ACOUSTICAL ANALYSIS REPORT

Valley Center ARCO
San Diego County Record ID: PDS2015-STP-15-012
Environmental Log Number: PDS2015-ER-15-08-018

Lead Agency:

County of San Diego

Department of Planning Development Services
Contact: Souphalak Sakdarak
5510 Overland Avenue, Suite 110
San Diego, California 92123
Phone: 858-495-5214

Preparer:

Amy L. Hool
Eilar Associates, Inc.
Acoustical & Environmental Consulting
210 South Juniper Street, Suite 100
Escondido, California 92025
www.eilarassociates.com
Phone: 760-738-5570
Fax: 760-738-5227

Project Proponent:

Rafat Mikhail

c/o Barghausen Consulting Engineers, Inc. 3883 Ruffin Road, Suite B San Diego, California 92123 Phone: 425-656-7468

Job #B50608N1

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SDC PDS RCVD 10-23-20 STP15-012

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GLOSSARY OF TERMS AND ACRONYMS

Ambient Sound: The combination of all near and far sounds in a given environment, none of which is particularly dominant.

Attenuation: The reduction in sound pressure level as sound is transmitted from one point to another.

Average Sound Level (L_{EQ}): Also known as equivalent sound level and expressed in dBA. The A-weighted sound level of a steady state sound which has the same sound energy as that contained in the actual time-varying sound being measured over a specific time period.

A-weighted Sound Level (dBA): Designed to approximate the response of the human ear to sound. A sound pressure level which has been filtered or weighted to quantitatively reduce the effect of low frequency noise.

Community Noise Equivalent Level (CNEL): The 24-hour weighted average noise level calculated as A-weighted sound pressure levels with different weighting factors for the noise levels occurring during the evening and nighttime periods. This weighting is applied to account for an individual's increased sensitivity to noise during these times. Sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting.

Day-Night Average Sound Level (LDM): A-weighted equivalent continuous sound exposure level for a 24-hour period with a 10 dB adjustment added to the sound levels occurring during nighttime hours (10 p.m. to 7 a.m.).

Decibel (dB): The primary unit of sound measurement; used to quantify both sound pressure level and sound power level. In acoustics, equal to ten times the logarithm of the ratio of one sound and a lower-intensity reference sound.

Frequency: The number of oscillations per second; generally expressed in hertz (Hz) or cycles per second (cps).

Insertion Loss: The sound level reduction at a receiver that occurs when a sound-attenuating device, such as a silencer or barrier, is inserted in the path between source and receiver. Expressed in decibels at a specific frequency octave band.

Sound Level Meter: An instrument, usually handheld, that is used to measure sound pressure levels with averaging capabilities and standard frequency-weighting.

Sound Pressure Level (L, or SPL): The level of sound energy, measured in dB, at a specific location. In order to be meaningful, a sound pressure level measurement must be accompanied by a reference distance at which the sound source was measured.

EXECUTIVE SUMMARY

The proposed project, Valley Center ARCO, consists of the construction of a new gas station and convenience store on a currently vacant 0.90-acre lot. The project site is located at the southwest corner of the intersection of Valley Center Road and Cole Grade Road in the unincorporated community of Valley Center, County of San Diego, California.

The proposed project is a gas station that does not include any residential facility, nor does it include any other noise-sensitive space (i.e. school, library, place of worship, etc.). No outdoor use areas are proposed at the project site at which noise levels must remain below a certain threshold. For this reason, exterior noise impacts to the site resulting from traffic noise or other environmental noise sources have not been evaluated. Project-generated traffic is also not anticipated to create any direct noise impacts at off-site receivers.

Noise from proposed mechanical equipment to be located on site has also been evaluated to determine whether noise from these sources will exceed the noise standards of the County of San Diego Noise Ordinance. Mechanical noise sources to be located on site include air conditioning and condensing units on the roof of the proposed convenience store. With the roof-top mechanical equipment and parapet as shown on the plans, all mechanical noise sources are expected to be adequately controlled at surrounding property lines.

Temporary construction noise was calculated to determine the impact this activity will have on surrounding residential properties. Section 36.409 of the County of San Diego Noise Ordinance states it is unlawful to operate construction equipment that exceeds an average sound level of 75 dB for an eight-hour period between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received. Section 36.410 of the Noise Ordinance provides noise level limits for impulsive noise, such as blasting or the use of equipment such as a rock crusher, pile driver, hoe ram, or drill rig. Current proposed construction activities are expected to meet County of San Diego noise regulations for temporary construction noise during all phases of construction. General good practice measures should be followed, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego. With these recommendations, it is expected that construction equipment noise levels will be at or below an average eight-hour equivalent noise level of 75 dBA at surrounding occupied properties, in compliance with County of San Diego regulations.

1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for discretionary approval. Its purpose is to assess noise impacts from proposed project-generated traffic and mechanical equipment operation on site, as well as temporary construction noise.

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

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

1.1 Project Description

The proposed project, Valley Center ARCO, consists of the construction of a new gas station and convenience store on a currently vacant 0.90-acre lot. The project proposes a 3,953-square foot convenience store that will operate 24 hours a day, seven days a week, and a fueling facility with six multiple product dispensers. The site is zoned C36 (General Commercial), as are all surrounding properties located directly to the north, south, east, and west. The nearest noise-sensitive receiver is a property zoned RR (Rural Residential) located to the northeast of the project site, across Valley Center and Cole Grade Roads.

Please refer to project plans provided as Appendix A for more details.

1.2 Environmental Settings & Existing Conditions

1.2.1 Project Location

The project site is located at the southwest corner of the intersection of Valley Center Road and Cole Grade Road in the unincorporated community of Valley Center, County of San Diego, California. The Assessor's Parcel Number (APN) for the property is 188-260-31-00. The property has an overall site area of approximately 0.90 acres.

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

1.2.2 Measured Noise Level

An on-site inspection was conducted at 1:45 p.m. on Thursday, July 2, 2015. The weather conditions were as follows: winds at 5-10 mph, low humidity, and temperatures in the high 80s. The sound level measurement was performed with a sound level meter using A-weighting and a "slow" response time in accordance with Section 36.403 of the County of San Diego Noise Ordinance. An ambient noise measurement was taken approximately 60 feet south of the Valley Center Road centerline, and 45 feet west of the Cole Grade Road centerline. The microphone position was approximately five feet above the existing grade. The measured noise level can be seen in Table 1. Noise sources present during this measurement primarily included traffic noise from vehicles on Valley Center Road and Cole Grade Road. The ambient noise measurement location is shown in Figure 5.

Table 1. On-Site Noise Measurement Conditions and Results					
Date Thursday, July 2, 2015					
Time	1:45 p.m. – 1:55 p.m.				
Conditions	Clear skies, winds at 5-10 mph, temperature in the high 80s with low humidity				
Measured Noise Level	68.9 dBA L _{EQ}				

1.3 Methodology and Equipment

1.3.1 Formulas and Calculations

Decibel Addition

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

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

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

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

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

where SPL_1 = Known sound pressure level at known distance, SPL_2 = Calculated sound pressure level at distance,

 D_1 = Distance from source to location of 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.

Barrier Insertion Loss

When a barrier is placed between a source and receiver, sound attenuation can be achieved. The amount of attenuation is dependent on the height of the barrier, the wavelength of the sound, and the distance between source and receiver, source and barrier, and barrier and receiver. The amount of attenuation achieved is known as "insertion loss." The maximum amount of sound attenuation that can be achieved by a barrier is usually between 15 and 20 dB.

Hourly L_{EQ} Summation

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

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

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

Sound Power to Sound Pressure

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

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

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

Project-Generated Traffic Noise Impacts

Changes in traffic noise levels can be predicted by inputting the ratio of the two scenarios into the following logarithmic equation:

$$\Delta = 10\log(V2/V1)$$

where: Δ = Change in sound energy, V1 = original or existing traffic volume, and V2 = future or cumulative traffic volume.

1.3.2 Measurement Equipment

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

- Larson Davis Sound Expert LxT Type 1 Sound Level Meter, Serial # 4084
- Larson Davis Model CA250 Calibrator, Serial # 2106

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

2.0 NOISE SENSITIVE LAND USES AFFECTED BY AIRBORNE NOISE

2.1 Potential Noise Impacts

This section is designated for projects with noise-sensitive land uses. The proposed project is a gas station that does not include any residential facility, nor does it include any other noise-sensitive space (i.e. school, library, place of worship, etc.). No outdoor use areas are proposed at which noise levels must remain below a certain threshold. For this reason, exterior noise impacts to the site resulting from traffic noise or other environmental noise sources have not been evaluated.

2.2 Off-Site Direct and Cumulative Impacts

In the draft traffic study prepared by Darnell & Associates, Inc., segments of Valley Center Road, Cole Grade Road, and Miller Road have been evaluated in depth to determine estimated daily traffic volumes. All evaluated roadway segments have been reviewed to determine existing (2018) volumes, project volumes, and opening year volumes. No cumulative traffic volumes have been evaluated, per the request of the County of San Diego. Noise impacts from increased traffic due to project activity have been evaluated to determine compliance with County of San Diego noise standards, described in Section 2.1. Calculations have been provided as Appendix D, and pertinent sections of the project traffic study are provided in Appendix B.

2.2.1 Direct Noise Impacts

In order to determine whether any direct noise impacts will be experienced at off-site receivers, the existing traffic scenario was compared to the increase in volumes shown in the existing plus project traffic scenario. The maximum increase in noise levels was found to be approximately 1.1 dB at Cole Grade Road, south of Valley Center Road. The opening year and opening year plus project scenarios were also compared and similarly showed an increase of approximately 1.1 dB at Cole Grade Road, south of Valley Center Road. As a direct noise impact is defined as a doubling of existing sound energy, or an increase of 3 dB, it has been determined that no direct noise impacts will be caused by the proposed project as the maximum impact falls below this threshold.

2.2.2 Cumulatively Significant Noise Impacts

A review of cumulative traffic noise impacts could not be conducted, as cumulative traffic volumes were not provided within the project traffic study, per the request of the County of San Diego. The direct noise impacts calculated are assumed to be representative of the project site's contribution to the surrounding noise environment.

2.2.3 Design Considerations & Mitigation Measures

As a direct noise impact is defined as a doubling of existing sound energy, or an increase of 3 dB, it has been determined that no direct noise impacts will be caused by the proposed project. As the project is not anticipated to cause any direct noise impacts, no mitigation is deemed necessary to attenuate project-generated traffic noise.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for Determination of Significance

The County of San Diego Noise Ordinance states that noise levels from stationary sources shall not exceed 50 dBA between the hours of 7 a.m. and 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m. at properties zoned RR, or 60 dBA between the hours of 7 a.m. and 10 p.m. and 55 dBA between the hours of 10 p.m. and 7 a.m. at commercially zoned properties. At the boundary of two different zonings, the sound level limit is considered to be the arithmetic mean of the respective limits for the two zones. Therefore, the nighttime noise limit at a property line which is shared by a residential zone and a commercial zone is considered to be 50 dBA.

Section 36.409 of the County of San Diego Noise Ordinance states it is unlawful to operate construction equipment that exceeds an average sound level of 75 dBA for an eight-hour period, between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received. In addition, according to Section 36.408 of the ordinance, construction activities must be limited to the hours of 7 a.m. to 7 p.m., Monday through Saturday (except legal holidays). No construction activity is permitted on Sunday. Section 36.410 provides noise limits for impulsive noise, which is defined as a high peak noise level of short duration (one second or less). Impulsive activity includes blasting and the use of equipment such as a rock crusher, hoe ram, pile driver, or drill rig. Impulsive noise limits are provided for both residential and agricultural properties.

Pertinent sections of the County of San Diego Noise Ordinance are provided in Appendix C.

3.2 Potential Operational Noise Impacts

3.2.1 Potential Build-Out Noise Conditions

Anticipated operational noise impacts from the proposed project will primarily consist of one air conditioning unit and six condensing units to be located on the roof of the convenience store.

According to the project plans, the proposed rooftop air conditioning unit will be a York J10DFN20S or a similar 10 ton unit. Sound power levels for a similar unit, the York J10ZFN, have been provided by the manufacturer in octave band values, which is shown in Table 2. Manufacturer data sheets have been provided as Appendix E.

Table 2. Sound Power Levels of York J10ZFN Source Source Total									
							Total		
Jource	63	125	250	500	1K	2K	4K	8K	(dBA)
J10ZFN	99.5	94.5	92.0	90.0	87.0	81.0	76.0	70.0	99.5

At the time of this noise analysis, no information is available on the proposed rooftop condensing units. The Bohn TCP3 FlexPack has been used on similar projects. Noise levels for the FlexPack were provided by Mike Hutson of Heatcraft Refrigeration. The FlexPack was shown to have a noise level of 74.7 dBA at five feet from the unit. No octave band spectral data was available; therefore, a typical condenser spectrum was obtained from *Architectural Acoustics*, by M. David Egan. The resulting estimated noise spectrum is shown below, in Table 3.

Table 3. Sound Pressure Levels of Condenser Units at 5 feet									
Source		Sound	l Pressur	e at Octa	ve Band	Frequenc	y (dB)		Total
Cource	63	125	250	500	1K	2K	4K	8K	(dBA)
Bohn TCP3 Flexpack	72.7	65.7	63.7	63.7	62.7	58.7	49.7	41.7	74.7

Noise levels have been calculated using the methodology shown in Section 1.3.1 at surrounding noise-sensitive receivers, and are shown in Table 4. The parapet wall was included in this analysis and considered to extend approximately three feet above the roof deck. Calculations assume that all equipment is in constant operation. More information is provided in Appendix F: Mechanical Equipment Noise Calculations, and a graphical representation of source/receiver locations are provided as Figure 5.

Table 4. Mechanical Equipment Noise Levels at Surrounding Receivers						
Receiver	Location	Noise Limit	Equipment Noise Level (dBA)			
Neceivei	Location	(dBA)	AC Unit	Condensers	Total	
R1	Northeast Property Line (Residential)	50	35.3	40.5	41.6	
R2	East Property Line (Commercial)	55	40.6	46.9	47.8	
R3	South Property Line (Commercial)	55	44.5	53.2	53.7	
R4	West Property Line (Commercial)	55	42.5	52.2	52.6	

3.2.2 Design Considerations & Mitigation Measures

As shown above, noise levels from stationary equipment sources on site are not expected to exceed the nighttime noise limits set within the County of San Diego Noise Ordinance as designed. No mitigation is required.

3.3 Potential General Construction Noise Impacts

3.3.1 Potential Temporary Construction Noise Impacts without Mitigation

According to the County of San Diego Noise Ordinance, temporary construction noise must be adequately controlled at occupied properties. The nearest occupied properties surrounding the site are receivers to the northeast, across the intersection of Valley Center Road and Cole Grade Road. All other occupied properties are located at a greater distance from the site.

Construction scheduling information was obtained from a representative of the applicant. Grading will be the first phase of construction, and will be accomplished using a D4 dozer and a vibratory roller. All of this equipment may be in use simultaneously. There will not be any imported or exported fill. No blasting or other impulsive construction activity is anticipated, and therefore, the noise limits set within Section 36.410 do not apply for this project. All other phases of construction are anticipated to use quieter equipment and be located farther from the residential receiver.

Please refer to Table 5 for typical noise levels of construction equipment planned to be used on site, as described above.

Table 5. Typical Construction Equipment Noise Levels					
Noise Source Duty Cycle (%) Calculated Noise Level (L _M at 50 feet (dBA)					
Dozer ¹	40%	85			
Vibratory Roller ²	40%	71.3			

¹Source: UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database.

The worst-case receiver to the northeast was calculated at the corner nearest the construction site, with all construction activity assumed to take place on the corner of the project site nearest the residential receiver, for the entire duration of an 8-hour work day. During all phases, it was assumed that all pieces of equipment would be operating simultaneously (considering duty cycle) near the center of each area, approximately 150 feet away from the residential property line receivers in the worst-case location. This method is considered worst-case and does not account for the varying distance from source to receiver as equipment moves around the site.

Noise levels for the grading phase of construction are shown in Table 6. Detailed calculations can be found in Appendix G. Graphical representations of source and receiver locations are shown in Figure 6.

²Source: Federal Highway Administration (FHWA) Construction Noise Database.

Table 6. Temporary Construction Noise Levels at Neighboring Properties to South					
Phase	Equipment Used 8-Hour Average Nois Level (dBA)				
Grading	D4 Dozer, Vibratory Roller	71.7			

3.3.2 Design Considerations and Temporary Mitigation Measures

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

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

- 1. Turn off equipment when not in use.
- 2. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.
- 3. Use equipment with effective mufflers.
- 4. Minimize the use of backup alarms.
- 5. Equipment staging areas should be placed at locations away from noise-sensitive (occupied) receivers.

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

3.4 Potential Impulsive Noise Impacts

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

4.0 CONCLUSION

The proposed project is a gas station that does not include any residential facility, nor does it include any other noise-sensitive space (i.e. school, library, place of worship, etc.). No outdoor use areas are proposed at the project site at which noise levels must remain below a certain threshold. For this reason, exterior noise impacts to the site resulting from traffic noise or other environmental noise sources have not been evaluated. Project-generated traffic is also not anticipated to create any direct noise impacts at off-site receivers.

Noise from proposed mechanical equipment to be located on site has also been evaluated to determine whether noise from these sources will exceed the noise standards of the County of San Diego Noise Ordinance. Mechanical noise sources to be located on site include air conditioning units on the roof of the proposed convenience store. With the roof-top mechanical equipment and parapet as shown on the plans, all mechanical noise sources are expected to be adequately controlled at surrounding property lines.

It is determined that typical construction activities will meet the County of San Diego temporary construction noise limit of 75 dBA at all adjacent property lines, given reasonable maintenance of equipment and conservative planning of simultaneous equipment operation. No mitigation is required for attenuating the brief construction noise impacts.

5.0 CERTIFICATION

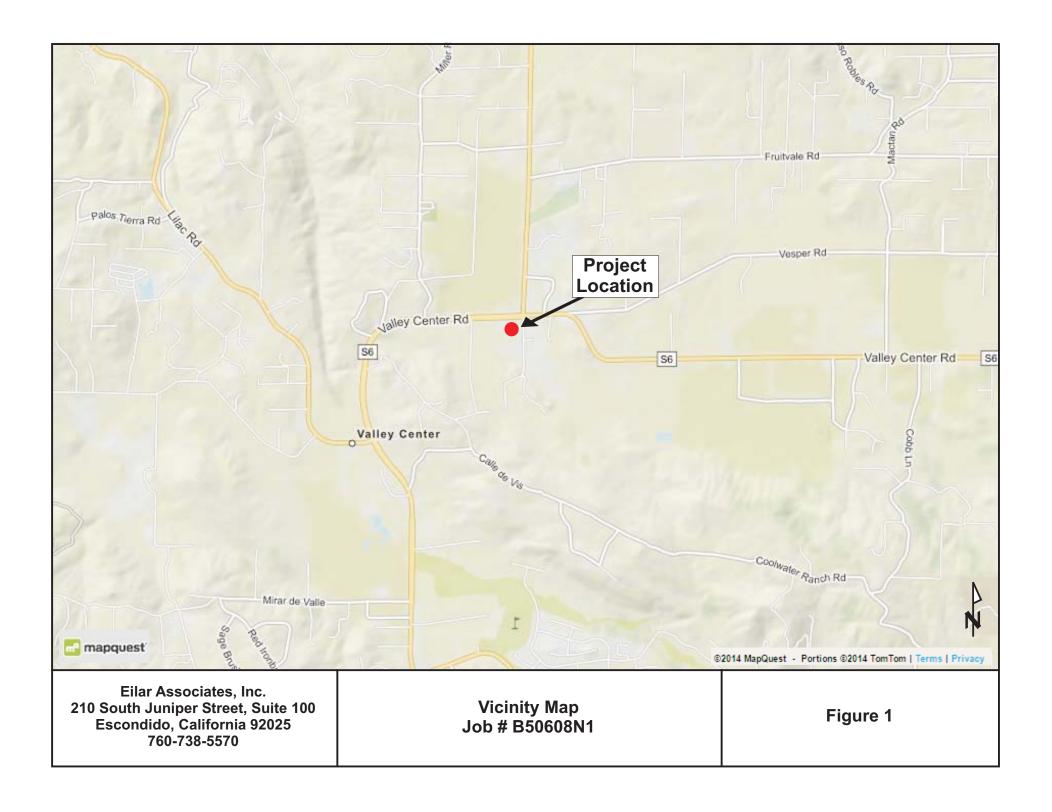
The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the proposed Valley Center ARCO project, located within the unincorporated community of Valley Center, County of San Diego, California. This report was prepared by Jeff Russert and Amy Hool, and updated by Amy Hool.

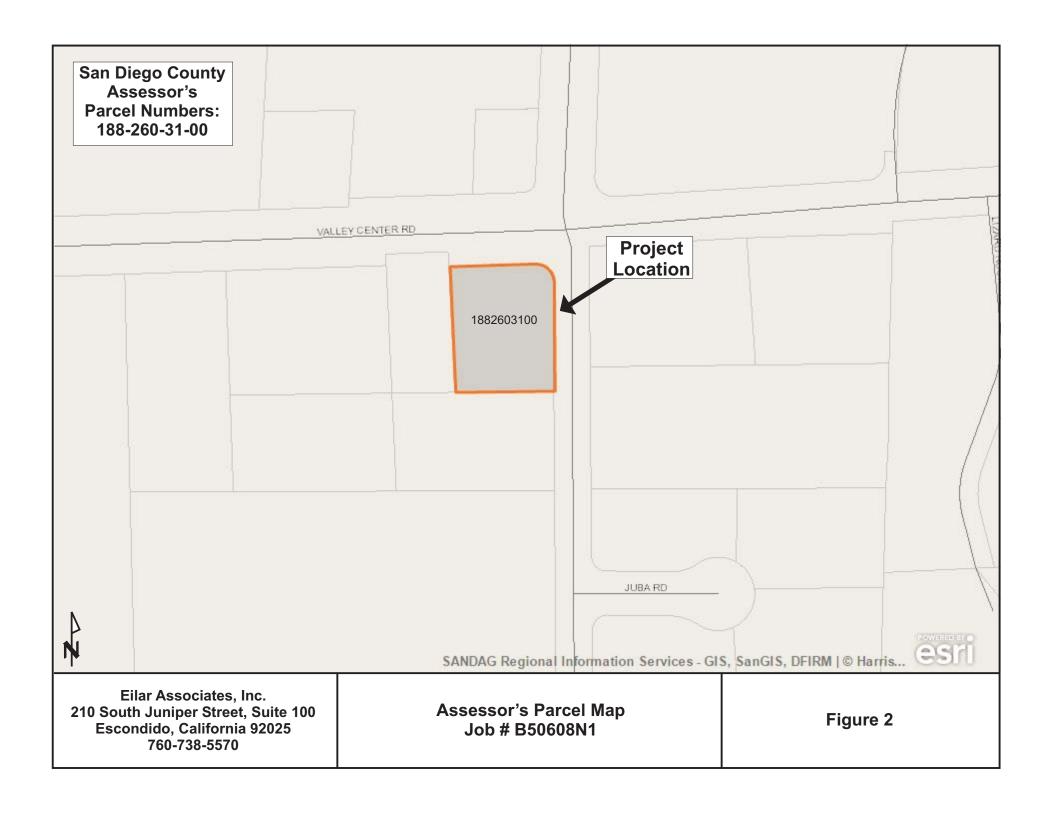
Amy Hool, President/CEO

6.0 REFERENCES

- 1. County of San Diego Noise Element to the General Plan.
- 2. County of San Diego Noise Ordinance.
- 3. UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database.
- 4. Draft Traffic Impact Study for ARCO Valley Center, by Darnell & Associates, Inc., dated September 25, 2020.





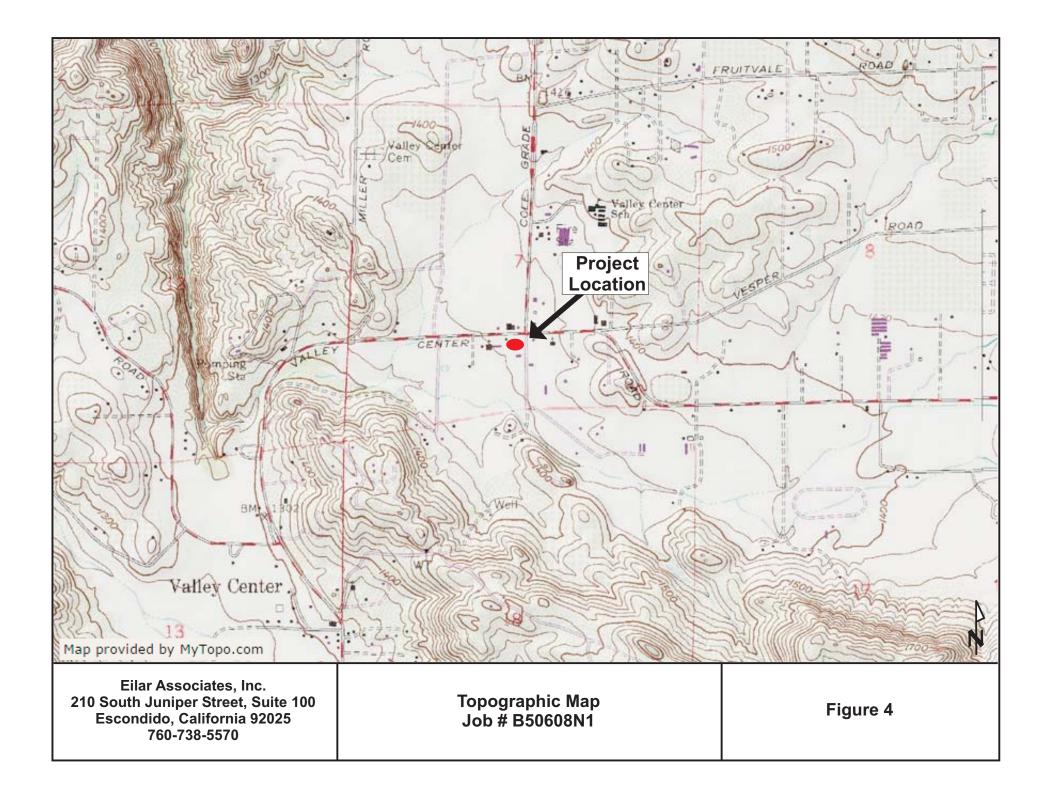




Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570

Satellite Aerial Photograph Job # B50608N1

Figure 3





Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570 Satellite Aerial Photograph Showing Rooftop Mechanical Equipment and Receiver Locations Job # B50608N1

Figure 5

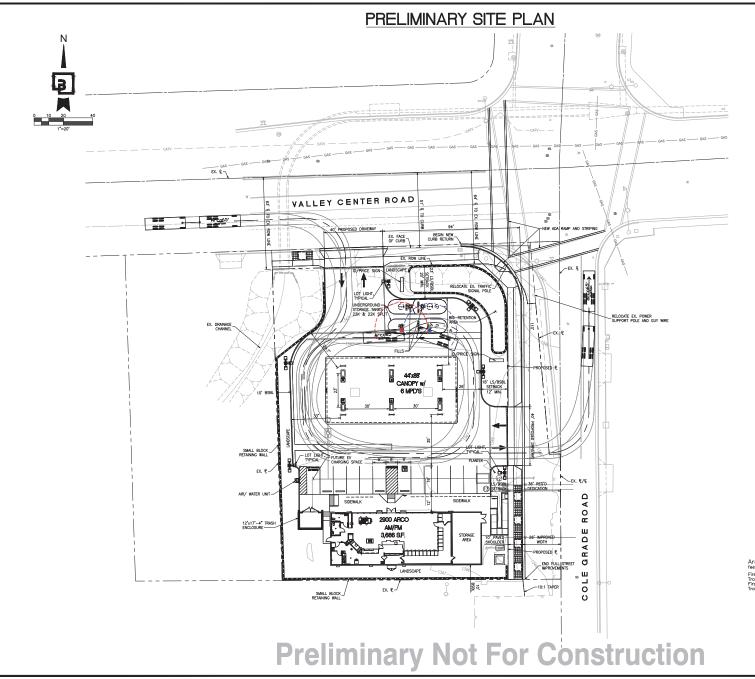


Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570 Satellite Aerial Photograph Showing
Temporary Construction Equipment and
Receiver Locations
Job # B50608N1

Figure 6

APPENDIX A

Project Plans





PROJECT DATA:

LOCATION: SWC VALLEY CENTER ROAD AND COLE GRADE ROAD, VALLEY CENTER, CALIFORNIA

ZONING: C36

APN: 188-260-31-00

PARCEL SIZE: 33,379 S.F. (0.77 ACRES)

BUILDING SIZE: 3,666 S.F. (2,912 S.F. C-STORE & 754 S.F. STORAGE) CANOPY SIZE: 3,872 S.F.

BUILDING HEIGHT ALLOWED: 35' MAX.

CONSTRUCTION TYPE:
BUILDING: V-B (SPRINKLERED)
CANOPY: II-B (SPRINKLERED)

BUILDING/PARKING SETBACKS:

FRONT YARD: SIDE STREET YARD: INTERIOR SIDE YARD: REAR YARD: 50' MIN. FROM STREET CENTERLINE 35' MIN. FROM STREET CENTERLINE 0' MIN. 15' MIN.

LANDSCAPE SETBACKS:

FRONT YARD: SIDE YARD:

PARKING REQUIREMENTS: 4 STALLS PER 1,000 S.F. OF GROSS AREA 3666/ 1000= 3.67*4= 14.67

PARKING REQUIRED: 15 STALLS PARKING PROVIDED: 13 STALLS + 12 STALLS UNDER CANOPY

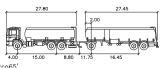
TOTAL PARKING PROVIDED: 25 STALLS

BICYCLE PARKING REQUIRED: 3 SPACES MIN. BICYCLE PARKING PROVIDED: 3 SPACES

SOURCE OF PLAN:

THIS SITE PLAN HAS BEEN PREPARED BASED ON A TOPOGRAPHIC SURVEY DATED DECEMBER 4, 2014 PREPARED BY:

DCI ENGINEERING, INC. LAND SURVEYING & CIVIL ENGINEERING 4420 E. MIRALOMA AVENUE, SUITE "A" AVAHEIM, CA 92807 (714) 779–3828



Arco65'

Lock to Lock Time Steering Angle Articulating Angle





NO. DATE INCUSOR DESCRIPTION OF THE PARTY OF

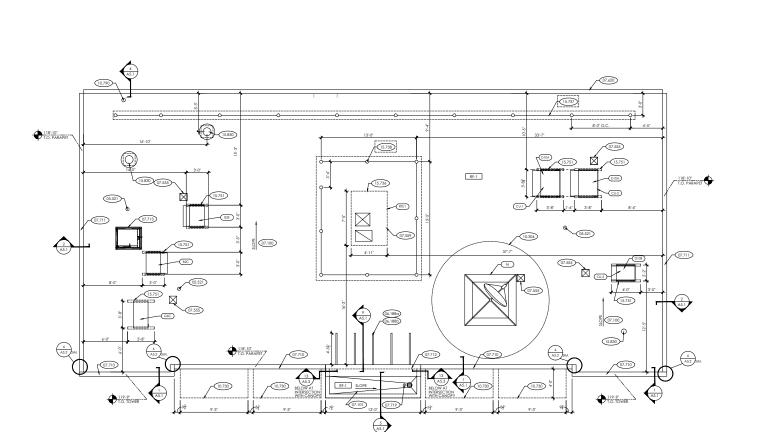
2900 am/pm FUEL CANOPY w/ 6 MPD's

VALLEY CENTER ROAD @ COLE GRADE ROAD VALLEY CENTER, CALIFORNIA FACILITY #TRD

ESIONED BY: EH ALLIANCE ZAON: DRAWN BY: AD ALLIANCE PIN:
VERSION: PROJECT NO:

PRELIMINARY SITE PLAN

PSP-1



ROOF PLAN 1/4"=1'-0"

GENERAL NOTES:

PROTOTYPE DOCUMENTS

PROTOTYPE DOCUMENTS:

INSTRUMENT SERVICES AND MIST BE REVERED AND ADMEDITED THE LOCAL SITE.

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- A. REFER TO SPECIFICATIONS FOR ROOF SYSTEM, INCLUDING GUARANTEES, CURBS, FLASHING, AND EIG. B. REFER TO ROOFING MANUFACTURERS WRITTEN INSTRUCTIONS AND DETAILS FOR ROOFING SYSTEM INSTALLATION. CONTRACTOR TO PROVIDE COMPLETE ROOFING PACKAGE PER MANUFACTURE
- ROOFING PACKAGE PER MANUFACTURES' RECOMMENDATIONS.

 CROOF ASSEMBLY SHALL COMPLY WILL I'R AND ME CLASS "RATINGS INCLUDING COPINGS, FLASHING, PARAPET WALL, AND COPINGS, FLASHING, PARAPET WALL, AND LO NO 13 TOSCOPHE EQUIPMENT OR MATERIALS ON THE ROOF STRUCTURE UNLESS APPOVED IN WRITING BY THE ARCHITECT, STRUCTURAL ENGINEER AND THE JOST MANUFACTURES.
- E. REFER TO SHEET Q1.1 FOR EQUIPMENT PLAN.

 I. FOR EQUIPMENT SCHEDULE REFER TO SHEET
- FOR EQUIPMENT SCHEDULE REFER TO SHEET

 Q2.1

 J. GRINERAL CONTRACTOR BY TO PROVIDE

 TEMPOSARY CONTRACTOR BY TO PROVIDE

 TEMPOSARY CONTRICTION PRIMITIES

 QUARBOAL TO CONSTLY WINI CODE OF

 TEMPOSARY CONTRICTION ST OF THE YEAR

 HEGHT AND BE ABLE TO WINISTAND 200

 POUNDS AT TOP FOSE

 E. REFER TO DETAIL 3/AS 2 FOR INCHANCALS

 CREEN SUPPOSTS AND VERN PRES. ALL

 ORIGINATOR OF PRESTALLON AND CANT.

 BY THE CONTRICTION AND CONTRICTION

 ET RECOUNT CHIEN NOTION D. 355.

KEYED NOTES:

05.521 TIE-OFF ANCHOR REFER TO DETAIL

7/A5.2

06.188a 2x4 KICKER @ 30" O.C., SEE

- DETAIL 10/S2.4

 06.188b CENTER KICKER TO HIGH POINT OF THE ENHANCED TOWER

 07.100 FOR ROOF SLOPE REFER TO
- STRUCTURAL DRAWINGS. ‡ PER FOOT MIN. 07.101 LINE REPRESENTS SLOPE OF TAPERED
- ROOF INSULATION. 07.555 PIPING CURB. REFER TO DETAIL
- 5/A5.2

07.559 PROVIDE ROOF CURBS AT ALL MECHANICAL EQUIPMENT, SEE

2/A5.2

- 07.620 6' PRE-FINISHED 22 GA. METAL GUTTER. REFER TO DETAIL 8/A5.1
- 07.710 SHOP FORMED PRE-FINISHED METAL COPING CAP, REFER TO 1/A5.1 07.711 SHOP FORMED PRE-FINISHED
- COPING CAP, REFER TO 2/A5.1 07.712 SHOP FORMED PRE-FINISED METAL COPING CAP, REFER TO 9/A5.1
- 07.713 ROOF LADDER HATCH 07.719 OVERFLOW DRAIN PIPE TO SOFFIT
- (SIZE FOR LOCATION). FOR FLASHIN REFER TO DETAIL 3/A5.2
- 10.304 SATELLITE ON BALLASTED CURB. TO DETAIL 4/A5.2
- 10.730 ALUMINUM FRAME FABRIC AWNING SUNBRELLA ORANGE 4609-0000. REFER TO SHEET 4/A3.2 10.790 FIRE SPRINKLER RISER
- 15.736 RTU
 15.737 OPTION 15 3' H. MECHANICAL
 SCREEN AT REAR OF BUILDING SEE
- DEIAL B/A5.2

 15.738 OPTION 16 6 H. MECHANICAL

 SCREEN AT RTU SEE DETAIL B/A5.2

 15.751 CONDENSER CURBS, REFER TO DETAIL

1/A5.2

15.830 EXHAUST FAN THROUGH ROOF, REFER
TO SHEET M1.1

ROOFING

RF-1 TYPE: FULLY ADHERED EPDM SYSTEM BY: FIRESTONE (OR EQUAL) ROOF INSULATION: MIN. 3" POLYISOCYANURATE (R-22 MIN.)

2900 am/pm EOR \ WOR PROTOTYPE

CONSTRUCTION FOR NOI





ROOF

PROJECT NO:

A1.4

- ALL MECHANICAL EQUIPMENT AND INSTALLATIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE STANDARD MECHANICAL CODE, THE STANDARD BUILDING CODE, THE STATE ENERGY CODE, NFPA 90A, 96, 101 AND ALL APPLICABLE LOCAL CODES AND ORDINANCES.
- PRIOR TO PURCHASING ANY MATERIALS OR STARTING ANY WORK, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DUCTWORK SIZES AND LOCATIONS, EQUIPMENT, ETC. SHOWN ON THE DRAWINGS OR AFFECTING THIS WORK AND SHALL REPORT ANY DEVAITIONS TO THE ARCHITECT.
- SHOP DRAWNOS SHALL BE SUBMITTED TO AND APPROVED BY THE ARCHITECT PRIOR TO ORDERNIC, PURCHASING, OR FABRICATION ANY MECHANICA EQUIPMENT, SHOP DRAWNOS SHALL INCLUDE: ALL DOPHENT SHOPDIES OF SPECIFIC PRIOR SHOP DRAWNOS SHALL INCLUDE: ALL DOPHENT SHOP OF SHOP OF SHALL INCLUDE SHALL DRAWNOS PRIOR SHALL INCLUDE SHA
- CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWNOS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWNOS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN THEREIN.
- ALL REQUIRED CONTROL WIRING NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE INCLUDED AS PART OF THE MECHANICAL WORK.
- ALL THE SUPPLYING UNDER THAN 2000 CPU OF HE TO ANY SPIZE AND ALL BEDDELARING THAN STREAM SERVING MEANS OF SCHOOLS SHAUL BE WARTED WITH A SHOWLE DETECTOR IN THE RETURN DUCTORE. THE SHAVE DETECTOR SHALL BE WRED TO STOP THE TRAN UPON DETECTION OF SAMPLE, AND SORAL THE BUILDING FIRE ALAND OR AUDIEST HAS A NO SHALL BE DENTIFIED AS AIR DUCTOR AUDIEST, AND SHALL BE IDENTIFIED AS AIR DUCT
- ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- ALL MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER.
- 12. ALL HVAC COMPRESSORS SHALL HAVE EXTENDED 5-YEAR MANUFACTURER'S WARRANTY.
- 13. SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL AS RECOMMENDED IN SMACHA LOW PRESSURE DUCT CONSTRUCTION STANDARDS, LATEST EDITION. ALL JOINTS AND SEAMS SHALL BE SEALED WITH DUCT SEALED.
- SUPPLY AND RETURN DUCTWORK IN NON-AIR CONDITIONED AREAS SHALL BE INSULATED WITH 2" THICK FIBERGLASS DUCT INSULATION WITH FOIL VAPOR BARRIER, U.L. LISTED, MINIMUM R-6.
- 15. ALL DUCTWORK SHALL BE SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE. DUCT SUPPORTS AND ATTACHMENT TO STRUCTURE SHALL BE AS PER SMACONA STANDARDS.
- 16. FLEXIBLE DUCTWORK SHALL BE FLEXMASTER TYPE 3 OR EQUAL, SAME SIZE AS DIFFUSER NECKS, MAXIMUM 8"-0" LONG, FLEXIBLE DUCTWORK SHALL BE INSTALLED AS STRAGHT AS POSSIBLE, AND SHALL BE ROUTED AND SUPPORTED WITHOUT FORMING CRIMPS OR OTHER AIR FLOW RESTRICTIONS.
- ROUND AND FLEXIBLE DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH SPIN-IN FITTINGS WITH AIR EXTRACTORS AND BALANCING DAMPERS.
- 18 DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.
- CONDENSATE FROM ALL AIR CONDITIONING EQUIPMENT SHALL BE TRAPPED AND ROUTED TO THE NEAREST APPROVED LOCATION. CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC CONDENSATE SHALL BE PUMPED IF REQUIRED.
- 20. AFTER CONSTRUCTION, THE ENTIRE HVAC SYSTEM SHALL BE TESTED, ADJUSTED, AND BALANCED TO DELIVER THE AIR FLOW QUANTITIES SHOWN ON THE DRAWINGS. SUBMIT CERTIFIED TEST AND BALANCE REPORT TO ARCHITECT FOR APPROVAL.
- ANY EXISTING WALL, FLOOR, OR CEILING SURFACE THAT IS DISTURBED DURING THE COURSE OF THE HVAC WORK SHALL BE REPAIRED TO MATCH NEW AND/OR EXISTING CONDITIONS.
- 22. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, ETC. TO FIT WITHIN THE SPACE ALLOWED BY THE ARCHITECTURAL AND STRUCTURAL CONDITIONS, CUTTING OR OTHERWISE ALTERNOR MAY STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.
- 23. MOUNT THERMOSTATS 42" AFF UNLESS NOTED OTHERWISE.
- 24. ALL ROOFTOP MOUNTED EQUIPMENT SHALL BE INSTALLED LEVEL ON AND ANCHORED TO MINIMUM 12" HIGH INSULATED ROOF CURBS. CONTRACTOR SHALL COORDINATE ROOF SLOPE AND ACTUAL CURB HEIGHTS WITH ARCHITECTURAL DRAWINGS. ALL REFERENCES TO ROOF HEIGHTS REFER TO HEIGHTS ABOVE FINISHED ROOF SURFACE.
- LOCATIONS OF GRILLES, REGISTERS, & DIFFUSERS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS WITH LIGHTS. CEILING GRID. ETC.
- 26. MANUAL OVER-RIDE CONTROL (EMERGENCY SHUT-DOWN) SWITCHES FOR ALL HVAC UNITS SHALL BE LOCATED IN LOCKING COVER ADJACENT TO FIRE ALARM ANNUNCATOR PANEL OR OTHER LOCATION APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION.
- . ROOFTOP HVAC UNITS SHALL BE INSTALLED SUCH THAT ROOF DECK IS COMPLETE AND CONTINUOUS UNDER BOTTOMS OF HVAC UNITS, AND SHALL BE CUT ONLY FOR UNIT SUPPLY AND FEURIN OPENINSS. SPACE BETWEEN ROOF DECK AND BOTTOM OF ROOFTOP HVAC UNITS (INSDE OF ROOF CURBS) SHALL BE FILLED WITH HIGH DENSITY ACOUSTICAL INSULATION.
- MAINTAIN MINIMUM 10'-0" CLEARANCE FROM ROOFTOP UNIT OUTSIDE AIR INTAKES AND ALL EXHAUST OUTLETS, EXHAUST FANS AND PLUMBING VENTS.

SYMBOL	DESCRIPTION	ABBREVIATION
	ABOVE FINISHED FLOOR	AFF
	AIR COMPRESSOR	С
	AIR EXTRACTOR	
	BACK DRAFT DAMPER	800
	BRAKE HORSEPOWER	BHP
	BRITISH THERMAL UNIT	BTU
	CELLING DIFFUSER	CD
	CEILING RETURN GRILLE	RAG
₩	DIFFUSER TYPE "A" BALANCED FOR 1900 CFM	A/1900
	DRY BULB	DB
14x12	DUCT SIZE (RECTANGULAR)	
8"#	DUCT SIZE (ROUND)	
	ENERGY EFFICIENCY RATING	EER
	ENTERING AIR TEMPERATURE	EAT
(¶)	EQUIPMENT NUMBER DESIGNATION (EF-1)	
	EXHAUST FAN	EF
	EXTERNAL STATIC PRESSURE (IN. W.C.)	ESP
	FLY FAN	FF
	HORSEPOWER	HP
	INCHES WATER COLUMN	IN. W.C.
	KILOWATT	KW
	LEAVING AIR TEMPERATURE	LAT
ij	MANUAL VOLUME DAMPER	MVD
	THOUSAND BTU/HOUR	мвн
	NEGATIVE PRESSURE DUCT OR OUTLET	
	OUTSIDE AIR	0/A
	PACKAGED ROOFTOP UNIT	RTU
⊠	POSITIVE PRESSURE DUCT OR OUTLET	
	RADIANT HEATER	RH
(S)	REMOTE TEMPERATURE SENSOR	
	RETURN AIR	R/A
	SEASONAL ENERGY EFFICIENCY RATING	SEER
•	SMOKE DETECTOR	SD
	SPIN IN FITTING W/ DAMPER & FLEX DUCTWORK	
	SUPPLY AIR	S/A
①	THERMOSTAT	T'STAT
	UNDERCUT (DOOR) 1"	U/C 1"
	UNIT HEATER	UH
	WALL LOUVER	WL
	WET BULB	WB

FRESH AIR DESIGN CONDITIONS					
APPLICATION	NET FLOOR AREA	ESTIMATED MAXIMUM OCCUPANCY P/1000 SQ.FT.	OUTSIDE AIR CALCULATION	OUTSIDE AIR REQUIRED	OUTSIDE AIR PROVIDED
RETAIL	1707	-	0.3 CFM/SQ.FT.	512 CFM	Ī
STORAGE	480	-	0.15 CFM/SQ.FT.	72 CFM	
OFFICE	75	1 PERSON	20 CFM/PERSON	20 CFM	
CORRIDOR	75	-	0.05 CFM/SQ.FT.	4 CFM	
RTU-1					1500 CFM
TOTALS				608 CFM	1500 CFM
NOTES:					•

2. NO CAPACITY HAS BEEN INCLUDED IN THIS DESIGN FOR FUTURE.

SCHEDULE - AIR BALANCE	

TAG	EXHAUST CFM	OUTSIDE AIR CFM
EF-1 X 2	150	-
EF-2	500	-
EF-3	650	-
RTU-1	-	1500
TOTALS	1300	1500

DESIGN CONDITIONS

- DESIGN CONDITIONS LISTED ARE FOR A PROTOTYPICAL PROJECT. SITE SPECIFIC CALCULATIONS MUST BE DONE BY SITE SPECIFIC ENGINEER.
 ALL VALUES MUST BE VERIFIED.
- WINTER 75° F INSIDE -8° F OUTSIDE
- 3. SUMMER 75° F INSIDE 93° F DB / 75° F WB OUTSIDE.
- 2 WATTS PER SQUARE FOOT LIGHTING LOAD.
- EQUIPMENT LOADS USED:
- a) 3000 WATTS EXPELLED TO SPACE IN SALES AREA. b) 1000 WATTS EXPELLED TO SPACE IN BACKROOM. c) 300 WATTS EXPELLED TO SPACE IN OFFICE. d) 0 WATTS EXPELLED TO SPACE IN RESTROOMS AND CORRIDOR.
- 24 HOUR OPERATION.
- 13.5 FEET TALL WALLS WITH R-19 INSULATION. 9.5 FEET HIGH CEILINGS.
- R-20 ROOF INSULATION.
- STOREFRONT GLASS (FACING WEST): U-VALUE = 0.5, SHADING COEFFICIENT = 0.5
- POPULATION DENSITY:
 PEOPLE IN BACKROOM
 PEOPLE IN SALES AREA
 PERSON IN OFFICE
- 11. TOTAL CALCULATED HEAT LOSS 117 MBH.
- 12. TOTAL CALCULATED HEAT GAIN 10.17 TONS.
- 13. CALCULATIONS BASED ON ASHRAE DESIGN CRITERIA

	SCHED	ULE	- R	OOF,	TOP	UNI	T (N.	GAS	S FIR	RED I	HEAT	ING)
TAG	MODEL No.	NOM. TONS	TOTAL CFM	MIN. O.A. CFM	ESP	FAN BHP	MBH TOT. COOL	MBH SEN. COOL	MBH GAS IN	MBH GAS OUT	WEIGHT (LB)	ACCESSORIES
RTU-1	J10DFN20S	10	4000	1500	0.75"	2.50	119	87.1	250	200	1212	1,2,3,4,5,6,7,8

NOTES:

A. COOLING CAPACITY BASED ON 95'F AMBIENT, 80'F db/67'F, WB INDOOR ENTERING AIR TEMPERATURE. B. MIN. EER 10. C. MIN. STEADY-STATE COMBUSTION EFFICIENCY OF 80%.

ACCESSORIES:

- AUCESAINES

 1 12" HIGH INSULATED ROOF CURR.
 2 PRORRAMMER HERMOSTAT WITH REDUCTE DUCT MOUNTED TEMPERATURE SENSOR.
 4. SMACE DETECTOR IN RETURN ARE DUCT.
 5. ECONOMIZER WITH DIFFERENTIAL ENTHAUP CONTROLS.
 6. BROMMERG ELEF EMPERGENON WITH DISCONNECT.
 7. HEAD PRESSURE CONTROL TO O'F.
 7. HEAD PRESSURE CONTROL TO O'F.

SELECTIONS ARE BASED ON PRODUCTS BY YORK/JCI. EQUAL PRODUCTS: CARRIER, McQUAY, TRANE.

	SCHEDULE - FANS											
TAG	MODEL	DUTY	QTY.	CFM	E.S.P.	MOTOR SIZE	RPM	DRIVE	WEIGHT (Lb)	ACCESSORIES		
EF-1	PENN. ZT	EXHAUST	2	75	0.375*	48 W	1200	DIRECT	19	1,2,3		
EF-2	DR30HFA	EXHAUST	1	500	0.125	1/4 HP	933	DIRECT	50	1,2		
EF-3	-	EXHAUST	1	650	-	-	-	-	-	4		
FF-1	MARS 36CH	PEST	1	2550	-	1/2 HP	1750	DIRECT	50	5,6		

ACCESSORIES:

- GRAVITY BACKDRAFT DAMPERS.
 WIRE FOR CONTINUOUS OPERATION DURING BUILDING OCCUPIED MODE.
 ROOF CAP.
 HOOD FAN SELECTED AND PROVIDED BY OTHERS.

COMEDINE

- DISCONNECT SWITCH.
 PLUNGER TYPE DOOR SWITCH.
 FLY FAN SHALL BE PRICED AS SITE SPECIFIC OPTION.

EQUAL PRODUCTS: GREENHECK, CARNES, COOK

SCHEDULE - AIR DISTRIBUTION										
SERIES	CFM	DUTY	NECK	SIZE	DAMPER	MATERIAL	DESCRIPTION			
TMS-AA	SEE DWGS	SUPPLY	SEE DWGS	24x24	YES	ALUMINUM	1			
TMS-AA	SEE DWGS	SUPPLY	SEE DWGS	12x12	YES	ALUMINUM	1			
50F	SEE DWGS	RETURN	22x22	24x24	NO.	ALUMINUM	2			

AID DISTRIBUTION

24x12

NOTES:

TAG

A

В

С

D

A. REFER TO ARCHITECTURAL DRAWINGS FOR TYPE OF CEILING AND/OR SUSPENSION SYSTEM. B. FINISH SHALL BE OF THE TYPE AND COLOR SELECTED BY ARCHITECT. SUBMIT FINISH CHART WITH SHOP DRAWINGS DESCRIPTION:

50F SEE DWGS RETURN SEE DWGS

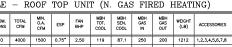
- SELECTIONS ARE BASED ON PRODUCTS BY TITUS.
 EQUAL PRODUCTS: KRUEGER, CARNES, METAL*WIRE & PRICE.

PROTOTYPE DOCUMENTS

NO ALUMINUM

2

THIS DRAWING IS PROTOTYPICAL AND MUST BE REVIEWED AND ADAPTED FOR LOCAL SITE CONDITIONS, BUILDING CODES AND CLIMATE CONDITIONS, BUILDING CODES AND CLIMATE CONDITIONS, DEITHER PR CORPORATION NOR FIEDLER GROUP WARRANT OR GUARANTY ITS ACCURACY OR APPLICABILITY NOUR LOCAL AREA AND THEREFORE ASSIME NO LIABILITY FOR STEE SPECIAL EST HERE DOCUMENTS ARE PROVIDED ONLY AS A PROTOTYPICAL GUIDE AND THE AND MASS BE DESIGNED AND SEALED BY REGISTEED PROFESSIONAL ARCHITECT AND ENGINEERS. SITE SPECIFIC SERVICES MAY B PROVIDED BY FIEDLER GROUP BY CALLING



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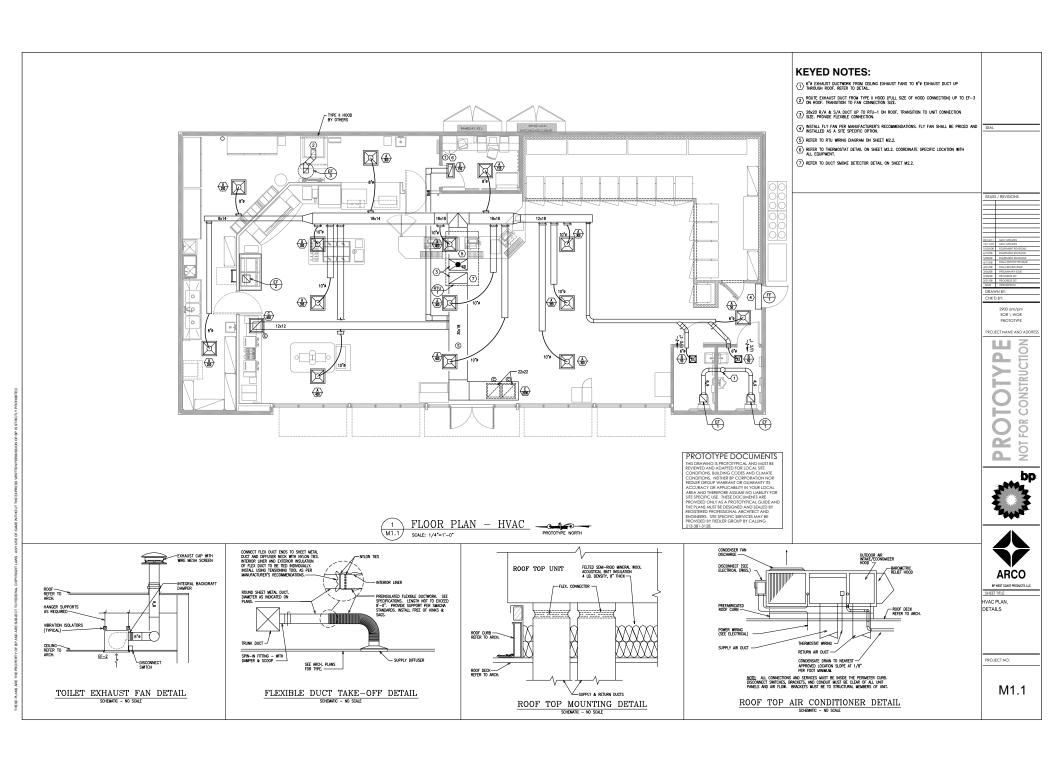




HVAC NOTES SCHEDULES & LEGEND

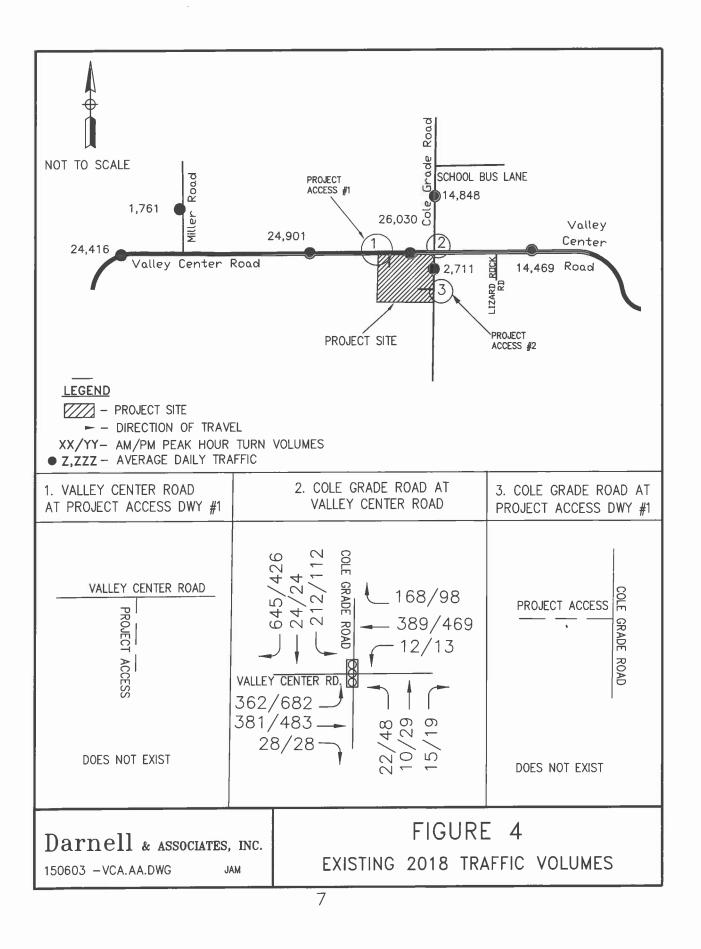
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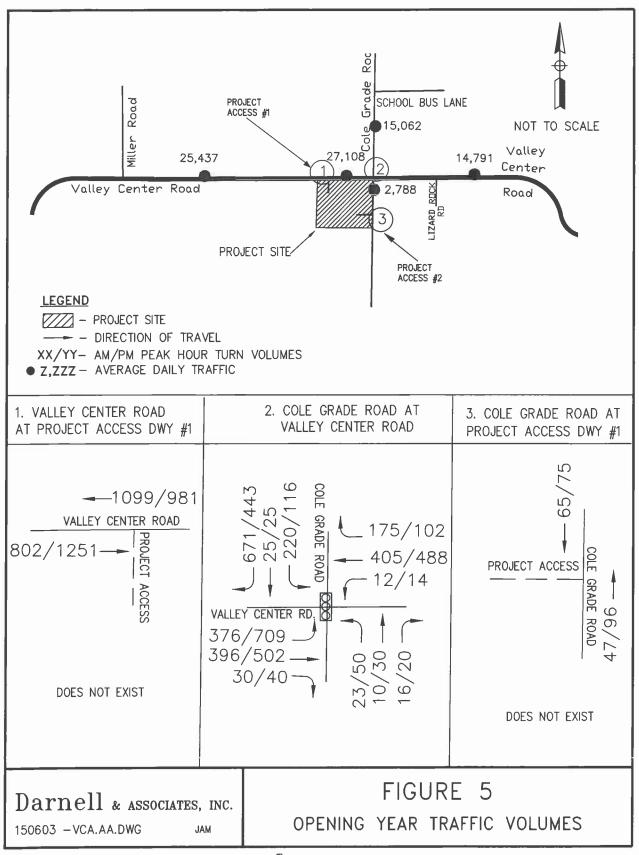
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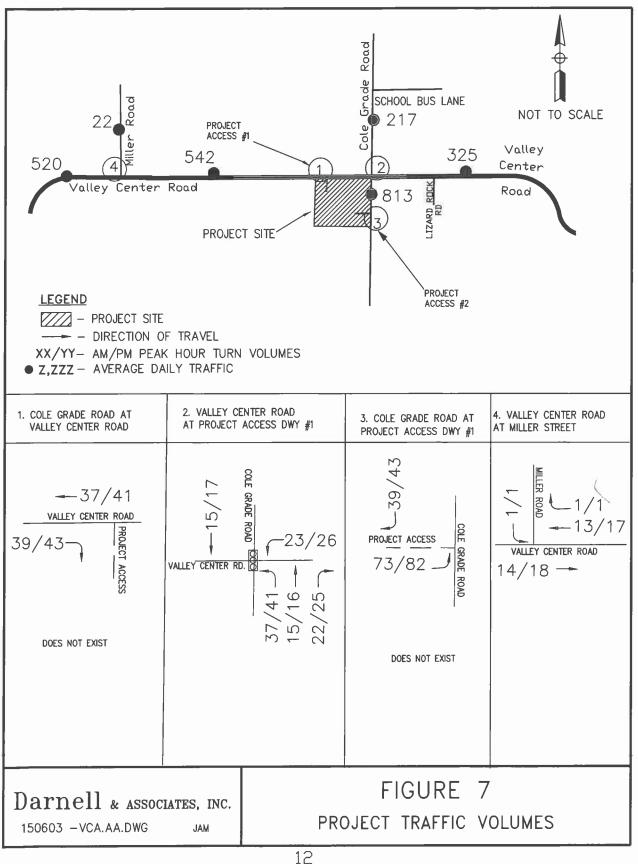


APPENDIX B

Pertinent Sections of Darnell & Associates Traffic Study







APPENDIX C

Pertinent Sections of the County of San Diego Noise Ordinance Cross reference(s)--Definitions, § 12.101 et seq.

SEC. 36.403. SOUND LEVEL MEASUREMENT.

- (a) A sound level measurement made pursuant to this chapter shall be measured with a sound level meter using A-weighting and a "slow" response time, as these terms are used in ANSI S1.1-1994 or its latest revision.
- (b) Each measurement shall be conducted at the boundary line of the property on which the noise source is located or any place on the affected property, but no closer than five feet from the noise source.
- (c) The sound level meter shall be calibrated and adjusted by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances in the ANSI specifications for sound level meters, ANSI S1.4-1983 or its latest revision. The sound level meter shall be used as provided in the manufacturer's instructions.

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

SEC. 36.404. GENERAL SOUND LEVEL LIMITS.

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

TABLE 36.404 SOUND LEVEL LIMITS IN DECIBELS (dBA)

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

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

- (b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.
- (c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in <u>Table</u> 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in <u>Table</u> 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.
- (d) If the measured ambient noise level exceeds the applicable limit in <u>Table 36.404</u>, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.
- (e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.
- (f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.

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

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

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

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

SEC. 36.406. POWERED MODEL VEHICLES.

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

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

SEC. 36.407. REFUSE VEHICLES & PARKING LOT SWEEPERS.

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

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

SEC. 36.408. HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT.

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

- (a) Between 7 p.m. and 7 a.m.
- (b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

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

SEC. 36.409. SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT.

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

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

SEC. 36.410. SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE.

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

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

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

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

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

APPENDIX D

Project-Generated Traffic Noise Calculations

Project-Generated Traffic Noise Levels										
			Existing +		Opening	Opening Year +				
	Existing	Project	Project	Increase	Year	Project	Increase			
Valley Center Road						<u>. </u>				
West of Miller Road	24,416	520	24,936	0.1	N/A	N/A	N/A			
Between Miller Road and Project Access #1	24,901	542	25,443	0.1	25,437	25,979	0.1			
Between Project Access #1 and Cole Grade Road	26,030	542	26,572	0.1	27,108	27,650	0.1			
East of Cole Grade Road	14,469	325	14,794	0.1	14,791	15,116	0.1			
Cole Grade Road		•		•						
South of Valley Center Road	2,711	813	3,524	1.1	2,788	3,601	1.1			
North of Valley Center Road	14,848	217	15,065	0.1	15,062	15,279	0.1			
Miller Road										
North of Valley Center Road	1,761	22	1,783	0.1	N/A	N/A	N/A			

APPENDIX E

Manufacturer Data Sheets

Electric Heat Multipliers

Vo	ltage	kW Capacity Multipliers ¹
Nominal	Applied	kw capacity multipliers
240	208	0.75
240	230	0.92
480	460	0.92
600	575	0.92

^{1.} Electric heaters are rated at nominal voltage. Use this table to determine the electric heat capacity for heaters applied at lower voltages.

Sound Performance

Indoor Sound Power Levels

C:			ECD	Blo	wor			Sound	Power	, dB (10	0 ⁻¹²) Wat	tts		
Size (Tons)	Model	CFM	ESP (IWG)	БЮ	wer	Sound Rating ¹		Oc	tave Ba	nd Cer	nterline l	Frequenc	y (Hz)	
(10113)			(1113)	RPM	BHP	dB (A)	63	125	250	500	1000	2000	4000	8000
J06 (6.5)	ZF	2600	0.6	812	1.14	74	71	73	73	71	69	65	65	60
J07 (7.5)	ZF	3000	0.6	854	1.47	77	74	76	76	74	72	68	68	63
J08 (8.5)	ZF	3400	0.6	872	1.65	80	77	79	79	77	75	71	71	66
J10 (10)	ZF	4000	0.6	959	2.29	83	80	82	82	80	78	74	74	69
J12 (12.5)	ZF	5000	0.6	1132	3.74	87	84	86	86	84	82	78	78	73

^{1.} These values have been accessed using a model of sound propagation from a point source into the hemispheric/free field. The dBA values provided are to be used for reference only. Calculation of dBA values cover matters of system design and the fan manufacture has no way of knowing the details of each system. This constitutes an exception to any specification or guarantee requiring a dBA value of sound data in any other form than sound power level ratings.

Outdoor Sound Power Levels J06 thru 12ZF

Size	Model	Sound Rating ¹			Octave B	and Cente	rline Frequ	ency (Hz)		
(Tons)	Wodei	dB (A)	63	125	250	500	1000	2000	4000	8000
J06 (6.5)	ZF	83	86.0	87.5	86.0	82.5	79.0	73.5	68.5	62.0
J07 (7.5)	ZF	83	89.5	92.0	89.0	87.5	84.0	78.5	73.5	66.5
J08 (8.5)	ZF	90	91.5	93.5	92.5	89.0	85.5	80.5	76.0	71.0
J10 (10)	ZF	90	99.5	94.5	92.0	90.0	87.0	81.0	76.0	70.0
J12 (12.5)	ZF	84	91.0	92.5	90.0	85.0	81.5	77.0	73.0	66.5

^{1.} Rated in accordance with AHRI 270 standard.

APPENDIX F

Mechanical Equipment Noise Calculations

Sound Power Level to Sound Pressure Level Analysis

Distances

Source Height: hs = 17.0 (ft)

Receiver Height: hR = 5.0 (ft)

Source to Receiver Distance: dsR = 300.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/7/2015

Source Description: Condenser
Path Description: NE Residence

Path Calculation

Source to Receiver Direct Path Distance: r = 300.2 (ft)

Sound Power to Sound Pressure Calculations										
Octave Band Sound Power Level: Lw	125 88.6	250 86.6	500 86.6	 2000 81.6	4000 72.6	TOTAL 97.6	` '			
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75 A-Weighting						47.3	(dB)	at	300.2	(ft)
A-Weighted Sound Pressure Level						39.2	(-)	at	300.2	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 47.3 (dB)

Total A-Weighted Sound Pressure Level: 39.2

of sources 6

Of Sources 0

Combined Sound Pressure Level: **55.1** (dB) at 300.2 (ft) Combined A-Weighted Sound Pressure Level: **46.9** (dBA) at 300.2 (ft)

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	20.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	280.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1

Date: 7/7/2015
Source Description: Condenser
Path Description: NE Residence

Path Calculations			
Source to Barrier Edge Path Distance:	d1 =	20.0	(ft)
Barrier to Receiver Diffracted Path Distance:	$d_2 =$	280.3	(ft)
Source to Receiver Direct Path Distance:	r =	300.2	(ft)

Sound Power to Sound Pressure Calculations												
Octave Band Sound Power Level: Lw	_	<u>125</u> 88.6	250 86.6		1000 85.6	2000 81.6			TOTAL 97.6	- (/		
Sound Pressure Level: $L_p = L_w - 20 \log(r) - 0.75$,	300.2	(ft)
A-Weighting										(dB)		` ,
A-Weighted Sound Pressure Level	19.1	22.2	27.7	33.1	35.3	32.5	22.8	13.2	39.2	(dBA) at	300.2	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.01	0.02	0.04	0.08	0.15	0.31	0.61	1.23				
Barrier Insertion Loss: IL = 10 log [3+10N]	4.9	5.0	5.3	5.8	6.6	7.8	9.6	11.8		(dB)		
Sound Pressure Level With Barrier: Lp - IL	40.4	33.3	31.0	30.5	28.7	23.5	12.7	2.5	42.2	(dB) at	300.2	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	14.2	17.2	22.4	27.3	28.7	24.7	13.2	1.4	32.7	(dBA) at	300.2	(ft)

Combined S	ound Pressur	e Level at	t Receiver	With Barrier

Total Sound Pressure Level: 42.2 (dB)

Total A-Weighted Sound Pressure Level 32.7

of sources 6

Combined Sound Pressure Level: 49.9 (dB) at 300.2 (ft)

Combined A-Weighted Sound Pressure Level 40.5 (dBA) at 300.2 (ft)

Sound Power Level to Sound Pressure Level Analysis

Distances

Source Height: hs = 17.0 (ft)

Receiver Height: hR = 5.0 (ft)

Source to Receiver Distance: dsR = 300.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015

Source Description: RTU-1
Path Description: NE Residence

Path Calculation

Source to Receiver Direct Path Distance: r = 300.2 (ft)

Sound Power to Sound Pressure Calculations										
Octave Band Sound Power Level: Lw	 <u>125</u> 94.5	250 92.0	1000 87.0	2000 81.0		TOTAL 101.8	` '			
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75						51.5	`	at	300.2	(ft)
A-Weighted Sound Pressure Level						41 5	(dBA)	at	300.2	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 51.5 (dB)

Total A-Weighted Sound Pressure Level: 41.5

of sources 1

Combined Sound Pressure Level: 51.5 (dB) at 300.2 (ft)

Combined A-Weighted Sound Pressure Level: 41.5 (dBA) at 300.2 (ft)

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	20.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	280.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1

Date: 7/2/2015
Source Description: RTU-1
Path Description: NE Residence

Path Calculations

Source to Barrier Edge Path Distance: $d_1 = 20.0$ (ft) Barrier to Receiver Diffracted Path Distance: $d_2 = 280.3$ (ft) Source to Receiver Direct Path Distance: r = 300.2 (ft)

Sound Power to Sound Pressure Calculations												
Octave Band Sound Power Level: Lw	<u>63</u> 99.5	<u>125</u> 94.5	<u>250</u> 92.0			2000 81.0			TOTAL 101.8	,		
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75	49.2	44.2	41.7	39.7	36.7	30.7	25.7	19.7	51.5	(dB) at	300.2	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	23.0	28.1	33.1	36.5	36.7	31.9	26.2	18.6	41.5	(dBA) at	300.2	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.01	0.02	0.04	0.08	0.15	0.31	0.61	1.23				
Barrier Insertion Loss: IL = 10 log [3+10N]	4.9	5.0	5.3	5.8	6.6	7.8	9.6	11.8		(dB)		
Sound Pressure Level With Barrier: Lp - IL	44.3	39.2	36.4	33.9	30.1	22.9	16.1	7.9	46.4	(dB) at	300.2	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	18.1	23.1	27.8	30.7	30.1	24.1	16.6	6.8	35.3	(dBA) at	300.2	(ft)

Combined Sound Pressure Level at Receiver With Barrier

Total Sound Pressure Level: 46.4 (dB)

Total A-Weighted Sound Pressure Level 35.3

of sources 1

Combined Sound Pressure Level: 46.4 (dB) at 300.2 (ft)

Combined A-Weighted Sound Pressure Level 35.3 (dBA) at 300.2 (ft)

Sound Power Level to Sound Pressure Level Analysis

Distances

Source Height: hs = 17.0 (ft)

Receiver Height: hR = 5.0 (ft)

Source to Receiver Distance: dsR = 120.0 (ft)

Project Name: Arco Valley Center
Project Number: B50608N1
Date: 7/7/2015
Source Description: Condenser
Path Description: R2-East PL

Path Calculation

Source to Receiver Direct Path Distance: r = 120.6 (ft)

Sound Power to Sound Pressure Calculations											
Octave Band Sound Power Level: Lw	 <u>125</u> 88.6	250 86.6	500 86.6	1000 85.6	2000 81.6	4000 72.6	TOTAL 97.6	` '			
Sound Pressure Level: Lp = Lw - 20 log (r) - 0.75 A-Weighting							55.3	(dB)	at	120.6	(ft)
A-Weighted Sound Pressure Level							47.1	(- /	at	120.6	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 55.3 (dB)

Total A-Weighted Sound Pressure Level: 47.1

of sources 6

Of Sources 0

Combined Sound Pressure Level: **63.0** (dB) at 120.6 (ft) Combined A-Weighted Sound Pressure Level: **54.9** (dBA) at 120.6 (ft)

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	10.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	110.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1

Date: 7/7/2015 Source Description: Condenser Path Description: R2-East PL

Path Calculations Source to Barrier Edge Path Distance: $d_1 = 10.0$ (ft) Barrier to Receiver Diffracted Path Distance: $d_2 = 110.8$ (ft) Source to Receiver Direct Path Distance: r = 120.6 (ft)

Sound Power to Sound Pressure Calculations												
Octave Band Sound Power Level: Lw			<u>250</u> 86.6						TOTAL 97.6	. ,		
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75	53.2	46.2	44.2	44.2	43.2	39.2	30.2	22.2	55.3	(dB) at	120.6	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	27.0	30.1	35.6	41.0	43.2	40.4	30.7	21.1	47.1	(dBA) at	120.6	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.02	0.05	0.10	0.19	0.38	0.77	1.54	3.07				
Barrier Insertion Loss: IL = 10 log [3+10N]	5.1	5.4	6.0	6.9	8.3	10.3	12.6	15.3		(dB)		
Sound Pressure Level With Barrier: Lp - IL	48.1	40.8	38.2	37.3	34.9	28.9	17.6	6.9	49.7	(dB) at	120.6	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		•
A-Weighted Sound Pressure Level	21.9	24.7	29.6	34.1	34.9	30.1	18.1	5.8	39.1	(dBA) at	120.6	(ft)

Combined Sound Pressure Level at Receiver Wit	h Barı	rier
Total Sound Pressure Level:	49.7	(dB)
Total A-Weighted Sound Pressure Level	39.1	
# of sources	6	
Combined Sound Pressure Level:	57.5	(dB) at 120.6 (ft)
Combined A-Weighted Sound Pressure Level	46.9	(dBA) at 120.6 (ft)

Sound Power Level to Sound Pressure Level Analysis

Distances Source Height: 17.0 (ft) Receiver Height: hR = 5.0 (ft) Source to Receiver Distance: dsR = 130.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015 Source Description: RTU-1

Path Description: R2 - East PL

Path Calculation

Source to Receiver Direct Path Distance:

Sound Power to Sound Pressure Calculations													
Octave Band Sound Power Level: Lw		125 94.5	250 92.0		1000 87.0		4000 76.0		TOTAL 101.8	` '			
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75									58.7	` '	at	130.6	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	30.2	35.3	40.3	43.7	43.9	39.1	33.4	25.8	48.7	(dBA)	at	130.6	(ft)

(ft)

r = **130.6**

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 58.7 (dB) Total A-Weighted Sound Pressure Level: 48.7

of sources 1

Combined Sound Pressure Level: 58.7 (dB) at 130.6 (ft) Combined A-Weighted Sound Pressure Level: 48.7 (dBA) at 130.6 (ft)

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	$d_{SB} =$	30.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	100.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015

Source Description: RTU-1 Path Description: R2 - East PL

Path Calculations			
Source to Barrier Edge Path Distance:	d1 =	30.0	(ft)
Barrier to Receiver Diffracted Path Distance:	$d_2 =$	100.8	(ft)
Source to Receiver Direct Path Distance:	r =	130.6	(ft)

Sound Power to Sound Pressure Calculations									
Octave Band Sound Power Level: Lw	 <u>125</u> 94.5	<u>250</u> 92.0	1000 87.0	<u>2000</u> 81.0		TOTAL 101.8	,		
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75 A-Weighting						58.7	(dB) at (dB)	130.6	(ft)
A-Weighted Sound Pressure Level						48.7	(dBÁ) at	130.6	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	<u>250</u>	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04		2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.03	0.07	0.14	0.27	0.54	1.08	2.16	4.32				
Barrier Insertion Loss: IL = 10 log [3+10N]	5.2	5.7	6.4	7.6	9.2	11.4	13.9	16.7		(dB)		
Sound Pressure Level With Barrier: Lp - IL	51.2	45.8	42.5	39.4	34.7	26.5	19.0	10.3	53.0	(dB) at	130.6	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	25.0	29.7	33.9	36.2	34.7	27.7	19.5	9.2	40.6	(dBA) at	130.6	(ft)

Combined Sound Pressure Level at Receiver With Barrier

Total Sound Pressure Level: 53.0 (dB)

Total A-Weighted Sound Pressure Level 40.6

of sources 1

Combined Sound Pressure Level: 53.0 (dB) at 130.6 (ft)

Combined A-Weighted Sound Pressure Level 40.6 (dBA) at 130.6 (ft)

Sound Power Level to Sound Pressure Level Analysis

Distances Source Height: 17.0 (ft) Receiver Height: hR = 5.0 (ft) Source to Receiver Distance: dsR = 20.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/7/2015 Source Description: Condenser Path Description: S Property Line

Path Calculation

Source to Receiver Direct Path Distance: r = **23.3** (ft)

Sound Power to Sound Pressure Calculations													
Octave Band Sound Power Level: Lw		125 88.6	250 86.6	500 86.6	1000 85.6	2000 81.6	4000 72.6		TOTAL 97.6	` '			
Sound Pressure Level: Lp = Lw - 20 log (r) - 0.75	67.5	60.5	58.5	58.5	57.5	53.5	44.5	36.5	69.5	(dB)	at	23.3	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	41.3	44.4	49.9	55.3	57.5	54.7	45.0	35.4	61.4	(dBA)	at	23.3	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 69.5 (dB)

Total A-Weighted Sound Pressure Level: 61.4

of sources 6

Combined Sound Pressure Level: 77.3 (dB) at 23.3 (ft)

Combined A-Weighted Sound Pressure Level: 69.1 (dBA) at 23.3

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	10.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	10.0	(ft)

Project Name: Arco Valley Center
Project Number: B50608N1
Date: 7/7/2015

Source Description: Condenser Path Description: S Property Line

Path Calculations			
Source to Barrier Edge Path Distance:	d ₁ =	10.0	(ft)
Barrier to Receiver Diffracted Path Distance:	$d_2 =$	16.4	(ft)
Source to Receiver Direct Path Distance:	r =	23.3	(ft)

Sound Power to Sound Pressure Calculations												
Octave Band Sound Power Level: Lw		<u>125</u> 88.6	<u>250</u>			2000 81.6			TOTAL	` '		
Sound Pressure Level: $L_p = L_w - 20 \log(r) - 0.75$										()	23.3	(ft)
A-Weighting									05.5	(dB) at	20.0	(11)
A-Weighted Sound Pressure Level	41.3	44.4	49.9	55.3	57.5	54.7	45.0	35.4	61.4	(dBA) at	23.3	(ft)

Barrier Insertion Loss Calculations												
Octave Band	<u>63</u>	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.35	0.69	1.38	2.77	5.54	11.07	22.14	44.28				
Barrier Insertion Loss: IL = 10 log [3+10N]	8.1	10.0	12.3	14.9	17.7	20.0	20.0	20.0		(dB)		
Sound Pressure Level With Barrier: Lp - IL	59.4	50.5	46.2	43.6	39.8	33.5	24.5	16.5	60.2	(dB) at	23.3	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	33.2	34.4	37.6	40.4	39.8	34.7	25.0	15.4	45.4	(dBA) at	23.3	(ft)

Combined Sound Pressure Level at Receiver Wit	h Barr	ier			
Total Sound Pressure Level:	60.2	(dB)			
Total A-Weighted Sound Pressure Level	45.4				
# of sources	6				
Combined Sound Pressure Level:	68.0	(dB) at	23.3	(ft)	
Combined A-Weighted Sound Pressure Level	53.2	(dBA) at	23.3	(ft)	
<u> </u>			•		

Sound Power Level to Sound Pressure Level Analysis

Distances Source Height: 17.0 (ft) Receiver Height: hR = 5.0 (ft) Source to Receiver Distance: dsR = 32.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015 Source Description: RTU-1

Path Description: S Property Line

Path Calculation

Source to Receiver Direct Path Distance: r = **34.2** (ft)

Sound Power to Sound Pressure Calculations													
Octave Band Sound Power Level: Lw		125 94.5	250 92.0		1000 87.0		4000 76.0		TOTAL 101.8	` '			
Sound Pressure Level: Lp = Lw - 20 log (r) - 0.75									70.3	(dB)	at	34.2	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	41.9	47.0	52.0	55.4	55.6	50.8	45.1	37.5	60.4	(dBA)	at	34.2	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 70.3 (dB) Total A-Weighted Sound Pressure Level: 60.4

of sources 1

Combined Sound Pressure Level: 70.3 (dB) at 34.2 (ft) Combined A-Weighted Sound Pressure Level: 60.4 (dBA) at 34.2

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	22.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	10.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015

Source Description: RTU-1 Path Description: S Property Line

Path Calculations

Source to Barrier Edge Path Distance: $d_1 = 22.0$ (ft)

Barrier to Receiver Diffracted Path Distance: $d_2 = 16.4$ (ft)

Source to Receiver Direct Path Distance: r = 34.2 (ft)

Sound Power to Sound Pressure Calculations Octave Band 63 125 250 500 1000 2000 4000 8000 TOTAL (Hz) Sound Power Level: Lw 99.5 94.5 92.0 **101.8** (dB) 90.0 87.0 81.0 76.0 70.0 (dB) at Sound Pressure Level: $L_p = L_w - 20 \log(r) - 0.75$ **68.1** 58.6 55.6 49.6 38.6 63.1 60.6 44.6 70.3 34.2 (ft) A-Weighting -26.2 -16.1 -8.6 -3.2 0 1.2 0.5 -1.1 (dB) A-Weighted Sound Pressure Level 41.9 47.0 52.0 55.4 55.6 50.8 45.1 37.5 60.4 (dBA) at 34.2 (ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	<u>250</u>	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.47	0.94	1.88	3.76	7.52	15.04	30.07	60.15				
Barrier Insertion Loss: IL = 10 log [3+10N]	8.9	10.9	13.4	16.1	18.9	20.0	20.0	20.0		(dB)		
Sound Pressure Level With Barrier: Lp - IL	59.2	52.1	47.2	42.5	36.6	29.6	24.6	18.6	60.3	(dB) at	34.2	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	33.0	36.0	38.6	39.3	36.6	30.8	25.1	17.5	44.5	(dBA) at	34.2	(ft)

Combined Sound Pressure Level at Receiver With Barrier

Total Sound Pressure Level: 60.3 (dB)

Total A-Weighted Sound Pressure Level 44.5

of sources 1

Combined Sound Pressure Level: 60.3 (dB) at 34.2 (ft)

Combined A-Weighted Sound Pressure Level 44.5 (dBA) at 34.2 (ft)

Sound Power Level to Sound Pressure Level Analysis

Distances Source Height: 17.0 (ft) Receiver Height: hR = 5.0 (ft) Source to Receiver Distance: dsR = 50.0 (ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/7/2015 Source Description: Condenser Path Description: R4-West PL

Path Calculation

Source to Receiver Direct Path Distance: r = **51.4** (ft)

Sound Power to Sound Pressure Calculations										
Octave Band Sound Power Level: Lw	 <u>125</u> 88.6	250 86.6	500 86.6	 2000 81.6	4000 72.6	TOTAL 97.6	(Hz) (dB)			
Sound Pressure Level: Lp = Lw - 20 log (r) - 0.75						62.7	(dB)	at	51.4	(ft)
A-Weighted Sound Pressure Level						54.5	(dBA)	at	51 <i>A</i>	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 62.7 (dB) Total A-Weighted Sound Pressure Level: 54.5

of sources 6

Combined Sound Pressure Level: 70.4 (dB) at 51.4 (ft)

Combined A-Weighted Sound Pressure Level: 62.3 (dBA) at 51.4

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source	Height: hs=	17.0	(ft)
Barrie	r Height: hв=	18.0	(ft)
Receive	r Height: hR=	5.0	(ft)
Horizontal Source to Barrier D	oistance: dsb =	5.0	(ft)
Horizontal Barrier to Receiver D	istance: dbr =	45.0	(ft)

Project Name: Arco Valley Center

Project Number: B50608N1 Date: 7/7/2015

Source Description: Condenser Path Description: R4-West PL

Path Calculations			
Source to Barrier Edge Path Distance:	d1 =	5.1	(ft)
Barrier to Receiver Diffracted Path Distance:	$d_2 =$	46.8	(ft)
Source to Receiver Direct Path Distance:	r =	51.4	(ft)

Sound Power to Sound Pressure Calculations									
Octave Band Sound Power Level: Lw	 <u>125</u> 88.6	<u>250</u> 86.6	1000 85.6	2000 81.6		TOTAL 97.6	` '		
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75 A-Weighting						62.7	(dB) at (dB)	51.4	(ft)
A-Weighted Sound Pressure Level						54.5	(dBÁ) at	51.4	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.06	0.11	0.23	0.46	0.92	1.84	3.68	7.35				
Barrier Insertion Loss: IL = 10 log [3+10N]	5.5	6.2	7.2	8.8	10.9	13.3	16.0	18.8		(dB)		
Sound Pressure Level With Barrier: Lp - IL	55.1	47.4	44.4	42.8	39.8	33.3	21.6	10.8	56.4	(dB) at	51.4	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	28.9	31.3	35.8	39.6	39.8	34.5	22.1	9.7	44.4	(dBA) at	51.4	(ft)

Combined Sound Pressure Level at Receiver With Barrier								
56.4	(dB)							
44.4								
6								
64.2	(dB) at	51.4	(ft)					
52.2	(dBA) at	51.4	(ft)					
	56.4 44.4 6 64.2	56.4 (dB) 44.4 6 64.2 (dB) at	56.4 (dB) 44.4 6 64.2 (dB) at 51.4	56.4 (dB) 44.4 6				

Sound Power Level to Sound Pressure Level Analysis

Distances

Source Height: $h_S = 17.0$ (ft)

Receiver Height: $h_R = 5.0$ (ft)

Source to Receiver Distance: $d_{SR} = 80.0$ (ft)

Project Name: Arco Valley Center
Project Number: B50608N1
Date: 7/2/2015
Source Description: RTL-1

Source Description: RTU-1
Path Description: R2 - East PL

Path Calculation

Source to Receiver Direct Path Distance: r = 80.9 (ft)

Sound Power to Sound Pressure Calculations											
Octave Band Sound Power Level: Lw	 125 94.5	250 92.0	500 90.0	1000 87.0	2000 81.0	4000 76.0	 TOTAL 101.8	٠,			
Sound Pressure Level: Lp = Lw - 20 log (r) - 0.75 A-Weighting							62.9	(dB)	at	80.9	(ft)
A-Weighted Sound Pressure Level							52.9	(dBA)	at	80.9	(ft)

Combined Sound Pressure Level at Receiver

Total Sound Pressure Level: 62.9 (dB)

Total A-Weighted Sound Pressure Level: 52.9

of sources 1

Combined Sound Pressure Level: **62.9** (dB) at 80.9 (ft)

Combined A-Weighted Sound Pressure Level: 52.9 (dBA) at 80.9 (ft)

Sound Power Level to Sound Pressure Level and Barrier Insertion Loss Analysis

Barrier Parameters			
Source Height:	hs=	17.0	(ft)
Barrier Height:	hв =	18.0	(ft)
Receiver Height:	$h_R =$	5.0	(ft)
Horizontal Source to Barrier Distance:	dsB =	30.0	(ft)
Horizontal Barrier to Receiver Distance:	$d_{BR} =$	50.0	(ft)

Project Name: Arco Valley Center Project Number: B50608N1 Date: 7/2/2015

Source Description: RTU-1
Path Description: R2 - East PL

Path Calculations			
Source to Barrier Edge Path Distance:	d1 =	30.0	(ft)
Barrier to Receiver Diffracted Path Distance:	$d_2 =$	51.7	(ft)
Source to Receiver Direct Path Distance:	r =	80.9	(ft)

Sound Power to Sound Pressure Calculations												
Octave Band Sound Power Level: Lw	<u>63</u> 99.5	<u>125</u> 94.5	<u>250</u> 92.0			<u>2000</u> 81.0			TOTAL 101.8	. ,		
Sound Pressure Level: Lp = Lw - 20 log(r) - 0.75	60.6	55.6	53.1	51.1	48.1	42.1	37.1	31.1	62.9	(dB) at	80.9	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	34.4	39.5	44.5	47.9	48.1	43.3	37.6	30.0	52.9	(dBA) at	80.9	(ft)

Barrier Insertion Loss Calculations												
Octave Band	63	125	250	500	1000	2000	4000	8000	TOTAL	(Hz)		
Wavelength: λ	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14		(ft)		
Fresnel Number: $N = (2/\lambda) [d_1 + d_2 - d]$	0.09	0.17	0.35	0.69	1.39	2.78	5.55	11.10				
Barrier Insertion Loss: IL = 10 log [3+10N]	5.9	6.8	8.1	10.0	12.3	14.9	17.7	20.0		(dB)		
Sound Pressure Level With Barrier: Lp - IL	54.7	48.8	45.0	41.1	35.8	27.2	19.4	11.1	56.2	(dB) at	80.9	(ft)
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	28.5	32.7	36.4	37.9	35.8	28.4	19.9	10.0	42.5	(dBA) at	80.9	(ft)

Combine	Combined Sound Pressure Level at Receiver With Barrier								
	Total Sound Pressure Level:	56.2	(dB)						
	Total A-Weighted Sound Pressure Level	42.5							
	# of sources	1							
	Combined Sound Pressure Level:	56.2	(dB) at	80.9	(ft)				
Com	bined A-Weighted Sound Pressure Level	42.5	(dBA) at	80.9	(ft)				

APPENDIX G

Temporary Construction Noise Calculations

Noise Attenuation by Distance Calculation

Job: Valley Center ARCO

Job #: B50608N1 Date: 7/13/2015 Source: D-4 Dozer

Receiver: Residence Northwest

Noise Source					
	Noise Level (dBA) _	85	_ at	50	feet

0	feet	at	5	feet above grade
0	feet	at	5	feet above grade
150	feet			_
	0 0 150	0 feet	0 feet at	0 feet at 5

Path Calculation		
Source to Receiver Direct Path Distance:	150	feet

Sound Pressure Level	75.5	at	150	feet
Hours of Use:	8	_		
Duty Cycle (%):	40	_		
Level During 8 Hour day:	71.5	_		

Summation	
Number of Sources: _	2
Level during 8 hour day:	71.7

Noise Attenuation by Distance Calculation

Job: Valley Center ARCO

Job #: B50608N1
Date: 7/13/2015
Source: Vibratory Roller
Receiver: Residence Northwest

Noise Source					
Nois	e Level (dBA)	75	at	32.8	feet

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 150 feet

Path Calculation

Source to Receiver Direct Path Distance: ____150 ____ feet

Sound Pressure Level 61.8 at 150 feet

Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 57.8