ZANDERSON PLAZA

NOISE STUDY REPORT

Prepared for:

Zanderson, LP
764 West Ramona Expressway
Perris, CA 92571

Prepared by:

BPG
BIRDSEYE
PLANNING GROUP

February, 2017

ZANDERSON PLAZA PROJECT
CITY OF HEMET, CALIFORNIA
Noise Study

Table of Contents

Page

List of Figures

List of Tables

Appendices

Appendix A - Monitoring Sheet and Modeling Files

This page intentionally left blank.

ZANDERSON PLAZA PROJECT
HEMET, CALIFORNIA
NOISE STUDY

This report is an analysis of the potential noise impacts associated with the Zanderson Plaza Project, a restaurant/retail project proposed for construction in the City of Hemet, Riverside County. The report has been prepared by Birdseye Planning Group, LLC, under contract to the applicant to support the entitlement process and address a request from the City of Hemet Planning Department. This study analyzes the potential for temporary impacts associated with construction activity, long-term impacts associated with traffic on neighboring roadways and operation of the various project elements described herein at the northeast corner of Sanderson Avenue and Menlo Avenue in the City of Hemet, California.

PROJECT DESCRIPTION

The Zanderson Plaza project proposes to construct a two phase commercial development and related infrastructure improvements on an 8.67 net acre undeveloped project site at the northeast corner of Sanderson Avenue and Menlo Avenue (APN 44-100-016) (Figure 1). The proposed project would require the following entitlements from the City of Hemet:

Rezone from Heavy Agriculture (A-10) General Commercial (C-1). The proposed project would require a zone change from Heavy Agriculture (A-10) to Neighborhood Commercial (C-1) for the entire 8.67 acre site to be consistent with the existing General Plan designation of Neighborhood Commercial (NC - FAR 0.35). As stated in the Hemet General Plan Update (2012), the NC—Neighborhood Commercial designation provides for general retail, markets, commercial services and restaurants designed to serve primarily the needs of surrounding residential areas.

Commercial Tentative Parcel Map (6 lots). The project also requires processing a commercial Tentative Parcel Map to subdivide the entire 8.67 acres into six (6) individual lots for the purpose of commercial development. The lots would be defined as follows:

Lot 1: 45,532 square feet - 1.05 acres;
Lot 2: 43,560 square feet - 1 acre;
Lot 3: 57,284 square feet - 1.32 acres;
Lot 4: 43,563 square feet - 1 acre;
Lot 5: 43,560 square feet - 1 acre; and
Lot 6: 113,168 square feet - 2.60 acres.

The TPM would include two common lots; Lot A would be 25,489 square feet (.59 acres) and located along the southern site boundary. Lot B would be 14,323 square feet (.33 acres). The proposed TPM is provided as Figure 2.

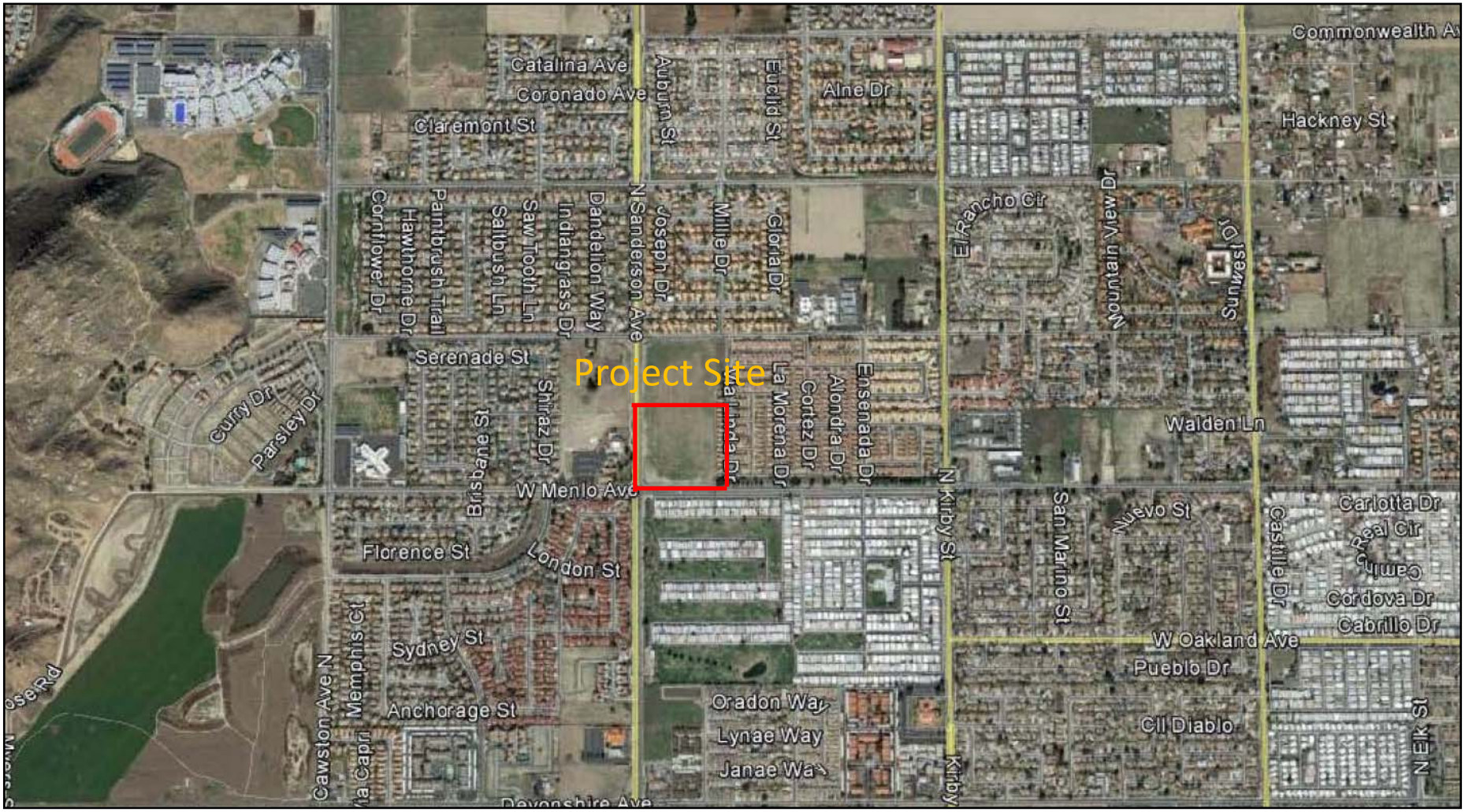


FIGURE 1

Vicinity Map

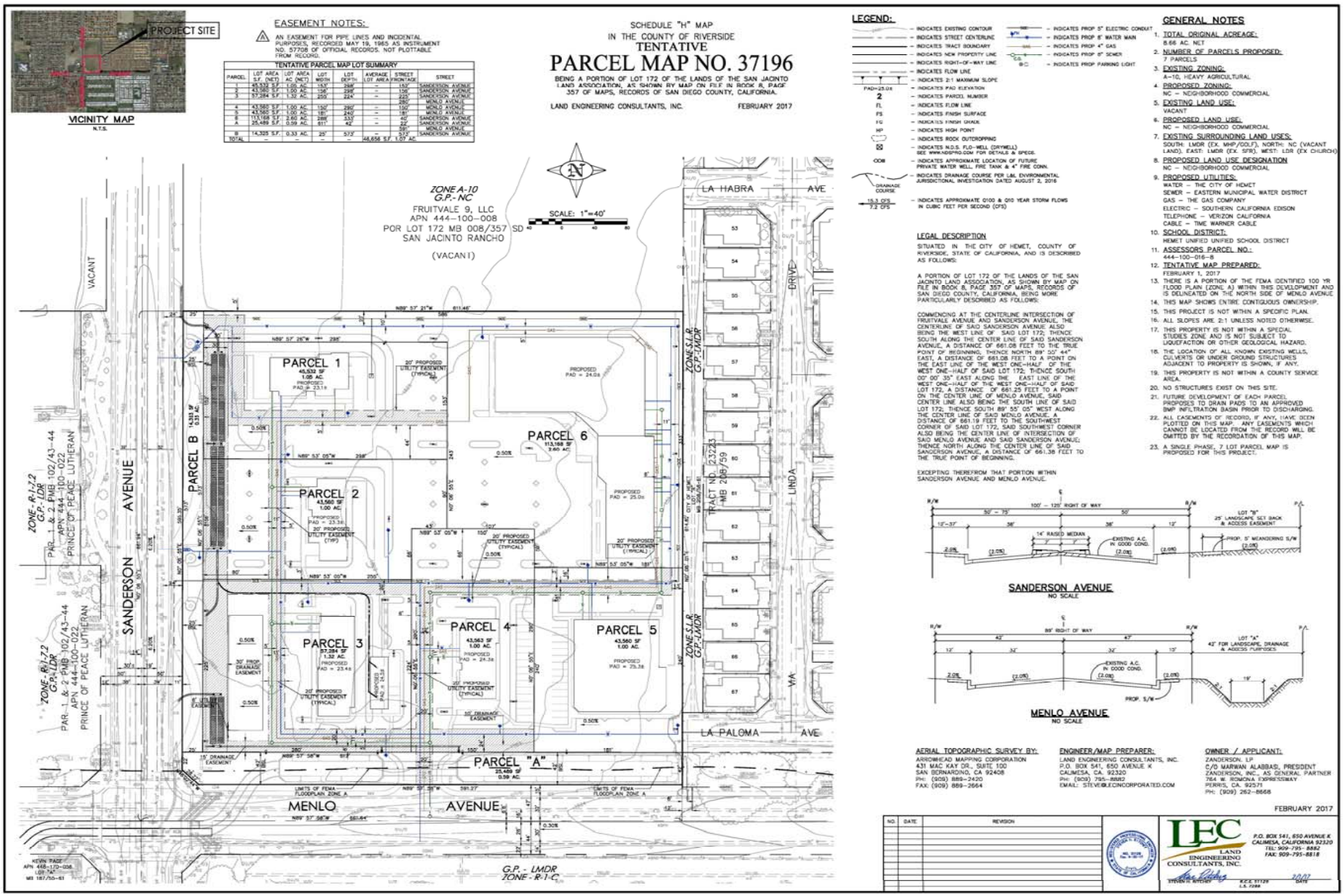


FIGURE 2

Tentative Parcel Map

Conditional Use Permit. A Conditional Use Permit is being requested for development of the proposed drive-thru restaurants and a gasoline/fueling station.

Phase I would be constructed on the west side of the site and include the following elements:

- two approximately 4,500 square foot fast food restaurants with drive-thru windows (9,050 square feet total);
- one 1,500 square foot drive thru car wash with attached storage/supply room;
- one 10-position (20 pump) fueling island with overhead canopy for cars/light trucks; and
- one convenience store/restaurant building.

The convenience store would be approximately 4,600 square feet. Items for sale would include beer and wine for consumption off-site per an Off-Site Beer and Wine License issued by the State Department of Alcoholic Beverage. The restaurant would be 1,600 square feet with a drive thru window at the north end (6,200 square feet total). A 600 square foot second floor would be constructed for use as an office. A total of 112 parking spaces would be provided. Total square footage of development under Phase I would be 16,750.

The car wash would have a water treatment and reclamation system designed to clean and reuse water to minimize potable water demand. The car wash will be a self-service drive thru facility; and thus, is not subject to California State registration requirements.

The underground diesel and gasoline fueling tanks would be located along the northern site boundary to provide easy access for tanker trucks. A total of 4 10,000 gallon tanks (i.e., one diesel tank and three gasoline tanks) would be installed.

Phase II would be constructed on the east side of the side and have a 4,600 SF restaurant with a drive thru and 42,230 SF of multi-tenant retail space in two buildings. An additional 203 parking spaces would be provided for a total of 315 (112 with Phase I and 203 with Phase II).

Phase I of the project is anticipated to begin construction in mid-2017 and be completed within 12 months. Phase II will begin in 2018 with the entire project in operation by 2019.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations. Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (i.e., industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings construction to California Energy Code standards is generally 30 dBA or more (HMMH, 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB. Daytime Leq levels are louder than Ldn or CNEL levels; thus, if the Leq meets noise standards, the Ldn and CNEL are also met.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Urban areas contain a variety of land use and development types that are noise sensitive including residences, schools, churches, hospitals and convalescent care facilities. Nearby sensitive receptors are single-family residences located to the east and south of the site and a church/pre-school located to the west on the west side of Sanderson Avenue.

Project Site Setting

The project area is a mix of suburban residential and commercial uses. Thus, the most common and primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles and trucks) Sanderson Avenue and Menlo Avenue. Motor vehicle noise is of concern because where a high number of individual events occur, it can create a sustained noise level. Aircraft overflights occur but do not noticeably contribute to the ambient noise environment.

To gather data on the general noise environment at the project site, two weekday morning 15-minute noise measurements were taken on November 28, 2016. Site 1 is located along Sanderson Avenue adjacent to and north of the Prince of Peace Pre-School. Site 2 is located along Menlo Avenue at the southeast corner of the site adjacent to existing single-family residences (Site 2). The measurements were taken using an ANSI Type II integrating sound level meter. The predominant noise source was traffic. The temperature during monitoring was 65 degrees Fahrenheit with no perceptible wind.

During monitoring, 352 cars/light trucks, three medium (two-axles and six wheels) and seven heavy (18-wheel) trucks passed Site 1. A total of 94 cars/light truck, five medium trucks and three heavy trucks passed Site 2. Table 1 identifies the noise measurement locations and measured noise levels. Monitoring locations are shown in Figure 3. As shown, the Leq was 65.6 dBA at Site 1 and 60.0 dBA at Site 2. The monitoring data sheet is provided as Appendix A.

Table 1
Noise Monitoring Results

Measurement Location	Primary Noise Source	Sample Time	Leq (dBA)
1. Sanderson Avenue north of Prince of Peace Pre-School	Traffic	Weekday morning	65.6
2. Menlo Avenue at southeast corner of project site	Traffic	Weekday morning	60.0

Source: Field visit using ANSI Type II Integrating sound level meter.

Regulatory Setting

The Federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare. To implement the Federal Noise Control Act, the U.S. Environmental Protection

M = Measurement Location

FIGURE 3

Noise Monitoring Locations

Agency (EPA) undertook a number of studies related to community noise in the 1970s. The EPA found that 24-hour averaged noise levels less than 70 dBA would avoid measurable hearing loss, levels of less than 55 dBA outdoors and 45 dBA indoors would prevent activity interference and annoyance (EPA 1974).

The U.S. Department of Housing and Urban Development (HUD) published a Noise Guidebook for use in implementing the Department's noise policy. In general, HUD's goal is exterior noise levels that are less than or equal to 55 dBA Ldn. The goal for interior noise levels is 45 dBA Ldn. HUD suggests that attenuation be employed to achieve this level, where feasible, with a special focus on sensitive areas of homes, such as bedrooms (HUD 2011).

Title 24 of the California Code of Regulations (CCR) establishes standards governing interior noise levels that apply to all new single-family and multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing Ldn exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum Ldn levels to 45 dBA in any habitable room. Although there are no generally applicable interior noise standards pertinent to all uses, many communities in California have adopted an Ldn of 45 as an upper limit on interior noise in all residential units.

In addition, the State of California General Plan Guidelines (OPR 2003), provides guidance for noise compatibility. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

City of Hemet Noise Ordinance

Chapter 30, Article II, Section 30-32(33) of the Hemet Municipal Code allows construction activities between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Construction occurring consistent with these provisions is exempt from regulation.

Per the City of Hemet General Plan Noise Element (Table II-F-4), the maximum allowable exterior noise level at residences and school classrooms is 65 dBA (CNEL). The maximum interior noise level is 45 dBA (CNEL). As referenced, CNEL is a 24-hour average with penalties added for noise occurring during the evening and at night. The Leq (65 dBA exterior and 45 dBA interior) or hourly average is typically higher than the CNEL; thus, for the purpose of this evaluation, if the standards are met using the Leq, the CNEL will be met.

Vibration Standards

Vibration is a unique form of noise as the energy is transmitted through buildings, structures and the ground whereas audible noise energy is transmitted through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels.

The County of Imperial Code and General Plan Noise Element do not provide vibration standards. The Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment* (May 2006) uses a threshold of 65 VdB for buildings where low ambient vibration is essential for interior operations. These buildings include hospitals and recording studios. A threshold of 72 VdB is used for residences and buildings where people normally sleep (i.e., hotels and rest homes). A threshold of 75 VdB is used for institutional land uses where activities occur primarily during the daytime (i.e., churches and schools). The threshold used for the proposed project is 72 VdB as single-family residences are the nearest sensitive receptors to the site.

Construction activities such as blasting, pile driving, demolition, excavation or drilling have the potential to generate ground vibrations near structures. With respect to ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings. No historic buildings occur on the site or are known to occur near the site; thus, 100 VdB is used to quantify potential vibration impacts to neighboring structures. Construction activities referenced above that would generate significant vibration levels are not proposed. However, to provide information for use in completing the CEQA evaluation, construction-related vibration impacts are evaluated using the above referenced criteria.

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported by the Federal Transit Administration, Office of Planning and Environment, and the distance to nearby sensitive receptors. Reference noise levels from that document were used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation).

The proposed project would be a new use; thus, traffic noise levels associated with existing and future traffic on Sanderson Avenue and Menlo Avenue were based on the difference in volumes between existing conditions and the proposed use referenced in the Traffic Impact Assessment. A doubling of traffic volumes would be required to cause a noticeable increase (3 dBA) in the Leq associated with traffic noise.

Temporary Construction Noise

The main sources of noise during construction activities would include heavy machinery used during, grading and clearing the site, as well as equipment used during building construction and paving. Table 2 demonstrates the typical noise levels associated with heavy construction equipment. As shown, average noise levels associated with the use of heavy equipment at construction sites can range from about 81 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (Hanson, Towers, and Meister, May 2006).

Table 2
Typical Construction Equipment Noise Levels

Equipment Onsite	Typical Level (dBA) 25 Feet from the Source	Typical Level (dBA) 50 Feet from the Source	Typical Level (dBA) 100 Feet from the Source
Air Compressor	84	78	64
Backhoe	84	78	64
Bobcat Tractor	84	78	64
Concrete Mixer	85	79	73
Bulldozer	88	82	76
Jack Hammer	95	89	83
Pavement Roller	86	80	74
Street Sweeper	88	82	76
Man Lift	81	75	69
Dump Truck	82	76	70

Source: Noise levels based on FHWA Roadway Construction Noise Model (2006) Users Guide Table 1.
Noise levels based on actual maximum measured noise levels at 50 feet (Lmax).
Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.

Noise-sensitive uses near the project site are existing single-family residences located to the east and south across Menlo Avenue as well as the Prince of Peace Church and Pre-School located to the west. The closest receivers are located to the east and abut the site boundary. The church/pre-school property west of the site is located 50 feet from the centerline of Sanderson Avenue and 100 feet from the closest development area on the site. Table 3 shows typical maximum construction noise levels at various distances from construction activity, based on a standard noise attenuation rate of 6 dBA per doubling of distance. The noise level used to estimate the maximum noise level that could occur is based on use of a bulldozer as it is likely

to be the noisiest type of equipment used over a sustained period of time in proximity to neighboring residences during site preparation activities. Actual noise levels will fluctuate throughout the day and may periodically exceed 88 dBA at the property lines depending on the type and location of equipment used and whether multiple pieces of equipment are operating simultaneously in the same area.

Table 3
Typical Maximum Construction Noise Levels at Various Distances from Project Construction

Distance from Construction	Maximum Noise Level at Receptor (dBA)
25 feet	88
50 feet	82
100 feet	76
250 feet	70
500 feet	64
1,000 feet	58

Per Chapter 30, Article II, Section 30-32(33) of the Hemet Municipal Code allows construction activities between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Assuming all construction occurs within this window, no significant noise impact would occur and no mitigation would be required to reduce noise levels.

Temporary Construction-Related Vibration

Activities associated with retail, restaurant and fueling operations do not generate vibration. Thus, this discussion focuses on temporary vibration caused by construction. The closest single-family residences to the site are located along the west side of Via Linda Drive and abut the site to the east. The residences are approximately 25 feet from the property line. Based on the information presented in Table 4, vibration levels could reach 87 VdB at these residences during construction assuming a bulldozer is the heaviest piece of equipment used during grading or site clearing.

As discussed below, 100 VdB is the threshold where minor damage can occur in fragile buildings. Vibration levels are projected to be under this threshold; thus, structural damage is not expected to occur as a result of construction activities associated with the proposed project.

Vibration levels may exceed the groundborne velocity threshold level of 72 VdB for residences and/or buildings where people sleep as discussed above. Maximum vibration levels could be

75-77 VdB. However, as long as construction occurs within the prescribed hours referenced above, temporary vibration impacts would be considered adverse, but **less than significant.**

Table 4
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998

Long-Term Operational Noise Exposure

Long-term operation of the proposed project was evaluated for potential exterior traffic related impacts caused by increased traffic volumes associated with the project as well as interior noise levels caused by traffic.

Exterior Traffic Noise. Traffic is the primary noise source that would be generated by the proposed project. Existing measured noise levels exceed the exterior residential standard (65 dBA) at the Prince of Peace Pre-School and residences located at southwest and southeast corners of the Sanderson Avenue and Menlo Avenue intersection. Thus, whether a traffic-related noise impact would occur is based on whether project traffic, when added to the existing traffic, would cause the Leq to noticeably increase (+3 dBA) or exceed the 65 dBA exterior standard referenced in the Hemet Municipal Code.

The roadway network adjacent to the project site (Sanderson Avenue and Menlo Avenue) was modeled using the Federal Highway Administration Traffic Noise Model (TNM) version 2.5 software (see Appendix A). The model calculates traffic noise at receiver locations based on traffic volumes, travel speed, mix of vehicle types operating on the roadways (i.e., cars/trucks, medium trucks and heavy trucks) and related factors. Traffic volumes and vehicle mix on Sanderson Avenue and Menlo Avenue used to calibrate TNM were based on vehicle counts obtained during the monitoring period. The 15 minute counts were multiplied by four to obtain hourly traffic counts. The model was calibrated based on traffic counts during monitoring to calculate noise levels that are +/- 2 dBA those measured on-site and reported in Table 1.

Traffic volumes for peak hour project operation were obtained from the Traffic Impact Study prepared by Kunzman Associates, Inc. (October 2016). Sanderson Avenue is classified as a major roadway in the Hemet General Plan. Average daily volumes are approximately 23,900 vehicles north of Menlo Avenue and 24,400 vehicles south of Menlo Avenue. Menlo Avenue is

classified as a secondary roadway. Average daily volumes are approximately 6,200 east of Sanderson Avenue and 4,000 west of Sanderson Avenue. Both Sanderson Avenue and Menlo Avenue in proximity to the project site are designated truck routes. Peak hour project trips were added to baseline conditions to determine whether the Leq at the following receivers would noticeably change or exceed 65 dBA as a result of project-related traffic:

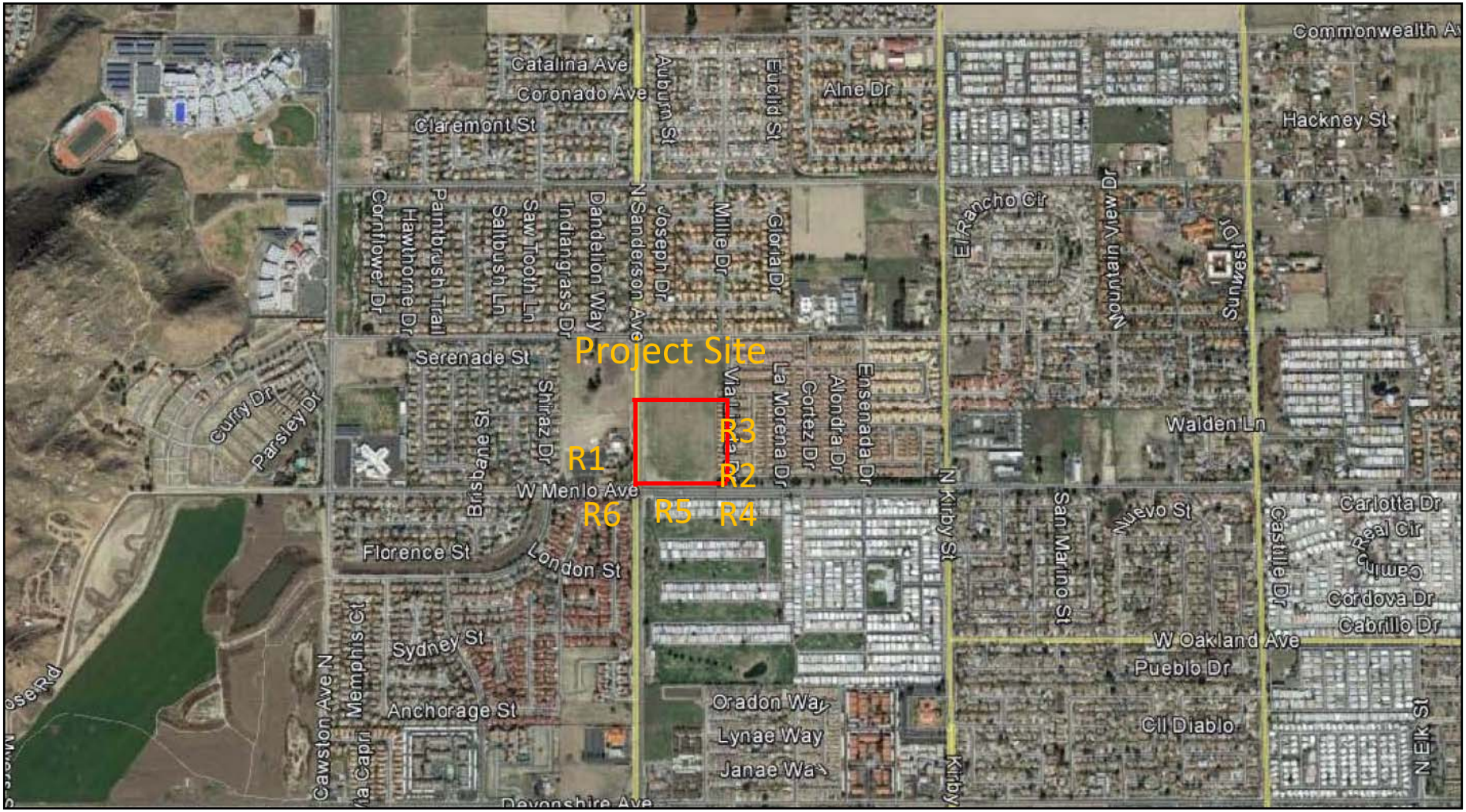
1. Prince of Peace Pre-School near the northwest corner of Sanderson Avenue and Menlo Avenue;
2. Single-family residence abutting the southeast corner of the site;
3. Single-family residence abutting the center of the eastern site boundary
4. Mobile home residences located across Menlo Avenue south of the site mid-block;
5. Mobile home residences located near the southeast corner of Sanderson Avenue and Menlo Avenue; and
6. Single-family residences located at the southwest corner of Sanderson Avenue and Menlo Avenue.

The receiver locations are shown in Figure 4. The single-family residences east and southwest of the site are located behind 6-foot high concrete block screening walls which provides some sound attenuation from traffic noise. The mobile home park to the south is located south of a 4-foot high screening wall. Both walls were considered as part of the traffic noise modeling. Existing noise levels are shown in Table 5. As shown, the daytime hourly average (Leq) exceeds the 65 dBA standard at receivers 1, 5 and 6 under baseline conditions.

Table 5
Modeled Noise Levels

Receptor	Existing Leq	Exceed Standard?	With Project Leq	dBA Change	Significant Impact
Site 1 – Prince of Peace Pre-School	66.5	Yes	66.9	+0.4	No
Site 2 – Residence at SE Corner of site	61.3	No	61.8	+0.5	No
Site 3 – Residence east of site	54.9	No	55.2	+0.3	No
Site 4 - Mobile homes mid-block	63.4	No	63.9	+0.5	No
Site 5 - Mobile homes at SE corner of Sanderson and Menlo	66.1	Yes	66.5	+0.4	No
Site 6 - Residences at SW corner of Sanderson and Menlo	66.3	Yes	66.6	+0.3	No

To calculate project-related noise effects, project peak hour traffic volumes as provided in the Traffic Impact Assessment were added to baseline traffic conditions. A project related noise impact would occur under conditions where the project causes a Leq exceeding the 65 dBA standard to noticeably increase (+3 dBA) or a Leq under the standard to exceed the standard. As shown in Table 5, traffic associated with the project would add less than one decibel to the existing Leq at all receivers. The proposed project would have no perceptible impact on traffic-related sound levels at receivers in proximity to the site.



R = Receiver Location

FIGURE 4

Receiver Locations

Interior Traffic Noise. California Energy Code Title 24 standards specify construction methods and materials that result in energy efficient structures and up to a 30 dBA reduction in exterior noise levels (assuming windows are closed). This includes operation of mechanical ventilation (e.g. heating and air conditioning), in combination with standard building construction that includes dual-glazed windows with a minimum Sound Transmission Class (STC) rating of 26 or higher. When windows are open, the insertion loss drops to about 10 dBA. Assuming windows are closed, interior noise levels at the Prince of Peace Pre-School, the receiver with the highest exterior noise level, would be approximately 36.9 dBA Leq which would be below the 45 dBA interior standard. In all cases modeled, the existing interior noise levels would not noticeably change with the addition of project traffic.

In addition to traffic noise, on-site noise sources would include operation of the car wash, drive thru speakers and roof top heating, ventilation and air conditioning (HVAC) equipment. The following discussion addresses potential noise impacts associated with those uses.

Car Wash. The type of car wash to be used on-site has not been specified; however, for the purpose of this discussion, it is assumed to be an automated rollover (i.e., a car wash with brushes that roll over the vehicle during operation) car wash with a 45 horsepower dryer blower. Baseline noise data for a similar system indicated operation would generate 79 dBA at a distance of 30 feet (Illingsworth & Rodkin, Inc., 2014). The nearest residences are approximately 250 feet to the south across Menlo Avenue and the single-family residences located 350 feet east of the proposed car wash location. Sound levels from the car wash would attenuate to approximately 61 dBA at the mobile home park (Receivers 4 and 5). The modeled daytime Leq at these locations would be 62.5 and 66.0 dBA, respectively. Car wash noise would be masked by traffic noise at these receivers.

Without factoring screening from the proposed Phase II buildings and the existing concrete block screening wall, car wash noise would attenuate from 79 dBA at 30 feet to approximately 58 dBA at the eastern property line. The daytime project Leq at Receiver 2 would be approximately 60.0 dBA. Noise from the car wash would attenuate to below the modeled Leq at the neighboring property line to the east. It is possible that noise from the car wash would be audible at the nearest receivers; however, considering existing noise levels, operation of the car wash would not cause an exceedance of City noise standards. To reduce project-related noise during evening and nighttime hours, the car wash can be conditioned to operate only during the daytime (7:00 a.m. to 7:00 p.m.).

Drive Thru Window Speakers. Speaker noise is a variable noise source and subject to change based on volume settings. The nearest drive thru menu board and speaker would be located on the southeast side of the convenience store/restaurant building proposed for construction in Phase I and the restaurant building located at the southeast corner of the site as part of Phase II. Menu board/speaker noise is assumed to project south and east. The Phase I restaurant is located approximately 250 feet north of Receiver 4. The Phase II restaurant and drive thru aisle is located adjacent to residential properties approximately 50 feet to the east. Reference noise levels range from 58 to 65 dBA at 30 feet from the source (Illingsworth & Rodkin, 2010). Noise

would attenuate to approximately 40 dBA at receivers to the south and to 54 to 61 dBA at receivers to the east. This would be an intermittent source with levels that are less than or similar to modeled traffic noise. However, speaker noise may be audible at adjacent residences to the east throughout the day as traffic volumes fluctuate. As a condition of project approval, it is recommended that drive thru speaker noise be inaudible beyond the immediate drive thru lane, order and pick up window. However, as referenced, speaker noise would attenuate to below baseline conditions at the property line and be less than the 65 dBA standard.

HVAC Systems. The HVAC system proposed for use on the site has not been specified and noise levels vary depending on the size of the system. However, multiple HVAC systems will be installed on the roof-tops of restaurant/retail buildings located along the east side of the site. Reference noise levels for the project are based on noise measurements made at similar outdoor restaurant facilities. HVAC noise levels can be expected to range from 60 to 70 dBA at 5 feet from the roof top equipment and ventilation openings (Illingsworth & Rodkin, 2011). Assuming HVAC units are installed at the center of the roof top, or approximately 100 feet from the eastern property line (Receivers 2 and 3) and 250 feet from the receivers to the south (Receivers 4 and 5), a 70 dBA reference noise level would attenuate to 36 dBA at the southern receivers and 44 dBA at 100 feet and the property line. HVAC noise would be less than the 65 dBA criteria.

CONCLUSION

The proposed project is not expected to have an adverse operational noise impacts. Per Chapter 30, Article II, Section 30-32(33) of the Hemet Municipal Code allows construction activities between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Assuming all construction occurs within this window, no significant noise impact would occur and no mitigation would be required to reduce noise levels.

The existing 65 dBA Leq standard at three of the six receivers is exceeded under existing conditions. The proposed project would have less than a 0.5 dBA increase in the Leq at modeled receivers. The project would not cause an noticeable increase in Leq at receivers where this standard is exceeded or cause the Leq to increase above 65 dBA at receivers currently at or below the standard. Assuming a 30 dBA reduction in noise levels between exterior and interior levels, the interior standard would be met at all receivers with operation of the proposed project. Thus, a less than significant noise impact would occur.

REFERENCES

City of Hemet Municipal Code, Chapter 30, Article II, Section 30-32(33).

City of Hemet, General Plan Noise Element (Table II-F-4), 2012.

Federal Highway Administration. *Roadway Construction Noise Model. 2006.* Users Guide Table 1.

Federal Highway Administration, Transportation Noise Model Version 2.5, 2004.

Federal Transit Administration. *Transit Noise and Vibration Impact Assessment*. May 2006.

Federal Rail Administration (FRA) *Guidelines (Report Number 293630-1),* December 1998.

Hanson, Carl E., Towers, David A., and Meister, Lance D. (2006, May). *Transit Noise and Vibration Impact Assessment.* Federal Transit Administration, Office of Planning and Environment. http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

Harris Miller Miller & Hanson Inc. T*ransit Noise and Vibration Impact Assessment, Final Report*. May 2006.

Kunzman Associates, Inc., *Zanderson Plaza Traffic Impact Assessment*, October, 2016.

Appendix A

Monitoring Data Sheet and Modeling Results

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>
<Analysis By?>

25 October 2016
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Zanderson Plaza - Project Daytime Leq
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Prince of Peace	1	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
SFR Southeast Corner	2	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
SFR Via Linda North	3	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
Menlo Mid-Block	5	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
SE Corner Sanderson/Menlo	7	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
SW Corner Sanderson/Menlo	8	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	3	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>
<Analysis By?>

25 October 2016
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Zanderson Plaza - Baseline
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Prince of Peace	1	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
SFR Southeast Corner	2	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
SFR Via Linda North	3	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
Menlo Mid-Block	5	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
SE Corner Sanderson/Menlo	7	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
SW Corner Sanderson/Menlo	8	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	3	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0