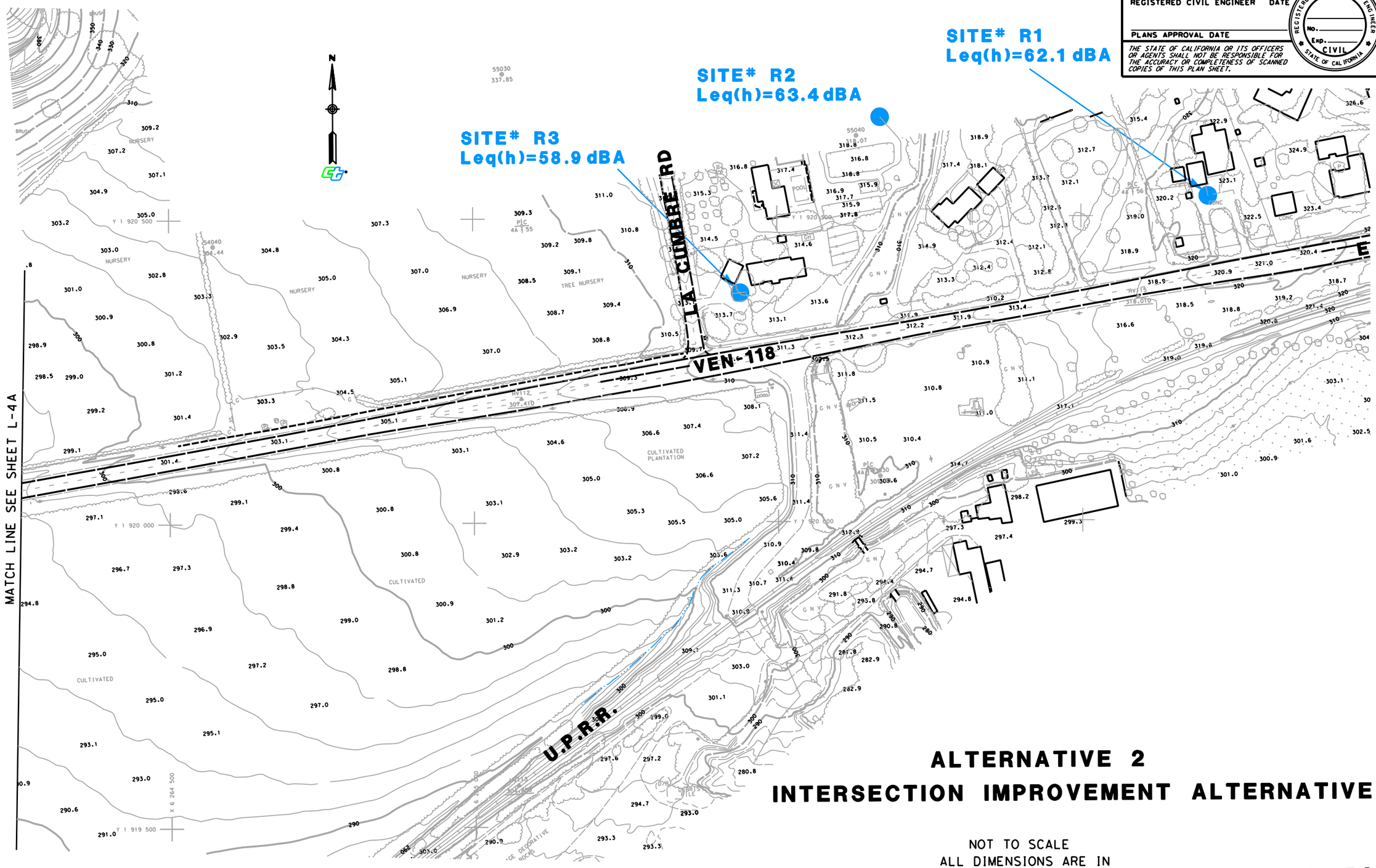
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.7/11.8 16.8/17.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 2
INTERSECTION IMPROVEMENT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-5A

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

5Layout 5alt2_3_4_6.dgn 1/5/2010 2:35:51 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

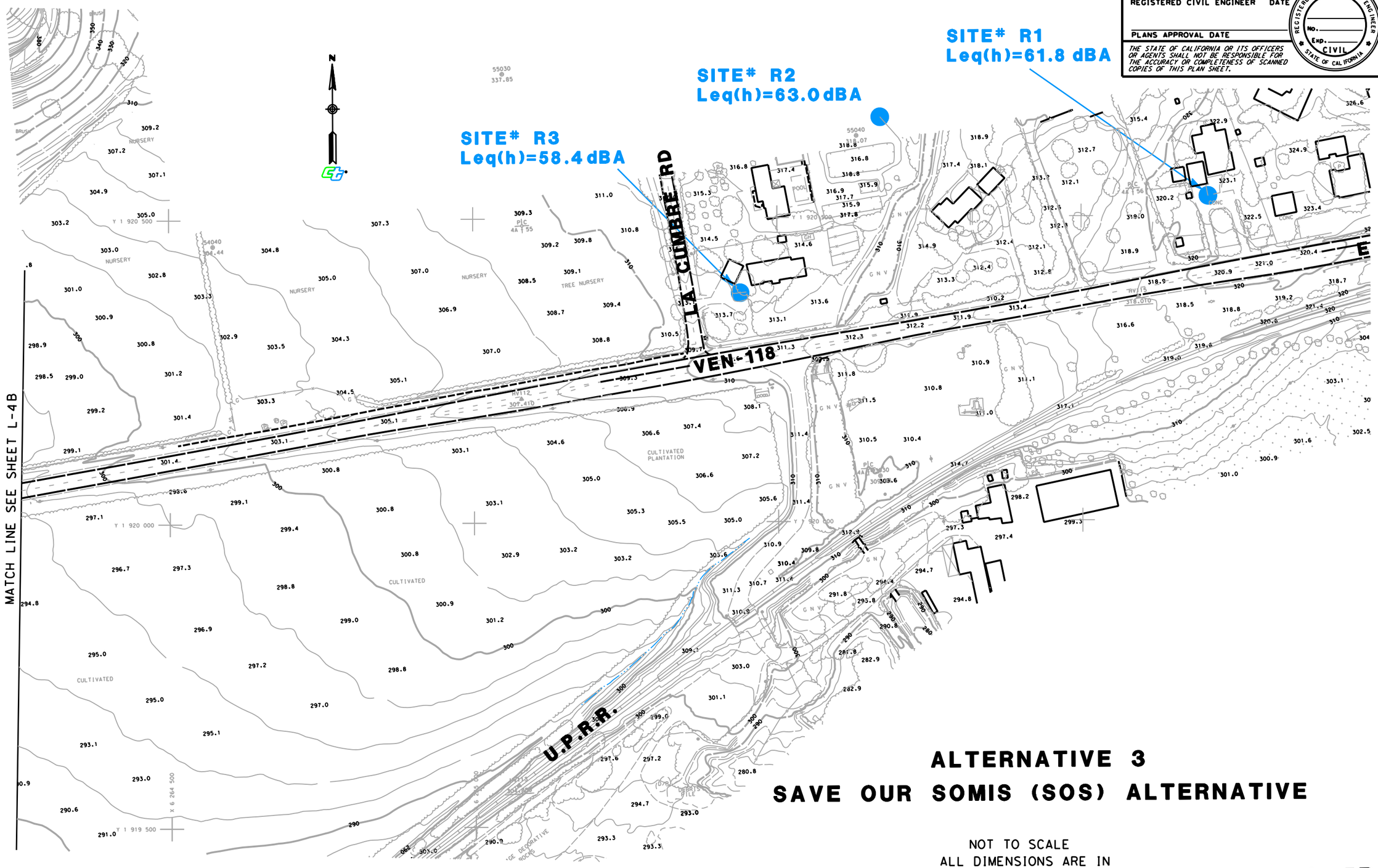
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.7/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 3
SAVE OUR SOMIS (SOS) ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-5B

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

5Layout 5alt2_3_4_6.dgn 1/5/2010 2:37:17 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

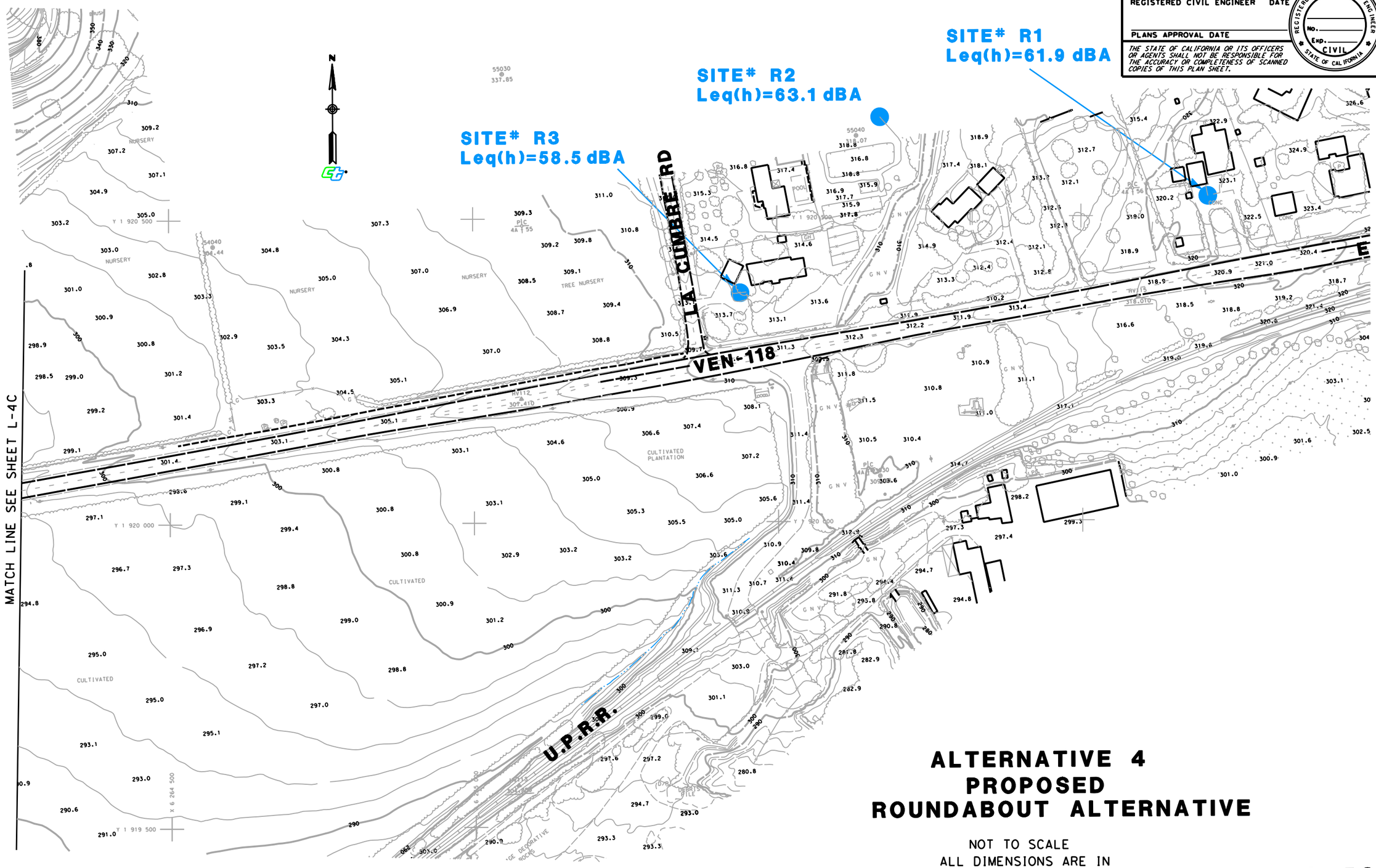
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.7/11.8 16.8/17.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 4
PROPOSED
ROUNDABOUT ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-5C

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | DGN FILE => $REQUEST | CU 07332 | EA 105960

5Layout 5alt2_3_4_6.dgn 1/5/2010 2:39:13 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

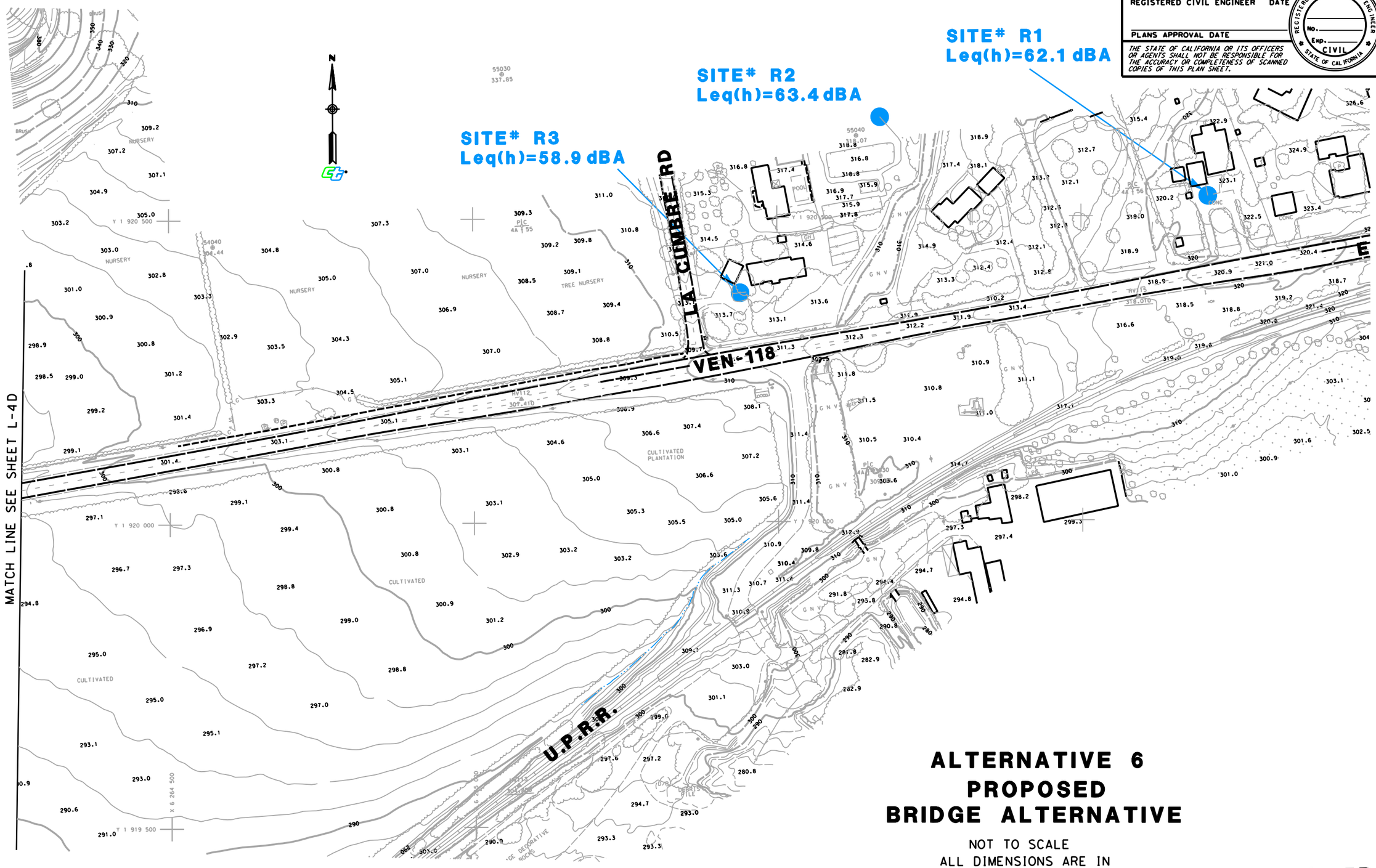
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.7/11.8 16.8/17.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 6
PROPOSED
BRIDGE ALTERNATIVE

NOT TO SCALE
ALL DIMENSIONS ARE IN
FEET UNLESS OTHERWISE SHOWN

L-5D

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER DGN FILE => $REQUEST | CU 07332 | EA 105960

5Layout 5alt2_3_4_6.dgn 1/5/2010 2:40:18 PM

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

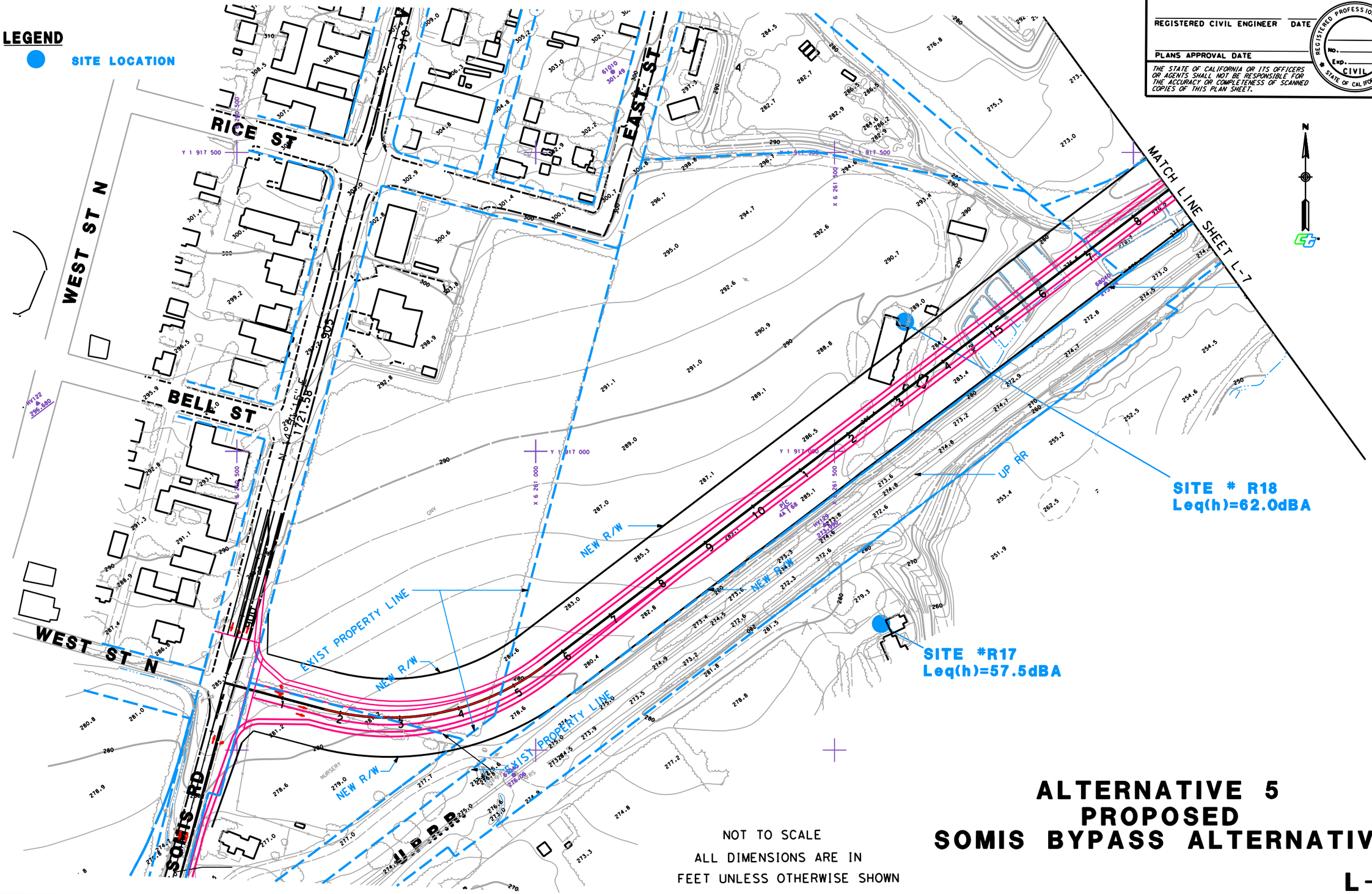
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER NO. EXP. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE 5
PROPOSED
SOMIS BYPASS ALTERNATIVE

L-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PLANNING DIVISION

FUNCTIONAL SUPERVISOR
CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED

LAST REVISION 00-00-00
DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
USERNAME => $USER
DGN FILE => $REQUEST
CU 07332
EA 105960

Layout 6Alt5.dgn 1/5/2010 2:42:52 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

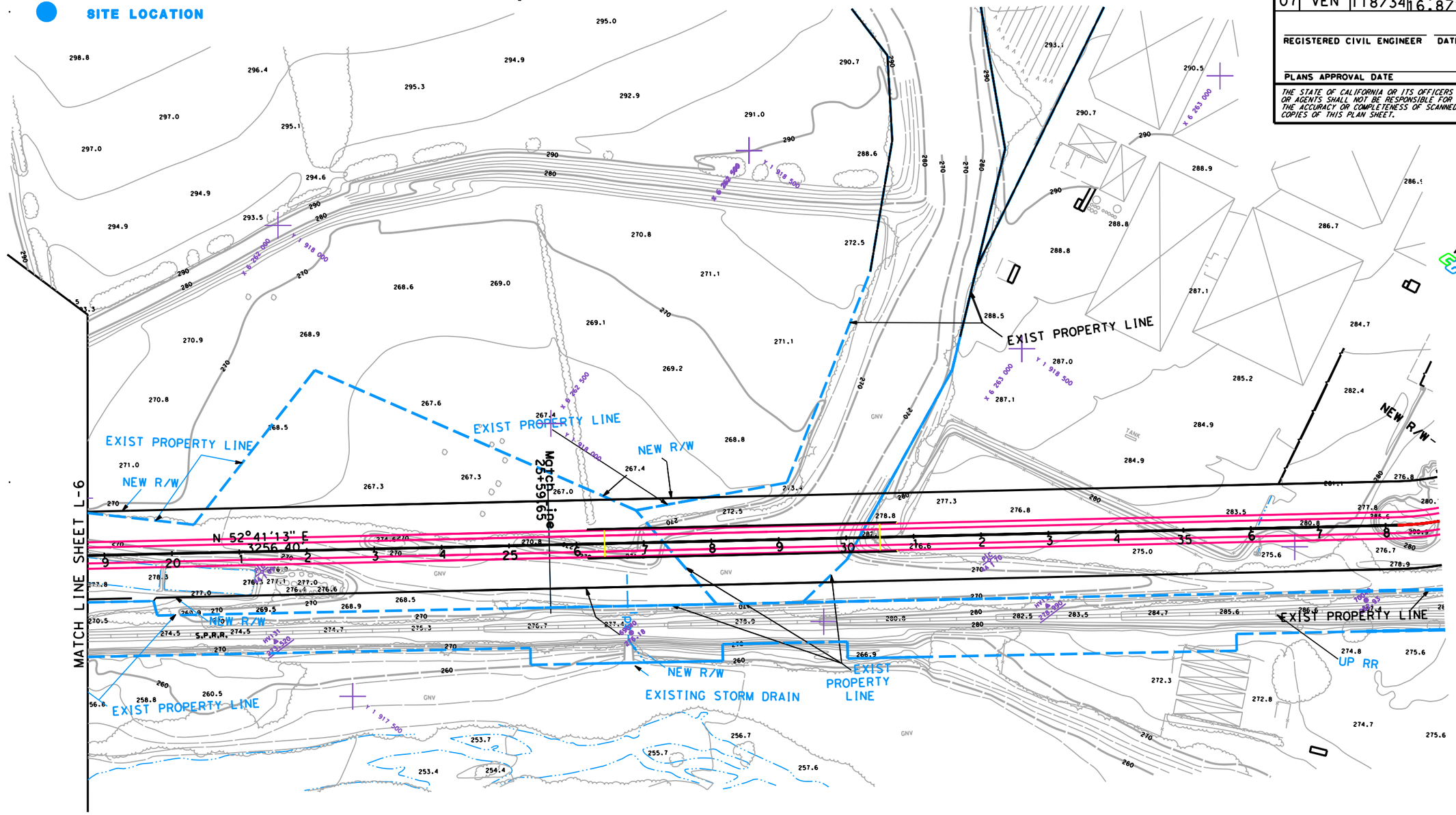
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.



ALTERNATIVE 5
PROPOSED
SOMIS BYPASS ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

L-7

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

Layout 7Alt5.dgn 1/5/2010 2:46:41 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 6.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

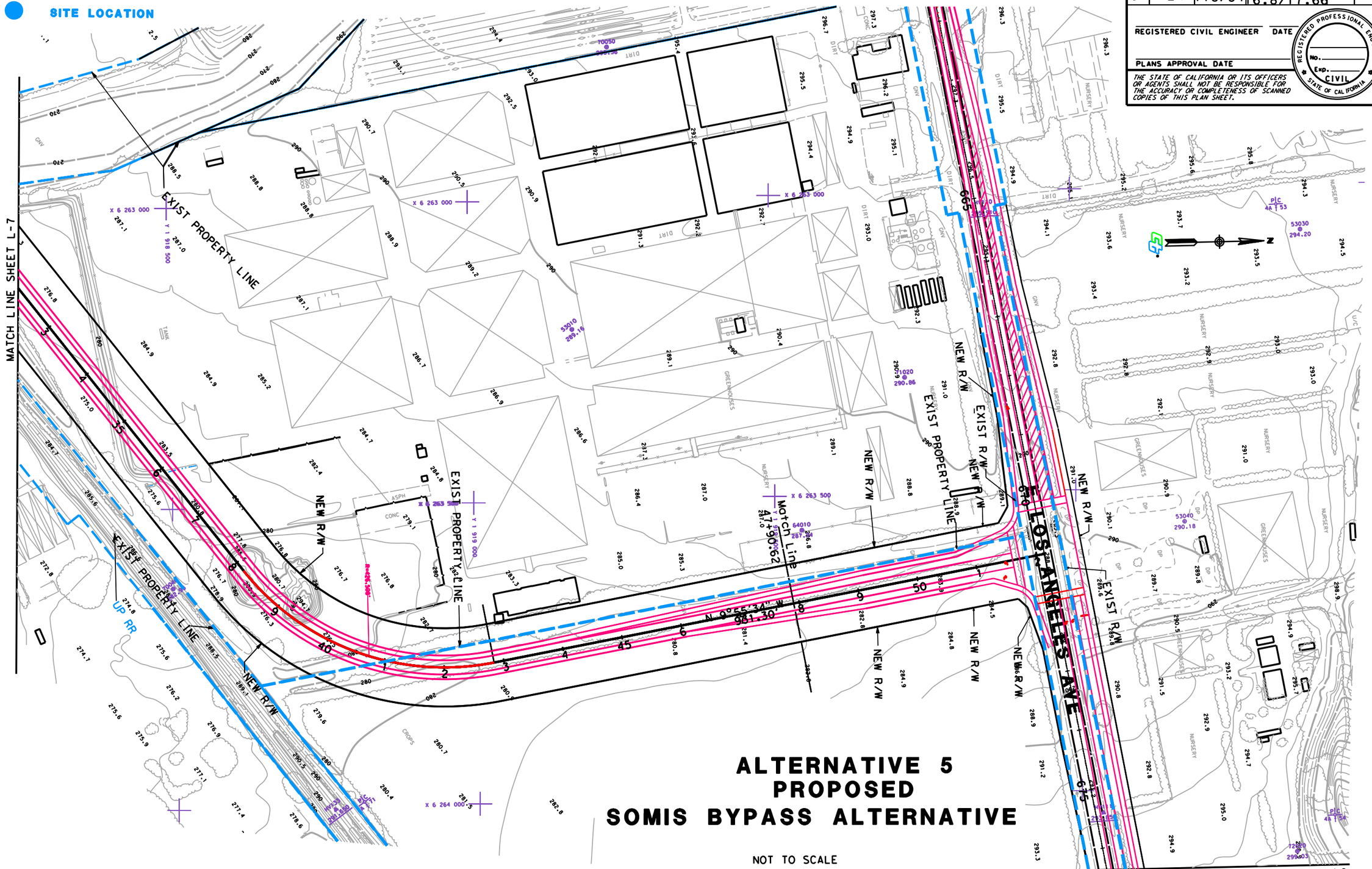
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.



ALTERNATIVE 5
PROPOSED
SOMIS BYPASS ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PLANNING DIVISION

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER
DGN FILE => $REQUEST

CU 07332

EA 105960

Layout 8Alt5.dgn 1/5/2010 2:48:18 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

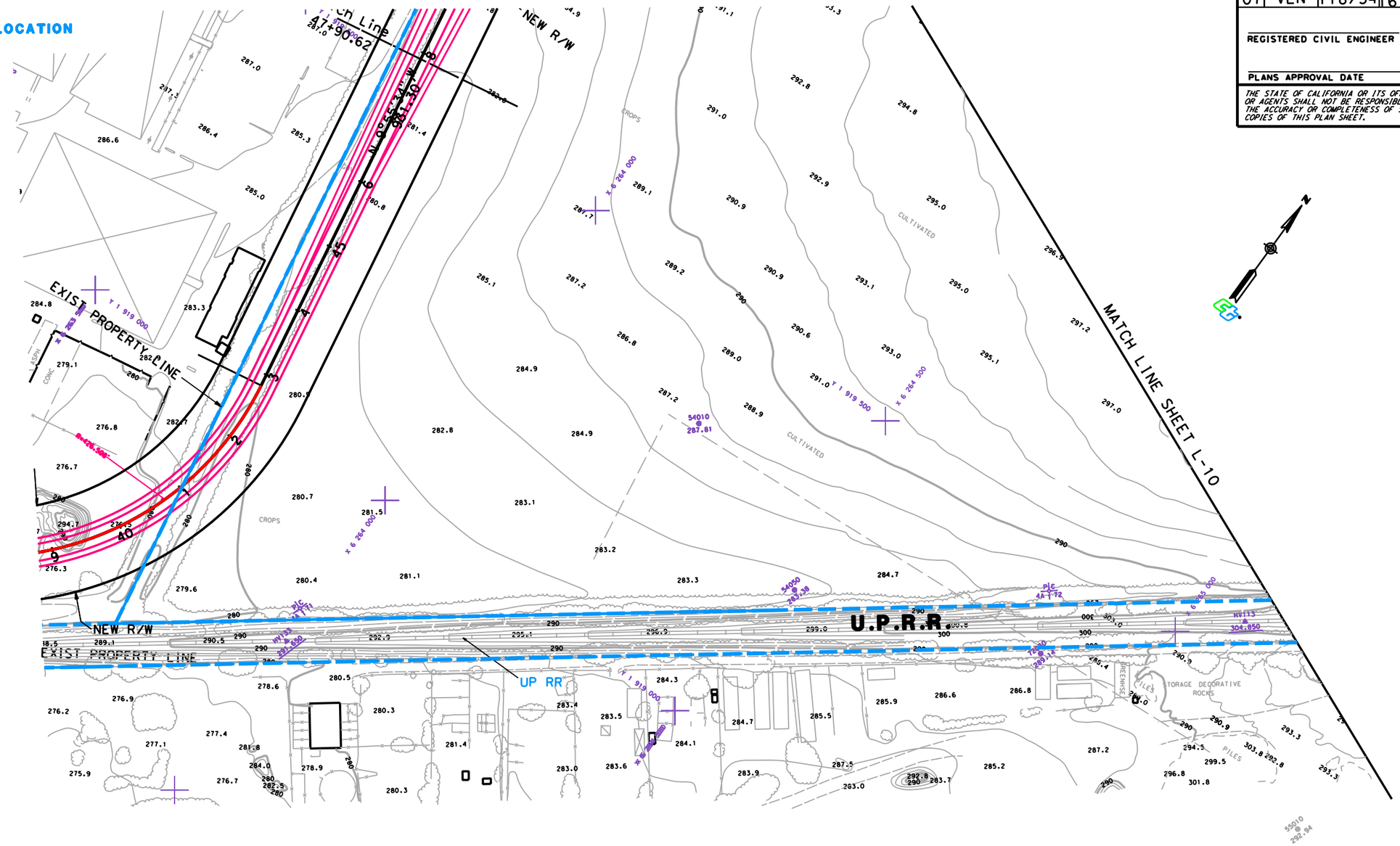
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.

LEGEND

SITE LOCATION



ALTERNATIVE 5
PROPOSED
SOMIS BYPASS ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

L-9

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE

TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER

DGN FILE => $REQUEST

CU 07332

EA 105960

Layout 9Alt5.dgn 1/5/2010 2:51:05 PM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	VEN	118/34	10.72/11.8 16.8/17.66		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

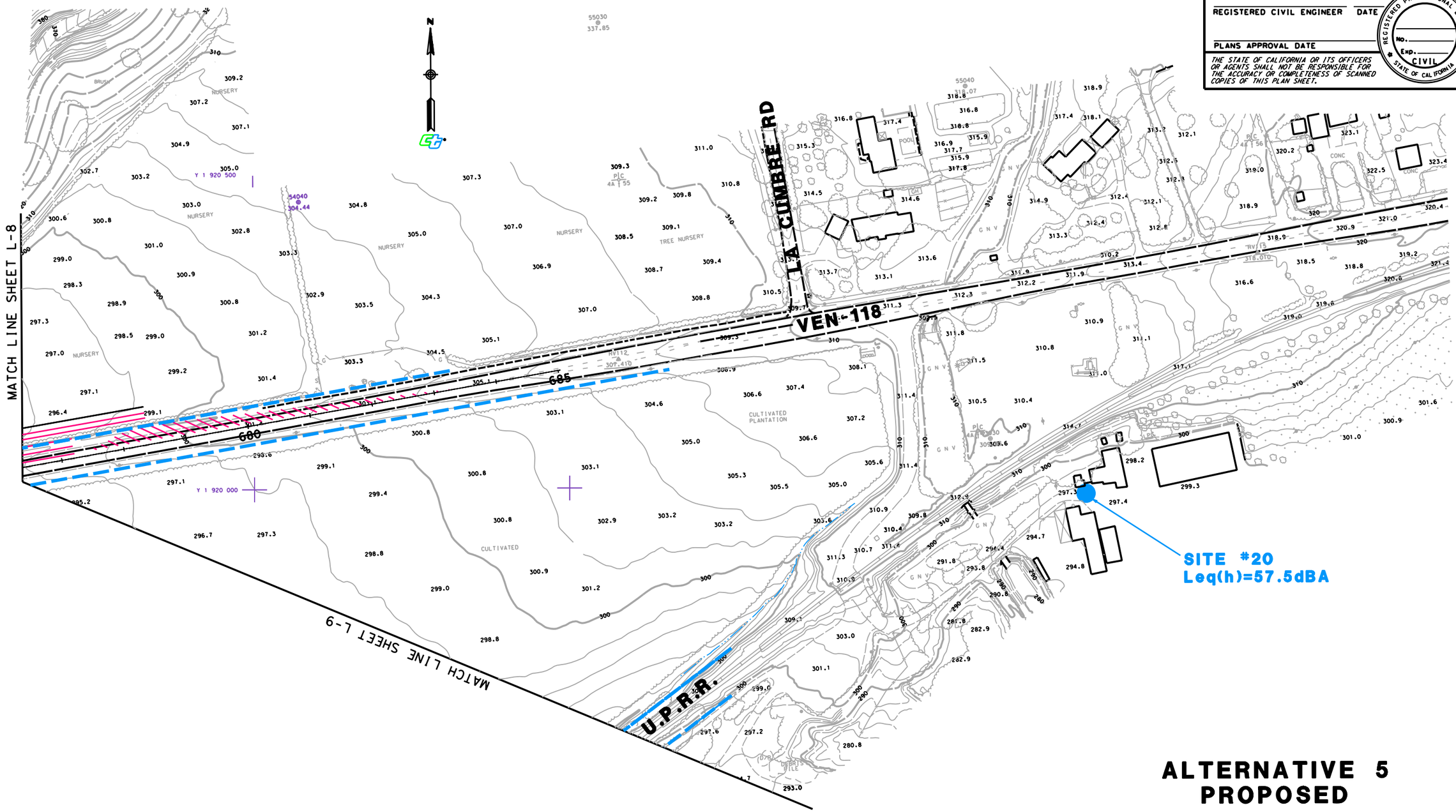
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEGEND

SITE LOCATION

NOTE: Leq(h)= Future Predicted Noise Level at the Noisiest Hour.



ALTERNATIVE 5
PROPOSED
SOMIS BYPASS ALTERNATIVE

NOT TO SCALE

ALL DIMENSIONS ARE IN

FEET UNLESS OTHERWISE SHOWN

L-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PLANNING DIVISION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE

TIME PLOTTED => $TIME

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => $USER

DGN FILE => $REQUEST

CU 07332

EA 105960

Layout 10Alt5.dgn 1/5/2010 2:52:31 PM

Appendix B Supplemental Data

This appendix includes field notes, photographs, and other data from the field investigation and noise modeling results.