j.c. brennan & associates
consultants in acoustics
P.O. Box 6748 • Auburn, California 95604
1287 High Street • Auburn, California 95603
p.530.823.0960 • f.530.823.0961 • www.jcbrennanassoc.com

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October 22, 2015

Mr. Dan Biswas
SimoneCRE Abbie, LLC
511 North Scottsdale Road, Suite 200
Scottsdale, AZ 85250

Subject: Georgetown Dollar General Store Revised HVAC Noise Calculations

Dear Mr. Biswas:

This is intended to be a supplement and revision to the Georgetown, California Dollar General Environmental Noise Assessment *(Environmental Noise Assessment, Dollar General Store - Georgetown, Prepared for: SimoneCRE Abbie, LLC, Prepared by: j.c. brennan & associates, Inc., October 23, 2014)*.

Previous Report

The original analysis assumed the following in the HVAC calculations:

> *Mechanical Equipment Noise*
>
> *The heating, ventilation, and air-conditioning (HVAC) systems for the store will consist of packaged rooftop air conditioning systems. A building of 10,000 square feet would require HVAC units totaling approximately (5-ton).*
>
> *j.c. brennan and associates, Inc., used data collected from a similar project using two Bryant Model 574-DNWA 36060 (3-ton), roof mounted HVAC units. Each of the units have a sound power level of 75 dBA, per the manufacturer's cut-sheets (Appendix B).*
>
> *Based upon the site plan, the nearest residential property lines are located approximately 220 feet northwest of the nearest proposed building facade. The two HVAC units are located at the following distances from the nearest property line to the northwest:*
>
> *Hemispherical stationary noise sources will attenuate at a rate of 6 dB per doubling of distance. This is a 20 log attenuation rate. Based upon the attenuation over distance, the noise levels associated with each unit and the cumulative noise from 2 HVAC units can be calculated at the nearest property*

line. Table 4 shows the calculated noise level from the HVAC units. This does not account for shielding from the roof parapets and the roof lines.

Table 4 (From Previous Report)
Calculated Roof-top HVAC Noise Levels
At the Nearest West Property Line

Unit	*Distance to Residential Property Line to the North West*	*Calculated Individual HVAC Unit Noise Level*	***Calculated Cumulative Noise Levels***
1	*220 feet*	*28 dBA*	
2	*220 feet*	*28 dBA*	
			31 dBA

Therefore predicted HVAC noise generations would comply with the El Dorado County General Plan Noise Element hourly nighttime 45 dB L_{eq} and 55 dB L_{max} noise level standards.

Corrected Analysis

Based upon comments received on the analysis, it is clear that 5-tons of cooling is not sufficient for the proposed project. The project applicant has indicated that the mechanical plan indicates that there are (3) 7.5-ton units and (1) 5-ton units on the roof of the proposed project. The cut-sheet for the proposed units indicates that a 7.5-ton unit has an outdoor sound power level (PWL) of 83 dBA. Assuming all four units have a PWL of 83 dBA, the overall PWL is 89 dBA. Calculating the overall sound level from the nearest HVAC unit to the nearest residence and B&B at a conservative distance of 150-feet, results in a sound level of 45.5 dBA Leq/Lmax. This does not account for shielding from the pitched roof or parapet. Based upon the design, the roof line and pitched roof will block line-of-sight to each of the units.

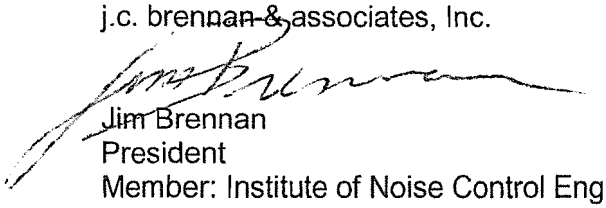
j.c. brennan & associates, Inc. utilized a barrier analysis to determine the minimum shielding expected at the nearest residence. The barrier analysis indicates a minimum shielding of 5 dBA. Therefore, the HVAC noise levels are expected to be less than 40 dBA Leq/Lmax, and will comply with the El Dorado County daytime and nighttime noise level standards.

Attached is the cut-sheet for the HVAC equipment noise levels.

If you have questions, please contact me at 530-823-0960, or jbrennan@jcbrennanassoc.com.

Respectfully submitted,

j.c. brennan & associates, Inc.



Jim Brennan
President
Member: Institute of Noise Control Engineering
file: 2014-212 - Revised HVAC Calculations

Appendix A
Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
$L_{(n)}$	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L_{50} is the sound level exceeded 50% of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is s rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Sound Performance

Indoor Sound Power Levels

Size (Tons)	Model	CFM	ESP (IWG)	Blower		Sound Power, dB (10^{-12}) Watts							
						Sound Rating[1]	Octave Band Centerline Frequency (Hz)						
				RPM	BHP	dB (A)	63	125	250	500	1000	2000	4000	8000
078 (6.5)	ZH/ZJ	2600	0.6	812	1.14	74	71	73	73	71	69	65	65	60
090 (7.5)	ZH/ZJ	3000	0.6	854	1.47	77	74	76	76	74	72	68	68	63
102 (8.5)	ZH/ZJ	3400	0.6	872	1.65	80	77	79	79	77	75	71	71	66
120 (10)	ZH/ZJ	4000	0.6	959	2.29	83	80	82	82	80	78	74	74	69
150 (12.5)	ZH/ZJ	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
ZH/ZJ078-150

Size (Tons)	Model	Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)						
			125	250	500	1000	2000	4000	8000
078 (6.5)	ZH	83	88.0	82.5	81.5	78.0	73.0	69.0	62.0
090 (7.5)	ZH	83	89.5	83.5	82.0	78.0	72.5	68.0	60.5
102 (8.5)	ZH	90	93.5	92.5	88.0	84.5	79.0	74.5	68.0
120 (10)	ZH	90	94.0	92.0	88.5	84.5	80.0	75.5	68.5
150 (12.5)	ZH	84	90.0	84.5	81.5	77.5	72.0	68.5	61.5
078 (6.5)	ZJ	83	88.0	82.5	81.5	78.0	73.0	69.0	62.0
090 (7.5)	ZJ	83	89.5	83.5	82.0	78.0	72.5	68.0	60.5
102 (8.5)	ZJ	83	89.0	84.5	81.5	78.0	72.5	68.5	70.5
120 (10)	ZJ	83	89.5	83.5	81.0	78.0	72.0	68.5	70.5
150 (12.5)	ZJ	84	90.0	84.5	81.5	77.5	72.0	68.5	61.5

1. Rated in accordance with ARI 270 standard.

Appendix C

Barrier Insertion Loss Calculation

Project Information:

Job Number: 2014-212
Project Name: Georgetown Dollar General
Location(s): 1

Noise Level Data:

Source Description: HVAC
Source Noise Level, dBA: 46
Source Frequency (Hz): 1000
Source Height (ft): 15

Site Geometry:

Receiver Description: Nearest Res
Source to Barrier Distance (C_1): 20
Barrier to Receiver Distance (C_2): 130

Pad/Ground Elevation at Receiver: 10
Receiver Elevation[1]: 15
Base of Barrier Elevation: 12
Starting Barrier Height 3

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
15	3	-5	41	No
16	4	-6	40	Yes
17	5	-7	39	Yes
18	6	-8	37	Yes
19	7	-10	36	Yes
20	8	-11	35	Yes
21	9	-12	34	Yes
22	10	-13	33	Yes
23	11	-14	32	Yes
24	12	-15	31	Yes
25	13	-15	31	Yes

Notes: 1.Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)

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