ACOUSTICAL ANALYSIS REPORT

Santa Fe Valley Chinese Bible Church of San Diego
County of San Diego Case Numbers:
3300 10-037(MUP), APN 678-060-27-00, KIVA Project: 09-0117132

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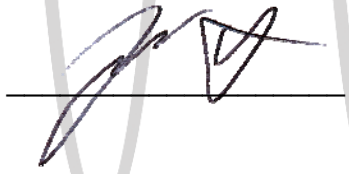

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April 13, 2017

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EXECUTIVE SUMMARY

The proposed project, the Chinese Bible Church of San Diego, consists of the construction of a multiple-use religious facility. The project will include five buildings, including a Sanctuary and Administration Building, a Fellowship Hall, a Religious Meeting Building, a Christian Education Building, and a Fellowship Learning Center Building. The project site is located at 16919 Four Gee Road in an unincorporated area of San Diego County, California.

The primary noise source in the vicinity of the project site is traffic noise from Camino Del Sur/Camino Del Norte, Rancho Bernardo Road, and Four Gee Road. Without mitigation or proposed project structures, in the future (2050) noise environment, the majority of the project site will be located between the 55 and 60 CNEL traffic noise contours, with all proposed project structures exposed to noise levels of below 60 CNEL. The facility will also have a number of outdoor use areas including a courtyard, a tot lot, and other play areas. The County of San Diego requires that planned outdoor useable areas must adhere to an exterior noise limit of 65 CNEL for noise sensitive land uses such as places of worship. As all of the proposed structures lie outside of the future 60 CNEL contour, interior noise levels should not exceed 45 CNEL for any buildings in the development. Additionally, all outdoor use areas will be exposed to noise levels of below 65 CNEL in the future noise environment. For these reasons, no mitigation is deemed necessary to attenuate exterior and interior noise levels.

The County of San Diego requires an analysis to determine whether the proposed project will have an adverse noise impact on surrounding properties. An analysis of proposed rooftop mechanical equipment noise was performed and is provided within this report. Project-generated traffic noise is not expected to have a significant impact on surrounding properties. Noise levels generated by indoor church activities are expected to be controllable with typical sound transmission loss and distance attenuation. No formal activities or amplification are currently planned to take place outdoors, however, if any outdoor events are proposed to include more than 500 people or will extend after the hours of 7 p.m., the noise impacts of the specific event must be evaluated to determine design features and mitigation measures required to comply with the applicable noise regulations at that time. No audio or public address system was included in this analysis, as it is currently unknown if or where such a system would be implemented. According to the project applicant, if an outdoor audio system is to be used, the church would use updated sound equipment that directs sound to designated areas. The church would also have speakers face exterior buildings to help contain the sound in the areas around the buildings and would not exceed maximum sound levels at the property lines.

Temporary construction noise was calculated to determine the impact this activity will have on surrounding residential properties. Current proposed construction activities are expected to meet County of San Diego noise regulations for temporary construction noise during all phases of construction. General good practice measures should also be followed, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego. With these recommendations, it is expected that construction equipment noise levels will be at or below an average eight-hour equivalent noise level of 75 dBA, in compliance with County of San Diego regulations.

1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the noise evaluation requirement of the County of San Diego for a major use permit. Its purpose is to assess noise impacts from nearby roadway traffic and to identify project features or requirements necessary to achieve exterior noise levels of 65 CNEL or less in outdoor activity areas and interior noise levels of 45 CNEL or less in assembly and meeting spaces, in compliance with the County of San Diego noise regulations. This analysis will also address the potential temporary and permanent noise impacts caused by the project at surrounding noise-sensitive receivers.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances.

Sound pressure is the actual noise experienced by a human or registered by a sound level instrument. When sound pressure is used to describe a noise source, the distance from the noise source must be specified in order to provide complete information. Sound power, on the other hand, is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

1.1 Project Description

The proposed project, the Santa Fe Valley Chinese Bible Church of San Diego, consists of the construction of a multiple-use religious facility. The project will include five buildings, including a Sanctuary and Administration Building, a Fellowship Hall, a Religious Meeting Building, a Christian Education Building, and a Fellowship Learning Center Building. The Christian Education Building will include guest quarters on the second floor. Additional information is provided in Appendix A: Project Plans.

1.2 Environmental Settings & Existing Conditions

1.2.1 Project Location

The project site is located at 16919 Four Gee Road in an unincorporated area of the County of San Diego. The project site is located on an irregular shaped lot. The Assessor's Parcel Number (APN) for the property is 678-060-27-00.

The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map of this area are also provided as Figures 2 through 4, respectively.

1.2.2 Existing Noise Environment

The primary noise source in the vicinity of the project site includes automobile and truck traffic noise from Camino Del Sur/Camino Del Norte, Rancho Bernardo Road, and Four Gee Road. Current traffic volumes are given based on information from the San Diego Association of Governments (SANDAG) Series 12 Transportation Forecast Information Center, located on the SANDAG website at http://tfic.sandag.org/. A traffic study was also performed by KOA Corporation in March 2017, including current (year 2017) traffic estimates, and future (year 2050) traffic projections. Current and future traffic estimates from this study were also considered in this analysis. Pertinent Sections of the KOA Corporation Traffic Study are included as Appendix B.

Camino Del Norte is a four-lane, two-way 6.2 Prime Arterial running east-west to the south of the project site. The posted speed limit is 45 mph. According to SANDAG, the current (2008) traffic volume is approximately 11,900 Average Daily Trips (ADT). According to the KOA traffic study, the current traffic volume is approximately 20,071 ADT. For a worst-case analysis, the KOA traffic study traffic volume was used for the current traffic noise analysis.

To the west of Rancho Bernardo Road, Camino Del Norte becomes Camino Del Sur, which is a County of San Diego maintained road. Camino Del Sur is a four-lane, two-way 4.1B Major Arterial running east-west to the south of the project site. The posted speed limit is 45 mph. According to SANDAG, the current (2008) traffic volume on Camino Del Sur in the vicinity of the project site is approximately 16,900 ADT. According to the KOA Traffic study, the current traffic volume is approximately 25,523 ADT. For a worst-case analysis, the KOA traffic study traffic volume was used for the current traffic noise analysis.

Rancho Bernardo Road is a four-lane, two-way Major Road running east-west to the east of the project site. The posted speed limit is 50 mph. According to SANDAG, the current (2008) traffic volume is approximately 8,800 ADT. No average daily traffic volumes for Rancho Bernardo Road were provided in the KOA traffic study.

Four Gee Road is a two-lane, two-way non-circulation element roadway in the vicinity of the project site. The posted speed limit is 25 mph. No current traffic information is listed by SANDAG. According to the traffic study performed by KOA, the current weekday traffic volume is approximately 3,088 ADT.

Traffic volumes for the roadway sections near the project site are shown in Table 1. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

Table 1. Overall Roadway Traffic Information					
Roadway Name	**Speed Limit (mph)**	**Vehicle Mix (%)**		**Current ADT (2017)[1]**	**Future ADT (2050)[1]**
		Medium Trucks	**Heavy Trucks**		
Camino Del Norte	45	1.0%	0.5%	20,071	25,490
Camino Del Sur	45	1.0%	0.5%	25,523	32,414
Rancho Bernardo Road	50	1.0%	0.5%	8,800[2]	20,700[2]
Four Gee Road	25	0.5%	0.5%	3,088	3,922

[1] Current and Future traffic volumes obtained from the traffic study prepared by KOA Corporation, unless otherwise noted

[2]Current (2008) and future (2050) traffic volumes obtained from SANDAG Series 12 TFIC.

No current or future truck percentages were available for any roadways; however, based on neighboring and surrounding land use, roadway classification, professional experience and on-site observations, a truck percentage mix of 1.0% medium trucks and 0.5% heavy trucks was used for Camino Del Norte, Camino Del Sur, and Rancho Bernardo Road, and a truck percentage mix of 0.5% medium trucks and 0.5% heavy trucks was used for Four Gee Road. More information is available in Appendix C: Traffic Noise Model (TNM) Data and Results.

Without mitigation or proposed project structures, in the current noise environment, the majority of the project site is located between the 50 and 55 CNEL traffic noise contours. For a graphical representation of these contours, please refer to Figure 5: Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location.

1.2.3 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Thursday, November 17, 2011. The weather conditions were as follows: partly cloudy skies, low humidity, and temperature in the mid 60's with winds at 3-5 mph from the south. A "one-hour" equivalent measurement was made approximately 25 feet from the Four Gee Road centerline at the entrance to the project site. The microphone was placed at approximately five feet above the existing project site grade.

Traffic volumes for Four Gee Road were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a continuous 10-minute sound level measurement, no changes in the L_{EQ} were observable and results were recorded. The measured noise level and related weather conditions are found in Table 2. The calculated equivalent hourly vehicle traffic count adjustment and a complete tabular listing of all traffic data recorded during the on-site traffic noise measurement are found in Appendix C: Traffic Noise Model (TNM) Data and Results.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	Thursday, November 17, 2011
Time	4:40 p.m. – 4:50 p.m.
Conditions	Partly cloudy skies, winds at 3-5 mph from the south, temperature in the mid 60's with low humidity
Measured Noise Level	61.2 dBA L_{EQ}

1.3 Methodology and Equipment

1.3.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by applying an appropriate factor. Other field data gathered include measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This information is subsequently verified using available maps and records.

1.3.2 Roadway Noise Calculation

The Traffic Noise Model, Version 2.5 program released by the U.S. Department of Transportation was used to calculate the future daytime average hourly noise level (HNL) at various locations at the project site. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the L_{EQ}, and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study. Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required.

In order to determine the estimated traffic volumes of roadways during the traffic noise measurement made on site for model calibration, the approximate percentage of the Average Daily Trips (ADT) value for the time period in which the measurement is made is incorporated into the traffic model. These percentages have been established in a study performed by Katz-Okitsu and Associates, Traffic Engineers (see reference). For purposes of calibrating the TNM, 8.6% of the ADT values for the current environment were used in calculations (for roadways that were not manually counted) to account for traffic between the hours of 4 p.m. and 5 p.m. in the vicinity of the project site. Further explanation can be supplied on request.

Noise levels were calculated for the site using the methodology described above for the location, conditions, and traffic volumes counted during the noise measurements. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level to determine if adjustments or

corrections (calibration) should be applied to the traffic noise prediction model in the Traffic Noise Model software (TNM). Adjustments are intended to account for site-specific variances in overall reflectivity or absorption, which may not be accurately represented by the default settings in the model.

The measured noise level of 61.2 dBA L_{EQ} at entrance to the property was compared to the calculated (modeled) noise level of 60.6 dBA L_{EQ}, for the same weather conditions and traffic flow. According to the Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guide (see reference), a traffic noise model is considered validated if the measured and calculated noise impacts differ by three decibels or less. No adjustment was deemed necessary to model future noise levels for this location as the difference between the measured and calculated levels was found to be less than three decibels. The Traffic Noise Model is assumed to be representative of actual traffic noise that is experienced on site. This information is presented in Table 3.

Table 3. Calculated versus Measured Traffic Noise Data

Calibration Receiver Position	Calculated	Measured	Difference	Correction
25 Feet from Four Gee CL	60.6 dBA L_{EQ}	61.2 dBA L_{EQ}	0.6 dB	None applied

1.3.3 Cadna Noise Modeling Software

Modeling of the outdoor noise environment is accomplished using Cadna Version 4.5, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

In order to validate the results of the Cadna noise prediction model, noise impacts from mechanical equipment were manually calculated in spreadsheets, without consideration of shielding from proposed project structures. This was performed for one location at each noise-sensitive property line. These values were compared to those predicted by Cadna, when ignoring building shielding. The calculated values were all found to be within 2.1 dB of the Cadna noise levels. These differences can be attributed to differences in the methodology for determining the approximate distance from each HVAC unit to the receiver. Due to the large number of HVAC units, the distance attenuation was calculated in the spreadsheets by estimating the average distance of each type of HVAC unit for each building, whereas the Cadna model calculates distance attenuation based on the location of each individual HVAC unit. This data is summarized in Table 4.

Table 4. Calculated HVAC Noise Levels for Model Comparison

Noise Source	Receiver	Receiver Location	Distance to Nearest Equipment (feet)	Calculated Noise Level[1] (dBA)	Cadna Model Noise Level[2] (dBA)	Difference (dB)
AC Units (Without Project Structures)	R-1	North	200	49.3	47.9	1.4
	R-2	South	200	48.0	47.0	1.0

Table 4. Calculated HVAC Noise Levels for Model Comparison						
Noise Source	**Receiver**	**Receiver Location**	**Distance to Nearest Equipment (feet)**	**Calculated Noise Level[1] (dBA)**	**Cadna Model Noise Level[2] (dBA)**	**Difference (dB)**
AC Units (Without Project Structures)	R-3	East	225	48.0	45.9	2.1
	R-4	West	175	47.3	45.8	1.5

[1]Calculated as attenuation by distance only (see Section 1.3.4)
[2]As predicted by Cadna model

Cadna modeling was also used in determining the impacts from outdoor church events to the neighboring residential properties. Events were assumed to include a group of guests moving around the courtyard area. In order to model the noise from many noise sources spread out over a large area of space, noise was modeled in Cadna as an area source, which divides all of the sound power along the surface of a plane. Due to the irregular shape of the courtyard area, verification using the actual model was not feasible, therefore a separate model with a simple square area source was created for verification purposes. The area source used in this verification analysis includes 250 male voices, which are each expected to measure approximately 75 dBA at 3.28 feet, and 250 female voices, which are each expected to measure approximately 71 dBA at 3.28 feet. A receiver was placed at 150 feet from the center of the area source.

The calculated value was found to be within 1.4 dB of the Cadna noise levels. This differences can be attributed to differences in the calculation methodology, including the presence of ground absorption in Cadna. An area source will not act precisely like a point source at this distance, so a small discrepancy is to be expected. The results of this analysis can be seen below in Table 5.

Table 5. Calculated Event Noise Levels for Model Comparison				
Noise Source	**Distance to Center of Source (feet)**	**Calculated Noise Level[1] (dBA)**	**Cadna Model Noise Level[2] (dBA)**	**Difference (dB)**
250 Male Voices, 250 Female Voices (Loud)	150	67.3	65.9	1.4

[1]Calculated as attenuation by distance only (see Section 1.3.4)
[2]As predicted by Cadna model

1.3.4 Formulas and Calculations

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_C = 10\log(10^{L1/10} + 10^{L2/10} + \ldots 10^{LN/10})$$

where L_C = the combined noise level (dB), and
L_N = the individual noise sources (dB).

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

$$SPL_2 = SPL_1 - 20\log(\frac{D_2}{D_1})$$

where SPL_1 = Known sound pressure level at distance,
SPL_2 = Calculated sound pressure level at known distance,
D_1 = Distance from source to known sound pressure level, and
D_2 = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Sound Power to Sound Pressure

To convert sound power levels to sound pressure levels, the following formula is used:

$$SPL = SWL - 20\log(D) - 0.5$$

where: SPL= Calculated sound pressure level at distance, and
D = Distance from source to location of calculated sound pressure level.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EQ} = 10\log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and
L_P = the partial hour noise level (dB).

1.3.5 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 720 Type 2 Sound Level Meter, Serial #0263
- Larson Davis Model CA150 Type 1 Calibrator, Serial #0339
- Larson Davis Sound Expert LxT Type 1 Sound Level Meter, Serial # 4084, with microphone & windscreen
- Larson Davis Model CA250 Calibrator, Serial # 1081

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All

instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

2.0 NOISE SENSITIVE LAND USES AFFECTED BY AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance

The County of San Diego Noise Element to the General Plan states that planned outdoor useable areas must adhere to an exterior noise limit of 65 CNEL for noise sensitive land uses such as places of worship. Additionally, interior noise levels in assembly areas, meeting spaces, and guest quarters should not exceed 45 CNEL.

The County of San Diego Report Format and Content Requirements also detail the guidelines for the determination of significance for project-generated traffic noise levels. Direct noise impacts can be determined by comparing existing traffic versus existing traffic plus project-generated traffic. If project-generated traffic more than doubles the existing sound energy (an increase of 3 dB), this is considered to be a direct noise impact. Cumulatively significant noise impacts can be determined by comparing the existing traffic versus the existing plus cumulative plus project-generated traffic. Cumulative traffic volumes consist of the anticipated traffic generated by other permitted or planned projects in the vicinity of the project. If cumulative and project-generated traffic more than double the existing sound energy, this would be considered a significant cumulative noise impact; however, the project's contribution must also be determined. By comparing existing traffic plus cumulative traffic versus existing traffic plus cumulative traffic and project-generated traffic, the project contribution to the overall noise level can be determined. If the project-generated traffic results in more than a one decibel increase, the project's contribution can be considered "cumulatively considerable."

Pertinent sections of the County of San Diego Noise Element are provided in Appendix D.

2.2 Potential Noise Impacts

2.2.1 Potential Build-out Noise Conditions & Impacts

The future (2050) traffic volumes for Camino Del Sur/Camino Del Norte and Four Gee Road were obtained from the traffic noise study prepared by KOA Corporation. The future traffic volume of Camino Del Norte is expected to increase to 25,490 ADT by the year 2050. The future traffic volume of Camino Del Sur is expected to increase to 32,414 ADT by the year 2050. The future traffic volume of Four Gee Road is expected to increase to 3,922 ADT by the year 2050. According to the SANDAG Series 12 Transportation Forecast Information Center the future traffic volume of Rancho Bernardo Road is expected to increase to 20,700 ADT by the year 2050.

The same truck percentages from the existing traffic volumes were used for future traffic volume modeling. Rancho Bernardo Road will be classified as a Major Road with a minimum design speed of 55 mph, and Camino Del Sur will be classified as a Major Arterial with a minimum design speed of 65 mph. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

Without mitigation or proposed project structures, in the future (2050) noise environment, the majority of the project site is expected to be located between the 55 and 60 CNEL traffic noise

contours, with all proposed project structures exposed to noise levels of below 60 CNEL. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location.

2.2.1.1 Exterior

The County of San Diego Noise Element to the General Plan states that planned outdoor useable areas must adhere to an exterior noise limit of 65 CNEL for noise sensitive land uses such as places of worship. Additionally, interior noise levels in meeting spaces and assembly areas should not exceed 45 CNEL. Without mitigation or proposed project structures, in the future (2050) noise environment, the majority of the project site is located between the 55 and 60 CNEL traffic noise contours, with all proposed project structures exposed to noise levels of below 60 CNEL. Therefore, all facades and outdoor use areas are expected to have noise levels below 60 and 65 CNEL, respectively. For this reason, no mitigation is deemed necessary to attenuate exterior noise levels. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location.

2.2.1.2 Interior

The County of San Diego requires places of worship to be designed in order to attenuate, control, and maintain interior noise levels to below 45 CNEL in noise-sensitive spaces. Current exterior building construction is generally expected to achieve at least 15 decibels of exterior-to-interior noise attenuation, with windows opened. Therefore, proposed project building structures exposed to exterior noise levels greater than 60 CNEL could be subject to interior noise levels exceeding the 45 CNEL noise limit for noise-sensitive space.

Without mitigation or proposed project structures, in the future (2050) noise environment, the majority of the project site is located between the 55 and 60 CNEL traffic noise contours, with all proposed project structures exposed to noise levels of below 60 CNEL. As no proposed building facades are expected to be exposed to noise levels exceeding 60 CNEL, interior noise levels should not exceed 45 CNEL for any buildings in the development, including the guest quarters in the Christian Education Building. Therefore, no additional project design features are deemed necessary for mitigating interior noise impacts. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location.

2.2.2 Design Considerations & Mitigation Measures

As detailed above, both exterior and interior noise impacts are expected to remain below the applicable County of San Diego noise limits as currently designed. No additional project design features are deemed necessary.

2.3 Off-Site Direct and Cumulative Impacts

A traffic study performed by KOA Corporation in October 2014 was used to determine the impacts of project related traffic for the original acoustical analysis report prepared for the project. An updated traffic study was issued in March 2017 that shows new existing traffic counts which exceed those shown in the 2014 report. Project-generated trip projections are expected to remain at the same figures shown in the original traffic report. Due to the increase in existing traffic volumes, anticipated project trips are expected to have a lesser noise impact, as the increase over existing volumes will be lessened. For this reason, the original evaluation of project-generated traffic noise

that was performed using figures from the October 2014 traffic study was determined to be the "worst-case" scenario, and actual project-generated traffic noise impacts are expected to be slightly less than those shown herein.

Project related traffic impacts were greatest for Four Gee Road and Camino Del Norte, therefore these roadways are the focus of this analysis.

2.3.1 Direct Noise Impacts

In order to determine whether any direct noise impacts will be experienced at off-site receivers, the existing traffic scenario was compared to the increase in volumes shown in the existing plus project traffic scenario. As Sunday church services will generate the greatest amount of traffic, the project will generate 2,775 ADT on weekends, including 925 total trips during the peak hour on Sundays.

A Traffic Noise Model (TNM) was generated to analyze traffic noise impacts with and without the project generated trips. Weekend traffic noise levels were calculated at worst case receivers at the residences near the intersection of Four Gee Road and Camino Del Sur. The results of this analysis can be seen below in Table 6. For a graphical representation of receiver locations, please refer to Figure 7.

Table 6. Weekend Traffic Noise Impacts at Worst Case Receivers

Receiver	Weekend Traffic Noise Level (CNEL)		Increase of Traffic Noise Level (dB)
	Without Project	With Project	
Worst Case Receiver 1	60	62	2
Worst Case Receiver 2	59	61	2
Worst Case Receiver 3	60	61	1

The maximum increase in noise levels was found to be approximately 2 dB at Worst Case Receivers 1 and 2. As a significant direct noise impact is defined by the County of San Diego Noise Report Format and Content Requirements as a doubling of existing sound energy, or an increase of 3 dB, it has been determined that no direct noise impacts will be caused by the proposed project as the maximum impact falls below this threshold.

2.3.2 Cumulatively Significant Noise Impacts

A Traffic Noise Model (TNM) was generated to compare the existing weekend traffic impacts to the near term cumulative weekend traffic estimates with the project related traffic to determine the noise impact of the additional traffic on nearby roadways. Traffic CNEL impacts were determined for weekend traffic projections with and without the project at the same worst case receivers evaluated in Section 2.3.1. The results of this analysis can be seen below in Table 7. For a graphical representation of receiver locations, please refer to Figure 7.

Table 7. Cumulative Weekend Traffic CNEL Impacts at Worst Case Receivers			
Receiver	Weekend Traffic Impacts (CNEL)		Increase of Traffic Noise Level (dB)
	Existing	Existing + Cumulative + Project	
Worst Case Receiver 1	60	63	3
Worst Case Receiver 2	59	62	3
Worst Case Receiver 3	60	63	3

The maximum increase in traffic noise level was found to be approximately 3 dB at Worst Case Receivers 1, 2, and 3. A cumulatively significant noise impact is defined by the County of San Diego Noise Report Format and Content Requirements as a doubling of existing sound energy, or an increase of 3 dB; however, as the nearest affected receivers are multifamily properties, and as resulting noise levels are still below the 65 CNEL threshold for multifamily properties contained within the Noise Element to the General Plan, it has been determined that no cumulatively considerable noise impacts will be caused by the proposed project. No mitigation is deemed necessary to attenuate project-generated traffic noise. For more details, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results. Pertinent sections of the KOA Traffic Study are provided in Appendix B.

2.3.3 Design Considerations & Mitigation Measures

It has been determined that no direct or cumulative noise impacts will be caused by the proposed project. As the project is not anticipated to cause any significant noise impacts, no mitigation is deemed necessary to attenuate project-generated traffic noise.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for Determination of Significance

The proposed project site is currently zoned Specific Plan (S88), but will be rezoned to Single-Family Residential (RS) as a part of the project planning approval. Properties to the north and west are also zoned S88, and properties to the east are zoned RS. The properties to the south, located within the City of San Diego limits, are zoned AR-1-1 and are considered to be a single-family residential use. The applicable sound level limits for residential zones are found in the County of San Diego Municipal Code and the City of San Diego Municipal Code. The County of San Diego Municipal Code states that the hourly average noise limit for any noise source emanating from properties within this zone is not to exceed 50 dBA between the hours of 7 a.m. and 10 p.m., and 45 dBA between the hours of 10 p.m. and 7 a.m., when measured at any point in a neighboring single-family residential property. According to the City of San Diego Municipal Code, hourly average noise level at a property with a single-family residential use should not exceed 50 dBA between the hours of 7 a.m. and 7 p.m., 45 dBA between the hours of 7 p.m. and 10 p.m., or 40 dBA between the hours of 10 p.m. and 7 a.m.

Section 36.409 of the County of San Diego Noise Ordinance states that it is unlawful to operate construction equipment that exceeds an average sound level of 75 dBA for an eight-hour period, between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise

source is located or on any occupied property where the noise is being received. In addition, according to Section 36.408 of the ordinance, construction activities must be limited to the hours of 7 a.m. to 7 p.m., Monday through Saturday (except legal holidays). No construction activity is permitted on Sunday. Section 36.410 provides noise limits for impulsive noise, which is defined as a high peak noise level of short duration (one second or less). Impulsive activity includes blasting and the use of equipment such as a rock crusher, hoe ram, pile driver, or drill rig. None of this activity is anticipated to take place on the project site, and therefore, impulsive activity has not been evaluated in any further depth.

Pertinent sections of the County of San Diego Noise Ordinance and the City of San Diego Noise Ordinance are provided in Appendix D.

3.2 Potential Operational Noise Impacts

3.2.1 Potential Build-Out Noise Conditions

HVAC Equipment Noise

This project includes the installation of rooftop HVAC units on all five proposed buildings. Mechanical unit locations are specified on attached roof plans in Appendix A.

The nearest noise sensitive receivers are residential properties, for which the most restrictive County of San Diego noise limit during hours of operation is 45 dBA in the nighttime hours of 10 p.m. to 7 a.m. at the north, east, and west property lines. The residences to the south are within the City of San Diego, and therefore the most restrictive limit of 40 dBA in the nighttime hours of 10 p.m. to 7 a.m. must be met at this property line.

Noise data for the proposed Carrier HVAC units is shown below in Table 8. Cadna calculations are provided in Appendix E: Cadna Calculations Input and Results.

Table 8. Carrier Mechanical Specifications and Noise Emission Data

Model Number	Unit Tons	Octave Band Sound Power Levels (dB)								
		63	125	250	500	1000	2000	4000	8000	Total (dBA)
48TC05	4	90.9	84.6	79.5	77.9	76.5	71.1	66.9	62.5	81
48TC06	5	84.0	82.2	76.3	74.8	72.5	68.8	65.6	61.8	78
48TC08	7.5	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1	82
48TC14	12.5	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87

Exterior noise levels of the proposed HVAC equipment were calculated using Cadna. All property line receivers were calculated at a height of five feet above grade. All units were calculated at a height of 35 feet above grade, as they will be roof-mounted. The project includes a three-foot high parapet wall around the roof of Building B – Christian Ed, as this building is the closest to the neighboring residences, which was included in the Cadna model. Calculation results are shown in Table 9. Please refer to Appendix E: Cadna Calculations Input and Results for more details. A graphical representation of HVAC equipment and receiver locations is provided as Figure 8.

Table 9. Calculated Noise Impacts of Rooftop Mechanical Equipment			
Receiver Number	**Approximate Distance to Nearest Equipment (feet)**	**Noise Limit (dBA)**	**Exterior Noise Impact (dBA)**
R-1 (North Property Line)	200	45	43.9
R-2 (South Property Line)	200	40	39.2
R-3 (East Property Line)	225	45	42.9
R-4 (West Property Line)	175	45	39.3

As shown above, with the three-foot high parapet wall around the roof of Building B included as a project design feature, noise levels are not expected to exceed the County of San Diego or City of San Diego nighttime noise limits at any surrounding property line. For this reason, no mitigation is deemed necessary for attenuating exterior noise impacts of HVAC equipment.

Noise from Church Events

When completed, the church will include a maximum of 1,500 seats in the Main Sanctuary. The largest group gathering (1,500 maximum) is the weekly Sunday morning worship which will take place in the Sanctuary. Typical sound transmission loss and distance attenuation is expected to be sufficient to bring noise from indoor church services and activities into compliance with the County of San Diego daytime noise regulations at residential receivers.

The facility will also have a number of outdoor use areas including a courtyard, a tot lot, and other play areas. No specific outdoor events have been proposed at this time; however, any events that could potentially occur are anticipated to take place during daytime hours, and would therefore need to meet the daytime noise limit of 50 dBA, enforced by both the County of San Diego and the City of San Diego, at all surrounding residential property lines.

In order to approximate noise levels of the guests at the outdoor areas, measurements shown in the *Handbook of Acoustical Measurements and Noise Control* were consulted. The *Handbook* shows noise levels of speech for both males and females for five different vocal efforts: casual, normal, raised, loud, and shout. Measurements for “loud” voices were considered to be appropriate for this analysis. It should be noted that although there is a vocal effort level above loud voice (shouting), this level of vocal effort would not be sustainable over a long period of time. Although a person may occasionally shout, performing calculations assuming all loud voices is expected to account for an occasionally shout combined with normal conversation. The *Handbook* states that, at a distance of 3.28 feet, an average male will generate a noise level of 75 dBA when speaking with a loud voice, and a female will generate a noise level of 71 dBA when speaking with a loud voice.

Events were considered to include a group of guests gathering around the courtyard area. In order to model the noise from many spread out sources, an area source was used, which divides all of the sound power along the surface of a plane. A typical event may include up to 500 guests, and therefore, a Cadna model was created with 250 loud male voices and 250 loud female voices, divided across the courtyard area. Each noise source was calculated as speaking for 40 percent of every hour, which is considered conservative estimate to account for pauses within speech as well as breaks for listening. No audio or public address system was included in this analysis, as it is currently unknown if or where such a system would be implemented. According to the project applicant, if an outdoor audio system is to be used, the church would use updated sound equipment that directs sound to designated areas. The church would also have speakers face exterior

buildings to help contain the sound in the areas around the buildings and would not exceed maximum sound levels at the property lines.

The results of this analysis can be seen below in Table 10, and a graphical representation of event noise contours are provided as Figure 9. Please refer to Appendix E: Cadna Calculations Input and Results for more details.

Table 10. Calculated Noise Impacts of Church Events			
Receiver Number	**Approximate Distance to Courtyard (feet)**	**Noise Limit (dBA)**	**Exterior Noise Impact (dBA)**
R-1 (North Property Line)	600	50	47.3
R-2 (South Property Line)	250	50	50.0
R-3 (East Property Line)	250	50	46.7
R-4 (West Property Line)	250	50	46.6

Noise from Church Bell

The proposed Sanctuary building is anticipated to include a church bell. The exact specifications and operation schedule of the bell have not yet been determined. It is anticipated that the church bell will only operate during daytime hours, and will therefore be required to meet the single family residential hourly-average noise limit of 50 dBA.

In order to estimate the noise level of the anticipated church bell, a noise measurement was performed of a church bell in Escondido, California. The measured church bell plays a melody every day at noon for approximately two minutes. The measurement was performed across the street from the church, at a distance of approximately 120 feet. Over a one-minute period during which there were no cars driving near the sound level meter, and the church bell was ringing steadily, an average noise level of 61.8 dBA was measured. As the bell was only ringing for a two-minute period and was creating no noise for the remainder of the hour, the hourly average noise level of the church bell was 47.0 dBA, per the methodology described in Section 1.3.4.

For a worst case analysis, the noise from the proposed church bell can be rounded up to 65.0 dBA, which is more than a doubling of the sound power of the measured church bell. The nearest residential receiver is located approximately 300 feet from the proposed bell location. At this distance, if the bell were to ring for a period of 5 minutes out of an hour, the hourly average noise level is calculated to be 46.2 dBA. This is expected to comply with the 50 dBA daytime noise limit at residential properties.

3.2.2 Design Considerations & Mitigation Measures

As shown above, noise levels from stationary equipment sources on site are not expected to exceed the nighttime noise limits set within the County of San Diego Noise Ordinance and the City of San Diego Municipal Code.

In order to ensure noise from outdoor events remains in compliance with applicable noise regulations, a condition of approval should be implemented as follows: If any outdoor events are proposed to include more than 500 people, will involve the use of an outdoor audio system, or will extend after the hours of 7 p.m., the noise impacts of the specific event must be evaluated to

determine design features and mitigation measures required to comply with the applicable noise regulations at that time.

3.3 Potential General Construction Noise Impacts

3.3.1 Potential Temporary Construction Noise Impacts without Mitigation

According to the County of San Diego Noise Ordinance, temporary construction noise must be adequately controlled at occupied properties. The nearest occupied properties surrounding the site include receivers to the south and east. The property lines to the north and west are not developed or used for residential purposes and therefore are excluded from this analysis.

Information about construction equipment and phasing was provided by the Harper Construction Company, the project contractor, and is included in Appendix A. Noise levels and duty cycles of typical construction equipment that will likely be used on site is shown in Table 11. The majority of construction noise levels were obtained from the UK Department for Environment, Food and Rural Affairs (DEFRA). Exceptions include equipment noise levels which were measured by Eilar Associates, Inc. at an existing construction site (performed at the 91 Freeway/Green River project site near Corona, California on March 25, 2010).

Table 11. Typical Construction Equipment Noise Levels

Equipment Description	Duty Cycle (%)	Noise Level at 50 feet (dBA)
Grader	40	70
Dozer	40	71
Backhoe/Loader	40	65
Water Truck	40	77
Excavator	40	69
Generator	50	57
Concrete Mixer	40	75
Paver	50	71
Roller	20	69
Crane	16	73
Forklift	40	74
Welder	40	69

[1] Unless noted otherwise, noise levels from DEFRA Construction Noise Level Database (see reference).
[2] Eilar Associates, Inc. noise measurement data.

Receivers to the south and east were calculated for all phases of construction detailed in Appendix A. In order to evaluate anticipated noise levels in these two worst-case locations, the site was roughly divided into four quadrants. During the various phases of construction, it was assumed that all pieces of equipment would be operating simultaneously (considering duty cycle) near the center of each area, approximately 90 feet away from the south property line and 145 feet away from the east property line in the worst-case locations. This method should account for the varying distance from source to receiver as equipment moves around the site.

Noise levels of construction at the locations described above are shown in Table 12. Detailed calculations can be found in Appendix F: Construction Equipment Noise Calculations. A graphical representation of the source and receiver locations is shown in Figure 10.

Table 12. Temporary Construction Noise Levels at Neighboring Properties to North & South			
Phase	**Equipment Used**	**8-Hour Average Noise Level (dBA)**	
		South Property Line	**East Property Line**
Grading	Grader, Dozer, Backhoe/Loader, Water Truck	69.7	65.6
Trenching	Excavator, Backhoe/Loader, Other General Industrial Equipment[1]	62.6	58.5
Paving	Backhoe/Loader, Concrete Mixer, Paver, Roller	68.3	64.1
Building Construction	Crane, Generator, Backhoe/ Loader, Forklift, Welder	67.4	63.3

[1] Noise levels generated by "Other General Industrial Equipment" were approximated through the inclusion of an additional backhoe and a generator in calculations.

3.3.2 Design Considerations and Temporary Mitigation Measures

As shown above, noise levels from temporary construction are expected to be in compliance with the County of San Diego eight-hour average equivalent noise limit of 75 dBA for on-site activity.

For any project in which construction activity will take place near occupied residential properties, the following "good practice" recommendations should be adhered to whenever possible:

1. Turn off equipment when not in use.

2. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

3. Use equipment with effective mufflers.

4. Minimize the use of backup alarms.

5. Equipment staging areas should be placed at locations away from noise-sensitive (occupied) receivers.

These general recommendations, in addition to limiting construction equipment operation to the allowable hours detailed in the County of San Diego Noise Ordinance, will assist in maintaining the comfort of neighboring sensitive receivers during the construction of this site.

3.4 Potential Impulsive Noise Impacts

There is no anticipated need for impulsive construction activity on site, and therefore, this noise source has not been included in this analysis.

4.0 CONCLUSION

As the proposed structures lie outside of the future 60 CNEL contour, interior noise levels should not exceed 45 CNEL for any buildings in the development. No mitigation is deemed necessary to maintain compliant interior noise levels. Additionally, all outdoor use areas are expected to be exposed to noise levels below 65 CNEL, complying with the applicable County of San Diego exterior noise level requirements.

As shown above, with the three-foot high parapet wall around the roof of Building B included as a project design feature, noise levels from stationary equipment sources on site are not expected to exceed the nighttime noise limits set within the County of San Diego Noise Ordinance and the City of San Diego Municipal Code.

Noise from indoor church activities is expected to be controllable with typical sound transmission loss and distance attenuation, and no formal activities or amplification are currently planned to take place outdoors. If any outdoor events are proposed to include more than 500 people, or will extend after the hours of 7 p.m., the noise impacts of the specific event must be evaluated to determine design features and mitigation measures required to comply with the applicable noise regulations at that time. No audio or public address system was included in this analysis, as it is currently unknown if or where such a system would be implemented. According to the project applicant, if an outdoor audio system is to be used, the church would use updated sound equipment that directs sound to designated areas. The church would also have speakers face exterior buildings to help contain the sound in the areas around the buildings and would not exceed maximum sound levels at the property lines.

Temporary construction noise was calculated to determine the impact this activity will have on surrounding residential properties. Current proposed construction activities are expected to meet County of San Diego noise regulations for temporary construction noise during all phases of construction. General good practice measures should also be followed, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego. With these recommendations, it is expected that construction equipment noise levels will be at or below an average eight-hour equivalent noise level of 75 dBA, in compliance with County of San Diego regulations.

5.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the Chinese Bible Church of San Diego project in the County of San Diego, California. This report was prepared by Jeff Russert, Amy Hool, and Douglas K. Eilar, and updated by Jonathan Brothers and Amy Hool.

Jonathan Brothers, Principal Acoustical Consultant

Amy Hool, Senior Acoustical Consultant

6.0 REFERENCES

1. California Building Code, Based on the International Building Code, Chapter 12, Section 1207 - *Sound Transmission Control*.

2. Federal Highway Administration, Traffic Noise Model Version 2.5.

3. County of San Diego Noise Element to the General Plan.

4. County of San Diego Noise Ordinance.

5. City of San Diego Noise Ordinance.

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7. Heeden, Robert A., Compendium of Materials for Noise Control, U.S. Department of Health, Education and Welfare, National Institute for Occupational Safety and Health, November 1978.

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10. Western Electro-Acoustic Laboratory, Inc., 1711 Sixteenth Street, Santa Monica, California 90404, 213-80-9268, Sound Transmission Loss Vs. Glazing Type, Window Size and Air Filtration, January 1985. The research described in this report was prepared for the California Association of Window Manufacturers, 823 North Harbor Boulevard, Suite E, Fullerton, California 92632, 714-525-7088.

11. United States Department of Transportation Federal Highway Administration, Highway Construction Noise Handbook, Section 9.0 “Construction Equipment Noise Levels and Ranges,” August 2006.

12. Wyle Laboratories, Development of Ground Transportation Systems Noise Contours for the San Diego Region, December, 1973.

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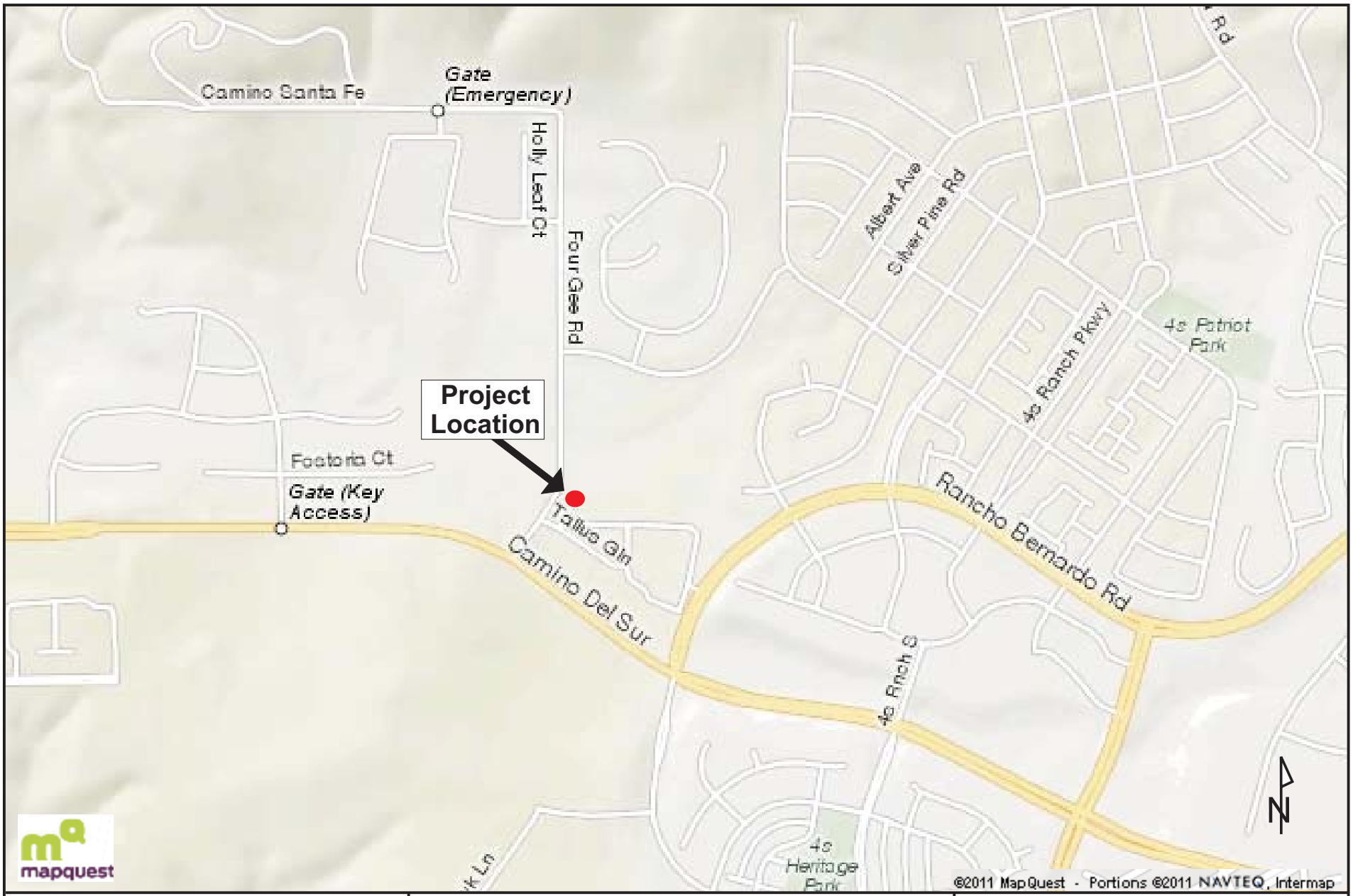
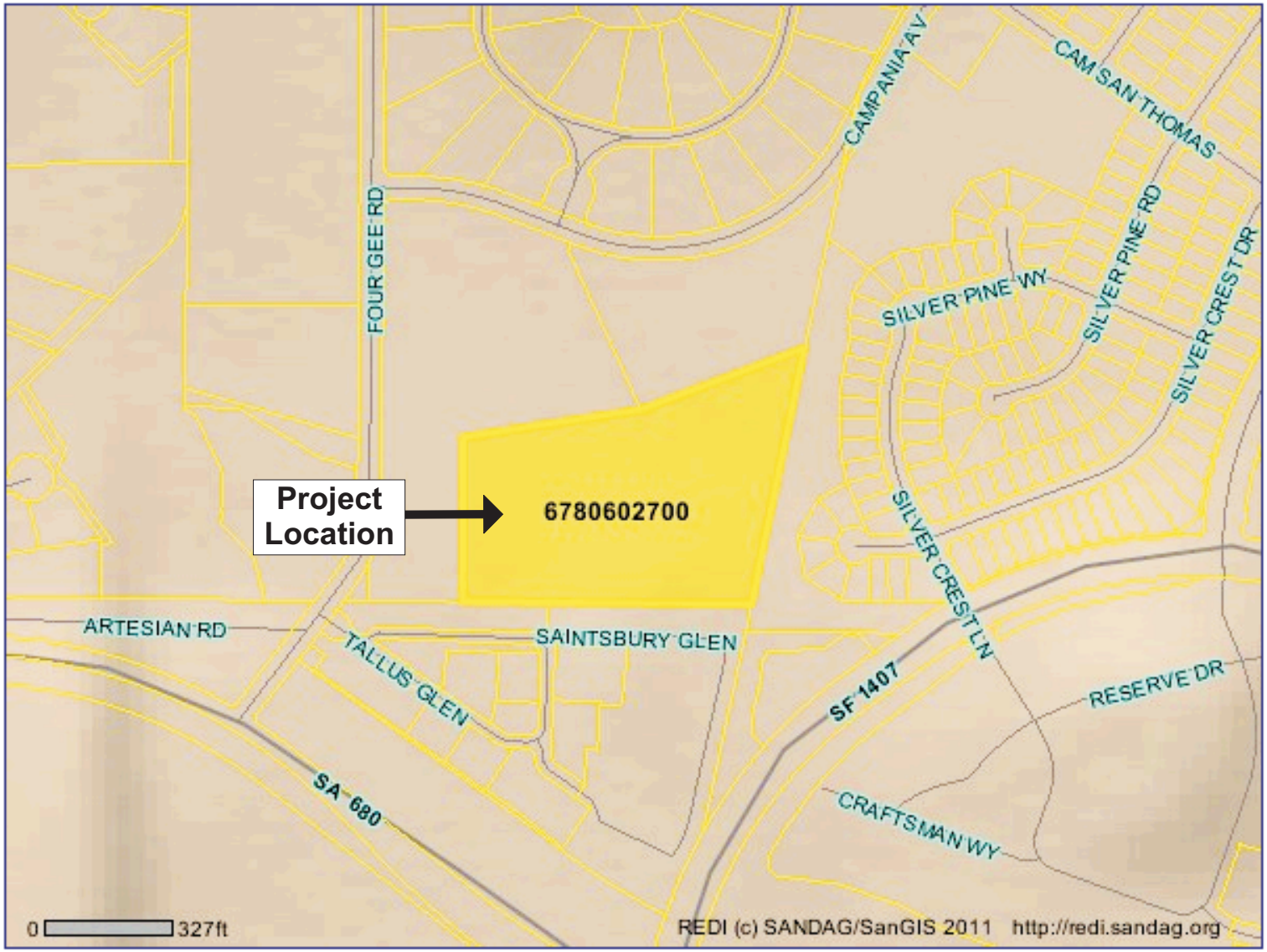
15. Department for Environment Food and Rural Affairs (DEFRA), Update of Noise Database for Prediction of Noise on Construction and Open Sites, 2005.

FIGURES



Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Vicinity Map** **Job #B70322N1**	**Figure 1**



San Diego County Assessor's Parcel Number:

678-060-27-00

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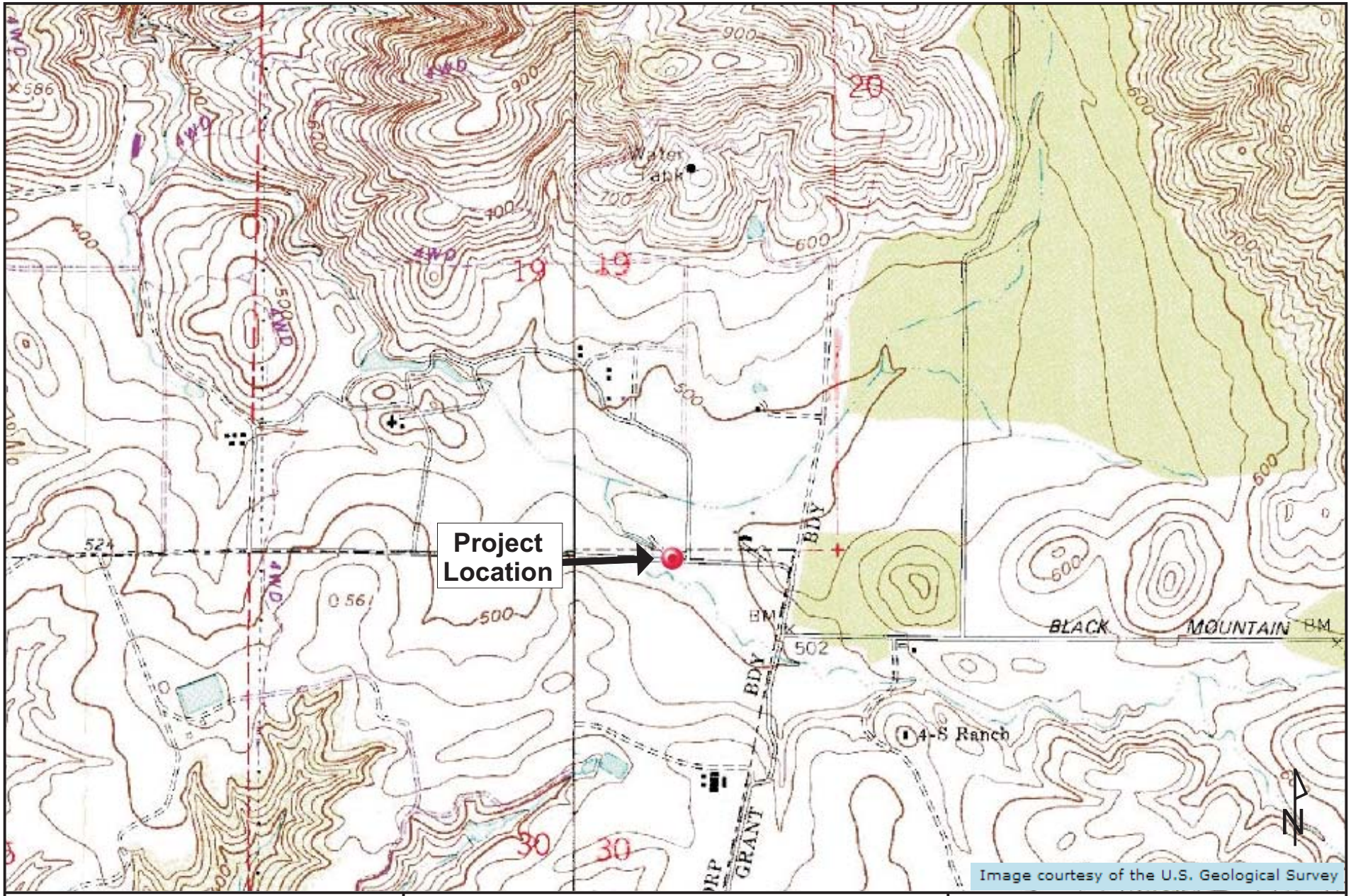
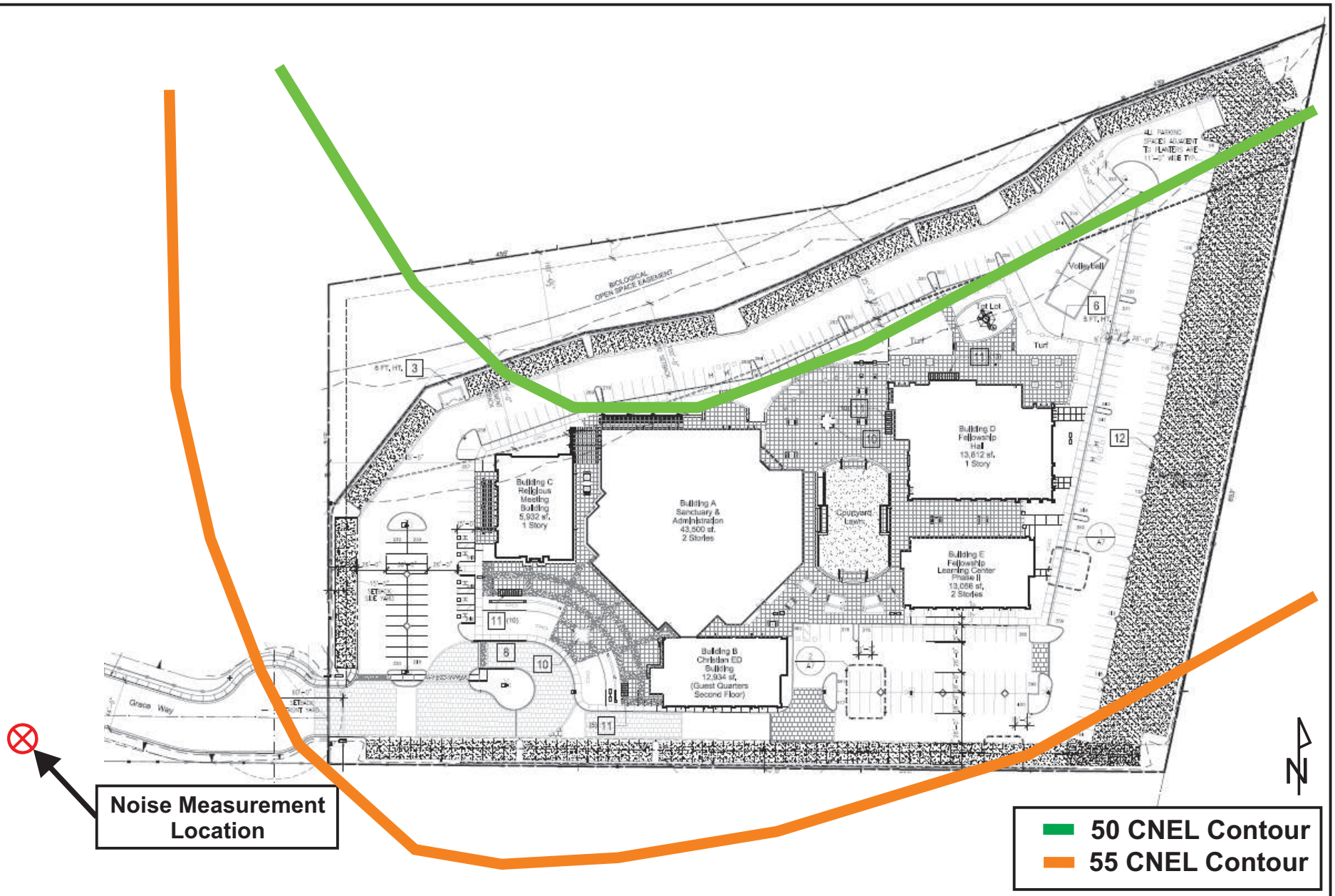
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Assessor's Parcel Map** **Job # B70322N1**	**Figure 2**

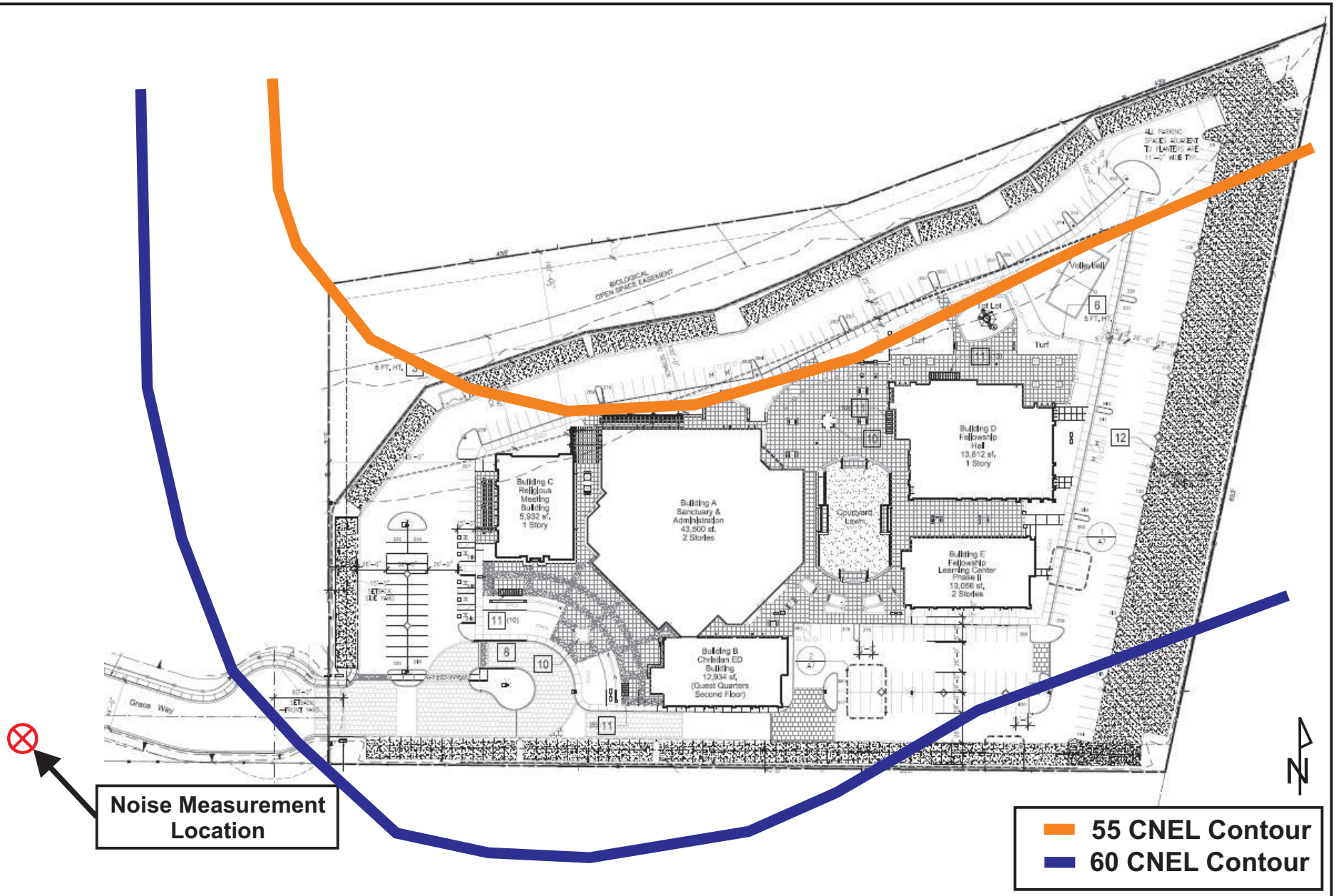
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Satellite Aerial Photograph** **Job # B70322N1**	**Figure 3**



Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Topographic Map** **Job # B70322N1**	**Figure 4**



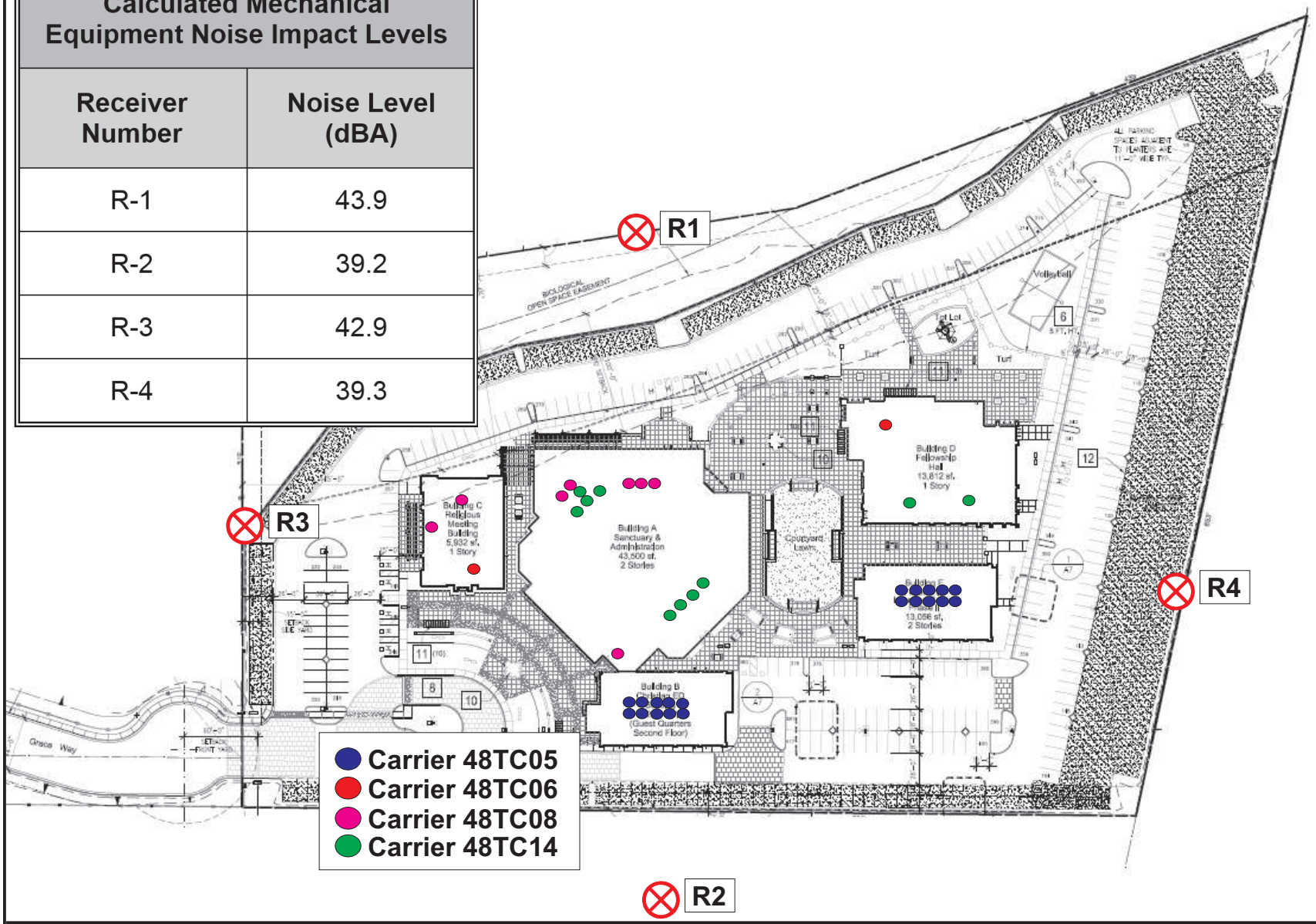
Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location Job #B70322N1	Figure 5



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location Job #B70322N1	Figure 6

Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Satellite Aerial View Showing Worst Case Traffic Noise Receivers** **Job #B70322N1**	**Figure 7**

Calculated Mechanical Equipment Noise Impact Levels	
Receiver Number	**Noise Level (dBA)**
R-1	43.9
R-2	39.2
R-3	42.9
R-4	39.3



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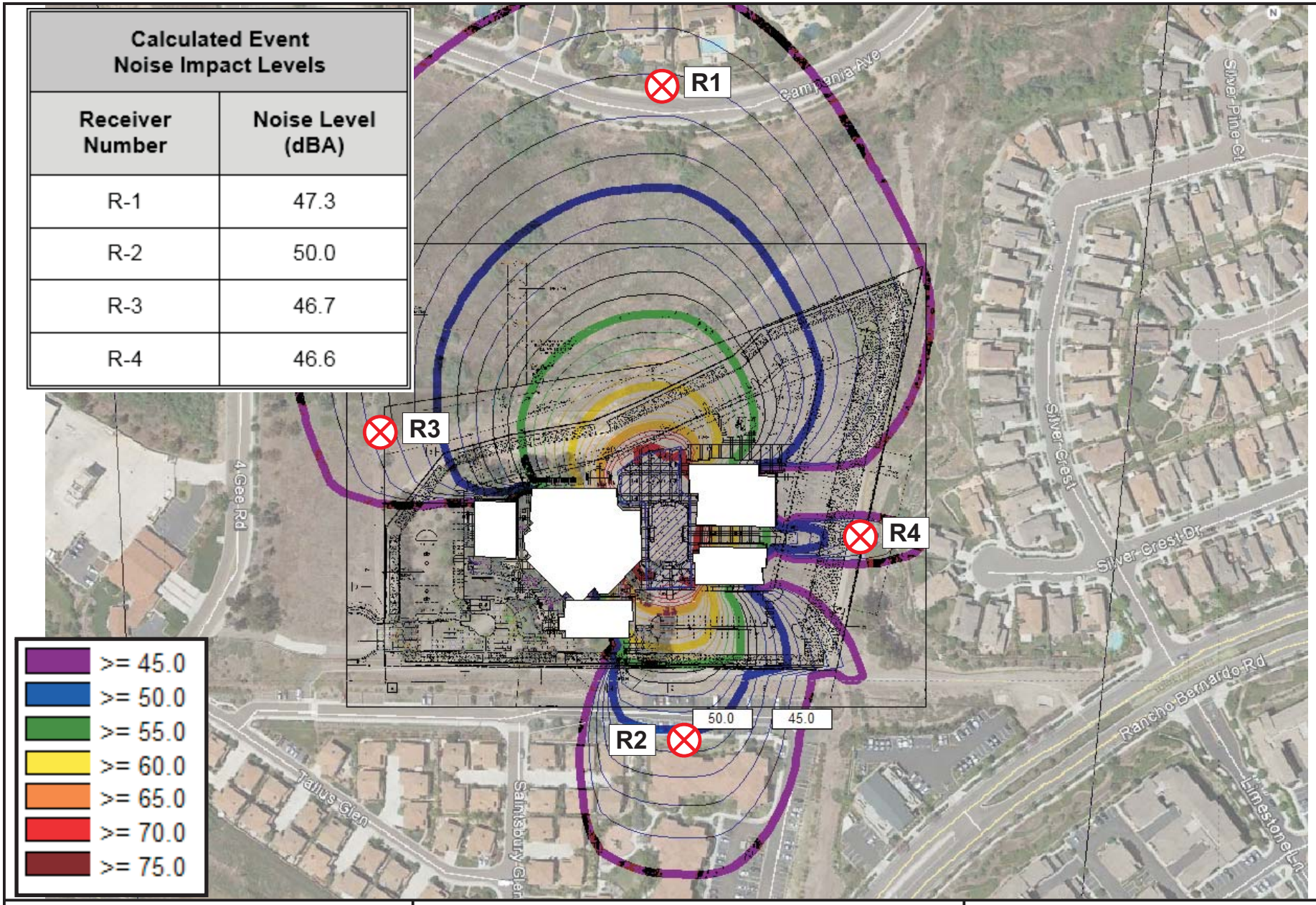
Site Plan Showing Rooftop Mechanical Equipment and Receiver Locations
Job #B70322N1

Figure 8

Calculated Event Noise Impact Levels	
Receiver Number	Noise Level (dBA)
R-1	47.3
R-2	50.0
R-3	46.7
R-4	46.6



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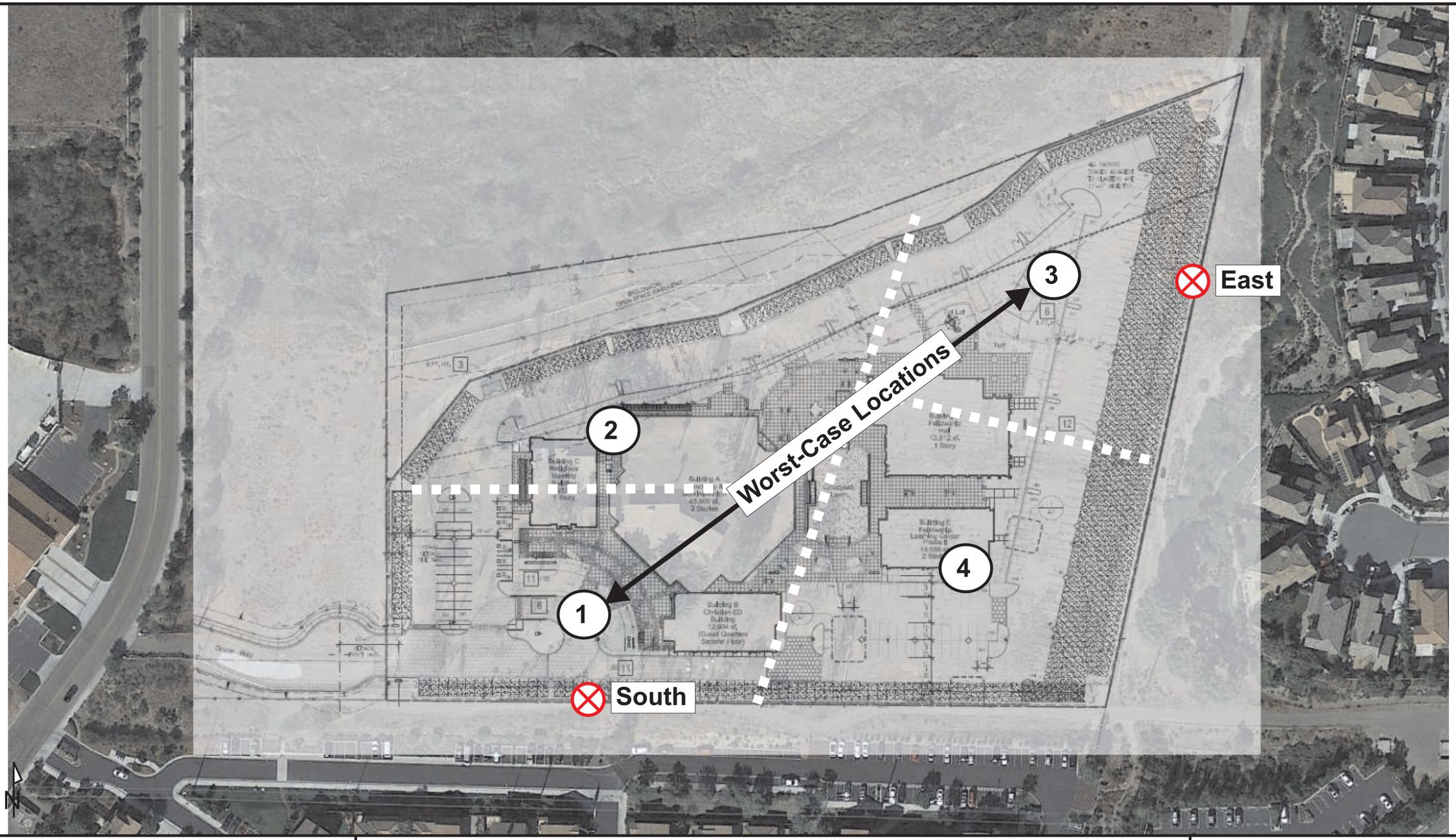
Satellite Aerial View Showing Event Noise Contours and Receiver Locations
Job #B70322N1

Figure 9



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Satellite Aerial Photograph Showing Construction Equipment Noise Source and Worst-Case Receiver Locations Job # B70322N1	Figure 10

APPENDIX A

Project Plans

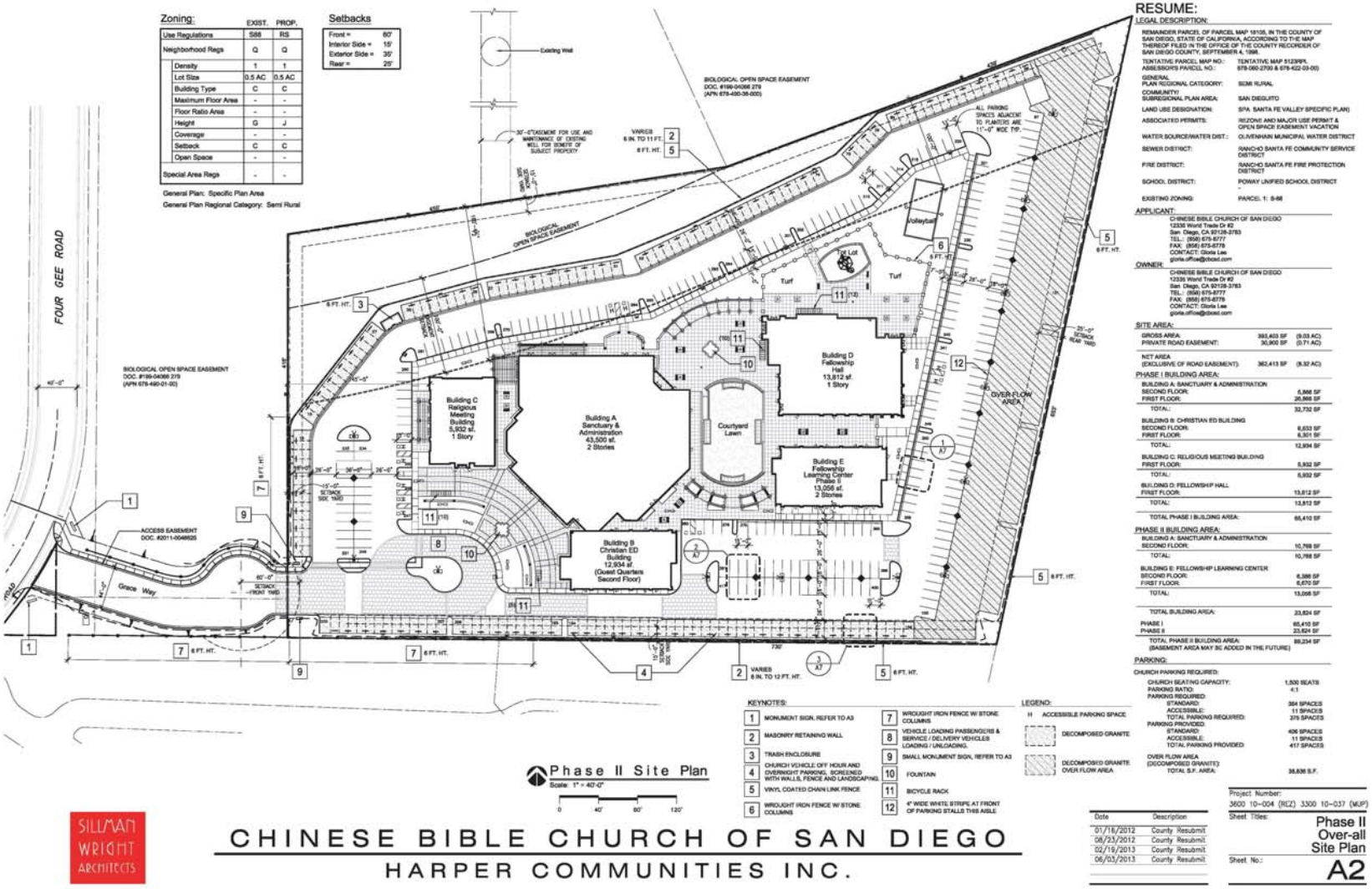


Figure 1-2
Project Site Plan

Rooftop Units Specifications and Quantities

Plan Item	Maker	Model	Nominal Tonage	Sound Performance	Description	Number of Rooftop Units						
						Total	Sanctuary	Religious Meeting Building Bldg "C"	Fellowship Hall Bldg "D"	Christian Ed Bldg "B"	Fellowship Learning Center Bldg "E"	Fellowship Learning Center Bldg "F"
"B"	Carrier	48TC 05	4	See Product Catalog, Page 10, Table 6 (copy and link below)	Gas Heat/Electric Cooling Packaged Rooftop	25	-	-	-	10	10	5
"C"	Carrier	48TC 06	5	See Product Catalog, Page 10, Table 6 (copy and link below)	Gas Heat/Electric Cooling Packaged Rooftop	2	-	1	1	-	-	-
"E"	Carrier	48TC 08	7.5	See Product Catalog, Page 10, Table 6 (copy and link below)	Gas Heat/Electric Cooling Packaged Rooftop	7	5	2	-	-	-	-
"H"	Carrier	48TC 14	12.5	See Product Catalog, Page 10, Table 6 (copy and link below)	Gas Heat/Electric Cooling Packaged Rooftop	10	8	-	2	-	-	-
					Total # of Rooftop Units	44	13	3	3	10	10	5

Product Catalog: http://www.docs.hvacpartners.com/idc/groups/public/documents/techlit/48tc- (See Page 10, Table 6 below)

Table 6 – SOUND PERFORMANCE TABLE

UNIT	COOLING STAGES	OUTDOOR SOUND (dB)								
		A–WEIGHTED	63	125	250	500	1000	2000	4000	8000
A04	1	80	90.6	80.9	80.2	76	74.6	71.3	68.5	63.9
A05	1	81	90.9	84.6	79.5	77.9	76.5	71.1	66.9	62.5
A06	1	78	84.0	82.2	76.3	74.8	72.5	68.8	65.6	61.8
A07	1	78	88.8	81.8	76.9	74.4	73.3	69.8	66.3	62.7
A08	1	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
D08	2	82	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1
A09	1	83	91.2	86.4	81.9	81.0	78.3	73.9	71.4	67.3
D09	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
A12	1	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
D12	2	82	89.0	83.1	80.5	78.5	75.5	71.6	69.6	69.3
D14	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9

LEGEND
dB – Decibel

NOTES:
1. Outdoor sound data is measure in accordance with AHRI standard 270–2008.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A–weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A–weighted measurements for Carrier units are taken in accordance with AHRI standard 270–2008.

SANTA FE VALLEY CHRUCH

Phase	Equipment	Amount	Hours per Day	Duration (days)	Estimated hours in each Construction Zone									
					A	B	C	D	E	F	G	H	I	
Mass Site Grading	Scrapers/Grader	1	6	30	6	6	28	28	28	14	28	14	28	
	Rubber Tired Dozer	1	6	15	3	3	14	14	14	7	14	7	14	
	Tractor/Loader/Backhoe	1	7	15	7	7	10	17	17	7	24	7	10	
	Water Truck	1	8	30	8	8	38	38	38	19	38	19	38	
Fine Site Grading	Grader	1	6	10	7	7	7	7	7	7	10	3	7	
	Rubber Tired Dozer	1	6	5	4	4	4	4	4	4	5	2	2	
	Tractor/Loader/Backhoe	1	7	5	4	4	4	4	4	4	6	2	2	14
	Water Truck	1	8	10	9	9	9	9	9	9	13	4	9	14
Trenching	Excavators	2	8	10	0	36	0	0	0	0	36	0	7	14
	Other General Industrial Equipment	1	8	10	0	36	0	0	0	0	36	0	7	14
	Tractor/Loader/Backhoe	1	8	5	0	20	0	0	0	0	13	0	7	14
Paving	Cement and Mortar Mixers	4	6	10	0	60	0	0	0	0	0	0	0	14
	Paver	1	7	10	0	70	0	0	0	0	0	0	0	14
	Paving Equipment	2	6	10	0	60	0	0	0	0	0	0	0	14
	Roller	1	7	10	0	70	0	0	0	0	0	0	0	14
	Tractor/Loader/Backhoe	1	7	10	0	70	0	0	0	0	0	0	0	14
Building Construction	Crane	1	4	8	0	32	0	0	0	0	0	0	0	14
	Forklifts	2	6	60	0	360	0	0	0	0	0	0	0	14
	Generator Set	1	8	30	0	240	0	0	0	0	0	0	0	14
	Tractor/Loader/Backhoe	1	8	20	0	160	0	0	0	0	0	0	0	14
	Welders	3	8	10	0	80	0	0	0	0	0	0	0	14

APPENDIX B

Pertinent Sections of the KOA Corporation Traffic Studies

SANTA FE VALLEY CHINESE BIBLE CHURCH OF SAN DIEGO TRAFFIC IMPACT STUDY

March 2017

KOA CORPORATION
PLANNING & ENGINEERING
www.koacorporation.com

SANTA FE VALLEY CHINESE BIBLE CHURCH OF SAN DIEGO TRAFFIC IMPACT STUDY PREPARED FOR THE COUNTY OF SAN DIEGO

March 2017

Prepared for:
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
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Job No.: JB42038

3.4 EXISTING CONDITIONS + PROJECT

3.4.1 Analysis

This section will summarize the analysis for the addition of project traffic onto the existing background traffic for AM, PM, Sunday, and ADT conditions. The traffic analysis criteria are the same as outlined in Section 2.1.

Daily traffic volumes for existing plus project are shown in Figures 3-12 and 3-13. AM, PM, and Sunday peak hour intersection volumes are shown in Figures 3-14 thru 3-16. The LOS calculated for street segments and intersections are shown in Tables 7 and 8. Existing + Project LOS calculations are included in Appendix E.

Table 7
Existing + Project Segment ADT Volumes and Level of Service

Roadway Segment Name	Lanes/Class	Capacity	Without Project			Project Traffic	With Project			Δ V/C	Sig?
			ADT	LOS	V/C		ADT	LOS	V/C		
Weekday											
4 Gee Road											
From Camino Del Norte to Project Driveway[1]	2-lane Collector	16,200	3,088	B	0.191	390	3,478	B	0.215	0.02	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	25,523	C	0.638	356	25,879	C	0.647	0.01	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	20,071	B	0.542	301	20,372	B	0.551	0.01	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	20,839	B	0.563	296	21,135	B	0.571	0.01	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	26,816	B	0.470	202	27,018	B	0.474	0.00	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	49,587	C	0.826	198	49,785	C	0.830	0.00	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	51,471	D	0.858	196	51,667	D	0.861	0.00	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	13,355	A	0.361	94	13,449	A	0.363	0.00	No
Weekend											
4 Gee Road											
From Camino Del Norte to Project Driveway[1]	2-lane Collector	16,200	2,306	B	0.142	2,758	5,064	C	0.313	0.17	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	14,661	A	0.367	2,520	17,181	B	0.430	0.06	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	12,740	A	0.344	2,131	14,871	B	0.402	0.06	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	13,402	A	0.362	2,098	15,500	B	0.419	0.06	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	19,134	A	0.336	1,429	20,563	A	0.361	0.03	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	29,855	B	0.498	1,399	31,254	B	0.521	0.02	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	32,566	B	0.543	1,385	33,951	B	0.566	0.02	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	8,978	A	0.243	669	9,647	A	0.261	0.02	No

Note: [1] County of San Diego Jurisdiction, [2] City of San Diego Jurisdiction

Table 12
Existing + Ambient + Cumulative + Project Segment ADT Volumes and Level of Service

Roadway Segment Name	Lanes/Class	Capacity	Without Project			Project Traffic	With Project			Δ V/C	Sig?
			ADT	LOS	V/C		ADT	LOS	V/C		
Weekday											
4 Gee Road											
From Camino Del Sur to Project Driveway[1]	2-lane Collector	16,200	3,212	B	0.198	390	3,601	B	0.222	0.02	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	26,544	C	0.664	356	26,900	C	0.672	0.01	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	20,874	B	0.564	301	21,175	B	0.572	0.01	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	21,673	B	0.586	296	21,969	B	0.594	0.01	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	27,889	B	0.489	202	28,091	B	0.493	0.00	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	54,098	D	0.902	198	54,296	D	0.905	0.00	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	55,289	E	0.921	196	55,484	E	0.925	0.00	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	14,079	A	0.381	94	14,174	A	0.383	0.00	No
Weekend											
4 Gee Road											
From Camino Del Sur to Project Driveway[1]	2-lane Collector	16,200	2,467	B	0.152	2,758	5,226	C	0.323	0.17	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	15,687	B	0.392	2,520	18,207	B	0.455	0.06	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	13,632	A	0.368	2,131	15,763	B	0.426	0.06	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	14,340	A	0.388	2,098	16,438	B	0.444	0.06	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	20,473	A	0.359	1,429	21,903	A	0.384	0.03	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	31,945	B	0.532	1,399	33,343	B	0.556	0.02	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	34,846	B	0.581	1,385	36,230	C	0.604	0.02	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	9,606	A	0.260	669	10,275	A	0.278	0.02	No

Note: [1] County of San Diego Jurisdiction
Note: [2] City of San Diego Jurisdiction

Table 14
General Plan Segment ADT Volumes and Level of Service

Roadway Segment Name	Lanes/Class	Capacity	Without Project			Project Traffic	With Project			Δ V/C	Sig?
			ADT	LOS	V/C		ADT	LOS	V/C		
Weekday											
4 Gee Road											
From Camino Del Sur to Project Driveway[1]	2-lane Collector	16,200	3,922	B	0.242	390	4,311	C	0.266	0.02	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	32,414	D	0.810	356	32,770	D	0.819	0.01	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	25,490	C	0.689	301	25,791	C	0.697	0.01	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	26,466	C	0.715	296	26,762	C	0.723	0.01	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	34,056	B	0.597	202	34,258	B	0.601	0.00	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	62,975	F	1.050	198	63,173	F	1.053	0.00	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	65,368	F	1.089	196	65,564	F	1.093	0.00	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	16,961	B	0.458	94	17,055	B	0.461	0.00	No
Weekend											
4 Gee Road											
From Camino Del Sur to Project Driveway[1]	2-lane Collector	16,200	2,929	B	0.181	2,758	5,687	C	0.351	0.17	No
Camino Del Sur											
From 4 Gee Rd to Rancho Bernardo Rd[2]	4-lane Major Arterial	40,000	18,619	B	0.465	2,520	21,139	B	0.528	0.06	No
Camino Del Norte											
From Rancho Bernardo Rd to 4S Ranch Pkwy[1]	4-lane Major	37,000	16,180	B	0.437	2,131	18,311	B	0.495	0.06	No
From 4S Ranch Rd to Dove Canyon Rd[1]	4-lane Major	37,000	17,021	B	0.460	2,098	19,118	B	0.517	0.06	No
From Dove Canyon Rd to Bernardo Center Dr [1]	6-lane Prime Arterial	57,000	24,300	B	0.426	1,429	25,729	B	0.451	0.03	No
From Bernardo Center Dr to Paseo Montanoso [2]	6-lane Prime Arterial	60,000	37,916	C	0.632	1,399	39,314	C	0.655	0.02	No
From Paseo Montanoso to I-15 Ramps[2]	6-lane Prime Arterial	60,000	41,359	C	0.689	1,385	42,744	C	0.712	0.02	No
Dove Canyon Rd											
From Camino Del Norte to Lone Quail Rd[1]	4-lane Major	37,000	11,402	A	0.308	669	12,071	A	0.326	0.02	No

Note: [1] County of San Diego Jurisdiction
Note: [2] City of San Diego Jurisdiction

SANTA FE VALLEY CHINESE BIBLE CHURCH
OF SAN DIEGO
TRAFFIC IMPACT STUDY

October 2014

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Job No.: JB42038

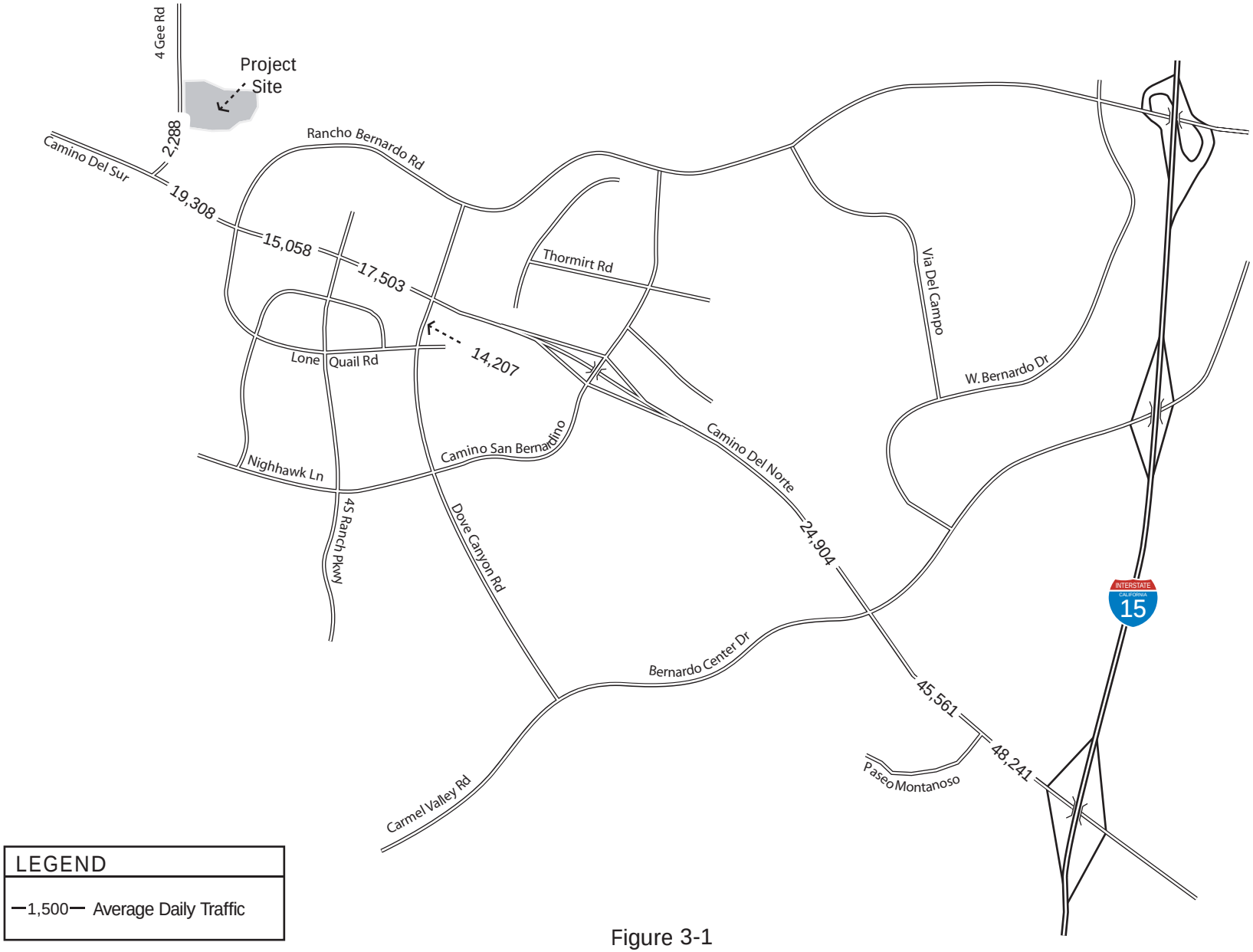

Figure 3-1
Existing Weekday Roadway Segment Volumes

Figure 3-2
Existing Weekend Roadway Segment Volumes

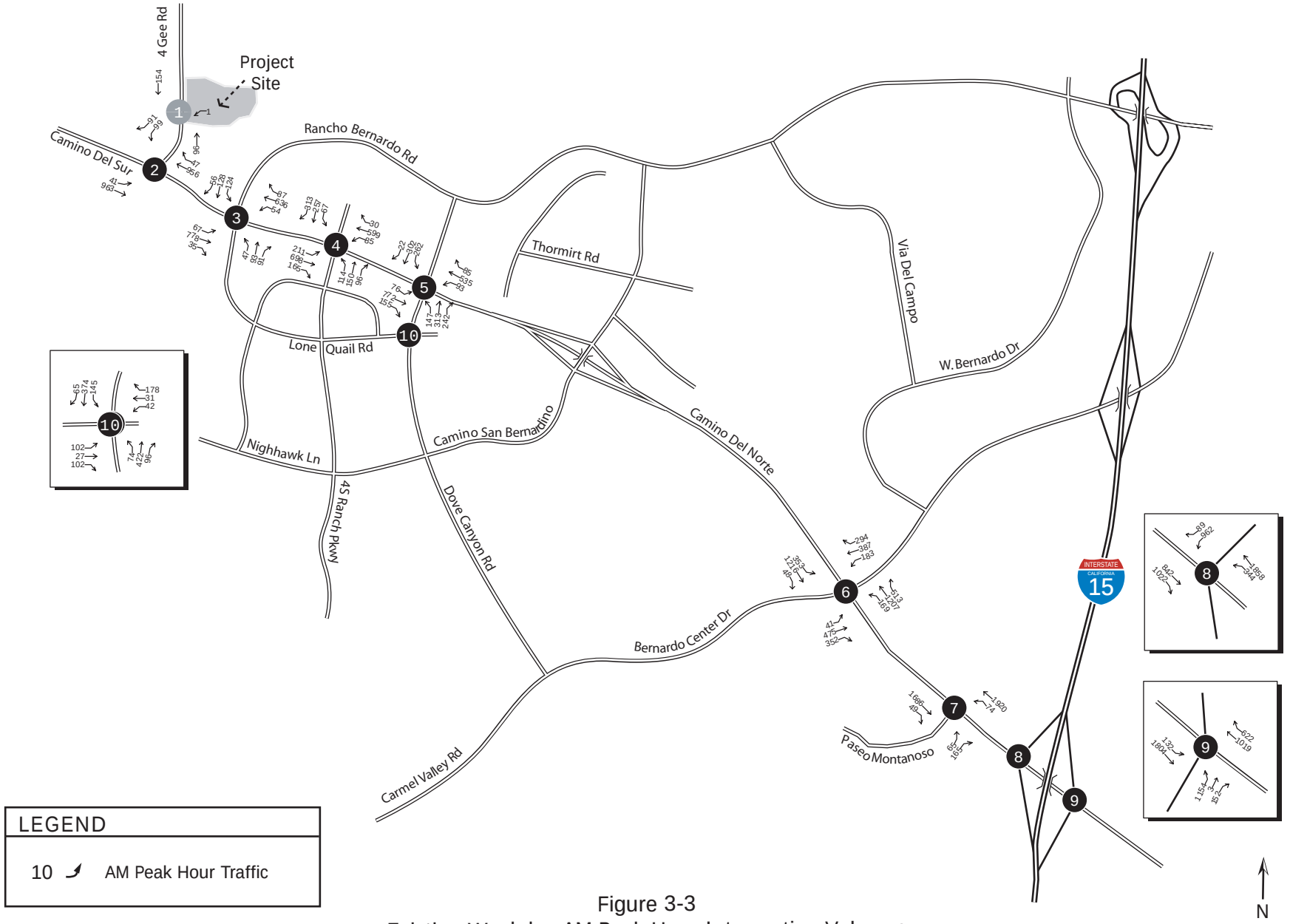

Figure 3-3
Existing Weekday AM Peak Hour Intersection Volumes

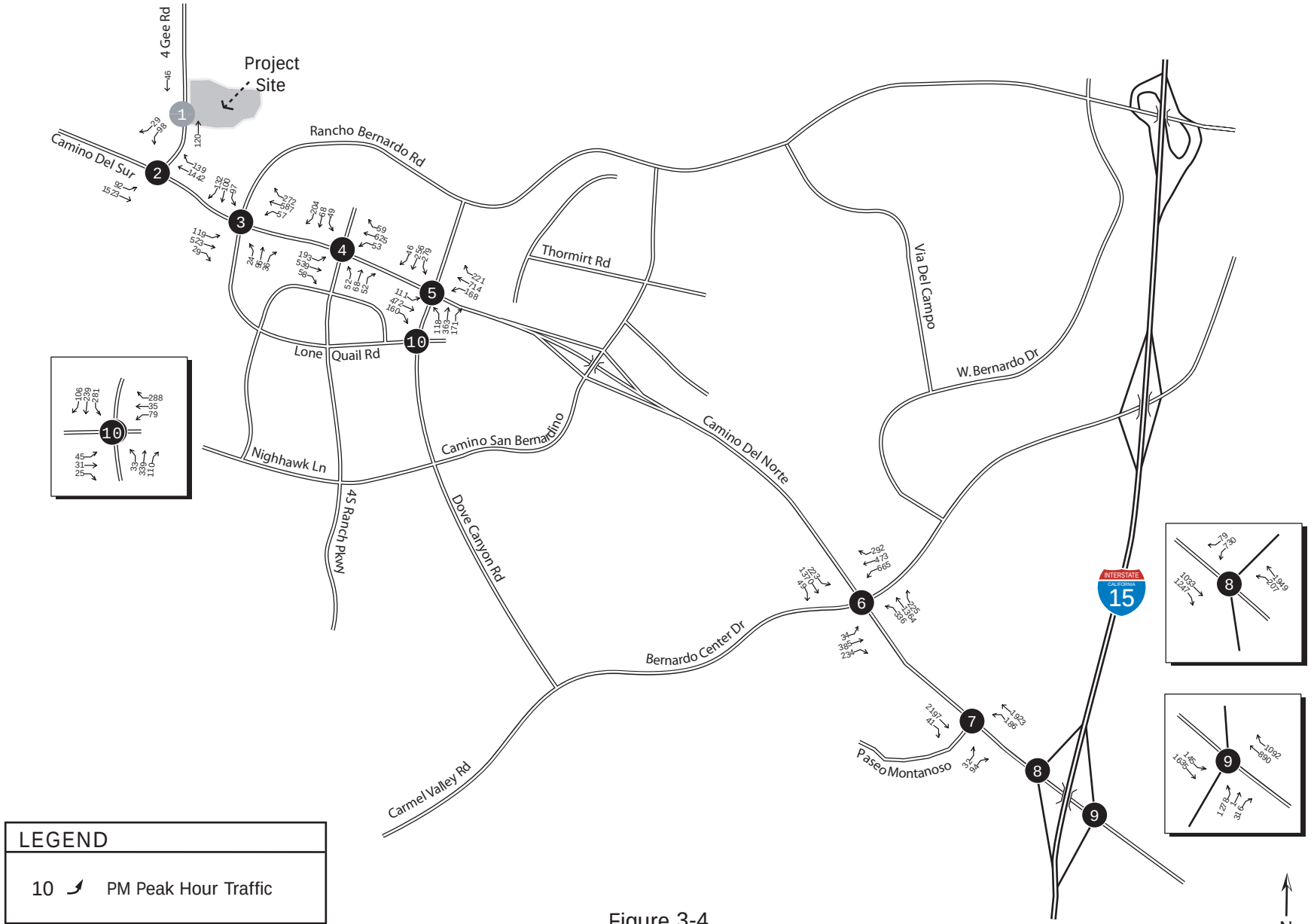

Figure 3-4
Existing Weekday PM Peak Hour Intersection Conditions

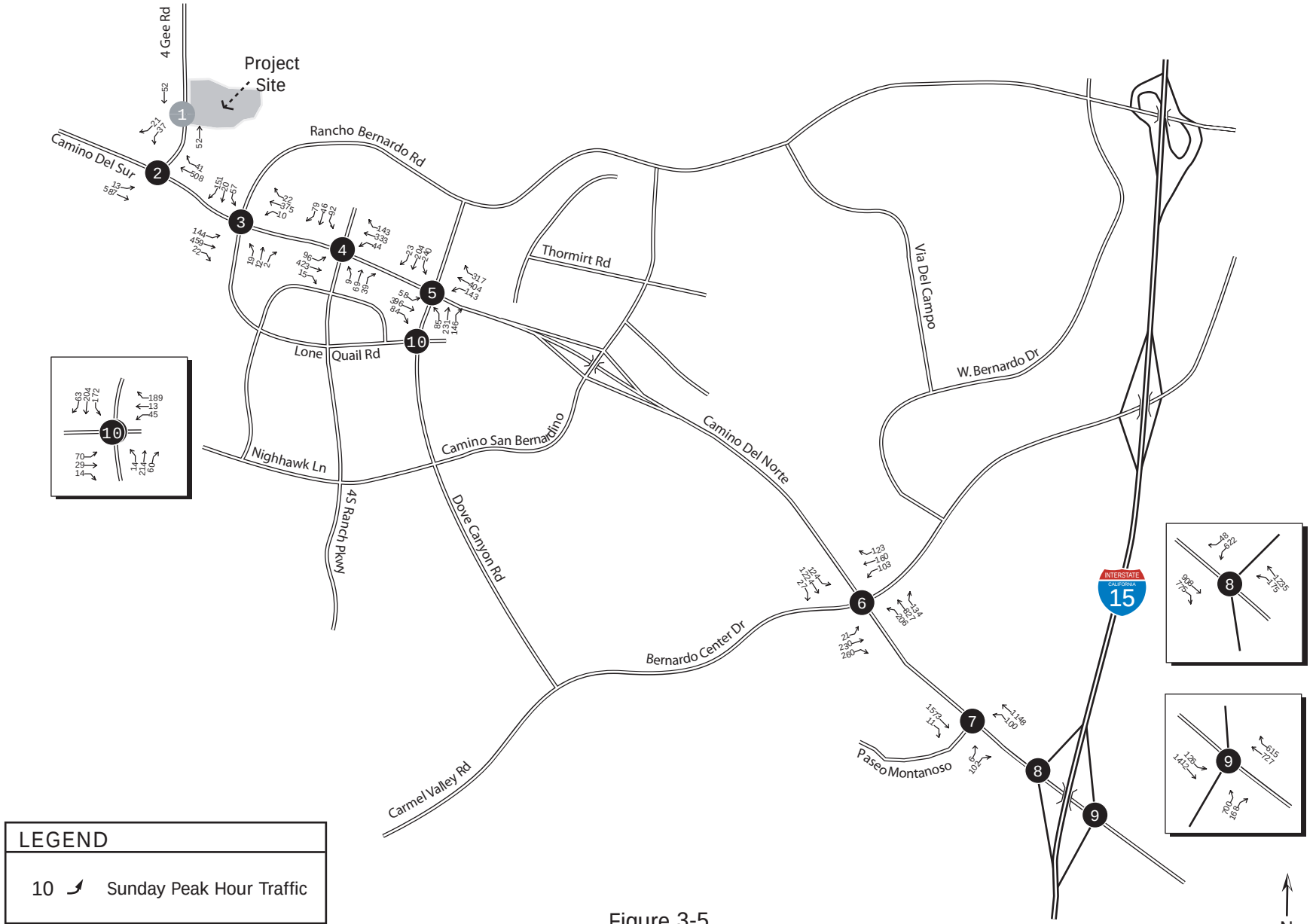

Figure 3-5
Existing Weekend Sunday Peak Hour Intersection Conditions

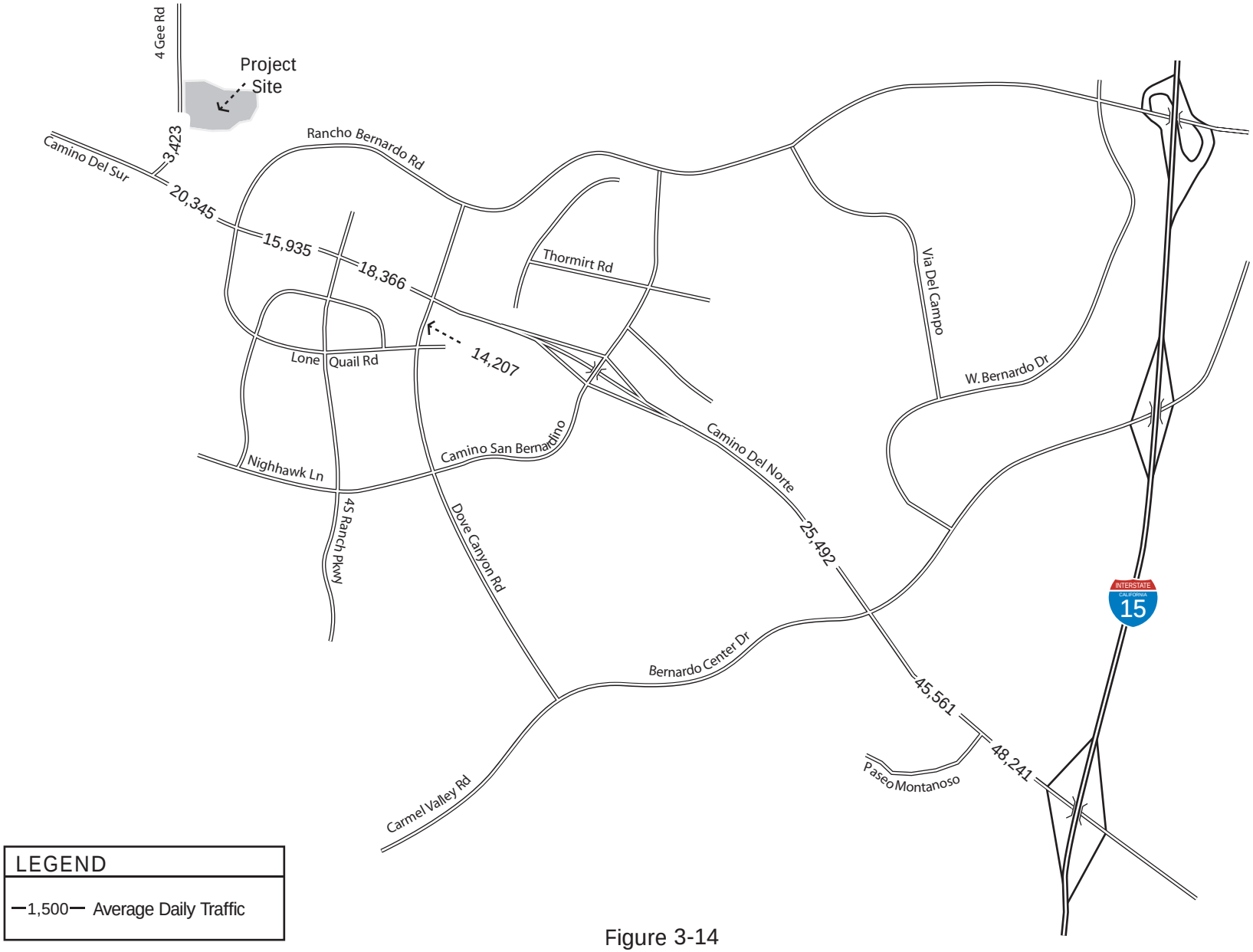

Figure 3-14
Existing Weekday Roadway Segment Volumes With Project

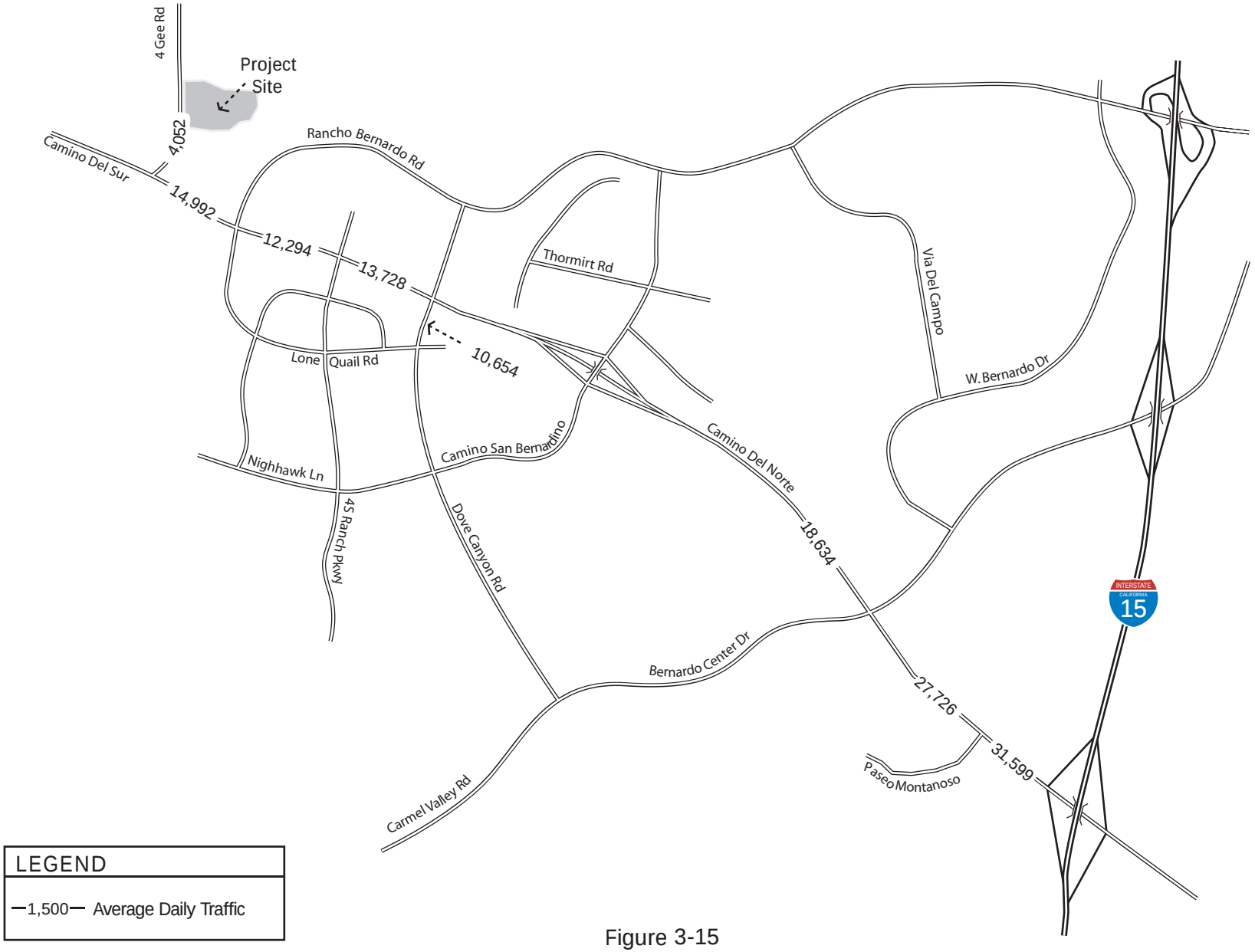

Figure 3-15
Existing Weekend Roadway Segment Volumes With Project

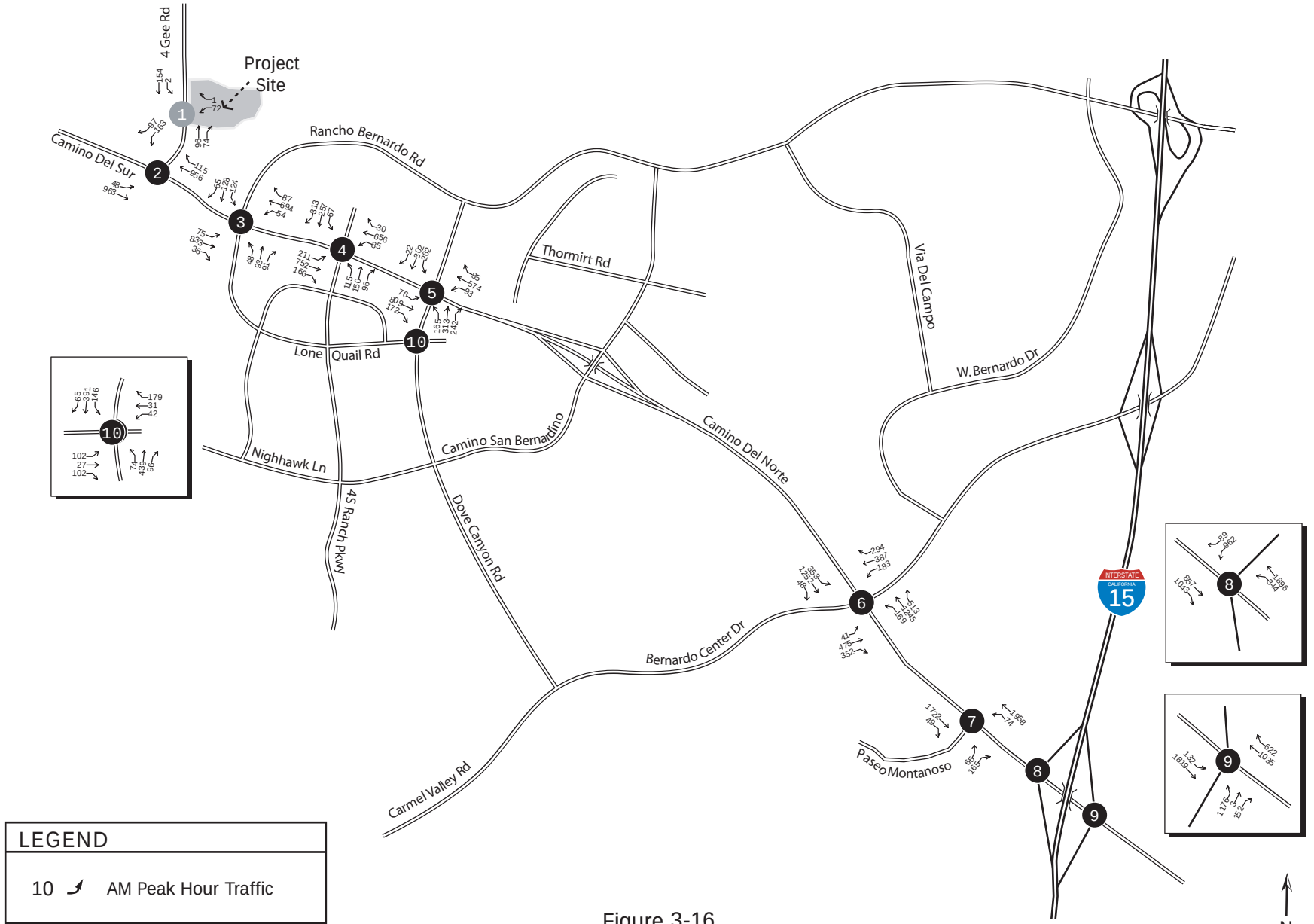

Figure 3-16
Existing Weekday AM Peak Hour Intersection Volumes With Project

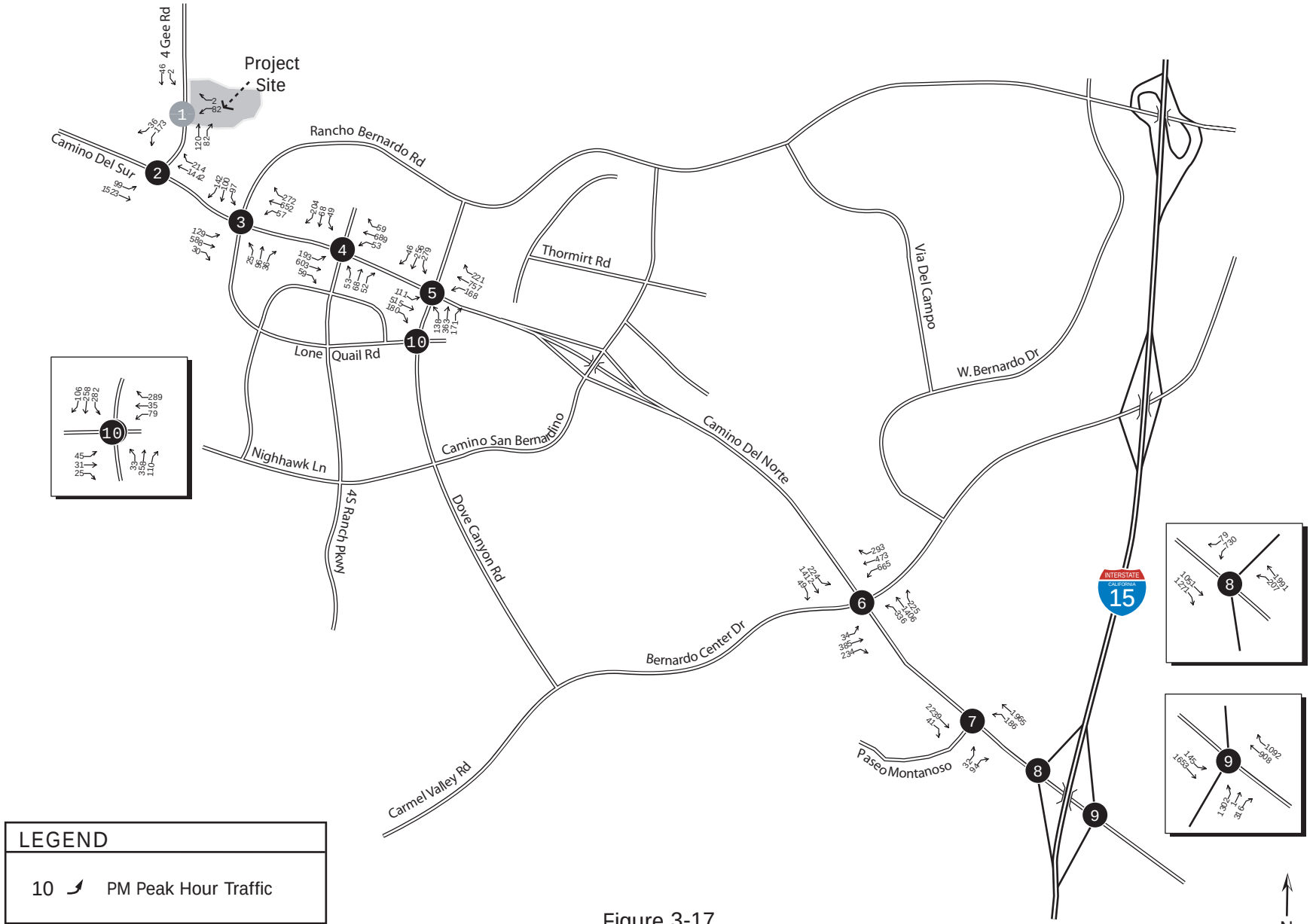

Figure 3-17
Existing Weekday PM Peak Hour Intersection Volumes With Project

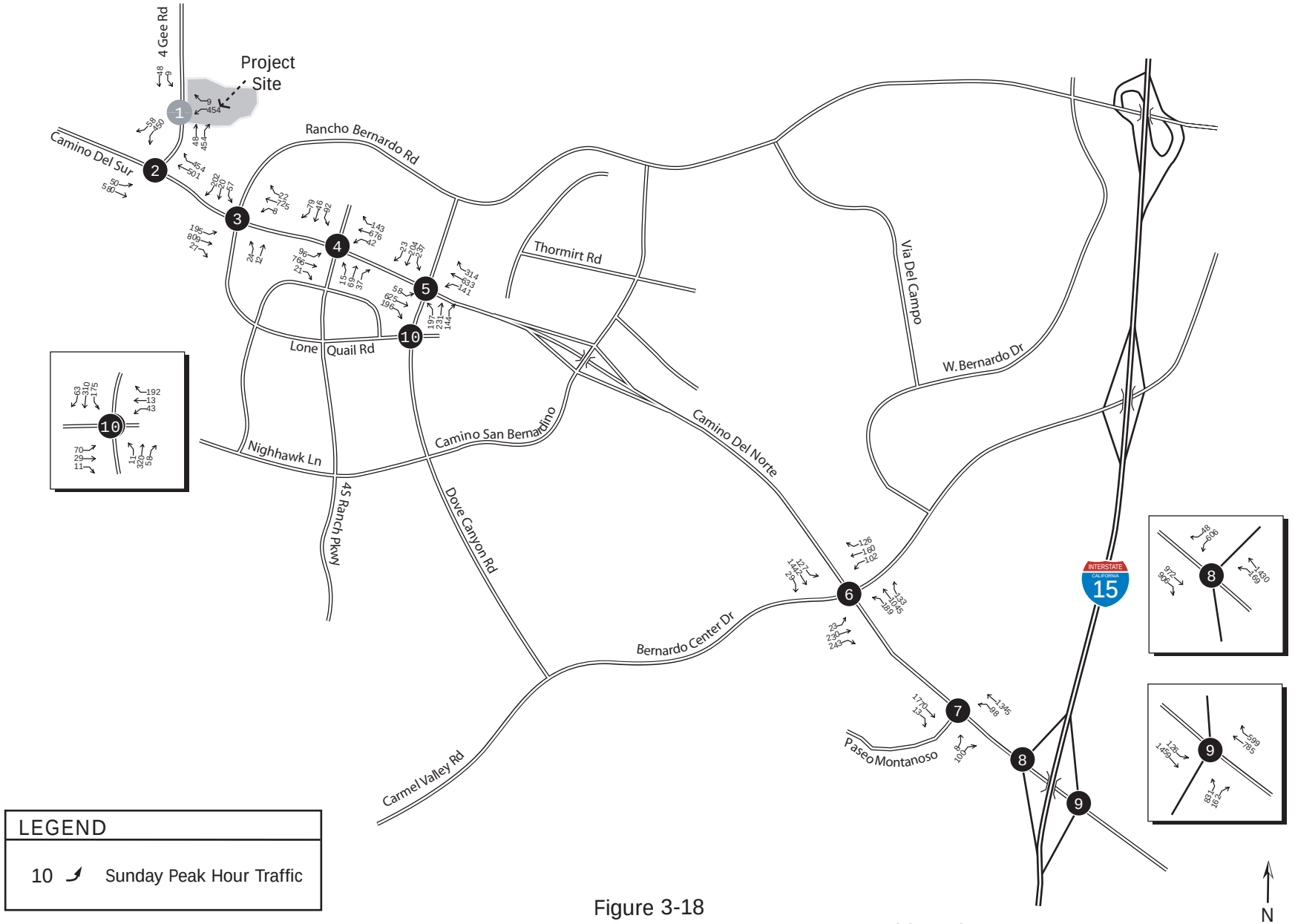

Figure 3-18
Existing Weekend Sunday Peak Hour Intersection Volumes With Project

Figure 3-22
Cumulative Projects Weekday Roadway Segment Volumes

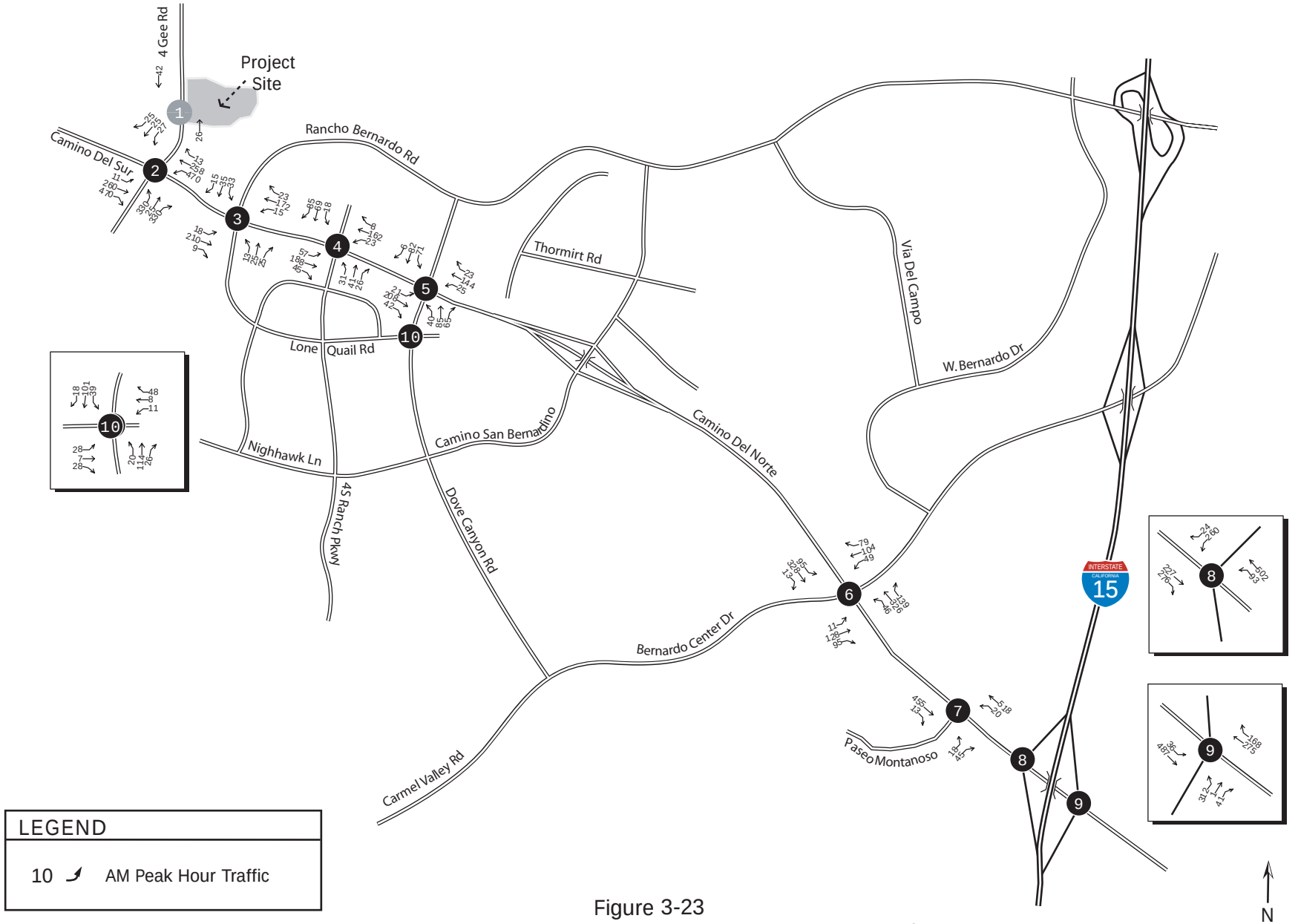

Figure 3-23
Cumulative Projects Weekday AM Peak Hour Intersection Volumes

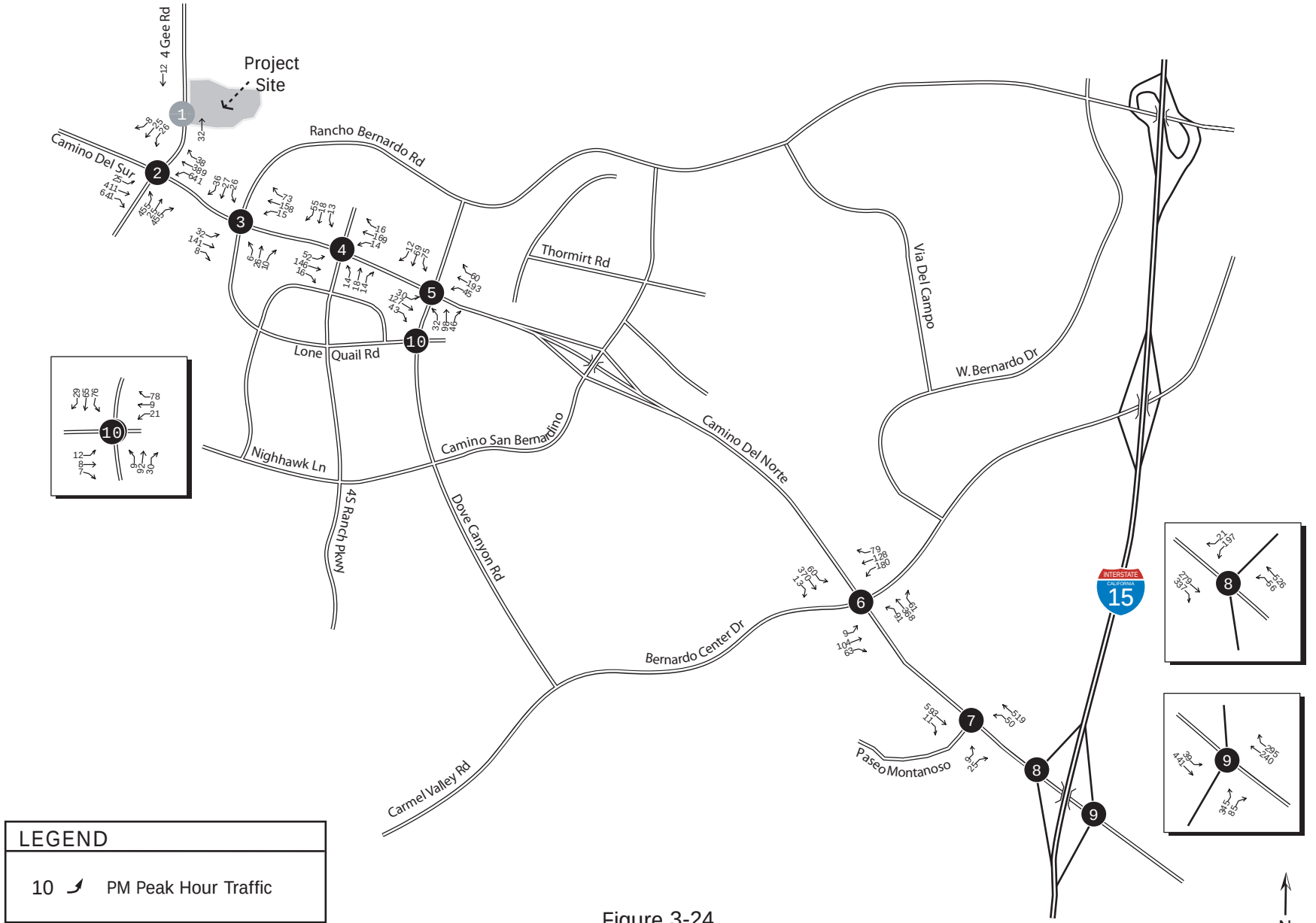

Figure 3-24
Cumulative Projects Weekday PM Peak Hour Intersection Volumes

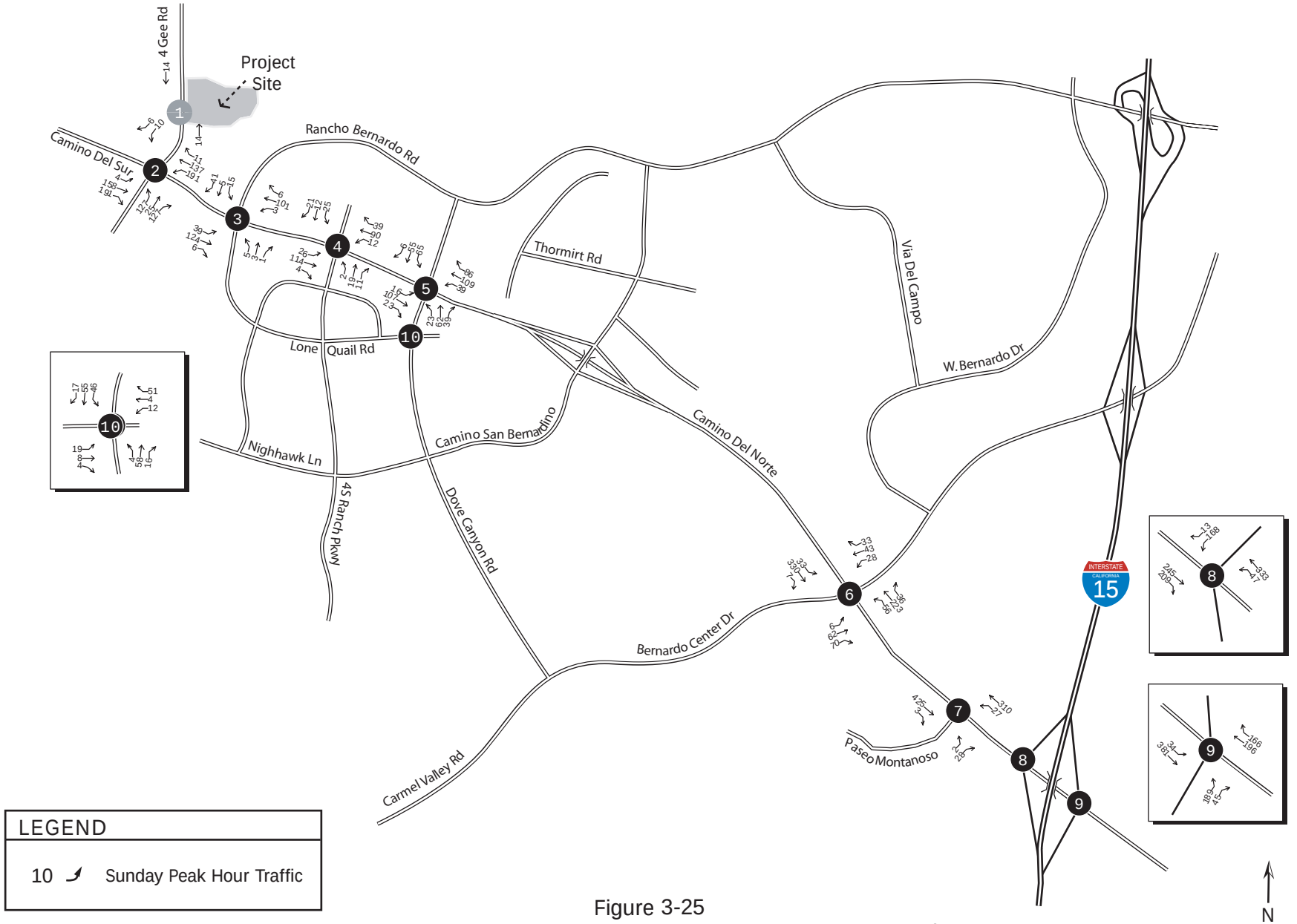

Figure 3-25
Cumulative Projects Weekend Sunday Peak Hour Intersection Volumes

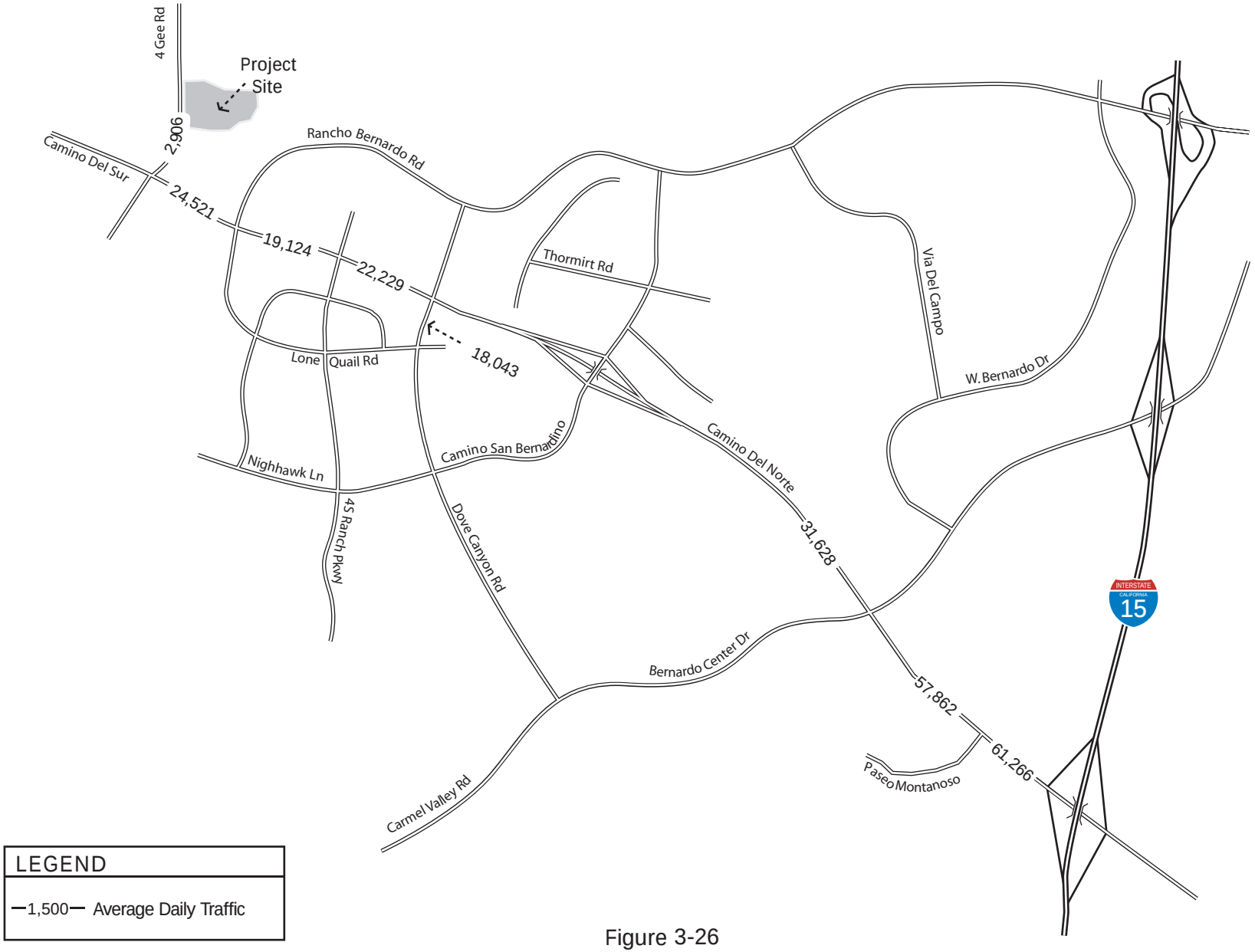

Figure 3-26
Existing + Ambient + Cumulative Weekday Roadway Segment Volumes Without Project

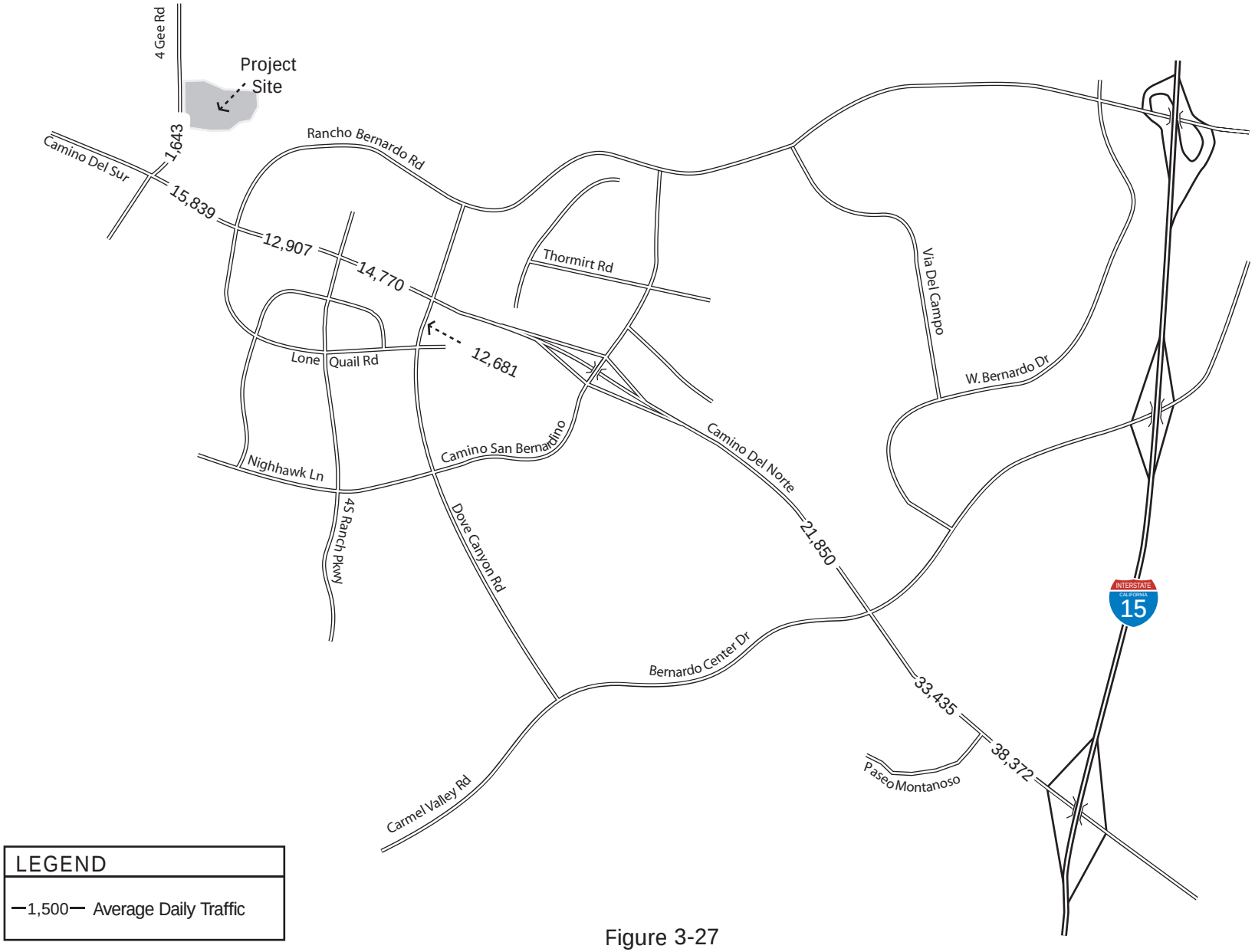

Figure 3-27
Existing + Ambient + Cumulative Weekend Roadway Segment Volumes Without Project

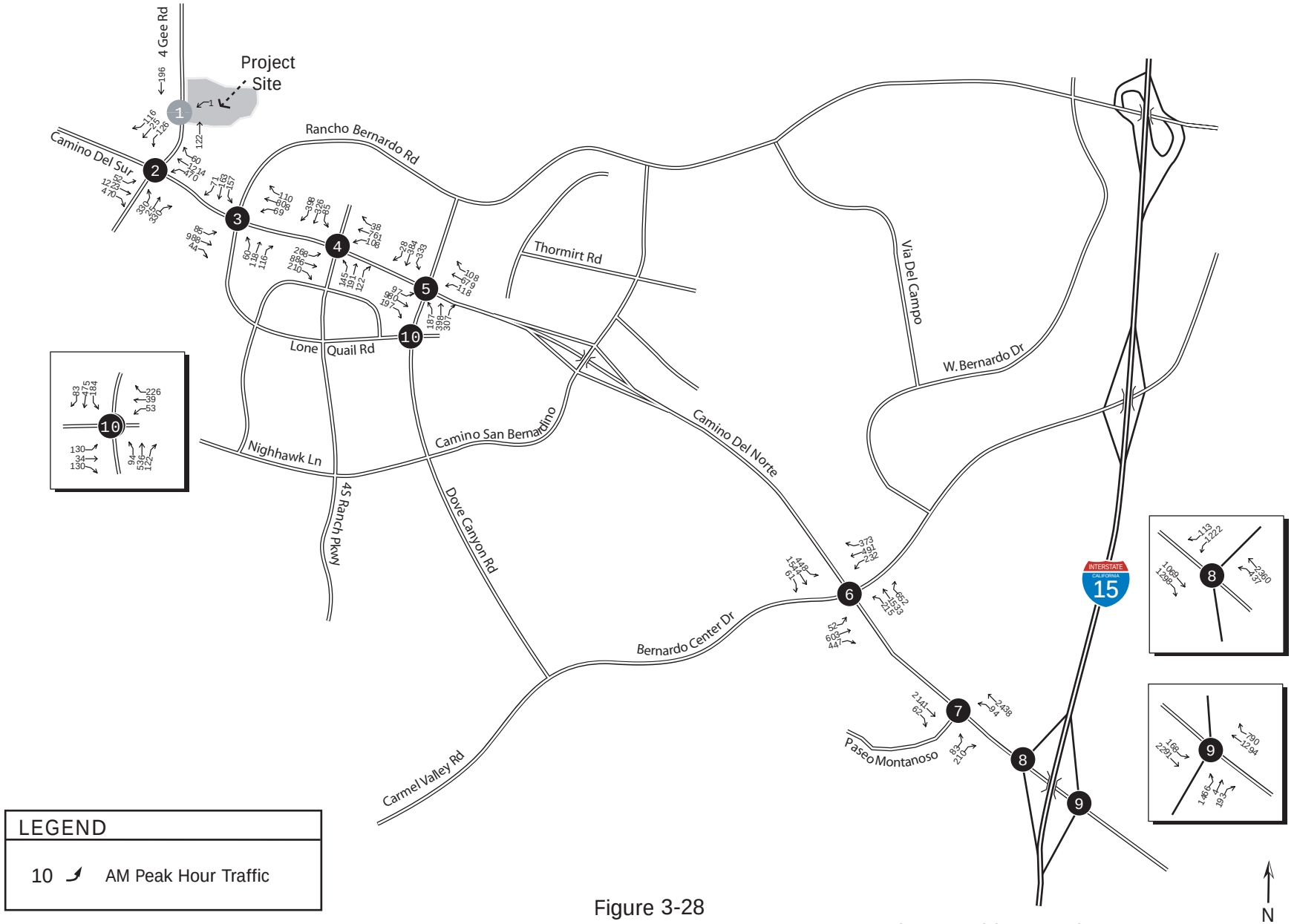

Figure 3-28
Existing + Ambient + Cumulative Weekday AM Peak Hour Intersection Volumes Without Project

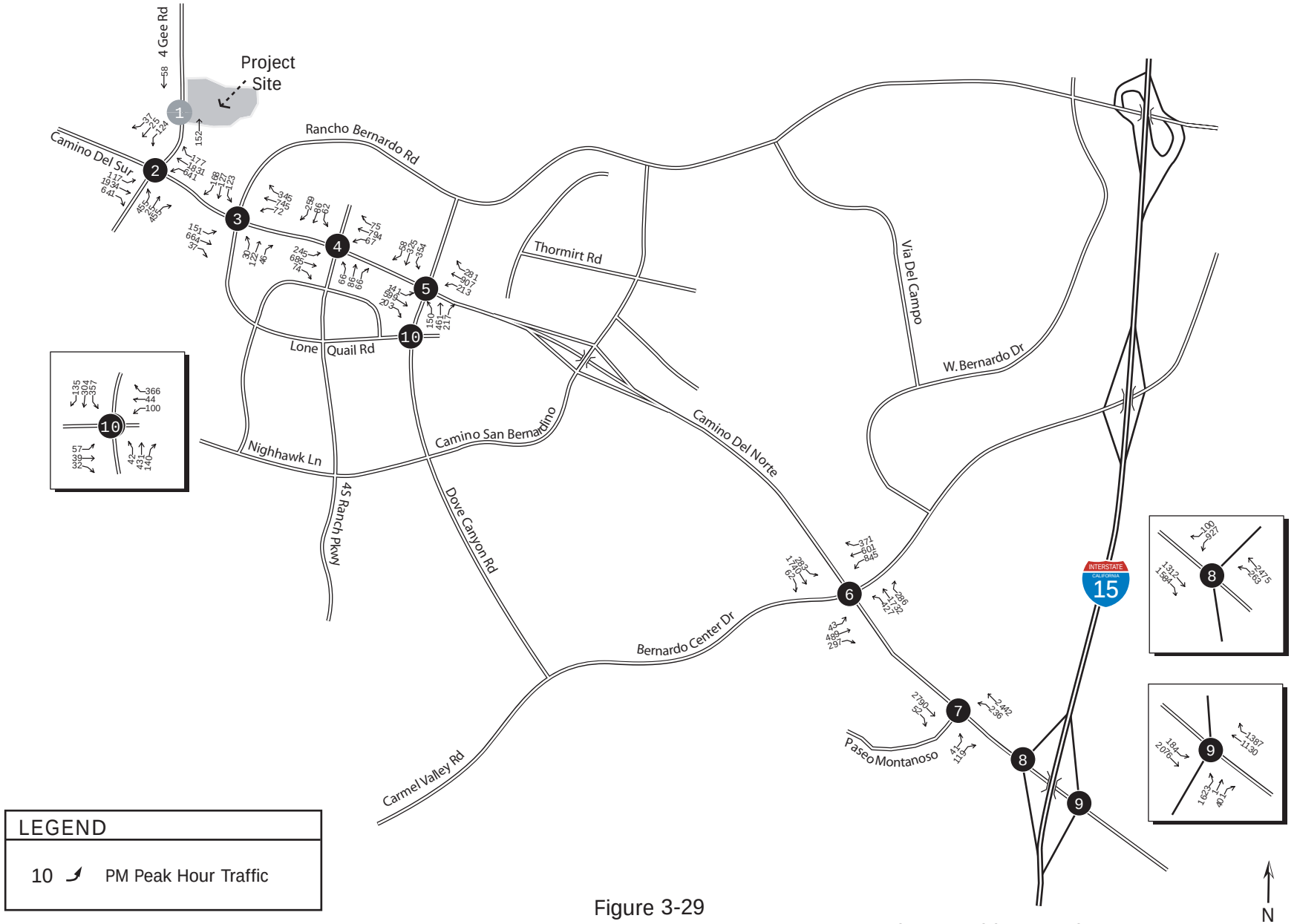

Figure 3-29
Existing + Ambient + Cumulative Weekday PM Peak Hour Intersection Volumes Without Project

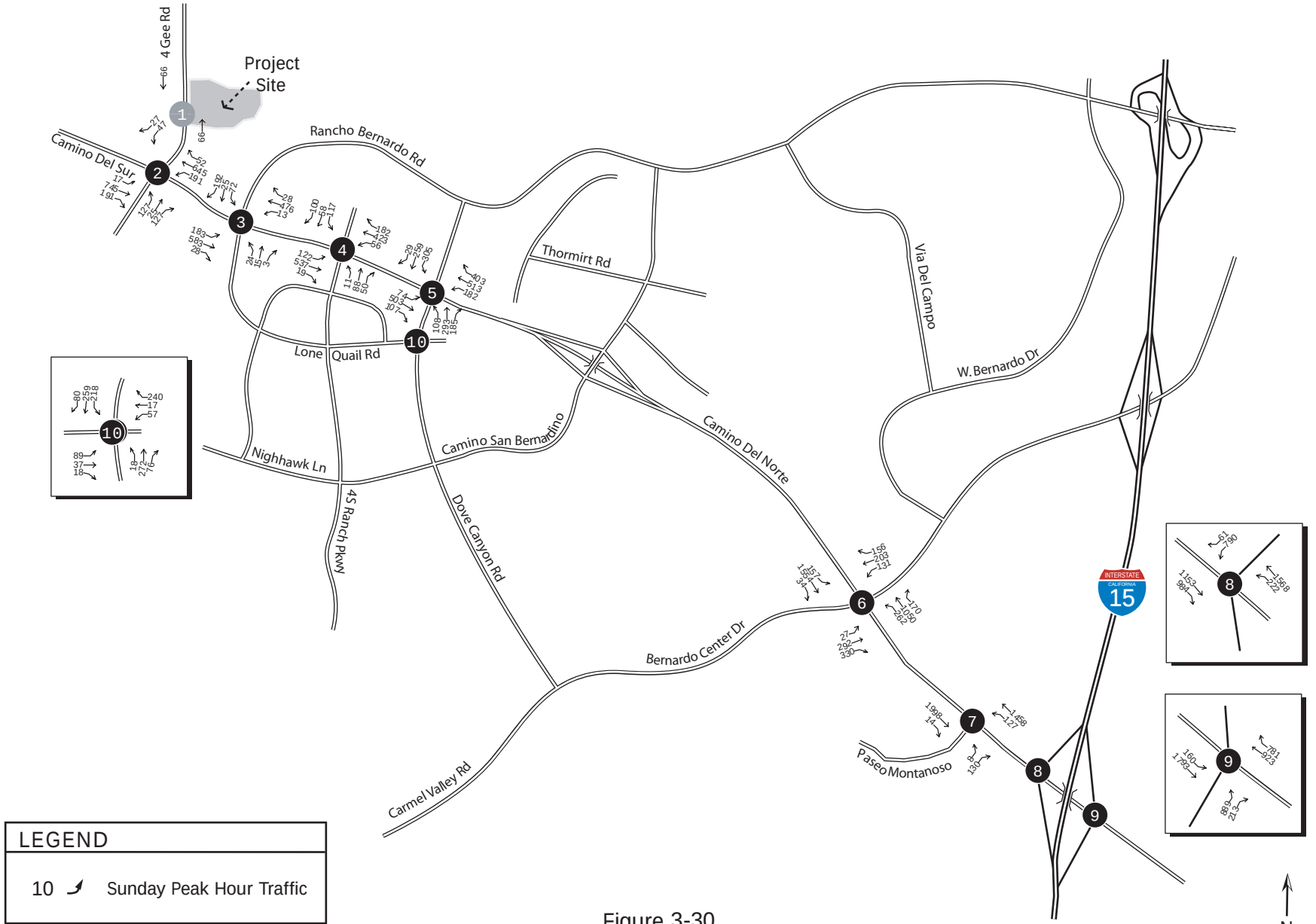

Figure 3-30
Existing + Ambient + Cumulative Weekend Sunday Peak Hour Intersection Volumes Without Project

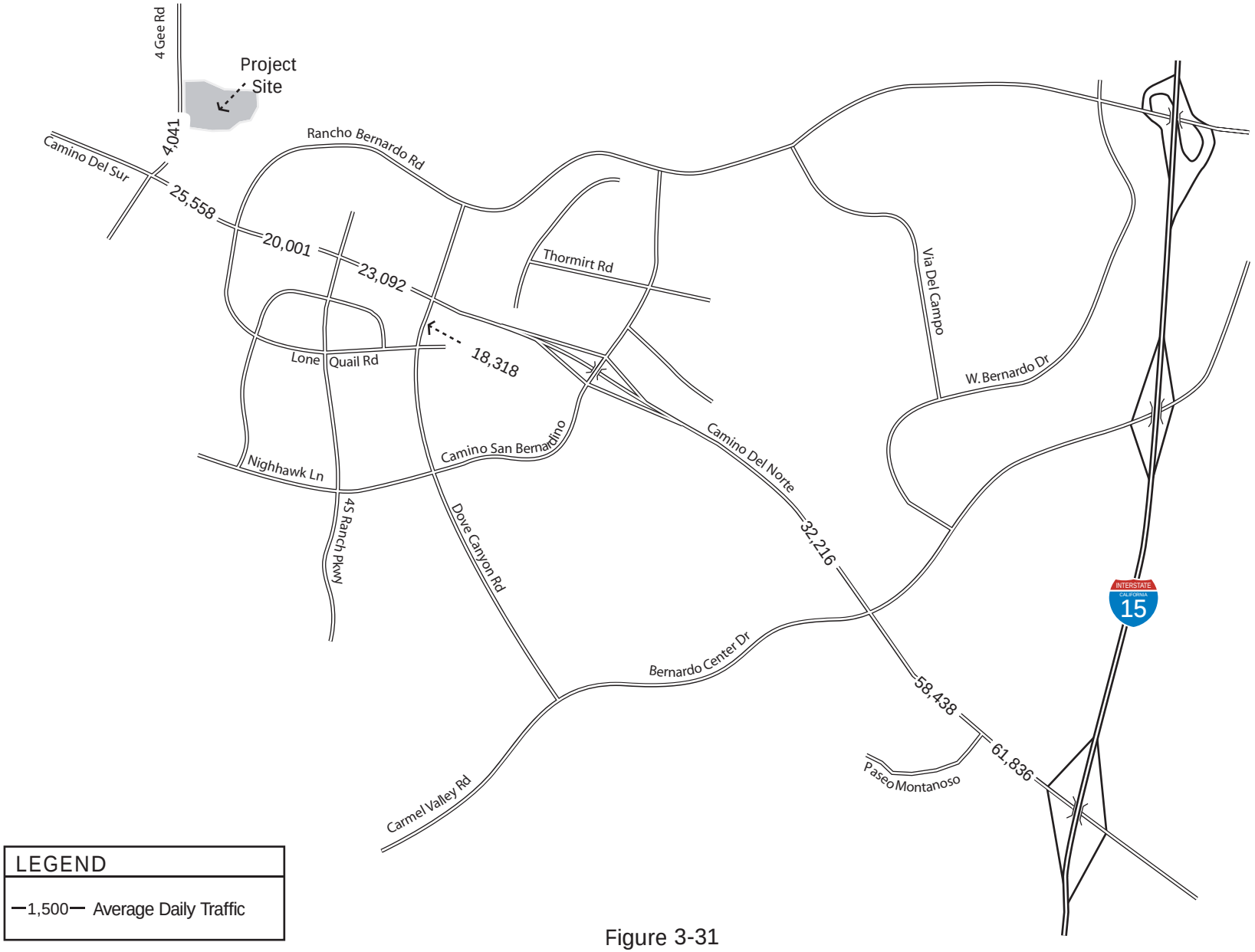

Figure 3-31
Existing + Ambient + Cumulative Weekday Roadway Segment Volumes With Project

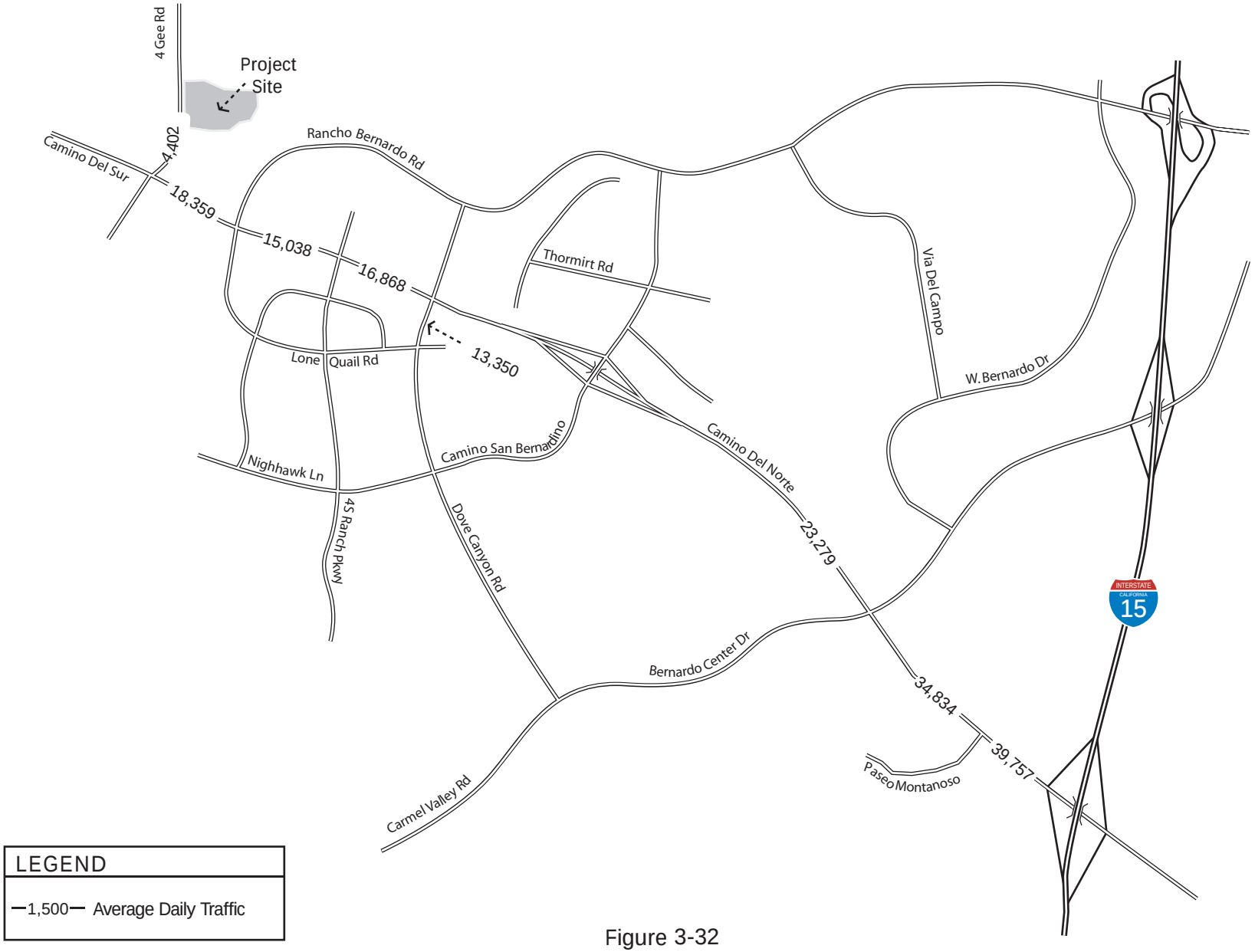

Figure 3-32
Existing + Ambient + Cumulative Weekend Roadway Segment Volumes With Project

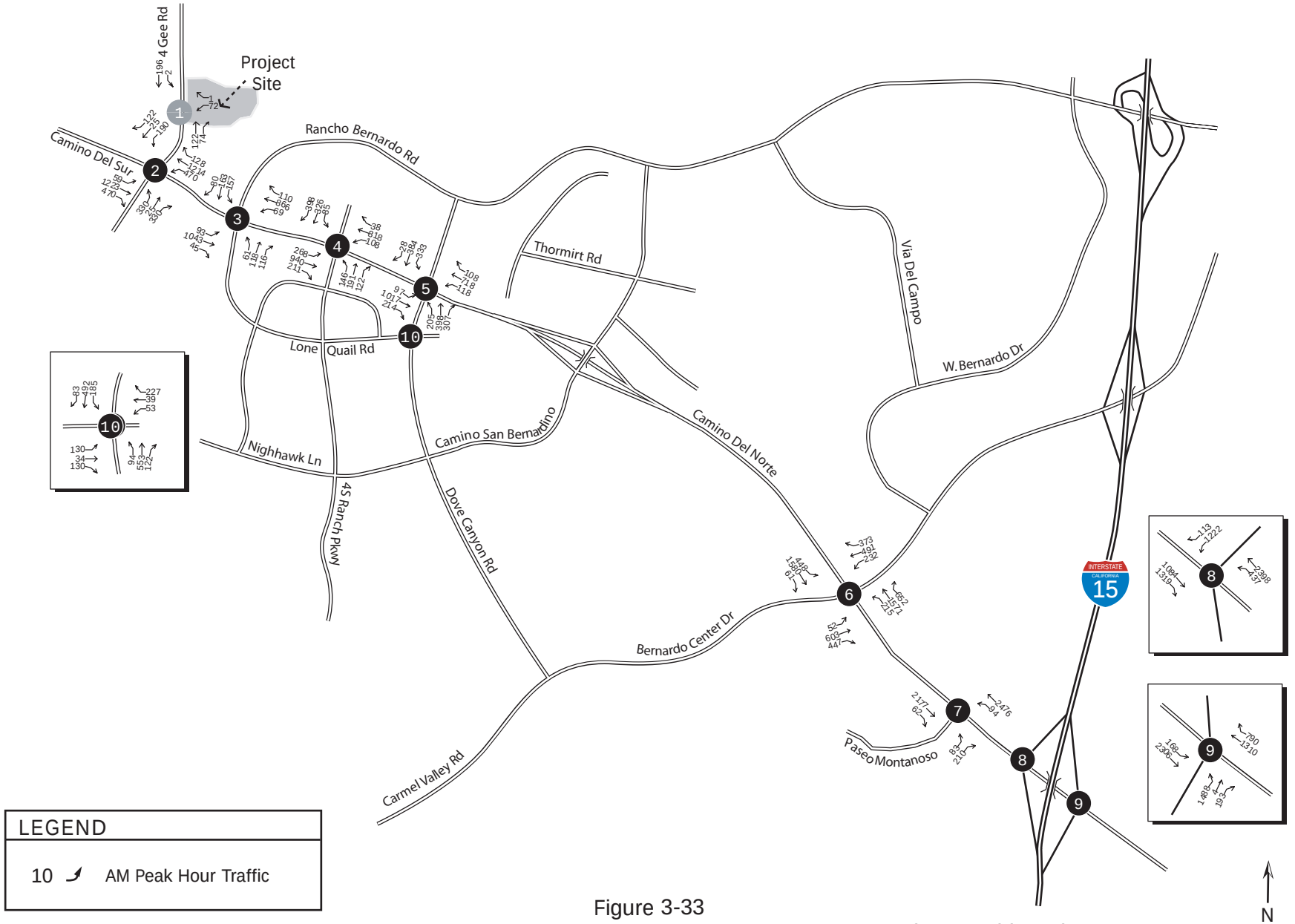

Figure 3-33
Existing + Ambient + Cumulative Weekday AM Peak Hour Intersection Volumes With Project

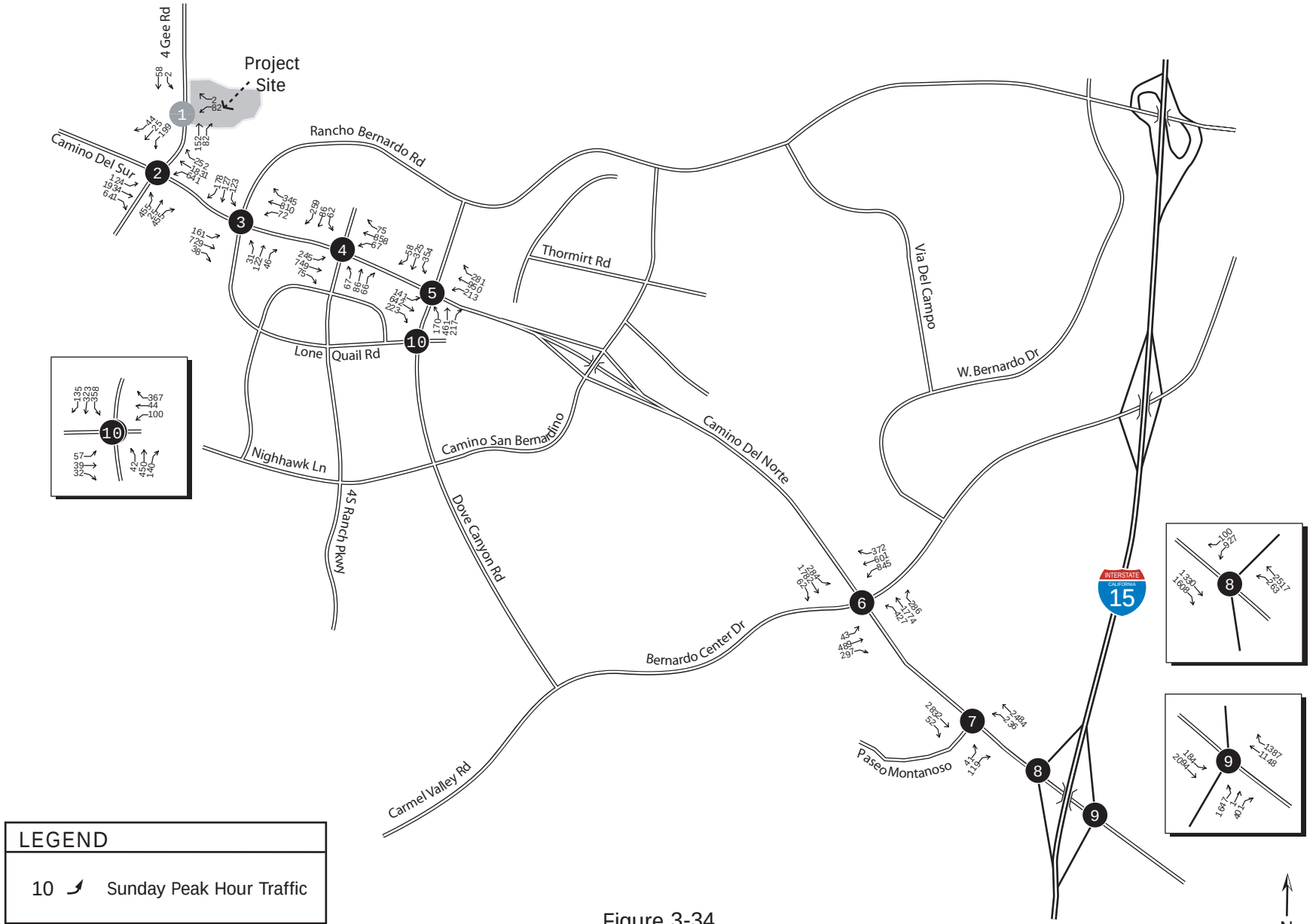

Figure 3-34
Existing + Ambient + Cumulative Weekday PM Peak Hour Intersection Volumes With Project

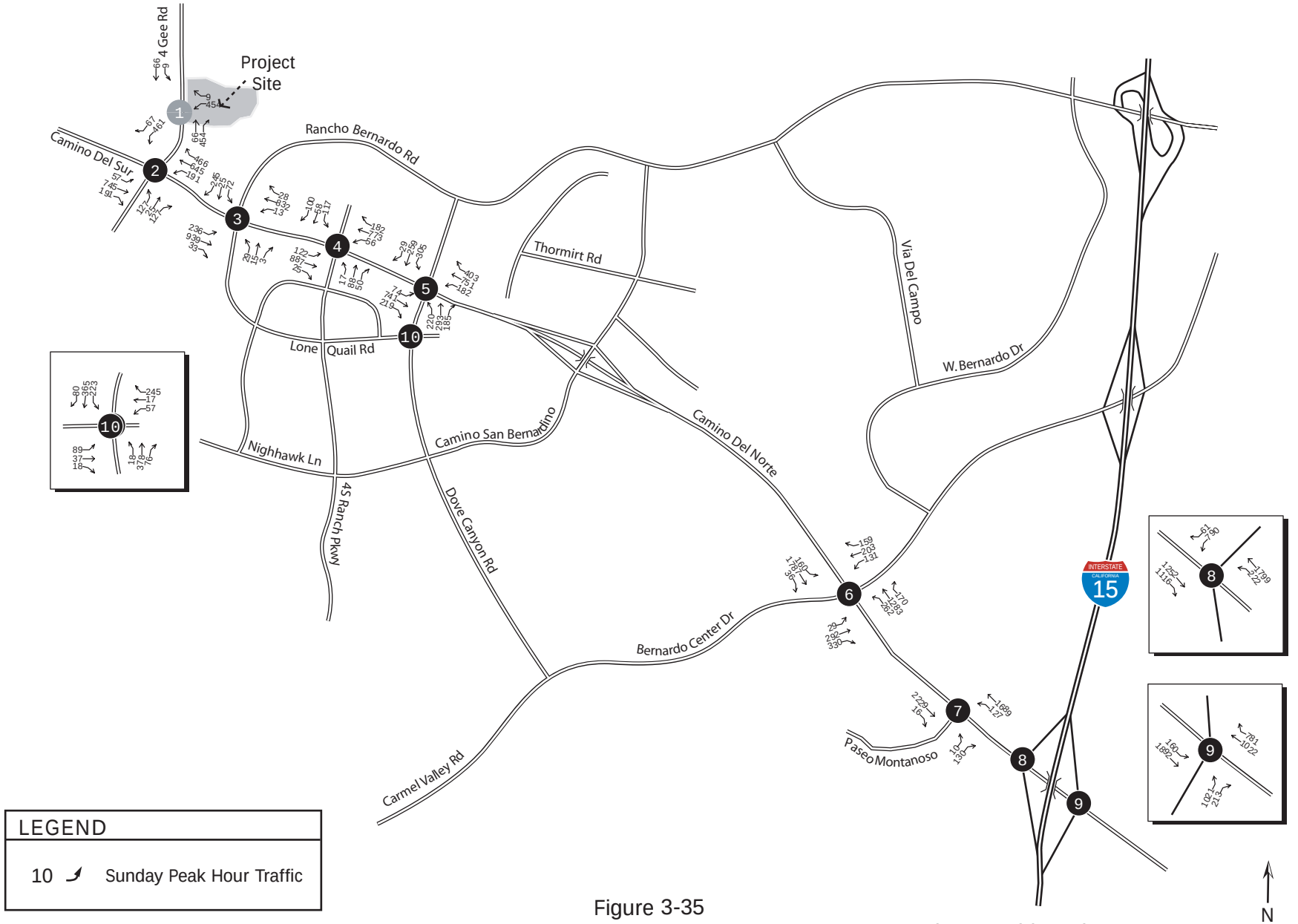

Figure 3-35
Existing + Ambient + Cumulative Weekend Sunday Peak Hour Intersection Volumes With Project

APPENDIX C

Traffic Noise Model (TNM) Data and Results

Eilar Associates 11 April 2017
JB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: B70322N1
RUN: Calibration

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

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Camino Del Sur	90.0	point1	1	8,408.4	1,356.6	0.00				Average	
		point2	2	6,824.5	2,093.5	0.00				Average	
		point3	3	6,253.0	2,196.8	0.00				Average	
		point4	4	5,585.0	2,369.0	0.00				Average	Y
		point5	5	4,972.1	2,678.9	0.00				Average	
		point6	6	4,304.1	3,188.5	0.00				Average	
		point7	7	4,050.3	3,312.1	0.00				Average	
		point8	8	3,757.5	3,377.2	0.00				Average	
		point9	9	3,176.1	3,381.5	0.00				Average	
		point10	10	11.4	3,356.9	0.00					
Four Gee	40.0	point11	11	4,303.9	3,190.3	0.00				Average	
		point12	12	4,599.0	3,577.0	0.00				Average	
		point13	13	4,630.4	3,646.7	0.00				Average	
		point14	14	4,638.0	4,004.1	0.00				Average	
		point15	15	4,632.5	6,034.7	0.00					
Rancho Bernardo Rd	80.0	point36	36	7,828.3	805.0	0.00				Average	
		point37	37	7,396.5	859.6	0.00				Average	
		point38	38	6,631.3	772.2	0.00				Average	
		point39	39	5,636.5	1,007.2	0.00				Average	
		point40	40	5,367.3	1,182.1	0.00				Average	
		point41	41	5,275.8	1,329.7	0.00				Average	
		point42	42	5,230.7	1,534.7	0.00				Average	
		point43	43	5,251.2	1,827.1	0.00				Average	
		point44	44	5,378.1	2,441.0	0.00				Average	
		point45	45	5,472.8	2,764.6	0.00				Average	

		point46	46	5,600.2	3,005.7	0.00				Average	
		point47	47	5,837.8	3,254.4	0.00				Average	
		point48	48	6,177.8	3,480.0	0.00				Average	
		point49	49	6,439.5	3,585.9	0.00				Average	
		point50	50	6,792.4	3,617.7	0.00				Average	
		point51	51	7,031.0	3,585.2	0.00				Average	
		point52	52	7,397.6	3,426.8	0.00				Average	
		point53	53	8,278.3	2,832.5	0.00				Average	
		point54	54	8,406.3	2,769.6	0.00					

Eilar Associates **11 April 2017**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B70322N1**
RUN: **Calibration**

Roadway	Points		Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
Name	Name	No.	V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	1700	45	17	45	9	45	0	0	0	0
	point2	2	1700	45	17	45	9	45	0	0	0	0
	point3	3	1700	45	17	45	9	45	0	0	0	0
	point4	4	1700	45	17	45	9	45	0	0	0	0
	point5	5	1700	45	17	45	9	45	0	0	0	0
	point6	6	2162	45	22	45	11	45	0	0	0	0
	point7	7	2162	45	22	45	11	45	0	0	0	0
	point8	8	2162	45	22	45	11	45	0	0	0	0
	point9	9	2162	45	22	45	11	45	0	0	0	0
	point10	10										
Four Gee	point11	11	168	35	0	0	0	0	0	0	0	0
	point12	12	168	35	0	0	0	0	0	0	0	0
	point13	13	168	35	0	0	0	0	0	0	0	0
	point14	14	168	35	0	0	0	0	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	745	50	8	50	4	50	0	0	0	0
	point37	37	745	50	8	50	4	50	0	0	0	0
	point38	38	745	50	8	50	4	50	0	0	0	0
	point39	39	745	50	8	50	4	50	0	0	0	0
	point40	40	745	50	8	50	4	50	0	0	0	0
	point41	41	745	50	8	50	4	50	0	0	0	0
	point42	42	745	50	8	50	4	50	0	0	0	0
	point43	43	745	50	8	50	4	50	0	0	0	0

	point44	44	745	50	8	50	4	50	0	0	0	0
	point45	45	745	50	8	50	4	50	0	0	0	0
	point46	46	745	50	8	50	4	50	0	0	0	0
	point47	47	745	50	8	50	4	50	0	0	0	0
	point48	48	745	50	8	50	4	50	0	0	0	0
	point49	49	745	50	8	50	4	50	0	0	0	0
	point50	50	745	50	8	50	4	50	0	0	0	0
	point51	51	745	50	8	50	4	50	0	0	0	0
	point52	52	745	50	8	50	4	50	0	0	0	0
	point53	53	745	50	8	50	4	50	0	0	0	0
	point54	54										

Eilar Associates 11 April 2017
JB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B70322N1
RUN: Calibration

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver2	2	1	4,588.6	3,515.7	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates 11 April 2017
JB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: B70322N1
RUN: Current

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht Perturbs			On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Building A	W	0.00	100.00	0.00				0.00	point1	1	5,113.9	3,773.9	0.00	0.00	0.00	0	0		
									point2	2	5,250.8	3,774.2	0.00	0.00	0.00	0	0		
									point3	3	5,249.7	3,747.9	0.00	0.00	0.00	0	0		
									point4	4	5,257.8	3,739.5	0.00	0.00	0.00	0	0		
									point5	5	5,286.6	3,739.8	0.00	0.00	0.00	0	0		
									point6	6	5,287.2	3,659.6	0.00	0.00	0.00	0	0		
									point7	7	5,235.0	3,606.0	0.00	0.00	0.00	0	0		
									point8	8	5,220.9	3,606.9	0.00	0.00	0.00	0	0		
									point9	9	5,213.8	3,613.6	0.00	0.00	0.00	0	0		
									point10	10	5,195.5	3,595.9	0.00	0.00	0.00	0	0		
									point11	11	5,181.6	3,595.9	0.00	0.00	0.00	0	0		
									point12	12	5,168.6	3,608.9	0.00	0.00	0.00	0	0		
									point13	13	5,162.1	3,602.2	0.00	0.00	0.00	0	0		
									point14	14	5,102.3	3,661.1	0.00	0.00	0.00	0	0		
									point15	15	5,108.8	3,666.7	0.00	0.00	0.00	0	0		
									point16	16	5,100.1	3,676.1	0.00	0.00	0.00	0	0		
									point17	17	5,100.3	3,699.2	0.00	0.00	0.00	0	0		
									point18	18	5,110.8	3,708.8	0.00	0.00	0.00	0	0		
									point19	19	5,107.9	3,712.2	0.00	0.00	0.00	0	0		
									point20	20	5,117.1	3,719.8	0.00	0.00	0.00	0	0		
									point21	21	5,112.1	3,723.6	0.00	0.00	0.00	0	0		
									point22	22	5,113.0	3,774.0	0.00	0.00					
Building B	W	0.00	100.00	0.00				0.00	point23	23	5,166.7	3,593.8	0.00	0.00	0.00	0	0		
									point24	24	5,275.1	3,594.7	0.00	0.00	0.00	0	0		
									point25	25	5,275.1	3,562.2	0.00	0.00	0.00	0	0		
									point26	26	5,268.6	3,562.4	0.00	0.00	0.00	0	0		
									point27	27	5,268.4	3,535.3	0.00	0.00	0.00	0	0		
									point28	28	5,166.5	3,535.5	0.00	0.00	0.00	0	0		
									point29	29	5,166.0	3,546.5	0.00	0.00	0.00	0	0		
									point30	30	5,156.2	3,546.7	0.00	0.00	0.00	0	0		
									point31	31	5,156.0	3,568.0	0.00	0.00	0.00	0	0		
									point32	32	5,166.7	3,568.0	0.00	0.00	0.00	0	0		
									point33	33	5,166.6	3,593.7	0.00	0.00					
Building C	W	0.00	100.00	0.00				0.00	point34	34	5,021.4	3,753.2	0.00	0.00	0.00	0	0		
									point35	35	5,088.4	3,753.2	0.00	0.00	0.00	0	0		

									point36	36	5,088.3	3,661.6	0.00	0.00	0.00	0	0		
									point37	37	5,021.0	3,661.9	0.00	0.00	0.00	0	0		
									point38	38	5,021.4	3,752.9	0.00	0.00					
Building D	W	0.00	100.00	0.00				0.00	point39	39	5,377.2	3,777.6	0.00	0.00	0.00	0	0		
									point40	40	5,443.6	3,777.6	0.00	0.00	0.00	0	0		
									point41	41	5,443.8	3,801.8	0.00	0.00	0.00	0	0		
									point42	42	5,516.0	3,800.9	0.00	0.00	0.00	0	0		
									point43	43	5,515.8	3,749.4	0.00	0.00	0.00	0	0		
									point44	44	5,502.1	3,749.4	0.00	0.00	0.00	0	0		
									point45	45	5,502.1	3,698.4	0.00	0.00	0.00	0	0		
									point46	46	5,377.3	3,698.0	0.00	0.00	0.00	0	0		
									point47	47	5,377.2	3,777.6	0.00	0.00					

Eilar Associates
JB
11 April 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B70322N1
RUN: Calibration
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver2	2	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates **11 April 2017**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B70322N1**
RUN: **Current**

Roadway	Points		Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
Name	Name	No.	V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	1147	45	12	45	6	45	0	0	0	0
	point2	2	1147	45	12	45	6	45	0	0	0	0
	point3	3	1147	45	12	45	6	45	0	0	0	0
	point4	4	1147	45	12	45	6	45	0	0	0	0
	point5	5	1147	45	12	45	6	45	0	0	0	0
	point6	6	1458	45	15	45	7	45	0	0	0	0
	point7	7	1458	45	15	45	7	45	0	0	0	0
	point8	8	1458	45	15	45	7	45	0	0	0	0
	point9	9	1458	45	15	45	7	45	0	0	0	0
	point10	10										
Four Gee	point11	11	177	35	1	35	1	35	0	0	0	0
	point12	12	177	35	1	35	1	35	0	0	0	0
	point13	13	177	35	1	35	1	35	0	0	0	0
	point14	14	177	35	1	35	1	35	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	503	50	5	50	3	50	0	0	0	0
	point37	37	503	50	5	50	3	50	0	0	0	0
	point38	38	503	50	5	50	3	50	0	0	0	0
	point39	39	503	50	5	50	3	50	0	0	0	0
	point40	40	503	50	5	50	3	50	0	0	0	0
	point41	41	503	50	5	50	3	50	0	0	0	0
	point42	42	503	50	5	50	3	50	0	0	0	0
	point43	43	503	50	5	50	3	50	0	0	0	0

	point44	44	503	50	5	50	3	50	0	0	0	0
	point45	45	503	50	5	50	3	50	0	0	0	0
	point46	46	503	50	5	50	3	50	0	0	0	0
	point47	47	503	50	5	50	3	50	0	0	0	0
	point48	48	503	50	5	50	3	50	0	0	0	0
	point49	49	503	50	5	50	3	50	0	0	0	0
	point50	50	503	50	5	50	3	50	0	0	0	0
	point51	51	503	50	5	50	3	50	0	0	0	0
	point52	52	503	50	5	50	3	50	0	0	0	0
	point53	53	503	50	5	50	3	50	0	0	0	0
	point54	54										

Eilar Associates
JB

11 April 2017
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B70322N1
RUN: Current

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
R1 - C1	2	1	4,667.0	3,451.4	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C2	4	1	4,766.4	3,450.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C3	5	1	4,873.5	3,455.3	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C4	6	1	4,983.5	3,450.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C5	7	1	5,094.4	3,450.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C6	8	1	5,202.5	3,450.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C7	9	1	5,311.5	3,450.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C8	10	1	5,433.0	3,452.4	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C9	11	1	5,540.1	3,449.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C10	12	1	5,662.6	3,448.5	0.00	4.92	0.00	66	10.0	8.0	Y
R1 - C11	13	1	5,763.0	3,451.4	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C1	14	1	4,667.0	3,520.9	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C2	15	1	4,765.5	3,517.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C3	16	1	4,871.6	3,518.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C4	17	1	4,983.5	3,517.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C5	18	1	5,091.5	3,515.1	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C6	19	1	5,199.6	3,515.1	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C7	20	1	5,309.6	3,518.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C8	21	1	5,433.0	3,514.1	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C9	22	1	5,537.2	3,519.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C10	23	1	5,655.9	3,519.0	0.00	4.92	0.00	66	10.0	8.0	Y
R2 - C11	24	1	5,762.0	3,515.1	0.00	4.92	0.00	66	10.0	8.0	Y

R3 - C1	25	1	4,666.1	3,589.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C2	26	1	4,761.6	3,589.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C3	27	1	4,871.6	3,588.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C4	28	1	4,981.5	3,588.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C5	29	1	5,091.5	3,587.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C6	30	1	5,201.5	3,591.3	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C7	31	1	5,303.8	3,585.5	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C8	32	1	5,433.0	3,588.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C9	33	1	5,539.2	3,590.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C10	34	1	5,655.9	3,589.4	0.00	4.92	0.00	66	10.0	8.0	Y
R3 - C11	35	1	5,763.9	3,590.4	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C1	36	1	4,666.1	3,658.8	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C2	37	1	4,762.5	3,655.9	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C3	38	1	4,867.7	3,662.7	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C4	39	1	4,981.5	3,658.8	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C5	40	1	5,089.6	3,664.6	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C6	41	1	5,200.5	3,666.6	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C7	42	1	5,301.8	3,665.6	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C8	43	1	5,430.1	3,670.4	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C9	44	1	5,537.2	3,670.4	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C10	45	1	5,650.1	3,673.3	0.00	4.92	0.00	66	10.0	8.0	Y
R4 - C11	46	1	5,751.4	3,676.2	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C1	47	1	4,663.2	3,746.6	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C2	48	1	4,757.7	3,745.7	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C3	49	1	4,862.9	3,750.5	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C4	50	1	4,975.8	3,747.6	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C5	51	1	5,092.5	3,746.6	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C6	52	1	5,190.9	3,750.5	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C7	53	1	5,298.9	3,752.4	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C8	54	1	5,426.3	3,752.4	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C9	55	1	5,539.2	3,753.4	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C10	56	1	5,650.1	3,756.3	0.00	4.92	0.00	66	10.0	8.0	Y
R5 - C11	57	1	5,750.4	3,756.3	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C1	58	1	4,653.5	3,820.9	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C2	60	1	4,762.5	3,821.9	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C3	61	1	4,864.8	3,823.8	0.00	4.92	0.00	66	10.0	8.0	Y

R6 - C4	62	1	4,980.6	3,822.9	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C5	63	1	5,093.5	3,828.6	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C6	64	1	5,195.7	3,824.8	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C7	65	1	5,298.9	3,823.8	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C8	66	1	5,429.2	3,823.8	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C9	67	1	5,537.2	3,826.7	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C10	68	1	5,645.3	3,831.5	0.00	4.92	0.00	66	10.0	8.0	Y
R6 - C11	69	1	5,737.9	3,828.6	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C1	70	1	4,653.5	3,901.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C2	71	1	4,757.7	3,903.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C3	72	1	4,862.9	3,899.1	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C4	73	1	4,979.6	3,903.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C5	74	1	5,094.4	3,902.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C6	75	1	5,192.8	3,903.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C7	76	1	5,295.1	3,903.9	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C8	77	1	5,424.4	3,905.8	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C9	78	1	5,537.2	3,905.8	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C10	79	1	5,648.2	3,908.7	0.00	4.92	0.00	66	10.0	8.0	Y
R7 - C11	80	1	5,739.8	3,906.8	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C1	81	1	4,657.4	3,983.0	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C2	82	1	4,754.8	3,984.0	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C3	83	1	4,861.9	3,981.1	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C4	84	1	4,980.6	3,985.9	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C5	85	1	5,090.6	3,984.0	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C6	86	1	5,194.8	3,985.9	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C7	87	1	5,291.2	3,984.9	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C8	88	1	5,424.4	3,984.9	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C9	89	1	5,537.2	3,990.7	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C10	90	1	5,643.4	3,989.7	0.00	4.92	0.00	66	10.0	8.0	Y
R8 - C11	91	1	5,732.1	3,990.7	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C1	92	1	4,656.4	4,065.0	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C2	93	1	4,752.9	4,066.0	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C3	94	1	4,858.1	4,066.0	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C4	95	1	4,974.8	4,066.9	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C5	96	1	5,094.4	4,064.0	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C6	97	1	5,190.9	4,071.8	0.00	4.92	0.00	66	10.0	8.0	Y

R9 - C7	98	1	5,289.3	4,073.7	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C8	99	1	5,421.5	4,069.8	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C9	100	1	5,537.2	4,075.6	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C10	101	1	5,638.5	4,072.7	0.00	4.92	0.00	66	10.0	8.0	Y
R9 - C11	102	1	5,724.4	4,076.6	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C1	104	1	4,659.3	4,159.5	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C2	105	1	4,753.9	4,157.6	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C3	106	1	4,858.1	4,157.6	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C4	107	1	4,974.8	4,159.5	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C5	108	1	5,088.6	4,164.4	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C6	109	1	5,190.9	4,164.4	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C7	110	1	5,283.5	4,171.1	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C8	111	1	5,425.3	4,168.2	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C9	112	1	5,535.3	4,174.0	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C10	113	1	5,636.6	4,174.0	0.00	4.92	0.00	66	10.0	8.0	Y
R10 - C11	114	1	5,719.6	4,174.0	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates
JB
11 April 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B70322N1
RUN: Current
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1 - C1	2	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
R1 - C2	4	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R1 - C3	5	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R1 - C4	6	1	0.0	52.4	66	52.4	10	----	52.4	0.0	8	-8.0
R1 - C5	7	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R1 - C6	8	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R1 - C7	9	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R1 - C8	10	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R1 - C9	11	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R1 - C10	12	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R1 - C11	13	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
R2 - C1	14	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
R2 - C2	15	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R2 - C3	16	1	0.0	52.4	66	52.4	10	----	52.4	0.0	8	-8.0
R2 - C4	17	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R2 - C5	18	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
R2 - C6	19	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R2 - C7	20	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R2 - C8	21	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R2 - C9	22	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R2 - C10	23	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
R2 - C11	24	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R3 - C1	25	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
R3 - C2	26	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0

R3 - C3	27	1	0.0	51.6	66	51.6	10	----	51.6	0.0	8	-8.0
R3 - C4	28	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
R3 - C5	29	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
R3 - C6	30	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
R3 - C7	31	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R3 - C8	32	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R3 - C9	33	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R3 - C10	34	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
R3 - C11	35	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R4 - C1	36	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R4 - C2	37	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R4 - C3	38	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R4 - C4	39	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
R4 - C5	40	1	0.0	49.7	66	49.7	10	----	49.7	0.0	8	-8.0
R4 - C6	41	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
R4 - C7	42	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
R4 - C8	43	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
R4 - C9	44	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R4 - C10	45	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R4 - C11	46	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R5 - C1	47	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R5 - C2	48	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
R5 - C3	49	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R5 - C4	50	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0
R5 - C5	51	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
R5 - C6	52	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0
R5 - C7	53	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
R5 - C8	54	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0
R5 - C9	55	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R5 - C10	56	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R5 - C11	57	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R6 - C1	58	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R6 - C2	60	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R6 - C3	61	1	0.0	49.7	66	49.7	10	----	49.7	0.0	8	-8.0
R6 - C4	62	1	0.0	48.5	66	48.5	10	----	48.5	0.0	8	-8.0
R6 - C5	63	1	0.0	47.9	66	47.9	10	----	47.9	0.0	8	-8.0
R6 - C6	64	1	0.0	47.9	66	47.9	10	----	47.9	0.0	8	-8.0
R6 - C7	65	1	0.0	48.2	66	48.2	10	----	48.2	0.0	8	-8.0
R6 - C8	66	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
R6 - C9	67	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
R6 - C10	68	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0

R6 - C11	69	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R7 - C1	70	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
R7 - C2	71	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R7 - C3	72	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
R7 - C4	73	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
R7 - C5	74	1	0.0	47.1	66	47.1	10	----	47.1	0.0	8	-8.0
R7 - C6	75	1	0.0	47.0	66	47.0	10	----	47.0	0.0	8	-8.0
R7 - C7	76	1	0.0	47.3	66	47.3	10	----	47.3	0.0	8	-8.0
R7 - C8	77	1	0.0	47.9	66	47.9	10	----	47.9	0.0	8	-8.0
R7 - C9	78	1	0.0	48.5	66	48.5	10	----	48.5	0.0	8	-8.0
R7 - C10	79	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
R7 - C11	80	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
R8 - C1	81	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
R8 - C2	82	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R8 - C3	83	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0
R8 - C4	84	1	0.0	47.0	66	47.0	10	----	47.0	0.0	8	-8.0
R8 - C5	85	1	0.0	46.5	66	46.5	10	----	46.5	0.0	8	-8.0
R8 - C6	86	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
R8 - C7	87	1	0.0	46.5	66	46.5	10	----	46.5	0.0	8	-8.0
R8 - C8	88	1	0.0	47.1	66	47.1	10	----	47.1	0.0	8	-8.0
R8 - C9	89	1	0.0	47.4	66	47.4	10	----	47.4	0.0	8	-8.0
R8 - C10	90	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
R8 - C11	91	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
R9 - C1	92	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R9 - C2	93	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R9 - C3	94	1	0.0	48.3	66	48.3	10	----	48.3	0.0	8	-8.0
R9 - C4	95	1	0.0	46.5	66	46.5	10	----	46.5	0.0	8	-8.0
R9 - C5	96	1	0.0	45.9	66	45.9	10	----	45.9	0.0	8	-8.0
R9 - C6	97	1	0.0	45.6	66	45.6	10	----	45.6	0.0	8	-8.0
R9 - C7	98	1	0.0	45.7	66	45.7	10	----	45.7	0.0	8	-8.0
R9 - C8	99	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
R9 - C9	100	1	0.0	46.6	66	46.6	10	----	46.6	0.0	8	-8.0
R9 - C10	101	1	0.0	47.2	66	47.2	10	----	47.2	0.0	8	-8.0
R9 - C11	102	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
R10 - C1	104	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R10 - C2	105	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R10 - C3	106	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
R10 - C4	107	1	0.0	46.0	66	46.0	10	----	46.0	0.0	8	-8.0
R10 - C5	108	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
R10 - C6	109	1	0.0	45.1	66	45.1	10	----	45.1	0.0	8	-8.0
R10 - C7	110	1	0.0	45.0	66	45.0	10	----	45.0	0.0	8	-8.0

R10 - C8	111	1	0.0	45.5	66	45.5	10	----	45.5	0.0	8	-8.0
R10 - C9	112	1	0.0	45.8	66	45.8	10	----	45.8	0.0	8	-8.0
R10 - C10	113	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
R10 - C11	114	1	0.0	46.7	66	46.7	10	----	46.7	0.0	8	-8.0

Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		110	0.0	0.0	0.0
All Impacted		0	0.0	0.0	0.0
All that meet NR Goal		0	0.0	0.0	0.0

Eilar Associates **11 April 2017**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B70322N1**
RUN: **Future**

Roadway	Points		Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
Name	Name	No.	V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	1456	65	15	65	7	65	0	0	0	0
	point2	2	1456	65	15	65	7	65	0	0	0	0
	point3	3	1456	65	15	65	7	65	0	0	0	0
	point4	4	1456	65	15	65	7	65	0	0	0	0
	point5	5	1456	65	15	65	7	65	0	0	0	0
	point6	6	1852	65	19	65	9	65	0	0	0	0
	point7	7	1852	65	19	65	9	65	0	0	0	0
	point8	8	1852	65	19	65	9	65	0	0	0	0
	point9	9	1852	65	19	65	9	65	0	0	0	0
	point10	10										
Four Gee	point11	11	225	35	1	35	1	35	0	0	0	0
	point12	12	225	35	1	35	1	35	0	0	0	0
	point13	13	225	35	1	35	1	35	0	0	0	0
	point14	14	225	35	1	35	1	35	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	1183	55	12	55	6	55	0	0	0	0
	point37	37	1183	55	12	55	6	55	0	0	0	0
	point38	38	1183	55	12	55	6	55	0	0	0	0
	point39	39	1183	55	12	55	6	55	0	0	0	0
	point40	40	1183	55	12	55	6	55	0	0	0	0
	point41	41	1183	55	12	55	6	55	0	0	0	0
	point42	42	1183	55	12	55	6	55	0	0	0	0
	point43	43	1183	55	12	55	6	55	0	0	0	0

	point44	44	1183	55	12	55	6	55	0	0	0	0
	point45	45	1183	55	12	55	6	55	0	0	0	0
	point46	46	1183	55	12	55	6	55	0	0	0	0
	point47	47	1183	55	12	55	6	55	0	0	0	0
	point48	48	1183	55	12	55	6	55	0	0	0	0
	point49	49	1183	55	12	55	6	55	0	0	0	0
	point50	50	1183	55	12	55	6	55	0	0	0	0
	point51	51	1183	55	12	55	6	55	0	0	0	0
	point52	52	1183	55	12	55	6	55	0	0	0	0
	point53	53	1183	55	12	55	6	55	0	0	0	0
	point54	54										

Eilar Associates
JB
11 April 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B70322N1
RUN: Future
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1 - C1	2	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
R1 - C2	4	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
R1 - C3	5	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R1 - C4	6	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R1 - C5	7	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R1 - C6	8	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R1 - C7	9	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
R1 - C8	10	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R1 - C9	11	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R1 - C10	12	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R1 - C11	13	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
R2 - C1	14	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R2 - C2	15	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
R2 - C3	16	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R2 - C4	17	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
R2 - C5	18	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R2 - C6	19	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R2 - C7	20	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
R2 - C8	21	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
R2 - C9	22	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R2 - C10	23	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R2 - C11	24	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R3 - C1	25	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
R3 - C2	26	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0

R3 - C3	27	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R3 - C4	28	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
R3 - C5	29	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R3 - C6	30	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R3 - C7	31	1	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
R3 - C8	32	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
R3 - C9	33	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
R3 - C10	34	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R3 - C11	35	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R4 - C1	36	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
R4 - C2	37	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
R4 - C3	38	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R4 - C4	39	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
R4 - C5	40	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
R4 - C6	41	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R4 - C7	42	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R4 - C8	43	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R4 - C9	44	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R4 - C10	45	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
R4 - C11	46	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
R5 - C1	47	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
R5 - C2	48	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R5 - C3	49	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
R5 - C4	50	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R5 - C5	51	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R5 - C6	52	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R5 - C7	53	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R5 - C8	54	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R5 - C9	55	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R5 - C10	56	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
R5 - C11	57	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
R6 - C1	58	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R6 - C2	60	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R6 - C3	61	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R6 - C4	62	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R6 - C5	63	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R6 - C6	64	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R6 - C7	65	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R6 - C8	66	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R6 - C9	67	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
R6 - C10	68	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0

R6 - C11	69	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R7 - C1	70	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R7 - C2	71	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R7 - C3	72	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R7 - C4	73	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R7 - C5	74	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R7 - C6	75	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R7 - C7	76	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R7 - C8	77	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R7 - C9	78	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R7 - C10	79	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R7 - C11	80	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
R8 - C1	81	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R8 - C2	82	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R8 - C3	83	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R8 - C4	84	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R8 - C5	85	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R8 - C6	86	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R8 - C7	87	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
R8 - C8	88	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R8 - C9	89	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R8 - C10	90	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R8 - C11	91	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
R9 - C1	92	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R9 - C2	93	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
R9 - C3	94	1	0.0	51.6	66	51.6	10	----	51.6	0.0	8	-8.0
R9 - C4	95	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
R9 - C5	96	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
R9 - C6	97	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
R9 - C7	98	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
R9 - C8	99	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R9 - C9	100	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R9 - C10	101	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R9 - C11	102	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R10 - C1	104	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R10 - C2	105	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
R10 - C3	106	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R10 - C4	107	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
R10 - C5	108	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
R10 - C6	109	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
R10 - C7	110	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0

R10 - C8	111	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
R10 - C9	112	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R10 - C10	113	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R10 - C11	114	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	110	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates
JR
2 March 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Santa Fe Valley Chinese Bible Church
RUN: Sunday Peak Hour without Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver28	28	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
Receiver29	29	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
Receiver30	30	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sunday Peak Hour without Project**

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver28	28	1	4,523.6	3,305.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver29	29	1	4,562.1	3,359.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver30	30	1	4,607.5	3,240.5	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sunday Peak Hour without Project**

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	1057	45	11	45	5	45	0	0	0	0
	point2	2	1057	45	11	45	5	45	0	0	0	0
	point3	3	1057	45	11	45	5	45	0	0	0	0
	point4	4	985	45	10	45	5	45	0	0	0	0
	point5	5	861	45	9	45	4	45	0	0	0	0
	point6	6	1057	45	11	45	5	45	0	0	0	0
	point7	7	1057	45	11	45	5	45	0	0	0	0
	point8	8	1057	45	11	45	5	45	0	0	0	0
	point9	9	1057	45	11	45	5	45	0	0	0	0
	point10	10										
Four Gee	point11	11	110	35	1	35	1	35	0	0	0	0
	point12	12	110	35	1	35	1	35	0	0	0	0
	point13	13	110	35	1	35	1	35	0	0	0	0
	point14	14	110	35	1	35	1	35	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	864	50	9	50	4	50	0	0	0	0
	point37	37	864	50	9	50	4	50	0	0	0	0
	point38	38	864	50	9	50	4	50	0	0	0	0
	point39	39	864	50	9	50	4	50	0	0	0	0
	point40	40	864	50	9	50	4	50	0	0	0	0
	point41	41	864	50	9	50	4	50	0	0	0	0
	point42	42	864	50	9	50	4	50	0	0	0	0
	point43	43	864	50	9	50	4	50	0	0	0	0

	point44	44	864	50	9	50	4	50	0	0	0	0
	point45	45	864	50	9	50	4	50	0	0	0	0
	point46	46	864	50	9	50	4	50	0	0	0	0
	point47	47	864	50	9	50	4	50	0	0	0	0
	point48	48	864	50	9	50	4	50	0	0	0	0
	point49	49	864	50	9	50	4	50	0	0	0	0
	point50	50	864	50	9	50	4	50	0	0	0	0
	point51	51	864	50	9	50	4	50	0	0	0	0
	point52	52	864	50	9	50	4	50	0	0	0	0
	point53	53	864	50	9	50	4	50	0	0	0	0
	point54	54										

Eilar Associates
JR
2 March 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Santa Fe Valley Chinese Bible Church
RUN: Sunday Peak Hour with Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver37	37	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
Receiver38	38	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
Receiver39	39	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sunday Peak Hour with Project**

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver37	37	1	4,523.6	3,305.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver38	38	1	4,562.1	3,359.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver39	39	1	4,607.5	3,240.5	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sunday Peak Hour with Project**

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	763	45	8	45	4	45	0	0	0	0
	point2	2	763	45	8	45	4	45	0	0	0	0
	point3	3	964	45	10	45	5	45	0	0	0	0
	point4	4	1049	45	11	45	5	45	0	0	0	0
	point5	5	1049	45	11	45	5	45	0	0	0	0
	point6	6	1049	45	11	45	5	45	0	0	0	0
	point7	7	1049	45	11	45	5	45	0	0	0	0
	point8	8	1049	45	11	45	5	45	0	0	0	0
	point9	9	1049	45	11	45	5	45	0	0	0	0
	point10	10										
Four Gee	point11	11	253	35	1	35	1	35	0	0	0	0
	point12	12	253	35	1	35	1	35	0	0	0	0
	point13	13	253	35	1	35	1	35	0	0	0	0
	point14	14	253	35	1	35	1	35	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	864	50	9	50	4	50	0	0	0	0
	point37	37	864	50	9	50	4	50	0	0	0	0
	point38	38	864	50	9	50	4	50	0	0	0	0
	point39	39	864	50	9	50	4	50	0	0	0	0
	point40	40	864	50	9	50	4	50	0	0	0	0
	point41	41	864	50	9	50	4	50	0	0	0	0
	point42	42	864	50	9	50	4	50	0	0	0	0
	point43	43	864	50	9	50	4	50	0	0	0	0

	point44	44	864	50	9	50	4	50	0	0	0	0
	point45	45	864	50	9	50	4	50	0	0	0	0
	point46	46	864	50	9	50	4	50	0	0	0	0
	point47	47	864	50	9	50	4	50	0	0	0	0
	point48	48	864	50	9	50	4	50	0	0	0	0
	point49	49	864	50	9	50	4	50	0	0	0	0
	point50	50	864	50	9	50	4	50	0	0	0	0
	point51	51	864	50	9	50	4	50	0	0	0	0
	point52	52	864	50	9	50	4	50	0	0	0	0
	point53	53	864	50	9	50	4	50	0	0	0	0
	point54	54										

Eilar Associates
2 March 2015
JR
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Santa Fe Valley Chinese Church
RUN: Existing Sunday
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver37	20	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
Receiver38	21	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
Receiver39	116	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates 2 March 2015
JR TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Santa Fe Valley Chinese Church
RUN: Existing Sunday

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver37	20	1	4,523.6	3,305.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver38	21	1	4,562.1	3,359.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver39	116	1	4,607.5	3,240.5	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Santa Fe Valley Chinese Church**
RUN: **Existing Sunday**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	570	45	6	45	3	45	0	0	0	0
	point2	2	570	45	6	45	3	45	0	0	0	0
	point3	3	713	45	7	45	4	45	0	0	0	0
	point4	4	664	45	7	45	3	45	0	0	0	0
	point5	5	713	45	7	45	4	45	0	0	0	0
	point6	6	713	45	7	45	4	45	0	0	0	0
	point7	7	713	45	7	45	4	45	0	0	0	0
	point8	8	713	45	7	45	4	45	0	0	0	0
	point9	9	713	45	7	45	4	45	0	0	0	0
	point10	10										
Four Gee	point11	11	74	35	0	0	0	0	0	0	0	0
	point12	12	74	35	0	0	0	0	0	0	0	0
	point13	13	74	35	0	0	0	0	0	0	0	0
	point14	14	74	35	0	0	0	0	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	586	50	3	50	3	50	0	0	0	0
	point37	37	586	50	3	50	3	50	0	0	0	0
	point38	38	586	50	3	50	3	50	0	0	0	0
	point39	39	586	50	3	50	3	50	0	0	0	0
	point40	40	586	50	3	50	3	50	0	0	0	0
	point41	41	586	50	3	50	3	50	0	0	0	0
	point42	42	586	50	3	50	3	50	0	0	0	0
	point43	43	586	50	3	50	3	50	0	0	0	0

	point44	44	586	50	3	50	3	50	0	0	0	0
	point45	45	586	50	3	50	3	50	0	0	0	0
	point46	46	586	50	3	50	3	50	0	0	0	0
	point47	47	586	50	3	50	3	50	0	0	0	0
	point48	48	586	50	3	50	3	50	0	0	0	0
	point49	49	586	50	3	50	3	50	0	0	0	0
	point50	50	586	50	3	50	3	50	0	0	0	0
	point51	51	586	50	3	50	3	50	0	0	0	0
	point52	52	586	50	3	50	3	50	0	0	0	0
	point53	53	586	50	3	50	3	50	0	0	0	0
	point54	54										

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sun Peak Hr Exising+Cumulative+Proj**

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Camino Del Sur	point1	1	3307	45	34	45	17	45	0	0	0	0
	point2	2	3307	45	34	45	17	45	0	0	0	0
	point3	3	3307	45	34	45	17	45	0	0	0	0
	point4	4	3307	45	34	45	17	45	0	0	0	0
	point5	5	4305	45	44	45	22	45	0	0	0	0
	point6	6	4305	45	44	45	22	45	0	0	0	0
	point7	7	4305	45	44	45	22	45	0	0	0	0
	point8	8	4305	45	44	45	22	45	0	0	0	0
	point9	9	4305	45	44	45	22	45	0	0	0	0
	point10	10										
Four Gee	point11	11	111	35	1	35	1	35	0	0	0	0
	point12	12	111	35	1	35	1	35	0	0	0	0
	point13	13	111	35	1	35	1	35	0	0	0	0
	point14	14	111	35	1	35	1	35	0	0	0	0
	point15	15										
Rancho Bernardo Rd	point36	36	484	50	5	50	2	50	0	0	0	0
	point37	37	484	50	5	50	2	50	0	0	0	0
	point38	38	484	50	5	50	2	50	0	0	0	0
	point39	39	484	50	5	50	2	50	0	0	0	0
	point40	40	484	50	5	50	2	50	0	0	0	0
	point41	41	484	50	5	50	2	50	0	0	0	0
	point42	42	484	50	5	50	2	50	0	0	0	0
	point43	43	484	50	5	50	2	50	0	0	0	0

	point44	44	484	50	5	50	2	50	0	0	0	0
	point45	45	484	50	5	50	2	50	0	0	0	0
	point46	46	484	50	5	50	2	50	0	0	0	0
	point47	47	484	50	5	50	2	50	0	0	0	0
	point48	48	484	50	5	50	2	50	0	0	0	0
	point49	49	484	50	5	50	2	50	0	0	0	0
	point50	50	484	50	5	50	2	50	0	0	0	0
	point51	51	484	50	5	50	2	50	0	0	0	0
	point52	52	484	50	5	50	2	50	0	0	0	0
	point53	53	484	50	5	50	2	50	0	0	0	0
	point54	54										

Eilar Associates **2 March 2015**
JR **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **Santa Fe Valley Chinese Bible Church**
RUN: **Sun Peak Hr Exising+Cumulative+Proj**

Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver37	37	1	4,523.6	3,305.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver38	38	1	4,562.1	3,359.1	0.00	4.92	0.00	66	10.0	8.0	Y
Receiver39	39	1	4,607.5	3,240.5	0.00	4.92	0.00	66	10.0	8.0	Y

Eilar Associates
JR
2 March 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: Santa Fe Valley Chinese Bible Church
RUN: Sun Peak Hr Exising+Cumulative+Proj
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver37	37	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
Receiver38	38	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
Receiver39	39	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX D

Pertinent Sections of Applicable Noise Regulations

Cross reference(s)--Definitions, § 12.101 et seq.

SEC. 36.403. SOUND LEVEL MEASUREMENT.

(a) A sound level measurement made pursuant to this chapter shall be measured with a sound level meter using A-weighting and a "slow" response time, as these terms are used in ANSI S1.1-1994 or its latest revision.

(b) Each measurement shall be conducted at the boundary line of the property on which the noise source is located or any place on the affected property, but no closer than five feet from the noise source.

(c) The sound level meter shall be calibrated and adjusted by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances in the ANSI specifications for sound level meters, ANSI S1.4-1983 or its latest revision. The sound level meter shall be used as provided in the manufacturer's instructions.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.404. GENERAL SOUND LEVEL LIMITS.

(a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

TABLE 36.404
SOUND LEVEL LIMITS IN DECIBELS (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
(2) RRO, RC, RM, S86, V5, RV and RU with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S94, V4, and all commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) V1, V2	7 a.m. to 7 p.m.	60
V1, V2	7 p.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M50, M52, and M54	Anytime	70

(6) S82, M56, and M58.	Anytime	75
(7) S88 (see subsection (c) below)		

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.

(Amended by Ord. No. 7094 (N.S.), effective 3-25-86; amended by Ord. No. 9478 (N.S.), effective 7-19-02; amended by Ord. No. 9621 (N.S.), effective 1-9-04; amended by Ord. No. 9962 (N.S.), effective 1-9-09; amended by Ord. No. 10211 (N.S.), effective 6-1-12)

SEC. 36.405. REPAIRING, REBUILDING OR TESTING MOTOR VEHICLES.

It shall be unlawful for any person to repair, rebuild or test any motor vehicle in such a manner as to cause a disturbing, excessive or offensive noise as defined in section 36.402 of this chapter.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.406. POWERED MODEL VEHICLES.

It shall be unlawful for any person to operate a powered model vehicle between 9 p.m. and 7 a.m. A powered model vehicle operated in a County park shall meet the daytime sound level standards for an RS zone measured at a point 100 feet from the park property line or 100 feet from where the model vehicle is being operated, whichever is less.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.407. REFUSE VEHICLES & PARKING LOT SWEEPERS.

No person shall operate or allow to be operated, a refuse compacting, processing, or collection vehicle or a parking lot sweeper between the hours of 10 p.m. to 6 a.m., in or within 100 feet of a residential zone.

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.408. HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

(a) Between 7 p.m. and 7 a.m.

(b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.409. SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

(Amended by Ord. No. 9700 (N.S.), effective 2-4-05; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.410. SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE.

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410A, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410A are as described in the County Zoning Ordinance.

TABLE 36.410A.
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410B, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410B are as described in the County Zoning Ordinance.

Table N-1 Noise Compatibility Guidelines

Land Use Category		Exterior Noise Level (CNEL)						
			55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.

Table N-2 Noise Standards[Note]
1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: *(i)* for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, *(ii)* for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; *(iii)* for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

In addition, the County has adopted community noise control standards as part of the County's Noise Abatement and Control Ordinance (County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4) and provides guidance for implementation of the County's noise policies and ordinance in the County's *California Environmental Quality Act* (CEQA) Guidelines for Determining Significance for Noise. The Noise Ordinance defines limits for activities that generate excessive noise and sets noise level limits for land uses. The County's CEQA significance guidelines provide guidance on the use of the General Plan Noise Element and the County Noise Abatement and Control Ordinance when considering the environmental impact of noise exposure to high or excessive noise levels.

Article 9.5: Noise Abatement and Control

Division 4: Limits

("Noise Level Limits, Standards and Control"
added 9–18–1973 by O–11122 N.S.)
(Retitled to "Limits" on 9–22–1976 by O–11916 N.S.)

§59.5.0401 Sound Level Limits

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one–hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

TABLE OF APPLICABLE LIMITS

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

(c) Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(d) This section does not apply to firework displays authorized by permit from the Fire Department.

(e) This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit, nor to any roller coaster operated on City–owned parkland.

(Amended 9–11–1989 by O–17337 N.S.)
(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)

§59.5.0402 Motor Vehicles

(a) Off–Highway

(1) Except as otherwise provided for in this article, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on– highway motor vehicles as specified in the table for "45 mile– per–hour or less speed limits" contained in Section 23130 of the California Vehicle Code, and as corrected for distances set forth in subsection A.2. below.

(2) Corrections

The maximum noise level as the off–highway vehicle passes may be measured at a distance of other than fifty (50) feet from the center line of travel, provided the measurement is further adjusted by adding algebraically the applicable correction as follows:

Distance (Feet)	Correction (decibels)
25	-6
28	-5
32	-4
35	-3
40	-2
45	-1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5
100	+6

(3) A measured noise level thus corrected shall be deemed in violation of this section if it exceeds the applicable noise–level limit as specified above.

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

("Motor Vehicles" renumbered from Sec. 59.5.0403 on 9–22–1976 by O–11916 N.S.)

§59.5.0403 Watercraft

Violations for excessive noise of watercraft operating in waters under the jurisdiction of The City of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. Permits issued by The City of San Diego for the operation of watercraft not in compliance with noise criteria of the Harbors and Navigation Code shall be reviewed and approved by the Administrator prior to issuance.

("Watercraft" renumbered from Sec. 59.5.0407 and amended 9–22–1976 by O–11916 N.S.)

§59.5.0404 Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1–3–1984 by O–16100 N.S.)

§59.5.0406 Refuse Vehicles and Parking Lot Sweepers

No person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle between the hours of 7:00 p.m. to 6:00 a.m. or a parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the Administrator.

("Refuse Vehicles" added 9–18–1973 by O–11122 N.S.; amended 9–22–1976 by O–11916 N.S.)

(Amended 6-9-2010 by O-19960 N.S.; effective 7-9-2010.)

COUNTY OF SAN DIEGO

REPORT FORMAT AND CONTENT REQUIREMENTS

NOISE

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

First Revision
January 27, 2009

APPROVAL

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Noise** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and were considered by the Director of Planning and Land Use, in coordination with the Director of Public Works on the 27th day of January, 2009.

ERIC GIBSON
Director of Planning and Land Use

JOHN SNYDER
Director of Public Works

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Noise** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and have hereby been approved by the Deputy Chief Administrative Officer (DCAO) of the Land Use and Environment Group on the 27th day of January, 2009. The Director of Planning and Land Use is authorized to approve revisions to these Guidelines for Determining Significance and Report Format and Content Requirements for Noise except any revisions to the Guidelines for Determining Significance presented in Chapter 4.0 must be approved by the Deputy CAO.

Approved, January 27, 2009

CHANDRA WALLAR
Deputy CAO

PURPOSE

The Noise Report Format and Content Requirements provide guidance on conducting noise assessment and preparing reports for discretionary projects being processed by the Land Use and Environment Group. These guidelines are designed to:

1. Ensure the quality, accuracy and completeness of noise impact reports.

2. Aid in staff's efficient and consistent review of maps and documents from different consultants.

3. Provide adequate information to make appropriate planning decisions and to make determinations regarding conformance with applicable regulations.

4. Increase the efficiency of the environmental review process and avoid unnecessary time delays.

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ATTACHMENT

1.0 INTRODUCTION

All noise assessment shall follow the requirements in this document. The overall length of reports and amount of information to include will vary depending on the size and scope of the project, the regional setting, and the degree of impacts proposed.

1.1 Acoustical Analysis Report

An Acoustical Analysis Report is required for projects with potential significant noise impacts.

2.0 REPORT FORMAT AND REQUIREMENTS

2.1 General Report Guidelines

All written reports shall follow these general guidelines:

- Reports should be technical in nature and should avoid anecdotal or extraneous information.
- Reports should be concise and written in a professional manner suitable for peer review. Staff may reject reports based on inadequate quality if the report is written in such a manner that a timely and accurate review cannot be completed.
- Acoustical reports should be bound such that staff may easily review the document. Shorter reports may be stapled, but longer documents should be bound by other methods, such as comb binding.
- Attached plot plans must be to scale and contain a north arrow and both number and bar scales. When maps are reduced, adjust the scale, or mark the map "Reduced/Use Bar Scale".
- For Full Acoustical Analysis Reports, each chapter and subsection of the report should be clearly delineated with bold print and/or underlining and will use the numerical headings contained in these report requirements.
- Draft copies of the report shall have all changes made in response to staff comments in strikeout/underline form. Final copies of the report shall be clean, with all editing marks removed.

All acoustical reports will be reviewed for technical accuracy and completeness by a staff noise specialist. Reports are considered draft until staff determines the report to be complete. Each submittal and review of a draft noise report is considered an "iteration". During each iteration, staff will either determine the report to be complete or respond with comments for necessary changes. The County expects that the first iteration will be as complete and comprehensive as possible to address issues in the scoping letter. However, each report may have up to three iterations, after which project denial may be recommended due to inadequate environmental progress.

2.2 Acoustical Analysis Report

2.2.1 Outline

The required sections of the Full Acoustical Report are provided in the outline below:

ACOUSTICAL ANALYSIS REPORT OUTLINE

COVER PAGE
TABLE OF CONTENTS
GLOSSARY OF TERMS AND ACRONYMS
EXECUTIVE SUMMARY (REPORT SUMMARY)

1.0 INTRODUCTION

- **1.1 Project Description**
- **1.2 Environmental Settings & Existing Conditions**
  - **a. Settings & Location**
  - **b. Existing Noise Conditions**
- **1.3 Methodology & Equipment**
  - **a. Noise Measuring Methodology & Procedures**
  - **b. Noise Modeling Software**
  - **c. Noise Formulas and Calculations**

2.0 NOISE SENSITIVE LAND USES (NSLU) AFFECTED BY AIRBORNE NOISE

- **2.1 Guidelines for the Determination of Significance**
- **2.2 Potential Noise Impacts**
  - **a. Potential Build-out Noise Conditions & Impacts**
    - **i. Exterior Locations**
    - **ii. Interior Locations**
  - **b. Design Considerations & Mitigation Measures**
    - **i. Exterior Locations**
    - **ii. Interior Locations**
- **2.3 Off-site Direct & Cumulative Noise Impacts(If applicable)**
  - **a. Direct Noise Impacts**
  - **b. Cumulatively Significant Noise Impacts**
  - **c. Design Considerations & Mitigation Measure Calculations**

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for the Determination of Significance

3.2 Potential Operational Noise Impacts (Non-Construction Noise)

- **a. Potential Build-out Noise Conditions without Mitigation**
- **b. Design Considerations and Mitigation Measures**

3.3 Potential General Construction Noise Impacts

- **a. Potential Temporary Construction Noise Impacts without Mitigation**
- **b. Design Considerations &Temporary Mitigation Measures**

3.4 Potential Impulsive Noise Impacts (If Applicable)

- **a. Potential Impulsive Noise Impacts without Mitigation**
- **b. Design Considerations & Mitigation Measures**

3.5 Cumulative or Combined Noise Impacts (If Applicable)

- **a. Potential Combined Noise Impacts**
- **b. Design Considerations & Mitigation Measures**

4.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS (If Applicable)

4.1 Guidelines for the Determination of Significance

4.2 Potential & Mitigated Noise Impacts

5.0 SUMMARY OF PROJECT IMPACTS, DESIGN CONSIDERATIONS, MITIGATION & CONCLUSION

6.0 CERTIFICATION

FIGURE, EXHIBITS & ILLUSTRATIONS

- **Identify project location**
- **Identify all NSLUs & receptor locations**
- **Identify all noise sources**
- **Identify all design considerations and recommended mitigation measures**
- **Identify CNEL noise contours (If applicable)**
- **(11”x17” sized sheet shall be utilized if 8”x 11” illustrations are unclear)**

APPENDICES

- References
- Sound Modeling Application Input/Output Data
- Mechanical Equipment Manufacturer Specifications

2.2.2 Content

Note: The numbering identified below should be used when preparing technical studies. The numbers and titles are shown in italics only for purposes of this document and are not required to be formatted in italics for the technical study.

COVER PAGE

The cover page shall include the following information:

- Project common name
- Project numbers (i.e. TM, ZAP, MUP, etc.) including the environmental log number (ER)
- Date (original report date plus all revisions) must be revised during each iteration of the draft report
- Name of County Approved CEQA Consultant preparing document, firm name (if applicable) and address
- Project proponent's name and address
- The following statement: Prepared for The County of San Diego

TABLE OF CONTENTS

The table of contents must follow the order and format outlined in this document. Page number should be assigned when possible. Titles of each Appendix or Attachment should be listed in the order in which they are found in the document.

GLOSSARY OF TERMS AND ACRONYMS

Provide a list of terms and acronyms used in the report.

EXECUTIVE SUMMARY

Provide a brief summary of the project, the noise sources present on the site, potential impacts and proposed mitigation. No information should be provided in the summary that is not further explained elsewhere in the document. The purpose of the summary is to provide a quick reference for the public and decision makers. Therefore, the language should be less technical than that used in the remainder of the document.

1.0 INTRODUCTION

1.1 Project Description

Project Description: Provide a very detailed description of the project, including all on-site and off-site components and any design alternatives. An 8.5" x 11" or 11" x 17" copy of the plot plan/map must be attached to the report as (a) numbered figure(s). The project description should be as detailed as possible, including details such as but not limited to the following:

- Size of project site and area proposed for development.
- Description of all adjoining land uses.
- Purpose and scale of proposed uses associated with the project, such as residential development or recreational camping.
- Proposed structures (size, location, purpose, etc.).
- Location of all easements relevant to the noise assessment.
- Proposed Noise Sensitive Land Uses (NSLUs), exposed to noise sources.
- Construction equipment activities and staging areas.

1.2 Environmental Settings & Existing Conditions

a. Settings & Locations

Describe the physical characteristics, such as topography, elevation, etc. Briefly describe the general vicinity in terms of type and density of development and infrastructure. In addition, address the existing land uses on site, on surrounding lands and activities.

Project Location: Discuss the project location in the regional and local context. Include Global Positioning System (GPS), San Diego Association of Governments (SANDAG) or most current mapping coordinates used by San Diego Geographic Information System (SANGIS) with the site and APN clearly identified as numbered figure(s).

For SANDAG GIS Projection/Coordinate System information, refer to SANDAG website: http://www.sandag.org/index.asp?subclassid=100&fuseaction=home.subclasshome

b. Existing Noise Conditions

Discuss existing noise conditions. Describe the location of the project site, identifying existing noise associated with project related to the following:

- Existing noise from all sources, particularly roads, highways, railroads, airports, heliports, extractive industries or any significant on- and off-site noise impacts.

- Existing operation activities including but not limited to: mechanical equipment, pumps, rooftop equipment, condenser units, A/C units, generators, pneumatic equipment and outdoor human activities.

- Existing construction activities including but not limited to: site grading, truck/construction equipment movement, engine noise, rock excavation, crushing, and blasting.

1.3 Methodology and Equipment

a. Noise Measuring Methodology and Procedures

Identify and list all types of noise measuring and project related equipment involved in the analysis. Receptor locations will be located at any point on and/or beyond the boundaries of the property line (section 36.404). Existing and proposed NSLUs shall be identified and modeled (Policy 4B). Exterior locations shall be identified as contiguous areas to the building structure, with related accessibility. The outdoor living area shall be adjoined, on the same lot as the dwelling unit, and will conform to setbacks and relevant ordinances. Receptors shall be located at the most optimal location based on access, privacy and relevant County Standards. This section will also discuss field calibration. Document any calibration calculations that were necessary to validate noise model. Ground-borne vibration assessment is to be identified in inches per second rms.

In addition, noise measurements and analysis shall be documented to the effect that all procedures are in compliance with the most current American Society for Testing and Materials (ASTM) standards or other applicable standards.

SOUND LEVEL MEASUREMENT (Excerpt from Section 36.403)

(a) A sound level measurement made pursuant to this chapter shall be measured with a sound level meter using the A-weighting and "slow" response.

(b) Each measurement shall be conducted a the boundary line of the property on which the noise source is located or any place on the affected property, but no closer than five feet from the noise source.

(c) The sound level meter shall be calibrated and adjusted by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances in American National Standards Institute specifications for sound level meters, ANSI-S1.4-1983 or its the latest revision. The sound level meter shall be used as provided in the manufacture's instructions.

b. Noise Modeling Software

Discuss the noise modeling application in the report. Input data and results shall be submitted in a form in which Staff is able to verify with in-house programs. Noise assessment utilizing proprietary noise models and propriety software will only be acceptable when accompanied by theoretical calculations. Provide a discussion of the two methods of analysis, addressing and comparing the results. For more proprietary model information refer to the "Proprietary Models" Section below.

Traffic Noise Prediction Model-Sound 32, Traffic Noise Model-TNM 2.5 and the most current transportation noise modeling software that is available to the County are considered acceptable noise modeling applications. Other proprietary models are considered additional, supplemental information supporting actual and theoretical noise assessment and calculations. Staff may request additional information such as noise assessment in a certain form, visual illustrations, etc.

Proprietary Models

In order for the County of San Diego to allow the use of noise models which are not open source or provided by a public agency, such as "Cadna", certain criteria must be met. Since proprietary models are not made available to the County for use, the County must rely on certain assumptions regarding the model, its application, and the validity of the modeling results. It will be necessary for staff to run its own analysis for a given project. This analysis allows staff to verify that the project complies with applicable noise ordinance and noise element requirements based on the unmitigated noise levels of all noise generators on the property site. This analysis may also eliminate the need to examine the proprietary model results since the available source information for this project (the unmitigated case) can be used to demonstrate compliance. In order to perform this preliminary evaluation, staff will need sufficient noise source specifications and location information including property line distances.

The submitted data should be presented as a comma-delimited (or Tab-Delimited) data set for each noise source, relevant noise barrier, and model receptor. The standardized data format for this information is as follows:

1. All project locations must be described using State plane coordinates, or with a Cartesian reference frame using a stated origin location;

2. All project locations must be described using State plane coordinates, or with a Cartesian reference frame using a stated origin location;

3. All noise sources or generators shall require two files for describing their noise performance information and their location information. Each source will be linked in these files with a unique integer identification number. The noise performance file shall list each generator beginning with the ID number followed by its octave band information in a comma-delimited format starting with the 63 Hertz band and extending up to at least the 8000 Hertz band (16K is preferred). Unless it is otherwise specified, the decibel values shall be stated for each band with A-weighting included. A separate header/line entry or explanation would be required for an alternate format such as one-third octave bands or raw sound level values. The noise generator or source location file must use a matching integer identification number for each source in a comma-delimited format: generator1 _id, x_coordinate, y_coordinate, z_coordinate (elevation of the source). One generator per line (entry);

4. The noise barrier or feature file must use a unique integer identification number for each feature in a comma-delimited format for vertices: barrier1 _id, x_coordinate, y_coordinate, z0_coordinate (base of feature elevation), z1_coordinate (top of feature elevation). One vertex or node per line (entry); and

5. The model receptor file with a unique integer identification number must be given to each receptor in a comma-delimited format: receptor1_id, x_coordinate, y_coordinate, z_coordinate (elevation of the receptor), with one receptor per line (entry). Please note that an expanded receptor file may be required at complex sites.

c. Noise Formulas and Calculations

Demonstrate the calculations and procedures used in the noise assessment. Discuss theoretical and measured calculations that may apply. This section will discuss calculations such as barrier attenuation loss, attenuation by distance, etc.

2.0 NOISE SENSITIVE LAND USES (NSLU) AFFECTED BY AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance (Excerpt from Section 4.1)

Project implementation will result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from roads [existing and planned], railroads, airports, heliports and all other noise sources) in excess of any of the following:

A. Exterior Locations:

i. 60 dB (CNEL); or

ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 square feet:	***400 square feet***
(2) Net lot area 4,000 square feet to 10 acres:	***10% of net lot area***
(3) Net lot area over 10 acres :	***1 acre***

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

2.2 Potential Noise Impacts

Discuss the exposure of NSLU receptors to potential noise from all sources particularly roads, highways, railroads, airports, heliports or extractive industries (Transportation and Non-transportation). This includes noise caused by new development impacting existing or foreseeable future NSLUs.

It also includes new development which creates or locates NSLUs in such a place that they are impacted by noise (a typical example being a new residential project locating residences in close proximity to a highway).

a. Potential Build-out Noise Conditions & Impacts

Discuss potential buildout noise conditions for interior and exterior NSLU. Noise-related adverse effects associated with new development projects fall into the following category:

- Noise Sensitive Land Uses (NSLU) – Exposure of NSLU to potential noise from all sources, particularly roads, highways, railroads, airports, heliports or extractive industries. This includes noise caused by new development, impacting existing or foreseeable future NSLU. It also includes new development which creates or locates NSLU in such a place that they are impacted by noise (a typical example being a new residential project locating residences in close proximity to a highway). A table shall include potential noise sources that are modeled in the analysis:

Table X.X Sample Roadway Potential ADTs

Roadway / Highway/ Noise Source Name	Potential Speed Limit	Potential ADTs

- Potential Noise Impact Identification - Model noise sensitive receptors at strategic NSLU locations to help determine the worse-case scenario for exterior and interior locations. Identify all receptor locations and their values.

Table X.X Sample Potential Traffic Noise Impacts

Receptor Number	Receptor Location	Elevation	Potential Traffic Noise Level (CNEL)

b. Design Considerations and Mitigation Measures

If potential noise level impacts to exterior and interior NSLU are determined to be significant, please see the following:

Design Consideration Calculations

For exterior and interior locations:

- Identify all existing topographic and structural elements that are modeled in noise analysis.
- Discuss modifications to the development that have been made or will be made which reduce the exterior and interior noise level below CNEL equal to 60 decibels
- Identify all existing topographic elements that are modeled in the noise analysis. Provide a quantitative analysis of all topographic elements taken into calculations.

Mitigation Calculations

For exterior and interior locations:

- Discuss modifications to the development that have been made or will be made which reduce the noise sensitive receptors to a noise level below CNEL equal to 60 decibels
- Provide mitigation measures to reduce potential noise impacts. Determine whether the potential noise impacts are significant by quantifying the anticipated changes to the noise environment with the recommended mitigation. Compare noise impact results with and without the recommended mitigation.
- Determine whether mitigation or design is feasible to adequately reduce noise levels to meet County Standards.

Table X.X Sample Potential Mitigated Traffic Noise Impacts

Receptor Number	Receptor Location	Elevation	Mitigation	Mitigated Traffic Noise Level (CNEL)

2.3 Off-site Direct & Cumulative Noise Impacts (If applicable)

a. Direct Noise Impacts

(Existing vs. Existing + Project)

Direct noise impacts occur in discretionary applications where existing noise conditions and the project related noise contributions will combine to exceed the standards of the County Noise Element at exterior noise sensitive land uses (NSLU). It is more likely to occur in locations where existing noise levels are elevated or approach the applicable criterion of 60 decibels CNEL for an exterior NSLU. It is considered a significant direct impact when:

"New projects combine to generate more than double the existing sound energy of a documented noisy site."

b. Cumulatively Significant Noise Impacts

(Existing vs. Existing + Cumulative [Near-term] + Project)

Cumulative noise impacts may occur in discretionary applications where other permitted or planned projects will combine to exceed the standards of the Noise Element. It is more likely to occur in locations where existing noise levels are elevated or approach the applicable criterion of 60 decibels CNEL for an exterior noise sensitive land use (NSLU). Two examples of cumulative effects are (1) major residential developments in a region generate sufficient project-related traffic to affect significantly existing or planned NSLU and (2) extractive industries or long-term construction activities from several projects are in close proximity to existing or planned NSLU with future conditions exceeding 60 decibels CNEL. With an identified significant cumulative impact (doubling the existing noise conditions), the analysis also needs to determine whether the project's contribution is "cumulatively considerable" before addressing the issue of feasible mitigation measures.

- ***Cumulatively Considerable***
  (Existing + Cumulative vs. Existing + Cumulative + Project)
  Mitigation measures are required to reduce potential "Cumulatively Considerable" impacts. Evaluation of mitigation feasibility and limitations shall be addressed in association with their implementation. A "cumulatively considerable" contribution requiring mitigation or design measures is identified whenever:

  "A more than a one decibel increase from the project was identified in the model analysis."

  A major project issue for cumulative noise effects can be identified whenever there is no supporting evidence that (1) the surrounding community would consent to a proposed off-site mitigation scheme or (2) the feasible measures (on or off-site) are not sufficient to comply with the Noise Element.

c. Design Considerations & Mitigation Measure Calculations

This section shall discuss and identify all design considerations and noise mitigation measures to reduce significant impacts to noise sensitive land uses to less than significant. For each significant impact and mitigation measure, determine if the proposed mitigation have reduced the significance level to an acceptable and feasible level in accordance with the stated Significance Guidelines.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for the Determination of Significance

~Table 1 from Section 4.2

It shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property exceeds the applicable limits on Table 1.

The project will generate airborne noise which, together with noise from all sources, will be in excess of either of the following:

Table 1
San Diego County Code Section 36.404,
SOUND LEVEL LIMITS IN DECIBELS (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-90, S-92 and R-V and R-U with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) R-RO, R-C, R-M, S-86, V5 and R-V and R-U with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S-94, V4 and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1, V2 V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
(5) M-50, M-52 and M-54	Anytime	70
(6) S-82, M-56 and M-58	Anytime	75
(7) S88 (see subsection (c) below)		

(a) If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(b) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone which the extractive industry is actually located.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the facility is located.

~Section B from Section 4.2

Section 36.409 states:

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

~Table 2 &3 from Section 4.2

Impulsive Noise: Noise generated by the project will exceed the standards listed in San Diego Code Section 36.410, Sound Level Limitations on Impulsive Noise.

Section 36.410 states:

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 2, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 2 are as described in the County Zoning Ordinance.

Table 2.
San Diego County Code Section 36.410,
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED
AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 3, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 3 are as described in the County Zoning Ordinance.

Table 3.
San Diego County Code Section 36.410,
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA) FOR PUBLIC ROAD PROJECTS

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period.

If the sound level caused by construction equipment or the producer of the impulsive noise, exceeds the maximum sound level for any portion of any minute it will deemed that the maximum sound level was exceeded during that minute.

3.2 Potential Operational Noise Impacts (Non-Construction Noise)

Discuss exposure of on- or off- site areas to increased noise associated with operation of projects including but not limited to: mechanical equipment, pumps, rooftop equipment, condenser units, A/C units, pneumatic equipment, operation related traffic (vehicle movement, engine noise), outdoor human activity in defined limited areas, speakers, bells and chimes.

a. Potential Build Out Noise Conditions without Mitigation

Discuss potential buildout noise conditions. Noise-related adverse effects associated with new development projects fall into the following category:

- Operational Activities – Exposure of on- or off- site areas to increased noise associated with operation of projects including but not limited to; mechanical equipment, pumps, rooftop equipment, condenser units, A/C units, pneumatic equipment, operation related traffic (vehicle movement, engine noise), outdoor human activity in defined limited areas, speakers, bells and chimes. Provide measured Leq and octave band data.
  Note: No permanent loudspeaker or sound amplification system shall be used to produce sounds in violation of the County Noise Ordinance.

Table X.X Sample Noise Generating Equipment Measurement

Noise Source Name	Distance Measured	Octave Band Data					Leq Measurement

- Potential Noise Impact Identification
  Model noise receptors relative to the project boundaries and property lines. Receptors shall be strategically located in areas that will determine worst-case noise impacts. Identify all noise sources, receptor locations, their distance to project property lines and their values.

Table X.X Sample Attenuation by Distance Measurement

Noise Source Name	Receptor Label	Receptor (Property Line) Location	Distance Measured	Noise Level (dBA)

b. Design Considerations and Mitigation Measures

If potential noise impacts at the project boundaries/property lines and beyond is determined to be significant:

Design Considerations

- Discuss modifications to the development that have been made or will be made which reduce noise impacts to the project boundaries and property lines.
- Identify all existing topographic elements that are modeled in the noise analysis. Provide a quantitative analysis of all topographic elements taken into calculations.

Mitigation Calculations

- Discuss modifications to the development that have been made or will be made which will reduce noise impacts to the project boundaries and property line. Noise level limit thresholds at the property line will be determined by Section 4.2-Table 1.
- Provide mitigation measures to reduce potential noise impacts. Determine whether the potential noise impacts are significant by quantifying the anticipated changes to the noise environment with the recommended mitigation. Compare noise impact results with and without the recommended mitigation. Noise level limit thresholds at the property line will be determined by Section 4.2-Table 1.

Table X.X Sample Mitigated Noise Impacts

Noise Source Name	Receptor Label	Receptor (Property Line) Location	Noise Level (dBA)	Noise Mitigated Reduction

3.3 Potential General Construction Noise Impacts

Discuss exposure of on- or off- site areas to increased noise associated with temporary general construction operations and equipment including but not limited to: loaders, back hoes, graders, scrapers, water trucks, pneumatic equipment and operation related traffic (vehicle movement, engine noise), etc.

a. Potential Temporary Construction Noise Impacts Without Mitigation

Discuss potential temporary construction noise conditions. Noise-related adverse effects associated with new development projects fall into the following category:

Construction Activities - The exposure of on- or off- site areas to temporary construction noise associated with project-related activities including but not limited to; site grading, truck/construction equipment movement, engine noise, rock excavation and rock crushing, etc .

Table X.X Sample Construction Noise Equipment Measurement

Noise Source Name	Distance Measured	Leq Measurement

Potential Noise Impact Identification

Model noise receptors relative to the project boundaries and property lines located on any occupied property where noise is being received. . Receptors shall be strategically located in areas that will determine worst-case noise impacts. Identify all noise sources, receptor locations, their distance to project property lines and their values.

Table X.X Sample Construction Noise Attenuation by Distance Measurement

Noise Source Name	Receptor Label	Receptor (Property Line) Location	Distance Measured	Noise Level (dBA)

b. Design Considerations and Mitigation Measures

If temporary construction noise impacts at the project boundaries/property lines and beyond are determined to be significant:

Design Considerations

- Discuss modifications to the development that have been made or will be made which reduce construction noise impacts to the project boundaries and property lines.

- Identify all existing topographic elements that are modeled in the noise analysis. Provide a quantitative analysis of all topographic elements taken into calculations.

Mitigation Measures

- Discuss modifications to the development that have been made or will be made which will reduce noise impacts to the project boundaries and property line. Noise level limit thresholds at the property line on any occupied property where the noise is being received shall not exceed an average of 75 dB for an eight hour period, between 7a.m. and 7 p.m.
- Provide mitigation measures to reduce construction noise impacts to 75 dB or below. Determine whether the potential temporary noise impacts are significant by quantifying the anticipated changes to the noise environment with the recommended mitigation. Compare noise impact results with and without the recommended temporary construction noise mitigation. Construction noise level limit thresholds at the property line or on any occupied property where the noise is being received will be as high as 75 dBA.

Table X.X Sample Mitigated Noise Impacts

Noise Source Name	Receptor Label	Receptor (Property Line) Location	Noise Level (dBA)	Noise Mitigated Reduction

3.4 Potential Impulsive Noise Impacts (If Applicable)

Discuss exposure of on- or off- site areas to increased impulsive noise associated with any single noise event or series of single noise events, which causes a high peak noise level of short duration (one second or less), measured at a specific location. Examples include, but are not limited to: gun shots, explosions, blasting or a noise generated by impulsive construction equipments.

a. Potential Impulsive Noise Impacts without Mitigation

Discuss potential impulsive noise activities associated with the project.

Impulsive Noise Operations and Activities - The exposure of on- or off- site areas to noise associated with project-related activities include the following but are not limited to: rock excavation, rock crushing, hoe ram operations, blasting etc.

Potential Noise Impact Identification

Model noise receptors relative to the project boundaries and property lines located or any occupied property where noise is being received. Receptors shall be strategically located in areas that will determine worst-case noise impacts. Identify all noise sources, receptor locations, their distance to project property lines and their values.

b. Design Considerations and Mitigation Measures

If potential impulsive noise impacts at the project boundaries/property lines and beyond are determined to be significant, provide the following if applicable:

Design Considerations

- Discuss modifications to the development that have been made or will be made which reduce impulsive noise impacts to the project boundaries and property lines.
- Identify all existing topographic elements that are modeled in the noise analysis. Provide a quantitative analysis of all topographic elements taken into calculations.

Mitigation Measures

- Discuss modifications to the development that have been made or will be made which will reduce the project related impulsive noise impacts to the project boundaries and property line.
- Provide mitigation measures to reduce impulsive noise impacts to less than significant. Determine whether the impulsive noise impacts are significant by quantifying the anticipated changes to the noise environment with the recommended mitigations. Compare noise impact results with and without the recommended noise mitigation measures.

3.5 Cumulative or Combined Noise Impacts (If applicable)

a. Potential Combined Noise Impacts

- Discuss co-location project exposure of on- or off- site areas to increased noise associated with operation of projects including but not limited to; mechanical equipment, pumps, rooftop equipment, condenser units, A/C units, pneumatic equipment, operation related traffic (vehicle movement, engine noise), outdoor human activity in defined limited areas, speakers, bells and chimes.

- Identify cumulative or combined noise impacts from both existing and potential noise impacts. Specify whether the project proposes significant contributions to the existing noise conditions.

Table X.X Sample of Cumulative or Combined Noise Impacts

Receptor Label	Receptor (Property Line) Location	Noise Source (name) & Leq	Noise Source (name) & Leq	Noise Source (name) & Leq	Cumulative or Combined Noise Level Impacts

b. Design Considerations & Mitigation Measures

Project Design Considerations

- Identify all existing topographic elements that are modeled in the noise analysis.
- Discuss modifications to the development that have been made or will be made which reduce noise impacts at the project boundaries and property lines.
- Identify all existing topographic elements that are modeled in the noise analysis. Provide a quantitative analysis of all topographic elements taken into calculations.

Mitigation Measurement Calculations

If the proposed potential noise impacts are determined to have a significant contribution to the existing noise conditions, mitigation measures shall be provided.

- Provide mitigation measures to reduce potential noise impact contributions. Determine whether the potential noise impacts are significant by quantifying the anticipated changes to the noise environment with the recommended mitigation. Compare noise impact results with and without the recommended mitigation. Noise level limit thresholds at the property line will be determined by Section 4.1-Table 2.

4.0 4.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS

4.1 Guidelines for the Determination of Significance

Project implementation will expose the uses listed in Table 4 and 5 to ground-borne vibration or noise levels equal to or in excess of the levels shown:

APPENDIX E

Cadna Calculations Input and Results

Cadna Noise Model - Sound Levels												
Name	**ID**	**Type**										**Source**
			63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A**	**lin**	
Carrier 48TC05	B	Lw	90.9	84.6	79.5	77.9	76.5	71.1	66.9	62.5	80.8	92.4	Carrier Data Sheet
Carrier 48TC06	C	Lw	84.0	82.2	76.3	74.8	72.5	68.8	65.6	61.8	77.7	87.2	Carrier Data Sheet
Carrier 48TC08	E	Lw	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1	81.4	89.6	Carrier Data Sheet
Carrier 48TC14	H	Lw	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87.1	92.4	Carrier Data Sheet
Males Voice	V_1	Lw	85.8	67.1	77.1	85.1	82.1	76.1	72.1	63.1	86.0	87.8	Harris Book (16.3)
Female Voice	V_2	Lw	87.0	37.7	72.7	76.7	78.7	74.7	71.7	63.7	82.0	82.7	Harris Book (16.3)

HVAC Noise Model - Point Sources								
Name	ID	Result. PWL	Lw / Li		Height	Coordinates		
		Day	Type	Value		X	Y	Z
		(dBA)			(m)	(m)	(m)	(m)
Carrier 48TC05	L_1	80.8	Lw	B	10.67	1649.04	1115.01	10.67
Carrier 48TC05	L_2	80.8	Lw	B	10.67	1652.49	1115.32	10.67
Carrier 48TC05	L_3	80.8	Lw	B	10.67	1655.64	1115.42	10.67
Carrier 48TC05	L_4	80.8	Lw	B	10.67	1659.35	1115.49	10.67
Carrier 48TC05	L_5	80.8	Lw	B	10.67	1662.4	1115.49	10.67
Carrier 48TC05	L_6	80.8	Lw	B	10.67	1649.56	1112.44	10.67
Carrier 48TC05	L_7	80.8	Lw	B	10.67	1652.9	1112.52	10.67
Carrier 48TC05	L_8	80.8	Lw	B	10.67	1655.93	1112.66	10.67
Carrier 48TC05	L_9	80.8	Lw	B	10.67	1659.59	1112.74	10.67
Carrier 48TC05	L_10	80.8	Lw	B	10.67	1662.55	1112.88	10.67
Carrier 48TC06	L_11	77.7	Lw	C	10.67	1546.26	1120.46	10.67
Carrier 48TC08	L_12	81.4	Lw	E	10.67	1535.27	1130.81	10.67
Carrier 48TC08	L_13	81.4	Lw	E	10.67	1543.14	1137.59	10.67
Carrier 48TC08	L_14	81.4	Lw	E	10.67	1567.15	1138.03	10.67
Carrier 48TC08	L_15	81.4	Lw	E	10.67	1569.46	1140.86	10.67
Carrier 48TC08	L_16	81.4	Lw	E	10.67	1583.12	1141.13	10.67
Carrier 48TC08	L_17	81.4	Lw	E	10.67	1586.46	1141.23	10.67
Carrier 48TC08	L_18	81.4	Lw	E	10.67	1590.11	1141.13	10.67
Carrier 48TC08	L_19	81.4	Lw	E	10.67	1581.04	1099.82	10.67
Carrier 48TC12	L_20	87.1	Lw	H	10.67	1571.22	1134.13	10.67
Carrier 48TC12	L_21	87.1	Lw	H	10.67	1573.49	1136.67	10.67
Carrier 48TC12	L_22	87.1	Lw	H	10.67	1576.64	1139.31	10.67
Carrier 48TC12	L_23	87.1	Lw	H	10.67	1601.46	1117.23	10.67
Carrier 48TC12	L_24	87.1	Lw	H	10.67	1598.63	1114.31	10.67
Carrier 48TC12	L_25	87.1	Lw	H	10.67	1595.99	1111.77	10.67
Carrier 48TC12	L_26	87.1	Lw	H	10.67	1593.26	1109.04	10.67
Carrier 48TC05	L_27	80.8	Lw	B	10.67	1583.28	1088.37	10.67
Carrier 48TC05	L_28	80.8	Lw	B	10.67	1586.39	1088.27	10.67
Carrier 48TC05	L_29	80.8	Lw	B	10.67	1583.09	1085.94	10.67
Carrier 48TC05	L_30	80.8	Lw	B	10.67	1590.18	1087.88	10.67
Carrier 48TC05	L_31	80.8	Lw	B	10.67	1593.1	1087.88	10.67
Carrier 48TC05	L_32	80.8	Lw	B	10.67	1596.69	1087.79	10.67
Carrier 48TC05	L_33	80.8	Lw	B	10.67	1586.3	1085.94	10.67
Carrier 48TC05	L_34	80.8	Lw	B	10.67	1590.67	1085.75	10.67
Carrier 48TC05	L_35	80.8	Lw	B	10.67	1593.1	1085.75	10.67
Carrier 48TC05	L_36	80.8	Lw	B	10.67	1596.4	1085.65	10.67
Carrier 48TC06	L_37	77.7	Lw	C	10.67	1645.65	1155.52	10.67
Carrier 48TC14	L_38	87.1	Lw	H	10.67	1651.6	1136.56	10.67
Carrier 48TC14	L_39	87.1	Lw	H	10.67	1665.98	1136.96	10.67
Carrier 48TC14	L_40	87.1	Lw	H	10.67	1571.72	1139.29	10.67

Event Noise Model - Point Sources									
Name	**ID**	**Result. PWL**	**Lw / Li**			**Height**	**Coordinates**		
		Day	**Type**	**Value**	**Qty**		**X**	**Y**	**Z**
		(dBA)				**(m)**	**(m)**	**(m)**	**(m)**
						1.52	134.91	111.03	1.52
						1.52	134.7	94.94	1.52
						1.52	146.93	94.72	1.52
						1.52	146.71	62.54	1.52
						1.52	147.36	53.53	1.52
						1.52	169.45	53.96	1.52
						1.52	168.59	97.51	1.52
						1.52	161.94	99.87	1.52
						1.52	163.87	122.61	1.52
Male Voices	A_1	110.0	PWL-pt	V_1	250	1.52	143.71	117.68	1.52
						1.52	133.21	109.98	1.52
						1.52	143.84	118.56	1.52
						1.52	164.11	122.43	1.52
						1.52	163.15	101.61	1.52
						1.52	168.94	96.89	1.52
						1.52	168.94	53.44	1.52
						1.52	147.27	52.8	1.52
						1.52	146.41	95.39	1.52
Female Voices	A_2	106.0	PWL-pt	V_2	250	1.52	134.82	94.53	1.52

HVAC Noise Model - Noise Levels at Receivers						
Name	ID	Level Lr	Height	Coordinates		
		Day		X	Y	Z
		(dBA)	(m)	(m)	(m)	(m)
North PL	R_1	43.9	6.1	1569.24	1201.43	6.1
South PL	R_2	39.2	6.1	1591.82	1025.16	6.1
East PL	R_3	42.9	1.52	1709.56	1073.32	1.52
West PL	R_4	39.3	1.52	1484.86	1130.69	1.52

Event Noise Model - Noise Levels at Receivers						
Name	ID	Level Lr	Height	Coordinates		
		Day		X	Y	Z
		(dBA)	(m)	(m)	(m)	(m)
North PL	R_1	47.3	6.1	154.92	297.89	6.1
South PL	R_2	50.0	6.1	158.62	-23.26	6.1
East PL	R_3	46.7	1.52	254	77.43	1.52
West PL	R_4	46.6	1.52	18.13	130.87	1.52

Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	200.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg B - Unit 48TC05
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**202.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**37.7**	**32.6**	**31.0**	**29.6**	**24.2**	**20.0**	**15.6**	(dBA)	at	202.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	43.9	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**53.9**	(dBA) at	202.2	(ft)

Total Sound Pressure Level at Receiver	**49.3**	dBA

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	360.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg E - Unit 48TC05
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**361.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**32.7**	**27.6**	**26.0**	**24.6**	**19.2**	**15.0**	**10.6**	(dBA)	at	361.2	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	38.8	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**48.8**	(dBA) at	361.2	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	350.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT06
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**351.3**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**30.5**	**24.6**	**23.1**	**20.8**	**17.1**	**13.9**	**10.1**	(dBA)	at	351.3	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	26.0	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**26.0**	(dBA) at	351.3	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	400.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT08
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**401.1**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**31.5**	**27.7**	**25.9**	**23.6**	**19.9**	**15.5**	**12.3**	(dBA)	at	401.1	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	31.6	(dBA)		
# of sources	2			
Combined Sound Pressure Level:	**34.6**	(dBA) at	401.1	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	460.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48CT06
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**461.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**28.2**	**22.3**	**20.8**	**18.5**	**14.8**	**11.6**	**7.8**	(dBA)	at	461.0	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	23.6	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**23.6**	(dBA) at	461.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	430.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48TC14
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**431.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_w	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_w - 20\ log\ (r) - 0.75$	**31.8**	**31.2**	**31.5**	**28.8**	**25.0**	**21.9**	**19.5**	(dBA)	at	431.0	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	36.7	(dBA)			
# of sources	2				
Combined Sound Pressure Level:	**39.7**	(dBA) at	431.0	(ft)	

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	280.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48TC14
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**281.6**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**35.5**	**34.9**	**35.2**	**32.5**	**28.7**	**25.6**	**23.2**	(dBA)	at	281.6	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	46.4	(dBA)		
# of sources	8			
Combined Sound Pressure Level:	**55.4**	(dBA) at	281.6	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	375.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48CT08
Path Description: R-1 North

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**376.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_w	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_w - 20\ log\ (r) - 0.75$	**32.0**	**28.2**	**26.4**	**24.1**	**20.4**	**16.0**	**12.8**	(dBA)	at	376.2	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	36.1	(dBA)			
# of sources	5				
Combined Sound Pressure Level:	**43.1**	(dBA) at	376.2	(ft)	

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	365.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg B - Unit 48TC05
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**366.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**32.6**	**27.5**	**25.9**	**24.5**	**19.1**	**14.9**	**10.5**	(dBA)	at	366.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	38.7	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**48.7**	(dBA) at	366.2	(ft)

Total Sound Pressure Level at Receiver	**48.9**	dBA

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	400.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg E - Unit 48TC05
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**401.1**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**31.8**	**26.7**	**25.1**	**23.7**	**18.3**	**14.1**	**9.7**	(dBA)	at	401.1	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	37.9	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**47.9**	(dBA) at	401.1	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	270.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT06
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**271.7**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**32.8**	**26.9**	**25.4**	**23.1**	**19.4**	**16.2**	**12.4**	(dBA)	at	271.7	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	28.2	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**28.2**	(dBA) at	271.7	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	230.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT08
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**231.9**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**36.2**	**32.4**	**30.6**	**28.3**	**24.6**	**20.2**	**17.0**	(dBA)	at	231.9	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	36.3	(dBA)		
# of sources	2			
Combined Sound Pressure Level:	**39.3**	(dBA) at	231.9	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	290.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48CT06
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**291.5**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**32.2**	**26.3**	**24.8**	**22.5**	**18.8**	**15.6**	**11.8**	(dBA)	at	291.5	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	27.6	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**27.6**	(dBA) at	291.5	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	365.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48TC14
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**366.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**33.2**	**32.6**	**32.9**	**30.2**	**26.4**	**23.3**	**20.9**	(dBA)	at	366.2	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	38.1	(dBA)			
# of sources	2				
Combined Sound Pressure Level:	**41.1**	(dBA) at	366.2	(ft)	

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	300.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48TC14
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**301.5**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**34.9**	**34.3**	**34.6**	**31.9**	**28.1**	**25.0**	**22.6**	(dBA)	at	301.5	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	45.8	(dBA)		
# of sources	8			
Combined Sound Pressure Level:	**54.8**	(dBA) at	301.5	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	200.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48CT08
Path Description: R-2 South

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**202.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**37.4**	**33.6**	**31.8**	**29.5**	**25.8**	**21.4**	**18.2**	(dBA)	at	202.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	41.5	(dBA)		
# of sources	5			
Combined Sound Pressure Level:	**48.5**	(dBA) at	202.2	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	395.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg B - Unit 48TC05
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**396.1**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**31.9**	**26.8**	**25.2**	**23.8**	**18.4**	**14.2**	**9.8**	(dBA)	at	396.1	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	38.0	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**48.0**	(dBA) at	396.1	(ft)

Total Sound Pressure Level at Receiver	**48.0**	dBA

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	225.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg E - Unit 48TC05
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**227.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**36.7**	**31.6**	**30.0**	**28.6**	**23.2**	**19.0**	**14.6**	(dBA)	at	227.0	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	42.9	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**52.9**	(dBA) at	227.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	585.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT06
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**585.8**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**26.1**	**20.2**	**18.7**	**16.4**	**12.7**	**9.5**	**5.7**	(dBA)	at	585.8	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	21.5	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**21.5**	(dBA) at	585.8	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	560.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT08
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**560.8**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**28.6**	**24.8**	**23.0**	**20.7**	**17.0**	**12.6**	**9.4**	(dBA)	at	560.8	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	28.6	(dBA)		
# of sources	2			
Combined Sound Pressure Level:	**31.7**	(dBA) at	560.8	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	345.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48CT06
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**346.3**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**30.7**	**24.8**	**23.3**	**21.0**	**17.3**	**14.1**	**10.3**	(dBA)	at	346.3	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	26.1	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**26.1**	(dBA) at	346.3	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	275.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48TC14
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**276.6**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**35.6**	**35.0**	**35.3**	**32.6**	**28.8**	**25.7**	**23.3**	(dBA)	at	276.6	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	40.5	(dBA)			
# of sources	2				
Combined Sound Pressure Level:	**43.5**	(dBA) at	276.6	(ft)	

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	390.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48TC14
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**391.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_w	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_w - 20\ log\ (r) - 0.75$	**32.6**	**32.0**	**32.3**	**29.6**	**25.8**	**22.7**	**20.3**	(dBA)	at	391.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	43.5	(dBA)		
# of sources	8			
Combined Sound Pressure Level:	**52.5**	(dBA) at	391.2	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	475.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48CT08
Path Description: R-3 East

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**475.9**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**30.0**	**26.2**	**24.4**	**22.1**	**18.4**	**14.0**	**10.8**	(dBA)	at	475.9	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	34.0	(dBA)		
# of sources	5			
Combined Sound Pressure Level:	**41.0**	(dBA) at	475.9	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	375.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg B - Unit 48TC05
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**376.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**32.3**	**27.2**	**25.6**	**24.2**	**18.8**	**14.6**	**10.2**	(dBA)	at	376.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	38.5	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**48.5**	(dBA) at	376.2	(ft)

Total Sound Pressure Level at Receiver	**47.3**	dBA

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	565.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg E - Unit 48TC05
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**565.8**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.6	79.5	77.9	76.5	71.1	66.9	62.5	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**28.8**	**23.7**	**22.1**	**20.7**	**15.3**	**11.1**	**6.7**	(dBA)	at	565.8	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	34.9	(dBA)		
# of sources	10			
Combined Sound Pressure Level:	**44.9**	(dBA) at	565.8	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	200.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT06
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**202.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**35.3**	**29.4**	**27.9**	**25.6**	**21.9**	**18.7**	**14.9**	(dBA)	at	202.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	30.8	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**30.8**	(dBA) at	202.2	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	175.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Bldg C - 48CT08
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**177.6**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**38.6**	**34.8**	**33.0**	**30.7**	**27.0**	**22.6**	**19.4**	(dBA)	at	177.6	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	38.6	(dBA)		
# of sources	2			
Combined Sound Pressure Level:	**41.6**	(dBA) at	177.6	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	525.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48CT06
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**525.9**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	82.2	76.3	74.8	72.5	68.8	65.6	61.8	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**27.0**	**21.1**	**19.6**	**17.3**	**13.6**	**10.4**	**6.6**	(dBA)	at	525.9	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	22.5	(dBA)		
# of sources	1			
Combined Sound Pressure Level:	**22.5**	(dBA) at	525.9	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	525.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Fellowship Hall - 48TC14
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**525.9**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**30.0**	**29.4**	**29.7**	**27.0**	**23.2**	**20.1**	**17.7**	(dBA)	at	525.9	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	34.9	(dBA)		
# of sources	2			
Combined Sound Pressure Level:	**37.9**	(dBA) at	525.9	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	370.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48TC14
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**371.2**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	85.2	84.6	84.9	82.2	78.4	75.3	72.9	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**33.1**	**32.5**	**32.8**	**30.1**	**26.3**	**23.2**	**20.8**	(dBA)	at	371.2	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	44.0	(dBA)		
# of sources	8			
Combined Sound Pressure Level:	**53.0**	(dBA) at	371.2	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	35.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	290.0	(ft)

Project Name: Santa Fe Valley Church
Project Number: B50112N1
Date: 3/2/2015
Source Description: Sanctuary - 48CT08
Path Description: R-4 West

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**291.5**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	84.3	80.5	78.7	76.4	72.7	68.3	65.1	(dBA)			
Sound Pressure Level: $L_p = L_W - 20\ log\ (r) - 0.75$	**34.3**	**30.5**	**28.7**	**26.4**	**22.7**	**18.3**	**15.1**	(dBA)	at	291.5	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	38.3	(dBA)		
# of sources	5			
Combined Sound Pressure Level:	**45.3**	(dBA) at	291.5	(ft)

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APPENDIX F

Construction Equipment Noise Calculations

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Grader
Receiver: South - Grading

Noise Source

Noise Level (dBA) 70 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **64.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **60.9**

Summation

Number of Sources: 4

Level during 8 hour day: **69.7**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Dozer
Receiver: South - Grading

Noise Source

Noise Level (dBA) 71 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **65.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **61.9**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: South - Grading

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**59.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**55.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Water Truck
Receiver: South - Grading

Noise Source

Noise Level (dBA)	77	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**71.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**67.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Grader
Receiver: East - Grading

Noise Source

Noise Level (dBA) 70 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **60.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **56.8**

Summation

Number of Sources: 4

Level during 8 hour day: **65.6**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Dozer
Receiver: East - Grading

Noise Source

Noise Level (dBA)	71	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**61.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**57.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: East - Grading

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**55.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**51.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Water Truck
Receiver: East - Grading

Noise Source

Noise Level (dBA)	77	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**67.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**63.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe (x 2)
Receiver: South - Trenching

Noise Source

Noise Level (dBA) 68 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **62.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **58.9**

Summation

Number of Sources: 3

Level during 8 hour day: **62.6**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Excavator
Receiver: South - Trenching

Noise Source

Noise Level (dBA)	69	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**63.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**59.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Generator
Receiver: South - Trenching

Noise Source

Noise Level (dBA)	57	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**51.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**48.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe (x 2)
Receiver: East - Trenching

Noise Source

Noise Level (dBA) 68 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **58.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **54.8**

Summation

Number of Sources: 3

Level during 8 hour day: **58.5**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Excavator
Receiver: East - Trenching

Noise Source

Noise Level (dBA)	69	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**59.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**55.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Generator
Receiver: East - Trenching

Noise Source

Noise Level (dBA)	57	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**47.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**44.7**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: South - Paving

Noise Source

Noise Level (dBA) 65 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **59.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **55.9**

Summation

Number of Sources: 4

Level during 8 hour day: **68.3**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Concrete Mixer
Receiver: South - Paving

Noise Source

Noise Level (dBA) 75 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **69.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **65.9**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Paver
Receiver: South - Paving

Noise Source

Noise Level (dBA)	71	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**65.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**62.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Roller
Receiver: South - Paving

Noise Source

Noise Level (dBA)	69	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**63.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**56.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: East - Paving

Noise Source

Noise Level (dBA) 65 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **55.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **51.8**

Summation

Number of Sources: 4

Level during 8 hour day: **64.1**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Concrete Mixer
Receiver: East - Paving

Noise Source

Noise Level (dBA) 75 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **65.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **61.8**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Paver
Receiver: East - Paving

Noise Source

Noise Level (dBA)	71	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**61.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**58.7**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Roller
Receiver: East - Paving

Noise Source

Noise Level (dBA)	69	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**59.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**52.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Crane
Receiver: South - Bldg Construction

Noise Source

Noise Level (dBA) 73 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **67.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **16**
Level During 8 Hour day: **59.9**

Summation

Number of Sources: 5

Level during 8 hour day: **67.4**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Generator
Receiver: South - Bldg Construction

Noise Source

Noise Level (dBA)	57	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**51.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**48.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: South - Bldg Construction

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**59.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**55.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Forklift
Receiver: South - Bldg Construction

Noise Source

Noise Level (dBA)	74	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**68.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**64.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Welder
Receiver: South - Bldg Construction

Noise Source

Noise Level (dBA) 69 at 50 feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level	**63.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**59.9**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Crane
Receiver: East - Bldg Construction

Noise Source

Noise Level (dBA) 73 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **63.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **16**
Level During 8 Hour day: **55.8**

Summation

Number of Sources: 5

Level during 8 hour day: **63.3**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Generator
Receiver: East - Bldg Construction

Noise Source

Noise Level (dBA)	57	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**47.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**50**			
Level During 8 Hour day:	**44.7**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Backhoe
Receiver: East - Bldg Construction

Noise Source

Noise Level (dBA) 65 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 145 feet

Path Calculation

Source to Receiver Direct Path Distance: **145** feet

Sound Pressure Level **55.8** at 145 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **51.8**

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Forklift
Receiver: East - Bldg Construction

Noise Source

Noise Level (dBA)	74	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**64.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**60.8**			

Noise Attenuation by Distance Calculation

Job: Chinese Bible Church
Job #: B50112N3
Date: 4/6/2016
Source: Welder
Receiver: East - Bldg Construction

Noise Source

Noise Level (dBA)	69	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	145	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**145**	feet

Sound Pressure Level	**59.8**	at	145	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**55.8**			