

APPENDIX I

NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

**Sycamore Canyon Commercial
Sycamore Canyon Boulevard and Central Avenue
Riverside, California**

Prepared For

KA Enterprises

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Job #B70816N3

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TABLE OF CONTENTS

	<u>Page</u>
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	1
2.1 Project Description	
2.2 Project Location	
2.3 Applicable Noise Standards	
3.0 ENVIRONMENTAL SETTING	3
3.1 Existing Noise Environment	
3.2 Future Noise Environment	
4.0 METHODOLOGY AND EQUIPMENT	5
4.1 Methodology	
4.2 Measurement Equipment	
5.0 NOISE IMPACTS AND MITIGATION	6
5.1 Noise Impacts on Surrounding Properties	
5.2 Mitigation Measures	
6.0 CONCLUSION	8
7.0 CERTIFICATION	8
8.0 REFERENCES	8

FIGURES

1. Vicinity Map
2. Satellite Aerial Photograph
3. Topographic Map
4. Satellite Aerial Photograph Showing Equipment Noise Contours and Receiver Locations

APPENDICES

- A. Project Plans
- B. Pertinent Sections of the City of Riverside Municipal Code and Noise Element to the General Plan
- C. Manufacturer Data Sheets
- D. Cadna Analysis Data and Results

1.0 EXECUTIVE SUMMARY

The proposed project, Sycamore Canyon Commercial, includes the construction of a new commercial facility to include a gas station, car wash, convenience store, and one restaurant with drive-through services. The project site is located at the northeast corner of the intersection of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California.

The purpose of this report is to assess noise impacts from the equipment associated with the proposed commercial facility, and to determine if mitigation is necessary and feasible to reduce project-related noise impacts to comply with applicable noise limits. Noise limits specified within the City of Riverside Municipal Code must be met at neighboring property lines.

Calculations show that, with the currently anticipated equipment, exterior noise levels generated at the project site are expected to comply with the applicable City of Riverside daytime and nighttime noise limits at the nearest noise-sensitive property lines. It should be noted that, in order to maintain compliant noise levels at off-site receivers, the car wash equipment must be selected such that the equipment generates a noise level of not greater than 84 dBA at a distance of 10 feet from the exit of the tunnel, which is a condition satisfied by the currently evaluated Mark VII car wash system. With the car wash equipment selected accordingly, noise impacts from all proposed noise-generating equipment at off-site receivers would be expected to be equal to or lesser than the projected noise impacts shown herein.

Additionally, the City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday. Provided construction activities take place during the permissible hours of operation, the project is anticipated to comply with the City of Riverside requirements.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the noise requirements of the City of Riverside. Its purpose is to assess noise impacts from proposed project-related noise sources, and to determine if mitigation is necessary to reduce the noise impacts to be compliant with applicable 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 calculations.

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.

2.1 Project Description

The proposed project, Sycamore Canyon Commercial, includes the construction of a new commercial facility to include a gas station, car wash, convenience store, and one restaurant with drive-through services. The automatic car wash will be installed in a tunnel near the southeast corner of the property. The proposed automatic car wash with dryer unit is the primary focus of this analysis, although noise from proposed car wash vacuum units, HVAC equipment, and drive-through intercom systems has been evaluated as well. For purposes of this analysis, it is assumed that equipment on site may operate during the nighttime hours. For additional project details and equipment positioning, please refer to the project plans provided in Appendix A.

2.2 Project Location

The subject property is located at the northeast corner of the intersection of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California. The site is currently vacant. For a graphical representation of the site, please refer to the Vicinity Map, Satellite Aerial Photograph, and Topographic Map provided as Figures 1 through 3, respectively.

2.3 Applicable Noise Standards

The noise regulations applicable to this project are contained within the City of Riverside Municipal Code, Title 7, which specifies noise limits based on the land use of the properties in question. The subject property will be a commercial land use after development. The nearest noise-sensitive properties are a park across Sycamore Canyon to the west, which is considered to be a recreational use, and residential properties to the south, beyond Central Avenue. All other surrounding area is either vacant or occupied by major roadways, such as Interstate 215/State Route 60, which is located immediately to the east of the property.

The City of Riverside Municipal Code states that exterior noise levels at properties zoned for residential use shall not exceed a noise level of 55 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. Noise impacts at public recreation facilities are allowable up to 65 dBA at any time. It should be noted, however, that the Municipal Code also states that, in the event that the measured ambient noise level exceeds allowable standards, the noise limit shall be increased in five-decibel increments to encompass the ambient noise level. Measured ambient noise levels detailed in Section 3.1 demonstrate that the minimum measured ambient noise level was 59.7 dBA during nighttime hours. As this noise level exceeds the applicable residential noise standards, the applicable nighttime noise limit has been increased to 60 dBA for residential properties, while the public recreation facility noise limit will remain at 65 dBA.

The City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

The City of Riverside Noise Element to the General Plan was also reviewed. The Noise Element does not contain specific noise limits for stationary noise sources, and is generally geared more towards the analysis of potential noise impacts on proposed project sites from off-site transportation

noise sources. The Noise Element states that stationary noise sources should be mitigated to meet the noise limits of the City or Riverside Noise Control Code (Chapter 7 of the Municipal Code), as referenced above.

Pertinent sections of the City of Riverside Municipal Code and Noise Element to the General Plan are provided as Appendix B.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

An on-site inspection was conducted at 10:30 a.m. on Tuesday, August 29, 2017. The existing noise environment consists primarily of traffic traveling on surrounding roadways. A long-term ambient noise measurement was made near the southwest corner of the subject property. The microphone position was approximately 2.5 feet above the existing grade. The measured noise levels can be seen in Table 1.

Table 1. On-Site Measured Noise Levels		
Date	Time	Noise Level (dBA)
August 29, 2017	11 a.m. – 12 p.m.	62.6
	12 p.m. – 1 p.m.	65.4
	1 p.m. – 2 p.m.	62.7
	2 p.m. – 3 p.m.	65.9
	3 p.m. – 4 p.m.	65.5
	4 p.m. – 5 p.m.	65.4
	5 p.m. – 6 p.m.	67.1
	6 p.m. – 7 p.m.	65.9
	7 p.m. – 8 p.m.	64.9
	8 p.m. – 9 p.m.	68.9
	9 p.m. – 10 p.m.	66.5
	10 p.m. – 11 p.m.	62.7
	11 p.m. – 12 a.m.	68.7
August 30, 2017	12 a.m. – 1 a.m.	60.1
	1 a.m. – 2 a.m.	62.7
	2 a.m. – 3 a.m.	59.7
	3 a.m. – 4 a.m.	61.9
	4 a.m. – 5 a.m.	62.5
	5 a.m. – 6 a.m.	65.1
	6 a.m. – 7 a.m.	67.7
	7 a.m. – 8 a.m.	66.8
	8 a.m. – 9 a.m.	66.2

Table 1. On-Site Measured Noise Levels		
Date	Time	Noise Level (dBA)
August 30, 2017	9 a.m. – 10 a.m.	66.9
	10 a.m. – 11 a.m.	63.6
	11 a.m. – 12 p.m.	63.5

As shown above, noise levels measured on site ranged from 59.7 dBA between the hours of 2 a.m. and 3 a.m. to 68.9 dBA between the hours of 8 p.m. and 9 p.m.

3.2 Future Noise Environment

The future noise environment in the vicinity of the project site will be primarily a result of the same roadway noise sources, as well as the noise generated by the proposed automatic car wash dryer and vacuum equipment, HVAC equipment operating on site, and drive-through intercom noise from the one restaurant on site.

The automatic car wash equipment is anticipated to be a Mark VII “rollover” car wash or a similar unit. As the dryer is the primary source of noise generation from an automatic car wash, product data from Mark VII has been used for this analysis. The dryer is anticipated to be the AquaDri E-20 20 hp or an equivalent. This dryer is an onboard dryer, meaning that the dryer is mobile, and moves over a stationary vehicle. Noise levels for this equipment were provided by the manufacturer as broadband, A-weighted noise levels of 84 dBA at 10 feet from the exit of the car wash tunnel, and 83 dBA at a distance of 10 feet from the entrance to the car wash tunnel. No octave band data has been given for the dryer, and therefore, octave band noise levels of a similar carwash with a mobile dryer have been used to estimate the spectral content of the AquaDri E-20 dryer. Noise levels are shown in Table 2, and manufacturer sheets are provided in Appendix C.

Table 2. Sound Pressure Level and Estimated Spectrum of Typical Car Wash Equipment									
Source	Sound Pressure Level at Octave Band Frequency (dB)								Total (dBA)
	63	125	250	500	1K	2K	4K	8K	
AquaDri E-20, at 10 feet from tunnel exit	76.8	80.8	77.7	78.2	79.3	77.4	74.9	71.7	84.0

The vacuum on site will be manufactured by J.E. Adams Industries (Model 8600) and is a dual motor, single vacuum. The proposed vacuum is expected to generate approximately 78.2 dBA at 10 feet from the unit. Octave band data has not been provided, and for this reason, this information has been estimated based on previous noise measurements of vacuums at similar car wash facilities. Noise data is shown in Table 3, and manufacturer information is provided in Appendix C.

Table 3. Sound Pressure Level & Estimated Spectrum of Vacuum, at 10 Feet from Source									
Source	Sound Pressure Level at Octave Band Frequency (dBA)								Total (dBA)
	63	125	250	500	1K	2K	4K	8K	
Vacuum	67.9	63.7	70.6	65.7	70.5	72.3	73.5	67.7	78.2

Typical assumptions were made regarding air conditioning units to be used on site based on the square footage of proposed buildings. It was assumed that the 3,200-square foot convenience store and the 3,800-square foot restaurant would each be serviced by units with a capacity of 7.5 tons. Both units were assumed to be roof-mounted for purposes of the noise model. As a specific make/model is unknown at this time, typical units manufactured by Carrier have been input into the noise model. Octave band sound power levels have been provided by the manufacturer and are shown in Table 4. Please refer to Appendix C for additional information.

Table 4. Sound Power Levels of Carrier 48PG Centurion Units									
Source	Sound Power at Octave Band Frequency (dB)								Total (dBA)
	63	125	250	500	1K	2K	4K	8K	
48PG08 (7.5-ton)	91.7	83.6	81.0	77.9	75.0	69.9	66.0	59.3	80.0

The proposed drive-through intercom systems are expected to be manufactured by HME or a similar manufacturer. The HME Intercom System is measured to have a maximum noise level of 84 dBA at one foot from the speaker post. Although the proposed intercom system is available in a configuration that automatically adjusts its noise level based on the ambient noise conditions present on site, the maximum noise levels of the drive-through intercom systems will be input into the noise model, in order to reflect anticipated worst-case conditions. For further details on the HME intercom system, please refer to Appendix C: Manufacturer Data Sheets.

No other proposed equipment on site is anticipated to generate significant levels of noise.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

Modeling of the outdoor noise environment is accomplished using Cadna Version 2018, which is an industry-standard, model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts. Noise standards used by Cadna that are particularly relevant to this analysis include ISO 9613 (Attenuation of sound during propagation outdoors). Cadna provides results that are in line with basic acoustical calculations for distance attenuation and barrier insertion loss. Further explanation may be provided upon request.

4.2 Measurement Equipment

The following equipment was used at the site to document site conditions and measure existing ambient noise levels (detailed in Section 3.1):

- Larson Davis Model 720 Type 2 Sound Level Meter, Serial # 0311
- Larson Davis Model CA150 Type 2 Calibrator, Serial # 2056
- Distance measurement wheel, digital camera

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 S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 NOISE IMPACTS AND MITIGATION

5.1 Noise Impacts on Surrounding Properties

5.1.1 Operational Noise Impacts

Noise levels of the proposed equipment (including the proposed car wash, vacuums, HVAC equipment, and the drive-through intercoms) were calculated using Cadna at surrounding properties to the south and west. As there are no noise-sensitive receivers located at the sidewalk/street to the south and west, receivers have been calculated at the nearest noise-sensitive properties across Central Avenue and Sycamore Canyon Boulevard, respectively. All receivers were calculated at a height of five feet above grade, to account for the height of an average individual's ears above the ground. Calculations include the shielding that will be provided by the proposed on-site structures as well as the topography of the site and surrounding area.

In addition, appropriate duty cycles were applied to the car wash equipment operating on site. The total duration of a typical automatic car wash is approximately 5 minutes, from start to finish. Therefore, it was assumed that a maximum of 12 car washes would take place during any given hour. Typically, the dryer unit of an automatic car wash operates for one minute out of each cycle. For this reason, the dryer unit was evaluated assuming that it would be in use for one minute per car wash, for a maximum expected duty cycle of 12 minutes per hour. These scenarios are assumed to be a worst-case estimate of usage at the car wash. Vacuums, air conditioning equipment, and drive-through intercom systems have been evaluated as being operational during the entire hour.

Results of the analysis are shown in Table 5 below. Noise contours are shown in Figure 4. Additional information can be found in Appendix D: Cadna Analysis Data and Results.

Table 5. Calculated Commercial Facility Noise Impact Levels			
Receiver Number	Receiver Location	Noise Limit (dBA)	Equipment Noise Level (dBA)
R-1	South Residential Property	60	45.8
R-2	West Property	65	46.8

As shown above, with the currently anticipated on-site equipment, noise levels generated at the project site are expected to comply with the most stringent applicable noise limits of the City of Riverside at the nearest residential and recreational properties. The calculated receivers represent the highest amount of noise exposure at off-site properties, and any other receivers are expected to have lesser noise impacts due to added distance attenuation. No additional project design features are deemed necessary to attenuate noise impacts.

As this analysis was conducted using typical assumptions regarding car wash equipment, it should be noted that the car wash equipment must be selected appropriately in order to maintain compliance. Provided the car wash dryer does not generate a noise level of greater than 84 dBA at a distance of 10 feet from the exit of the tunnel (a condition satisfied by the Mark VII rollover car wash with AquaDri E-20 dryer, as evaluated herein), noise impacts generated at off-site receivers are expected to be equal to or lesser than the noise impacts projected herein.

5.1.2 Temporary Construction Noise Impacts

The City of Riverside Municipal Code exempts noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided that said activities do not take place between the hours of 7 p.m. and 7 a.m. on weekdays, between the hours of 5 p.m. and 8 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

5.2 Mitigation Measures

In order to comply with the applicable noise limits of the City of Riverside for permanent noise sources associated with the operation of the site, the following mitigation measure is required:

- NOI-1 The car wash dryer must be selected so that it does not generate a noise level of greater than 84 dBA at a distance of 10 feet from the exit of the tunnel (a condition satisfied by the Mark VII rollover car wash with AquaDri E-20 dryer, as evaluated herein).

With the above mitigation measures in place, the project is expected to comply with all applicable City of Riverside noise regulations.

6.0 CONCLUSION

Calculations show that, with the currently anticipated equipment, exterior noise levels generated at the project site are expected to comply with the applicable City of Riverside daytime and nighttime noise limits at the nearest noise-sensitive property lines. It should be noted that, in order to maintain compliant noise levels at off-site receivers, the car wash equipment must be selected such that the equipment generates a noise level of not greater than 84 dBA at a distance of 10 feet from the exit of the tunnel, which is a condition satisfied by the currently evaluated Mark VII car wash system. With the car wash equipment selected accordingly, noise impacts at off-site receivers would be expected to be equal to or lesser than the projected noise impacts shown herein.

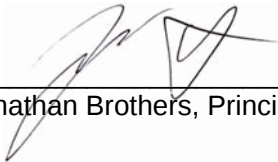
This analysis is based upon a current worst-case scenario of anticipated, typical equipment for this type of facility. Substitution of equipment with higher noise emission levels may invalidate the recommendations of this study. These conclusions and recommendations are based on the best and most current project-related information available at the time this study was prepared.

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 Sycamore Canyon Commercial property, to be located at the northeast corner of Sycamore Canyon Boulevard and Central Avenue in the City of Riverside, California. This report was prepared by Amy Hool and Jonathan Brothers.



Amy Hool, Senior Acoustical Consultant

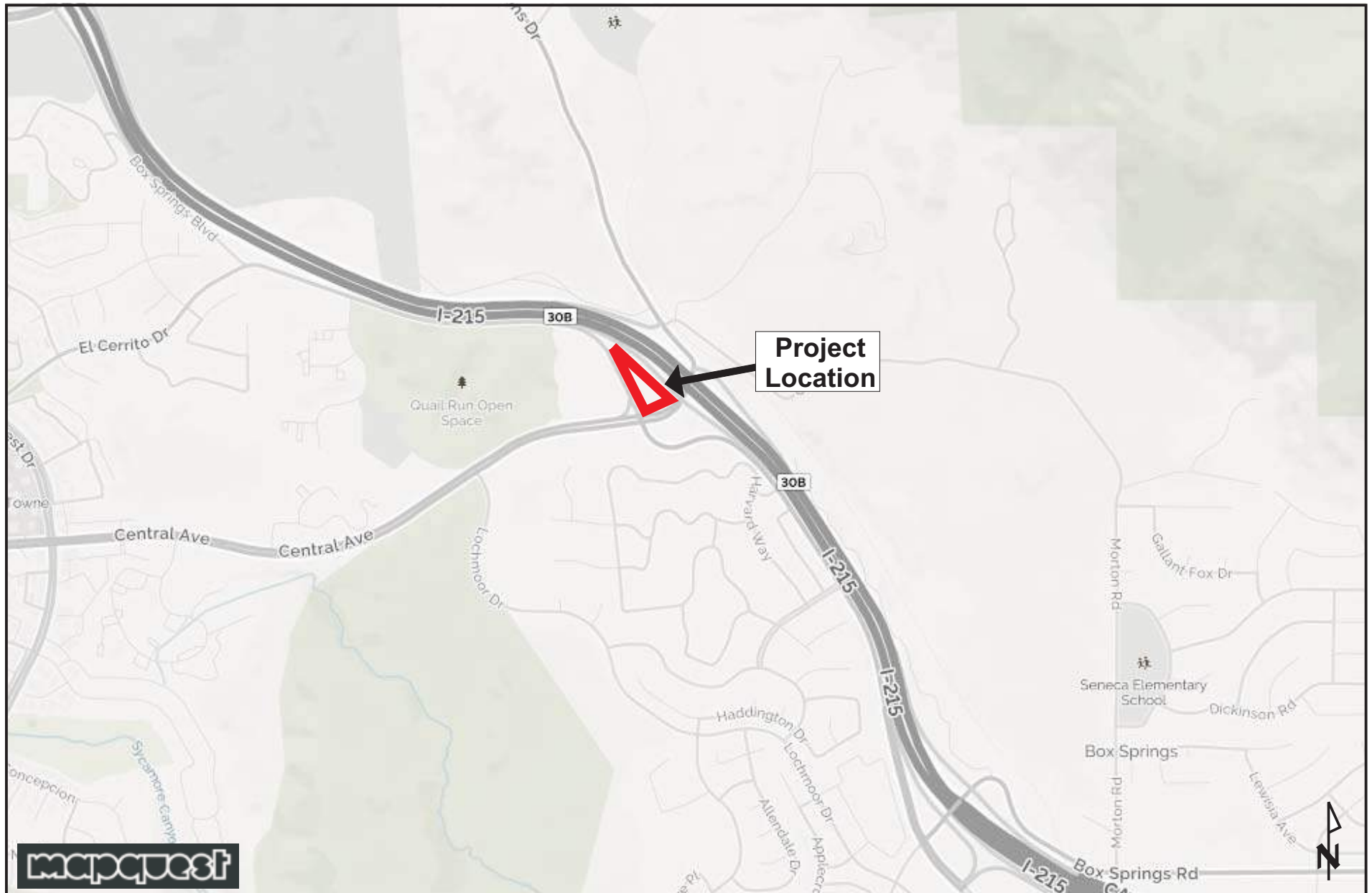


Jonathan Brothers, Principal Acoustical Consultant

8.0 REFERENCES

1. City of Riverside Municipal Code, Title 7: Noise Control.
2. City of Riverside Noise Element to the General Plan 2025, Adopted November 2007.
3. DataKustik, CadnaA (Computer Aided Noise Abatement), Version 2018.

FIGURES



Eilar Associates, Inc.
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Escondido, California 92025
760-738-5570

Vicinity Map
Job # B70816N3

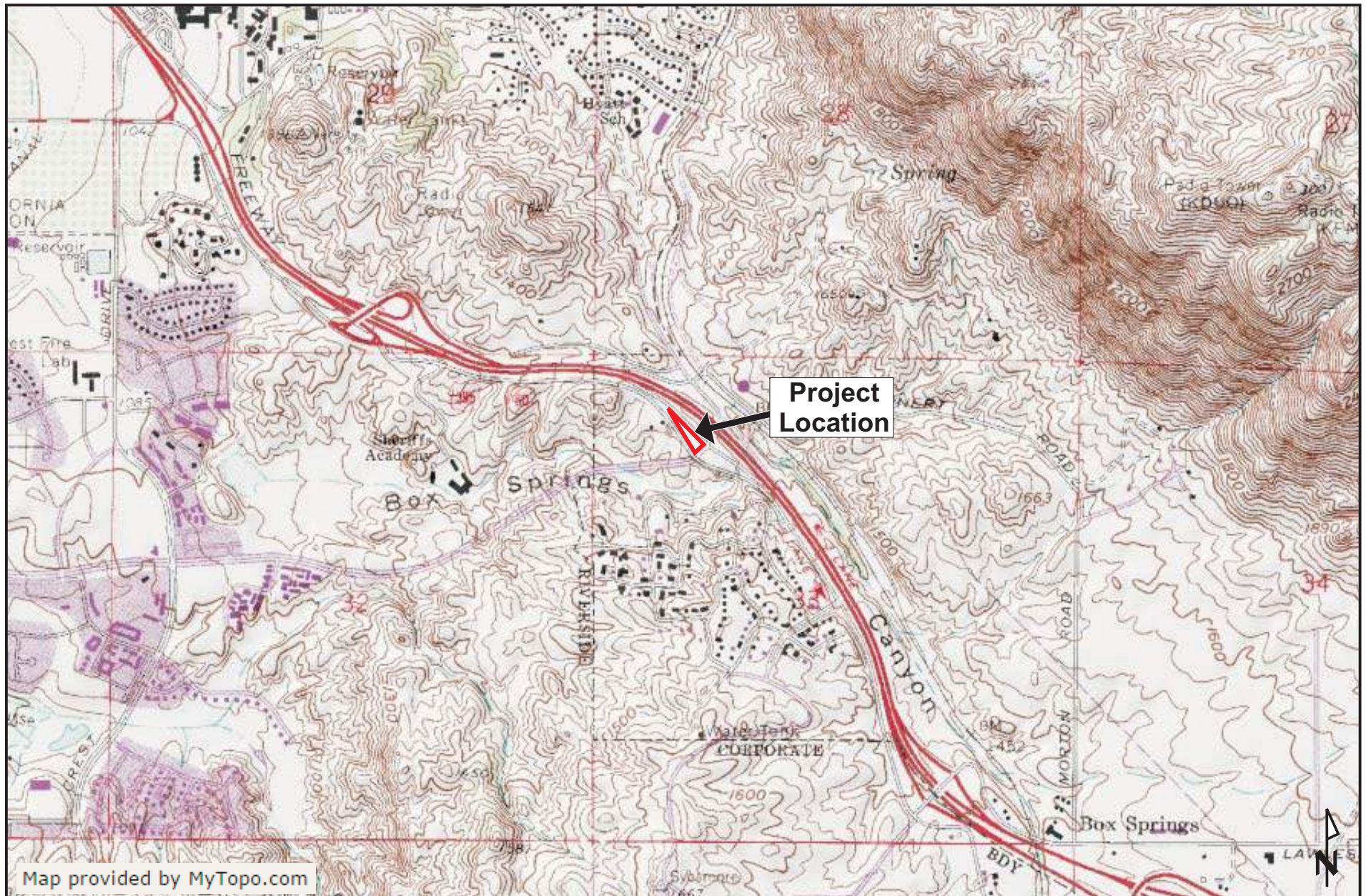
Figure 1



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

Satellite Aerial Photograph
 Job # B70816N3

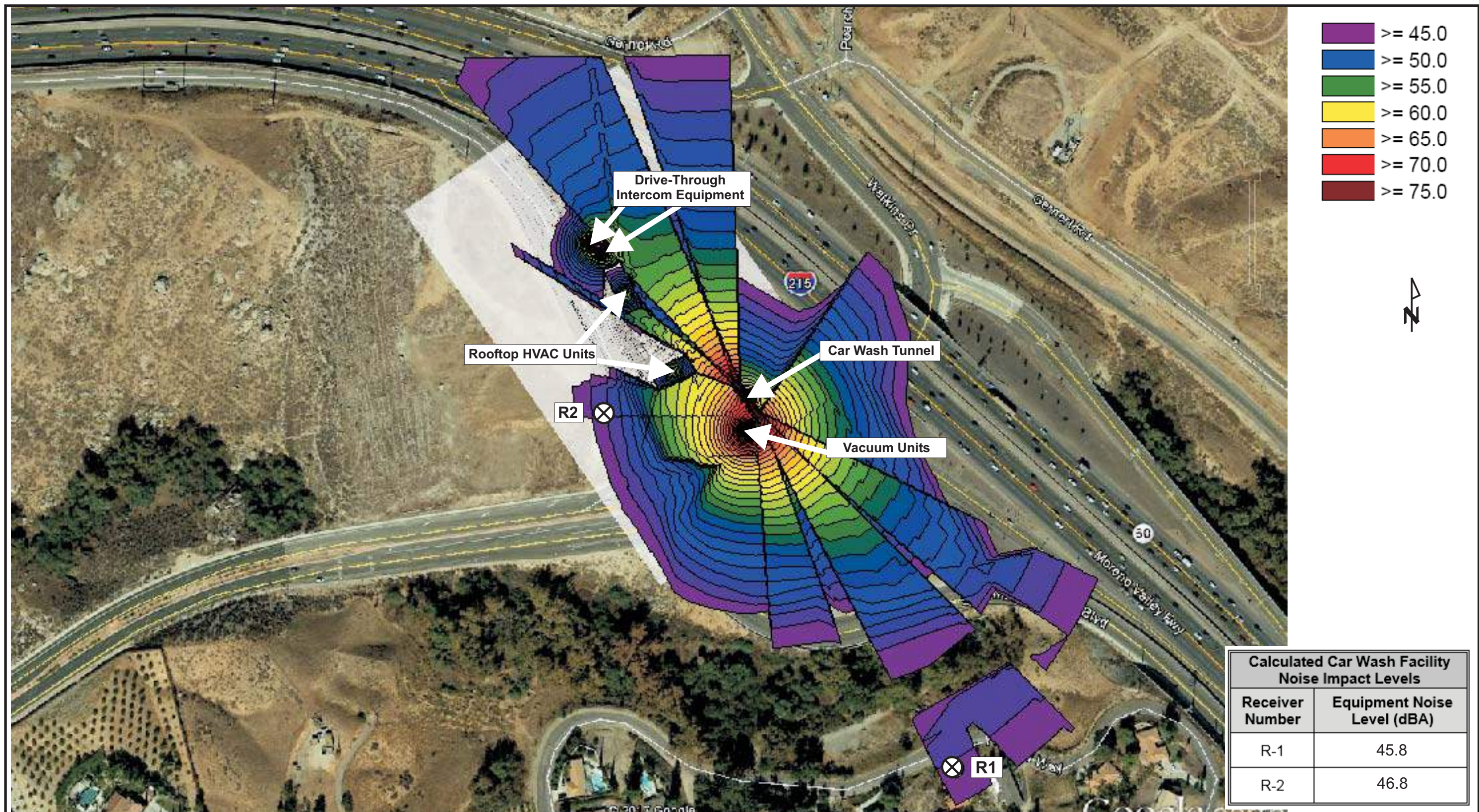
Figure 2



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

Topographic Map
Job # B70816N3

Figure 3



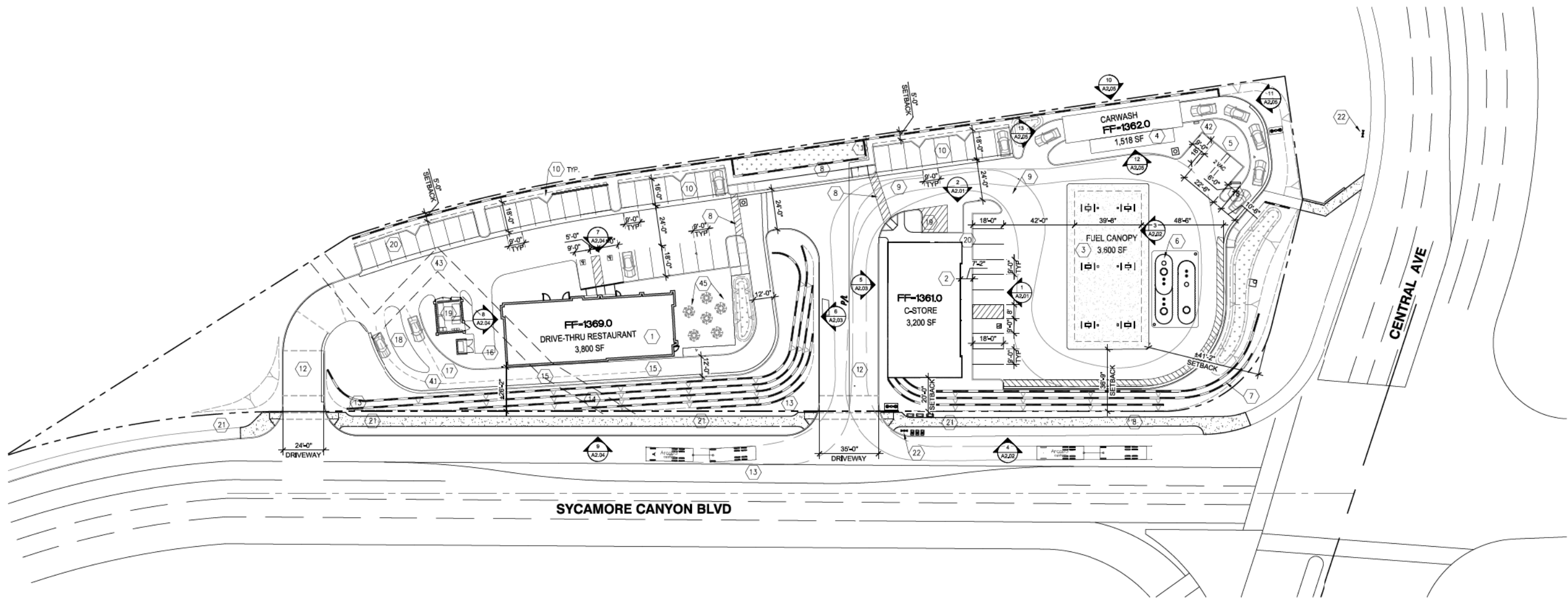
Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Satellite Aerial Photograph Showing Equipment Noise Contours and Receiver Locations
 Job # B70816N3

Figure 4

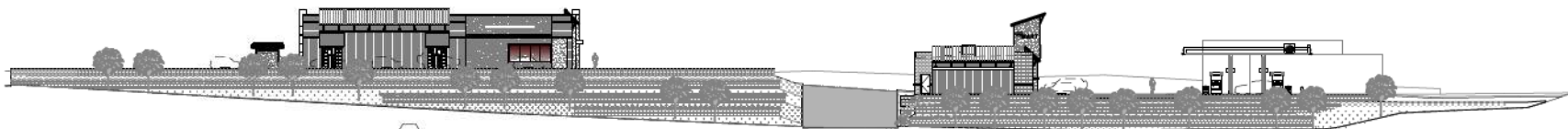
APPENDIX A

Project Plans



SITE PLAN

1" = 30'-0"



Retail Store (Fast Food)
3,800 SF

SITE ELEVATION

1" = 30'-0"

SETBACK TABLE

DEVELOPMENT STANDARD	CR
FRONT YARD SETBACK (MIN.)	0 FT.
SIDE YARD SETBACK (MIN.)	0 FT.
INTERIOR SIDE	0 FT.
STREET SIDE	0 FT.
REAR YARD SETBACK (MIN.)	0 FT.

DEVELOPMENT SUMMARY

LOT AREA:

AREA OF PROPOSED SUMMARY STREET VACATION

AREA OF PROPOSED STREET VACATION

TOTAL LOT AREA:

PARCEL MAP:

LOT AREA FOR EACH PARCEL

SUMMARY OF EA. BLDG AND SQ. FT

C-STORE	3,200 SF
CANOPY	3,800 SF
FAST FOOD	3,800 SF
CAR WASH	1,518 SF
TOTAL	12,118 S.F.

FLOOR AREA RATIO:

.12

TOTAL LANDSCAPE AREA:

10,762 S.F.

LANDSCAPE ANALYSIS

SITE:	95,559 SF	2.18 ACRES
BUILDINGS:		
C-STORE	3,200 SF	
CANOPY	3,800 SF	
FAST FOOD	3,800 SF	
CAR WASH	1,518 SF	
LOT COVERAGE :	11,800/95558	12.3%
LANDSCAPE AREA:	10,762 SF	11%

PARKING ANALYSIS

PARKING SPACES REQUIREMENTS PER RIVERSIDE ZONING ORDINANCE TABLE 19-580-060:
VEHICLE FUELING STATION W/ CONVENIENCE STORE: 1 SPACE/250 SF OF RETAIL AREA INCLUDING COOLER AREAS 3,200 SF / 250 = 13 SPACES
STAND ALONE FAST FOOD DRIVE THRU: 1 SPACE/100 SF OF FLOOR AREA 3,800 SF / 100 = 38 SPACES
FULL SERVICE AUTOMATED CARWASH: 1 SPACE/2 EMPLOYEES OF LARGEST SHIFT 1,518 SF = 1 SPACES
PARKING SPACES REQUIRED: 52 SPACES PARKING SPACES PROVIDED: 54 SPACES

KEYED NOTES

1. DRIVE-THRU RESTAURANT - 3,800 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. BLDG ELEV'S HAVE WELL MODULATED PLANES & ARTICULATED FACADES, ARTICULATED ROOF LINES, AND MULTIPLE EXTERIOR MATERIALS. (TYPICAL)
2. C-STORE - 3,200 sf. ALL ROOF MNTD EQUIP SHALL BE FULLY SCREENED FROM VIEW. TOWER PROJECTIONS SHALL BE FINISHED ON ALL FOUR SIDES
3. 6 MULTI PRODUCT DISPENSERS (MPD's) W/ 90'x40' CANOPY - 3,600 sf
4. CAR WASH AND EQUIPMENT ROOM BUILDING - 1,199 sf - SELF SERVE
5. VACUUMS - 2 SPACES
6. UNDERGROUND STORAGE TANKS -
7. CORNER ID SIGN FOR THE CENTER - INTERSECTION AS GATEWAY INTO THE CITY OF RIVERSIDE. AN ATTRACTIVE AND DYNAMIC ENTRANCE FEATURE SHALL BE PROVIDED ALONG THE PROJECTS STREET FRONTAGES
8. PEDESTRIAN SITE ACCESS SHALL BE PROVIDED NEAR THE INTERSECTION. PEDESTRIAN CONNECTIONS SHALL BE PROVIDED BETWEEN ALL USES ON-SITE
9. 20' WIDE TRUCK TURNING TEMPLATE - FOR FUEL TRUCKS, FIRE TRUCKS AND TRASH TRUCKS
10. PARKING LOT LANDSCAPE DIAMONDS SHALL BE PROVIDED EVERY 4 PARKING SPACES. AVOID USE OF LIGHT POLES IN DIAMONDS. LANDSCAPE FINGERS BETWEEN PARKING SPACES SHALL BE PROVIDED WHERE FEASIBLE

11. LANDSCAPE SETBACK ALONG FREEWAY ROW
12. DECORATIVE PROJECT ENTRANCE PAVING
13. MONUMENT SIGN - PER RIVERSIDE ZONING ORDINANCE TABLE 19-620.
14. STREET TREES TO ENHANCE DRIVE-THRU SCREENING
15. DRIVE-THRU WINDOWS - SCREENED WITH ARCHITECTURAL ELEMENTS - SEE ELEVATIONS
16. LOADING ZONE- PER RIVERSIDE ZONING ORDINANCE 19-580.
17. DRIVE-THRU LANES - DRIVE-THRU LANES SHALL BE SCREENED FROM VIEW THRU ELEV GRADE DIFFERENCES LANDSCAPING ARBORS TRELLISES TO REDUCE VISUAL PRESENCE OF DRIVE-THRU OPS
18. MENU BOARDS FOR DRIVE-THRU RESTAURANT AND CAR WASH
19. TRASH ENCLOSURE
20. FREEWAY SIGN - FREEWAY SIGNAGE SHALL COMPLY WITH STD'S TABLE 19.620.080.C. OF RIVERSIDE MUNICIPAL CODE
21. OFF-SITE IMPROVEMENTS WITHIN 100 FEET OF SITE
22. NEW FIRE HYDRANT

41. 180' OF VEHICULAR STACKING FROM MENU BD TO PU WINDOW
42. CAR WASH PAY STATION
43. EASEMENT TO BE VACATED - SEE CIVIL
45. OUTDOOR SEATING AREA
46. GROUND-MOUNTED UTILITY EQUIPMENT SUCH AS, BUT NOT LIMITED TO, ELECTRIC POWER TRANSFORMERS AND DISTRIBUTION FACILITIES, WATER PUMPS, CABLE TELEVISION BOXES, AND TELECOMMUNICATIONS FACILITIES (NOT INCLUDING POLE-MOUNTED EQUIPMENT) SHALL BE SCREENED FROM VIEW ON ALL SIDES WITH SOLID MASONRY WALLS OR SIMILAR PERMANENT STRUCTURES.

Revision

Appr.

Cld.

By

Date

No.

Title

KA ENTERPRISES MEGA MART
Sycamore Canyon Blvd and Central Ave
Riverside, CA

5820 Oberlin Dr Suite 201
San Diego, CA 92121

858/404-6080
fa x 858/404-6081



For

Scale:

Horizontal

Vertical

N/A

Designed

Drawn

Checked

Approved

Date

18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX

CIVIL ENGINEERING, LAND PLANNING,
SURVEYING, ENVIRONMENTAL SERVICES



18447

SD1.01

APPENDIX B

Pertinent Sections of the City of Riverside Municipal Code and Noise Element to the General Plan

Title 7

NOISE CONTROL

Chapters:

7.05	POLICY AND INTENT
7.10	DEFINITIONS
7.15	ADMINISTRATION AND ENFORCEMENT
7.20	SOUND LEVEL MEASUREMENT
7.23	AMBIENT NOISE LEVELS
7.25	NUISANCE EXTERIOR SOUND LEVEL LIMITS
7.30	NUISANCE INTERIOR SOUND LEVEL LIMITS
7.35	GENERAL NOISE REGULATIONS
7.40	VARIANCE PROCEDURE
7.45	SEVERABILITY

Chapter 7.05

POLICY AND INTENT

Sections:

7.05.010 Policy and intent.

Section 7.05.010 Policy and intent.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this chapter. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment. (Ord. 6273 § 1 (part), 1996)

Chapter 7.10

DEFINITIONS

Sections:

7.10.010	Definitions generally.
7.10.015	A-weighted sound level.
7.10.020	Agricultural property.
7.10.025	Ambient noise level.
7.10.030	Commercial purpose.
7.10.035	Construction.
7.10.040	Community support land use category.
7.10.045	Cumulative period.
7.10.050	Decibel (dB).
7.10.055	Demolition.
7.10.060	Emergency.
7.10.065	Emergency work.
7.10.070	Fixed noise source.
7.10.075	Grading.
7.10.080	Impulsive sound.
7.10.085	Industrial land use category.
7.10.090	Intrusive noise.
7.10.095	Minor maintenance.
7.10.100	Mobile noise source.
7.10.105	Motor vehicle.
7.10.110	Muffler or sound dissipative device.
7.10.115	Noise.
7.10.120	Noise Control Officer.
7.10.125	Noise disturbance.
7.10.130	Noise source.
7.10.135	Noise zone.
7.10.140	Nonurban land use category.
7.10.145	Office/commercial land use category.
7.10.150	Person.
7.10.155	Powered model vehicle.
7.10.160	Public recreation facility land use category.
7.10.165	Public right-of-way.
7.10.170	Public space.
7.10.175	Residential land use category.
7.10.180	Sound.
7.10.185	Sound amplifying equipment.
7.10.190	Sound level.
7.10.195	Sound level meter.
7.10.200	Sound pressure.
7.10.205	Sound pressure level.
7.10.210	Supplementary definitions of technical terms.

Section 7.10.010 Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter. (Ord. 6273 § 1 (part), 1996)

Section 7.10.015 A-weighted sound level.

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level is designated dB(A) or dBA. (Ord. 6273 § 1 (part), 1996)

Section 7.10.020 Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.025 Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location. (Ord. 6273 § 1 (part), 1996)

Section 7.10.030 Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment. (Ord. 6273 § 1 (part), 1996)

Section 7.10.035 Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, or similar action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.040 Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone. (Ord. 6273 § 1 (part), 1996)

Section 7.10.045 Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous. (Ord. 6273 § 1 (part), 1996)

Section 7.10.050 Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (twenty micronewtons per square meter). (Ord. 6273 § 1 (part), 1996)

Section 7.10.055 Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site

improvements, landscaping or utilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.060 Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action. (Ord. 6273 § 1 (part), 1996)

Section 7.10.065 Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.070 Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices. (Ord. 6273 § 1 (part), 1996)

Section 7.10.075 Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements. (Ord. 6273 § 1 (part), 1996)

Section 7.10.080 Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another. (Ord. 6273 § 1 (part), 1996)

Section 7.10.085 Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones. (Ord. 6967 § 2, 2007; (Ord. 6273 § 1 (part), 1996)

Section 7.10.090 Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level. (Ord. 6273 § 1 (part), 1996)

Section 7.10.095 Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state. (Ord. 6273 § 1 (part), 1996)

Section 7.10.100 Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source. (Ord. 6273 § 1 (part), 1996)

Section 7.10.105 Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code. (Ord. 6273 § 1 (part), 1996)

Section 7.10.110 Muffler or sound dissipative device.

"Muffler or sound dissipative device" means a device for abating the sound of escaping gases from an internal combustion engine. (Ord. 6273 § 1 (part), 1996)

Section 7.10.115 Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans. (Ord. 6273 § 1 (part), 1996)

Section 7.10.120 Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance. (Ord. 6273 § 1 (part), 1996)

Section 7.10.125 Noise disturbance.

"Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities or endangers or injures personal or real property. (Ord. 6273 § 1 (part), 1996)

Section 7.10.130 Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor. (Ord. 6273 § 1 (part), 1996)

Section 7.10.135 Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels. (Ord. 6273 § 1 (part), 1996)

Section 7.10.140 Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more. (Ord. 6273 § 1 (part), 1996)

Section 7.10.145 Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.150 Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State. (Ord. 6273 § 1 (part), 1996)

Section 7.10.155 Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power. (Ord. 6273 § 1 (part), 1996)

Section 7.10.160 Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities. (Ord. 6273 § 1 (part), 1996)

Section 7.10.165 Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.170 Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity. (Ord. 6273 § 1 (part), 1996)

Section 7.10.175 Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones. (Ord. 6967 § 2, 2007; Ord. 6273 § 1 (part), 1996)

Section 7.10.180 Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency. (Ord. 6273 § 1 (part), 1996)

Section 7.10.185 Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes. (Ord. 6273 § 1 (part), 1996)

Section 7.10.190 Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply. (Ord. 6273 § 1 (part), 1996)

Section 7.10.195 Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute

specifications for sound level meters, S1.4-1971, or the most recent revision thereof. (Ord. 6273 § 1 (part), 1996)

Section 7.10.200 Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy. (Ord. 6273 § 1 (part), 1996)

Section 7.10.205 Sound pressure level.

"Sound pressure level" in decibels means twenty times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated. (Ord. 6273 § 1 (part), 1996)

Section 7.10.210 Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof. (Ord. 6273 § 1 (part), 1996)

Chapter 7.15

ADMINISTRATION AND ENFORCEMENT

Section:

7.15.005 Administration and enforcement.

Section 7.15.005 Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community Development Department and/or the Riverside Police Department.

B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this Title and to perform all other functions required by this Title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education. (Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

Chapter 7.20

SOUND LEVEL MEASUREMENT

Section:

7.20.010 Sound level measurement.

Section 7.20.010 Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighting scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season. (Ord. 6273 § 1 (part), 1996)

Chapter 7.23

AMBIENT NOISE LEVELS

Sections:

- 7.23.010 Ambient Sound Levels.**
- 7.23.020 Mixed Use Development.**
- 7.23.030 Infill Single-Family Residential Development.**

Section 7.23.010 Ambient Sound Levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the Health and Safety Code of the State of California as may be amended from time to time. (Ord. 6967 § 3, 2007)

Section 7.23.020 Mixed Use Development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Section 7.23.030 Infill Single-Family Residential Development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by 5 decibels. (Ord. 6967 § 3, 2007)

Chapter 7.25

NUISANCE EXTERIOR SOUND LEVEL LIMITS

Section:

7.25.010 Exterior sound level limits.

Section 7.25.010 Exterior sound level limits.

A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:

1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than thirty minutes in any hour; or
2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than fifteen minutes in any hour; or
3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
4. The exterior noise standard of the applicable land use category, plus fifteen decibels, for the cumulative period of more than one minute in any hour; or
5. The exterior noise standard for the applicable land use category, plus twenty decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed sixty dBA for units installed before 1-1-80 and fifty-five dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	Time Period	Noise Level
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA
Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010B

Land Use Category/Zoning Matrix	
Land Use Category	Underlying Zone
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30

NUISANCE INTERIOR SOUND LEVEL LIMITS

Section:

7.30.015 Interior sound level limits.

Section 7.30.015 Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	Time Period	Noise Level
Residential	Night (10 p.m. C 7 a.m.) Day (7 a.m. C 10 p.m.)	35 dBA 45 dBA
School	7 a.m. C 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 6273 § 1 (part), 1996)

Chapter 7.35

GENERAL NOISE REGULATIONS

Sections:

7.35.010 **General noise regulations.**

7.35.020 **Exemptions.**

Section 7.35.010 **General noise regulations.**

A. Notwithstanding the sound level meter standards described in this ordinance, it is nonetheless unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to residential sleeping facilities.
4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.
10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. The following acts, among others, are declared to be disturbing, excessive and offensive noises in violation of this section:

1. Radios, Television Sets, Musical Instruments and similar stationary or mobile devices: Operating, playing or permitting the operation or playing of any radio, television set, audio equipment, drum, musical instrument, or similar device which produces or reproduces sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity. The operation of any such set, instrument, audio equipment, television set, machine or similar device between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at a distance of 50 feet from the building, structure or vehicle in which it is located, shall be prima facie evidence of a violation of this section.

2. Loud Speakers (Amplified Sound): Using, or operating, or permitting to be used or operated, for any purpose, any loud speaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m. such that the sound therefrom creates a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category, except for any non-commercial public speaking, public assembly or other activity for which a variance has been issued.

3. Animals and Birds: Owning, possessing, or permitting to be harbored any animal or bird which frequently or for a continued duration howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial property line.

4. Loading and Unloading: Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a

noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

5. Construction: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on week days and between 5 p.m. and 8 a.m. on Saturdays or at any time on Sunday or federal holidays such that the sound therefrom creates a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category, except for emergency work or by variance. This section does not apply to the use of domestic power tools.

6. Domestic Power Tools: Operating or permitting the operation of any mechanically powered saw, sander, drill grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line. Any motor, machinery, pump, compressor, generator etc., shall be sufficiently muffled and maintained so as not to create a noise disturbance.

7. Powered Model Vehicles: Operating or permitting the operation of powered model vehicles between the hours of 7:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category.

8. Stationary Non-emergency Signaling Devices: Sounding, or permitting the sounding of any signal from any stationary bell, chime, siren, whistle, or similar device intended primarily for non-emergency purposes, from any place, for more than 10 seconds in any hourly period. Houses of worship and the Mission Inn carillons shall be exempt from the operation of this provision. Sound sources covered by this provision and not exempted under this subsection may be exempted by a variance.

9. Emergency Signaling Devices: The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device, except for emergency purposes or for testing. Testing of a stationary emergency signaling device shall not occur before 7 a.m. or after 7 p.m. Any such testing shall only use the minimum cycle test time. In no case shall the test time exceed 10 seconds or occur more than once each calendar month.

10. Vehicle, Motorcycle, Motorboat or Aircraft Repair and Testing: Repairing, rebuilding, modifying or testing any motor vehicle, motorboat or aircraft, or permitting any these activities, in such a manner as to create a noise disturbance across a residential property line, or at any time exceeds the maximum permitted noise level for the underlying land use category shall not be permitted except where said activities are directly related to officially sanctioned events. underlying land use category.

11. Permitting any noise disturbance that is:

a. Plainly audible across property boundaries;

b. Plainly audible through partitions common to two residences within a building;

c. Plainly audible at a distance of 50 feet in any direction from the source of music or sound between the hours of 7:00 a.m. and 10:00 p.m.; or

d. Plainly audible at a distance of 25 feet in any direction from the source of music or sound between the hours of 10:00 p.m. ad 7:00 a.m. (Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

Section 7.35.020 Exemptions.

The following activities shall be exempt from the provisions of this title:

A. Emergency Work. The provisions of this Title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.

B. Entertainment Events. The provisions of this Title shall not apply to those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of seven a.m. and ten p.m.

C. Federal or State Preempted Activities. The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. Minor Maintenance to Residential Property. The provisions of this Title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of seven a.m. and ten p.m.

E. Right-Of-Way Construction. The provisions of this Title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. Public Health, Welfare and Safety Activities. The provisions of this Title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc. (Ord. 6917 § 1, 1996; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40

VARIANCE PROCEDURE

Sections:

- 7.40.010** **Variance procedure.**
- 7.40.020** **Appeals.**

Section 7.40.010 **Variance procedure.**

A. The Zoning Administrator is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Zoning Administrator. The application shall be signed by the property owner or owner's representative using forms supplied by the Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Zoning Administrator may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C. A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Any person who claims to be adversely affected by the allowance of the variance may file a statement with the Zoning Administrator containing any information to support his claim. If the Zoning Administrator determines that a sufficient controversy exists regarding a variance application, the variance may be set for public hearing before the Planning Commission.

D. Public notice of the consideration of a proposed variance from the standards of this chapter shall be provided by the Zoning Administrator by mailing such notice to property owners within three hundred feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Department of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Zoning Administrator or the Planning Commission shall consider comments received from property owners within three hundred feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Zoning Administrator or the Planning Commission finds that:

1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this title;
2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;
3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;
4. The granting of such variance will not be contrary to the objectives of any part of the

adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Zoning Administrator does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council. (Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

Section 7.40.020 Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Zoning Administrator or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the same criteria presented to the Zoning Administrator. (Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45

SEVERABILITY

Section:

7.45.010 Severability

Section 7.45.010 Severability

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional. (Ord. 6328 § 3, 1996)



Although MARB/MIP is located outside of the City and its sphere of influence, noise from the facility will affect both the City and the sphere.

The Public Safety and Land Use Elements contain additional information on airports in and adjacent to Riverside.

The City has worked as part of the March Joint Powers Authority to adjust air traffic patterns into and out of the MARB/MIP. Efforts have been made to minimize exposure of sensitive land uses to excessive noise in the busy airspace of Ontario and Los Angeles International Airports. Additionally, topographic conditions surrounding MARB/MIP also constrain flight patterns. Established patterns associated with MARB/MIP are anticipated to continue into the future, resulting in ongoing noise levels.

STATIONARY SOURCE NOISE

Industrial Noise

Industrial businesses can have a varying degree of impact on adjacent uses. Industrial operations often involve use of mechanical equipment, generators and vehicles that contribute to noise levels at industrial sites, particularly for outdoor activities. Many of Riverside's neighborhoods have homes in close proximity to industrial uses.

Title 7 of the Riverside Municipal Code establishes noise performance criteria to guard against exposure of residential and other noise-sensitive uses to loud industrial-related noise. The noise/land use compatibility criteria in Table N-1 (Characteristics of Noise) will be used in assessing siting of new industrial uses.

Construction Noise

Construction noise typically involves the loudest common urban noise events associated with building demolition, grading, construction, large diesel engines and truck deliveries and hauling. Construction activity, although temporary at any given location, can be substantially disruptive to adjacent uses during the construction period. Riverside Municipal Code Section 7.35.010(B)(5) regulates the allowable hours of construction activity to 7:00 A.M. to 7:00 P.M. on weekdays and 8:00 A.M. to 5:00 P.M. on Saturdays, with no construction activities allowed on Sunday or Federal holidays. In addition, the Municipal Code limits noise levels from construction activities to the maximum permitted exterior noise level for the affected land use.

Infrastructure improvements such as street widenings can also be a source of noise. Street improvement projects will incorporate the City's acoustical assessment procedure to minimize noise impacts.





NOISE ELEMENT

Mechanical Equipment Noise

The motors, pumps and fans that cool and heat our buildings produce point-source noise that most directly affects adjacent land uses. Frequently, this equipment includes components of pure tone noise from the rotational frequency of motors. Although noise levels are generally low from these sources, the fact that such sources may operate continuously and may include pure tones that make them audible at a substantial distance creates potential for conflict. The City's Zoning Code and Municipal Code provisions generally address these conflicts.

Portable Power Equipment

Leaf blowers, lawn mowers, portable generators, electric saws and drills and other similar equipment that people use to maintain their properties create frequent noise during daylight hours. Such disruptions to the ambient sound environment are ubiquitous in the modern city and can produce very high noise levels at the location of the work.

Amplified Sound

Amplified sound includes noise from personal or home audio equipment, automotive audio equipment, outdoor loudspeakers such as those used for paging and amplified sound at music or theatrical performances. Because this sound typically includes music or speech, it is potentially more detectable and more annoying than other sounds of the same noise level. Section 7.35.010 of the Municipal Code establishes limitations on time and magnitude of noise for these sources.

FUTURE NOISE CONDITIONS

Data, including a location map of measurement sites used to create the projected noise contours, can be found in the General Plan EIR.

The most significant noise sources in Riverside — roadways, freeways, railways and air facilities— will continue generating noise into the future. Figure N-5 (2025 Roadway Noise) identifies the projected noise contours for year 2025 largely attributable to roadway traffic; Figure N-6 (2025 Freeway Noise) identifies noise projected from freeway traffic. Projected noise from railroad activity is shown in Figure N-7 (2025 Railway Noise). Noise levels from these surface sources are expected to increase with increased traffic levels anticipated in the Planning Area by 2025.



NOISE ELEMENT

development process, potential noise impacts and appropriate mitigation will be identified.

Similarly, enforcement of the Noise Control Code will address nuisance noise such as loud animals or birds, loud audio equipment, domestic power tools, vehicle repair and testing, powered motor vehicles and construction activities.

Objective N-1: Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.

Policy N-1.1: Continue to enforce noise abatement and control measures particularly within residential neighborhoods.

Policy N-1.2: Require the inclusion of noise-reducing design features in development consistent with standards in Figure N-10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

Policy N-1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

Policy N-1.4: Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Policy N-1.5: Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.

Policy N-1.6: Educate the public about City noise regulations.

Policy N-1.7: Evaluate noise impacts from roadway improvement projects by using the City's Acoustical Assessment Procedure.

Policy N-1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.

APPENDIX C

Manufacturer Data Sheets

AquaJet XT[®]

➤ TOUCH-FREE ROLLOVER



AquaJet XT: touchless rollover for high performance washing.



EVOLUTIONARY WITH A TOUCH OF REVOLUTIONARY

- Ideal touch-free system for gas stations/convenience stores and investor sites
- Leverages the best features of the legacy AquaJet GT® system proven at thousands of sites worldwide
- Adds new technology to enhance wash quality and customer satisfaction while generating incremental revenue for the operator
- Engineered and manufactured in the USA to achieve the lowest total cost of ownership

Innovations that separate you from the competition.

➤ LED LIGHTING



Bright green, red, and yellow lights and reflective decals ensure customers are safely guided into position.

➤ MERCHANDISING DISPLAY



Customized animated graphics help brand your site, illustrate wash functions, up-sell to premium wash packages, and cross-sell to other profit centers.

➤ DRYER OPTIONS



Contour-following dryer (shown) tracks vehicle from optimal distance to dry thoroughly while minimizing energy consumption and avoiding obstacles. Static on-board and freestanding dryers are also available.

➤ K100 CONTROLLER



Provides unparalleled flexibility to create wash programs and control speed to ensure optimal cleaning results and maximize choices for the customer.

➤ THROUGHPUT TO MATCH YOUR SITE



AquaJet XT offers two high pressure pumping plant options to match your throughput needs. Medium volume sites looking for an economical system that still delivers great wash results can choose our CAT 1540 pumping plant. High volume sites needing more throughput can select our CAT 2530 pumping plant which allows you to wash the top and sides in the same pass. Either pumping plant can be located either on-board (shown) to save space or off-board in the equipment room or bay.

Technology to clean better and lower operating costs.



➤ IMPROVED PRESOAK SYSTEM

Presoak nozzles lower completely in the front and back of the vehicle for enhanced coverage. On-board presoak heater minimizes heat loss and maximizes the cleaning power of the presoak chemicals.

➤ TURBO TECHNOLOGY

28 zero degree turbo nozzles with built-in rocker panel blasters thoroughly clean the vehicle while minimizing the electricity, water and chemicals consumed.

➤ IDEAL SPEED FOR GREATER CUSTOMER CONFIDENCE

The travel and lift drives are frequency controlled for a smooth start and variable speed control. There is less stress on components, the machine runs smoothly and customers perceive the carwash to be safer.

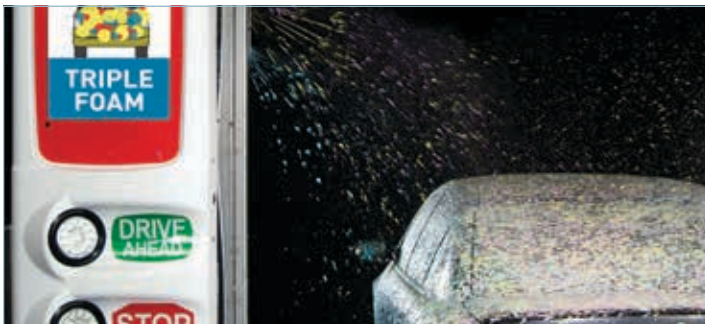
Revenue enhancing options to boost your bottom line.

➤ WHEELJET® WHEEL CLEANING SYSTEM



Our premium wheel cleaning system is angled for better centering, has larger brushes for better coverage, and integrates high pressure for added cleaning power. Our basic HubScrub® system is also available.

➤ TRIPLE-FOAM DETERGENT OR CONDITIONER



Customers love the colorful display and scent provided by tri-color foamed chemicals used to enhance the cleaning process, and are willing to pay more for wash packages that include them.

➤ PREMIUM WAX SYSTEM



Enables the use of chemicals such as Rain-X® to provide extended protection of all vehicle surfaces while driving incremental revenue for the carwash operator.

➤ LOWER OPERATING COSTS

	Time (min:sec)		Chemical (oz)		Water (gal)		Electricity (kW)	
	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer	Volvo S-40	Ford Explorer
Premium Wash (AquaJet XT 700)	3:35	3:54	3.18	3.41	34.4	40.3	1.142	1.251
Express Wash (AquaJet XT 700)	2:10	2:26	2.18	2.36	24.2	29.9	0.641	0.732
Premium Wash (AquaJet XT 300)	4:11	4:24	6.03	6.40	40.1	42.0	1.276	1.340
Express Wash (AquaJet XT 300)	2:57	3:07	5.03	5.35	29.7	31.3	0.830	0.877

Detailed data is available from your Mark VII representative.
Express wash: presoak, dwell, high pressure wash, wax+spot free rinse
Premium wash: undercarriage [not included in wash time], presoak, HubScrub+dwell, high pressure wash, triple foam, high pressure rinse, wax+spot free rinse

Mark VII continues its legacy of engineering highly efficient rollover systems that protect the environment while increasing your bottom line.

➤ DIMENSIONS:

- Machine Height without dryer: 108.5" / 276cm
- Machine Height with on-board static dryer or contouring dryer: 130.3" / 331cm
- Machine Width: 150" / 381cm
- Machine Depth with ABS doors: 52" / 132cm
- Machine Depth with stainless steel doors: 46" / 117cm
- Machine Weight: 3,000 lbs / 1,361 kg

➤ VEHICLE CLEARANCE:

- Height without dryer: 90" / 229cm
- Height with on-board static dryer or contouring dryer: 88.7" / 225cm
- Width at mirrors: 105" / 267cm
- Width at wheel brushes: 85" / 216cm

➤ BAY SIZE:

- Minimum Height without dryer: 111" / 282cm for standard energy chain, 144" / 366cm for narrow bay energy chain option, not including shims
- Minimum Height for on-board contouring or static dryer: 132" / 335cm, not including shims
- Minimum Width: 166" / 422cm (153" / 389cm with narrow bay option)
- Recommended Length: 34'

➤ UTILITIES

- Electrical: 208-230 VAC 60Hz 3Φ, 75 amp with 15 HP or 20 HP on-board dryer or no dryer
- Electrical: 208-230 VAC 60Hz 3Φ, 125 amp with 30 HP on-board dryer
- Minimum Water Pressure: 50 PSI / 3.5 bar
- Maximum Water Pressure: 80 PSI / 5.5 bar
- Minimum Water Demand: 28 GPM / 106 LPM
- Minimum Air Supply: ½" line with 80 PSI / 5.5 bar
- Maximum Air Supply: 150 PSI / 10.3 bar
- Air Consumption Demand: Constant 1 CFM / 28 LPM
Intermittent 3 CFM / 85 LPM
Triple foam 25 CFM / 708 LPM

Everything you need for a successful carwash business.



Mark VII is the North American subsidiary of WashTec AG of Germany, the world's leading manufacturer of vehicle washing equipment. Each day we wash over 2 million vehicles in over 35,000 locations and over 60 countries worldwide.

MARK VII'S PRODUCTS AND SERVICES INCLUDE:

- AquaJet XT® touch-free rollover
- SoftWash XT® soft-touch rollover
- ChoiceWash XT® hybrid rollover
- TurboJet XT® touch-free overhead
- SoftLine® tunnel
- JetWash® self-serve
- Premium and value line chemicals
- Ancillary products (entry systems, water treatment systems, etc.)
- Site selection assistance
- Custom site and bay layouts
- Service contracts
- Technical support
- Wash bay refurbishment



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WashTec AG of Germany is not affiliated with Integrated Services Inc., which markets
a tunnel controller product in the U.S. under the trademark WashTEC. Rain-X is a
trademark of Zep Inc.



Mark VII Equipment Inc.
5981 Tennyson Street
Arvada, CO 80003
Phone: 800.525.8248 or 303.423.4910
Fax: 303.430.0139
Email: markvii@markvii.net
Web: www.markvii.net



Models- 8100, 8500 angled lock bar
8200, 8600 pin lock
Single Door Vacuums

Page 2	Product Information
Page 3	Specifications
Page 4	Important Safety Instructions
Page 5	Product Dimensions
Page 6-8	Installation
Page 8-9	Programming
Page 10	Operating Instructions
Page 10-11	Maintenance & Troubleshooting
Page 12-18	Parts List
Page 19	Wiring Diagram



8100



8200



8500LD



8600LD

Calculated Sound Levels at Typical Distances

- 1) All calculations based on data obtained from testing on standard 9200, 9210, and 9213 vac models with metal domes to assume a worst case scenario.
- 2) Calculations assume an open field condition on a reflective surface (i.e. concrete). Nearby reflective surfaces such as walls may affect actual sound levels.
- 3) Data is to be used as an approximation only. Actual sound levels may vary based on environmental and site-related conditions.

2 Motor Vac - Small Dome																
Wide Open With Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	76.4	70.4	66.9	64.4	62.4	60.9	59.5	58.4	57.3	56.4	55.6	54.8	54.1	53.5	52.9	
Sealed Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	80.5	74.5	71.0	68.5	66.5	64.9	63.6	62.4	61.4	60.5	59.7	58.9	58.2	57.6	57.0	
Attachment Removed	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	74.5	68.5	65.0	62.5	60.6	59.0	57.6	56.5	55.4	54.5	53.7	52.9	52.3	51.6	51.0	

2 Motor Vac - Large Dome																
Wide Open With Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	78.2	72.2	68.7	66.2	64.3	62.7	61.3	60.2	59.1	58.2	57.4	56.6	56.0	55.3	54.7	
Sealed Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	84.2	78.1	74.6	72.1	70.2	68.6	67.2	66.1	65.1	64.2	63.3	62.6	61.9	61.2	60.6	
Attachment Removed	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	78.3	72.3	68.8	66.3	64.3	62.7	61.4	60.2	59.2	58.3	57.5	56.7	56.0	55.4	54.8	

3 Motor Vac - Large Dome																
Wide Open With Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	81.3	75.3	71.8	69.3	67.3	65.7	64.4	63.2	62.2	61.3	60.5	59.7	59.0	58.4	57.8	
Sealed Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	85.9	79.9	76.3	73.8	71.9	70.3	69.0	67.8	66.8	65.9	65.1	64.3	63.6	63.0	62.4	
Attachment Removed	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	79.6	73.6	70.1	67.6	65.6	64.0	62.7	61.5	60.5	59.6	58.8	58.0	57.3	56.7	56.1	

Dual Vac, Both Sides In Operation (Approximate - Derived From 2 Motor Large Dome Data)																
Wide Open With Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	81.2	75.2	71.7	69.2	67.3	65.7	64.3	63.2	62.1	61.2	60.4	59.6	59.0	58.3	57.7	
Sealed Attachment	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	87.2	81.1	77.6	75.1	73.2	71.6	70.2	69.1	68.1	67.2	66.3	65.6	64.9	64.2	63.6	
Attachment Removed	Distance From Vac in Feet															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Sound Level (dB)	81.3	75.3	71.8	69.3	67.3	65.7	64.4	63.2	62.2	61.3	60.5	59.7	59.0	58.4	57.8	

48PG03-14

Ultra High Efficiency Single Package Gas Heating/Electric Cooling
Commercial Rooftop Units with PURON® (R-410A) Refrigerant
2 to 12.5 Nominal Tons



Product Data



OPERATION AIR QUANTITY LIMITS

48PG03-14 Vertical and Horizontal Units

UNIT 48PG	COOLING (cfm)		HEATING (cfm)*	
	Min	Max	Min	Max
03	600	1000	600	1680
04 (Low Heat)	900	1500	600	1680
04 (Med Heat)	900	1500	940	2810
04 (High Heat)	900	1500	1130	2820
05 (Low Heat)	1200	2000	600	1680
05 (Med Heat)	1200	2000	940	2810
05 (High Heat)	1200	2000	1130	2820
06 (Low Heat)	1500	2500	940	2810
06 (Med Heat)	1500	2500	1130	2820
06 (High Heat)	1500	2500	1510	2520
07 (Low Heat)	1800	3000	940	2810
07 (Med Heat)	1800	3000	1130	2820
07 (High Heat)	1800	3000	1510	2520
08 (Low Heat)	2250	3750	2060	5160
08 (Med Heat)	2250	3750	2110	6870
08 (High Heat)	2250	3750	2450	4900
09 (Low Heat)	2550	4250	2060	5160
09 (Med Heat)	2550	4250	2110	6870
09 (High Heat)	2550	4250	2450	4900
12 (Low Heat)	3000	5000	2110	6870
12 (Med Heat)	3000	5000	2450	4900
12 (High Heat)	3000	5000	3150	6300
14 (Low Heat)	3750	6250	2110	6870
14 (Med Heat)	3750	6250	2450	4900
14 (High Heat)	3750	6250	3150	6300

*Consult tables on pages 8 and 9 if using a stainless steel heat exchanger.

Outdoor Sound Power (Total Unit)

UNIT 48PG	A-WEIGHTED* (dB)	OCTAVE BAND LEVELS dB							
		63	125	250	500	1000	2000	4000	8000
03	75.0	82.6	79.9	75.7	73.3	70.0	64.3	58.4	50.5
04	73.2	79.8	77.2	74.1	70.1	68.0	63.6	58.4	51.9
05	71.9	79.7	79.6	72.6	69.6	66.0	61.4	56.4	48.5
06	78.5	82.2	82.6	79.5	75.7	73.9	68.6	64.0	56.3
07	78.5	87.5	83.0	78.5	76.3	73.8	68.4	63.8	56.5
08	80.0	91.7	83.6	81.0	77.9	75.0	69.9	66.0	59.3
09	79.9	89.1	82.7	80.0	77.7	75.0	70.2	66.3	57.8
12	80.0	90.4	83.1	80.9	77.8	75.2	70.0	66.1	57.6
14	83.3	86.4	85.9	85.3	81.8	78.2	72.2	67.9	59.9

LEGEND

dB – Decibel

* Sound Rating AHRI or tone Adjusted, A-Weighted Sound Power Level in dB. For sizes 03-12, the sound rating is in accordance with AHRI Standard 270-1995. For sizes 14, the sound rating is in accordance with AHRI 370-2010.

Memo

Re: Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post

The sound pressure levels from the menu board or speaker post are as follows:

1. Sound pressure level (SPL) contours (A weighted) were measured on a typical HME SPP2 speaker post. The test condition was for pink noise set to 84 dBA at 1 foot in front of the speaker. All measurements were conducted outside with the speaker post placed 8 feet from a non-absorbing building wall and at an oblique angle to the wall. These measurements should not be construed to guarantee performance with any particular speaker post in any particular environment. They are typical results obtained under the conditions described above.
2. The SPL levels are presented for different distances from the speaker post:

Distance from the Speaker (Feet)	SPL (dBA)
1 foot	84 dBA
2 feet	78 dBA
4 feet	72 dBA
8 feet	66 dBA
16 feet	60 dBA
32 feet	54 dBA

3. The above levels are based on factory recommended operating levels, which are preset for HME components and represent the optimum level for drive-thru operations in the majority of the installations.

Also, HME incorporates automatic volume control (AVC) into many of our Systems. AVC will adjust the outbound volume based on the outdoor, ambient noise level. When ambient noise levels naturally decrease at night, AVC will reduce the outbound volume on the system. See below for example:

Distance from Outside Speaker	Decibel Level of standard system with 45 dB of outside noise <u>without</u> AVC	Decibel level of standard system with 45 dB of outside noise <u>with</u> AVC active
1 foot	84 dBA	60 dBA
2 feet	78 dBA	54 dBA
4 feet	72 dBA	48 dBA
8 feet	66 dBA	42 dBA
16 feet	60 dBA	36 dBA

If there are any further questions regarding this issue please contact HME customer service at 1-800-848-4468.

Thank you for your interest in HME's products.

APPENDIX D

Cadna Analysis Data and Results

EILAR ASSOCIATES, INC.
Acoustical and Environmental Consulting

Cadna Noise Model - Sound Levels														
Name	ID	Type		Oktave Spectrum (dB)										Source
			Weight	63	125	250	500	1000	2000	4000	8000	A	lin	
DT Speaker	L1	Lw (c)	A				84.5					84.5	87.7	Mfr
AquaDri C-30	L2	Lw (c)		106.5	110.5	107.4	107.9	109	107.1	104.6	101.4	113.7	116.5	Manufacturer and Measured
Carrier 48PG08 (7.5-ton)	L3	Lw		91.7	83.6	81	77.9	75	69.9	66	59.3	80.3	92.9	Mfr
Vacuum	L4	Lw		86.9	82.7	89.6	84.7	89.5	91.3	92.5	86.7	97.4	98	Manufacturer and Measured

Cadna Noise Model - Point Sources									
Name	ID	Result. PWL	Lw / Li		Height	Coordinates			Operating Time
		Day	Type	Value		X	Y	Z	
		(dBA)			(m)	(m)	(m)	(m)	(min/hr)
DT1	S_1	84.5	Lw	L1	1.22	158.61	222.36	416.22	
DT2	S_2	84.5	Lw	L1	1.22	164.05	218.46	416.22	
Car Wash	S_3	113.7	Lw	L2	1.83	254.52	124.39	416.83	12
CS HVAC	S_4	80.3	Lw	L3	5.79	208.05	141.65	420.79	
FF1 HVAC	S_5	80.3	Lw	L3	5.79	178.39	189.59	420.79	
VAC1	S_6	97.4	Lw	L4	1.52	255.41	104.31	416.52	
VAC2	S_7	97.4	Lw	L4	1.52	255.51	104.76	416.52	

EILAR ASSOCIATES, INC.
ACOUSTICAL AND ENVIRONMENTAL CONSULTING

Cadna Noise Model - Buildings							
Name	ID	Height	Coordinates				Absorption
		(m)	X	Y	Z	Ground	
			(m)	(m)	(m)	(m)	
Fast Food 1	BL_1	4.57	172.39	209.62	419.57	415	0.37
			175.11	210.69	419.57	415	
			188.92	182.54	419.57	415	
			178.13	177.69	419.57	415	
			164.1	205.31	419.57	415	
			172.74	208.98	419.57	415	
C-Store	BL_2	4.57	193.71	141.72	419.57	415	0.37
			195.46	142.55	419.57	415	
			216.63	151.8	419.57	415	
			222.38	140.88	419.57	415	
			199.13	130.3	419.57	415	

Cadna Noise Model - Barriers										
Name	ID	Coordinates					Cantilever		Absorption	
		X	Y	Z	Ground	Z-Ext	horz	vert	Left	Right
		(m)	(m)	(m)	(m)	(m)	(m)	(m)		
Tunnel Wall 1	B_1	247.62	131.62	419.57	415				0.37	0.37
		247.17	131.31	419.57	415					
		259.14	113.68	419.57	415					
		259.78	114.1	419.57	415					
Tunnel Wall 2	B_2	250.53	133.78	419.57	415				0.37	0.37
		251.03	134.14	419.57	415					
		263.2	116.28	419.57	415					
		262.84	116.05	419.57	415					
Tunnel Roof	B_3	251.03	134.14	419.57	415		4.85		0.37	0.37
		263.21	116.27	419.57	415					
Tunnel Wall 3	B_4	259.13	113.68	419.57	415	0.91			0.37	0.37
		263.21	116.28	419.57	415					
Tunnel Wall 4	B_5	247.08	131.23	419.57	415	0.91			0.37	0.37
		251.02	134.13	419.57	415					

EILAR ASSOCIATES, INC.
ACOUSTICAL AND ENVIRONMENTAL CONSULTING

Cadna Noise Model - Contour Lines											
Name	ID	Coordinates			Name	ID	Coordinates				
		X	Y	Z			X	Y	Z		
		(m)	(m)	(m)			(m)	(m)	(m)		
1	C_1	136.25	-172.22	417	7	C_7	147.09	237.32	415		
		166.94	-167.99	419			176.43	178.31	415		
		307.18	-155.29	419			199.43	129.64	415		
		383.39	-134.65	425			217.77	93.3	415		
		487.64	-112.95	433			228.1	87.97	415		
		519.39	-100.78	437			254.77	94.97	415		
		557.49	-100.78	434			266.44	106.97	415		
2	C_2	71.16	-165.34	410			264.11	116.97	415		
		105.56	-105.54	406			194.1	220.32	415		
		147.36	-80.14	407			167.43	244.99	415		
		307.71	-100.25	403			156.76	245.99	415		
		432.6	-24.04	416			147.76	238.32	415		
		482.88	-25.1	425			-22.84	421.61	400		
3	C_3	85.98	18.82	403			8	C_8	-218.87	304.26	400
		195.52	-44.68	405	-219.54	-35.11			400		
		295.01	-52.62	405	47.83	90.9			400		
		399.79	-15.58	416	-26.18	411.61			400		
4	C_4	80.68	29.93	403	9	C_9			191.18	412.28	415
		220.92	45.81	412					138.51	276.26	415
		300.83	19.35	412					281.86	164.24	415
		398.73	18.82	419					466.55	56.9	415
		546.38	46.87	424			599.24	230.92	415		
5	C_5	64.13	57.96	405			254.53	409.61	415		
		168.3	73.08	410			199.19	410.94	415		
		221.22	77.28	412	472.81	-177.76	440				
		256.5	88.2	415	349.46	-166.42	440				
6	C_6	306.49	124.32	416	10	C_10	238.78	-188.42	440		
		8.69	305.35	416			239.44	-198.43	440		
		86.81	265.03	415			518.81	-198.43	440		
		161.58	124.74	412			517.48	-175.76	440		
		150.66	79.38	408			477.47	-177.76	440		
		33.89	63	406							

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Acoustical and Environmental Consulting

Cadna Noise Model - Noise Levels at Receivers						
Name	ID	Level Lr	Height	Coordinates		
		Day		X	Y	Z
		(dBA)	(m)	(m)	(m)	(m)
South	R_1	45.8	1.52	384.79	-107.78	422.11
West	R_2	46.8	1.52	164.94	115.35	413.31