NOISE IMPACT ANALYSIS

Talk of the Town
400 Brotherton Road
Escondido, California 92025

Prepared For

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Job # B20106N1

Original Report: September 16, 2009
Plan Update Revision: January 26, 2012

ADM 12-0007

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1.0 EXECUTIVE SUMMARY

The proposed project, known as Talk of the Town, consists of the construction of a conveyor carwash system, an oil change facility, and a retail building. Additional improvements including landscaping, patios, and parking areas are also planned. The project site is located at 400 Brotherton Road, in Escondido, California.

The purpose of this report is to assess noise impacts from on-site noise sources, and to determine if mitigation is necessary and feasible to reduce project related property line noise impacts to below 60 dBA day/55 dBA night at the southern and eastern property lines and 50 dBA day/45 dBA night at the northern and western property lines, in compliance with the City of Escondido property line noise limits. This report serves as an update to a previous acoustical report, prepared by Eilar Associates in 2009, to account for the addition of a new exit driveway on the west side of the property and the relocation of Building B mechanical equipment to an indoor location.

Based on the project information available, the proposed Talk of the Town equipment noise levels are not expected to exceed the City of Escondido property line noise limits at any of the surrounding property lines, provided the car wash itself is only operational during daytime hours. No mitigation measures are deemed necessary.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the City of Escondido requirement for a major use permit. Its purpose is to assess noise impacts from on-site project related noise sources, and to determine if mitigation is necessary and feasible to reduce property line noise impacts to below 60 dBA day/55 dBA night along the southern and eastern property lines and 50 dBA day/45 dBA night along the northern and western property lines, in compliance with the City of Escondido property line noise limits.

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol "L_{EQ}" unless a different time period is specified, "L_{EQ}" is implied to mean a period of one hour. Some of the data may also be presented as octave-band-filtered and/or A-octave-band-filtered data, which are a series of sound spectra centered about each stated frequency, with half of the bandwidth above and half of the bandwidth below each stated frequency. This data is typically used for machinery noise analysis and barrier-effectiveness calculations.

2.1 Project Location

The subject property is located at 400 Brotherton Road, in Escondido, California. The Assessor's Parcel Number (APN) is 236-381-03-00. The overall property is rectangular in shape with an overall site area of approximately 1.35 acres. The zoning designation for the subject parcel is CG for General Commercial. Neighboring land uses in the vicinity of the project site are commercial to the south and east with residential areas to the north and west. The southern and eastern property lines are adjacent to roadways. The subject property is currently an undeveloped open lot.

For a graphical representation of the site, please refer to the Vicinity Map, Assessor's Parcel Map, Satellite Aerial Photograph, Topographic Map, and Land Use Map provided as Figures 1 through 5, respectively.

2.2 Project Description

The proposed project consists of the construction of a restaurant, in Building A, and a conveyor carwash system, an oil change facility, and a retail building in Building B. Additional improvements including landscaping, patios, and parking areas are also planned.

This acoustical analysis reflects building plans dated December 15, 2011, and is an update of the previous acoustical analysis prepared by Eilar Associates, dated March 17, 2007 (Eilar Associates Job #A61205N1), and the subsequent update of that study dated September 16, 2009 (Job #A90711N1). These plans reflect a new exit driveway on the west side of the property, and the removal of outdoor air conditioning equipment for Building B, which will now be located within the building. Updated calculations and mitigation measures are detailed within this report. For additional project details, please refer to the project plans provided in Appendix A.

2.3 Sensitive Receptors

The adjacent residential properties to the north and west are considered to be the primary noise sensitive receptors that may potentially be affected by the proposed Talk of the Town project. The nearest homes are as much as 24 feet in elevation above the subject site.

The remaining property lines to the south and east, are adjacent to commercial land uses and are considered to be less sensitive noise receptors, however, they have been included in this analysis.

2.4 Applicable Noise Standards

The noise regulations applicable to this project are contained within the City of Escondido Noise Ordinance, Section 17-229, entitled Sound Level Limits. Based on these noise regulations the following property line noise limits for this project:

- 60 dBA from 7 a.m. to 10 p.m. and 55 dBA from 10 p.m. to 7 a.m. at the southern and eastern property lines

- 50 dBA from 7 a.m. to 10 p.m. and 45 dBA from 10 p.m. to 7 a.m. at the northern and western property lines

Planning for this project will be based on the daytime noise limits for the cumulative noise impacts of the carwash equipment, the HVAC equipment for the restaurant, and the project-generated traffic noise, and the nighttime noise limits for the HVAC equipment only.

Please refer to copies of the pertinent sections of the City of Escondido Noise Ordinance provided as Appendix B.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

The existing noise environment is primarily a result of vehicle traffic noise from Centre City Parkway and Brotherton Road.

3.1.1 Ambient Noise Monitoring

An on-site inspection was conducted at 1:40 p.m. on Friday, January 5, 2007. The weather conditions were as follows: winds of 5-10 mph from the west, low humidity, and a temperature of 64 degrees. A 5-minute ambient noise measurement of 54.8 dBA L_{EQ} was taken at a location approximately in the center of the subject property. The microphone position was approximately five feet above the existing grade. The measured noise level was primarily a result of vehicle traffic noise from the adjacent roadways.

3.2 Future Noise Environment

The future noise environment in the vicinity of the project site will be primarily a result of the same traffic noise sources, as well as the proposed project.

3.2.1 Significant Noise Sources

The proposed project consists of three types of significant noise sources, which are the carwash dryer, HVAC equipment at the restaurant building, and project-generated traffic noise.

Dryer Unit

The proposed carwash facility is planned to make use of a new Aerodry Advantage dryer system to be installed within the carwash tunnel and set back approximately six feet from the exit. Manufacturer's noise emission data for the Aerodry Advantage dryer system was provided and is included in Appendix C.

The octave-band noise data for the dryer unit noise measurement used in the new Talk of the Town planning analysis is provided in Table 1.

Table 1. Manufacturer's Noise Data for a Single Operational Aerodry Advantage Dryer System

Octave Band Center Frequency (Hz)	31.5	63	125	250	500	1K	2K	4K	8K	L_{EQ}
Sound Pressure Level at 5 feet (dB)	81.3	82.6	83.1	84.5	84.5	70.9	69.0	64.7	57.1	82.5 dBA

HVAC Units

The proposed restaurant building is planned to make use of four ground-mounted Carrier 25HBB360 HVAC units which will be installed on the eastern side of the building. These are considered to be the only significant noise sources associated with the restaurant building.

To determine the expected equipment exterior noise levels for this analysis, it was necessary to obtain the noise level of a single operational unit Carrier 25HBB360 HVAC unit. Manufacturer's noise emission data for the Carrier HVAC equipment was provided and is included in Appendix C. The

octave-band noise data for the HVAC unit used in the new Talk of the Town planning analysis is provided in Table 2.

Table 2. Manufacturer's Noise Data for a Single Carrier 25HBB360 HVAC unit								
Octave Band Center Frequency (Hz)	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**Sum**
Sound Power Level (dBA)	55.0	63.0	67.5	71.5	68.0	64.0	60.5	75.1

On-Site Traffic Noise

Noise from vehicles in the parking lot was evaluated using information from the project traffic study, prepared by Linscott, Law, & Greenspan Engineers in December 2008. The worst-case traffic noise scenario is anticipated to take place during the PM peak hour, during which approximately 73 vehicles will enter the site, and 66 vehicles will exit. For pertinent sections of the LLG traffic study, please refer to Appendix D.

3.2.2 Insignificant Noise Sources

Washing System

Additional equipment planned to be installed for proposed project that are not considered to be significant noise sources are the conveyor wash system and the supporting equipment.

The supporting equipment consisting of pumps, a compressor as well as a vacuum motor/canister system are planned to be isolated within a dedicated equipment room which will limit their contribution to the outdoor noise environment to an insignificant level. The equipment room is planned to be equipped with passive rooftop ventilation.

The carwash facility is planned to make use of a new NS Corporation 80-foot conveyor wash system. This system consists of a minimal set of mechanical equipment. The only washing system components planned to be installed within the carwash tunnel are the conveyor track, various spray nozzles, and rotating washing mechanisms. Chuck Persekian of NS Corporation, the carwash system designer/vendor for this project, has stated that the proposed system provides very quiet operation. Based upon our professional experience and the recommendations of the manufacturer, the conveyor system is not considered to be a significant noise source and therefore was not included in the analysis.

Oil Change Facility

The proposed oil change facility is considered to be a very light-duty automotive service operation. There is no anticipated activity or equipment associated with the oil change facility that is considered to be a significant noise source.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

Noise emission data is often supplied per the industry standard format of Sound Power, which is the total acoustic power radiated from a given sound source as related to a reference power level. Sound Power differs from Sound Pressure, which is the fluctuations in air pressure caused by the presence of sound waves, and is generally the format that describes noise levels as heard by the receiver. Sound Pressure is the actual noise experienced by a human or registered by a sound level instrument. When Sound Pressure is used to describe a noise source it must specify the distance from the noise source to provide complete information. Sound Power is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

Attenuation due to distance is calculated by the equation:

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

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

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

4.2 Measurement Equipment

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

- Larson Davis Model 824, Type 1 Sound Level Meter, Serial #824A0344
- Larson Davis Model CA250, Type 1 Calibrator, Serial #2625

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterwards, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with sound level meters that conform to the American National Standards Institute specifications for sound level meters (ANSI SI.4-1983, R2001). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 IMPACTS

This analysis is based upon a limited number of carwash cycles per hour. Based upon our professional experience, an estimation of 30 minutes of dryer operating time per hour was incorporated into the analysis. With a typical dry cycle time of not more than one minute, this is considered to be an appropriate worst-case scenario for a busy carwash facility.

The ground mounted HVAC units for Building A were considered to be in constant operation for the purposes of this analysis. Building B HVAC units are planned to be located within the building, and therefore, are not included in this analysis.

Project traffic noise impacts were evaluated by incorporating the number of trips during the PM peak hour into a Traffic Noise Model. All exiting trips were assumed to use the newly proposed exit driveway, as this location is considered to be the worst-case, due to its proximity to neighboring residential properties. The PM peak hour will take place during either the afternoon or evening hours, but will not occur after 10 p.m. For this reason, this noise source must comply with daytime noise limits. Additional information is provided in Appendix D: Pertinent Sections of the LLG Engineers Traffic Study, and Appendix E: Traffic Noise Model (TNM) Data and Results.

Based on the project information available, the proposed Talk of the Town equipment and traffic noise levels are not expected to exceed the City of Escondido property line noise limits at any of the surrounding property lines. The calculated noise levels at each property line at the worst-case locations along each property line are shown in Tables 3, 4, and 5, and are summarized in Table 6. Please note that property line receivers for the southern and eastern property lines represent the noise levels at the nearest property line receivers across Brotherton Road and Centre City Parkway, respectively. Please refer to Figure 6: Site Plan Showing Noise Impacts at Surrounding Property Lines and Receiver Locations. For details of the acoustical analysis, please refer to Appendix F: Equipment Noise Calculations.

Table 3. Dryer Noise Levels, 30 Minutes in Operation

Receiver Location	Distance (feet)	Dryer Noise Levels, 30 Minutes in Operation (dBA L_{EQ})
R1, Northern Property Line	158	50
R2, Western Property Line	220	47
R3, Southern Property Line	192	48
R4, Southern Property Line	112	53
R5, Eastern Property Line	182	49

Table 4. Building A HVAC Noise Levels, Continuous Operation

Receiver Location	Distance (feet)	HVAC Noise Levels (Bldg A), Continuous Operation (dBA L_{EQ})
R1, Northern Property Line	240	33
R2, Western Property Line	125	38
R3, Southern Property Line	68	44
R4, Southern Property Line	164	36
R5, Eastern Property Line	310	31

Table 5. Project-Generated Traffic Noise Impacts, PM Peak Hour	
Receiver Location	**Peak Hour Traffic Noise Level (dBA)**
R1, Northern Property Line	38
R2, Western Property Line	46
R3, Southern Property Line	37
R4, Southern Property Line	41
R5, Eastern Property Line	28

Table 6. Combined Daytime/Nighttime Noise Levels at Surrounding Property Lines					
Receiver Location	**Car Wash Noise Level (dBA)**	**HVAC A Noise Level (dBA)**	**PM Peak Hour Traffic Noise Level (dBA)**	**Combined Hourly Daytime Noise Level (dBA)**	**Combined Nighttime Noise Level (dBA)**
R1, Northern Property Line	50	33	38	50	33
R2, Western Property Line	47	38	46	50	38
R3, Southern Property Line	48	44	37	50	44
R4, Southern Property Line	53	36	41	53	36
R5, Eastern Property Line	49	31	28	49	31

As shown above, it is not expected that noise levels will exceed the noise limit at any surrounding property line. As this analysis represents the worst-case situation and does not reflect any shielding due to proposed building structures, it is assumed that the car wash facility will remain in compliance with City of Escondido noise regulations at all surrounding property lines, provided car wash equipment is only operational during the daytime hours.

6.0 CONCLUSION

As designed, the proposed carwash facility is expected to be in compliance with all applicable City of Escondido property line noise limits, provided the carwash itself is only operational during daytime hours. No mitigation measures are deemed necessary. This analysis is based upon a current worst case scenario of anticipated, typical equipment for this type of facility. Substitution of equipment with higher noise emission levels may invalidate the recommendations of this study.

These conclusions and recommendations are based on the most up-to-date, project-related information available. However, noise characteristics of mechanical equipment may vary for specific installations. Verification of compliance with City of Escondido noise regulations can be provided, if desired, by conducting a noise survey consisting of sound level measurements at or close to the nearest impacted locations in each direction, after the project is built and in operation.

This is best accomplished in the late night or very early morning hours while the equipment is in full operation and other ambient noise sources are minimized. If any additional sound attenuation is found to be necessary, it can be specified at that time. We do not expect that any additional sound attenuation will be necessary within the scope of this project.

7.0 CERTIFICATION

This report is based on the related project information received and measured noise levels, and represents a true and factual analysis of the acoustical impact issues associated with the proposed Talk of the Town project, located 400 Brotherton Road, in Escondido, California. This report was prepared by Justin Smith, Michael Burrill, and Douglas Eilar, and updated by Amy Hool and Douglas Eilar.

Amy Lynn Hool

Amy Hool, Acoustical Consultant

Douglas K. Eilar, Principal

8.0 REFERENCES

1. Beranek, Leo L., *Acoustical Measurements*, Published for the Acoustical Society of America by the American Institute of Physics, Revised Edition, 1988.

2. City of Escondido Noise Ordinance

3. Harris, Cyril M., *Handbook of Acoustical Measurements and Noise Control*, Acoustical Society of America, 3rd Edition, 1998.

4. Harris, Cyril M., Ph.D., *Noise Control in Buildings*, Original Edition, 1994.

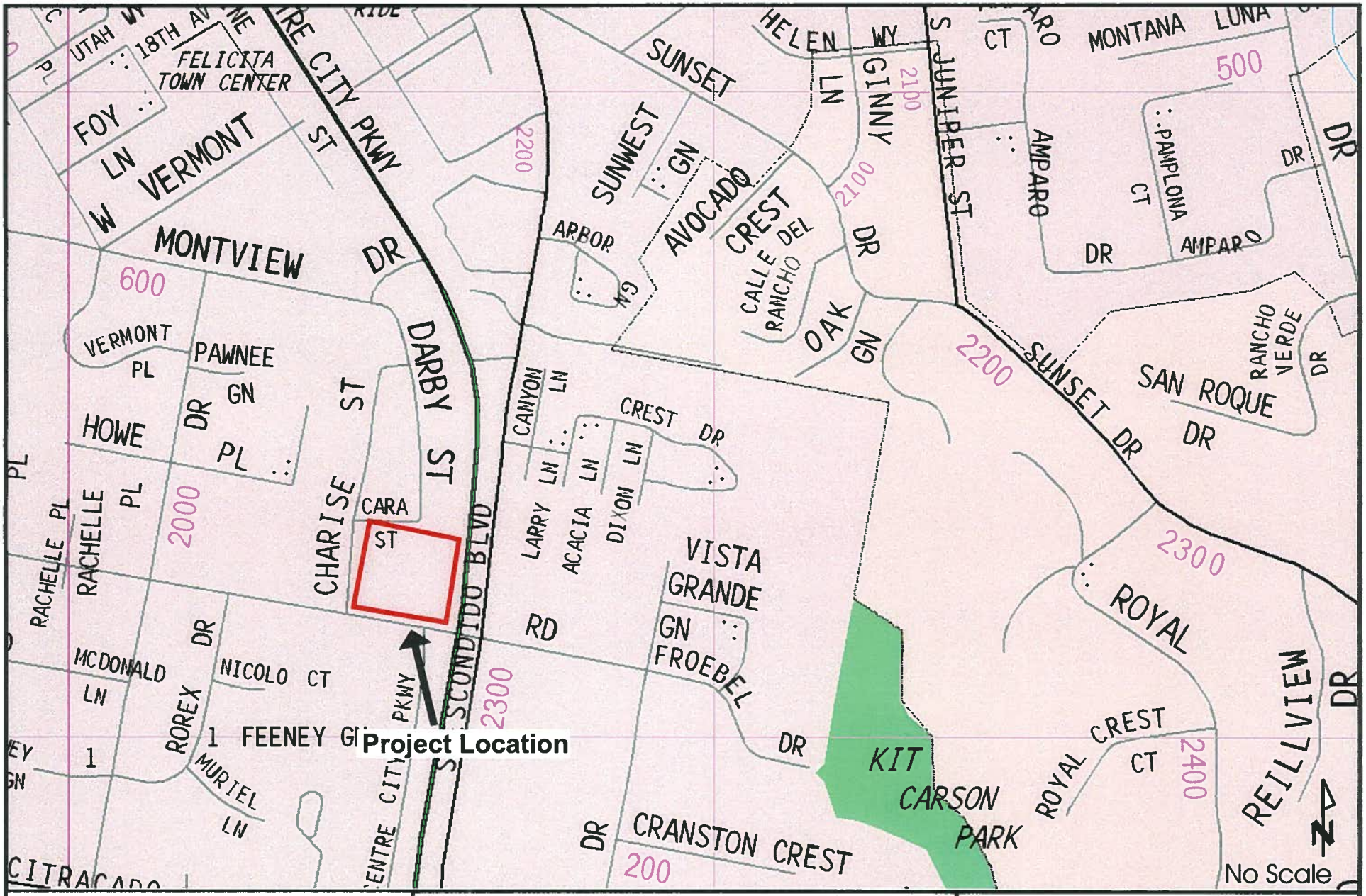
5. Hirschorn, Martin, *Noise Control Reference Handbook*, Revised Edition, 1989.

6 Irvine, Leland K. and Richards, Roy L., *Acoustics and Noise Control Handbook for Architects and Builders*, Original Edition, 1998.

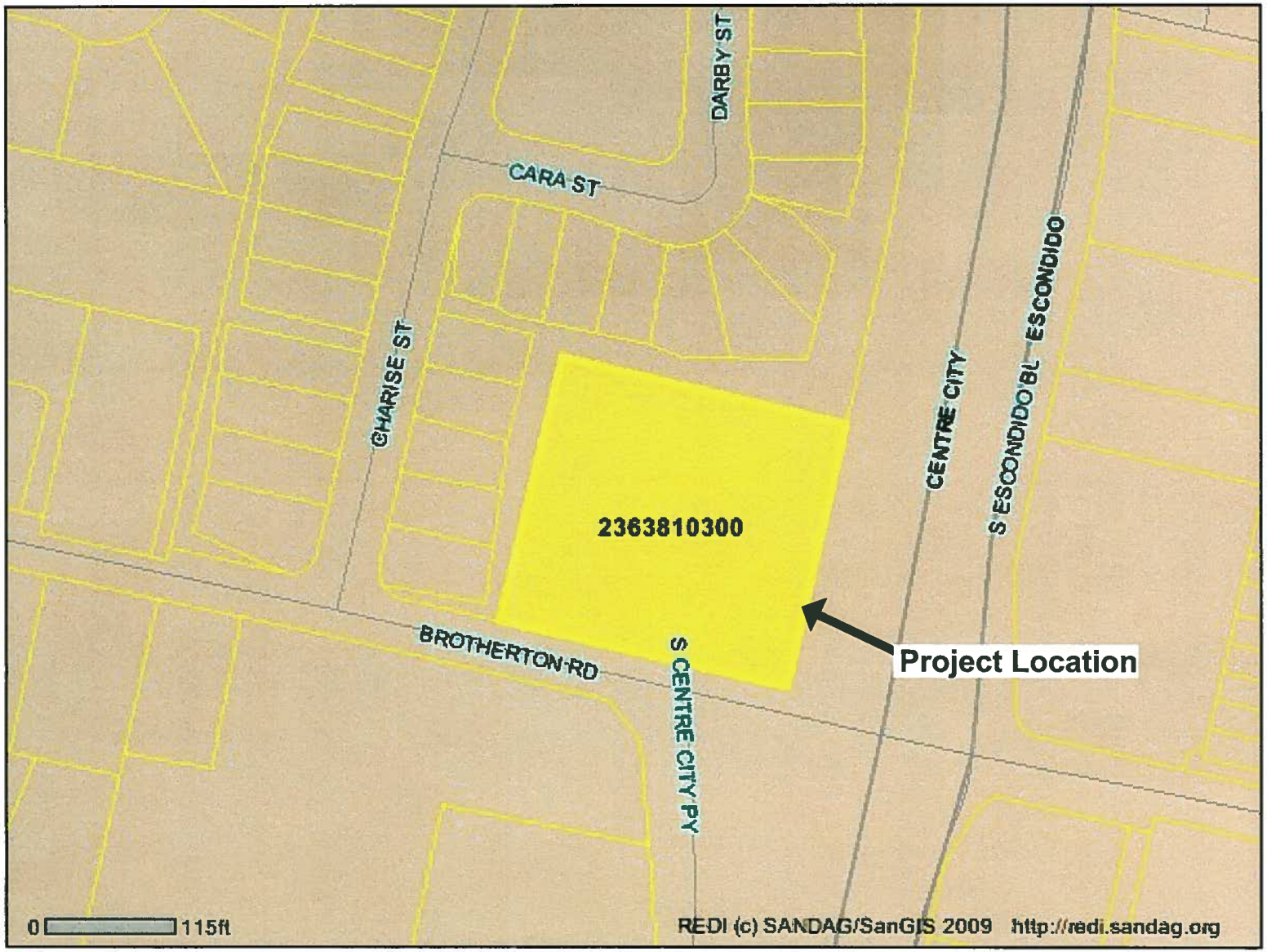
7 Knudsen, Vern O. and Harris, Cyril M., *Acoustical Designing In Architecture*, American Institute of Physics for the Acoustical Society of America, 2nd Edition, 1978.

8. Raichel, Daniel R., *The Science and Applications of Acoustics*, American Institute of Physics Press for the Acoustical Society of America, 1st Edition, 2000.

FIGURES



Eilar Associates, Inc. 321 Willowspring Drive North Encinitas, California 92024 760-738-5570	Vicinity Map Job # B20106N1	Figure 1



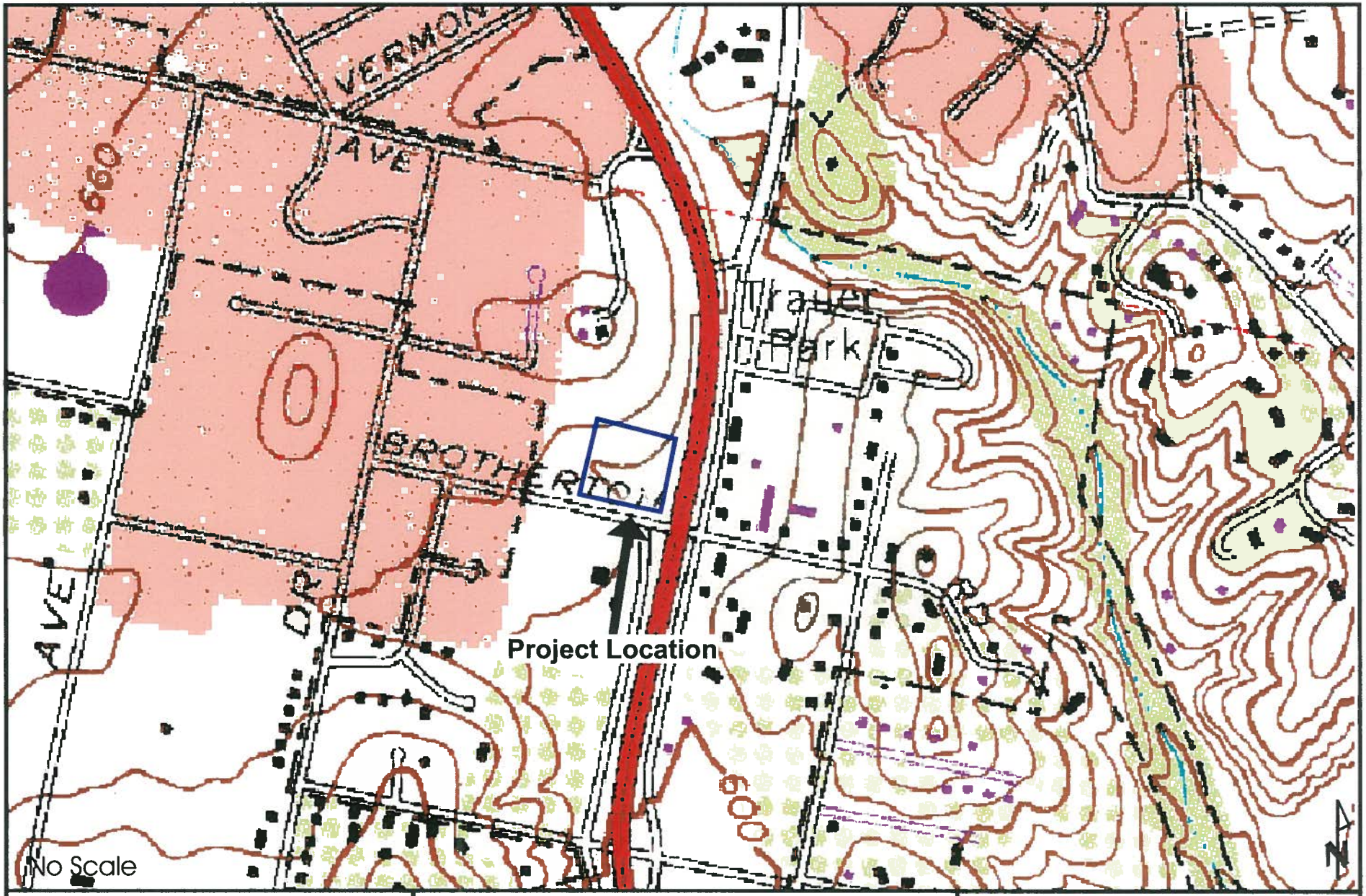
SANDAG

SanGIS

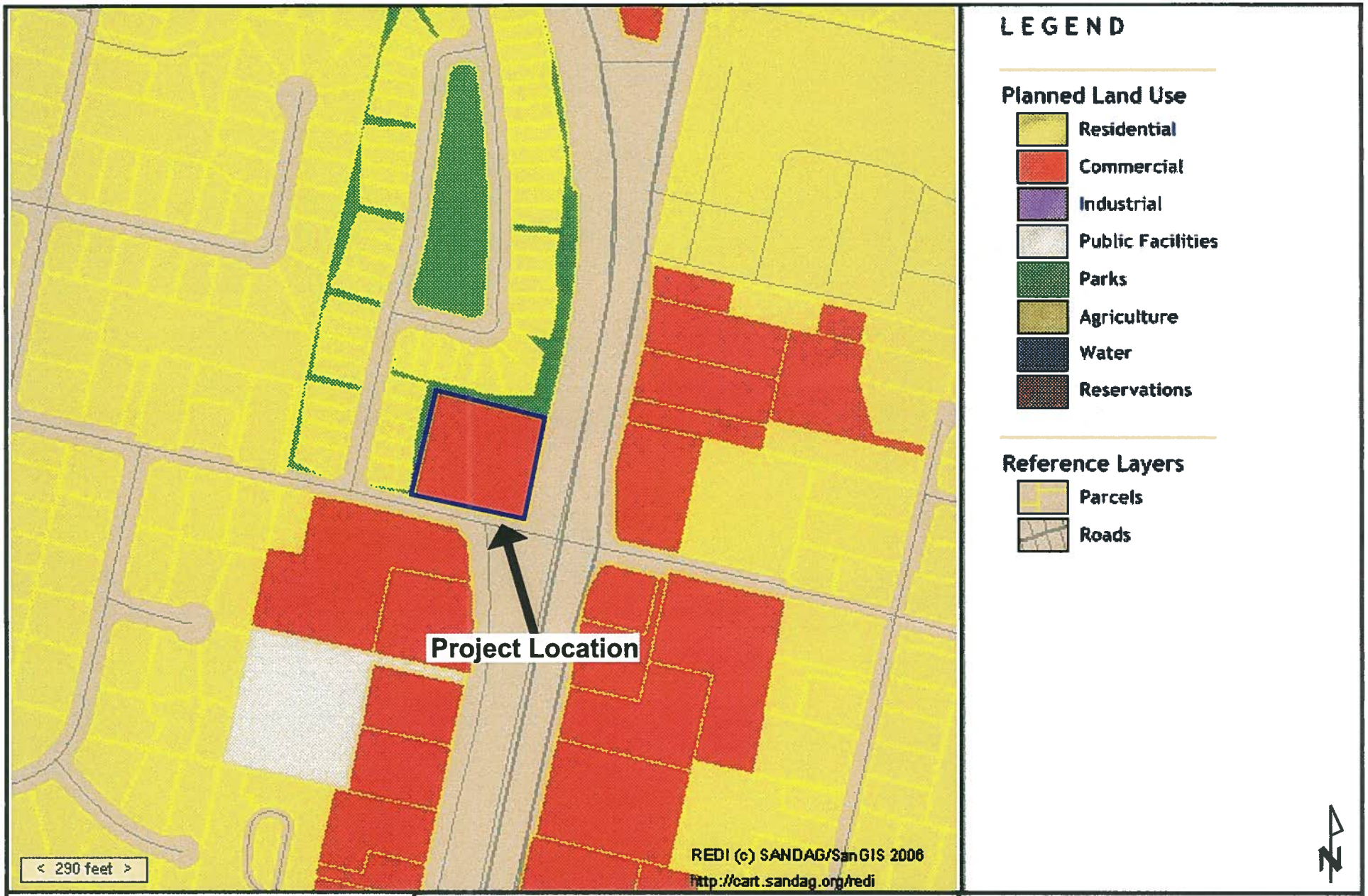
San Diego County Assessor's Parcel Number: 236-381-03-00

Eilar Associates, Inc. 321 Willowspring Drive North Encinitas, California 92024 760-738-5570	Assessor's Parcel Map Job # B20106N1	Figure 2

Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Satellite Aerial Photograph** **Job #B20106N1**	**Figure 3**



Eilar Associates, Inc. 321 Willowspring Drive North Encinitas, California 92024 760-738-5570	Topographic Map Job # B20106N1	Figure 4



Eilar Associates, Inc.
321 Willowspring Drive North
Encinitas, California 92024
760-738-5570

Planned Land Use Map
Job # B20106N1

Figure 5

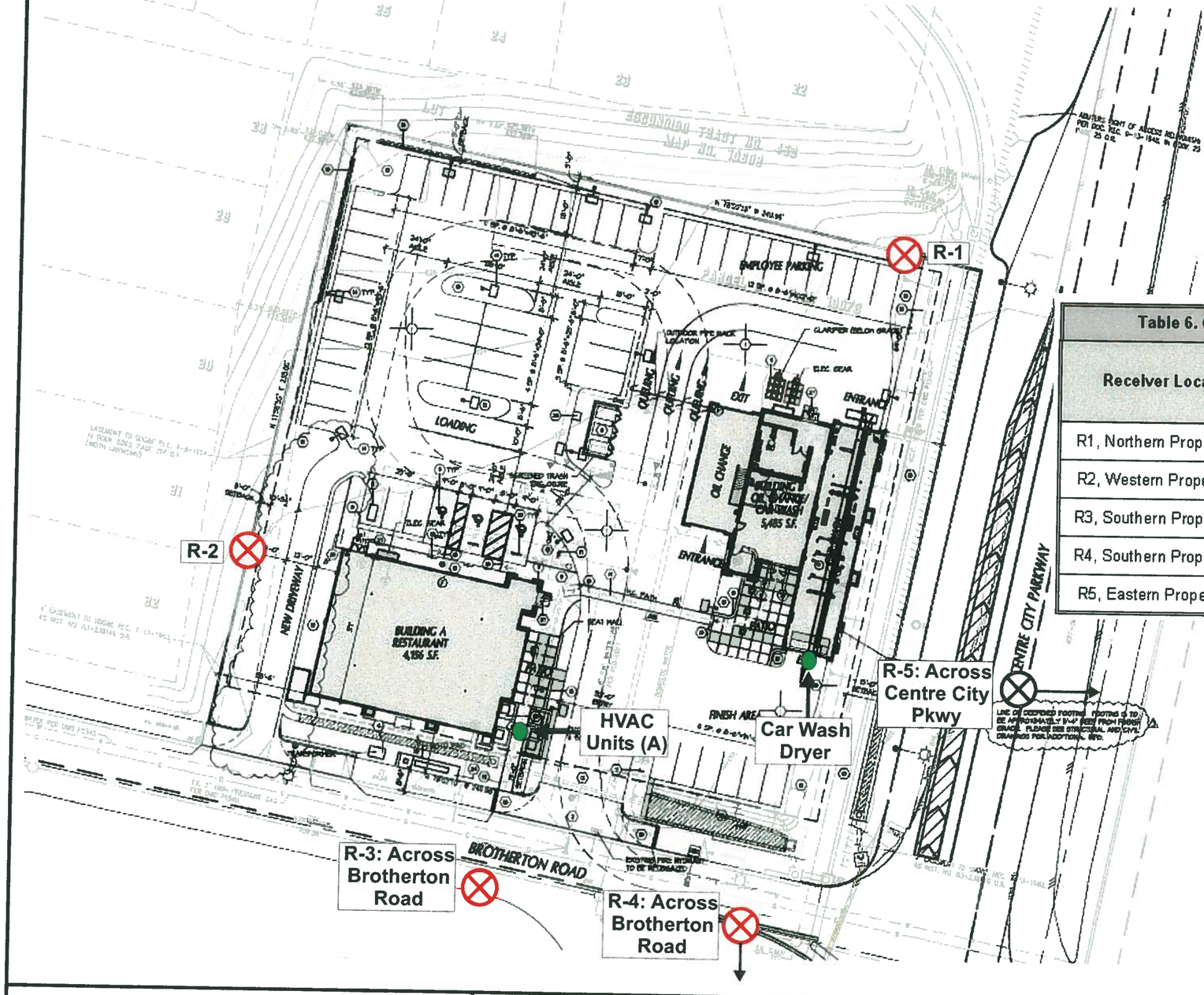


Table 6. Combined Daytime/Nighttime Noise Levels at Surrounding Property Lines					
Receiver Location	Car Wash Noise Level (dBA)	HVAC A Noise Level (dBA)	PM Peak Hour Traffic Noise Level (dBA)	Combined Hourly Daytime Noise Level (dBA)	Combined Nighttime Noise Level (dBA)
R1, Northern Property Line	50	33	38	50	33
R2, Western Property Line	47	38	46	50	38
R3, Southern Property Line	48	44	37	50	44
R4, Southern Property Line	53	36	41	53	36
R5, Eastern Property Line	49	31	28	49	31

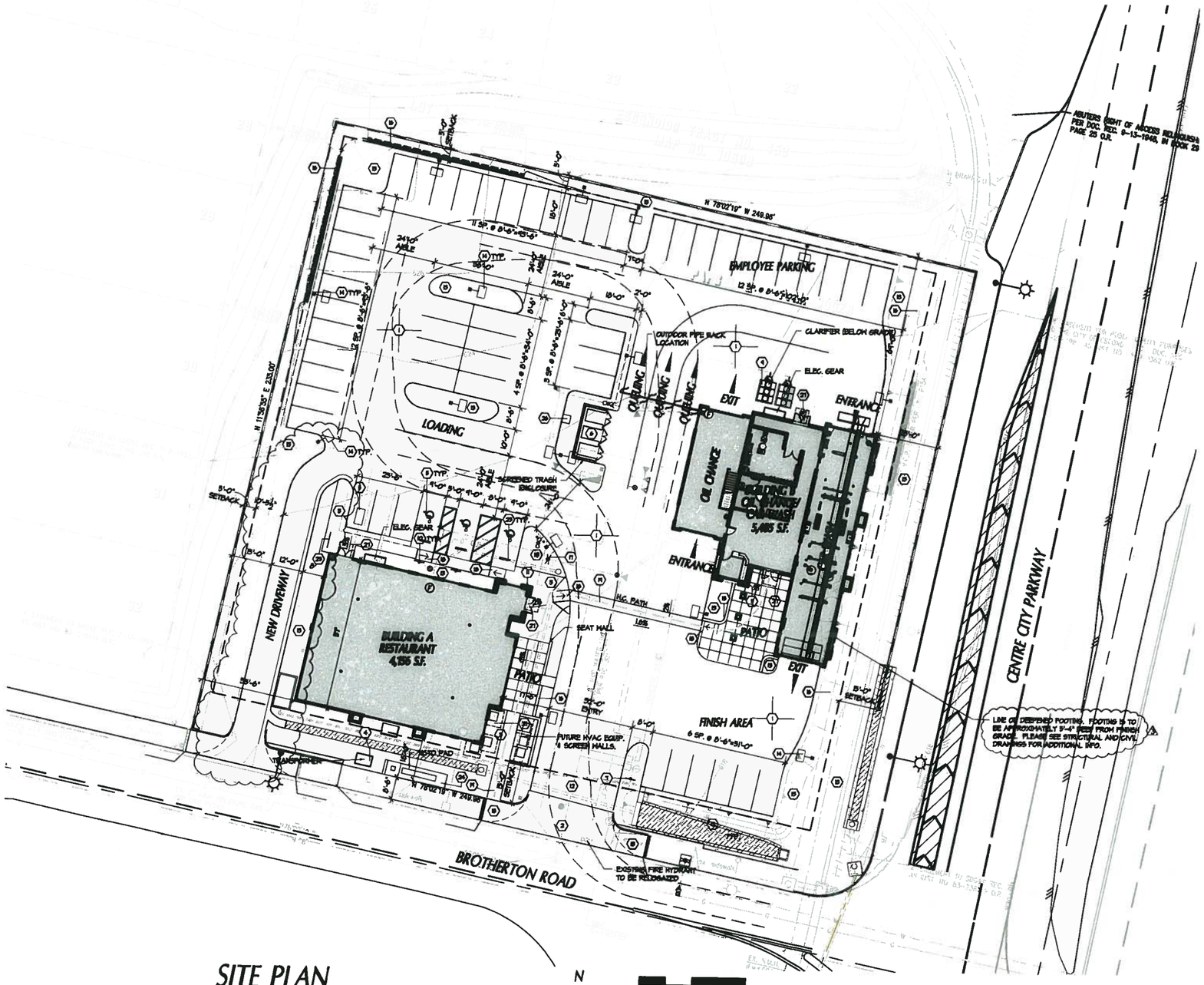
Eilar Associates, Inc.
321 Willowspring Drive North
Encinitas, California 92024
760-738-5570

Site Plan Showing Noise Impacts at Surrounding Property Lines and Receiver Locations
Job # B20106N1

Figure 6

APPENDIX A

Project Plans for Talk of the Town



SITE PLAN

SCALE: 1" = 20'

N

0 10' 20' 40'

SITE PLAN GENERAL NOTES

1. THE SOILS REPORT PREPARED BY : ALLIED EARTH TECHNOLOGY JOB NO. 10-1200AB
2. ALL DIMENSIONS ARE TO THE FACE OF WALL, FACE OF CONCRETE, CONCRETE CURB OR GRID LINE U.N.O.
3. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES DETAILS ON SHEET A0.1 ARE MINIMUM STANDARDS.
4. THE ENTIRE PROJECT SHALL BE PERMANENTLY MAINTAINED WITH AN AUTOMATIC IRRIGATION SYSTEM.
5. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.
6. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.
7. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.
8. SEE "C"DRAWINGS FOR FINISH GRADE ELEVATIONS.
9. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 4' O.C., EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. WAY. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". FINISH TO BE A MEDIUM BROOM FINISH U.N.O.
10. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB
11. FIRE HYDRANTS TO COMPLY W/ CITY OF ESCONDIDO ENGINEERING DEPARTMENT STANDARDS AND SPECIFICATIONS FOR ON-SITE FIRE HYDRANTS.
12. ALL UTILITIES SHALL BE SCREENED
13. ALL CONCENTRATED DRAINAGE DIRECTED TOWARDS THE PUBLIC STREET SHALL BE CONVEYED THROUGH UNDERSIDEWALK DRAINS.

SITE PLAN KEYNOTES

1. CONCRETE PAVING PER SOIL ENGINEER'S RECOMMENDATIONS. (SEE "L" DRAWINGS FOR COLORS AND PATTERNS.)
2. DRIVEWAY APRONS TO BE CONSTRUCTED PER CITY GUIDELINES, SEE CIVIL DRAWINGS. PROVIDE WASHED CONCRETE W/ LIGHT BROOM FIN. AT ALL DRIVE LOCATIONS. PROVIDE VERTICAL & HORIZONTAL EXPANSION JOINTS AT A MAXIMUM OF 5' O.C. SPACING.
3. 4" THICK ENHANCED INTEGRAL COLORED CONCRETE WALKWAY. MEET ADA ACCESS REQUIREMENTS AS SUMMARIZED IN SECTION 2 ON SHEET A0.3. SEE LANDSCAPE FOR DETAILS
4. TRANSFORMER PAD PER SDG&E REQUIREMENTS - VERIFY W/ ELEC. DRAWINGS
5. BELOW GROUND GREASE INTERCEPTOR. (SEE "P" DRAWINGS FOR SPECIFICATIONS).
6. TRASH ENCLOSURE. 6' HIGH CMU WALLS. SEE 10/A0.1
7. HANDICAP ACCESSIBILITY ENTRY SIGN - SEE 1/A0.3
8. HANDICAP INSIGNIA - SEE 6/A0.1
9. BELOW GRADE CLARIFIER (SEE CAR WASH DRAWINGS FOR DETAILS).
10. HANDICAP ACCESSIBILITY SIGN WITH ADDITIONAL VAN ACCESSIBLE SIGN PER UBC SECTION 1129.5. WALL-MOUNT IF POSSIBLE. SEE 5/A0.5, 5/A0.1 FOR SIM. DETAIL.
11. KNOX BOX FOR FIRE DEPARTMENT ACCESS. INSTALL PER CITY STANDARDS.
12. ENHANCED DRIVEWAY ENTRIES (COLORED SCORED CONCRETE) SEE "L" DRAWINGS
13. LANDSCAPE. SEE "L" DWGS.
14. LIGHT POLE LOCATIONS. SEE "E" DRAWINGS
15. 20" BLOCK SEAT WALL (SEE DETAIL 16/A0.2).
16. PROPOSED BLOCK RETAINING WALL-SPLIT FACE-BUFF COLOR (SEE CIVIL PLAN FOR HEIGHTS)
17. FIRE HYDRANT - SEE CIVIL DRAWINGS
18. CURB RAMP WITH DETECTABLE WARNINGS - SEE A0.3 FOR REQUIREMENTS.
19. HANDICAP PATH OF TRAVEL
20. ENHANCED COLORED SCORED CONCRETE - SEE LANDSCAPE DWG. FOR SPECS.
21. HVAC EQUIPMENT PADS (SEE "M" DRAWINGS).
22. SITE FURNISHINGS - SEE LANDSCAPE DRAWINGS FOR SPECS.
23. WHEEL STOP - PER CITY STANDARDS & 4/A0.1
24. NGTD PAD AND FURNITURE (CONTACT NGTD FOR EXACT EQUIPMENT AND LOCATION).
25. BIKE RACKS. SEE 5/A0.1
26. MAILBOX LOCATION - AUTH FLORENCE TYPE IV CBU 8710-ESSDAF W/ SANDSTONE FINISH OR EQUIVALENT. PROVIDE DECORATIVE MATCHING METAL BASE PLATE / BOLT COVER.
27. 60"X60" LEVEL LANDING AREA. SEE A0.3 FOR SLOPE REQUIREMENTS.

SITE LEGEND

- LANDSCAPED AREA
- CONCRETE PAVING - SEE "C" DRWGS. FOR THICKNESS
- STANDARD PARKING STALL 8'-6" x 18'-0" MIN.
- STANDARD PARKING STALL 8'-6" x 16'-0" W/ 2'-0" O.H.
- STANDARD PARKING STALL 8'-6" x 15'-0"
- HANDICAP PARKING STALL 9' x 18' SEE DETAIL 11/A0.1
- PREFERRED PARKING FOR CAR/ VAN POOL VEHICLES 5% TOTAL SPACES. SEE 5/A0.5
- ZERO CURB
- PROPERTY LINE
- YARDS USED FOR ALLOWABLE AREA INCREASES
- LIGHT STANDARD
- EXISTING PUBLIC FIRE HYDRANT
- PRIVATE FIRE HYDRANT- APPROXIMATE LOCATION
- CATCH BASIN APPROX LOCATION
- WATER LINE - SEE CIVIL
- GAS LINE - SEE CIVIL
- SEWER LATERAL SEE CIVIL
- FIRE LANE - CURB TO BE PTD. RED W/ WHITE LETTERS "NO PARKING FIRE LANE"
- DESIGNATED HYBRID VEHICLE PARKING STALLS - HYBRID SYMBOL TO BE PAINTED IN GREEN AT END OF STALL. SEE DETAIL 5/A0.5 5% TOTAL SPACES

NOTE: ALL PROPERTY LINES, EASEMENTS AND BUILDINGS, BOTH EXISTING AND PROPOSED, ARE SHOWN ON THIS SITE PLAN.

NOTE: ALL PARKING TO BE DOUBLE STRIPPED PER CITY OF ESCONDIDO PARKING STANDARDS.

NOTE: ALL SIGNAGE TO BE "UNDER SEPERATE PERMIT" AND "SEPERATE REVIEW".

NOTE: A SEPERATE PERMIT IS REQUIRED FOR SITE RETAINING WALLS.

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Carlsbad, California 92008
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LICENSED ARCHITECT EDMUND J. McMAHON RENEWAL 31-13 STATE OF CALIFORNIA

TALK OF THE TOWN
400 BROTHERTON RD.
ESCONDIDO, CA.

Date:	12/21/10
Project:	
File:	A1.dwg
Revisions:	
1	3-14-11
2	5-26-11
3	7-25-11
4 NEW DRIVEWAY	12-15-11

Sheet Title:
SITE PLAN

Sheet Number:
A1.1

APPENDIX B

Pertinent Sections of the City of Escondido Municipal Code

City of Escondido Noise Ordinance

Sec. 17-229. Sound Level Limits.

(a) Unless a variance has been applied for and granted pursuant to this article, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth in the following table, except that construction noise level limits shall be governed by Section 17-234 of this article.

TABLE 17-229		
ZONE	***TIME***	***APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)***
Residential Zones	*7 a.m. to 10 p.m.*	*50*
	10 p.m. to 7 a.m.	45
Multi-Residential Zones	*7 a.m. to 10 p.m.*	*55*
	10 p.m. to 7 a.m.	50
Commercial Zones	*7 a.m. to 10 p.m.*	*60*
	10 p.m. to 7 a.m.	55
Light Industrial/ Industrial Park Zones	*Anytime*	*70**
General Industrial Zones	*Anytime*	*75**

**Subject to provisions of Section 17-229 (c)(5).*

(b) Maximum Permissible Sound Levels by Receiving Land Use.

(1) The noise standards for the various categories of land use as presented in subsection (a) of this section shall, unless otherwise specifically indicated, apply to each property or portion of property substantially used for a particular type of land use reasonably similar to the land use types shown in subsection (a) of this section. Where two (2) or more dissimilar land uses occur on a single property, the more restrictive noise limits shall apply.

(2) Additional land use classifications may be added by action of the city council to reflect both lower and higher existing ambient levels than those shown.

(3) Where doubt exists when making identification of receiving land use, the city manager shall make an interpretation.

(4) No person shall operate or cause to be operated, any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level to exceed the environmental and/or nuisance interpretation of the applicable limits given in subsection (a) of this section.

(5) (a) Environmental noise shall be measured by the equivalent sound level (Leq) for such hours as are specified.

(b) Nuisance noise shall be measured as a sound level not to be exceeded at any time.

(c) Sound levels by receiving land use shall be measured at the boundary or at any point within the boundary of the property affected.

(d) Fixed location public utility distribution or fixed transmission facilities, located on or adjacent to a property line shall be subject to noise level limits of this section measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

c) Corrections to Exterior Noise Level Limits.

(1) If the noise is continuous, the Leq for any hour will be represented by any lesser time period within that hour. Noise measurements of a few minutes only will thus suffice to define the noise level.

(2) If the noise is intermittent, the Leq for any hour may be represented by a time period typical of the operating cycle. Measurement should be made of a representative number of noisy/quiet periods. A measurement period of not less than fifteen (15) minutes is, however, strongly recommended when dealing with intermittent noise.

(3) In the event the alleged offensive noise, as judged by the enforcement officer, contains a steady, audible sound such as a whine, screech or hum, or contains a repetitive impulsive noise such as hammering or riveting, the standard limits set forth in Table 17-229 shall be reduced by ten (10) dB or to the ambient noise level when such noises are not occurring.

(4) If the measured ambient level exceeds that permissible in subsection (a) of this section, the allowable noise exposure standard shall be the ambient noise level. The ambient level shall be measured when the alleged noise violations source is not operating.

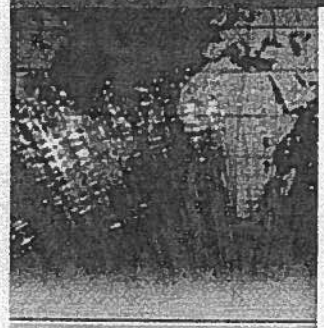
(5) The sound level limit at a location on a boundary between two (2) land use classifications is the limit applicable to the receiving land use; provided, however, that the one-hour average sound level limit applicable to extractive industries including but not limited to borrow pits and mines, shall be seventy-five (75) decibels (dB) at the property line regardless of the zone where the extractive industry is actually located.

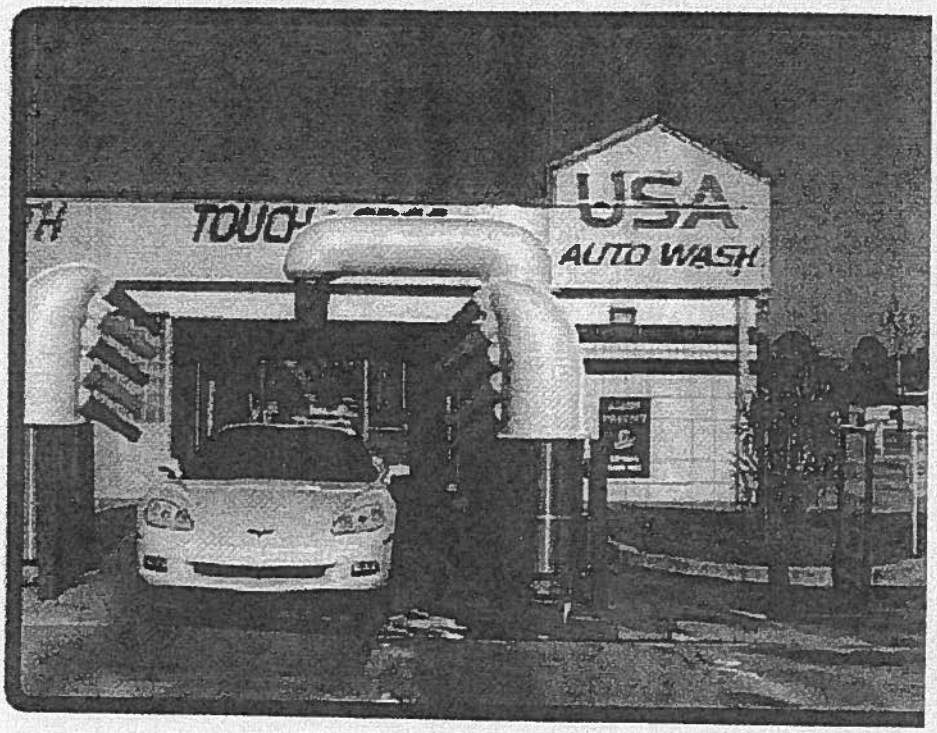
Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located. (Ord. No. 90-8, 2, 3-28-90)

APPENDIX C

Manufacturer's Noise Emission Data

Aerodry Systems, LLC





Optional Variable Frequency Drive to increase performance and reduce utility costs.

- **15 HP Motors, 3 Phase, TEFC, 1.3 SF**
- **230-460 v, useable on 208v Facility Amps Required: 150**
- **Est. Running Amps: 30 @ 230v, 15 @ 460v, 32 @ 208v**
- **Variable Frequency Drives, Starter Panels available**
- **96" Standard Height Clearance, Variable Width**
- **Axial Fan: Direct drive, One-piece aluminum molded**
- **Air Producer & Intake Housings: Polished Stainless Steel, w/Internal Sound Reduction Technology**
- **Ductwork: Gel-coated Fiberglass w/sound abatement**
- **Non-marking Soft, Stationary Nozzles: Red or Blue or Black**
- **Facility Requirements: 14' Bay Width, 6' Bay Length**
- **Patent Pending**

Modular Components ensure ease of installation and full adjus

Full-Serve, Self-Serve, Automatic wash applications.

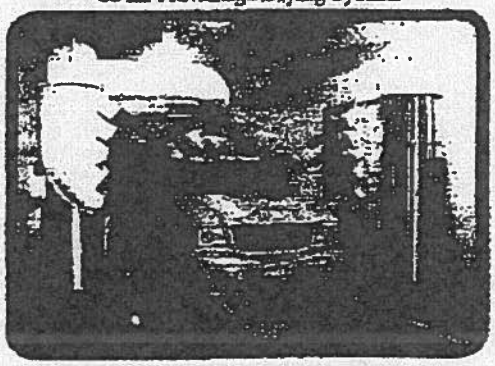
Aerodry Systems, LLC

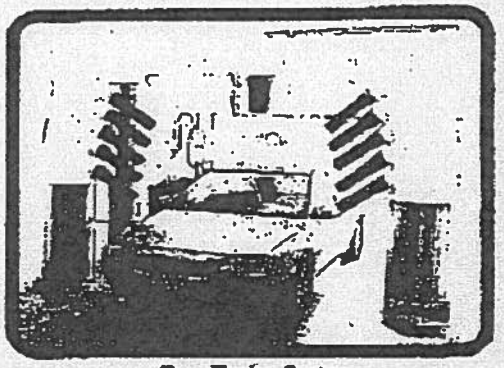
303-438-0120 303-438-0124 fax

Advanced technology combined with operator experience, has resulted in an efficient, reliable dryer with reduced sound levels.

Internal filters & modular design of stainless steel and fiberglass form a maintenance-free dryer which occupies minimal space.

60 HP Advantage Drying System





Base Drying System

Patent Pending

Contoured, lined ductwork for optimum air flow and sound reduction.

Summary of Sound Measurements: Advantage Drying System, 9/2002

	5' from blowers (4 motor system)	20' from blowers (4 motor system)	*5' from Worldwide (1 motor - 1998 test)*
A-Weighted:	**82.5 dBA**	**79.4 dBA**	***99.8 dBA***

Lifetime Fan Warranty!

To view complete report or warranty details, visit our website, *www.aerodrysystems.com*

35' 71 dBA
40' 70 dBA

Outside Noises - Conveyor

DAVID L. ADAMS ASSOCIATES, INC.
Consultants in Acoustics and Performing Arts Technologies

September 26, 2002

Ms. Cheryl Dobie
Aerodry Systems, LLC
P.O. Box 907
Broomfield, Colorado 80038

Re: Aerodry - Spectral Sound Measurements (DLAA Reference No. 6595)

Dear Ms. Dobie:

The following is a summary of the blower sound level measurements taken at the site on September 19, 2002. Attached, please find the printed results of the measurements.

Measurement Conditions

While at the site, spectral sound pressure levels were measured for the Aerodry Systems 15 horsepower blowers, using 4 motors. It is my understanding that the 4 motor configuration we measured is typical for this model. For our measurements, the following motor configuration was used: 1 for the left blower, 1 for the right blower, and 2 used in the overhead (top of vehicle) blower.

Measurements were taken in ANSI-standard ⅓-octave bands between 25 Hertz (Hz) and 20,000 Hz, as well as a 200-line FFT (narrow-band analysis, to better show if discrete tones are present) between 0 Hz and 10,000 Hz. The blowers were located in the center of the warehouse, approximately 20' from the garage door, which was open. The warehouse dimensions were approximately 70' x 100', and had a 14' ceiling. The warehouse contained a lay-in acoustical tile ceiling, a vinyl floor covering, and painted gypsum board walls. I have determined that background noise, which was comprised mainly of Hwy-36 traffic noise, did not effect the results of the sound level measurements.

As shown in Figure No. 1, attached, the blowers were centered in the warehouse. Measurements were taken at various positions within the warehouse, however, we are providing data from measurements taken on the "exit" side of the blowers, as this is the side of the blowers that will be closest to the outside of a car wash building. Measurements were taken at approximately 5-feet and 20-feet from the blower outlets. All measurements were taken 90 degrees off-axis, shown in Figure No. 1, as any measurements taken on-axis with the blowers would be effected by the high velocity airflow. The height of the microphone during all measurements was approximately 5-feet above the floor. We have **not** attempted to adjust the measured data for the effect of reverberant noise within the warehouse, but we believe the measurement location 5' away is in the blower's direct sound field and relatively unaffected by the warehouse.

1701 BOULDER STREET • DENVER, COLORADO 80211
303/455-1900 • FAX 303/455-9187
www.dlaa.com • denver@dlaa.com

Measurement Results

The results of all measurements, in the form of print-outs directly from the sound level meter, can be found following this report. All measurements were taken as 15-second averages. For clarity, the results of the ⅓-octave band measurements are listed below. For comparison, I have included the test results from our measurements taken on your original blower (1 motor configuration) in 1998.

⅓-Octave Band Sound Pressure Levels, in decibels (dB)

Center Frequency (Hz)	5 Feet from Blowers (4 motor system)	20 Feet from Blowers (4 motor system)	*5 Feet from Blower (1 motor - 1998 test)*
25	76.1	70.2	*67.3*
31.5	76.6	71.9	*71.4*
40	76.8	72.0	*75.5*
50	78.4	74.2	*79.3*
63	77.8	72.8	*85.3*
80	77.3	74.8	*81.9*
100	78.1	74.0	*83.7*
125	80.0	73.7	*83.3*
160	75.9	73.8	*86.4*
200	77.0	73.9	*85.9*
250	81.7	73.7	*88.5*
315	79.3	75.0	*90.5*
400	83.6	80.5	*97.0*
500	76.9	73.7	*96.2*
630	67.0	70.8	*96.5*
800	67.1	63.7	*89.7*
1,000	66.4	64.9	*88.5*
1,250	64.5	64.5	*84.7*
1,600	65.8	63.7	*82.4*
2,000	64.5	61.5	*83.0*
2,500	61.4	59.4	*80.3*
3,150	61.5	58.3	*78.5*
4,000	59.5	56.8	*76.4*
5,000	57.9	54.1	*74.0*
6,300	54.5	49.9	*72.5*
8,000	51.3	48.8	*70.6*
10,000	49.6	44.5	*68.9*
12,500	47.2	42.2	*67.1*
16,000	44.9	38.4	*64.3*
20,000	38.9	32.8	*59.9*
Overall (sum):	90.5 dB	86.4 dB	*103.0 dB*
A-Weighted:	**82.5 dBA**	**79.4 dBA**	***99.8 dBA***

Please note that even though the data are listed to the nearest 0.1 decibel, accuracy beyond the nearest whole decibel should not be expected.

Measurement Equipment

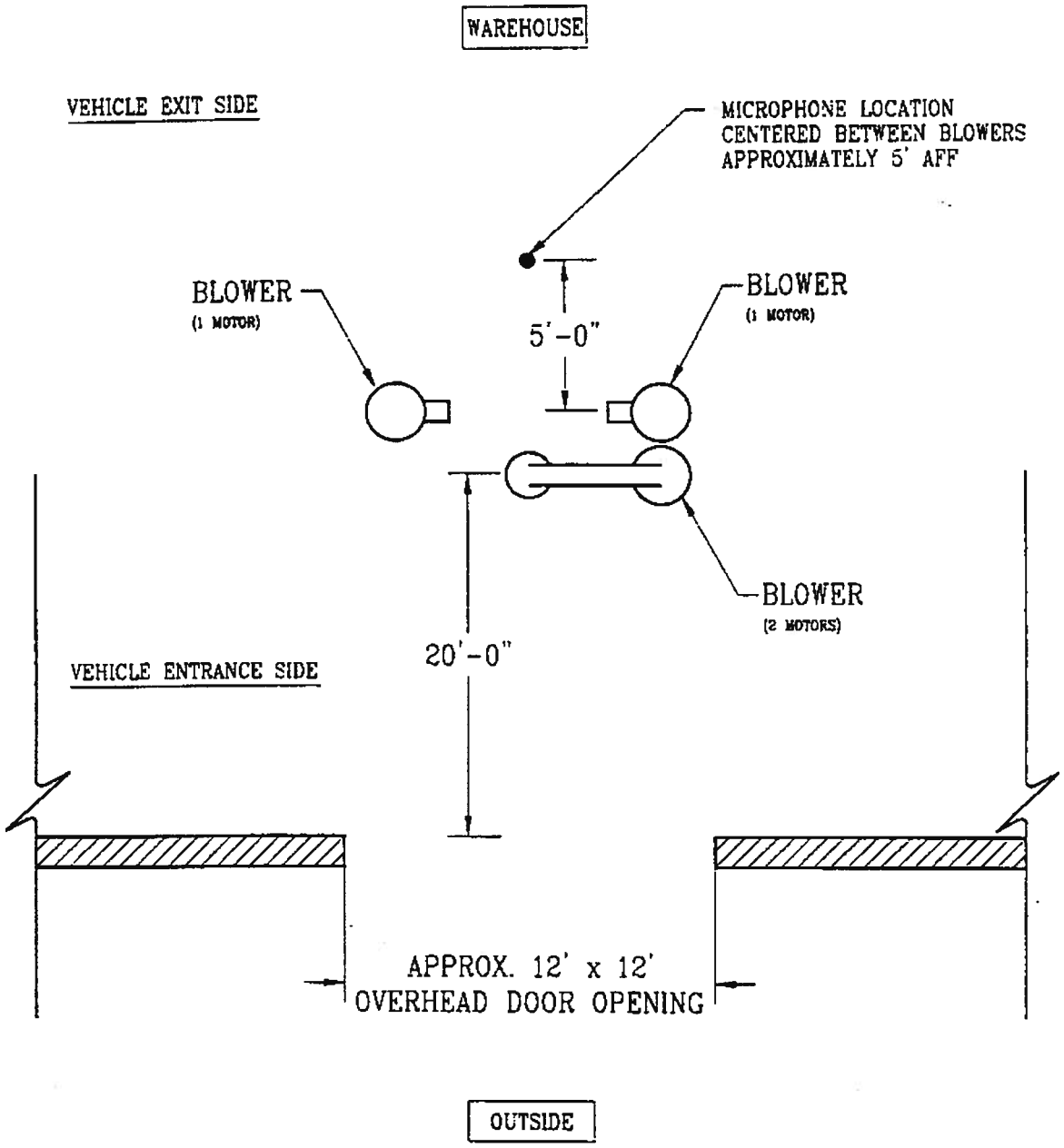
Measurements were taken with a Larson Davis model 2900 Type 1 sound level meter and a Brüel and Kjaer model 4165 condenser microphone. Immediately prior to measuring, the sound level meter was calibrated with a Larson Davis model CAL250 acoustic calibrator. Calibration was again verified at the conclusion of the measurements. All of our test equipment has been calibrated within the recommended time period set by the manufacturer. Documentation verifying measurement equipment calibration is available upon request.

If you have any questions please feel free to contact me.

Sincerely,

Andrew J. Kowalyshyn
Staff Consultant

Encl: Figure No. 1
Measurement Data



DAVID L. ADAMS ASSOCIATES, INC.
1701 BOULDER STREET
DENVER, COLORADO 80211
303/455-1900 FAX 303/455-9187

Measurement Configuration

AeroDry Systems, LLC

Not to Scale

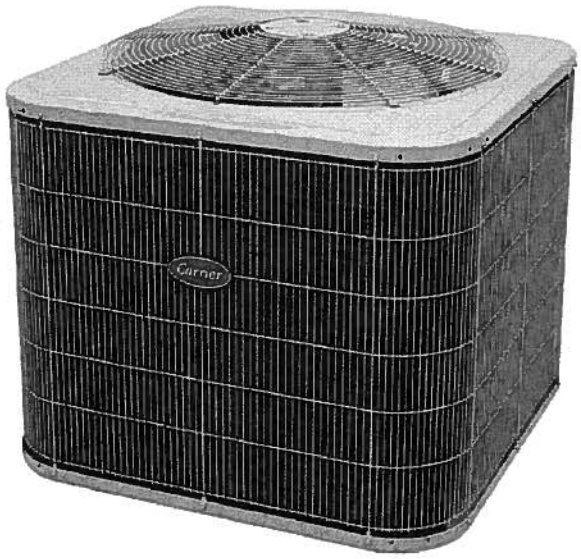
Date	Project No.	Drawn By
26 September 2002	6595	DMP

Figure No. 1

25HBB3
Base 13 Heat Pump
with Puron® Refrigerant
1–1/2 to 5 Nominal Tons (Sizes 18 to 60)

Carrier®
Turn to the Experts.

Product Data



Puron™
the environmentally sound refrigerant

Carrier heat pumps with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 25HBB has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows consumers to make a responsible decision in the protection of the earth's ozone layer.

As an Energy Star® Partner, Carrier Corporation has determined that this product meets the Energy Star® guidelines for energy efficiency. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 13 SEER/ 10.1 - 10.8 EER/ 7.7 - 8.3 HSPF (nominal)
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 72 dBA
- Sound levels as low as 70 dBA with accessory sound blanket

Comfort

- System supports Thermidistat™ or standard thermostat controls

Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, durable sheet metal construction
- Dense wire coil guard
- Baked-on powder paint

Applications

- Long-line - up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

Warranty

- 5 year limited compressor warranty
- 5 year limited parts warranty

ELECTRICAL DATA

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE†	MIN WIRE SIZE†	MAX LENGTH ft (m)‡	MAX LENGTH ft (m)‡	MAX FUSE* * or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		60° C	75° C	60° C	75° C	
18–30	208/230/1	253	197	48.0	9.0	0.8	12.0	14	14	66 (20.1)	62 (18.9)	20
24–30				58.3	12.8	0.75	16.8	14	14	47 (14.3)	45 (13.7)	25
30–30				77.0	16.0	0.8	21.4	12	12	58 (17.7)	56 (17.1)	30
36–30				79.0	16.7	0.9	21.7	12	12	58 (17.7)	55 (16.8)	35
42–30				109.0	19.9	1.2	26.0	10	10	77 (23.5)	73 (22.3)	40
48–30				117.0	21.8	1.2	28.4	8	8	109 (33.2)	104 (31.7)	50
60–30				134.0	26.3	1.2	34.1	8	8	91 (27.7)	87 (26.5)	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30°C, consult table 310–16 of the NEC (ANSI/NFPA 70). The ampacity of non–metallic–sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (ANSI/NFPA 70) Article 336–26. If other than uncoated (no–plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (ANSI/NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for voltage drop not to exceed 2%.

** Time–Delay fuse.

FLA – Full Load Amps

LRA – Locked Rotor Amps

MCA – Minimum Circuit Amps

RLA – Rated Load Amps

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Complies with 2001 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–30	74	52.0	63.5	68.0	70.5	66.5	62.0	57.5
24–30	75	54.5	64.0	69.0	69.5	67.5	64.0	58.0
30–30	74	52.0	62.5	66.5	68.5	65.0	63.5	59.0
36–30	72	55.0	62.0	63.5	66.0	64.0	61.5	54.0
42–30	77	55.5	60.0	63.5	71.5	65.0	62.5	59.0
48–30	77	58.0	65.5	68.5	72.0	66.5	60.5	53.0
60–30	77	55.0	63.0	67.5	71.5	68.0	64.0	60.5

NOTE: Tested in accordance with ARI Standard 270–95 (not listed in ARI).

A-WEIGHTED SOUND POWER WITH SOUND HOOD

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–30	73	52.5	63.0	67.5	69.0	66.0	62.0	55.5
24–30	74	54.0	63.5	69.0	69.0	67.5	63.5	57.5
30–30	74	51.5	62.0	66.5	67.5	64.5	62.0	57.5
36–30	70	54.5	62.0	63.5	64.5	63.0	60.0	51.5
42–30	75	55.0	60.5	63.5	69.0	64.5	61.5	56.0
48–30	74	58.0	64.5	69.0	68.5	66.0	60.0	53.0
60–30	74	55.0	63.5	67.0	69.0	66.5	62.0	57.0

NOTE: Tested in accordance with ARI Standard 270–95 (not listed in ARI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–SERIES	REQUIRED SUBCOOLING °F (°C)
18–30	10 (5.6)
24–30	12 (6.7)
30–30	11 (6.1)
36–30	9 (5.0)
42–30	11 (6.1)
48–30	11 (6.1)
60–30	12 (6.7)

APPENDIX D

Pertinent Sections of LLG Engineers Traffic Study, Dated December 2008

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The trips rates recommended in the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, published by SANDAG are used to estimate the project generated trips.

Table 7–1 tabulates the total project traffic generation.

7.1 Trip Generation

As seen in *Table 7-1*, the project is calculated to generate a total of approximately 1,645 ADT with 95 AM peak hour trips (48 inbound / 47 outbound) and 139 PM peak hour trips (73 inbound / 66 outbound).

A portion of restaurant trips are not new to the street system, but are captured from trips already on the street system. These trips are termed "Pass-by" trips and are assumed to be already on Centre City Parkway. A reduction of 20% was applied to the restaurant generated PM peak hour trips as suggested by San Diego Association of Governments (SANDAG) data, as shown in *Table 8-1*. Since no reduction is suggested for the ADT and AM peak hour trips, a reduction of 10% was applied to the ADT and the AM peak hour restaurant generated trips.

7.1.1 *Primary Trips*

Applying the pass-by reduction, the Project is calculated to generate a net of approximately 1,579 ADT with 89 AM peak hour trips (45 inbound / 44 outbound) and 130 PM peak hour trips (68 inbound / 62 outbound).

7.1.2 *Pass-by Trips*

The project is calculated to generate 66 daily pass-by trips with 6 AM peak hour trips (3 inbound and 3 outbound) and 9 PM peak hour trips (5 inbound and 4 outbound).

7.2 Trip Distribution/Assignment

The project distribution percentages were developed based on the SANDAG Select Zone Assignment (SZA) for Traffic Analysis Zone (TAZ) 1194. These percentages were modified marginally based on site access parameters, roadway system characteristics (i.e. project's proximity to Interstate 15), and existing traffic turning movement counts. Reduction due to pass-by trips was not applied at the project driveway(s).

At the Centre City Parkway / Brotherton Road intersection, northbound left-turns are permitted. However, eastbound left-turns are not permitted. Therefore, outbound traffic oriented to northbound Centre City Parkway was routed south on South Centre City Parkway (the frontage street just west of Centre City Parkway) to Citracado Parkway and then eastbound left on Citracado Parkway to Northbound Centre City Parkway.

The project primary and pass-by trips were assigned separately and added to obtain the total project trips.

TABLE 7-1
TRIP GENERATION

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Car Wash	1 Site	900 /site	900	4%	5:5	18	18	36	9%	5:5	41	40	81
Oil Change	2 Stalls	40 /Stall	80	7%	6:4	3	3	6	11%	5:5	5	4	9
Restaurant	4,156 SF	160 /KSF	665	8%	5:5	27	26	53	8%	6:4	27	22	53
Total Trips			**1,645**			**48**	**47**	**95**			**73**	**66**	**139**
Pass By Restaurant (Daily and AM: 10% and PM Peak hour: 20%)			66			3	3	6			5	4	9
Subtotal Primary Trips			**1,579**			**45**	**44**	**89**			**68**	**62**	**130**

APPENDIX E

Traffic Noise Model (TNM) Data and Results

Eilar Associates
AH

26 January 2012
TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: B20106N1 TOTT Car Wash
RUN: Traffic Noise Impacts

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

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Exit Driveway	12.0	point1	1	-105.9	202.1	0.00				Average	
		point2	2	-128.0	186.0	0.00				Average	
		point4	4	-149.3	88.7	0.00					
Entrance Main	12.0	point19	19	-19.0	57.0	0.00				Average	
		point20	20	2.0	158.0	0.00					
Entrance Car Wash	12.0	point22	22	19.1	232.5	0.00				Average	
		point23	23	31.1	239.8	0.00				Average	
		point24	24	54.0	238.1	0.00				Average	
		point25	25	74.0	232.5	0.00				Average	
		point26	26	79.2	224.6	0.00				Average	
		point27	27	78.4	209.3	0.00					
Entrance Restaurant	12.0	point28	28	17.6	234.8	0.00				Average	
		point29	29	-2.3	260.0	0.00				Average	
		point30	30	-24.9	269.1	0.00				Average	
		point31	31	-66.6	276.6	0.00				Average	
		point32	32	-91.6	266.1	0.00				Average	
		point33	33	-100.4	238.1	0.00				Average	
		point34	34	-100.4	212.5	0.00				Average	
		point35	35	-88.4	195.0	0.00				Average	
		point36	36	-46.8	188.0	0.00				Average	
		point37	37	-23.1	162.7	0.00				Average	
		point38	38	-21.1	126.3	0.00				Average	
		point39	39	-28.8	78.7	0.00				Average	
		point40	40	-32.4	55.7	0.00					
Entrance Oil	12.0	point42	42	3.0	159.0	0.00				Average	

		point43	43	19.0	169.0	0.00					
Entrance Car/Restaurant	12.0	point44	44	2.1	159.0	0.00				Average	
		point45	45	18.0	232.0	0.00					

Eilar Associates 26 January 2012
AH TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: B20106N1 TOTT Car Wash
RUN: Traffic Noise Impacts

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Exit Driveway	point1	1	66	10	0	0	0	0	0	0	0	0
	point2	2	66	10	0	0	0	0	0	0	0	0
	point4	4										
Entrance Main	point19	19	73	10	0	0	0	0	0	0	0	0
	point20	20										
Entrance Car Wash	point22	22	41	10	0	0	0	0	0	0	0	0
	point23	23	41	10	0	0	0	0	0	0	0	0
	point24	24	41	10	0	0	0	0	0	0	0	0
	point25	25	41	10	0	0	0	0	0	0	0	0
	point26	26	41	10	0	0	0	0	0	0	0	0
	point27	27										
Entrance Restaurant	point28	28	27	10	0	0	0	0	0	0	0	0
	point29	29	27	10	0	0	0	0	0	0	0	0
	point30	30	27	10	0	0	0	0	0	0	0	0
	point31	31	27	10	0	0	0	0	0	0	0	0
	point32	32	27	10	0	0	0	0	0	0	0	0
	point33	33	27	10	0	0	0	0	0	0	0	0
	point34	34	27	10	0	0	0	0	0	0	0	0
	point35	35	27	10	0	0	0	0	0	0	0	0
	point36	36	27	10	0	0	0	0	0	0	0	0
	point37	37	27	10	0	0	0	0	0	0	0	0
	point38	38	27	10	0	0	0	0	0	0	0	0
	point39	39	27	10	0	0	0	0	0	0	0	0

	point40	40										
Entrance Oil	point42	42	5	10	0	0	0	0	0	0	0	0
	point43	43										
Entrance Car/Restaurant	point44	44	68	10	0	0	0	0	0	0	0	0
	point45	45										

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26 January 2012
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B20106N1 TOTT Car Wash
RUN: Traffic Noise Impacts

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
R1	6	1	96.0	279.0	0.00	5.00	0.00	66	10.0	8.0	Y
R2	14	1	-157.8	144.2	0.00	5.00	0.00	66	10.0	8.0	Y
R3	15	1	37.0	17.0	0.00	5.00	0.00	66	10.0	8.0	Y
R4	16	1	-60.0	38.0	0.00	5.00	0.00	66	10.0	8.0	Y
R5	17	1	236.0	94.0	0.00	5.00	0.00	66	10.0	8.0	Y

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26 January 2012
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B20106N1 TOTT Car Wash
RUN: Traffic Noise Impacts
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
R1	6	1	0.0	38.2	66	38.2	10	----	38.2	0.0	8	-8.0
R2	14	1	0.0	45.9	66	45.9	10	----	45.9	0.0	8	-8.0
R3	15	1	0.0	36.7	66	36.7	10	----	36.7	0.0	8	-8.0
R4	16	1	0.0	40.6	66	40.6	10	----	40.6	0.0	8	-8.0
R5	17	1	0.0	28.0	66	28.0	10	----	28.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX F

Equipment Noise Calculations

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	6.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	158.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: Car Wash
Path Description: R-1

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**158.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)			
Sound Power Level: L_W	97.3	97.8	99.2	99.2	85.6	83.7	79.4	71.8	**104.6**	(dB)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**52.6**	**53.1**	**54.5**	**54.5**	**40.9**	**39.0**	**34.7**	**27.1**	**59.9**	(dB)	at	158.0	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	26.4	37.0	45.9	51.3	40.9	40.2	35.2	26.0	**53.1**	(dBA)	at	158.0	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	59.9	(dB)		
Total A-Weighted Sound Pressure Level:	53.1			
# of sources	1			
Combined Sound Pressure Level:	**59.9**	(dB) at	158.0	(ft)
Combined A-Weighted Sound Pressure Level:	**53.1**	(dBA) at	158.0	(ft)
# of minutes in operation (per hour)	30			
Total A-Weighted hourly LEQ	**50.13**	(dBA) at	58.4	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	6.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	220.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: Car Wash
Path Description: R-2

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**220.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)			
Sound Power Level: L_W	97.3	97.8	99.2	99.2	85.6	83.7	79.4	71.8	**104.6**	(dB)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**49.7**	**50.2**	**51.6**	**51.6**	**38.0**	**36.1**	**31.8**	**24.2**	**57.0**	(dB)	at	220.0	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	23.5	34.1	43.0	48.4	38.0	37.3	32.3	23.1	**50.3**	(dBA)	at	220.0	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	57.0	(dB)		
Total A-Weighted Sound Pressure Level:	50.3			
# of sources	1			
Combined Sound Pressure Level:	**57.0**	(dB) at	220.0	(ft)
Combined A-Weighted Sound Pressure Level:	**50.3**	(dBA) at	220.0	(ft)
# of minutes in operation (per hour)	30			
Total A-Weighted hourly LEQ	**47.25**	(dBA) at	58.4	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	6.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	192.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: Car Wash
Path Description: R-3

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**192.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)			
Sound Power Level: Lw	97.3	97.8	99.2	99.2	85.6	83.7	79.4	71.8	**104.6**	(dB)			
Sound Pressure Level: $L_p = L_w - 20 \log(r) - 0.75$	**50.9**	**51.4**	**52.8**	**52.8**	**39.2**	**37.3**	**33.0**	**25.4**	**58.2**	(dB)	at	192.0	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	24.7	35.3	44.2	49.6	39.2	38.5	33.5	24.3	**51.4**	(dBA)	at	192.0	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	58.2	(dB)		
Total A-Weighted Sound Pressure Level:	51.4			
# of sources	1			
Combined Sound Pressure Level:	**58.2**	(dB) at	192.0	(ft)
Combined A-Weighted Sound Pressure Level:	**51.4**	(dBA) at	192.0	(ft)
# of minutes in operation (per hour)	30			
Total A-Weighted hourly LEQ	**48.44**	(dBA) at	58.4	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	6.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	112.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: Car Wash
Path Description: R-4

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**112.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)			
Sound Power Level: L_W	97.3	97.8	99.2	99.2	85.6	83.7	79.4	71.8	**104.6**	(dB)			
Sound Pressure Level: $L_P = L_W - 20\ log\ (r) - 0.75$	**55.6**	**56.1**	**57.5**	**57.5**	**43.9**	**42.0**	**37.7**	**30.1**	**62.9**	(dB)	at	112.0	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	29.4	40.0	48.9	54.3	43.9	43.2	38.2	29.0	**56.1**	(dBA)	at	112.0	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	62.9	(dB)		
Total A-Weighted Sound Pressure Level:	56.1			
# of sources	1			
Combined Sound Pressure Level:	**62.9**	(dB) at	112.0	(ft)
Combined A-Weighted Sound Pressure Level:	**56.1**	(dBA) at	112.0	(ft)
# of minutes in operation (per hour)	30			
Total A-Weighted hourly LEQ	**53.12**	(dBA) at	58.4	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	6.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	182.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: Car Wash
Path Description: R-5

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**182.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)			
Sound Power Level: L_W	97.3	97.8	99.2	99.2	85.6	83.7	79.4	71.8	**104.6**	(dB)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**51.4**	**51.9**	**53.3**	**53.3**	**39.7**	**37.8**	**33.5**	**25.9**	**58.7**	(dB)	at	182.0	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	25.2	35.8	44.7	50.1	39.7	39.0	34.0	24.8	**51.9**	(dBA)	at	182.0	(ft)

Combined Sound Pressure Level at Receiver				
Total Sound Pressure Level:	58.7	(dB)		
Total A-Weighted Sound Pressure Level:	51.9			
# of sources	1			
Combined Sound Pressure Level:	**58.7**	(dB) at	182.0	(ft)
Combined A-Weighted Sound Pressure Level:	**51.9**	(dBA) at	182.0	(ft)
# of minutes in operation (per hour)	30			
Total A-Weighted hourly LEQ	**48.9**	(dBA) at	58.4	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	3.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	240.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: HVAC A
Path Description: R-1

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**240.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	55.0	63.0	67.5	71.5	68.0	64.0	60.5	(dBA)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**6.6**	**14.6**	**19.1**	**23.1**	**19.6**	**15.6**	**12.1**	(dBA)	at	240.0	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	26.7	(dBA)			
# of sources	4				
Combined Sound Pressure Level:	**32.7**	(dBA)	at	240.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	3.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	125.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: HVAC A
Path Description: R-2

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**125.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	55.0	63.0	67.5	71.5	68.0	64.0	60.5	(dBA)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**12.3**	**20.3**	**24.8**	**28.8**	**25.3**	**21.3**	**17.8**	(dBA)	at	125.0	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	32.4	(dBA)		
# of sources	4			
Combined Sound Pressure Level:	**38.4**	(dBA) at	125.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	3.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	68.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: HVAC A
Path Description: R-3

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**68.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	55.0	63.0	67.5	71.5	68.0	64.0	60.5	(dBA)			
Sound Pressure Level: $L_P = L_W - 20\ log\ (r) - 0.75$	**17.6**	**25.6**	**30.1**	**34.1**	**30.6**	**26.6**	**23.1**	(dBA)	at	68.0	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	37.6	(dBA)			
# of sources	4				
Combined Sound Pressure Level:	**43.7**	(dBA)	at	68.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	3.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	164.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: HVAC A
Path Description: R-4

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**164.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	55.0	63.0	67.5	71.5	68.0	64.0	60.5	(dBA)			
Sound Pressure Level: $L_P = L_W - 20 \log(r) - 0.75$	**10.0**	**18.0**	**22.5**	**26.5**	**23.0**	**19.0**	**15.5**	(dBA)	at	164.0	(ft)

Combined Sound Pressure Level at Receiver					
Total Sound Pressure Level:	30.0	(dBA)			
# of sources	4				
Combined Sound Pressure Level:	**36.0**	(dBA)	at	164.0	(ft)

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Sound Power Level to Sound Pressure Level Analysis

Distances			
Source Height:	h_S =	3.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	310.0	(ft)

Project Name: TOTT
Project Number: B20106N1
Date: 1/26/2012
Source Description: HVAC A
Path Description: R-5

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**310.0**	(ft)

Sound Power to Sound Pressure Calculations

Octave Band	125	250	500	1000	2000	4000	8000	(Hz)			
Sound Power Level: L_W	55.0	63.0	67.5	71.5	68.0	64.0	60.5	(dBA)			
Sound Pressure Level: $L_P = L_W - 20\ log(r) - 0.75$	**4.4**	**12.4**	**16.9**	**20.9**	**17.4**	**13.4**	**9.9**	(dBA)	at	310.0	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level:	24.5	(dBA)		
# of sources	4			
Combined Sound Pressure Level:	**30.5**	(dBA) at	310.0	(ft)

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