ArupAcoustics

Christopher A. Joseph & Associates
Environmental Planning and Research

Canyon Hills

Noise Impact Study

Report No. AAc/32363-00/R01

ArupAcoustics

Christopher A. Joseph & Associates Environmental Planning and Research

Canyon Hills

Noise Impact Study

April 2003

Ove Arup & Partners California Ltd
2440 South Sepulveda Boulevard, Suite 180, Los Angeles California 90064
Tel +1 310 312 5040 Fax +1 310 312 5788
www.arup.com/acoustics

Job number 32363-00

CONTENTS

"Sound 2000" Input and Output Files

APPENDIX I
Traffic Information for Highway 210

1. INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Introduction

Whitebird, Inc. proposes to build the Canyon Hills housing community on about 887 acres of land located in the northeastern San Fernando Valley in the City of Los Angeles. The project site is located within the Verdugo Mountains and bounded on the north by the communities of Sunland and Tujunga in the City of Los Angeles and on the south by La Tuna Canyon Road. Figure 1 shows the location of the proposed project site with respect to nearby residential communities.

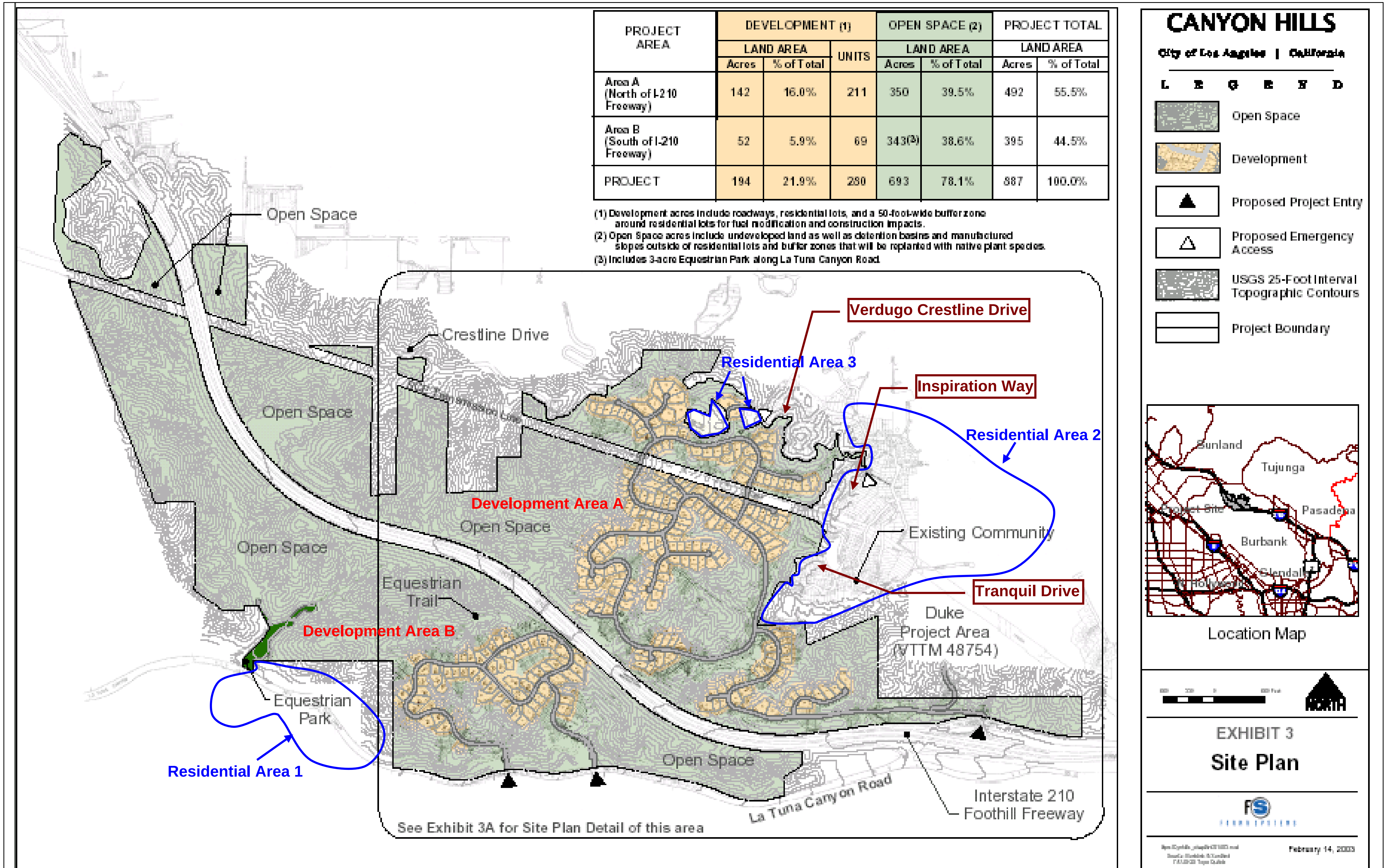
Arup Acoustics have been retained by the project's lead environmental consultants (Christopher A. Joseph and Associates) to conduct a study of the potential noise impacts from the proposed development on the neighboring communities and of existing noise on the development and recommend potential mitigation measures.

This noise study examines the potential noise impact on the surrounding communities that would result from the following project-related noise sources:

1. Auto traffic (increase in local auto traffic);
2. Mechanical equipment noise (air conditioning equipment, lawn maintenance, etc.); and
3. Construction activities.

In addition to examining the noise impact of the proposed development on the surrounding communities, this study will also address the noise impact of Interstate 210, which bisects the project site, on the future residences of the proposed project.

Following this introduction, Section 2 provides a general description of the noise metrics used in this analysis, applicable noise regulations and the existing noise environment. The noise impact on the nearby communities due to the proposed project's operation (i.e., traffic, mechanical equipment) and construction will be presented in Section 3. Section 4 is a discussion of the noise impacts from Interstate 210 on the proposed residential development. Recommended noise mitigation measures are detailed in Section 5.



PROJECT AREA	DEVELOPMENT (1)			OPEN SPACE (2)		PROJECT TOTAL	
	LAND AREA		UNITS	LAND AREA		LAND AREA	
	Acres	% of Total		Acres	% of Total	Acres	% of Total
Area A (North of I-210 Freeway)	142	16.0%	211	350	39.5%	492	55.5%
Area B (South of I-210 Freeway)	52	5.9%	69	343(3)	38.6%	395	44.5%
PROJECT	194	21.9%	280	693	78.1%	887	100.0%

(1) Development acres include roadways, residential lots, and a 50-foot-wide buffer zone around residential lots for fuel modification and construction impacts.
(2) Open Space acres include undeveloped land as well as detention basins and manufactured slopes outside of residential lots and buffer zones that will be replanted with native plant species.
(3) Includes 3-acre Equestrian Park along La Tuna Canyon Road.

Source: FORMA Systems, August 2002

Figure 1: Site Map Showing Project Site and Vicinity

1.2 Project Description

The proposed project consists of the development of 280 single-family homes to be clustered on approximately 202 acres of the 887-acre project site. Approximately 211 of these homes would be built on approximately 150 acres of the project site north of Interstate 210 (Development Area A) and the remaining 69 homes would be constructed on 52 acres of the project site south of Interstate 210 (Development Area B) (see Figure 1). The existing residences closest to the project site are located on Tranquil Drive, Inspiration Way and Verdugo Crestline Drive (shown in Figure 1). Construction of the project is estimated to begin in 2004 and end in 2009.

1.3 Executive Summary

The closest existing homes to the project site (and therefore most sensitive noise receptors to project-related noise) are located north and east of Development Area A and west of Development Area B. These homes are represented on Figure 1 as existing Residential Areas 1, 2 and 3. Residential Area 1 is west of Development Area B and consists of a cluster of homes on and near La Tuna Canyon Road. Residential Area 2 is east of Development Area A and is a group of single-family homes in the Sunland-Tujunga community that includes several noise sensitive areas, such as Inspiration Way and Tranquil Drive. Residential Area 3 lies north of Development Area A and includes two noise-sensitive residential areas along Verdugo Crestline Drive. The project site is bounded on the south side of Development Area B by a permanent open space, conserved as part of the Santa Monica Mountains Recreation Area. This park area south of La Tuna Canyon Road is also considered a noise-sensitive use. There are no other active land uses (e.g., commercial) close to the project site.

The existing noise environment at the project site and at the closest residential communities was determined through a series of "short-term" and "long-term" ambient noise level measurements conducted at six selected locations along the boundaries of the project site. These ambient noise monitoring locations are identified on Figure 2 as Locations A through F and the existing ambient noise level for each such Location is shown in Table 2. In addition to these six measurement sites, a seventh receptor, B1, was selected to represent the park area south of La Tuna Canyon Road.

It was found that the existing ambient noise levels at the closest residential communities to the proposed Development Areas varied from 47 dBA (CNEL) at Residential Area 3 (represented by Location E) to 68 dBA (CNEL) at Residential Area 1 (represented by Location A). Furthermore, the site noise survey indicates that the project site is currently exposed to Interstate 210 traffic noise levels ranging from 46 dBA (L_{eq}) at a distance of about 3600 feet from the centerline of Interstate 210 to 80 dBA (L_{eq}) at a distance of about 120 feet from the centerline of Interstate 210 (see Tables 1 and 2).

With respect to the existing residential communities surrounding the Development Areas, Interstate 210 noise levels are significantly reduced due to the presence of intervening landscape and relatively large setbacks that provide a "buffer zone" protecting those residential communities from Interstate 210 noise.

The potential noise impacts relating to the proposed project can be divided into categories of noise impacts to the existing noise-sensitive areas and noise impacts to the proposed development:

A. Noise Impacts on the Existing Noise-Sensitive Areas

- Noise generation related to the project's daily operation includes traffic noise and the mechanical equipment noise associated with home air conditioning systems.

  Increased traffic on both offsite and onsite roads would increase the ambient sound levels at the adjacent residential communities by no more than 1 dBA CNEL (see Table 3). At intersections of offsite roads, the increased traffic due to the project's operation would increase the ambient noise levels by a maximum 1 dBA[1] (see Table 4). Since the City of Los Angeles Draft L.A. CEQA Thresholds Guide (the "City CEQA Thresholds Guide")[2] defines a significant impact as 3 dBA CNEL, neither onsite nor offsite traffic noise would result in a significant noise impact to nearby residential areas.

  Noise emissions from onsite mechanical sources would not measurably increase the ambient noise level at adjacent communities.

  Therefore, the total operation-related noise increase at nearby residential receptors would be no more than 1 dBA CNEL, which is not a significant impact. In addition, the maximum 1-dBA increase in traffic noise at the offsite intersections would not constitute a significant noise impact.

- Construction-related noise generation due to grading, foundation preparation/road building and home building is planned to start in 2004 and continue through 2009.

  According to the City CEQA Thresholds Guide, a significant impact for construction noise is an increase in ambient noise levels at a noise-sensitive use by 10 dBA for more than one day, 5 dBA for more than 10 days out of 3 months, or 5 dBA during certain evening and weekend hours. The ambient sound levels at Residential Area 1, the park area, and Residential Areas 2 and 3 are expected to increase during the grading process by a maximum of 1, 2, 11 and 24 dBA, respectively (see Table 6). These conclusions are based on a conservative construction noise analysis which assumes, among other things, the simultaneous operation of 50% of all the construction equipment required for the grading of the entire project site for a period of not more than one hour.

  Based on this analysis, the noise associated with the various construction operations, including onsite truck traffic, would have a temporary significant impact on the daytime sound environment at the two closest residential communities (Residential Areas 2 and 3). Residential Area 1 and the park area would not experience a significant construction noise impact.

  Blasting is considered unlikely, but if necessary could generate noise levels in the range of 93 dB to 114 dB (linear peak sound levels) at Residential Areas 1, 2 and 3 and 89 dB to 110 dB in the park area. These blasting noise levels would typically last for fractions of a second. If blasting did occur, it is expected that the sound levels at these four noise-sensitive areas would be within OSHA occupational noise exposure limits. In our experience, this would not be a significant noise impact.

[1] This increase is in peak hour L_{eq}, which represents the greatest increase in traffic volume on an hourly basis. The average daily noise increase would be less than 1 dBA CNEL.

[2] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4.

Impacts associated with offsite construction traffic would be less than significant as the delivery trucks accessing the project site would not significantly increase the traffic on surrounding roads.

In addition, no cumulative construction noise impacts are expected as a result of the potentially simultaneous construction of related projects.

In summary, this noise study has investigated each of the above potential noise impacts and found that project operation would not have a significant noise impact on the surrounding community. Project construction would cause a short-term significant noise impact. Mitigation measures have been recommended to reduce the significant construction noise impact to the extent feasible.

B. Interstate 210 Noise Impact on the Proposed Development

If not mitigated, approximately 20 of the 280 homes in the proposed development would likely experience a significant noise impact (based on the Caltrans[3] guideline of 67 dBA) from the vehicular traffic on Interstate 210.

- Noise levels as estimated at the exterior of the 20 homes within approximately 500 feet of the centerline of Interstate 210 are expected to exceed the Caltrans guideline of 67 dBA, but the construction of sound walls (as shown in Figure 3) would acoustically protect 17 of the 20 proposed homes.
- With respect to three of the proposed homes close to Interstate 210 (residences R10, R11 and R12 in Figure 3), Interstate 210 traffic-generated sound levels cannot be sufficiently lowered with a highway sound wall because the required sound wall height would be impractical due to local topography. However, this noise impact can be mitigated by modifying the proposed site plan to move the impacted homes further from Interstate 210 and/or realigning the proposed driveways to allow for sound wall construction near the building lots.

Implementation of these noise mitigation measures would reduce the noise impact on the proposed residential development from the Interstate 210 traffic to an insignificant level.

2. ENVIRONMENTAL SETTING

2.1 Noise Descriptors

Noise is usually defined as sound that is undesirable because it interferes with speech/ communication and hearing, or is otherwise annoying (unwanted sound). More detailed description of the acoustical terminology can be found in Appendix A.

The decibel (**dB**) is a conventional unit for measuring the amplitude of sound; it accounts for the large variations in sound pressure amplitude and closely reflects the way people perceive changes in sound environment.

When describing sound and its effect on a human population, A-weighted (**dBA**) sound levels are typically used to account for the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used as a measure of community noise.

[3] Caltrans Project Development Procedures Manual, Chapter 30 - Highway Traffic Noise Abatement, 7/1/99, p. 30-13.

The equivalent sound level (**L_{eq}**) is normally used to describe community noise impacts with respect to general environmental sources such as auto traffic, air traffic, etc. To account for environmental noise fluctuation with respect to the time of the day, the Community Noise Equivalent Level (**CNEL**) is used in assessing noise impact on residential communities. CNEL is the adopted noise descriptor for evaluating project noise impacts pursuant to the City CEQA Thresholds Guide[4].

2.2 Existing Noise Environment

The existing sound environments at the project site and at the neighboring residential communities are described through measurements of the existing ambient noise levels. The noise receptor locations are described in Section 2.2.1. Section 2.2.2 details the measurement procedures and Section 2.2.3 describes the measurement results.

2.2.1 Receptor Locations

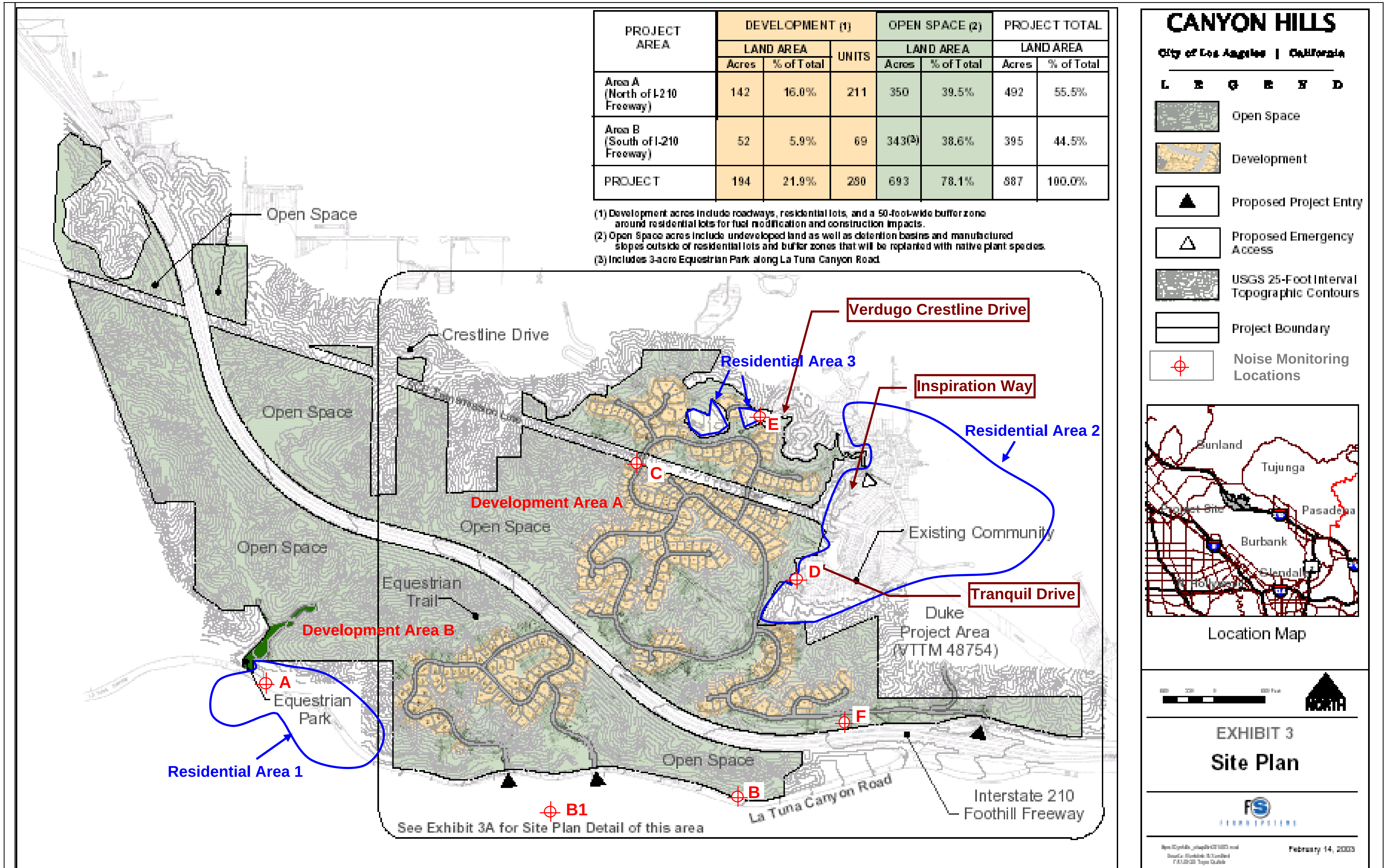
On Wednesday, September 12, 2002 and Thursday, September 13, 2002, between the hours of 1 pm and 2:30 pm, short-term (15-minute) ambient noise measurements were conducted at five selected Locations along the borders of the project site (Locations A, B, C, D and E, as shown in Figure 2). These measurements were not collected during any holidays and reflect typical existing noise levels during the daytime hours.

In addition, long-term measurements (minimum of 24 hours) were recorded from Thursday, September 13, 2002 through Tuesday, September 17, 2002, at one offsite Location representing existing Residential Area 3 (Location E) and one onsite Location near Interstate 210 (Location F). These long-term measurements provide a quantitative presentation of the variation of existing ambient noise levels during normal daytime, nighttime, weekday and weekend hours and were used to calculate the existing CNEL noise measurements.

In addition to the six measurement locations (A, B, C, D, E and F), a seventh noise-receptor was also used. This receptor, B1, represents the park area south of La Tuna Canyon Road (Figure 2), which is part of the Santa Monica Mountains Recreation Area. The ambient sound level at Location B1 was estimated based on the ambient sound levels at Location B and the distance (500 feet) between Location B1 and the centerline of La Tuna Canyon Road. Location B1 was conservatively assumed to have a direct line-of-sight to Interstate 210 and La Tuna Canyon Road (that is, sound attenuation due to topography was not included in the ambient sound level calculations).

Table 1 sets forth specific information regarding the noise monitoring locations. Locations A, B1, D, and E represent the noise-sensitive uses located within 500 feet of the project site. For example, measurements were taken at Locations A, D and E in order to determine the existing ambient noise levels in Residential Areas 1, 2 and 3, respectively. Location B1 was chosen to represent the ambient noise levels in the permanent open space south of La Tuna Canyon Road.

[4] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4.



PROJECT AREA	DEVELOPMENT (1)			OPEN SPACE (2)		PROJECT TOTAL	
	LAND AREA		UNITS	LAND AREA		LAND AREA	
	Acres	% of Total		Acres	% of Total	Acres	% of Total
Area A (North of I-210 Freeway)	142	16.0%	211	350	39.5%	492	55.5%
Area B (South of I-210 Freeway)	52	5.9%	69	343(3)	38.6%	395	44.5%
PROJECT	194	21.9%	280	693	78.1%	887	100.0%

(1) Development acres include roadways, residential lots, and a 50-foot-wide buffer zone around residential lots for fuel modification and construction impacts.
(2) Open Space acres include undeveloped land as well as detention basins and manufactured slopes outside of residential lots and buffer zones that will be replanted with native plant species.
(3) Includes 3-acre Equestrian Park along La Tuna Canyon Road.

Source: FORMA Systems, August 2002

Figure 2: Site Map Showing Noise Monitoring Locations

Table 1: Description of Receptor Locations

Receptor Location (Figure 2)	Description of Receptor Location	Area Represented by this Receptor	Direct Line of Sight to Interstate (Yes or No)[a]	Approximate Distance to Centerline of Interstate 210 (feet)	Measurement Duration
A	North side of La Tuna Canyon Road	Existing Residential Area 1	No	2400	15 minute
B	Non-residential area on the north side of La Tuna Canyon Road	B1	Yes	800	15 minute
B1[b]	Inside the park area, 500 feet south of La Tuna Canyon Road centerline	Permanent Open Space South of La Tuna Canyon Road	Yes	2100	N/A
C	Onsite near existing transmission lines	Future residences in Development Area A	Yes	2000	15 minute
D	Near an existing home at 938 Tranquil Drive	Existing Residential Area 2	Yes	2000	15 minute
E	Near an existing home at 2900 Verdugo Crestline Drive	Existing Residential Area 3	No	3600	4 days
F	Onsite close to Interstate 210	Traffic Noise from Interstate 210	Yes	120	4 days

[a] A Location is described as having a direct line of sight to Interstate 210 if Interstate 210 is visible from that Location. No direct line of sight to Interstate 210 means that intervening structures and landscape block the sight of Interstate 210 and therefore reduce the level of noise from Interstate 210 that is heard at that Location.

[b] Ambient conditions at Location B1 were calculated based on measurements performed at Location B.

The noise measurements at Locations C and F were used to calibrate the traffic noise model that was used to determine the noise impact of Interstate 210 on the future project residents. These two receptors are used for the calibration because they represent two extremes with regards to noise due to Interstate 210. Location C is located approximately 2,000 feet from the centerline of Interstate 210 and is slightly impacted by Interstate 210 traffic noise, while the sound environment at Location F is dominated by Interstate 210 because it is only 120 feet from the centerline of Interstate 210.

2.2.2 Measurement Procedures

The noise survey was performed using precision noise meters: Larson-Davis models 824 and 870. These noise meters meet and exceed the minimum industry standard performance requirements for "Type 1" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. Furthermore, these instruments meet and exceed the minimum requirements specified by Los Angeles Municipal Code (LAMC) Section 111.01(l)[5], in particular, that the instruments be "Type S2A" standard instruments or better. All instruments were calibrated and operated according to the manufacturer's written specifications. At all measurement sites, the microphone was placed at a height of 5 feet above the local grade.

At each short-term noise measurement Location, the sound level meter was programmed to record the average sound level (L_{eq}) over a cumulative period of a minimum of 15 minutes. Similarly, for long-term measurements, the noise meter was configured to record and store the hourly L_{eq} and CNEL over a cumulative period of 4 days, which included a weekend. Both these measurement durations satisfy the requirements of LAMC Section 111.01(a)[6] that the ambient noise measurements should be continuous for a period of at least 15 minutes.

2.2.3 Measurement Results

Table 2 presents the results of the short-term (15-min. L_{eq}) and long-term (CNEL) noise measurements at the selected Locations. It should be noted that with the exception of Locations E and F (where the CNEL was actually measured), the CNEL values are calculated based on the long-term noise data obtained at Locations E and F. Based on field observations and measured sound data, the existing noise environment at and in the vicinity of the project site is primarily controlled by vehicular traffic on Interstate 210 and, to a lesser degree, by vehicular traffic on La Tuna Canyon Road.

[5] City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 111.01(l), Rev. No. 63 – 1996.

[6] City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 111.01(a), Rev. No. 63 – 1996.

Table 2: Sound Level Measurements

Receptor Location (As shown in Figure 2)	Measurement Date and Time	Existing Ambient Noise Levels (dBA)	
		L_{eq} (15 minute)	CNEL (24 hour)
A	9/12/02, 1:21 pm -1:36 pm	66	68[c]
B	9/12/02, 12:56 pm - 1:11 pm	67	69[c]
B1	N/A	56[a]	58[a]
C	9/12/02, 2:16 pm - 2:31 pm	53	55[c]
D	9/12/02, 1:08 pm - 1:23 pm	54	56[c]
E	9/13/02 1:45 pm to 9/17/02 10:00 am	46[b]	47[d]
F	9/13/02 12:24 pm to 9/17/02 10:00 am	80[b]	81[d]

[a] Ambient conditions at Location B1 were calculated based on measurements performed at Location B.
[b] Hourly L_{eq} measured during peak traffic volume (am and pm)
[c] CNEL level was estimated based on long-term noise data obtained at Locations E and F
[d] Lowest measured CNEL over the 4-day period

As indicated in Table 2, the existing ambient noise levels in terms of the CNEL metric at the measurement Locations varied from 47 dBA (CNEL) at Location E (representing existing Residential Area 3), to 81 dBA (CNEL) at Location F (representing traffic noise from Interstate 210). With respect to the L_{eq} noise descriptor, the existing ambient noise level varied from 80 dBA (L_{eq}) measured at Location F near Interstate 210, to 46 dBA (L_{eq}) recorded at Location E. The measurement at Location F is approximately 120 feet from the center of Interstate 210 and the project site plan shows that approximately 3 of the proposed homes would be placed at approximately the same distance from Interstate 210 (e.g., R13 on Figure 3).

3. PROJECT-RELATED NOISE IMPACTS ON EXISTING NOISE-SENSITIVE AREAS

The proposed project's noise impacts on the nearby existing residential communities and park area are described as follows:

(a) Operation-related noise; and

(b) Construction-related noise.

These sound impacts are quantified by first determining the threshold of significant impact.

3.1 Significance Threshold

3.1.1 Operational Noise

The City CEQA Thresholds Guide[7] states:

> *A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the "normally unacceptable" of "clearly unacceptable" category, or any 5 dBA or greater noise increase (see the chart below).*

The chart below is an excerpt from the chart on pages I.2-3 and I.2-4 of the City CEQA Thresholds Guide for single family, duplex, mobile home land use and for playgrounds and neighborhood parks (see Appendix B).

	Community Noise Exposure CNEL, dB			
Land Use	***Normally Acceptable***	***Conditionally Acceptable***	***Normally Unacceptable***	***Clearly Unacceptable***
Single Family, Duplex, Mobile Homes	*50-60*	*55-70*	*70-75*	*Above 70*[8]
Playgrounds, Neighborhood Parks	*50-70*	*-*	*67-75*	*Above 72*

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Convention construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

[7] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4. Copies of pages I.2-3 and I.2-4 are included in Appendix B.

[8] This 70 dB figure is quoted directly from the City of Los Angeles Draft L.A. CEQA Thresholds Guide. However, other sources quote this number as 75 dB (i.e., State of California General Plan Guidelines, Preliminary Draft, Governor's Office of Planning and Research, October 2002, p. 258, and Noise Element of the City of Los Angeles General Plan, Department of City Planning Los Angeles, California, February 1999, p. I-1). Arup suggests this may be a typographical error in the Draft L.A. CEQA Thresholds Guide. Note that this potential error does not affect the determination of significant impacts for this report.

3.1.2 Construction Noise

With respect to construction noise, the City CEQA Thresholds Guide[9] states:

> *A project would normally have a significant impact on noise levels from construction if:*
>
> - *Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use;*
> - *Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use; or*
> - *Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday*

In the City CEQA Thresholds Guide[10], CNEL is mentioned as a noise descriptor for quantifying the noise impact from construction activities. However, construction typically occurs during the daytime hours, while CNEL describes the overall ambient sound levels over a 24-hour period, including nighttime hours. In Arup's experience, and as supported by the LAMC Section 112.05[11], the L_{eq} metric is more applicable when describing the potential noise impact from construction activities, and is likely to be a more conservative criteria than CNEL. In this study, the three significant thresholds outlined above will be described in terms of L_{eq}.

3.2 Operation-Related Noise Impacts on Existing Noise-Sensitive Areas

There are two potential noise sources related to the proposed project's operation that could have noise impact on existing noise-sensitive areas near the project site. These noise sources are traffic noise and mechanical equipment noise. Vehicular traffic due to the proposed project could have sound impact on existing Residential Areas 1, 2 and 3, the park area and on other areas that project-related traffic could pass through. Mechanical equipment, primarily equipment related to residential air conditioning systems, could also have a sound impact on the existing Residential Areas and the park area south of La Tuna Canyon Road. The following subsections describe Arup's analysis to determine whether there is a significant noise impact on these areas due to the proposed project's operation.

3.2.1 Traffic Noise Impact at Existing Residential and Park Areas (Onsite and Offsite Roads)

Since project-related traffic may travel along proposed project roads as well as existing nearby roads, there is a potential noise impact on Residential Areas, the park area and on other areas intersected by these nearby roads. To analyze the impact of project-related traffic noise, the impact on nearby areas will be discussed first, and the analysis of other areas intersected by offsite roads will be discussed in Section 3.2.4.

[9] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.1-3. (Included in Appendix B)

[10] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.1-3.

[11] City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 112.05, Rev. No. 63 – 1996.

In order to determine the potential noise impact of future automobile traffic on the existing Residential Areas and the park area, Arup used traffic data provided by Linscott Law & Greenspan[12]. The traffic data provided by Linscott Law & Greenspan includes projected traffic volumes for proposed roads on the project site and for project-related traffic volumes on existing nearby roads. This traffic data was incorporated into the Caltrans computer traffic program LEQV2, a program that is recommended in the City CEQA Thresholds Guide[13] for traffic noise assessments. This traffic program estimates the traffic noise level at a given Location based on traffic flow information and the relative distance between the given Location and the given road segment.

While the LEQV2 traffic program is mainly applicable to freeway traffic conditions, it is also used for non-freeway traffic, with some precautions. The program has higher accuracy for freeway traffic than for street traffic. To account for this, the Caltrans program limits the traffic velocity to a minimum of 30 mph (miles per hour). In the case of the Canyon Hills project, where the onsite maximum traffic speed is estimated at 25 mph, the program uses the lowest allowed speed of 30 mph. This results in a conservative noise prediction since traffic noise levels increase directly with increase in traffic speed. With respect to offsite roads (e.g., La Tuna Canyon Road), in which traffic speeds are higher than 30 mph, the program is accurate and was not adjusted.

It is also important to take into account the grade of the onsite roads, which is assumed to be steeper than a typical freeway. Arup assumes that this steeper grade will cause some increase in noise for automobile traffic, although the LEQV2 assumes that road grade will only affect noise due to truck traffic. In order to account for the increase in automobile noise due to the steeper grade, the predicted noise levels from LEQV2 were increased by 4 dBA. This 4-dBA adjustment is based on P.M. Nelson's Transportation Noise Reference Book,[14] which states that under normal conditions the increase in noise levels due to grading would be a maximum of 4 dBA for heavy trucks. Using 4 dBA is a conservative figure because grading is expected to increase the sound in heavy trucks more so than for automobile traffic and the onsite roads are expected to be primarily used by automobiles. Therefore, the noise prediction model was modified for onsite traffic as follows:

- The traffic speed was increased to 30 mph; and
- The predicted noise levels were increased by 4 dBA to account for grading.

These adjustments apply only to the onsite roads and not to the offsite roads, since the speed and grading of the offsite roads are consistent with the program's inherent assumptions.

The output files from LEQV2 are listed in Appendix C and the traffic data provided by Linscott Law & Greenspan is listed in Appendix D. Traffic noise levels were projected for the four sound receptor Locations that represent existing residential and park areas (Locations A, B1, D and E in Figure 2). Locations B, C and F are not near any existing noise-sensitive areas, so operational noise impacts are not applicable at these Locations. Section 3.2.3 incorporates the results of this analysis.

[12] Fax dated February 7, 2003 from Sarah Drobis, Linscott Law and Greenspan.

[13] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.2-6. (see Appendix B)

[14] Nelson, P. M., "Transportation Noise Reference Book", Butterworths, Boston: 1987, p. 10/12, section 10.4.4.

3.2.2 Mechanical Equipment Noise Impact at Existing Residential and Park Areas

A second potential noise source is mechanical equipment. Similar to traffic noise impacts, the noise that would be generated by outdoor mechanical equipment in future homes on the project site (i.e., heat pumps, air conditioning units) was estimated at Locations A, B1, D and E. Typically, specific data regarding the proposed mechanical systems and equipment are not available until the actual building design progresses. However, typical single-family homes, such as future homes proposed on the project site, will likely use a "split system" that includes an outdoor heat pump in the range of 5 – 7.5 tons. The sound generated from a typical residential heat pump is estimated to be 72 dBA at a distance of about 3 feet from the unit. To estimate the combined noise impact of mechanical equipment operating at multiple homes in the proposed project, the sound from 6 heat pumps (representing the nearest future homes to each of the existing Residential Areas) was combined to determine the noise impact on the existing homes. The sound levels were adjusted according to the distances between the applicable proposed and existing homes. Section 3.2.3 incorporates the results of this analysis.

3.2.3 Summary of Operation-Related Noise at Residential and Park Areas

The project's operation-related noise impacts on Locations A, B1, D and E are summarized in Table 3. These operation-related noise levels include noise due to vehicular traffic (at both proposed onsite roads and existing offsite roads) and mechanical equipment. The project's operation-related noise levels are estimated to be less than the ambient noise levels and to increase the ambient sound level by a maximum of 1 dBA at all Locations. As discussed in Section 3.1.1 above, the proposed project would not have a significant noise impact with respect to project operations unless the ambient noise level increases by at least 3 dBA in CNEL. Since the maximum increase in ambient noise levels measured at Locations A, B1, D and E is only 1 dBA, the operations relating to the proposed project would not cause a significant noise impact on the existing communities. The operation-related noise calculations are shown in Appendix E.

Table 3: Project's Operational Noise Impacts on Existing Sensitive Uses

Location (Figure 2)	Noise Levels in CNEL					
	Existing Ambient Noise Levels (Table 2) (A)	Project-Related Noise			Future Ambient Noise Levels with Project (A + B + C)	Increase in Ambient Levels with Project
		Traffic Noise Levels (B)	Mechanical Noise Levels (C)	Cumulative Operational Noise Levels (B + C)		
A	68	60	16	60	69	1
B [a]	N/A	N/A	N/A	N/A	N/A	N/A
B1	58	44	16	44	58	0
C [a]	N/A	N/A	N/A	N/A	N/A	N/A
D	56	48	26	48	57	1
E	47	42	34	43	48	1
F [a]	N/A	N/A	N/A	N/A	N/A	N/A

[a] Operational noise levels are irrelevant at Locations B, C and F because they are not near any noise-sensitive areas (see Figure 2).

3.2.4 Traffic Noise at Areas Intersected by Offsite Roads

Offsite vehicular traffic relating to the proposed project's operation would also increase traffic noise on offsite roads. Since an increase in traffic volume is directly related to an increase in traffic noise, the increase in ambient sound levels can be calculated based on future traffic volumes with and without the project-related traffic. The future traffic volume without the project includes the existing traffic and the future traffic from other projects in the area. This traffic volume data at nearby offsite roads was provided by Linscott Law & Greenspan and is included in Appendix E.

Table 4 shows the change in traffic noise levels that will be expected due to the project-related increase in traffic volume at traffic intersections in the vicinity of the project site. Note that the highest change in noise due to project traffic is 1 dBA and is due to an increase in the existing PM peak volume at the intersection of Development Area A Access/ Interstate 210 Westbound Ramps and La Tuna Canyon Road. Since this is less than a 3-dBA increase, the minimum threshold for a significant noise impact, there would not be a significant noise impact from the additional traffic along roads in the vicinity of the project site.

3.3 Construction-Related Noise Impacts on Existing Noise-Sensitive Areas

In addition to operational noise, construction noise has the potential to cause a temporary noise impact on the existing Residential Areas and the park area south of La Tuna Canyon Road. These potential noise impacts from project-related construction activities are a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses and the timing and duration of the noise-generating activities. Noise levels within and adjacent to the project construction areas would increase during the construction period. However, construction activities would not cause long-term impacts since they would be temporary and usually limited to daytime hours.

3.3.1 Phases of Construction

Noise from the construction activities would be generated by vehicles and equipment involved in various stages of construction operations. It is anticipated that the total construction periods for the project would last approximately 60 months (beginning in 2004 and ending in 2009). This 60-month construction period can be divided into three major phases of construction: grading, foundation preparation/road building, and home building. Of these three phases, grading is expected to be the noisiest construction phase because more equipment is typically used during grading than in the other phases. Foundation preparation/road building is also expected to produce high noise levels because of the road preparation and paving process.

Table 4: Summary of Offsite Traffic Noise Impacts

Traffic Intersection	Traffic Volume, [a] (Vehicles/Hour) **AM Peak Hour / PM Peak Hour**				Change in Noise Levels (dBA)	
	Existing	Future (2009) Without Project	Future (2009) With Project	Additional Traffic Volume Due to Project	Existing to Future Without Project	Future Without Project to Future With Project
I-210 Eastbound Ramps and Sunland Boulevard	3066 / 2856	3550 / 3583	3561 / 3597	11 / 14	<1	<1
I-210 Westbound Ramps and Sunland Boulevard	4196 / 4140	4849 / 4835	4876 / 4854	27 / 19	<1	<1
I-210 Eastbound Off-Ramp and La Tuna Canyon Road	1224 / 1203	1398 / 1374	1466 / 1499	68 / 125	<1	<1
Development Area A Access/ I-210 Westbound Ramps and La Tuna Canyon Road	1017 / 785	1167 / 906	1356 / 1151	189 / 245	<1	1
Tujunga Canyon Boulevard and Foothill Boulevard	3005 / 3435	3667 / 4086	3700 / 4228	43 / 142	<1	<1
Tujunga Canyon Boulevard and La Tuna Canyon Road/Honolulu Avenue	2096 / 2265	2454 / 2656	2497 / 2712	43 / 56	<1	<1
Development Area B Access (West) and La Tuna Canyon Road	1168 / 1122	1332 / 1280	1365 / 1322	33 / 42	<1	<1
Development Area B Access (East) and La Tuna Canyon Road	1168 / 1122	1332 / 1280	1386 / 1350	54 / 70	<1	<1
I-210 Eastbound On-Ramp and La Tuna Canyon Road	1215 / 1189	1389 / 1360	1493 / 1493	104 / 133	<1	<1

[a] Source: Project Traffic Consultant, Linscott Law & Greenspan, March 2003

Of the 60-month total construction period, it is estimated that the grading process would last for approximately 19 months in Development Area A and 9 months in Development Area B. During this process, the construction equipment described below would be spread out over 25% to 30% of the project site at any given time.

It is anticipated that the grading process in Development Area A would require the following construction equipment[15]:

8 Cat 657 twin-diesels (scrapers)
4 Off-highway trucks
2 Cat loaders (front loader)
6 D-8/9/10s (tractors)
2 Water trucks
2 Water pulls
3 Rubber-tired dozers
1 Blade vehicle
1 Excavator (backhoe)
2 Finish tractors.

It is anticipated that the grading process in Development Area B would require the following construction equipment [15]:

6 Cat 657 twin-diesels (scrapers)
4 Off-highway trucks
2 Cat loaders (front loader)
4 D-9/10s (tractors)
2 Water trucks
1 Water pull
2 Rubber-tired dozers
2 Finish tractors.

Since the above-listed equipment would be spread out over at least 25% of the grading area at any given time, it would not all be used simultaneously in a single area (in this discussion, a localized construction area refers to approximately 6 lots that are grouped together around a cul-de-sac, with each lot having similar elevations). In addition, the grading process is progressive. That is, some equipment cannot be used in a construction area at the same time as other equipment. In order to accurately represent the maximum noise levels due to grading, the grading process was divided into four phases based on the recommendation of Crosby, Mead, Benton and Associates, the project engineer.

The first phase of grading would require the use of Cat 657 twin-diesels, off-highway trucks, Cat loaders, D-8/9/10s and water trucks[16]. This first phase of grading is expected to last for 7 and 5 months in Development Areas A and B, respectively. The second phase of grading is expected to consist of operation of the rubber-tired dozers. After the dozers, a blade vehicle would be used in Development Area A, comprising the third phase of grading. The fourth and final phase of grading is expected to consist of finish tractor operation.

It was conservatively assumed that 50% of the equipment used for each phase of grading equipment could operate simultaneously in one area during that grading phase. For example, 4 Cat 657 twin diesels, 2 off-highway trucks, 1 Cat loader, 3 D-8/9/10s and 1 water truck could

[15] Memo from Crosby, Mead, Benton and Associates, February 5, 2003.

[16] Telephone conversation with Ray Maciag of Crosby, Mead, Benton and Associates, March 4, 2003.

operate simultaneously in one area in Development Area A during the first phase of grading. For the foundation preparation/road building and home building phases of construction, the equipment was conservatively assumed to all run simultaneously. For all phases of construction, it was assumed that each piece of equipment would operate at its maximum noise level for 15 minutes out of one hour.

The first phase of grading is expected to be the loudest because it is expected to contain the highest number of simultaneously operating vehicles. Therefore, the noise levels for the grading process were assumed to remain constant at the maximum noise level produced during the first phase of grading. Because the grading is expected to consist of four phases, three of which are quieter than the first, this is a worst-case scenario that would not occur on a daily basis over the entire grading phase.

In addition, the construction equipment is estimated[17] to operate periodically in one localized area for about 4-7 days at a time followed by little or no construction activities in that area for about three weeks at a time. This study's assumptions conservatively represent the worst-case scenario, but general information regarding construction habits indicates that this worst-case scenario would happen infrequently and for short periods of time.

3.3.2 Construction Equipment Noise Levels

The noise levels created by construction equipment will vary depending upon factors such as the type of equipment, the specific model, the operation being performed and the condition of the equipment.

Table 5 sets forth the anticipated sound levels for the construction equipment provided by Crosby, Mead, Benton & Associates and listed in Section 3.3.1. These represent the lower levels from the range of construction-related sound levels provided in the City CEQA Thresholds Guide[18]. The lower levels are used because the construction sound levels in the City CEQA Thresholds Guide are based on sound levels published by the Environmental Protection Agency in 1971[19]. However, over the past 32 years, the noise generation from construction machinery has been reduced, so that it is appropriate to use sound levels at the lower end of the spectrum of sound levels that were measured in 1971.

[17] Telephone conversation with Ray Maciag of Crosby, Mead, Benton and Associates, April 8, 2003.

[18] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.1-8 (included in Appendix B).

[19] Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

Table 5: Construction Equipment Noise Emission Levels

Equipment [a]	Noise Level at 50 Feet from Source (dBA) [b]	Equipment [a]	Noise Level at 50 Feet from Source (dBA) [b]
Scraper	80	Water Pull	82
Off-Highway Truck	82	Dozer	75
Front Loader	73	Blade Vehicle	82
Tractor	77	Backhoe	73
Water Truck	82	Finish Tractor	77

[a] The equipment list was provided Crosby, Mead, Benton and Associates.
[b] Equipment noise levels above are the lower of a range of values in the City CEQA Thresholds Guide, Exhibit I.1-1 (see Appendix B).

3.3.3 Construction Noise Level Calculations

The construction noise impacts on the existing Residential Areas and the park area south of La Tuna Canyon Road were determined by estimating the noise levels at Locations A, B1, D and E using the methodology described in the City CEQA Thresholds Guide[20]. The sound levels at 50 feet (see Table 5) for each of the construction vehicles that would operate simultaneously were combined to produce an overall sound level at 50 feet for each of the three construction phases. The construction-related sound level at 50 feet was then used to determine the sound level due to construction at Locations A, B1, D and E based on the relative distances between each Location and the construction area closest to that Location. These distances are approximately 600 feet, 1600 feet, 500 feet and 250 feet for Locations A, B1, D and E, respectively. This analysis conservatively does not account for existing natural barriers (i.e., hills) between construction areas and the noise-sensitive areas.

The sound levels due to construction at Locations A, B1, D and E were then combined with the ambient sound levels measured in the field noise survey (Table 2). The result represents the cumulative noise (the ambient sound levels plus construction noise) at Locations A, B1, D and E during the project's construction. The increase in ambient sound level with construction noise is the ambient sound level with construction minus the ambient sound level without construction. The construction noise calculations are included in Appendix G.

3.3.4 Construction Equipment Noise Impact

Total noise levels at Locations A, B1, D and E (representing Residential Areas 1, 2 and 3 and the park area south of La Tuna Canyon Road) associated with all construction equipment operations, including onsite truck traffic, are shown in Table 6. As with operation-related noise, construction noise levels at receptor Locations B, C and F are not applicable because these receptors do not represent any Residential Areas near the project site.

Since Location A is 600 feet from the closest project construction, the noise levels during construction are estimated to be 62 dBA, 61 dBA and 58 dBA for grading, foundation

[20] City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.1-4 (included in Appendix B).

Table 6: Projected Maximum Total Noise Level Produced by Construction-Related Activities Including Onsite Peak Hour Truck Traffic

Sound Receiver Locations	Existing Daytime Ambient Noise Level (Average Leq, dBA)	Maximum Noise Levels, Leq dBA			Ambient Sound Levels with Construction Noise Levels, Leq dBA			Increase in Noise Levels Relative to Existing Background Noise Levels, dBA		
		Site Grading	Foundation preparation / Road building	Home Building	Site Grading	Foundation preparation / Road building	Home Building	Site Grading	Foundation Preparation / Road building	Home Building
A	66	62	61	58	67	67	67	1	1	1
B [a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B1	56	53	53	49	58	58	57	2	2	1
C [a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D	54	64	63	59	65	63	60	11	9	6
E	46	70	69	65	70	69	65	24	23	19
F [a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[a] Construction noise levels at Locations B, C and F are irrelevant as Locations B, C and F do not represent noise-sensitive land uses (see Figure 2)

preparation/road building and home building, respectively. Although, these sound levels are less than the existing daytime ambient noise level of 66 dBA, the cumulative (ambient plus construction noise) increase in ambient sound level is only 1 dBA for each of the construction phases. As discussed above, a significant impact with respect to construction activities requires a minimum of 5 dBA increase in ambient sound levels, so there is not a significant noise impact on Location A due to construction activities.

Location B1, which represents the park area south of La Tuna Canyon Road, is 1600 feet from the closest project construction. The noise levels during construction are estimated to be 53 dBA for grading and foundation preparation/road building and 49 dBA for the home building phase. These sound levels are less than the estimated existing daytime ambient noise level of 56 dBA, so the maximum increase in ambient sound level due to construction is only 2 dBA. This increase in ambient levels is less than the 5 dBA minimum increase in ambient sound levels that constitutes a significant impact. Therefore, a significant noise impact is not anticipated at Location B1 due to construction activities.

At Location D, the construction-related noise levels are estimated to be 64 dBA, 63 dBA and 59 dBA during the three construction phases. These levels are higher than those of Location A and B1 because Location D is only 500 feet from the closest construction area. In addition, the ambient noise level at Location D is 54 dBA, lower than Locations A and B1 because it is further removed from Interstate 210. As a result, Location D is estimated to experience temporary ambient sound level increases of 11, 9 and 6 dBA during site grading, foundation preparation/road building and home building, respectively. These sound level increases are expected to continue for more than 10 days in a three month period, so a significance threshold of 5 dBA is appropriate. Therefore, Location D is expected to experience a significant, albeit temporary, noise impact for the time periods during each of the three construction phases when construction activities are occurring in areas near Location D.

Location E is expected to experience the most significant construction-related noise impact because it is both closer to construction and further from Interstate 210. At 250 feet from construction, construction-related noise levels at Location E are estimated at 70 dBA, 69 dBA and 65 dBA, respectively, for site grading, foundation preparation/road building and home building. Since the existing ambient noise level is 46 dBA L_{eq}, construction is expected to increase the ambient noise level by 24 dBA, 23 dBA and 19 dBA for the time periods during each of the three construction phases when construction activities are occurring in areas near Location E. This is a significant, albeit temporary, noise impact to Location E. These noise level increases are higher than those for Location D because of the low ambient noise levels at this Location.

These estimated noise levels would not occur during the entire construction period. Instead, these are the maximum noise levels that are anticipated at these noise-sensitive Locations when the busiest construction activities are occurring at the construction areas nearest these Locations. As stated in Section 3.3.1, general information regarding construction habits indicates that this worst-case scenario would happen infrequently (about once a month) and for short periods of time (a few days at a time).

3.3.5 Other Potential Construction Noise Impacts

As indicated in the project geotechnical report[21], the majority of the site grading can be excavated without the use of blasting techniques (i.e., using normal construction machinery). However, due to the potential variability of the onsite bedrock conditions, the use of explosive

[21] "Geotechnical Evaluation, Canyon Hills Project, City of Los Angeles, California", Zeiser Kling Consultants, Inc., March 24, 2003.

materials may be required for grading purposes in small, localized areas. The purpose of the blasting technique is to split rocks for ease of excavation. Based on measured blast noise levels from the Bureau of Mines[22], noise generated by blasting can range from 115 dB to 136 dB (linear peak sound levels measured at approximately 200 feet from the operation) and typically lasts a fraction of a second. Based on very preliminary and limited data provided by the project geotechnical consultant, Zeiser Kling Consultants (fax dated 3/703 and included in Appendix F), blasting may occur in a few localized areas, the closest of which are about 1600 feet from Locations A, D and E and 2200 feet from Location B1. If blasting were to occur, the noise level due to blasting would range from approximately 93 dB to 114 dB (linear peak sound level) at Locations A, D and E and from 89 dB to 110 dB (linear peak sound level) at Location B1. This blast noise level can be compared with reference to the Bureau of Mines' recommended noise standard, which is 128 dB (linear-peak) and the California Occupational Safety and Health Regulations permissible occupational noise exposure, which is 140 dB (linear-peak)[23, 24]. The estimated blasting sound levels are expected to be well below these published maximum allowable exposure limits.

In summary:

- The noise due to blasting would last for a very short duration (a fraction of a second).
- The closest home is 1600 feet from the nearest expected blast location, resulting in greater than 20 dBA reduction due to distance alone.
- If blasting were to occur, it would occur infrequently.
- Estimated blast noise levels would be below published exposure limits.

Based on the above information and based on our experience, the potential blasting that may occur in small, localized areas does not constitute a significant impact.

Construction haul trucks and other large trucks are anticipated to access the site via La Tuna Canyon Road. As the traffic data (provided by Linscott Law & Greenspan and contained in Appendix D) indicates, the existing peak hour a.m. traffic volume on La Tuna Canyon Road is about 1,180 vehicles per hour. If two times the number of all expected construction vehicles were to access the site simultaneously in one hour (increasing the existing volume of 1,180 vehicles per hour to 1,280 vehicles per hour), this traffic would result in a noise increase of less than 1 dBA. Since 1 dBA is less than the 5-dBA significant threshold for construction noise, construction-related traffic would not have a significant impact on the existing traffic-generated noise environment.

3.3.6 Cumulative Construction Noise Impacts

The Traffic Impact Study prepared by Linscott, Law & Greenspan for the proposed project includes a list of 13 related projects in the general vicinity of the project site. It is possible that the construction of one or more of those related projects could overlap with the construction of the proposed Canyon Hills project. If overlapping construction did occur, it is possible that the construction noise associated with those overlapping construction activities could be

[22] U.S. Department of the Interior, Bureau of Mines Environmental Research Program, Technical Progress Report 78, Blast Noise Standards and Instrumentation, May 1974

[23] Siskind, David E. and Charles R. Summers, "Blast Noise Standards and Instrumentation", Bureau of Mines Environmental Research Program, Technical Progress Report 78, U.S. Department of the Interior, May 1974.

[24] California Code of Regulations, Title 8, Section 5096. Exposure Limits for Noise.

simultaneously audible at one or more of the noise-sensitive Locations described above. In that event, a cumulative construction noise analysis would be required.

Of the 13 related projects described in the Traffic Impact Study, only one of them – the potential Duke project – is located close enough to the project site to potentially cause cumulative construction noise impacts. The other 12 related projects are at least 2500 feet from the proposed Canyon Hills project and are further shielded by natural topography. Based on distance alone, construction noise from these projects, were they to occur simultaneously, would not have a cumulative impact at any of the noise-sensitive Locations.

The Duke property is located north and east of Development Area A (see Figure 2). According to the Los Angeles City Planning Department, the vesting tentative tract map (VTTM 48754) for the Duke project was approved by the City on December 10, 2001 and permits 10 homes[25]. The only noise-sensitive Location in proximity to the Duke property is Location D. All other noise-sensitive Locations (A, B1, and E) are at least 3500 feet from the proposed Duke project.

Location D is approximately 500 feet from the nearest construction area in the Canyon Hills project site and approximately 2000 feet away from the anticipated location of construction activities on the Duke project site. Assuming conservatively that the construction noise levels in the Duke project are similar to those of the Canyon Hills project, the noise increase at Location D due to the additional construction noise associated with the Duke project would be less than 1 dBA. In addition, the proposed homes in the Duke project are planned to be built 50 feet downhill from the top of a ridgeline that runs between the Duke project and Residential Area 2. This topographical barrier would provide additional sound attenuation between the potential Duke project construction and Residential Area 2.

For all of the foregoing reasons, it is not anticipated that any cumulative construction noise impacts would occur with respect to the proposed project.

3.3.7 Summary of Construction-Related Noise Impacts

In summary, construction activities are expected to have a temporary significant impact on Locations D and E. It is likely that there would be no significant construction noise impact on Locations A and B1. In addition, blasting is unlikely to occur and, if it does occur, it is expected to generate noise levels within OSHA limits at the nearby noise-sensitive areas. In our experience, it would not constitute a significant impact. Also, the slight construction-related traffic volume increase on La Tuna Canyon Road is not estimated to have a significant noise impact on any noise-sensitive areas. Finally, no cumulative construction noise impacts are anticipated.

4. EXISTING ENVIRONMENT'S NOISE IMPACT ON PROPOSED HOMES

In addition to considering the operational and construction noise impacts on existing noise-sensitive land uses, the impact of the existing noise environment on the proposed homes was also analyzed. This existing environment is dominated by traffic noise generated by Interstate 210.

[25] Telephone conversation with Los Angeles City Planning Department, Subdivisions Section, April 16, 2003.

4.1 Noise Standard

Caltrans defines the Noise Abatement Criteria (NAC) for residential land use to be an exterior noise level of 67 dBA hourly L_{eq}.[26] This noise standard is used by Caltrans to determine when to build sound walls to acoustically protect sensitive land uses from traffic noise. For example, Caltrans would build a sound wall between a highway and a residential area when the residential land use is estimated to experience an exterior noise level of 67 dBA L_{eq} or more.

4.2 Interstate 210 Noise Impact on Proposed Homes

A calibrated noise prediction model was employed to determine whether the proposed homes closest to Interstate 210 required mitigation with respect to vehicular noise on Interstate 210 and, if so, to develop that noise mitigation. The noise prediction computer model is described in Section 4.2.1 and the resulting noise levels at the closest proposed homes are discussed in Section 4.2.2.

4.2.1 Noise Prediction Computer Model

The "Sound 2000[27]" Caltrans noise prediction computer model (another Caltrans traffic noise computer model in addition to LEQV2, which was used to determine traffic noise levels affecting existing noise-sensitive areas) was utilized to predict Interstate 210 traffic-generated noise levels at several onsite sound receptors, each representing future residential homes within the proposed project. These computations were based on the following information:

- Traffic volume, speed and fleet mix (i.e., percentage of autos, medium trucks and heavy trucks)
- Roadway, barrier and sound receptor geometry
- Number of traffic lanes.

The input and output files for Sound 2000 are included in Appendix H.

The traffic lane segments, natural topographical barriers (ridges and hills), receptor Locations and recommended sound wall locations are introduced through longitudinal distances and grade elevations obtained through review of the project AutoCAD drawings for "280 Lots Conceptual Grading Plan of Canyon Hills" prepared by Templeton Planning Group and dated on 12/19/02. The selected noise receptors, proposed sound walls locations and existing natural sound barriers that were input into the traffic model are shown in Figure 3.

The computer traffic noise model was calibrated based on noise measurements recorded at noise monitoring Locations C and F, which were chosen because Location C is relatively far from Interstate 210 and Location F is the closest measurement Location to Interstate 210. In both Locations, the noise environment is dominated by Interstate 210 traffic noise. As indicated in Table 1, both measurement Locations C and F have direct line of sight to Interstate 210. The computer model's predicted sound levels due to the existing traffic conditions were consistent with that measured at Locations C and F to within 1 dBA. The sound prediction model is considered accurate when the calibration level is within $\pm$ 3 dBA. Less than 3-dBA variation is

[26] Caltrans Project Development Procedures Manual, Chapter 30 - Highway Traffic Noise Abatement, 7/1/99, p. 30-13.

[27] Sound 2000 is an interface improvement over Sound32 traffic noise model. Calculation procedures are based on Sound32 traffic noise model, which is one of the recommended traffic noise models per City CEQA Thresholds Guide.

expected due to anticipated percentage of error associated with the input data, such as road geometries, traffic volume and fleet mix, etc

4.2.2 Interstate 210 Traffic Noise Levels

As shown in Figure 3, 14 noise receptors were inputted into the Caltrans noise model "Sound 2000". These 14 noise receptors were designated as sound receptors R1 through R14 and range between 150 feet and 700 feet from the centerline of Interstate 210. These receptors were positioned over the most noise-sensitive lots in each group of potential homes that are within 700 feet of the centerline of Interstate 210. Each noise receptor represents several homes in its general vicinity.

Of these 14 receptors, the 5 receptors (R1, R2, R4, R7 and R8) that were distanced from the centerline of Interstate 210 by at least 500 feet were all estimated to experience sound levels below the Caltrans criteria[28,29] of 67 dBA Leq. Based on this data, a 67-dBA contour (Figure 3) was estimated to exist at a distance of 500 feet from the centerline of Interstate 210. Any proposed homes outside this contour would meet the Caltrans noise criteria without additional noise mitigation measures. The 20 proposed homes (out of 280 proposed homes) inside this 67-dBA noise contour are represented by the 9 receptors R3, R5, R6 and R9 through R14.

Table 7 shows the predicted Interstate 210 traffic noise levels at R1 through R14. Without noise mitigation (i.e., sound walls), receptors R3, R5, R6 and R9 through R14 would all experience sound levels higher than 67 dBA. With the recommended sound walls shown on Figure 3, all receptors except R10 through R12 would meet the Caltrans sound criterion of 67 dBA. The recommended 16-foot high sound walls (B8 and B9) shown on Figure 3 would not be sufficient to meet the Caltrans standard at R10 through R12 due to the existing topography and because it is infeasible to construct the significantly higher sound walls that would be required to meet the Caltrans sound criterion.

If the recommended sound walls were placed directly adjacent to receptors R10 through R12 (as with receptors R13 and R14), the required sound reduction could be achieved. However, this is not possible under the current site plan because sound walls in that location would prevent vehicular access to those proposed homes. In order to meet Caltrans sound criterion at receptors R10 through R12, the proposed site plan would have to be modified. Potential solutions include re-designing the access road so that a sound wall can be placed directly adjacent to R10 through R12, moving the proposed homes on lots R10 through R12 further from Interstate 210 or eliminating the proposed homes at those three locations.

[28] C.S. Klein, Captain of Altedena Area Department of California Highway Patrol, letter to Maya Zaitzevsky, dated October 4, 2002

[29] Caltrans Project Development Procedures Manual, Chapter 30 - Highway Traffic Noise Abatement, 7/1/99, p. 30-13.

Barrier Designation	Recommended Sound Barrier Length (feet)	Recommended Sound Barrier Height (feet)
B1	150	6
B2	100	6
B3	200	6
B4	250	8
B5	200	8
B6	200	8
B7	300	8
B8	200	16
B9	550	16
B10	250	8

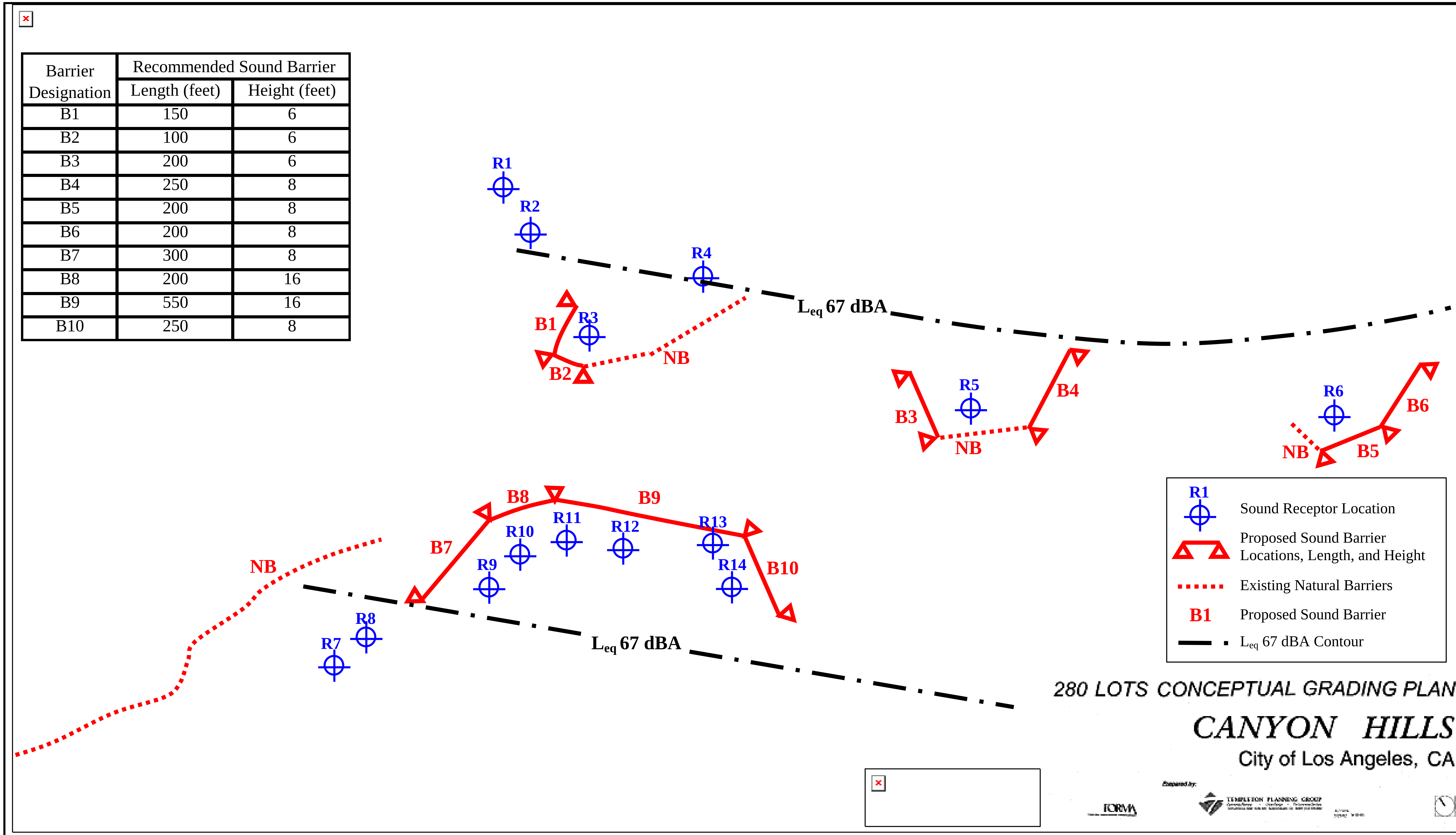


Figure 3: Receptors and Barriers Used in Traffic Model

Table 7: Sound Wall Analysis Based on Interstate 210 Traffic Noise

Sound Receptor (Figure 3)	Recommended Sound Wall (Figure 3) [a]	Interstate 210 Traffic Noise Level at Selected Residential Lots Nearest to Interstate 210, L_{eq} in dBA		Interstate 210 Traffic Noise Levels with Respect to Caltrans Criteria of 67 dBA	
		Without Sound Walls	With Sound Walls	Without Sound Walls	With Sound Walls
R1	NB	61	61	Meets Criteria	Meets Criteria
R2	NB	63	63	Meets Criteria	Meets Criteria
R3	B1 & B2	70	64	Exceeds Criteria by 3 dBA	Meets Criteria
R4	NB	66	66	Meets Criteria	Meets Criteria
R5	B3 & B4	71	67	Exceeds Criteria by 4 dBA	Meets Criteria
R6	B5 & B6	69	67	Exceeds Criteria by 2 dBA	Meets Criteria
R7	NB	62	63	Meets Criteria	Meets Criteria
R8	NB	65	64	Meets Criteria	Meets Criteria
R9	B7	67	67	Meets Criteria	Meets Criteria
R10	B7 & B8	69	68	Exceeds Criteria by 2 dBA	Exceeds Criteria by 1 dBA
R11	B8 & B9	71	69	Exceeds Criteria by 4 dBA	Exceeds Criteria by 2 dBA
R12	B9	75	70	Exceeds Criteria by 8 dBA	Exceeds Criteria by 3 dBA
R13	B9 & B10	79	65	Exceeds Criteria by 12 dBA	Meets Criteria
R14	B10	75	64	Exceeds Criteria by 8 dBA	Meets Criteria

[a] NB denotes Natural Barrier (existing landscape)

5. MITIGATION MEASURES

5.1 Measures to Protect Existing Noise-Sensitive Areas

5.1.1 Operational

There are no significant noise impacts relating to the proposed project's operation, so no operational mitigation measures are required.

5.1.2 Construction

There are significant, albeit temporary, noise impacts at Locations D and E (representing existing Residential Areas 2 and 3) during each of the construction phases during the time when construction equipment is operating in areas near these Locations. There is not a significant noise impact expected due to construction truck traffic of on existing roads in the areas surrounding the project site. Also, blasting-related sound levels (if blasting does occur) are expected to be infrequent and within safe limits, and therefore not significant.

The following noise control measures are recommended for implementation in order to minimize the significant impact at the Residential Areas 2 and 3 during the construction of the proposed project. Due to the quiet ambient conditions in these Residential Areas, the following mitigation measures are unlikely to reduce construction noise to a level of insignificance at these sensitive noise receptors. The goal of this noise mitigation plan is to provide the most effective and practical techniques for controlling construction noise emissions.

1. In accordance with LAMC Section 41.40(a)[30], construction activities, including job-site deliveries, shall be limited to the hours of 7:00 a.m. to 9:00 p.m.
2. In accordance with LAMC Section 41.40(c)[31], construction activities, including job-site deliveries, shall not be conducted within 500 feet of any existing residential buildings before 8:00 a.m. or after 6:00 p.m. on Saturday or any national holiday.
3. Prohibit use of adjoining residential streets by construction personnel and construction-related vehicles for parking.
4. An area should be designated as far from residential areas as feasible for the delivery of materials and equipment to site.
5. Stage deliveries to occur from mid-morning to mid-afternoon, where feasible, to take advantage of times when residential zones are less susceptible to annoyance from outside noise.
6. Coordinate deliveries to reduce the potential of trucks waiting to unload for protracted periods of time.
7. All construction equipment shall be equipped with the manufacturers' recommended noise muffling devices, such as mufflers and engine covers. These devices should be kept in good working condition throughout the construction process.

---

[30] City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 41.40, Rev. No. 63 – 1996.

[31] City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 41.40, Rev. No. 63 – 1996.

8. To the extent feasible, hydraulic equipment instead of pneumatic impact tools and electric powered equipment instead of diesel powered equipment shall be used for exterior construction work.
9. Maintaining equipment in an idling mode shall be minimized. All equipment not in use shall be turned off.
10. For smaller equipment (such as, air-compressors and small pumps), line-powered equipment shall be used to the extent feasible.
11. The project developer shall appoint a construction coordinator to interface with the general contractor and neighboring communities. The construction coordinator shall be accessible to resolve problems related to the effects of project construction on the surrounding community, to the extent feasible. The construction coordinator shall also provide information to the surrounding community regarding scheduling of specific construction activities (e.g., grading) and construction phasing.

5.2 Measures to Protect Proposed Homes

1. In order to meet Caltrans standards regarding freeway noise, sound walls shall be constructed at the locations and heights shown in Figure 3.
2. With these sound walls, 277 of the 280 homes will be meet the Caltrans standard. Sound levels at the remaining three residences (R10 through R12 in Figure 3) close to Interstate 210 cannot be sufficiently lowered with sound walls to satisfy Caltrans standards because the proposed site plan does not allow for sound wall placement directly adjacent to R10 through R12. As such, it is recommended that the proposed homes on R10 through R12 be eliminated from the site plan unless the site plan is modified so that compliance with the Caltrans sound criterion is possible. Potential modifications include the following:
    - Moving the proposed lots on R10, R11 and R12 further from Interstate 210
    - Re-designing the access road so that sound walls can be placed closer to R10, R11 and R12
3. The project design and construction will incorporate all applicable building codes that relate to building sound insulation, including appropriate use of double-glazed windows, etc.

APPENDIX A

Glossary of Acoustic Terms

A-WEIGHTED SOUND LEVEL. The most generally used measure of noise as it relates to human judgment of sound. It is defined as the sound level, in decibels, measured with a sound level meter set to an A-weighting network, as specified in American National Standard Specifications for Sound Level Meters. It is common practice to refer to the numerical units of an A-weighted sound level as “dBA”. The A-weighted network approximates the way the human ear hears different frequency sounds. Low frequency sounds are harder for the ear to hear than higher frequency sounds, therefore, a low frequency sound will have a lower level when measured using A-weighting (dBA) than it would without the weighting (dB).

ADDITION OF SOUND LEVELS. Sound levels in decibels are logarithmic quantities and do not follow normal algebraic rules for addition. Instead, the sound levels in decibels are first converted to energy equivalents, the energy equivalents are added algebraically, and then the total energy equivalent is converted back to its decibel values.

The formula for addition of sound levels is:

$$SoundLevel(total) = 10x\log\left(\sum_{i=1}^{n} 10^{L_1/10}\right)$$

where: L_i = individual component sound level in dBA

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. That is, the existing level of noise in a space or at a specific location in the environment.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). CNEL is a rating of the 24-hour average noise level in an environment which accounts for peoples increased annoyance to noise occurring in the evening and nighttime hours. It is the average equivalent A-Weighted sound level during a 24-hour day, calculated after adding five (5) decibels to sound levels which occur in the evening after 7 p.m. and before 10p.m., and ten (10) decibels to sound levels which occur in the night after 10 p.m. and before 7 a.m.

dB (DECIBEL). A unit of measure of sound pressure, which compresses a large range of numbers into a more meaningful scale. Hearing tests indicate that the lowest audible pressure is approximately 2 x 10^{-5} Pascals (0 dBA), while the sensation of pain is approximately 2 x 10^{2} Pascals (0 dBA), while the sensation of pain is approximately 2 x 10^{2} Pascals (140 dB). Generally, an increase of 10 dB is perceived as twice as loud.

$$Sound\ \mathrm{Pr}\ essureLevel(dB) = 10\log\left(\frac{p^2}{p_o^2}\right)$$

$$Sound\ \mathrm{Pr}\ essureLevel(dB) = 20\log\left(\frac{p}{p_0}\right)$$

p= root-mean-square sound pressure (Pascals)
p_0= reference root-mean-square sound pressure, generally 2 x 10^{-5} Pascals.

People judge the relative magnitude of sound sensation by subjective terms such as “loudness” or “noisiness.” Table A1 presents the subjective effect of changes in sound pressure level.

Change in Sound Pressure Level, dB (Increase or Decrease)	Change in Apparent Loudness (Subjective Ratings)
± 3	Just perceptible
± 5	Clearly noticeable
± 10	Half or twice as loud
± 20	Much quieter or louder

Source: Engineering Noise Control, Bies and Hansen, 1988

Table A1: Subjective Effect of Changes in Sound Pressure Level

EQUIVALENT SOUND LEVEL (L_{eq}). L_{eq} is the average sound level in an environment where the sound level changes, however, the L_{eq} is not a simple arithmetic average of the sound level over time, but is a logarithmic average. L_{eq} is the “energy” average noise level over a period of time. L_{eq} can be measured for any time period, but is typically measured for some increment or fraction of an hour such as 15 minutes, 1 hour or 24-hours.

NOISE ATTENUATION. Noise reduction. The ability of a material, substance or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

RECEIVERS. The location at which noise levels are computed and analyzed. Also referred to a as the observer.

SOUND LEVEL METER. An instrument designed and calibrated to respond to sound and to give objective, reproducible measurements of sound pressure level. It normally has several features that would enable its frequency response and average times to be changed to make it suitable to simulate the response of the human ear.

ArupAcoustics

APPENDIX B

Selections from the Draft L.A. CEQA Thresholds Guide

construction activities would occur within 500 feet of a noise sensitive use or during the hours specified in the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use;

- Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use; or

- Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at anytime on Sunday.

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification of noise sensitive land uses within 500 feet of the project site, including description, location, and distance from the project; and

- Quantification of ambient noise levels (existing and projected at the time of construction) measured in CNEL.

One of the following methodologies can be used to determine ambient noise levels:

- Field measurements involving the use of a noise meter at and surrounding the project site;
- "Presumed Ambient Noise Levels," as set forth in the LAMC, Section 111.03 (see Exhibit I.1-3); or
- A noise monitoring program performed according to the procedures set forth in the LAMC, Sections 111.02 and 112.05. This involves taking measurements at selected locations to establish ambient background noise levels.

<u>Project Impacts</u>

Review the description of the proposed project, including the duration of construction activities. Identify the type, amount, and scheduling of construction equipment to be used during each construction phase, and the distance from construction activities to noise sensitive uses.

Calculate the noise emissions from individual equipment by using the noise levels shown in Exhibits I.1-1 and I.1-2, or other applicable references, the distance to the noise sensitive uses, and noise attenuation standards. Noise models may be used, as appropriate. Noise levels 50 feet from a source decrease by approximately 3 dBA over a hard, unobstructed surface, such as asphalt, and by approximately 4.5 dBA over a soft surface, such as vegetation. For every doubling of distance thereafter, noise levels drop another 3 dBA over a hard surface and 4.5 dBA over a soft surface. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of emissions as that shown in Exhibit I.1-1.

Determine the combined noise levels from equipment that will be operated simultaneously. Noise levels measured in decibels increase logarithmically and cannot be added arithmetically. When transmission path topography between the construction noise source and the receptor location is complex, consult an experienced noise specialist, as necessary.

Establish the change in noise level from construction activities at the location of sensitive receptors. Subtract the projected noise level without construction equipment from the projected noise level during construction activities. Considering the number of days various noise levels are projected, determine whether construction activities would exceed both the number of days, times of day, and dBA increases in the Significance Threshold.

<u>Cumulative Impacts</u>

Exhibit I.1-1
NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT

Equipment	Levels in dBA at 50 feet[a]
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Cranes (derrick)	86-89
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Back Hoe	73-95
Pile Driving (peaks)	95-107
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88

[a] Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of emissions as that shown in this table.

Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

D. Evaluation of Screening Criteria

Review the description of the proposed project and the project traffic study to determine the size of each land use involved, information on stationary noise sources such as machinery or motorized equipment, and the vehicle trips that would be generated by the project. F.1. INTERSECTION CAPACITY explains how to calculate the number of average daily vehicle trips.

Determine the noise level from stationary sources at the property line by evaluating the decibel output of each source, the distance to the property line and the path over which the sound travels. Use an applicable noise model, as needed. In general, at a distance of 50 feet from the source over a hard surface, the decibel level decreases by 3 dBA, and over a soft surface (such as grass) the decibel level decreases by 4.5 dBA. For every doubling of distance thereafter, noise levels drop another 3 dBA over a hard surface and 4.5 dBA over a soft surface.[5]

Compare this information to the Screening Criteria.

2. DETERMINATION OF SIGNIFICANCE

A. Significance Threshold

A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the "normally unacceptable" or "clearly unacceptable" category, or any 5 dBA or greater noise increase (see the chart below).

	Community Noise Exposure CNEL, db			
Land Use	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging - Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters	-	50 - 70	-	above 65

5 *Federal Highway Administration (FHWA), Highway Traffic Noise Prediction Model (FHWA R77-108), 1978.*

Sports Arena, Outdoor Spectator Sports	-	50 - 75	-	above 70
Playgrounds, Neighborhood Parks	50 - 70	-	67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	-	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	-
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	-

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health Services (DHS).

B. Methodology to Determine Significance

Environmental Setting

In a description of the environmental setting, include the following information:

- Identification of surrounding land uses, including description, location and distance from the project; and

- Quantification of ambient noise levels (existing and projected at the time of project occupancy) measured in CNEL.

One of the following methodologies can be used to determine ambient noise levels:

- Field measurements involving the use of a noise meter at and surrounding the project site;

Mobile Vehicular Sources

Review the project description, determine the number of vehicle trips to be generated by the project, and distribute the trips on the street system (use the traffic study or methodology described in F.1. INTERSECTION CAPACITY). Determine the characteristics of the noise transmission pathway. Using a mobile noise prediction model, project the future exterior ambient noise levels for these streets with and without the proposed project. Base the selected noise model on the Federal Highway Administration (FHWA) highway noise prediction procedures described in FHWA-77-108 or the most recent revision. The City of Los Angeles recommends the use of either LEQV2 or SOUND32 prediction models as developed by California Department of Transportation (Caltrans). LEQV2 requires the following information: (a) traffic volumes, (b) roadway, barrier and receiver geometry, (c) vehicle speed, (d) number of lanes, (e) fleet mix, and (f) drop-off rates. It uses angles, distances and elevations to define source-receptor spatial relationships. SOUND32 requires the following information: (a) traffic volumes, (b) roadway, barrier and receiver geometry, and (c) drop-off rates. This model uses a three dimensional coordinate system to define source-receptor spatial relationships.

If monitoring was used to quantify existing noise levels, use existing traffic conditions (volumes, roadway geometry, etc.) to model the existing noise levels. A comparison of monitored existing noise levels and modeled existing noise levels can be used to calibrate the modeling resulting.

To determine the change in noise level, subtract the projected noise level on the selected roadways without the project's traffic-generated noise from the projected noise level, including the project's traffic-generated noise. Use the chart in the Significance Threshold to determine the significance of the difference.

Noise levels increase approximately 3 dBA for each doubling of roadway traffic volume, assuming that the speed and fleet mix remain constant. A change in vehicle speed can also change noise levels. If vehicle speed and fleet mix can be assumed to remain constant after project implementation, and the project would result in traffic that is less than double the existing traffic, then the project's mobile noise impacts can be assumed to be less than significant.

For a program-level analysis where project details are unknown, assume the full buildout of allowable land use and density. Use the methodology above to determine program-generated noise increases.

ArupAcoustics

APPENDIX C

LEQV2 Traffic Noise Program Output Files

```
                   * * * * * *  LEQV2 * * * * * *
                  San Fransisco Highway Traffic Noise
                           Prediction Program
                    Model Version 2.5  February 1985
                    (Calif. Vehicle Emissions Added)
                        Based on FHWA-RD-77-108

Title: Location A Daytime
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

---------------------------------
 1. Auto Volume                214
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               50
 5. Dist. to CTR. Near Lane     25
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
---------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
---------------------------------
NO BARRIER   TOTAL LEQ = 65 DBA  (APPROX. L10 67 DBA)

---------------------------------
WARNING: ANSWERS MAY NOT BE VALID FOR:
         DISTANCES LESS THAN 50 FT (15 M)

Title: Location A Daytime
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
---------------------------------

NO BARRIER

       Leq Auto              64.82
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        64.82
---------------------------------
 Title: Location A Evening
Date: 02-07-2003
```

```
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 29
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               50
 5. Dist. to CTR. Near Lane     25
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 56 DBA  (APPROX. L10 51 DBA)

----------------------------------
WARNING: ANSWERS MAY NOT BE VALID FOR:
         DISTANCES LESS THAN 50 FT (15 M)



Title: Location A Evening
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              56.14
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        56.14
----------------------------------
```

```
Title: Location A Nighttime
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 30
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               50
 5. Dist. to CTR. Near Lane     25
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 56 DBA  (APPROX. L10 52 DBA)

----------------------------------
WARNING: ANSWERS MAY NOT BE VALID FOR:
         DISTANCES LESS THAN 50 FT (15 M)


Title: Location A Nighttime
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              56.29
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        56.29
----------------------------------
```

```
Title: Location B1 Daytime
Date: 03-28-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                527
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    500
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 49 DBA  (APPROX. L10 51 DBA)

----------------------------------


Title: Location B1 Daytime
Date: 03-28-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              49.33
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        49.33
----------------------------------
```

```
Title: Location B1 Evening
Date: 03-28-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 74
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    500
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 41 DBA  (APPROX. L10 44 DBA)

----------------------------------


Title: Location B1 Evening
Date: 03-28-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              40.81
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        40.81
----------------------------------
```

```
Title: Location B1 Nighttime
Date: 03-28-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 72
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    500
 6. Roadway Angle, Left        -85
 7. Roadway Angle, Right        85
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 41 DBA  (APPROX. L10 44 DBA)

----------------------------------

Title: Location B1 Nighttime
Date: 03-28-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              40.69
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        40.69
----------------------------------
```

```
 Title: Location D Daytime
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                1426
 2. Medium Truck Volume           0
 3. Heavy Truck Volume            0
 4. Vehicle Speed                30
 5. Dist. to CTR. Near Lane     350
 6. Roadway Angle, Left         -55
 7. Roadway Angle, Right         45
 8. Drop-Off Rate                 3
 9. Number of lanes               1
10. Grade Correction              0
11. Dist. to Shoulder/Cut         0
12. Height of Shoulder/Cut        0
13. Distance to Barrier         100
14. Barrier Type                  1
15. Height of Barrier            55
16. Barrier Angle, Left         -55
17. Barrier Angle, Right         45
18. Height of Observer           60
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 53 DBA  (APPROX. L10 55 DBA)

WITH BARRIER TOTAL LEQ = 38 DBA  (APPROX. L10 39 DBA)

FIELD INSERTION LOSS =  15
----------------------------------



Title: Location D Daytime
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto               52.90
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS         52.90
----------------------------------

WITH BARRIER


 BARRIER SEGMENT
  Barrier Atten. Auto       -15.40
```

```
 Barrier Atten. Med. Trks  -14.97
 Barrier Atten. Hvy. Trks  -13.86

     11.5 ft. Truck Stack
     Line-of-sight break     8.9

      Leq Auto               37.51
      Leq Med. Trucks
      Leq Heavy Trucks

      ELEMENT TOTALS         37.51
----------------------------------
```

```
Title: Location D Evening
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                197
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    350
 6. Roadway Angle, Left        -55
 7. Roadway Angle, Right        45
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier        100
14. Barrier Type                 1
15. Height of Barrier           55
16. Barrier Angle, Left        -55
17. Barrier Angle, Right        45
18. Height of Observer          60
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 44 DBA  (APPROX. L10 47 DBA)

WITH BARRIER TOTAL LEQ = 29 DBA  (APPROX. L10 32 DBA)

FIELD INSERTION LOSS =  15
----------------------------------



Title: Location D Evening
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              44.31
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        44.31
----------------------------------

WITH BARRIER


 BARRIER SEGMENT
  Barrier Atten. Auto       -15.40
```

```
 Barrier Atten. Med. Trks  -14.97
 Barrier Atten. Hvy. Trks  -13.86

     11.5 ft. Truck Stack
     Line-of-sight break     8.9

      Leq Auto              28.91
      Leq Med. Trucks
      Leq Heavy Trucks

      ELEMENT TOTALS        28.91
----------------------------------
```

```
Title: Location D Nighttime
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                196
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    350
 6. Roadway Angle, Left        -55
 7. Roadway Angle, Right        45
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier        100
14. Barrier Type                 1
15. Height of Barrier           55
16. Barrier Angle, Left        -55
17. Barrier Angle, Right        45
18. Height of Observer          60
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 44 DBA  (APPROX. L10 47 DBA)

WITH BARRIER TOTAL LEQ = 29 DBA  (APPROX. L10 32 DBA)

FIELD INSERTION LOSS =  15
----------------------------------



Title: Location D Nighttime
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              44.28
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        44.28
----------------------------------

WITH BARRIER


 BARRIER SEGMENT
  Barrier Atten. Auto       -15.40
```

```
 Barrier Atten. Med. Trks  -14.97
 Barrier Atten. Hvy. Trks  -13.86

     11.5 ft. Truck Stack
     Line-of-sight break     8.9

      Leq Auto              28.89
      Leq Med. Trucks
      Leq Heavy Trucks

      ELEMENT TOTALS        28.89
----------------------------------
```

```
Title: Location E - Daytime Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                361
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    280
 6. Roadway Angle, Left        -45
 7. Roadway Angle, Right        45
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 47 DBA  (APPROX. L10 50 DBA)

----------------------------------



Title: Location E - Daytime Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              47.45
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        47.45
----------------------------------
```

```
Title: Location E - Evening Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 50
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    280
 6. Roadway Angle, Left        -45
 7. Roadway Angle, Right        45
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 39 DBA  (APPROX. L10 42 DBA)

----------------------------------



Title: Location E - Evening Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              38.86
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        38.86
----------------------------------
```

```
Title: Location E - Nighttime Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
INPUT DATA ( Feet & MPH )        1

----------------------------------
 1. Auto Volume                 49
 2. Medium Truck Volume          0
 3. Heavy Truck Volume           0
 4. Vehicle Speed               30
 5. Dist. to CTR. Near Lane    280
 6. Roadway Angle, Left        -45
 7. Roadway Angle, Right        45
 8. Drop-Off Rate                3
 9. Number of lanes              1
10. Grade Correction             0
11. Dist. to Shoulder/Cut        0
12. Height of Shoulder/Cut       0
13. Distance to Barrier          0
14. Barrier Type                 0
15. Height of Barrier            0
16. Barrier Angle, Left          0
17. Barrier Angle, Right         0
18. Height of Observer           0
----------------------------------

OUTPUT DATA  (Based on CALIFORNIA Ref. Energy Mean Emission Levels)
----------------------------------
NO BARRIER   TOTAL LEQ = 39 DBA  (APPROX. L10 42 DBA)

----------------------------------



Title: Location E - Nighttime Volume
Date: 02-07-2003
                                 ELEMENT NUMBER
OUTPUT DATA (HOURLY LEQS)        1
----------------------------------

NO BARRIER

       Leq Auto              38.77
       Leq Med. Trucks
       Leq Heavy Trucks

       ELEMENT TOTALS        38.77
----------------------------------
```

ArupAcoustics

APPENDIX D

Traffic Data Provided by Linscott Law and Greenspan

LINSCOTT
LAW &
GREENSPAN
ENGINEERS

FAX COVER PAGE

ENGINEERS & PLANNERS - TRAFFIC, TRANSPORTATION, PARKING

234 East Colorado Boulevard, Suite 400
Pasadena, California 91101-2212
Phone: 626.796.2322 Fax: 626.792.0941
Email: drobis@llgengineers.com

Costa Mesa 714.641.1587
San Diego 619.299.3090
Las Vegas 702.451.1920

FAX MULTIPLE MESSAGE COVER SHEET

Date: 07Feb03	*Time:*	*From:* Sarah Drobis
Project: Canyon Hills		*Job No.* 1-023085-1
Pages: 14		

TO THE FOLLOWING:

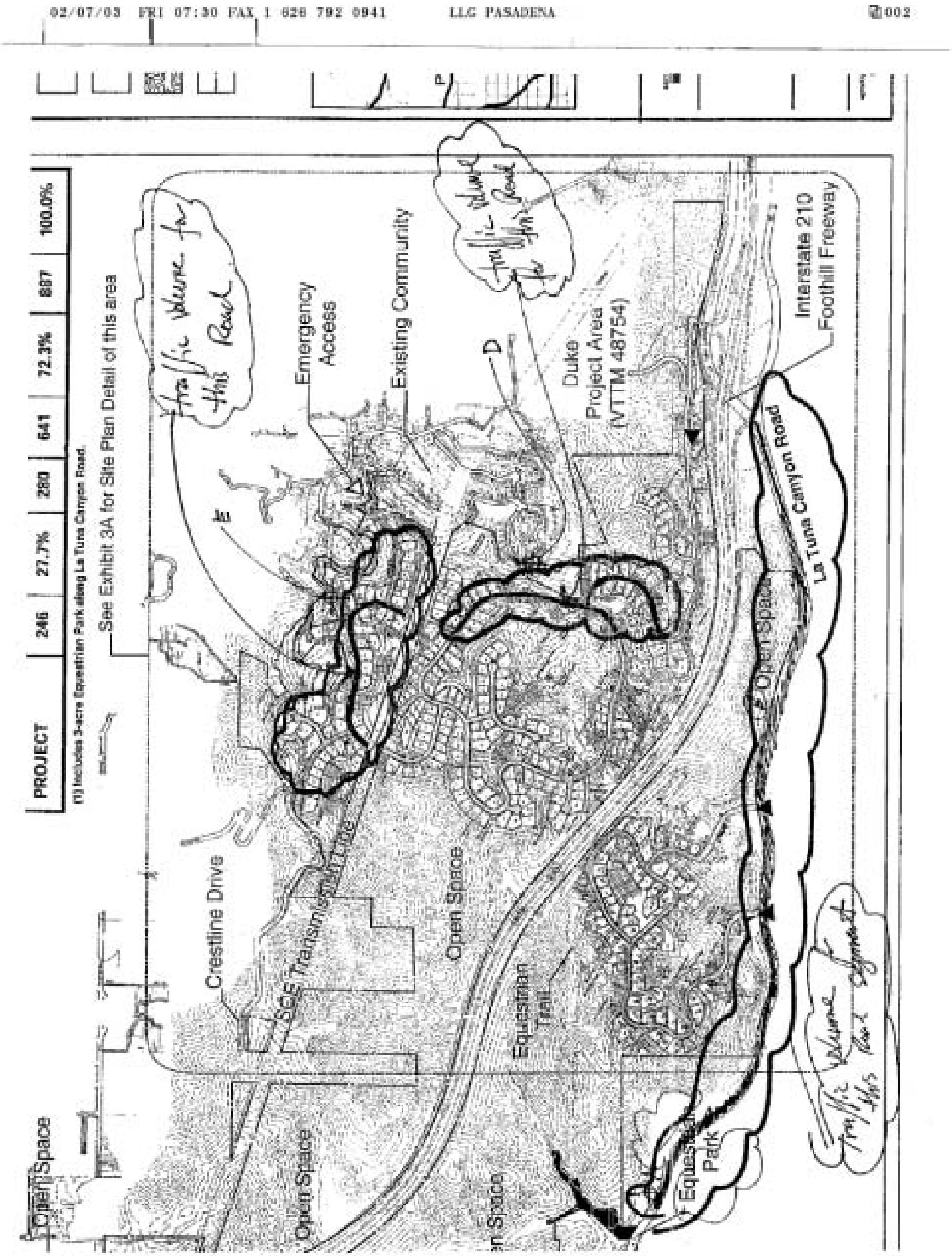
Name: Sean Bui *Fax No.* 310.312.5788	*Company:* ARUP *Recipient No:*
Name: *Fax No.*	*Company:* *Recipient No:*

MESSAGE

Attached for your use is the requested 24-hour traffic volume data for the Canyon Hills Project.

Feel free to call us at 626.796.2322 ext 227 if you have any questions, comments, or changes.

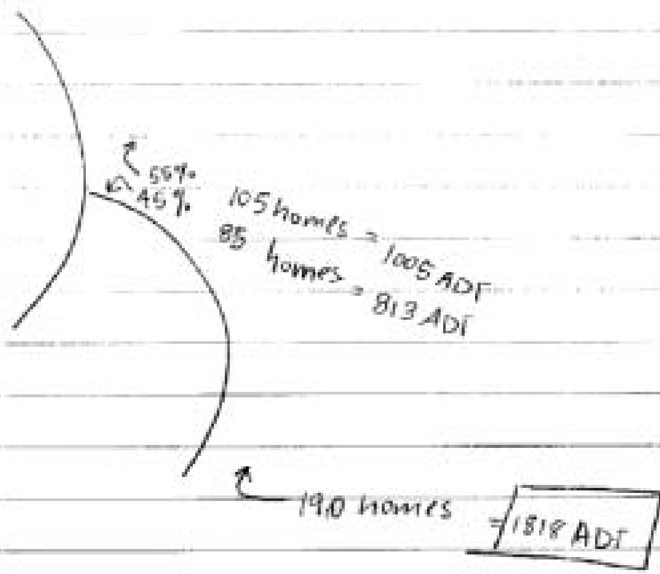
Thank you.


02/07/03 FRI 07:30 FAX 1 626 792 0941 LLG PASADENA 002
PROJECT
246
27.7%
280
641
72.3%
687
100.0%
(1) Includes 3-acre Equestrian Park along La Tuna Canyon Road.
See Exhibit 3A for Site Plan Detail of this area
Emergency
Access
Existing Community
Duke
Project Area
(VTTM 48754)
Interstate 210
Foothill Freeway
La Tuna Canyon Road
Open Space
Crestline Drive
SCE Transmission Line
Open Space
Equestrian
Trail
Equestrian
Park
Open Space
Open Space
Traffic Volume for this Road
Traffic Volume for this Road
Traffic Volume for this segment

02/07/03 FRI 07:32 FAX 1 626 792 0941 LLG PASADENA 003

Internal Roads
Project Traffic Volumes North portion

25% of 190 homes
= 48 homes
= 459 ADT



211 Total Homes.
Daily rate = 9.57 trips/DU.

24-Hour Traffic Volume Project Internal Roadway-North
Canyon Hills Project

Hour	Existing Volume [1]	Project Volume [2]	Existing Plus Project Volume [3]
12:00 AM	0	4	4
1:00 AM	0	2	2
2:00 AM	0	1	1
3:00 AM	0	1	1
4:00 AM	0	2	2
5:00 AM	0	4	4
6:00 AM	0	20	20
7:00 AM	0	38	38
8:00 AM	0	27	27
9:00 AM	0	20	20
10:00 AM	0	21	21
11:00 AM	0	24	24
12:00 PM	0	24	24
1:00 PM	0	23	23
2:00 PM	0	26	26
3:00 PM	0	37	37
4:00 PM	0	49	49
5:00 PM	0	44	44
6:00 PM	0	28	28
7:00 PM	0	22	22
8:00 PM	0	16	16
9:00 PM	0	12	12
10:00 PM	0	9	9
11:00 PM	0	6	6
24-hour Total	**0**	**459**	**459**

[1] Internal project roadways currently do not exist.
[2] Hourly volume over a 24-hour period calculated by converting the forecast number of daily trips assigned to the roadway segment.
[3] [1] + [2]

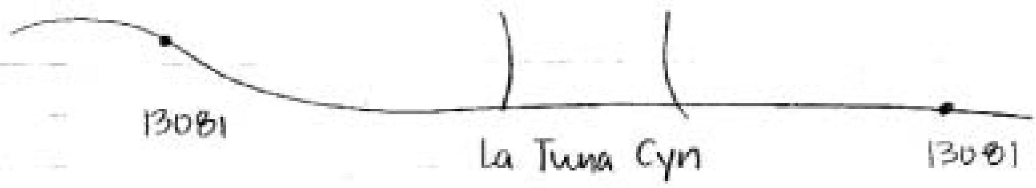
24-Hour Traffic Volume Project Internal Roadway-South
Canyon Hills Project

Hour	Existing Volume [1]	Project Volume [2]	Existing Plus Project Volume [3]
12:00 AM	0	16	16
1:00 AM	0	9	9
2:00 AM	0	6	6
3:00 AM	0	4	4
4:00 AM	0	6	6
5:00 AM	0	17	17
6:00 AM	0	78	78
7:00 AM	0	149	149
8:00 AM	0	105	105
9:00 AM	0	79	79
10:00 AM	0	85	85
11:00 AM	0	94	94
12:00 PM	0	96	96
1:00 PM	0	92	92
2:00 PM	0	103	103
3:00 PM	0	146	146
4:00 PM	0	193	193
5:00 PM	0	173	173
6:00 PM	0	111	111
7:00 PM	0	87	87
8:00 PM	0	63	63
9:00 PM	0	47	47
10:00 PM	0	35	35
11:00 PM	0	25	25
24-hour Total	**0**	**1818**	**1818**

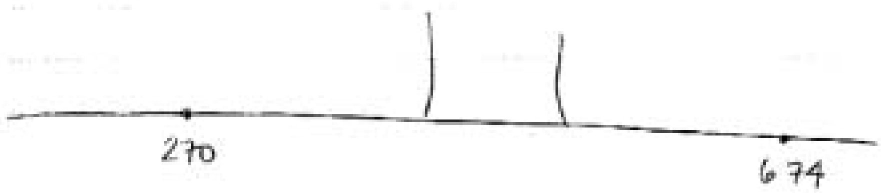
[1] Internal project roadways currently do not exist.
[2] Hourly volume over a 24-hour period calculated by converting the forecast number of daily trips assigned to the roadway segment.
[3] [1] + [2]

02/07/03 FRI 07:33 FAX 1 626 792 0941 LLG PASADENA 006

Existing ADT (Average)



Project ADT



Existing + Project

24-Hour Traffic Volume La Tuna Canyon Road West of Project Driveways
Canyon Hills Project

Hour	Existing Volume [1]	Project Volume [2]	Existing Plus Project Volume [3]
12:00 AM	60	2	62
1:00 AM	33	1	34
2:00 AM	29	1	30
3:00 AM	35	1	35
4:00 AM	80	1	81
5:00 AM	186	3	189
6:00 AM	465	12	476
7:00 AM	1192	22	1214
8:00 AM	1111	16	1126
9:00 AM	569	12	580
10:00 AM	486	13	499
11:00 AM	505	14	519
12:00 PM	552	14	566
1:00 PM	582	14	595
2:00 PM	763	15	778
3:00 PM	1107	22	1129
4:00 PM	1286	29	1314
5:00 PM	1474	26	1499
6:00 PM	1014	17	1031
7:00 PM	579	13	591
8:00 PM	350	9	359
9:00 PM	272	7	279
10:00 PM	243	5	248
11:00 PM	114	4	117
24-hour Total	**13081**	**270**	**13351**

[1] Traffic counts conducted on Thursday, October 17 and Friday, October 25, 2003.
Volume represents a two-way average volume over a two day count period.
[2] Hourly volume over a 24-hour period calculated by converting the forecast number of daily trips assigned to the roadway segment.
[3] [1] + [2]

24-Hour Traffic Volume La Tuna Canyon Road East of Project Driveways
Canyon Hills Project

Hour	Existing Volume [1]	Project Volume [2]	Existing Plus Project Volume [3]
12:00 AM	60	6	66
1:00 AM	33	3	36
2:00 AM	29	2	31
3:00 AM	35	2	36
4:00 AM	80	2	82
5:00 AM	186	6	192
6:00 AM	465	29	493
7:00 AM	1192	55	1247
8:00 AM	1111	39	1150
9:00 AM	569	29	598
10:00 AM	486	31	517
11:00 AM	505	35	540
12:00 PM	552	36	587
1:00 PM	582	34	616
2:00 PM	763	38	801
3:00 PM	1107	54	1161
4:00 PM	1286	71	1357
5:00 PM	1474	64	1538
6:00 PM	1014	41	1055
7:00 PM	579	32	611
8:00 PM	350	24	374
9:00 PM	272	18	290
10:00 PM	243	13	256
11:00 PM	114	9	123
24-hour Total	**13081**	**674**	**13755**

[1] Traffic counts conducted on Thursday, October 17 and Friday, October 25, 2003.
Volume represents a two-way average volume over a two day count period.
[2] Hourly volume over a 24-hour period calculated by converting the forecast number of daily trips assigned to the roadway segment.
[3] [1] + [2]

24-Hour Traffic Volume Project Internal Roadway-Main North Entrance
Canyon Hills Project

Hour	Existing Volume [1]	Project Volume [2]	Existing Plus Project Volume [3]
12:00 AM	0	18	18
1:00 AM	0	10	10
2:00 AM	0	6	6
3:00 AM	0	5	5
4:00 AM	0	7	7
5:00 AM	0	19	19
6:00 AM	0	86	86
7:00 AM	0	165	165
8:00 AM	0	117	117
9:00 AM	0	88	88
10:00 AM	0	94	94
11:00 AM	0	104	104
12:00 PM	0	106	106
1:00 PM	0	102	102
2:00 PM	0	114	114
3:00 PM	0	162	162
4:00 PM	0	214	214
5:00 PM	0	192	192
6:00 PM	0	124	124
7:00 PM	0	96	96
8:00 PM	0	70	70
9:00 PM	0	52	52
10:00 PM	0	39	39
11:00 PM	0	27	27
24-hour Total	**0**	**2019**	**2019**

[1] Internal project roadways currently do not exist.
[2] Hourly volume over a 24-hour period calculated by converting the forecast number of daily trips assigned to the roadway segment.
[3] [1] + [2]

LINSCOTT LAW & GREENSPAN

ENGINEERS

LETTER OF TRANSMITTAL

ENGINEERS & PLANNERS - TRAFFIC, TRANSPORTATION, PARKING

234 East Colorado Boulevard, Suite 400
Pasadena, California 91101-2212
Phone: 626.796.2322 Fax: 626.792.0941
E-mail: drobis@llgengineers.com

Costa Mesa 714.641.1587
San Diego 619.299.3090

To: *Sean Bui*	*Date:* *12Dec02* | *Project No. 1-023085-1*
ARUP	*Re:* *Canyon Hills Project*
2440 South Sepulveda Boulevard, Suite 180	
Los Angeles, CA 90064	

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via __________ the following items:

☐ Report ☐ Letter ☐ Plans ☐ Samples ☐ Specifications

☐ Via Overnight ☐ Via Regular Mail ☐ Via Messenger

Copies	Date	No.	Description
	12/12/02		Traffic volume exhibits

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☒ For Your Use ☒ As Requested

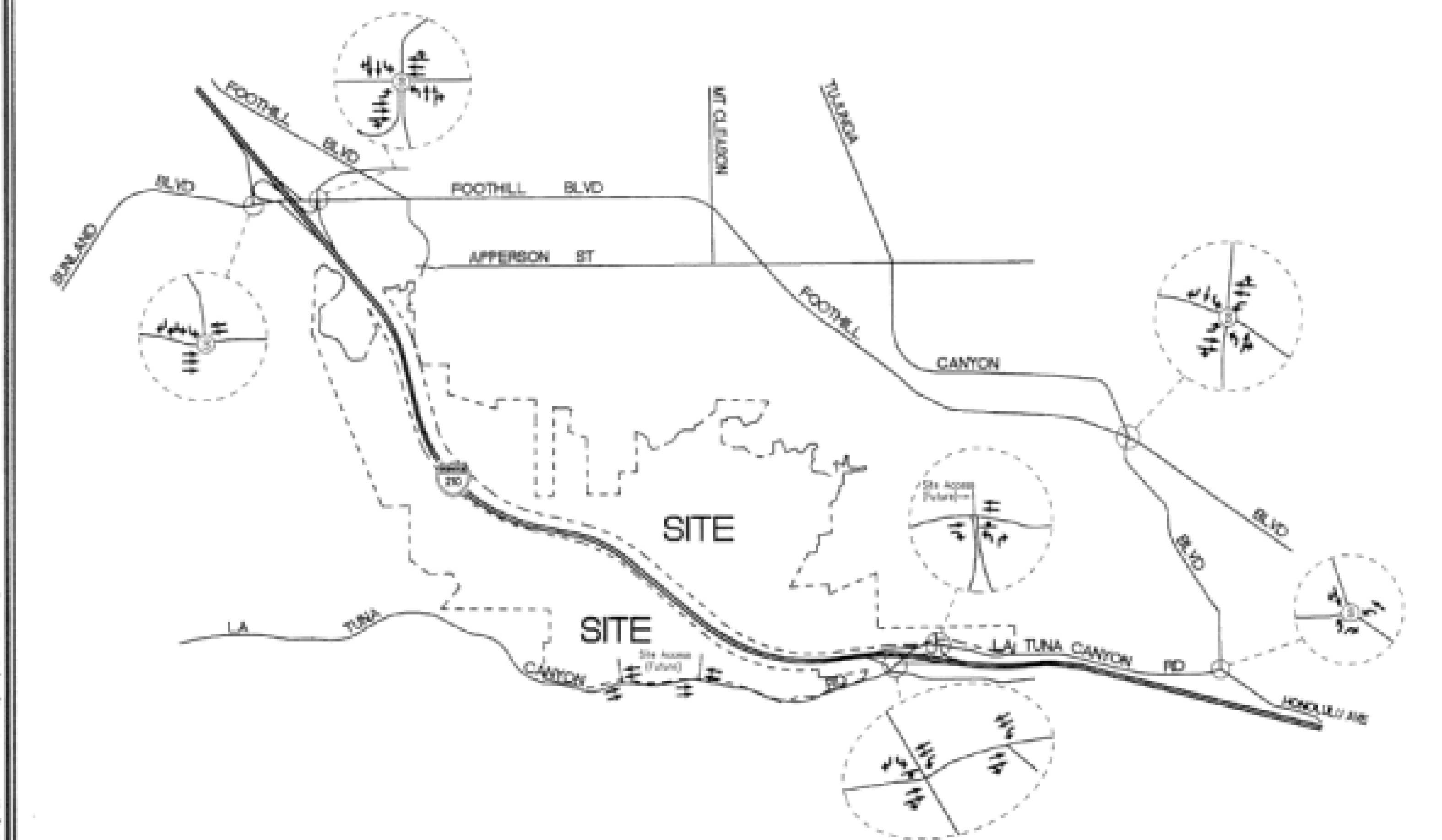
☐ For Review & Comment ☐ __________

REMARKS: Feel free to call with any questions!

COPY TO: Marc Melinkoff, Christopher A Joseph & Associates SIGNED: Sarah Drobis

If enclosures are not as noted, please notify us.

Sarah Drobis



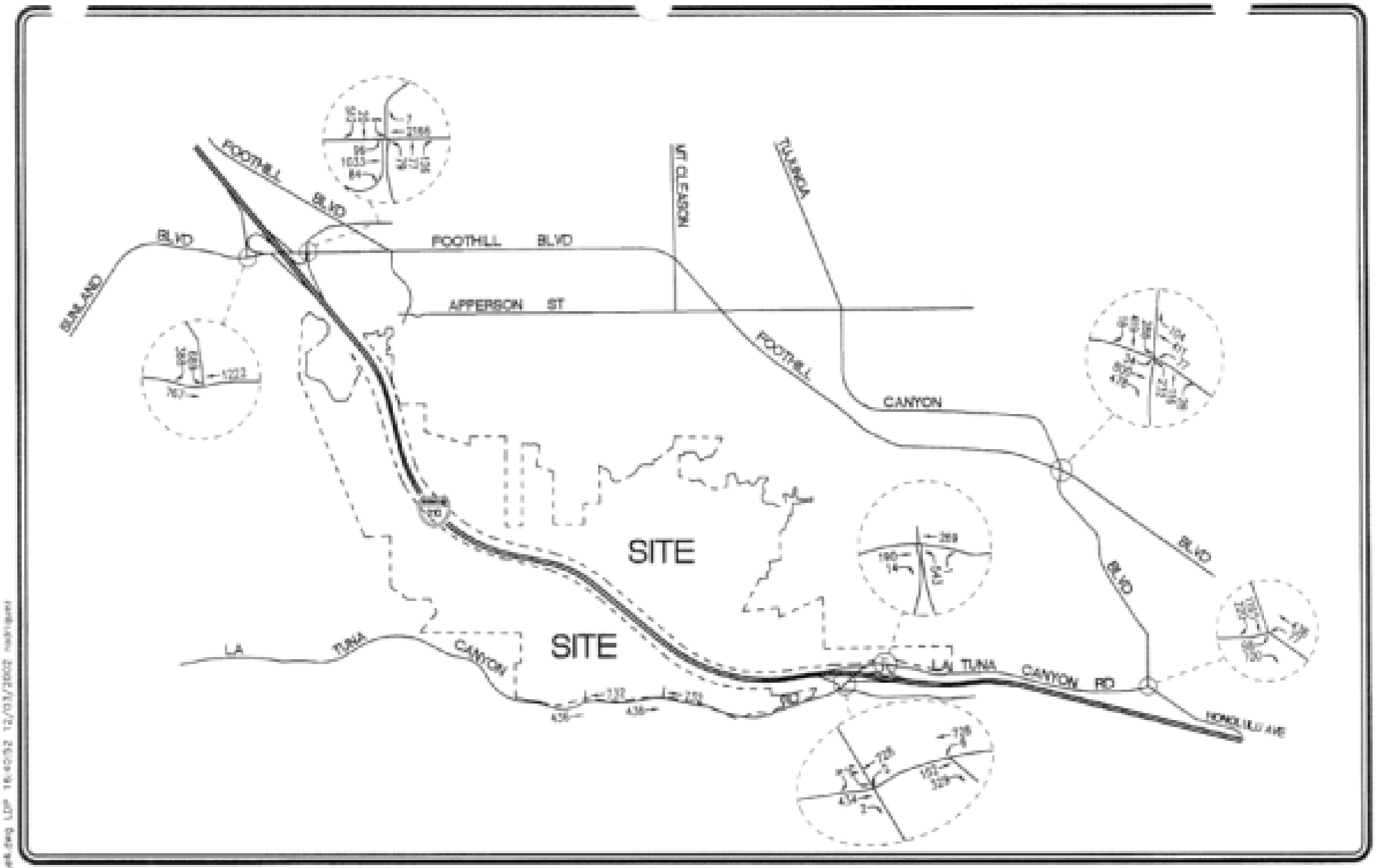
LINSCOTT LAW & GREENSPAN
ENGINEERS

Ⓢ = Traffic Signal
= Stop Sign

NOT TO SCALE

FIGURE 3
EXISTING LANE CONFIGURATIONS

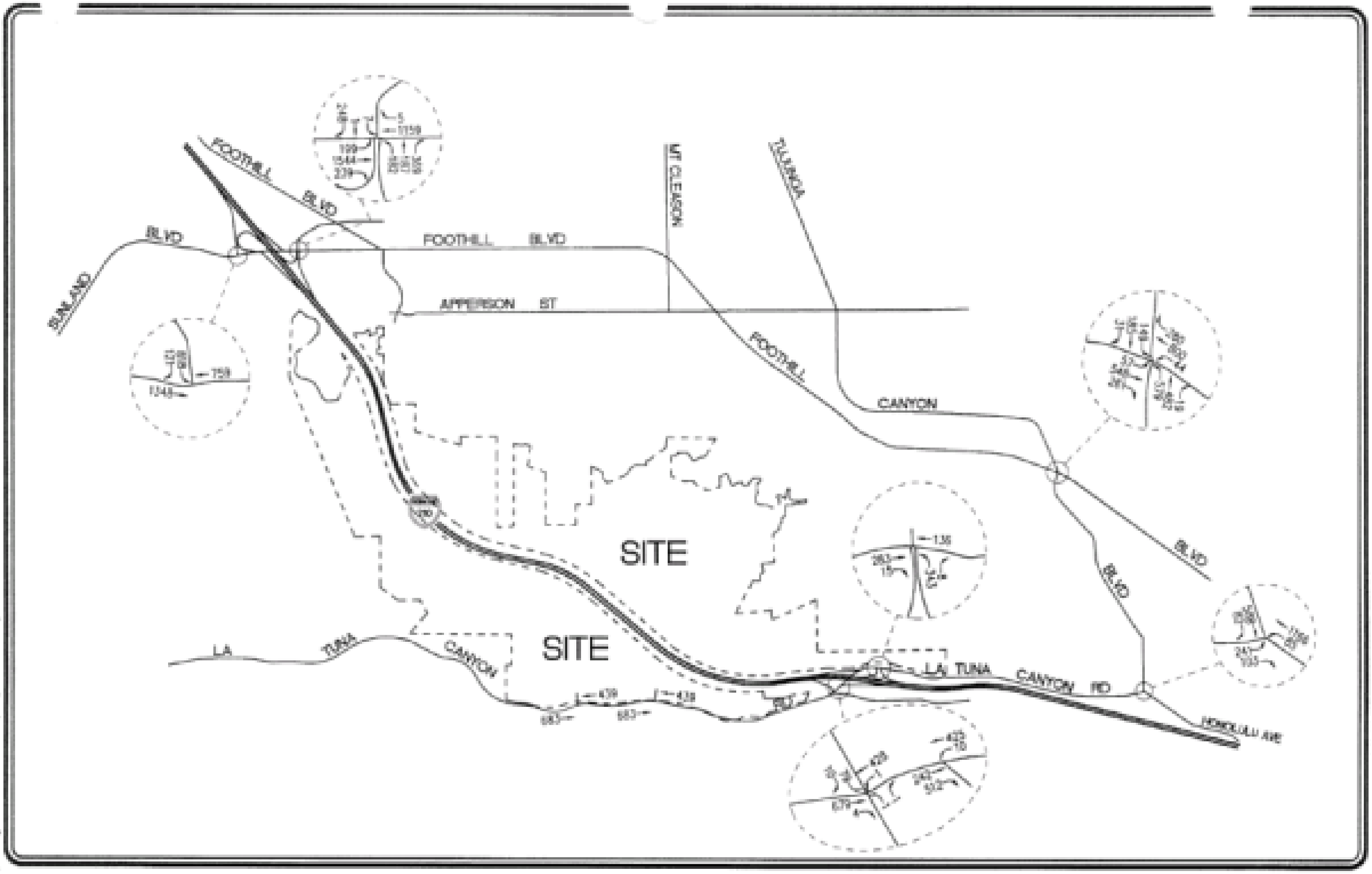
CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

NOT TO SCALE

FIGURE 4
YEAR 2002 EXISTING TRAFFIC VOLUMES
AM PEAK HOUR
CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

FIGURE 5
YEAR 2002 EXISTING TRAFFIC VOLUMES
PM PEAK HOUR
CANYON HILLS PROJECT

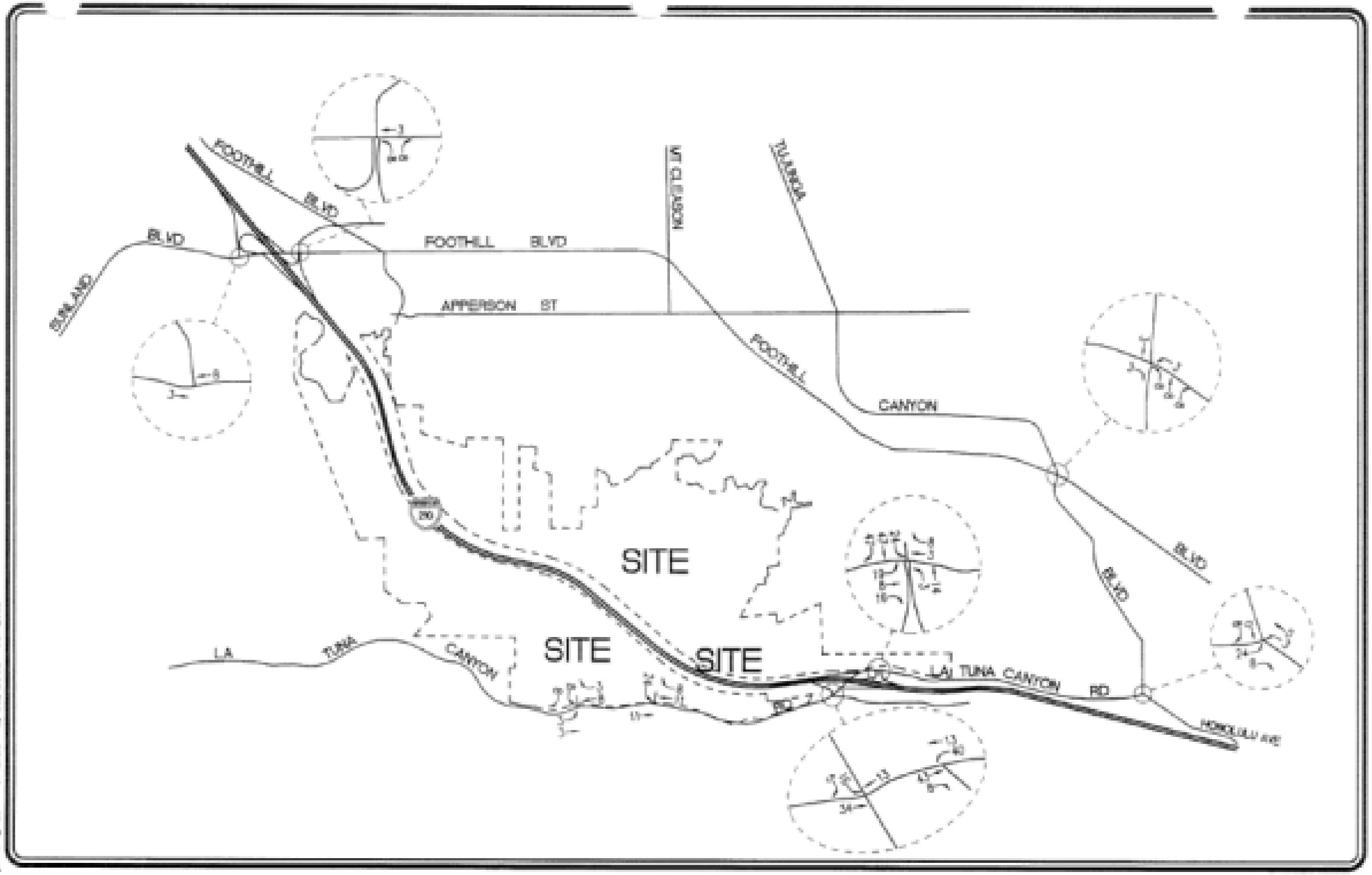


FIGURE 7
PROJECT TRAFFIC VOLUMES
AM PEAK HOUR
CANYON HILLS PROJECT

LINSCOTT LAW & GREENSPAN ENGINEERS

NOT TO SCALE

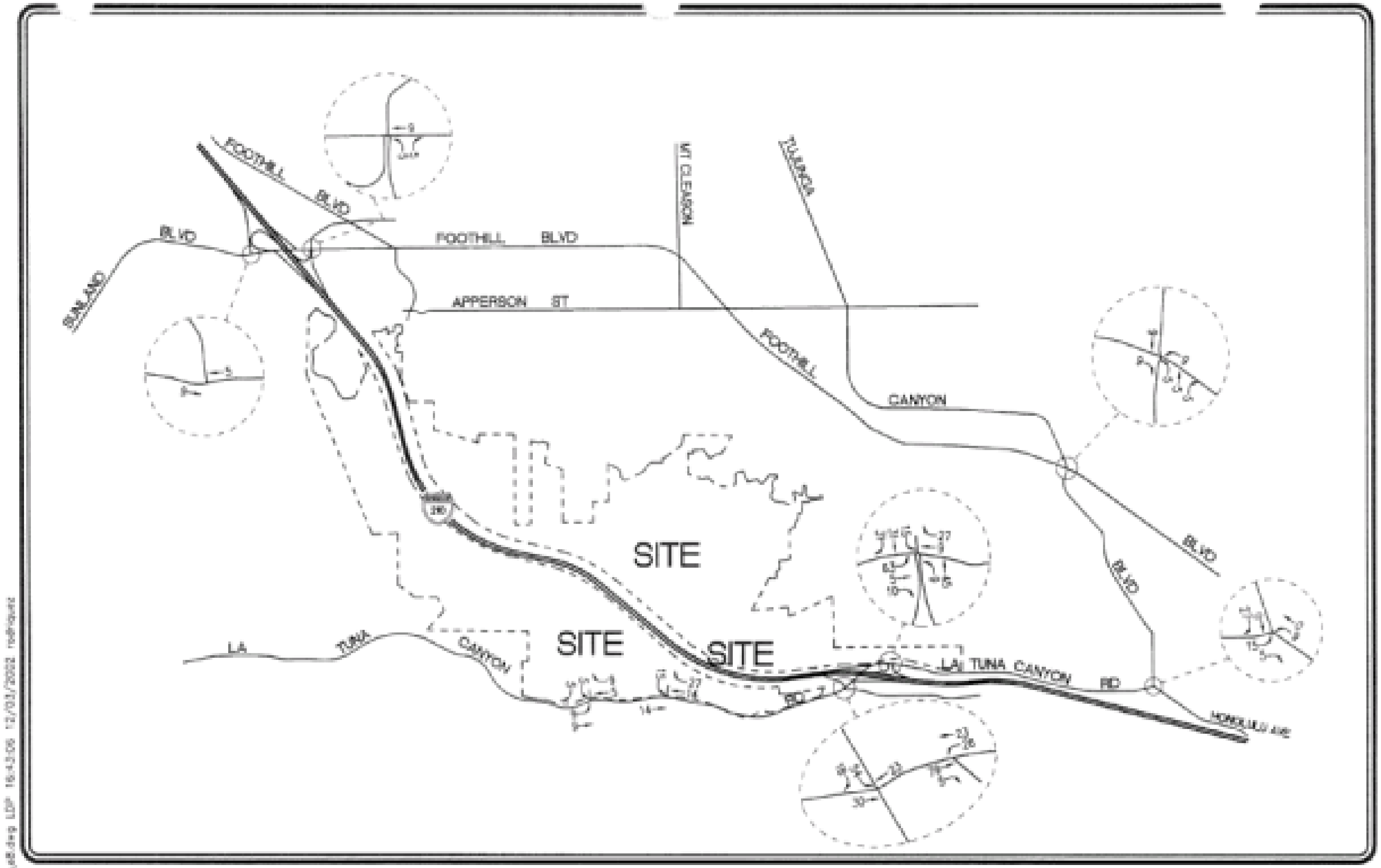
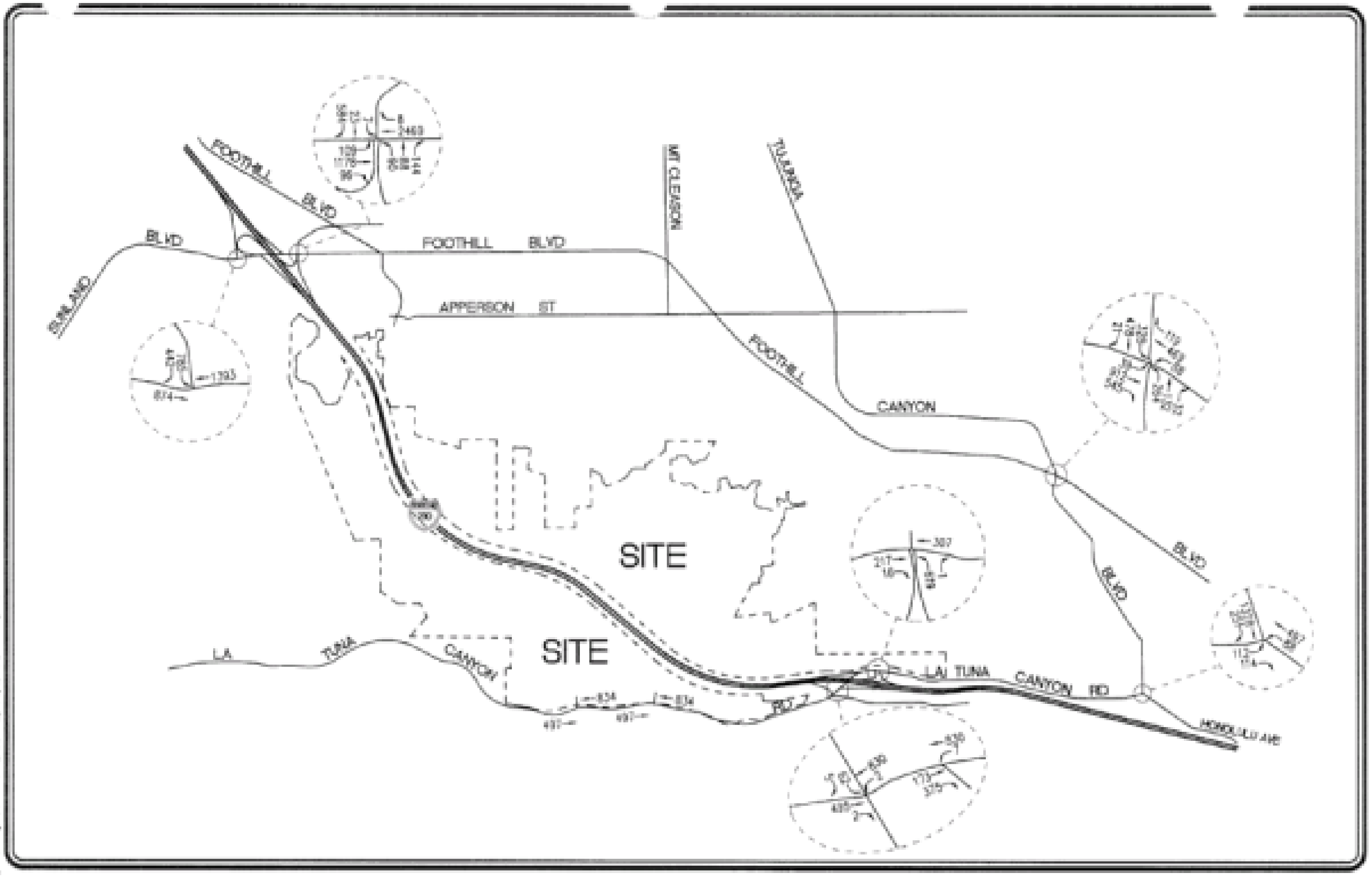


FIGURE 8
PROJECT TRAFFIC VOLUMES
PM PEAK HOUR
CANYON HILLS PROJECT

LINSCOTT LAW & GREENSPAN ENGINEERS

NOT TO SCALE



LINSCOTT LAW & GREENSPAN
ENGINEERS

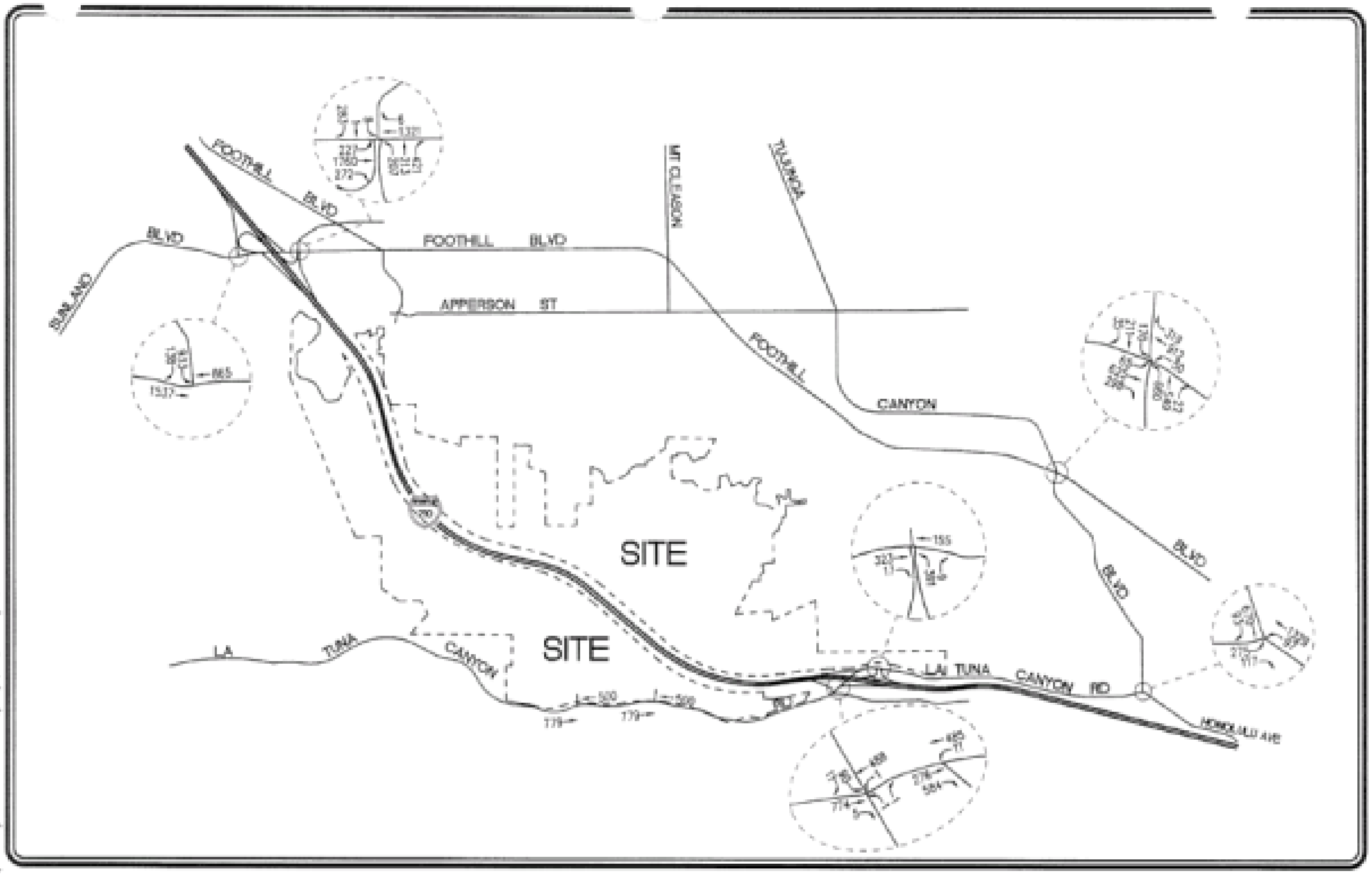
NOT TO SCALE

12

EXISTING PLUS AMBIENT GROWTH TRAFFIC VOLUMES

AM PEAK HOUR

CANYON HILLS PROJECT



LINSCOTT
LAW &
GREENSPAN
ENGINEERS

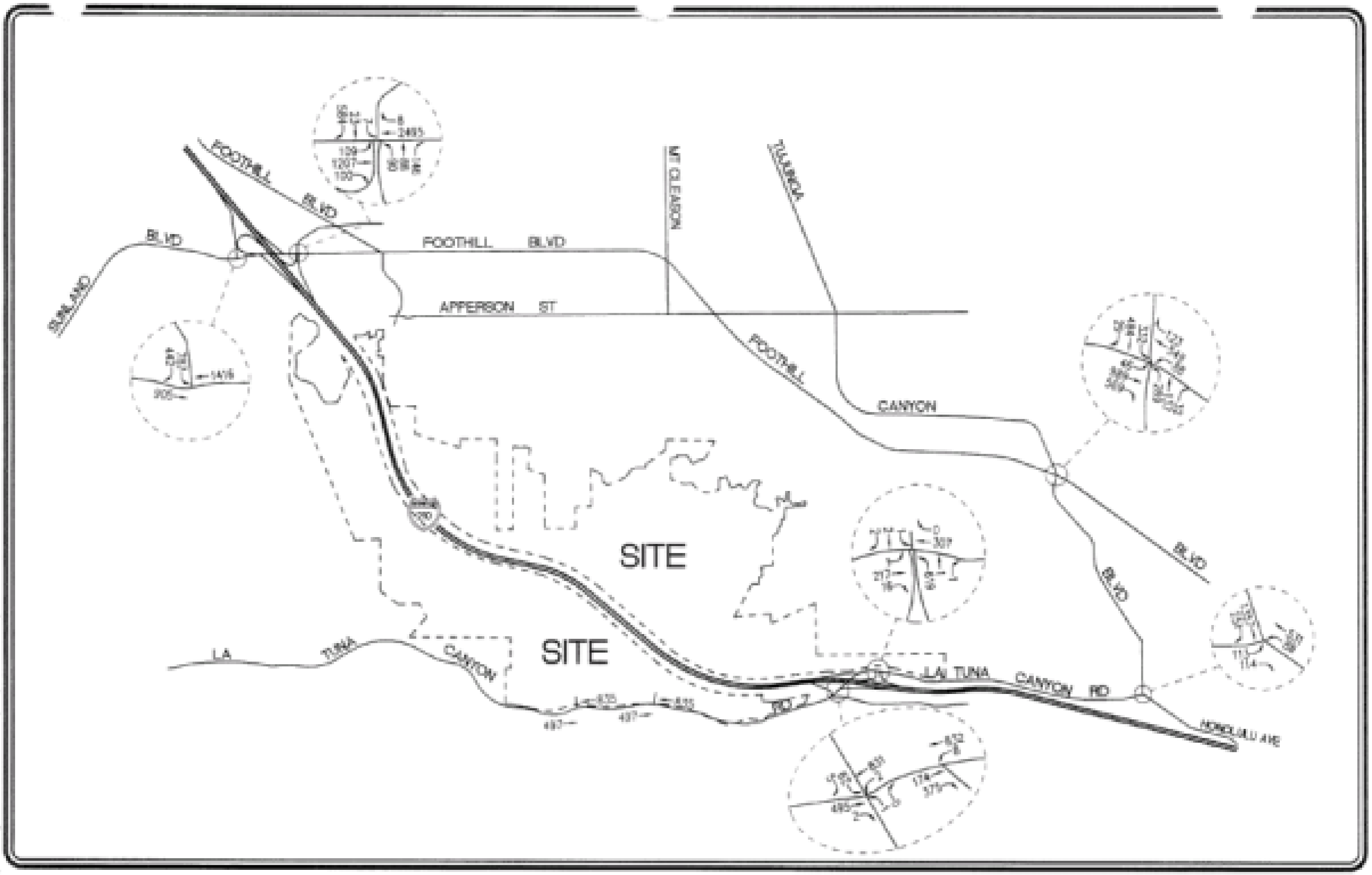
NOT TO SCALE

13

EXISTING PLUS AMBIENT GROWTH TRAFFIC VOLUMES

PM PEAK HOUR

CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

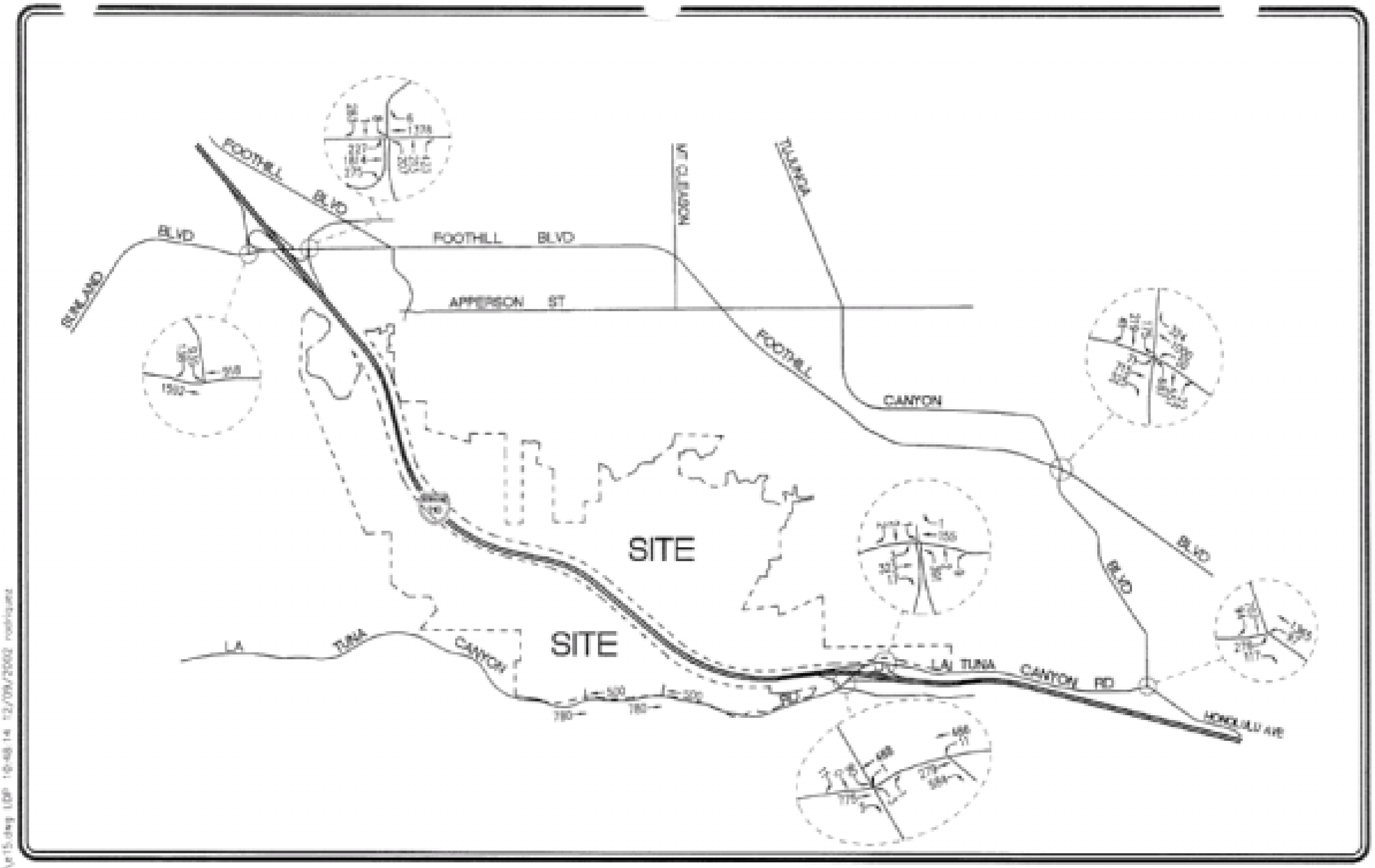
NOT TO SCALE

14

FUTURE 2009 PRE-PROJECT TRAFFIC VOLUMES

AM PEAK HOUR

CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

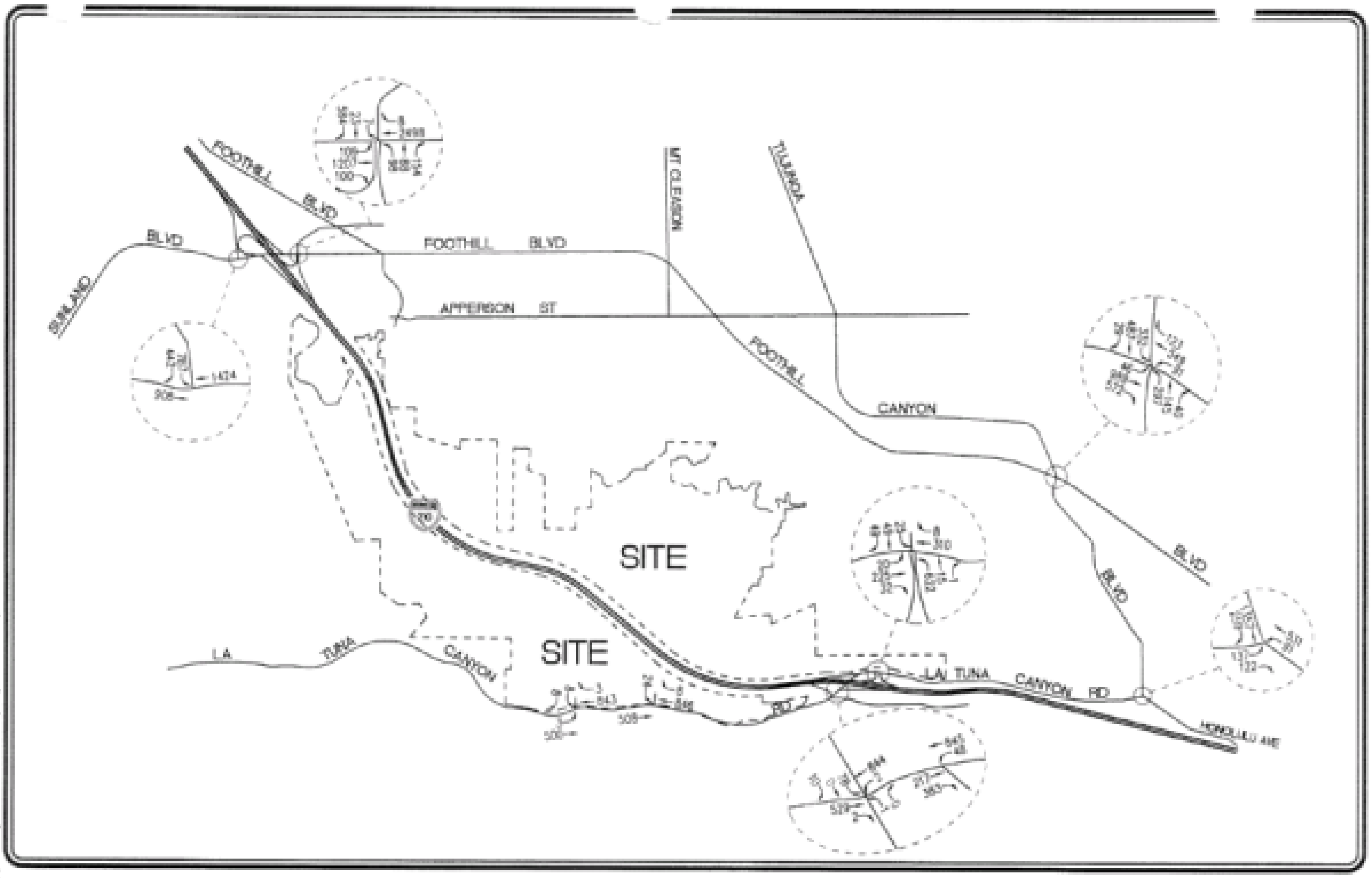
NOT TO SCALE

15

FUTURE 2009 PRE-PROJECT TRAFFIC VOLUMES

PM PEAK HOUR

CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

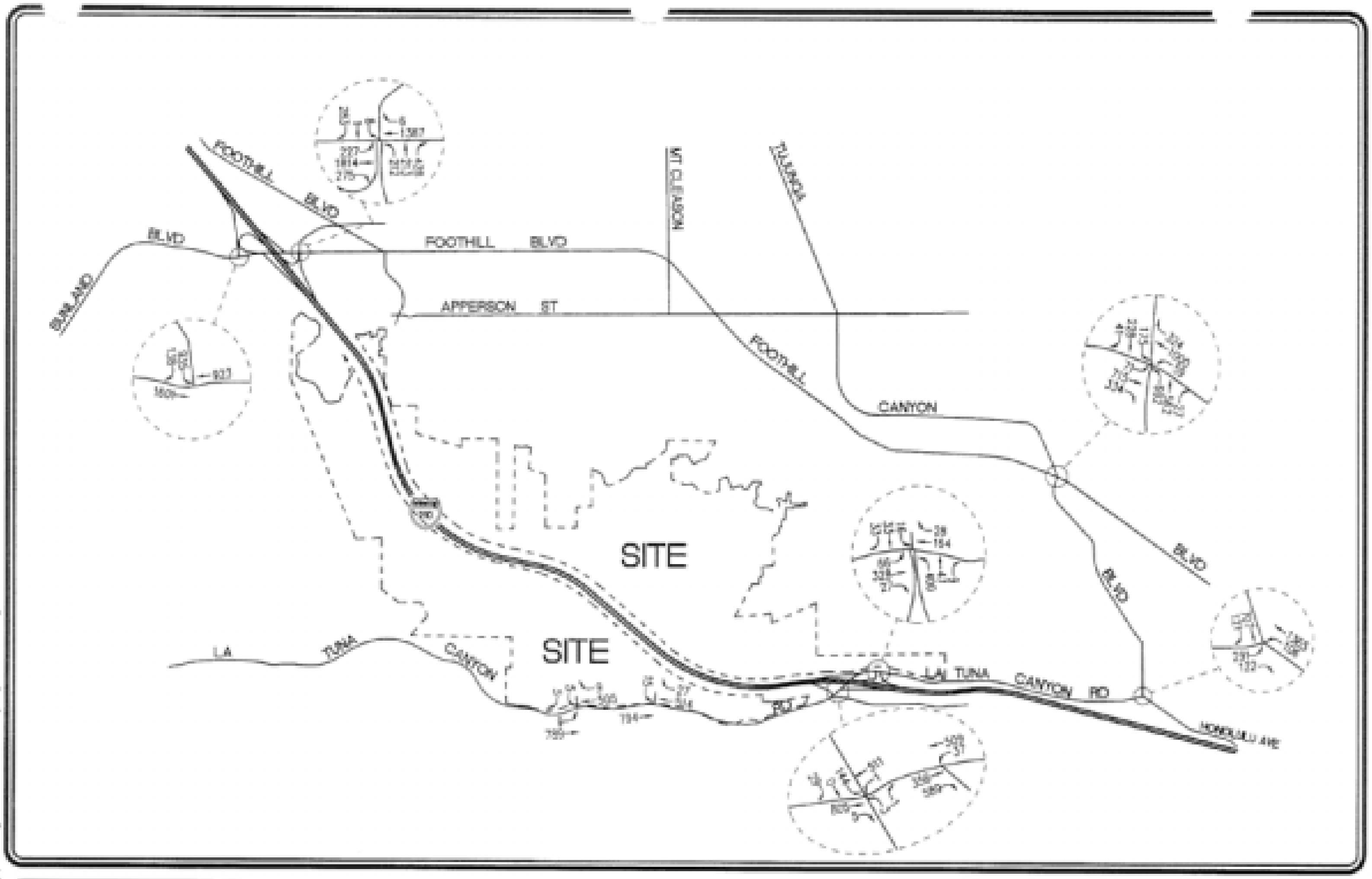
NOT TO SCALE

16

FUTURE 2009 WITH PROJECT TRAFFIC VOLUMES

AM PEAK HOURS

CANYON HILLS PROJECT



LINSCOTT LAW & GREENSPAN ENGINEERS

NOT TO SCALE

17

FUTURE 2009 WITH PROJECT TRAFFIC VOLUMES

PM PEAK HOURS

CANYON HILLS PROJECT

ArupAcoustics

APPENDIX E

Operational Noise Calculations

Canyon Hills - Noise Impact Study
Residential Mechanical Noise Calculations

Receptor	Distance to new homes	Condenser unit, SPL at 3.3ft	Barrier Insertion Loss	Distance Loss (6dB/DD)	SPL at Receptor	Hours of operations: Daytime (7am to 7pm)	Hours of operations: Evening (7pm to 10pm)	Hours of operations: Nighttime (10pm to 7am)	Ld	Le	Ln	CNEL
A	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
									Combined Noise at Receptor A =			**16**
B1	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
	1500	72	-10	-53	9	6	3	3	6	14	14	12
									Combined Noise at Receptor B1 =			**16**
D	425	72	-10	-42	20	6	3	3	17	25	25	23
	475	72	-10	-43	19	6	3	3	16	24	24	22
	525	72	-10	-44	18	6	3	3	15	23	23	21
	575	72	-10	-45	17	6	3	3	14	22	22	20
	625	72	-10	-46	16	6	3	3	13	21	22	19
	675	72	-10	-46	16	6	3	3	13	21	21	19
									Combined Noise at Receptor D =			**26**
E	150	72	-10	-33	29	6	3	3	26	34	34	32
	175	72	-10	-34	28	6	3	3	24	33	33	30
	225	72	-10	-37	25	6	3	3	22	30	31	28
	275	72	-10	-38	24	6	3	3	21	29	29	26
	325	72	-10	-40	22	6	3	3	19	27	27	25
	375	72	-10	-41	21	6	3	3	18	26	26	24
									Combined Noise at Receptor E =			**34**

Traffic at Receptor A

	Average Hourly Leq	Adjusted for CNEL Calcs	
12:00 AM	47	57	472887.1
1:00 AM	47	57	472887.1
2:00 AM	47	57	472887.1
3:00 AM	47	57	472887.1
4:00 AM	47	57	472887.1
5:00 AM	47	57	472887.1
6:00 AM	47	57	472887.1
7:00 AM	54	54	252824.3
8:00 AM	54	54	252824.3
9:00 AM	54	54	252824.3
10:00 AM	54	54	252824.3
11:00 AM	54	54	252824.3
12:00 PM	54	54	252824.3
1:00 PM	54	54	252824.3
2:00 PM	54	54	252824.3
3:00 PM	54	54	252824.3
4:00 PM	54	54	252824.3
5:00 PM	54	54	252824.3
6:00 PM	54	54	252824.3
7:00 PM	51	56	433389.9
8:00 PM	51	56	433389.9
9:00 PM	51	56	433389.9
10:00 PM	47	57	472887.1
11:00 PM	47	57	472887.1
		CNEL	**55.5**

Traffic at Receptor B1

	Average Hourly Leq	Adjusted for CNEL Calcs	
12:00 AM	31	41	13024.39
1:00 AM	31	41	13024.39
2:00 AM	31	41	13024.39
3:00 AM	31	41	13024.39
4:00 AM	31	41	13024.39
5:00 AM	31	41	13024.39
6:00 AM	31	41	13024.39
7:00 AM	39	39	7141.982
8:00 AM	39	39	7141.982
9:00 AM	39	39	7141.982
10:00 AM	39	39	7141.982
11:00 AM	39	39	7141.982
12:00 PM	39	39	7141.982
1:00 PM	39	39	7141.982
2:00 PM	39	39	7141.982
3:00 PM	39	39	7141.982
4:00 PM	39	39	7141.982
5:00 PM	39	39	7141.982
6:00 PM	39	39	7141.982
7:00 PM	36	41	12702.19
8:00 PM	36	41	12702.19
9:00 PM	36	41	12702.19
10:00 PM	31	41	13024.39
11:00 PM	31	41	13024.39
		CNEL	**40.0**

Traffic at Receptor D

	Average Hourly Leq	Adjusted for CNEL Calcs	
12:00 AM	35	45	29768.54
1:00 AM	35	45	29768.54
2:00 AM	35	45	29768.54
3:00 AM	35	45	29768.54
4:00 AM	35	45	29768.54
5:00 AM	35	45	29768.54
6:00 AM	35	45	29768.54
7:00 AM	42	42	16248.7
8:00 AM	42	42	16248.7
9:00 AM	42	42	16248.7
10:00 AM	42	42	16248.7
11:00 AM	42	42	16248.7
12:00 PM	42	42	16248.7
1:00 PM	42	42	16248.7
2:00 PM	42	42	16248.7
3:00 PM	42	42	16248.7
4:00 PM	42	42	16248.7
5:00 PM	42	42	16248.7
6:00 PM	42	42	16248.7
7:00 PM	40	45	28436.67
8:00 PM	40	45	28436.67
9:00 PM	40	45	28436.67
10:00 PM	35	45	29768.54
11:00 PM	35	45	29768.54
		CNEL	**43.6**

Traffic at Receptor E

	Average Hourly Leq	Adjusted for CNEL Calcs	
12:00 AM	29	39	8370.617
1:00 AM	29	39	8370.617
2:00 AM	29	39	8370.617
3:00 AM	29	39	8370.617
4:00 AM	29	39	8370.617
5:00 AM	29	39	8370.617
6:00 AM	29	39	8370.617
7:00 AM	37	37	4632.535
8:00 AM	37	37	4632.535
9:00 AM	37	37	4632.535
10:00 AM	37	37	4632.535
11:00 AM	37	37	4632.535
12:00 PM	37	37	4632.535
1:00 PM	37	37	4632.535
2:00 PM	37	37	4632.535
3:00 PM	37	37	4632.535
4:00 PM	37	37	4632.535
5:00 PM	37	37	4632.535
6:00 PM	37	37	4632.535
7:00 PM	34	39	8107.347
8:00 PM	34	39	8107.347
9:00 PM	34	39	8107.347
10:00 PM	29	39	8370.617
11:00 PM	29	39	8370.617
		CNEL	**38.1**

ArupAcoustics

APPENDIX F

Construction Information Provided by Zeiser Kling Consultants, Inc.

07-MAR-03 08:31 FROM:ZEISER KLING ID:7147551366 PAGE 1/2

ZEISER KLING Consultants, Inc.

Date:	3/7/03	**PN:**	00189-00
To:	ARUP acoustics	**FAX NO.:**	(310)312-5788
Attn.:	Amir Yazdanniyaz	**# of Pages: (including cover)**	2

Amir – attached is a sketch showing areas of cut within the Canyon Hills site that are proposed to be deeper than 60 feet. This corresponds to the depth where geophysical surveys indicate that the bedrock may require blasting in order to facilitate excavation.

Please consider the attached map as very preliminary and based on very limited data. However this should give you a general idea as to where blasting might occur within the site.

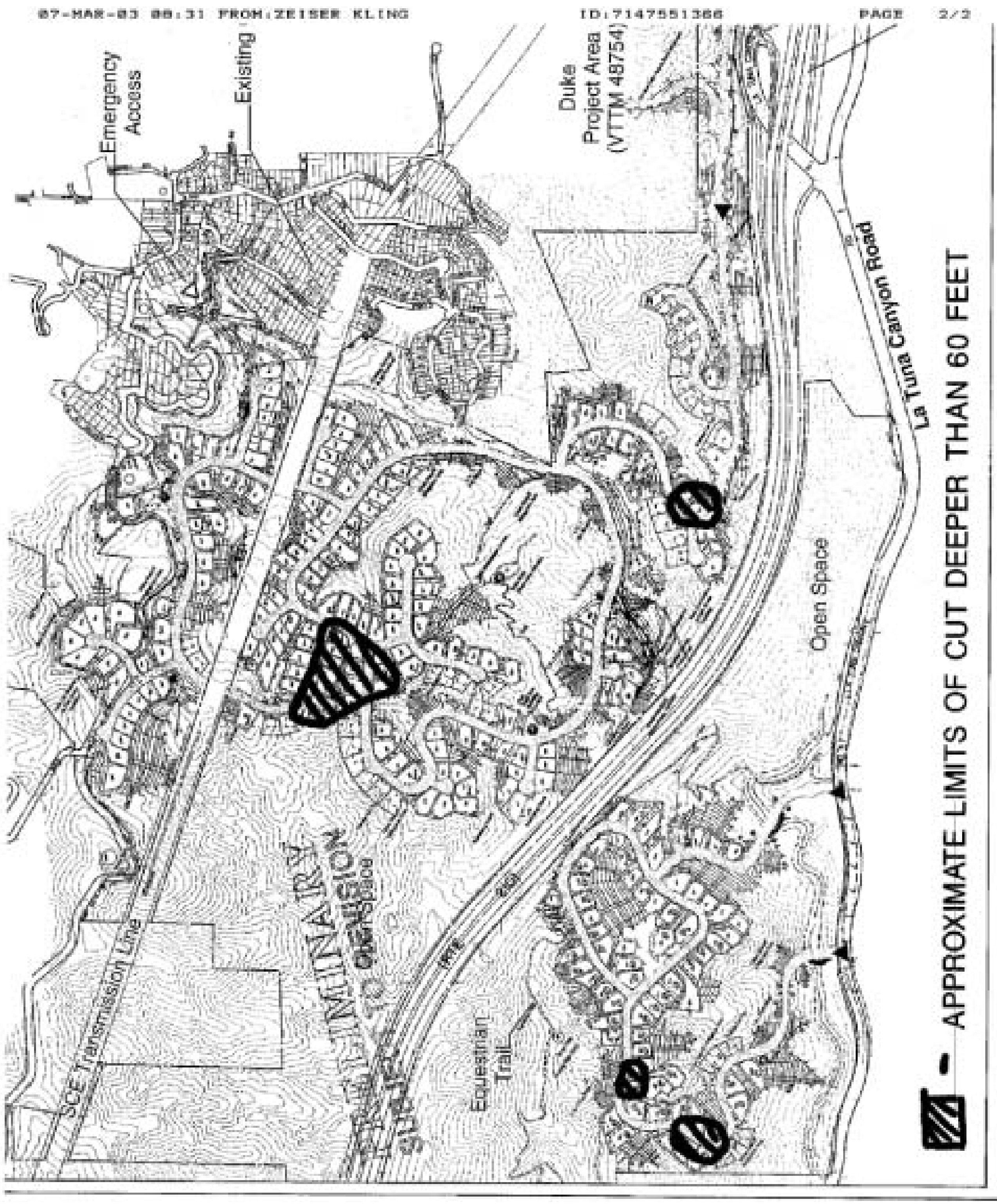
If you have any questions, please feel free to contact myself, Jim Lancaster, or Rick Zeiser at our office.

cc: Marc Melinkoff (310)473-9336

FROM: Matthew G. Rogers, PE, GE

1221 E. Dyer Road, Suite 105, Santa Ana, CA 92705
(714) 755-1355 • Fax (714) 755-1366
Web Site: http://www.zkci.com

E:\projects\master\faxcover.doc


07-MAR-03 08:31 FROM:ZEISER KLING
ID:7147551366
PAGE 2/2
Emergency Access
Existing
Duke Project Area (VTTM 48754)
La Tuna Canyon Road
Open Space
Equestrian Trail
SCE Transmission Line
APPROXIMATE LIMITS OF CUT DEEPER THAN 60 FEET

ArupAcoustics

APPENDIX G

Construction Calculations

CONSTRUCTION OF DEVELOPMENT AREA B (SOUTHERN PORTION)

		Percentage of time running at peak noise level				Number of Equipment Operating at Once			Contribution to dBA at 50 ft		
No.	Equipment	Loudest Phase of Site Grading	Street Improvement/ Homes Foundation	Homes Building	dBA @ 50'	Loudest Phase of Site Grading	Street Improvement/ Homes Foundation	Homes Building	Loudest Phase of Site Grading	Street Improvement / Homes Foundation	Homes Building
6	Cat 657 twin-deisels (scraper)	0.25			80	3			79	0	0
4	Off-highway rock trucks	0.25			82	2			79	0	0
2	Cat loaders	0.25			73	1			67	0	0
4	D-9/10s (tractor)	0.25			77	2			74	0	0
2	Water trucks	0.25			82	1			76	0	0
2	Concrete trucks		0.25		82		1		0	76	0
1	Delivery trucks		0.25	0.25	82		1	1	0	76	76
1	Scraper		0.25		80		1		0	74	0
1	Paver		0.25		85		1		0	79	0
2	Saws			0.1	72			2	0	0	65
2	Pneumatic Equipment			0.1	83			2	0	0	76
								Total	84	83	79

	Site Grading			Street Improvement/ Foundation			Homes Building		
Receptor	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**
A	600	0	**62**	600	0	**61**	600	0	**58**
B1	1600	0	**53**	1600	0	**53**	1600	0	**49**
D	500	0	**64**	500	0	**63**	500	0	**59**
E	250	0	**70**	250	0	**69**	250	0	**65**

CONSTRUCTION OF DEVELOPMENT AREA A (NORTHERN PORTION)

		Percentage of time running at peak noise level				Number of Equipment Operating at Once			Contribution to dBA at 50 ft		
No.	Equipment	Loudest Phase of Site Grading	Street Improvement/ Homes Foundation	Homes Building	dBA @ 50'	Loudest Phase of Site Grading	Street Improvement/ Homes Foundation	Homes Building	Loudest Phase of Site Grading	Street Improvement / Homes Foundation	Homes Building
8	Cat 657 twin-deisels (scraper)	0.25			80	4			80	0	0
4	Off-highway rock trucks	0.25			82	2			79	0	0
2	Cat loaders	0.25			73	1			67	0	0
6	D-9/10s (tractor)	0.25			77	3			76	0	0
2	Water trucks	0.25	0.25		82	1			76	0	0
1	Excavator	0.25			73	1			67	0	0
2	Concrete trucks		0.25		82		1		0	76	0
1	Delivery trucks		0.25	0.25	82		1	1	0	76	76
1	Scraper		0.25		80		1		0	74	0
1	Paver		0.25		85		1		0	79	0
2	Saws			0.1	72			2	0	0	65
2	Pneumatic Equipment			0.1	83			2	0	0	76
								Total	84	83	79

	Site Grading			Street Improvement/ Foundation			Homes Building		
Receptor	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**	**Distance to Constr. Site, ft**	**Barrier Adjust.**	**Estimated Noise, Hourly Leq**
A	600	0	**63**	600	0	**61**	600	0	**58**
B1	1600	0	**54**	1600	0	**53**	1600	0	**49**
D	500	0	**64**	500	0	**63**	500	0	**59**
E	250	0	**70**	250	0	**69**	250	0	**65**

SUMMARY OF CONSTRUCTION NOISE AT RECEPTORS

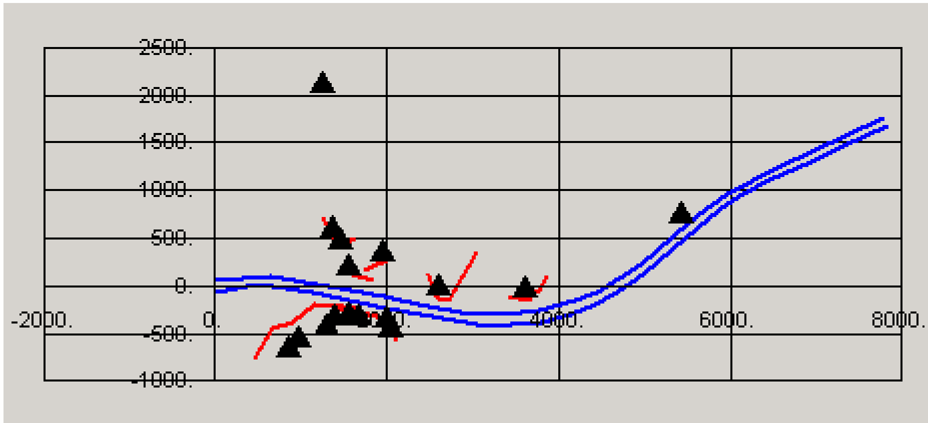
Receptor	Existing Ambient (CNEL)	Project Related Noise (Leq)			Future Ambient (Leq)			Increase in Ambient (Leq)		
		Site Grading	Street Improvement	Homes Building	Site Gradi	Street Improvement	Homes Building	Site Gradi	Street Improvement	Homes Building
A	66	62	61	58	67	67	67	1	1	1
B1	56	53	53	49	58	58	57	2	2	1
D	54	64	63	59	65	63	60	11	9	6
E	46	70	69	65	70	69	65	24	23	19

ArupAcoustics

APPENDIX H

"Sound 2000" Input and Output Files

H1. PLOT OF LANES, BARRIERS AND RECEIVERS USED IN SOUND 2000



H2. NOTATION CONVERSION BETWEEN REPORT AND SOUND 2000

It is important to note when reviewing the following input and output files that the receptors and barriers are numbered differently in this program than in the body of the report. Table D1 shows the conversion between the different notation systems.

Table D1: Notation Conversion

Report Receptor Notation	Sound 2000 Receptor Notation	Report Barrier Notation	Sound 2000 Barrier Notation
R1	REC 2	B1 & B2	NORTHERN BARRIER 2
R2	REC 1	NB	KNOLL 2
R3	REC 3	NB	NORTHERN BARRIER 3
R4	REC 4	B3	NORTHERN BARRIER 4
R5	REC 5	NB	KNOLL 3
R6	REC 6	B4	NORTHERN BARRIER 5
R7	REC 8	NB	KNOLL 4
R8	REC 7	B5 & B6	NORTHERN BARRIER 6
R9	REC 13	NB	SOUTHERN RIDGE
R10	REC 10	B7 through B10	SOUTHERN BARRIER
R11	REC 9	N/A	N/A
R12	REC 15	N/A	N/A
R13	REC 11	N/A	N/A
R14	REC 12	N/A	N/A
Measurement Location C	REC 14	N/A	N/A
Measurement Location F	REC 16	N/A	N/A

In the following input and output files, KNOLL 5 and NORTHERN BARRIER 1 are used to show topographical lines that break the line of sight from the residences to Interstate 210.

H3. AM PEAK TRAFFIC LEVELS WITH PROPOSED SOUND WALLS (SOUND 2000 INPUT FILE)

CANYON HILLS

T-NORMAL, 1

5609 , 65 , 115 , 65 , 340 , 65

T-NORMAL, 2

5609 , 65 , 115 , 65 , 340 , 65

T-NORMAL, 3

2663 , 65 , 55 , 65 , 161 , 65

T-, 4

5967 , 65 , 123 , 65 , 361 , 65

T-NORMAL, 5

2503 , 65 , 51 , 65 , 152 , 65

L- FREEWAY 210 EASTBOUND LANE 1B, 1

Y,3176.6,-417.3,1654,210 E POINT 32

Y,2788.4,-370.6,1642,210 E POINT 33

Y,1998.6,-235.4,1612,210 E POINT 34

Y,1134.6,-74.1,1572,210 E POINT 35

Y,676.4,-13.1,1548,210 E POINT 36

Y,353.5,-13.1,1532,210 E POINT 37

4.4,-61,1514,210 E POINT 38

L- FREEWAY 210 EASTBOUND LANE 1, 2

N,6459.8,1106.7,1714,210 E POINT 19

N,6163.1,967.2,1712,210 E POINT 20

N,5870.7,792.8,1708,210 E POINT 21

N,5611.5,611.6,1704,210 E POINT 22

N,5327.9,384.9,1701,210 E POINT 23

N,5131.5,232.3,1700,210 E POINT 24

N,4922.1,79.7,1698,210 E POINT 25

N,4689,-72.8,1696,210 E POINT 26

N,4376.6,-208,1690,210 E POINT 27

Y,4145.3,-295.2,1684,210 E POINT 28

Y,3800.6,-373.7,1674,210 E POINT 29

Y,3451.5,-408.6,1662,210 E POINT 31

3176.6,-417.3,1654,210 E POINT 32

L- FREEWAY 210 WESTBOUND LANE 2, 3

N,6556.5,1243.6,1718,210 W POINT 14

7789.1,1752.7,1730,210 W POINT 15

L- FREEWAY 210 EASTBOUND LANE 2, 4

N,7834.4,1673.5,1734,210 E POINT 16

N,7323.8,1455.5,1727,210 E POINT 17

N,6944.2,1302.9,1721,210 E POINT 18

6459.8,1106.7,1714,210 E POINT 19

L- FREEWAY 210 WESTBOUND LANE 1, 5

N,-3.5,57.9,1515,210 W POINT 1

N,652.5,89.7,1550,210 W POINT 2

N,1331.6,-5.6,1580,210 W POINT 3

N,1981.8,-118.2,1612,210 W POINT 4

N,2369.1,-193.2,1626,210 W POINT 5

N,2966.5,-291.6,1646,210 W POINT 6

N,3365.3,-308.9,1656,210 W POINT 7

N,3767,-265.6,1672,210 W POINT 8

N,4191.8,-155.9,1684,210 W POINT 9

N,4446.1,-69.3,1690,210 W POINT 10

N,4957.3,217.4,1696,210 W POINT 11

N,5512.1,656.3,1708,210 W POINT 12

N,5972.8,957.7,1712,210 W POINT 13

6556.5,1243.6,1718,210 W POINT 14

B- NORTHERN BARRIER 1, 1 , 1 , 0 ,

1244.1,699,1745,1745,

1429.6,384.9,1745,1745,

1628.5,502.2,1750,1750,

B-, 2 , 1 , 2 ,

2547.9,-90.1,1630,1630,

2636.2,-143.8,1670,1670,

2734.8,-134.8,1670,1670,

2797.5,-55.4,1630,1630,

B-, 3 , 1 , 2 ,

3532.2,-66,1705,1720,B4 P1

3608.3,-130.8,1705,1720,B4 P2

B- SOUTHE, 4 , 2 , 0 ,

1274.1,-335.6,1648,1664,

1414.2,-254.3,1636,1652,

1529.8,-248.5,1627,1643,

1786.2,-291.6,1600,1616,

1988.1,-333.6,1590,1606,

2035.3,-362.1,1590,1606,

2116.7,-566.5,1580,1588,

B- NORTHER, 5 , 2 , 0 ,

1571.7,250.6,1650,1656,

1514.9,137.1,1650,1656,

1600.1,114.4,1650,1656,

B- NORTHER, 6 , 2 , 0 ,

2477.8,123.7,1616,1624,

2547.9,-90.1,1616,1624,

B- SOUTHERN, 7 , 1 , 0 ,

452.6,-754.3,1780,1780,B9 P1

655.9,-445,1740,1740,B9 P2

893.2,-375.3,1730,1730,B9 P3

1167.2,-203.3,1630,1630,B9 P4

1489.3,-218.6,1630,1630,B9 P5

1693.3,-246,1630,1630,B9 P6

B- KNOLL 5, 8 , 1 , 0 ,

3414.3,-105.7,1690,1690,

3680.9,-159.4,1690,1690,

B- NORTHERN BARR, 9 , 2 , 0 ,

2797.5,-55.4,1616,1624,

3039.9,355.2,1590,1596,

B- NORTHERN BARR, 10 , 2 , 0 ,

3608.2,-130.1,1705,1713,

3776.4,-50.8,1705,1713,

3873,93,1702,1710,

B- KNOLL 2, 11 , 1 , 0 ,

1829.8,63.6,1650,1662,

1542.1,136.8,1650,1662,

B- NORTHERN BARRIER 3, 12 , 1 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

R, 1 , 67 ,500

1459.3,447.5,1753,REC 1

R, 2 , 67 ,500

1356.1,577.9,1752,REC 2

R, 3 , 67 ,500

1563.9,181.7,1657,REC 3

R, 4 , 67 ,500

1942.2,326,1651,REC 4

R, 5 , 67 ,500

2607.8,-34.7,1621,REC 5

R, 6 , 67 ,500

3604.7,-40.1,1710,REC 6

R, 7 , 67 ,500

978.4,-582.6,1685,REC 7

R, 8 , 67 ,500

861.8,-679.1,1675,REC 8

R, 9 , 67 ,500

1546.5,-317.3,1635,REC 9

R, 10 , 67 ,500

1388,-344.6,1645,REC 10

R, 11 , 67 ,500

2005.2,-362.9,1595,REC 11

R, 12 , 67 ,500

2051.7,-467.6,1585,REC 12

R, 13 , 67 ,500

1287,-454,1655,REC 13

R, 14 , 67 ,500

5424.6,734.8,1725,CALIBRAT

R, 15 , 67 ,500

1679,-339,1610,REC 15

R, 16 , 67 ,500

1251.9,2089,1900,CALIBRAT

D, 4.5

ALL,16

C,C

H4. AM PEAK TRAFFIC LEVELS WITH PROPOSED SOUND WALLS (SOUND 2000 OUTPUT FILE)

```
SOUND32 - RELEASE 07/30/91

 TITLE:
 CANYON HILLS

REC REC ID    DNL  PEOPLE   LEQ(CAL)
 --------------------------------
  1  REC 1     67.    500.   62.5
  2  REC 2     67.    500.   61.0
  3  REC 3     67.    500.   65.0
  4  REC 4     67.    500.   63.4
  5  REC 5     67.    500.   65.6
  6  REC 6     67.    500.   66.7
  7  REC 7     67.    500.   64.4
  8  REC 8     67.    500.   63.3
  9  REC 9     67.    500.   69.2
 10  REC 10    67.    500.   67.5
 11  REC 11    67.    500.   64.6
 12  REC 12    67.    500.   63.6
 13  REC 13    67.    500.   66.5
 14  CALIBRAT  67.    500.   77.7
 15  REC 15    67.    500.   69.7
 16  CALIBRAT  67.    500.   53.9
 ----------------
```

H5. AM PEAK TRAFFIC LEVELS WITHOUT PROPOSED SOUND WALLS (SOUND 2000 INPUT FILE)

CANYON HILLS

T-NORMAL, 1

5609 , 65 , 115 , 65 , 340 , 65

T-NORMAL, 2

5609 , 65 , 115 , 65 , 340 , 65

T-NORMAL, 3

2663 , 65 , 55 , 65 , 161 , 65

T-, 4

5967 , 65 , 123 , 65 , 361 , 65

T-NORMAL, 5

2503 , 65 , 51 , 65 , 152 , 65

L- FREEWAY 210 EASTBOUND LANE 1B, 1

Y,3176.6,-417.3,1654,210 E POINT 32

Y,2788.4,-370.6,1642,210 E POINT 33

Y,1998.6,-235.4,1612,210 E POINT 34

Y,1134.6,-74.1,1572,210 E POINT 35

Y,676.4,-13.1,1548,210 E POINT 36

Y,353.5,-13.1,1532,210 E POINT 37

4.4,-61,1514,210 E POINT 38

L- FREEWAY 210 EASTBOUND LANE 1, 2

N,6459.8,1106.7,1714,210 E POINT 19

N,6163.1,967.2,1712,210 E POINT 20

N,5870.7,792.8,1708,210 E POINT 21

N,5611.5,611.6,1704,210 E POINT 22

N,5327.9,384.9,1701,210 E POINT 23

N,5131.5,232.3,1700,210 E POINT 24

N,4922.1,79.7,1698,210 E POINT 25

N,4689,-72.8,1696,210 E POINT 26

N,4376.6,-208,1690,210 E POINT 27

Y,4145.3,-295.2,1684,210 E POINT 28

Y,3800.6,-373.7,1674,210 E POINT 29

Y,3451.5,-408.6,1662,210 E POINT 31

3176.6,-417.3,1654,210 E POINT 32

L- FREEWAY 210 WESTBOUND LANE 2, 3

N,6556.5,1243.6,1718,210 W POINT 14

7789.1,1752.7,1730,210 W POINT 15

L- FREEWAY 210 EASTBOUND LANE 2, 4

N,7834.4,1673.5,1734,210 E POINT 16

N,7323.8,1455.5,1727,210 E POINT 17

N,6944.2,1302.9,1721,210 E POINT 18

6459.8,1106.7,1714,210 E POINT 19

L- FREEWAY 210 WESTBOUND LANE 1, 5

N,-3.5,57.9,1515,210 W POINT 1

N,652.5,89.7,1550,210 W POINT 2

N,1331.6,-5.6,1580,210 W POINT 3

N,1981.8,-118.2,1612,210 W POINT 4

N,2369.1,-193.2,1626,210 W POINT 5

N,2966.5,-291.6,1646,210 W POINT 6

N,3365.3,-308.9,1656,210 W POINT 7

N,3767,-265.6,1672,210 W POINT 8

N,4191.8,-155.9,1684,210 W POINT 9

N,4446.1,-69.3,1690,210 W POINT 10

N,4957.3,217.4,1696,210 W POINT 11

N,5512.1,656.3,1708,210 W POINT 12

N,5972.8,957.7,1712,210 W POINT 13

6556.5,1243.6,1718,210 W POINT 14

B- KNO, 1 , 1 , 2 ,

1829.8,63.6,1650,1662,B2 P1

1542.1,136.8,1650,1662,B2 P2

B- KNO, 2 , 1 , 2 ,

2547.9,-90.1,1630,1630,

2636.2,-143.8,1670,1670,

2734.8,-134.8,1670,1670,

2797.5,-55.4,1630,1630,

B- KNO, 3 , 1 , 2 ,

3532.2,-66,1705,1720,B4 P1

3608.3,-130.8,1705,1720,B4 P2

B- SOUTHERN BA, 4 , 2 , 0 ,

1075.2,-617.5,1670,1670,B4 P1

1274.1,-335.6,1648,1648,B4 P2

1414.2,-254.3,1636,1636,B4 P3

1529.8,-248.5,1627,1627,B4 P4

1786.2,-291.6,1600,1600,B4 P5

1988.1,-333.6,1590,1590,B4 P6

2035.3,-362.1,1590,1590,B4 P7

2116.7,-566.5,1580,1580,B4 P8

B- NORTHERN BA, 5 , 1 , 0 ,

1244.1,699,1745,1745,

1429.6,384.9,1745,1745,

1628.5,502.2,1750,1750,

B- NORTHERN BAR, 6 , 2 , 0 ,

1571.7,250.6,1650,1650,

1514.9,137.1,1650,1650,

1600.1,114.4,1650,1650,

B- NORTHERN BAR, 7 , 2 , 0 ,

2477.8,123.7,1616,1616,

2547.9,-90.1,1616,1616,

B- SOUTHERN RIDGE, 8 , 1 , 0 ,

452.6,-754.3,1780,1780,B9 P1

655.9,-445,1740,1740,B9 P2

893.2,-375.3,1730,1730,B9 P3

1167.2,-203.3,1630,1630,B9 P4

1489.3,-218.6,1630,1630,B9 P5

1693.3,-246,1630,1630,B9 P6

B- KNOLL 5, 9 , 1 , 0 ,

3414.3,-105.7,1690,1690,

3680.9,-159.4,1690,1690,

B- NORTHERN BARRIER 5, 10 , 2 , 0 ,

2797.5,-55.4,1616,1616,

3039.9,355.2,1590,1590,

B- NORTHERN BARRIER 6, 11 , 2 , 0 ,

3608.2,-130.1,1705,1705,

3776.4,-50.8,1705,1705,

3873,93,1702,1702,

B- NORTHERN BARRIER 3, 12 , 1 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

R, 1 , 67 ,500

1459.3,447.5,1753,REC 1

R, 2 , 67 ,500

1356.1,577.9,1752,REC 2

R, 3 , 67 ,500

1563.9,181.7,1657,REC 3

R, 4 , 67 ,500

1942.2,326,1651,REC 4

R, 5 , 67 ,500

2607.8,-34.7,1621,REC 5

R, 6 , 67 ,500

3604.7,-40.1,1710,REC 6

R, 7 , 67 ,500

978.4,-582.6,1685,REC 7

R, 8 , 67 ,500

861.8,-679.1,1675,REC 8

R, 9 , 67 ,500

1546.5,-317.3,1635,REC 9

R, 10 , 67 ,500

1388,-344.6,1645,REC 10

R, 11 , 67 ,500

2005.2,-362.9,1595,REC 11

R, 12 , 67 ,500

2051.7,-467.6,1585,REC 12

R, 13 , 67 ,500

1287,-454,1655,REC 13

R, 14 , 67 ,500

5424.6,734.8,1725,CALIBRAT

R, 15 , 67 ,500

1679,-339,1610,REC 15

R, 16 , 67 ,500

1251.9,2089,1900,CALIBRAT

D, 4.5

ALL,16

C,C

H6. AM PEAK TRAFFIC LEVELS WITHOUT PROPOSED SOUND WALLS (SOUND 2000 OUTPUT FILE)

SOUND32 - RELEASE 07/30/91

TITLE:

CANYON HILLS

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	REC 1	67.	500.	62.5
2	REC 2	67.	500.	61.0
3	REC 3	67.	500.	69.1
4	REC 4	67.	500.	63.5
5	REC 5	67.	500.	70.1
6	REC 6	67.	500.	68.8
7	REC 7	67.	500.	64.8
8	REC 8	67.	500.	62.3
9	REC 9	67.	500.	70.9
10	REC 10	67.	500.	68.5
11	REC 11	67.	500.	78.8
12	REC 12	67.	500.	75.3
13	REC 13	67.	500.	67.3
14	CALIBRAT	67.	500.	77.7
15	REC 15	67.	500.	74.8
16	CALIBRAT	67.	500.	53.9

H7. PM PEAK TRAFFIC LEVELS WITH PROPOSED SOUND WALLS (SOUND 2000 INPUT FILE)

CANYON HILLS

T-NORMAL, 1

3021 , 65 , 62 , 65 , 183 , 65

T-NORMAL, 2

3021 , 65 , 62 , 65 , 183 , 65

T-NORMAL, 3

6018 , 65 , 124 , 65 , 364 , 65

T-, 4

3213 , 65 , 66 , 65 , 195 , 65

T-NORMAL, 5

5657 , 65 , 116 , 65 , 362 , 65

L- FREEWAY 210 EASTBOUND LANE 1B, 1

Y,3176.6,-417.3,1654,210 E POINT 32

Y,2788.4,-370.6,1642,210 E POINT 33

Y,1998.6,-235.4,1612,210 E POINT 34

Y,1134.6,-74.1,1572,210 E POINT 35

Y,676.4,-13.1,1548,210 E POINT 36

Y,353.5,-13.1,1532,210 E POINT 37

4.4,-61,1514,210 E POINT 38

L- FREEWAY 210 EASTBOUND LANE 1, 2

N,6459.8,1106.7,1714,210 E POINT 19

N,6163.1,967.2,1712,210 E POINT 20

N,5870.7,792.8,1708,210 E POINT 21

N,5611.5,611.6,1704,210 E POINT 22

N,5327.9,384.9,1701,210 E POINT 23

N,5131.5,232.3,1700,210 E POINT 24

N,4922.1,79.7,1698,210 E POINT 25

N,4689,-72.8,1696,210 E POINT 26

N,4376.6,-208,1690,210 E POINT 27

Y,4145.3,-295.2,1684,210 E POINT 28

Y,3800.6,-373.7,1674,210 E POINT 29

Y,3451.5,-408.6,1662,210 E POINT 31

3176.6,-417.3,1654,210 E POINT 32

L- FREEWAY 210 WESTBOUND LANE 2, 3

N,6556.5,1243.6,0,210 W POINT 14

7789.1,1752.7,1730,210 W POINT 15

L- FREEWAY 210 EASTBOUND LANE 2, 4

N,7834.4,1673.5,1734,210 E POINT 16

N,7323.8,1455.5,1727,210 E POINT 17

N,6944.2,1302.9,1721,210 E POINT 18

6459.8,1106.7,1714,210 E POINT 19

L- FREEWAY 210 WESTBOUND LANE 1, 5

N,-3.5,57.9,1515,210 W POINT 1

N,652.5,89.7,1550,210 W POINT 2

N,1331.6,-5.6,1580,210 W POINT 3

N,1981.8,-118.2,1612,210 W POINT 4

N,2369.1,-193.2,1626,210 W POINT 5

N,2966.5,-291.6,1646,210 W POINT 6

N,3365.3,-308.9,1656,210 W POINT 7

N,3767,-265.6,1672,210 W POINT 8

N,4191.8,-155.9,1684,210 W POINT 9

N,4446.1,-69.3,1690,210 W POINT 10

N,4957.3,217.4,1696,210 W POINT 11

N,5512.1,656.3,1708,210 W POINT 12

N,5972.8,957.7,1712,210 W POINT 13

6556.5,1243.6,1718,210 W POINT 14

B- NORTHERN BARRIER 3, 1 , 1 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

B- KNOL, 2 , 1 , 2 ,

2547.9,-90.1,1630,1630,

2636.2,-143.8,1670,1670,

2734.8,-134.8,1670,1670,

2797.5,-55.4,1630,1630,

B- KNOL, 3 , 1 , 2 ,

3532.2,-66,1705,1720,B4 P1

3608.3,-130.8,1705,1720,B4 P2

B- SOUTHERN, 4 , 2 , 0 ,

1274.1,-335.6,1648,1664,

1414.2,-254.3,1636,1652,

1529.8,-248.5,1627,1652,

1786.2,-291.6,1600,1625,

1988.1,-333.6,1590,1620,

2035.3,-362.1,1590,1606,

2116.7,-566.5,1580,1588,

B- NORTHERN, 5 , 2 , 0 ,

1571.7,250.6,1650,1656,

1514.9,137.1,1650,1656,

1600.1,114.4,1650,1656,

B- NORTHERN, 6 , 2 , 0 ,

2477.8,123.7,1616,1622,

2547.9,-90.1,1616,1622,

B- SOUTHERN RI, 7 , 1 , 0 ,

452.6,-754.3,1780,1780,

655.9,-445,1740,1740,

893.2,-375.3,1730,1730,

1167.2,-203.3,1630,1630,

1489.3,-218.6,1630,1630,

1693.3,-246,1630,1630,

B- KNOLL 5, 8 , 1 , 0 ,

3414.3,-105.7,1690,1690,

3680.9,-159.4,1690,1690,

B- NORTHERN BARRIER, 9 , 2 , 0 ,

2797.5,-55.4,1616,1624,

3039.9,355.2,1590,1596,

B- NORTHERN BARRIER, 10 , 2 , 0 ,

3608.2,-130.1,1705,1713,

3776.4,-50.8,1705,1713,

3873,93,1702,1710,

B- NORTHERN BARRIER 1, 11 , 1 , 0 ,

1244.1,699,1745,1745,

1429.6,384.9,1745,1745,

1628.5,502.2,1750,1750,

B- NORTHERN BARRIER 3, 12 , 2 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

R, 1 , 67 ,500

1459.3,447.5,1753,REC 1

R, 2 , 67 ,500

1356.1,577.9,1752,REC 2

R, 3 , 67 ,500

1563.9,181.7,1657,REC 3

R, 4 , 67 ,500

1942.2,326,1651,REC 4

R, 5 , 67 ,500

2607.8,-34.7,1621,REC 5

R, 6 , 67 ,500

3604.7,-40.1,1710,REC 6

R, 7 , 67 ,500

978.4,-582.6,1685,REC 7

R, 8 , 67 ,500

861.8,-679.1,1675,REC 8

R, 9 , 67 ,500

1546.5,-317.3,1635,REC 9

R, 10 , 67 ,500

1388,-344.6,1645,REC 10

R, 11 , 67 ,500

2005.2,-362.9,1595,REC 11

R, 12 , 67 ,500

2051.7,-467.6,1585,REC 12

R, 13 , 67 ,500

1287,-454,1655,REC 13

R, 14 , 67 ,500

5424.6,734.8,1725,CALIBRAT

R, 15 , 67 ,500

1679,-339,1610,REC 15

R, 16 , 67 ,500

1251.9,2089,1900,CALIBRAT

D, 4.5

ALL,16

C,C

H8. PM PEAK TRAFFIC LEVELS WITH PROPOSED SOUND WALLS (SOUND 2000 OUTPUT FILE)

SOUND32 - RELEASE 07/30/91

TITLE:

CANYON HILLS

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	REC 1	67.	500.	62.5
2	REC 2	67.	500.	61.4
3	REC 3	67.	500.	71.3
4	REC 4	67.	500.	65.8
5	REC 5	67.	500.	67.2
6	REC 6	67.	500.	67.2
7	REC 7	67.	500.	64.0
8	REC 8	67.	500.	62.8
9	REC 9	67.	500.	67.2
10	REC 10	67.	500.	66.2
11	REC 11	67.	500.	59.8
12	REC 12	67.	500.	60.8
13	REC 13	67.	500.	65.8
14	CALIBRAT	67.	500.	79.0
15	REC 15	67.	500.	63.4
16	CALIBRAT	67.	500.	54.3

H9. PM PEAK TRAFFIC LEVELS WITHOUT PROPOSED SOUND WALLS (SOUND 2000 INPUT FILE)

CANYON HILLS

T-NORMAL, 1

3021 , 65 , 62 , 65 , 183 , 65

T-NORMAL, 2

3021 , 65 , 62 , 65 , 183 , 65

T-NORMAL, 3

6018 , 65 , 124 , 65 , 364 , 65

T-, 4

3213 , 65 , 66 , 65 , 195 , 65

T-NORMAL, 5

5657 , 65 , 116 , 65 , 362 , 65

L- FREEWAY 210 EASTBOUND LANE 1B, 1

Y,3176.6,-417.3,1654,210 E POINT 32

Y,2788.4,-370.6,1642,210 E POINT 33

Y,1998.6,-235.4,1612,210 E POINT 34

Y,1134.6,-74.1,1572,210 E POINT 35

Y,676.4,-13.1,1548,210 E POINT 36

Y,353.5,-13.1,1532,210 E POINT 37

4.4,-61,1514,210 E POINT 38

L- FREEWAY 210 EASTBOUND LANE 1, 2

N,6459.8,1106.7,1714,210 E POINT 19

N,6163.1,967.2,1712,210 E POINT 20

N,5870.7,792.8,1708,210 E POINT 21

N,5611.5,611.6,1704,210 E POINT 22

N,5327.9,384.9,1701,210 E POINT 23

N,5131.5,232.3,1700,210 E POINT 24

N,4922.1,79.7,1698,210 E POINT 25

N,4689,-72.8,1696,210 E POINT 26

N,4376.6,-208,1690,210 E POINT 27

Y,4145.3,-295.2,1684,210 E POINT 28

Y,3800.6,-373.7,1674,210 E POINT 29

Y,3451.5,-408.6,1662,210 E POINT 31

3176.6,-417.3,1654,210 E POINT 32

L- FREEWAY 210 WESTBOUND LANE 2, 3

N,6556.5,1243.6,0,210 W POINT 14

7789.1,1752.7,1730,210 W POINT 15

L- FREEWAY 210 EASTBOUND LANE 2, 4

N,7834.4,1673.5,1734,210 E POINT 16

N,7323.8,1455.5,1727,210 E POINT 17

N,6944.2,1302.9,1721,210 E POINT 18

6459.8,1106.7,1714,210 E POINT 19

L- FREEWAY 210 WESTBOUND LANE 1, 5

N,-3.5,57.9,1515,210 W POINT 1

N,652.5,89.7,1550,210 W POINT 2

N,1331.6,-5.6,1580,210 W POINT 3

N,1981.8,-118.2,1612,210 W POINT 4

N,2369.1,-193.2,1626,210 W POINT 5

N,2966.5,-291.6,1646,210 W POINT 6

N,3365.3,-308.9,1656,210 W POINT 7

N,3767,-265.6,1672,210 W POINT 8

N,4191.8,-155.9,1684,210 W POINT 9

N,4446.1,-69.3,1690,210 W POINT 10

N,4957.3,217.4,1696,210 W POINT 11

N,5512.1,656.3,1708,210 W POINT 12

N,5972.8,957.7,1712,210 W POINT 13

6556.5,1243.6,1718,210 W POINT 14

B- NORTHERN BARRIER 3, 1 , 1 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

B- KNOLL, 2 , 1 , 2 ,

2547.9,-90.1,1630,1630,

2636.2,-143.8,1670,1670,

2734.8,-134.8,1670,1670,

2797.5,-55.4,1630,1630,

B- KNOLL, 3 , 1 , 2 ,

3532.2,-66,1705,1720,B4 P1

3608.3,-130.8,1705,1720,B4 P2

B- SOUTHERN BA, 4 , 2 , 0 ,

1075.2,-617.5,1670,1670,

1274.1,-335.6,1648,1648,

1414.2,-254.3,1636,1636,

1529.8,-248.5,1627,1627,

1786.2,-291.6,1600,1600,

1988.1,-333.6,1590,1590,

2035.3,-362.1,1590,1590,

2116.7,-566.5,1580,1580,

B- NORTHERN BA, 5 , 1 , 0 ,

1244.1,699,1745,1745,

1429.6,384.9,1745,1745,

1628.5,502.2,1750,1750,

B- NORTHERN BA, 6 , 2 , 0 ,

1571.7,250.6,1650,1650,

1514.9,137.1,1650,1650,

1600.1,114.4,1650,1650,

B- NORTHERN BA, 7 , 2 , 0 ,

2477.8,123.7,1616,1616,

2547.9,-90.1,1616,1616,

B- SOUTHERN RIDG, 8 , 1 , 0 ,

452.6,-754.3,1780,1780,

655.9,-445,1740,1740,

893.2,-375.3,1730,1730,

1167.2,-203.3,1630,1630,

1489.3,-218.6,1630,1630,

1693.3,-246,1630,1630,

B- KNOLL 5, 9 , 1 , 0 ,

3414.3,-105.7,1690,1690,

3680.9,-159.4,1690,1690,

B- NORTHERN BARRIER 5, 10 , 2 , 0 ,

2797.5,-55.4,1616,1616,

3039.9,355.2,1590,1590,

B- NORTHERN BARRIER 6, 11 , 2 , 0 ,

3608.2,-130.1,1705,1705,

3776.4,-50.8,1705,1705,

3873,93,1702,1702,

B- NORTHERN BARRIER 3, 12 , 2 , 0 ,

1745.8,166.9,1651,1651,

2039.1,297.9,1650,1650,

R, 1 , 67 ,500

1459.3,447.5,1753,REC 1

R, 2 , 67 ,500

1356.1,577.9,1752,REC 2

R, 3 , 67 ,500

1563.9,181.7,1657,REC 3

R, 4 , 67 ,500

1942.2,326,1651,REC 4

R, 5 , 67 ,500

2607.8,-34.7,1621,REC 5

R, 6 , 67 ,500

3604.7,-40.1,1710,REC 6

R, 7 , 67 ,500

978.4,-582.6,1685,REC 7

R, 8 , 67 ,500

861.8,-679.1,1675,REC 8

R, 9 , 67 ,500

1546.5,-317.3,1635,REC 9

R, 10 , 67 ,500

1388,-344.6,1645,REC 10

R, 11 , 67 ,500

2005.2,-362.9,1595,REC 11

R, 12 , 67 ,500

2051.7,-467.6,1585,REC 12

R, 13 , 67 ,500

1287,-454,1655,REC 13

R, 14 , 67 ,500

5424.6,734.8,1725,CALIBRAT

R, 15 , 67 ,500

1679,-339,1610,REC 15

R, 16 , 67 ,500

1251.9,2089,1900,CALIBRAT

D, 4.5

ALL,16

C,C

H10. PM PEAK TRAFFIC LEVELS WITHOUT PROPOSED SOUND WALLS (SOUND 2000 OUTPUT FILE)

SOUND32 - RELEASE 07/30/91

TITLE:
CANYON HILLS

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	REC 1	67.	500.	62.5
2	REC 2	67.	500.	61.4
3	REC 3	67.	500.	73.5
4	REC 4	67.	500.	65.8
5	REC 5	67.	500.	71.1
6	REC 6	67.	500.	69.1
7	REC 7	67.	500.	64.7
8	REC 8	67.	500.	62.2
9	REC 9	67.	500.	70.4
10	REC 10	67.	500.	68.3
11	REC 11	67.	500.	77.9
12	REC 12	67.	500.	73.9
13	REC 13	67.	500.	67.1
14	CALIBRAT	67.	500.	79.0
15	REC 15	67.	500.	73.6
16	CALIBRAT	67.	500.	54.3

ArupAcoustics

APPENDIX I

Traffic Information for Highway 210

PEAK HOUR VOLUME DATA

Peak hour volume data consists of hourly volume relationships and data location. The hourly volumes are expressed as a percentage of the Annual Average Daily Traffic (AADT). The percentages are shown for both the AM and the PM peak periods.

The principle data described here are the K factor, the D factor and their product (KD). The K factor is the percentage of AADT during the peak hour for both directions of travel. The D factor is the percentage of the peak hour travel in the peak direction. KD multiplied with the AADT gives the one way peak period directional flow rate or the design hourly volume (DHV). The design hourly volume is used for either Operational Analysis or Design Analysis. Refer to the 2000 Highway Capacity Manual for more details.

Following is a glossary of terms used in this listing of peak hour volume data:

Dir	Indicates direction of travel for peak volume
AADT	Annual Average Daily Traffic in vehicles per day (vpd).
AM Peak	Represents the morning peak period for traffic analysis
CS	Control Station Number, Caltrans identification number for monitoring site.
CO	County abbreviation used by Caltrans
D	D factor. The percentage of traffic in the peak direction during the peak hour. Values in this book are derived by dividing the measured PHV by the sum of both directions of travel during the peak hour.
DAY	Day of week for the peak volume.
DDHV	The directional design hour volume, in vehicles per hour (vph) DDHV=AADTxKxD. See equation (8-1) on page 8-11 of the 2000 Highway Capacity Manual.
DI	Caltrans has twelve transportation districts statewide. This abbreviation identifies the district in which the count station is located.
HR	The ending time for the peak hour volume listed. The volume observed fro 1 to 2 would be recorded as 2.

K	The percentage of the AADT in both directions during the peak hour. Values in this table are derived by dividing the measured 2-way PHV by the AADT.
KD	The product of K and D. The percentage of AADT in the peak direction during the peak hour. Values in this table are derived by dividing the measured 1-way PHV by the AADT.
LEG	For traffic counting purposes, a highway intersection or interchange is assigned two legs according to increasing postmiles (route direction) and with a postmile reference at the center of the intersection or interchange. The volume of traffic on each leg is denoted by an A, B or O. A = ahead leg, B = back leg, and O – traffic volume being same for both back and ahead legs.
MNTH	The month that the peak volume occurred.
PHV	Peak Hour Volume in the peak direction. A one way volume in vehicles per hour (vph) as used here. The PHV is analogous to the DDHV as used for design purposes.
PM	The Post Mile is the mileage measured from the county line, or from the beginning of a route. Each postmile along a route in a county is a unique location on the state highway system.
PM Peak	Represents the afternoon peak period for traffic analysis.
PRE	The postmile may have a prefix like R, T, L, M, etc. When a length of highway is changed due to construction or realigment, new postmile values are assigned. To distinguish the new values from the old, an alpha code is prefixed to the new postmile.
RTE	The state highway route number
YR	The year when the count was made. Traffic counting is on a 3-year cycle.

I1. TRUCK TRAFFIC ON CALIFORNIA STATE HIGHWAYS YEAR 2000 (INTERSTATE 210 SECTION)

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT TOTAL By Axle 2	3	4	5+	% TRUCK AADT By Axle 2	3	4	5+	EAL 1-WAY (1000)	YEAR VER/EST
210	07	LA	R0	A	JCT. RTE. 5, GOLDEN STATE FREEWAY	60000	5700	9.5	2109	285	285	3021	37	5	5	53	1184	97E
210	07	LA	R4.94	B	MACLAY STREET	86000	7000	8.14	1500	800	300	4400	21.43	11.43	4.29	62.86	1688	00E
210	07	LA	R5.911	B	JCT. RTE. 118, SIMI VALLEY FREEWAY	100000	7000	7	1500	800	300	4400	21.43	11.43	4.29	62.86	1688	00E
210	07	LA	R5.911	A	JCT. RTE. 118, SIMI VALLEY FREEWAY	100000	7900	7.9	2000	1600	300	4000	25.32	20.25	3.8	50.63	1641	00E
210	07	LA	R11.084	B	SUNLAND BOULEVARD	97000	7896	8.14	1999	1599	300	3998	25.32	20.25	3.8	50.63	1640	00E
210	07	LA	R11.084	A	SUNLAND BOULEVARD	90000	7902	8.78	2001	1600	300	4001	25.32	20.25	3.8	50.63	1642	00E
210	07	LA	R16.773	A	GLENDALE, PENNSYLVANIA AVENUE	126000	7900	6.27	2000	1600	300	4000	25.32	20.25	3.8	50.63	1641	00E
210	07	LA	R18.872	A	WEST JCT. RTE. 2, GLENDALE FREEWAY	117000	9126	7.8	3313	484	237	5092	36.3	5.3	2.6	55.8	1952	92V
210	07	LA	R19.881	A	EAST JCT. RTE. 2, ANGELES CREST HIGHWAY	117000	9594	8.2	3463	652	259	5219	36.1	6.8	2.7	54.4	2020	92V
210	07	LA	R23.191	B	PASADENA, LINCOLN BOULEVARD	110000	9020	8.2	3716	586	244	4474	41.2	6.5	2.7	49.6	1763	92V
210	07	LA	R23.191	A	PASADENA, LINCOLN BOULEVARD	120000	9240	7.7	3844	675	268	4454	41.6	7.3	2.9	48.2	1773	92V
210	07	LA	R24.962	B	PASADENA, JCT. RTES. 710/134	126000	8442	6.7	3436	709	211	4086	40.7	8.4	2.5	48.4	1626	92V
210	07	LA	R24.962	A	PASADENA, JCT. RTES. 710/134	270000	13500	5	3800	1999	701	7000	28.15	14.81	5.19	51.85	2835	00E
210	07	LA	L29.795	B	JCT. RTE. 164 SOUTH	241000	13207	5.48	3702	1900	700	6903	28.03	14.39	5.3	52.27	2789	00E
210	07	LA	R29.59	A	JCT RTE 164 SOUTH	230000	13202	5.74	3701	1900	700	6901	28.03	14.39	5.3	52.27	2788	00E
210	07	LA	R32.89	B	HUNTINGTON DRIVE	218000	13211	6.06	3703	1901	700	6905	28.03	14.39	5.3	52.27	2790	00E
210	07	LA	R32.89	A	HUNTINGTON DRIVE	215000	13201	6.14	3700	1900	700	6900	28.03	14.39	5.3	52.27	2788	00E
210	07	LA	R36.41	B	JCT. RTE. 605	231000	13190	5.71	3697	1898	699	6894	28.03	14.39	5.3	52.27	2785	00E

I2. 2001 AADT ON CALIFORNIA STATE HIGHWAYS

District	Route	County	PostMile Prefix	Post Mile	Description	Back Peak Hr	Back Peak Mo	Back AADT	Ahead Peak Hr	Ahead Peak Mo	Ahead AADT
7	210	LA			LOS ANGELES COUNTY						
7	210	LA	R	0	JCT. RTE. 5, GOLDEN STATE FR BEGIN FOOTHILL FREEWAY				7000	71000	67000
7	210	LA	R	0.84	LOS ANGELES, YARNELL STREET	7000	71000	67000	6700	68000	65000
7	210	LA	R	1.92	LOS ANGELES, ROXFORD STREET	6700	68000	65000	6500	67000	64000
7	210	LA	R	3.28	LOS ANGELES, POLK STREET	6500	67000	64000	7600	79000	75000
7	210	LA	R	4.11	LOS ANGELES, HUBBARD STREET	7600	79000	75000	9900	101000	96000
7	210	LA	R	4.94	LOS ANGELES, MACLAY STREET	9900	101000	96000	11600	117000	111000
7	210	LA	R	5.91	LOS ANGELES, JCT. RTE. 118 SIMI VALLEY FREEWAY	11600	117000	111000	11100	108000	104000
7	210	LA	R	7.82	LOS ANGELES, OSBORNE STREET/FOOTHILL BOULEVARD	11100	108000	104000	11100	108000	102000
7	210	LA	R	9.43	LOS ANGELES, WHEATLAND AVENUE	11100	108000	102000	11000	108000	102000
7	210	LA	R	11.08	LOS ANGELES, SUNLAND BOULEVARD	11000	108000	102000	10100	100000	94000
7	210	LA	R	14.17	LOS ANGELES, LA TUNA CANYON ROAD	10100	100000	94000	10600	106000	100000
7	210	LA	R	15.62	GLENDALE, LOWELL AVENUE	10600	106000	100000	13100	133000	127000
7	210	LA	R	16.77	GLENDALE, PENNSYLVANIA AVENUE	13100	133000	127000	13800	141000	135000
7	210	LA	R	17.38	LA CRESCENTA AVENUE	13800	141000	135000			
7	210	LA	R	18.88	LA CANADA FLINTRIDGE, WEST JCT. RTE. 2, GLENDALE FREEWAY	15500	160000	154000	10800	112000	110000
7	210	LA	R	19.88	LA CANADA FLINTRIDGE, EAST JCT. RTE. 2, ANGELES CREST HIGHWAY	10800	112000	110000	10600	111000	109000
7	210	LA	R	20.6	LA CANADA FLINTRIDGE, GOULD AVENUE/FOOTHILL BOULEVARD	10600	111000	109000	9200	99000	97000
7	210	LA	R	20.85	LA CANADA FLINTRIDGE, HAMPTON AVENUE/FOOTHILL BOULEVARD	9200	99000	97000	10400	113000	111000
7	210	LA	R	21.53	LA CANADA FLINTRIDGE, BERKSHIRE PLACE	10400	113000	111000	9900	110000	108000
7	210	LA	R	22.49	PASADENA, ARROYO BOULEVARD	9900	110000	108000	9800	111000	109000
7	210	LA	R	23.19	PASADENA, LINCOLN BOULEVARD/HOWARD AVENUE	9800	111000	109000	11000	126000	124000
7	210	LA	R	24.06	PASADENA, MOUNTAIN STREET	11000	126000	124000	10900	132000	129000
7	210	LA	R	24.96	PASADENA, JCT. RTE. 710 SOUTH, JCT. RTE. 134 WEST	10900	132000	129000	24600	307000	300000
7	210	LA	R	26.33	PASADENA, LAKE AVENUE	24600	307000	300000	23000	304000	297000
7	210	LA	R	26.94	PASADENA, HILL AVENUE	23000	304000	297000	21200	288000	280000
7	210	LA	R	27.14	PASADENA, ALLEN AVENUE	21200	288000	280000	22400	302000	293000
7	210	LA	R	28.25	PASADENA, ALTADENA DRIVE	22400	302000	293000	20900	283000	274000

7	210	LA	R	28.68	PASADENA, SAN GABRIEL BOULEVARD	20900	283000	274000	21300	283000	272000
7	210	LA	R	29.29	PASADENA, SIERRA MADRE VILLA	21300	283000	272000	20200	269000	257000
7	210	LA	L	29.8	PASADENA, JCT. RTE. 164 SOUTH; ROSEMEAD BOULEVARD	20200	269000	257000	19600	257000	249000
7	210	LA	R	30.82	ARCADIA, BALDWIN AVENUE	19600	257000	249000	19100	249000	241000
7	210	LA	R	31.88	ARCADIA, SANTA ANITA AVENUE	19100	249000	241000	18400	239000	232000
7	210	LA	R	32.89	MONROVIA, HUNTINGTON DRIVE	18400	239000	232000	18000	243000	230000
7	210	LA	R	33.91	MONROVIA, MYRTLE AVENUE	18000	243000	230000	17900	241000	228000
7	210	LA	R	34.74	MONROVIA, MOUNTAIN AVENUE	17900	241000	228000	18600	250000	236000
7	210	LA	R	35.24	DUARTE, BUENA VISTA STREET	18600	250000	236000	19000	250000	239000
7	210	LA	R	36.41	DUARTE, JCT.RTE. 605, SAN GABRIEL RIVER FREEWAY	19000	250000	239000	16800	223000	217000
7	210	LA	R	37.86	IRWINDALE, IRWINDALE AVENUE	16800	223000	217000	15300	204000	198000
7	210	LA	R	38.96	AZUSA, VERNON AVENUE	15300	204000	198000	15200	204000	198000
7	210	LA	R	39.6	AZUSA, AZUSA AVENUE	15200	204000	198000	14400	193000	188000
7	210	LA	R	40.6	AZUSA, CITRUS AVENUE	14400	193000	188000	13700	184000	179000
7	210	LA	R	41.59	GLENDORA, GRAND AVENUE	13700	184000	179000	13800	186000	181000
7	210	LA	R	43.16	GLENDORA, SUNFLOWER AVENUE	13800	186000	181000	13600	181000	177000
7	210	LA	R	44.4	GLENDORA, JCT. RTE. 30 EAST	13600	181000	177000	10900	141000	137000
7	210	LA	R	45.42	SAN DIMAS, ARROW HIGHWAY	10900	141000	137000	11900	151000	147000
7	210	LA	R	45.94	SAN DIMAS, COVINA BOULEVARD	11900	151000	147000	13000	163000	159000
7	210	LA	R	47.53	SAN DIMAS, RAGING WATERS DRIVE	13000	163000	159000	13000	167000	159000
7	210	LA	R	48.52	JCT. RTE. 10, JCT. RTE. 57 SOUTH, JCT. RTE. 71 SOUTHEAST	13000	167000	159000			

I3. CALTRANS K AND D FACTORS FROM 2001

OTM32420 CALTRANS TRAFFIC VOLUMES PAGE # 27

03/28/2002
12:53:20

LATEST TRAFFIC YEAR SELECTED
PEAK HOUR VOLUME DATA

DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	AM PEAK 1 WAY PHV	AM PEAK % K	AM PEAK % D	AM PEAK % KD	HR	DAY	MNTH	Dir	PM PEAK 1 WAY PHV	PM PEAK % K	PM PEAK % D	PM PEAK % KD	HR	DAY	MNTH
07	210	LA	R	7.194	781	O	01	E	6195	9.9	59.97	5.94	8	THU	MAR	W	6491	10.54	59.04	6.22	18	THU	MAY
07	210	LA	R	17.7	544	O	01	E	9930	9.33	69.14	6.45	8	THU	MAY	W	10026	9.98	65.19	6.51	18	TUE	JAN
07	210	LA	R	23.55	759	O	01	E	6376	8.73	58.98	5.15	8	THU	DEC	W	6640	8.71	61.52	5.36	18	TUE	APR
07	210	LA	R	35.74	194	A	01	W	9883	5.99	69.04	4.13	7	TUE	APR	E	10611	7.64	58.09	4.44	17	MON	OCT
07	210	LA	R	41.59	905	A	00	W	8598	6.98	66.5	4.64	7	WED	SEP	W	10686	11.32	50.96	5.77	16	SUN	APR
07	210	LA	R	42.66	761	O	01	W	8501	6.95	67.53	4.69	7	WED	MAR	E	7316	7.04	57.36	4.04	16	TUE	MAR
07	210	LA	R	46.45	416	O	01	W	6569	7.12	58.02	4.13	8	MON	SEP	W	6906	8.25	52.68	4.35	18	THU	SEP
01	211	HUM	R	77.05	148	A	01	N	273	7.85	65.63	5.15	9	FRI	DEC	S	295	9.26	60.08	5.56	18	THU	SEP
07	213	LA		.38	235	A	01	N	1411	7.32	70.73	5.18	8	WED	OCT	S	1575	9.12	63.36	5.78	18	MON	OCT
07	213	LA		5.085	245	B	01	N	1538	8.02	65.73	5.27	9	FRI	MAY	N	1427	7.77	62.97	4.89	13	WED	MAY
08	215	RIV	R	15.52	603	B	01	S	2854	7.18	66.39	4.77	7	WED	MAY	N	3209	9.24	58.02	5.36	16	FRI	DEC
08	215	RIV		26.31	827	A	00	N	2887	8.12	63.66	5.17	8	TUE	MAY	S	2569	8.17	56.29	4.6	18	TUE	MAR
08	215	RIV	R	30.93	214	A	00	S	3951	7.44	65.64	4.88	8	WED	FEB	N	3698	7.88	58.02	4.57	18	FRI	APR
08	215	RIV	R	35.76	215	B	00	N	4052	7.61	64.13	4.88	8	THU	APR	S	3687	8.2	54.2	4.44	18	THU	FEB
08	215	RIV	R	38.34	701	B	00	N	4098	7.31	62.99	4.61	8	THU	MAR	N	3836	7.72	55.83	4.31	16	FRI	MAR
08	215	SBD		4.052	868	B	00	S	6828	8.24	51.23	4.22	8	WED	MAY	N	6682	7.52	54.98	4.13	16	TUE	NOV
08	215	SBD		8.083	839	B	01	S	6514	7.68	63.38	4.87	9	THU	JAN	N	6081	8.13	55.86	4.54	17	TUE	FEB
08	215	SBD		11.63	905	A	00	S	2638	8.13	70.05	5.69	8	THU	FEB	N	2452	8.76	60.39	5.29	18	FRI	FEB
08	215	SBD		14.10	606	A	01	S	2722	9.15	62.02	5.67	8	TUE	MAY	N	2494	9.69	53.66	5.2	18	TUE	APR
08	215	SBD		17.32	822	B	00	S	2578	8.95	62.65	5.61	8	THU	OCT	N	2419	9.69	54.26	5.26	18	THU	MAR
06	216	TUL	R	.488	142	A	99	W	1475	8.37	67.38	5.64	8	MON	JUL	E	1973	11.39	66.21	7.54	16	WED	APR
06	216	TUL		14.01	143	B	99	W	527	13.17	76.49	10.07	7	THU	OCT	W	553	15.41	68.61	10.57	16	FRI	OCT
06	216	TUL		14.01	144	A	99	W	269	8.04	76.64	6.16	8	MON	APR	W	274	10.49	59.83	6.28	16	TUE	APR
06	216	TUL		19.25	145	B	99	W	147	10.93	73.87	8.08	8	THU	APR	E	135	13.19	56.25	7.42	15	SUN	JUL
10	219	STA		.116	290	A	01	W	1343	9.71	61.02	5.93	8	TUE	JAN	W	1323	9.7	60.22	5.84	16	WED	JAN
10	219	STA		4.858	179	B	01	E	611	8.5	52.76	4.48	9	FRI	SEP	E	803	10.38	56.75	5.89	17	THU	SEP
04	220	SOL		0	351	A	01	E	20	34.58	54.05	18.69	11	MON	SEP	W	19	30.84	57.58	17.76	14	FRI	SEP
03	220	SAC		3.114	922	B	99	E	43	7.13	72.88	5.2	9	WED	MAR	E	59	11	64.84	7.13	18	FRI	MAR
04	221	NAP		2.682	77	B	99	S	1971	8.54	63.89	5.45	8	MON	MAR	N	1949	9.04	59.66	5.39	18	THU	MAR
01	222	MEN		.96	733	A	00	W	344	7.13	62.43	4.45	8	WED	MAY	E	401	9.51	54.56	5.19	18	WED	AUG
06	223	KER		1.85	161	A	00	W	98	11.92	79.03	9.42	7	FRI	SEP	E	80	12.6	61.07	7.69	17	THU	JUN
06	223	KER	R	10.94	146	A	00	E	226	8.52	64.02	5.46	8	MON	MAR	W	247	10.96	54.41	5.96	16	WED	SEP
06	223	KER		20.91	147	B	00	E	345	8.79	52.27	4.6	12	FRI	MAR	W	385	9.14	56.12	5.13	17	MON	DEC
05	225	SB		.176	116	A	00	W	782	9.49	55.23	5.24	9	FRI	DEC	E	899	9.82	61.32	6.02	18	TUE	JUN
05	227	SLO		0	146	A	00	S	767	8.41	64.89	5.46	8	WED	OCT	S	840	10.48	57.03	5.97	17	THU	OCT
05	227	SLO		7.12	148	B	01	N	966	10.95	75.71	8.29	8	WED	FEB	S	1055	11.87	76.28	9.05	17	MON	SEP
05	227	SLO	R	12.95	151	A	00	S	584	7.43	58.93	4.38	9	FRI	OCT	N	698	10.06	51.97	5.23	13	TUE	JUL
05	227	SLO	R	14.06	153	B	00	S	1087	9.25	52.87	4.89	12	FRI	APR	N	1248	9.49	59.18	5.61	18	TUE	OCT
07	232	VEN		0	201	A	01	N	2228	7.26	71.21	5.17	8	TUE	JAN	S	2129	9.32	52.99	4.94	17	WED	NOV
07	232	VEN	R	4.11	202	B	01	S	1244	9.27	69.15	6.41	8	TUE	JAN	N	1554	12.04	66.55	8.01	18	THU	APR
06	233	MAD		.005	149	A	01	S	288	8.66	97.63	8.46	5	TUE	JAN	S	306	9.13	98.39	8.99	0	MON	JAN
06	233	MAD		3.586	150	B	01	N	398	7.4	62.19	4.6	10	THU	OCT	N	518	9.42	63.64	5.99	17	THU	OCT
04	237	SCL	R	.608	215	A	01	E	6227	12.2	79.26	9.67	9	TUE	OCT	W	3735	8.13	71.32	5.8	18	MON	APR
04	238	ALA		0	146	A	00	N	1680	10.05	52.93	5.32	8	TUE	NOV	N	1791	9.79	57.94	5.67	18	TUE	NOV
04	238	ALA		6.78	421	B	00	S	1402	7.7	67.11	5.17	7	TUE	MAY	N	1366	9.52	52.91	5.03	18	THU	AUG
04	238	ALA		16.28	148	A	00	S	3390	7.01	62.56	4.39	8	TUE	NOV	S	3506	6.43	70.53	4.54	13	SAT	FEB
12	241	ORA		32.54	923	B	01	S	2110	12.08	60.23	7.28	8	WED	FEB	N	2284	11.47	68.67	7.88	18	WED	MAR
08	243	RIV		28.28	890	B	99	S	153	11.87	60.96	7.23	11	SAT	JUL	N	233	15.56	70.82	11.02	16	SUN	JUL
08	243	RIV		29.66	243	B	99	N	420	9.35	75.95	7.1	9	WED	JAN	N	344	10.07	57.72	5.81	15	THU	APR
06	245	TUL		7.066	88	A	99	S	117	8.42	65.36	5.51	8	FRI	OCT	S	132	10.26	60.55	6.21	16	TUE	OCT
05	246	SB		9.55	203	B	01	E	772	9.99	53.76	5.37	12	SAT	FEB	W	861	11.44	52.34	5.99	18	FRI	AUG
05	246	SB		9.56	205	A	01	E	460	8.61	60.29	5.19	8	FRI	MAY	W	547	9.66	63.9	6.17	17	TUE	FEB

In summary, the traffic information was calculated and approved by the traffic consultant as follows:

Interstate 210 Segments	AADT Traffic Volume in Vehicles / Day (both directions)[a]	Peak Hour Traffic Volume in Vehicles / Hour (both directions)[b] **AM** / **PM**	Interstate 210 Segments	Peak Hour Traffic Volume in Vehicles / Hour (each direction) **AM**[c] **/ PM**[d]	Peak Hour Traffic Volume (Vehicle Type Mix)[e] in Vehicles / Hour **AM / PM**		
					Auto	Medium Truck	Heavy Truck (3 or more axles)
West of La Tuna Canyon Road	94,000	8,770 / 9,381	EB	6,064 / 3,266	5,609 / 3,021	115 / 62	340 / 183
			WB	2,706 / 6,115	2,503 / 5657	51 / 116	152 / 342
East of La Tuna Canyon Road	100,000	9,330 / 9,980	EB	6,451 / 3,474	5,967 / 3,213	123 / 66	361 / 195
			WB	2,879 / 6,506	2,663 / 6,018	55 / 124	161 / 364

[a] Obtained from the 2001 AADT (Annual Average Daily Traffic) table, post mile 14.17 data, La Tuna Canyon Road

[b] Calculated from AADT Traffic using the "K" factors of 0.0933 and 0.0998 from the 2001 K and D factors for **AM** Peak Hr and **PM** Peak Hr, respectively, post mile 17.7 data

[c] Calculated from peak hour traffic using the "D" factors from the 2001 K and D factors for **AM** Peak Hr, post mile 17.7 data, 69.14% and 30.86% for Eastbound and Westbound, respectively.

[d] Calculated from the peak hour traffic using the "D" factors from the 2001 K and D factors for **PM** Peak Hr, post mile 17.7 data, 34.81% and 65.19% for Eastbound and Westbound, respectively.

[e] Calculated from AM or PM peak hour traffic using the truck percentage breakdown from the 2000 AADT truck traffic, 7.5% for total truck traffic (average between post miles 11.084 and 16.77), with a breakdown of 1.9% for medium truck and 5.6% for heavy truck (3 or more axles).