MD ACOUSTICS
Sound Solutions for Planning and Design
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February 5, 2021

Mr. Reza Amirrezvani
SSCW Companies
14425 W McDowell Road, Suite F-108
Goodyear, AZ 85395

Subject: SuperStar Express Car Wash @ 5810 West Thunderbird Road – Noise Assessment – City of Glendale, AZ

Dear Mr. Amirrezvani:

MD Acoustics, LLC (MD) has completed a noise assessment for the proposed SuperStar Express Car Wash located at 5810 West Thunderbird Road, in Glendale AZ. This assessment reviews the projected car wash operational noise levels and compares to the City's noise ordinance. The project proposes an approximately 116-foot car wash tunnel with 28 covered vacuum bays.

1.0 Assessment Overview

This assessment evaluates the projections operational noise and compares to the City's noise ordinance for informational purposes. The project location map is located in Exhibit A. The site plan utilized for the project is indicated in Exhibit B. It should be noted that the nearest residences are located 700-feet to the north. A glossary of Acoustical Terms is located in Appendix A.

2.0 Acoustical Requirements

The City of Glendale outlines their noise regulations and standards within the Code of Ordinances from the Municipal Code. Chapter 25, Section 25-64 outlines the noise standards and is as follows:

a) It shall be unlawful for any person to make or continue, or cause or permit to be made or continued, any excessive, unnecessary, or offensive noise that disturbs the peace and quiet or that causes discomfort or annoyance to two or more independent witnesses who are not related.

b) This article is intended to reduce the amount of return visits by law enforcement. Subsequent visits by law enforcement will be cause for abatement of such disturbance and will require a mandatory restitution assessment for the law enforcement subsequent response services as a term of the sentencing.

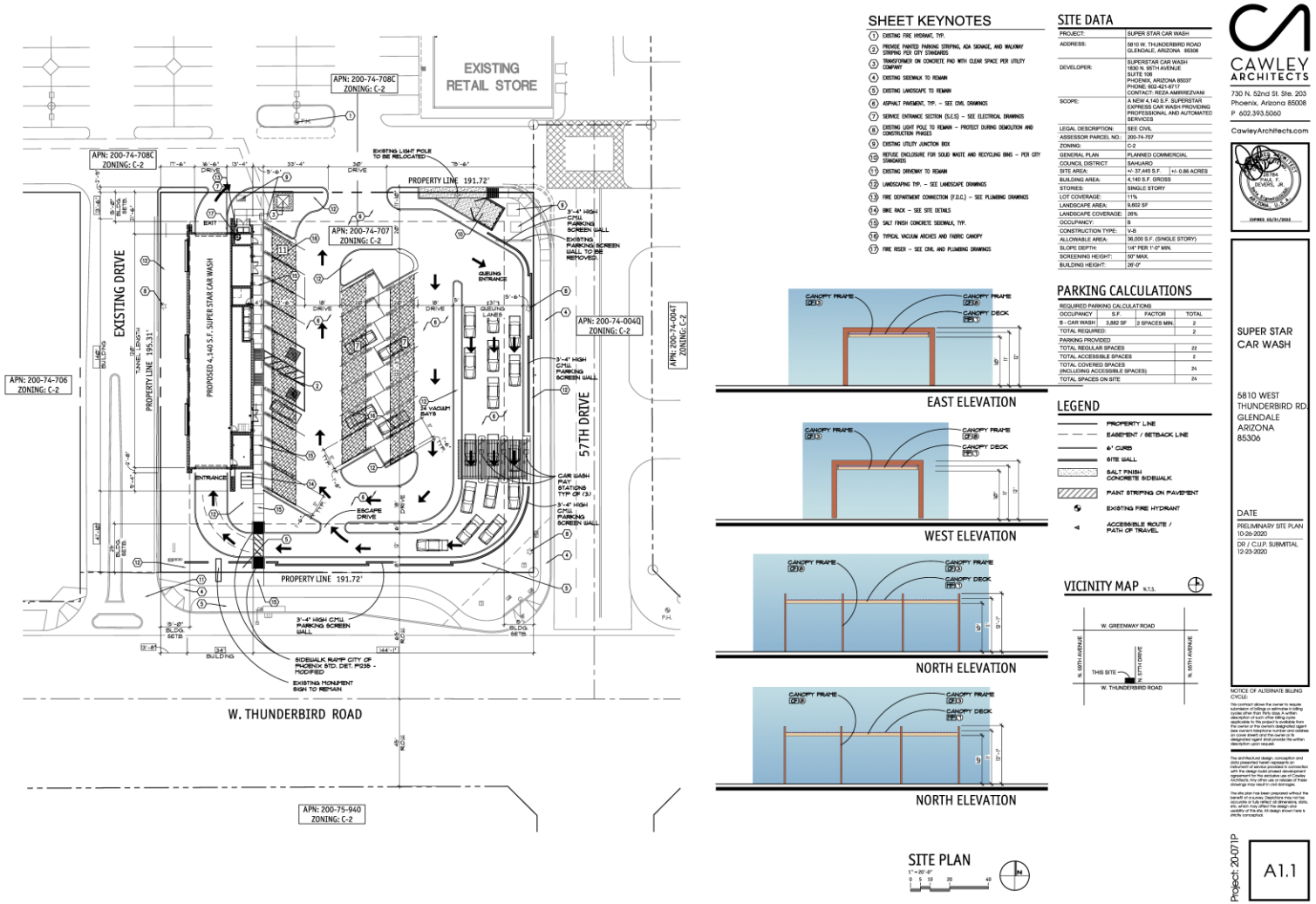
3.0 Study Method and Procedure

SoundPLAN Acoustic Model

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations.

Exhibit A
Location Map

Exhibit B
Site Plan



SHEET KEYNOTES

1. EXISTING FIRE HYDRANT, TYP.
2. PROVIDE PAINTED PARKING STRIPING, ADA SIGNAGE, AND WALKWAY STRIPING PER CITY STANDARDS
3. TRANSFORMER ON CONCRETE PAD WITH CLEAR SPACE PER UTILITY COMPANY
4. EXISTING SIDEWALK TO REMAIN
5. EXISTING LANDSCAPE TO REMAIN
6. ASPHALT PAVEMENT, TYP. – SEE CIVIL DRAWINGS
7. SERVICE ENTRANCE SECTION (S.E.S.) – SEE ELECTRICAL DRAWINGS
8. EXISTING LIGHT POLE TO REMAIN – PROTECT DURING DEMOLITION AND CONSTRUCTION PHASES
9. EXISTING UTILITY JUNCTION BOX
10. REFUSE ENCLOSURE FOR SOLID WASTE AND RECYCLING BINS – PER CITY STANDARDS
11. EXISTING DRIVEWAY TO REMAIN
12. LANDSCAPING TYP. – SEE LANDSCAPE DRAWINGS
13. FIRE DEPARTMENT CONNECTION (F.D.C.) – SEE PLUMBING DRAWINGS
14. BIKE RACK – SEE SITE DETAILS
15. SALT FINISH CONCRETE SIDEWALK, TYP.
16. TYPICAL VACUUM ARCHES AND FABRIC CANOPY
17. FIRE RISER – SEE CIVIL AND PLUMBING DRAWINGS

SITE DATA

PROJECT:	SUPER STAR CAR WASH
ADDRESS:	5810 W. THUNDERBIRD ROAD GLENDALE, ARIZONA 85306
DEVELOPER:	SUPERSTAR CAR WASH 1830 N. 95TH AVENUE SUITE 106 PHOENIX, ARIZONA 85037 PHONE: 602-421-6717 CONTACT: REZA AMIRKEZVANI
SCOPE:	A NEW 4,140 S.F. SUPERSTAR EXPRESS CAR WASH PROVIDING PROFESSIONAL AND AUTOMATED SERVICES
LEGAL DESCRIPTION:	SEE CIVIL
ASSESSOR PARCEL NO.:	200-74-707
ZONING:	C-2
GENERAL PLAN	PLANNED COMMERCIAL
COUNCIL DISTRICT:	SAHUARO
SITE AREA:	+/- 37,445 S.F. +/- 0.86 ACRES
BUILDING AREA:	4,140 S.F. GROSS
STORIES:	SINGLE STORY
LOT COVERAGE:	11%
LANDSCAPE AREA:	9,602 SF
LANDSCAPE COVERAGE:	26%
OCCUPANCY:	B
CONSTRUCTION TYPE:	V-B
ALLOWABLE AREA:	36,000 S.F. (SINGLE STORY)
SLOPE DEPTH:	1/4" PER 1'-0" MIN.
SCREENING HEIGHT:	50" MAX.
BUILDING HEIGHT:	26'-0"

PARKING CALCULATIONS

REQUIRED PARKING CALCULATIONS

OCCUPANCY	S.F.	FACTOR	TOTAL
B - CAR WASH	3,882 SF	2 SPACES MIN.	2
TOTAL REQUIRED:			2
PARKING PROVIDED			
TOTAL REGULAR SPACES			22
TOTAL ACCESSIBLE SPACES			2
TOTAL COVERED SPACES (INCLUDING ACCESSIBLE SPACES)			24
TOTAL SPACES ON SITE			24

LEGEND

- PROPERTY LINE
- EASEMENT / SETBACK LINE
- 6" CURB
- SITE WALL
- SALT FINISH CONCRETE SIDEWALK
- PAINT STRIPING ON PAVEMENT
- EXISTING FIRE HYDRANT
- ACCESSIBLE ROUTE / PATH OF TRAVEL

VICINITY MAP

SITE PLAN

1" = 20'-0"
0 5 10 20 40

CAWLEY ARCHITECTS
730 N. 52nd St. Ste. 203
Phoenix, Arizona 85008
P. 602.393.5060
CawleyArchitects.com

SUPER STAR CAR WASH

5810 WEST THUNDERBIRD RD.
GLENDALE
ARIZONA
85306

DATE
PRELIMINARY SITE PLAN 10-26-2020
DR / CLUP SUBMITTAL 12-23-2020

NOTICE OF ALTERNATE BILLING CYCLE:

Project: 20-071P
A1.1

SP's software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (vacuums, vacuum turbine motors and car wash blowers at the exit). The SP model assumes a total of 28 vacuums and the dryer system are operating simultaneously (worst-case scenario), when the noise will in reality be intermittent and lower in noise level.

In addition, the modeling takes into account existing property line walls, commercial buildings, and equipment enclosures proposed for the vacuum turbine. The reference vacuum equipment sound level data is provided in Appendix B.

All other noise producing equipment (e.g., compressors, pumps) will be housed within mechanical equipment rooms.

The following outlines the project design features:

1. The project will incorporate approximately twelve (12) 15-HP Sonny Blowers within the tunnel.

2. The project proposes to house the vacuum turbine motors inside the attached fully enclosed equipment room.

SoundPlan input and output values are provided in Appendix C.

4.0 Noise Level Projections and Recommendations

The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes the blowers, vacuums and equipment are always operational when in reality the noise will be intermittent and cycle on/off depending on the customer usage.

The modeling takes into account the proposed tunnel and equipment design, enclosure for the vacuum turbines. Project operations are anticipated to occur within the City's allowable daytime standards.

A total of four (4) receptors (R1 – R4) were modeled to evaluate the proposed project's operational impact. R1 – R4 represents the noise level to the nearest commercial uses.

All yellow dots represent either a property line or a sensitive receptor such as an outdoor sensitive area (e.g. courtyard, patio, backyard, etc).

Exhibit C illustrates the noise level projections associated with the car wash noise operations when all equipment is fully active (even though the noise will be intermittent). The noise projections demonstrate that the operational noise level to the nearest commercial uses will range between 55 to 62 dBA. The noise level at the residences to the north will be 36 dBA.

It is anticipated that within a 200 to 300 ft radius the car wash noise levels will be audible. Beyond said radius, local traffic noise becomes the dominate noise source and the car wash noise gets masked from local traffic. Residences are located 700 feet north of the site are outside the confluence of the car wash noise. In addition, existing retail structures further block the line of sight of the car wash to the residences.

It should be noted that the City of Glendale does not have a specific not-to-exceed noise limit. Therefore, this study compares the predicted car wash noise level to the estimated baseline traffic noise condition.

It is estimated that there are 15,000 to 20,000 average daily traffic volumes (ADTs) along Thunderbird Blvd. Based on the ADTs, vehicle speed, vehicle mix, the calculated noise level at 50-ft from the centerline of the roadway would be 68 dBA (see Appendix D). When extrapolating the data out to the existing commercial buildings north of the project site the anticipated baseline noise level is 55 dBA. The anticipated traffic noise level to the residences to the north (approximately 900 feet from the centerline) would be 48 to 52dBA.

When comparing the predicted car wash noise levels to the estimated baseline noise levels at the residences to the north, it is anticipated that the noise level will be 36 dBA which is more than 10 dBA quieter than the existing condition. The noise level will not increase at the residences to the north.

5.0 Conclusions

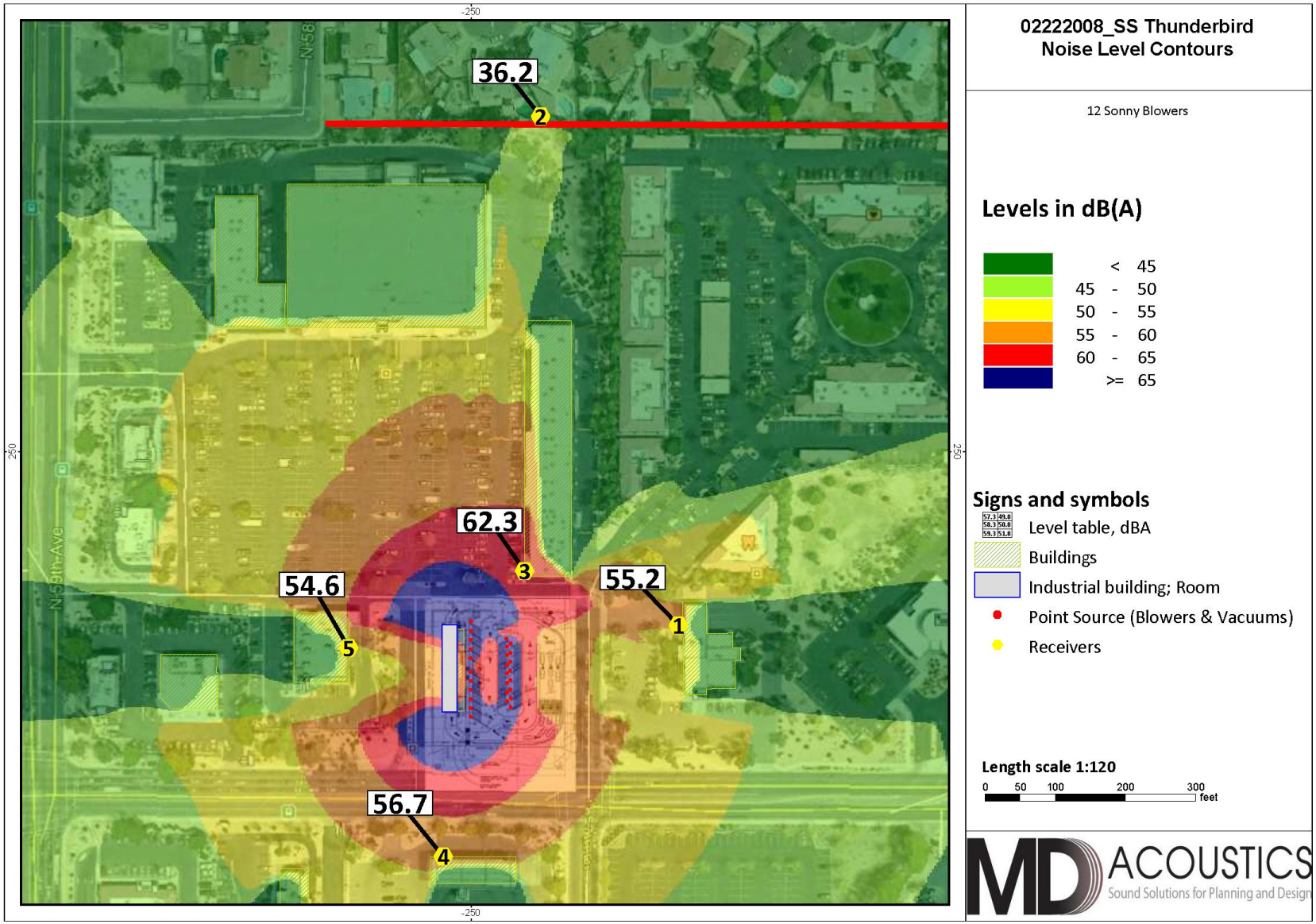
MD is pleased to provide this noise assessment for the SuperStar Express Car Wash project. Project operations are anticipated to comply with the City's noise ordinance. If you have any questions regarding this analysis, please call our office at (602) 774-1950.

Sincerely,
MD Acoustics, LLC

Mike Dickerson, INCE
Principal

Robert Pearson
Acoustical Consultant

Exhibit C
Operational Noise Levels



Appendix A
Glossary of Acoustical Terms

Glossary of Terms

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Day-Night-Level (DNL or LDN): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90 and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Noise Criteria (NC) Method: This metric plots octave band sound levels against a family of reference curves, with the number rating equal to the highest tangent line value as demonstrated in Figure 1.

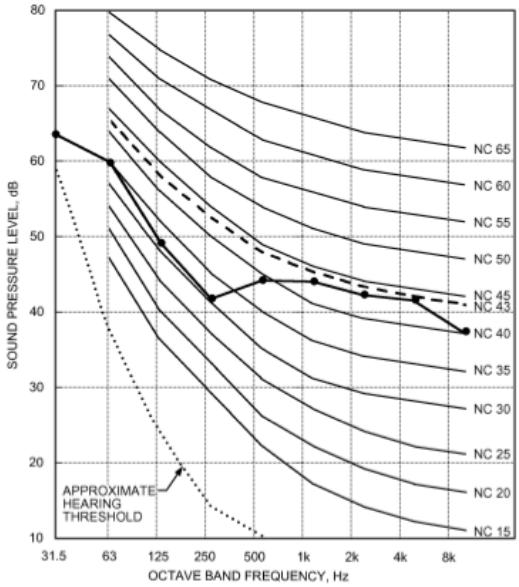
Percent Noise Levels: See L(n).

Room Criterion (RC) Method: When sound quality in the space is important, the RC metric provides a diagnostic tool to quantify both the speech interference level and spectral imbalance.

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

FIGURE 1: Sample NC Curves and Sample Spectrum Levels



***Sound Transmission Class (STC*)**: To quantify STC, a Transmission Loss (TL) measurement is performed in a laboratory over a range of 16 third-octave bands between 125 – 4,000 Hertz (Hz). The average human voice creates sound within the 125 – 4,000 Hz 1/3rd octave bands.

STC is a single-number rating given to a particular material or assembly. The STC rating measures the ability of a material or an assembly to resist airborne sound transfer over the specified frequencies (see ASTM International Classification E413 and E90). In general, a higher STC rating corresponds with a greater reduction of noise transmitting through a partition.

STC is highly dependent on the construction of the partition. The STC of a partition can be increased by: adding mass, increasing or adding air space, adding absorptive materials within the assembly. The STC rating does not assess low frequency sound transfer (e.g. sounds less than 125 Hz). Special consideration must be given to spaces where the noise transfer concern has lower frequencies than speech, such as mechanical equipment and or/or music. The STC rating is a lab test that does not take into consideration weak points, penetrations, or flanking paths.

Even with a high STC rating, any penetration, air-gap, or “flanking path can seriously degrade the isolation quality of a wall. Flanking paths are the means for sound to transfer from one space to

another other than through the wall. Sound can flank over, under, or around a wall. Sound can also travel through common ductwork, plumbing or corridors. Noise will travel between spaces at the weakest points. Typically, there is no reason to spend money or effort to improve the walls until all weak points are controlled first.

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

Appendix B

Referenced Equipment Noise Levels

Project: Sound Library

Job Number: 0000-2020-02

Site Address/Location: 1555 W Warner Rd, Gilbert, AZ 85233

Date: 04/05/2020

Field Tech/Engineer: Robert Pearson

Source/System: Vacutec System Averaged

General Location: Measured @ 1.5'

Sound Meter: NTi XL2 **SN:** A2A-05967-E0

Settings: A-weighted, slow, 1-sec, 10-sec duration

Meteorological Cond.: 80 degrees, 2 mph wind

Site Observations:

Clear sky, measurements were performed within 1.5ft of source. Measurements were performed while the vacuum was positiioned at threee (3) different positions. Holstered, unholstered and inside a car. This data is utilized for acoustic modeling purposes and represents an average sound level at a vacuum station.

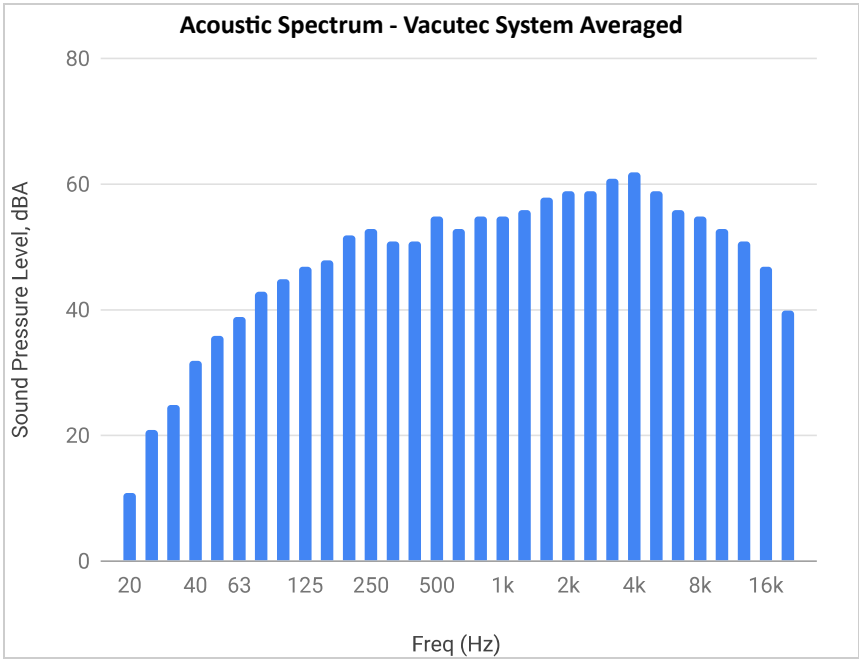
Leq	Lmin	Lmax
71.2	71.2	71.2

Ln 2	Ln 8	Ln 25	Ln 50	Ln 90	Ln 99
0.0	0.0	0.0	0.0	0.0	0.0

Table 1: Summary Measurement Data

Source/System	Overall Source	Overall dB(A)	3rd Octave Band Data (dBA)																															
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	12.5k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
Vacutec System Averaged	Car Wash Vacuu	71.2	11.0	21.0	25.0	32.0	36.0	39.0	43.0	45.0	47.0	48.0	52.0	53.0	51.0	51.0	55.0	53.0	55.0	55.0	56.0	58.0	59.0	59.0	61.0	62.0	59.0	56.0	55.0	53.0	51.0	47.0	40.0

Figure 1: Vacutec System Averaged



Project: Sound Library

Job Number: 0000-2020-02

Site Address/Location:

Date: 04/05/2018

Field Tech/Engineer: Michael Dickerson, INCE

Source/System: Sonny 7-Blowers

General Location: Measured @ 5'

Sound Meter: NTi XL2 **SN:** A2A-05967-E0

Settings: A-weighted, fast, 1-sec, 10-sec duration

Meteorological Cond.: 80 degrees, F

Site Observations:

Measured @ 5' from units 7-Blowers on

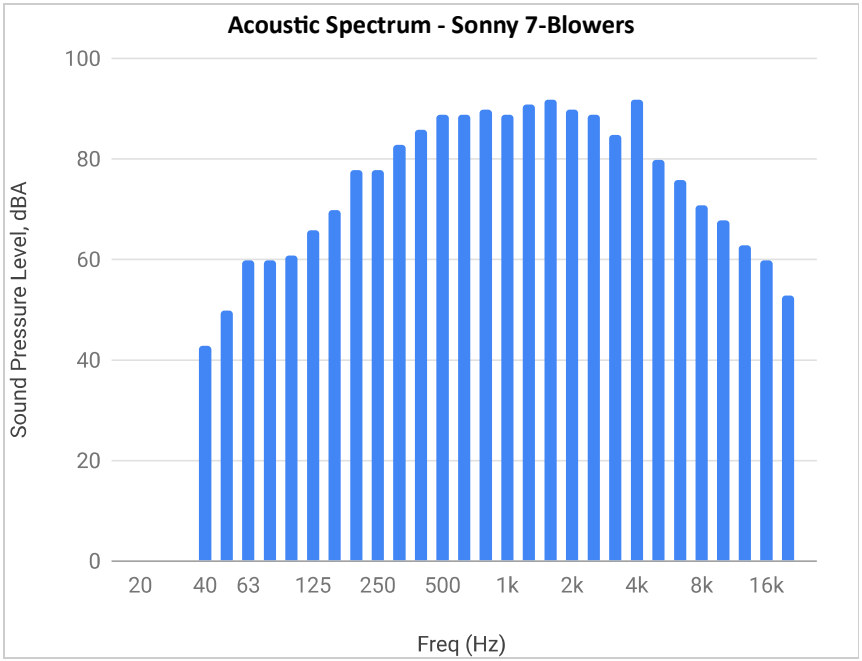
Leq	Lmin	Lmax
99.7	99.7	99.7

Ln 2	Ln 8	Ln 25	Ln 50	Ln 90	Ln 99
0.0	0.0	0.0	0.0	0.0	0.0

Table 1: Summary Measurement Data

Source/System	Overall Source	Overall dB(A)	3rd Octave Band Data (dBA)																															
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	12.5k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
Sonny 7-Blowers	Car Wash Dyer	99.7	0.0	0.0	0.0	43.0	50.0	60.0	60.0	61.0	66.0	70.0	78.0	78.0	83.0	86.0	89.0	89.0	90.0	89.0	91.0	92.0	90.0	89.0	85.0	92.0	80.0	76.0	71.0	68.0	63.0	60.0	53.0

Figure 1: Sonny Blower-7 Dryer System



Appendix C
SoundPlan Input/Output

SS Thunderbird
Octave spectra of the sources in dB(A) - Situation 1: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Facade 01	Area	20.76	85.8	57.0	36.8	50.0	0.0	0.0		3	100%/24h	17_Facade 01_	41.9	40.9	47.2	42.5	32.8	19.7	5.8	-8.6	
Facade 02	Area	170.65	86.2	57.0	37.2	59.5	0.0	0.0		3	100%/24h	18_Facade 02_	51.5	50.5	56.7	52.1	42.3	29.2	15.6	2.6	
Facade 03	Area	20.76	86.9	57.0	37.7	50.8	0.0	0.0		3	100%/24h	19_Facade 03_	42.7	41.7	48.0	43.4	34.1	21.5	8.3	-3.1	
Facade 04	Area	170.65	86.2	57.0	37.2	59.5	0.0	0.0		3	100%/24h	20_Facade 04_	51.5	50.5	56.7	52.1	42.3	29.2	15.6	2.6	
Roof 01	Area	245.41	85.8	57.0	36.8	60.7	0.0	0.0		0	100%/24h	15_Roof 01_	52.6	51.6	57.9	53.2	43.4	30.4	16.8	3.9	
Transmissive area 01	Area	8.36	86.8	0.0	86.8	96.1	0.0	0.0		3	100%/24h	22_Transmissive area 01_	68.7	81.7	90.0	91.4	91.2	82.6	72.5	59.1	
Transmissive area 01	Area	8.36	85.8	0.0	85.8	95.0	0.0	0.0		3	100%/24h	21_Transmissive area 01_	67.8	80.9	89.1	90.5	89.8	80.7	69.8	53.5	
Vac 1	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 2	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 3	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 4	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 5	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 6	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 7	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 8	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 9	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 10	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 11	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 12	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 13	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 14	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 15	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 16	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 17	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 18	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 19	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 20	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 20	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 21	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 22	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	

SS Thunderbird
Octave spectra of the sources in dB(A) - Situation 1: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Vac 23	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 24	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 25	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 26	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	

SS Thunderbird
Contribution level - Situation 1: Outdoor SP

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Receiver -37,141 Fl GF dB(A) Ldn 53.0 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 1	Default industrial noise	Point		27.5	0.0	
Vac 2	Default industrial noise	Point		30.0	0.0	
Vac 3	Default industrial noise	Point		30.1	0.0	
Vac 4	Default industrial noise	Point		30.3	0.0	
Vac 5	Default industrial noise	Point		30.4	0.0	
Vac 6	Default industrial noise	Point		30.5	0.0	
Vac 7	Default industrial noise	Point		30.6	0.0	
Vac 8	Default industrial noise	Point		30.6	0.0	
Vac 9	Default industrial noise	Point		30.6	0.0	
Vac 10	Default industrial noise	Point		30.5	0.0	
Vac 11	Default industrial noise	Point		30.2	0.0	
Vac 12	Default industrial noise	Point		30.6	0.0	
Vac 13	Default industrial noise	Point		30.7	0.0	
Vac 14	Default industrial noise	Point		30.9	0.0	
Vac 15	Default industrial noise	Point		31.0	0.0	
Vac 16	Default industrial noise	Point		31.1	0.0	
Vac 17	Default industrial noise	Point		31.2	0.0	
Vac 18	Default industrial noise	Point		31.2	0.0	
Vac 19	Default industrial noise	Point		31.3	0.0	
Vac 20	Default industrial noise	Point		30.7	0.0	
Vac 20	Default industrial noise	Point		30.9	0.0	
Vac 21	Default industrial noise	Point		31.0	0.0	
Vac 22	Default industrial noise	Point		31.1	0.0	
Vac 23	Default industrial noise	Point		31.2	0.0	
Vac 24	Default industrial noise	Point		31.3	0.0	
Vac 25	Default industrial noise	Point		31.4	0.0	
Vac 26	Default industrial noise	Point		30.6	0.0	
Roof 01	Default industrial noise	Area		9.8	0.0	
Facade 01	Default industrial noise	Area		1.7	0.0	
Transmissive area 01	Default industrial noise	Area		41.0	0.0	
Facade 02	Default industrial noise	Area		8.5	0.0	
Facade 03	Default industrial noise	Area		6.2	0.0	
Transmissive area 01	Default industrial noise	Area		51.9	0.0	
Facade 04	Default industrial noise	Area		6.6	0.0	
Receiver -105,164 Fl GF dB(A) Ldn 62.9 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 1	Default industrial noise	Point		34.1	0.0	
Vac 2	Default industrial noise	Point		34.7	0.0	
Vac 3	Default industrial noise	Point		35.3	0.0	
Vac 4	Default industrial noise	Point		35.8	0.0	
Vac 5	Default industrial noise	Point		36.4	0.0	
Vac 6	Default industrial noise	Point		37.0	0.0	
Vac 7	Default industrial noise	Point		38.0	0.0	
Vac 8	Default industrial noise	Point		38.6	0.0	

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Vac 9	Default industrial noise	Point		39.2	0.0	
Vac 10	Default industrial noise	Point		37.6	0.0	
Vac 11	Default industrial noise	Point		39.5	0.0	
Vac 12	Default industrial noise	Point		35.0	0.0	
Vac 13	Default industrial noise	Point		35.6	0.0	
Vac 14	Default industrial noise	Point		36.2	0.0	
Vac 15	Default industrial noise	Point		36.9	0.0	
Vac 16	Default industrial noise	Point		37.6	0.0	
Vac 17	Default industrial noise	Point		37.4	0.0	
Vac 18	Default industrial noise	Point		38.2	0.0	
Vac 19	Default industrial noise	Point		39.3	0.0	
Vac 20	Default industrial noise	Point		35.2	0.0	
Vac 20	Default industrial noise	Point		35.7	0.0	
Vac 21	Default industrial noise	Point		36.4	0.0	
Vac 22	Default industrial noise	Point		37.1	0.0	
Vac 23	Default industrial noise	Point		36.8	0.0	
Vac 24	Default industrial noise	Point		37.6	0.0	
Vac 25	Default industrial noise	Point		38.7	0.0	
Vac 26	Default industrial noise	Point		34.6	0.0	
Roof 01	Default industrial noise	Area		17.7	0.0	
Facade 01	Default industrial noise	Area		2.6	0.0	
Transmissive area 01	Default industrial noise	Area		44.2	0.0	
Facade 02	Default industrial noise	Area		17.3	0.0	
Facade 03	Default industrial noise	Area		18.1	0.0	
Transmissive area 01	Default industrial noise	Area		62.5	0.0	
Facade 04	Default industrial noise	Area		14.1	0.0	
Receiver -139,41 Fl GF dB(A) Ldn 57.0 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 1	Default industrial noise	Point		32.3	0.0	
Vac 2	Default industrial noise	Point		31.7	0.0	
Vac 3	Default industrial noise	Point		31.1	0.0	
Vac 4	Default industrial noise	Point		30.6	0.0	
Vac 5	Default industrial noise	Point		30.1	0.0	
Vac 6	Default industrial noise	Point		25.1	0.0	
Vac 7	Default industrial noise	Point		24.2	0.0	
Vac 8	Default industrial noise	Point		23.8	0.0	
Vac 9	Default industrial noise	Point		22.8	0.0	
Vac 10	Default industrial noise	Point		22.6	0.0	
Vac 11	Default industrial noise	Point		21.6	0.0	
Vac 12	Default industrial noise	Point		30.8	0.0	
Vac 13	Default industrial noise	Point		30.4	0.0	
Vac 14	Default industrial noise	Point		29.9	0.0	
Vac 15	Default industrial noise	Point		29.4	0.0	
Vac 16	Default industrial noise	Point		29.0	0.0	
Vac 17	Default industrial noise	Point		28.4	0.0	
Vac 18	Default industrial noise	Point		28.1	0.0	

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Vac 19	Default industrial noise	Point		27.6	0.0	
Vac 20	Default industrial noise	Point		30.6	0.0	
Vac 20	Default industrial noise	Point		30.2	0.0	
Vac 21	Default industrial noise	Point		29.7	0.0	
Vac 22	Default industrial noise	Point		29.2	0.0	
Vac 23	Default industrial noise	Point		28.8	0.0	
Vac 24	Default industrial noise	Point		28.3	0.0	
Vac 25	Default industrial noise	Point		27.9	0.0	
Vac 26	Default industrial noise	Point		31.1	0.0	
Roof 01	Default industrial noise	Area		14.8	0.0	
Facade 01	Default industrial noise	Area		12.8	0.0	
Transmissive area 01	Default industrial noise	Area		56.8	0.0	
Facade 02	Default industrial noise	Area		16.1	0.0	
Facade 03	Default industrial noise	Area		0.8	0.0	
Transmissive area 01	Default industrial noise	Area		37.8	0.0	
Facade 04	Default industrial noise	Area		16.3	0.0	
Receiver -180,131 Fl GF dB(A) Ldn 54.9 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 1	Default industrial noise	Point		23.9	0.0	
Vac 2	Default industrial noise	Point		21.0	0.0	
Vac 3	Default industrial noise	Point		20.7	0.0	
Vac 4	Default industrial noise	Point		18.6	0.0	
Vac 5	Default industrial noise	Point		18.7	0.0	
Vac 6	Default industrial noise	Point		18.7	0.0	
Vac 7	Default industrial noise	Point		18.9	0.0	
Vac 8	Default industrial noise	Point		19.0	0.0	
Vac 9	Default industrial noise	Point		19.2	0.0	
Vac 10	Default industrial noise	Point		19.8	0.0	
Vac 11	Default industrial noise	Point		23.9	0.0	
Vac 12	Default industrial noise	Point		23.6	0.0	
Vac 13	Default industrial noise	Point		23.5	0.0	
Vac 14	Default industrial noise	Point		23.5	0.0	
Vac 15	Default industrial noise	Point		20.3	0.0	
Vac 16	Default industrial noise	Point		20.3	0.0	
Vac 17	Default industrial noise	Point		20.3	0.0	
Vac 18	Default industrial noise	Point		20.4	0.0	
Vac 19	Default industrial noise	Point		20.6	0.0	
Vac 20	Default industrial noise	Point		23.6	0.0	
Vac 20	Default industrial noise	Point		23.5	0.0	
Vac 21	Default industrial noise	Point		23.5	0.0	
Vac 22	Default industrial noise	Point		22.7	0.0	
Vac 23	Default industrial noise	Point		20.4	0.0	
Vac 24	Default industrial noise	Point		20.5	0.0	
Vac 25	Default industrial noise	Point		20.6	0.0	
Vac 26	Default industrial noise	Point		23.8	0.0	
Roof 01	Default industrial noise	Area		21.9	0.0	

SS Thunderbird
Contribution level - Situation 1: Outdoor SP

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Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Facade 01	Default industrial noise	Area		9.3	0.0	
Transmissive area 01	Default industrial noise	Area		48.5	0.0	
Facade 02	Default industrial noise	Area		14.6	0.0	
Facade 03	Default industrial noise	Area		12.6	0.0	
Transmissive area 01	Default industrial noise	Area		53.7	0.0	
Facade 04	Default industrial noise	Area		26.5	0.0	

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver -37,141 Fl GF dB(A)	Ldn 53.0 dB(A)	Sigma(Ldn) 0.0 dB(A)																										
Facade 01	Ldn	1.7					-1.5			-7.0			-3.2			-9.7			-22.6			-39.4			-58.4			-83.7
Facade 02	Ldn	8.5					5.0			-0.6			3.2			-0.6			-7.9			-21.6			-37.6			-59.3
Facade 03	Ldn	6.2					1.2			-3.4			1.9			-2.0			-6.4			-19.5			-35.3			-55.8
Facade 04	Ldn	6.6					4.1			-2.3			0.4			-7.3			-8.1			-21.4			-39.6			-68.2
Roof 01	Ldn	9.8					5.4			0.3			5.7			0.1			-7.4			-21.6			-39.3			-64.0
Transmissive area 01	Ldn	51.9					26.4			36.1			41.8			43.5			50.0			41.4			28.7			6.4
Transmissive area 01	Ldn	41.0					23.9			32.6			36.7			35.8			32.9			20.6			4.8			-22.3
Vac 1	Ldn	27.5	-2.3	4.9	8.4	11.5	12.8	8.7	5.1	4.7	2.7	-1.3	1.0	1.4	3.8	7.4	8.6	11.5	10.1	15.7	17.8	18.4	19.8	20.2	17.1	14.8	9.5	-0.5
Vac 2	Ldn	30.0	-2.2	7.5	11.0	14.1	15.4	11.3	7.7	7.3	5.2	1.2	3.5	3.9	6.4	9.9	11.2	14.1	12.6	18.2	20.3	20.9	22.3	22.7	19.6	17.3	12.1	2.1
Vac 3	Ldn	30.1	-2.0	7.6	11.1	14.2	15.5	11.4	7.8	7.4	5.4	1.4	3.7	4.0	6.5	10.1	11.3	14.2	12.7	18.4	20.5	21.0	22.4	22.9	19.8	17.5	12.3	2.4
Vac 4	Ldn	30.3	-2.0	7.7	11.2	14.3	15.6	11.5	7.9	7.5	5.5	1.5	3.8	4.1	6.6	10.2	11.4	14.3	12.8	18.5	20.6	21.1	22.5	23.0	19.9	17.6	12.5	2.6
Vac 5	Ldn	30.4	-1.8	5.4	11.3	14.4	15.7	11.6	8.0	7.6	5.6	1.6	3.9	4.2	6.7	10.3	11.5	14.4	12.9	18.6	20.7	21.2	22.7	23.1	20.0	17.8	12.7	2.8
Vac 6	Ldn	30.5	-1.8	7.9	11.3	14.4	15.7	11.6	8.1	7.7	5.6	1.7	4.0	4.3	6.8	10.3	11.6	14.5	13.0	18.6	20.7	21.3	22.7	23.2	20.1	17.9	12.8	3.0
Vac 7	Ldn	30.6	-1.7	7.9	11.4	14.5	15.8	11.7	8.2	7.8	5.7	1.8	4.1	4.4	6.9	10.5	11.7	14.6	13.1	18.7	20.8	21.4	22.8	23.3	20.3	18.0	13.0	3.2
Vac 8	Ldn	30.6	-1.6	8.0	11.5	14.6	15.9	11.8	8.2	7.8	5.8	1.8	4.1	4.5	6.9	10.5	11.8	14.6	13.1	18.8	20.9	21.5	22.9	23.4	20.3	18.1	13.0	3.3
Vac 9	Ldn	30.6	-1.6	8.0	11.5	14.6	15.9	11.8	8.3	7.8	5.8	1.9	4.1	4.5	7.0	10.5	11.8	14.6	13.2	18.8	20.9	21.5	22.9	23.4	20.4	18.2	13.1	3.4
Vac 10	Ldn	30.5	-1.6	8.0	11.5	14.6	15.9	11.8	8.3	7.9	5.8	1.9	4.2	4.5	7.0	10.6	11.8	14.7	13.2	18.6	20.7	21.3	22.8	23.3	20.3	18.1	13.1	3.4
Vac 11	Ldn	30.2	-1.6	5.6	9.1	12.2	13.5	9.4	5.9	5.5	3.4	-0.5	1.8	2.1	4.6	10.3	11.6	14.6	13.1	18.5	20.6	21.3	22.7	23.2	20.1	17.9	12.8	3.0
Vac 12	Ldn	30.6	-0.6	6.6	10.1	13.2	14.5	10.4	6.9	6.5	4.5	0.6	2.9	4.6	7.0	10.6	11.9	14.7	13.2	18.7	20.9	21.5	23.0	23.5	20.5	18.3	13.4	3.9
Vac 13	Ldn	30.7	-0.5	6.7	10.2	13.3	14.6	10.5	7.0	6.6	4.6	0.7	3.0	4.7	7.2	10.7	12.0	14.8	13.3	18.9	21.1	21.7	23.1	23.6	20.6	18.5	13.6	4.2
Vac 14	Ldn	30.9	-0.3	6.9	10.4	13.5	14.8	10.6	7.2	6.8	4.8	0.9	3.2	4.9	7.3	10.9	12.1	14.9	13.5	19.0	21.2	21.8	23.3	23.8	20.8	18.7	13.8	4.5
Vac 15	Ldn	31.0	-0.2	7.0	10.5	13.6	14.9	10.8	7.3	6.9	4.9	1.1	3.4	5.0	7.4	11.0	12.3	15.0	13.6	19.1	21.3	21.9	23.4	23.9	20.9	18.9	14.0	4.7
Vac 16	Ldn	31.1	-0.1	7.1	10.6	13.7	15.0	10.9	7.4	7.0	5.0	1.2	3.4	5.1	7.5	11.1	12.3	15.1	13.7	19.2	21.4	22.0	23.5	24.0	21.0	19.0	14.2	4.9
Vac 17	Ldn	31.2	0.0	7.2	10.7	13.8	15.1	11.0	7.5	7.1	5.1	1.3	3.6	5.2	7.6	11.2	12.4	15.2	13.7	19.3	21.5	22.1	23.6	24.1	21.2	19.1	14.3	5.1
Vac 18	Ldn	31.2	0.0	7.2	10.7	13.8	15.1	11.0	7.6	7.2	5.1	1.3	3.6	5.3	7.7	11.2	12.5	15.3	13.8	19.3	21.5	22.1	23.6	24.1	21.2	19.2	14.4	5.2
Vac 19	Ldn	31.3	0.1	7.3	10.8	13.9	15.2	11.1	7.6	7.2	5.2	1.4	3.7	5.3	7.7	11.3	12.5	15.3	13.8	19.4	21.6	22.2	23.6	24.2	21.3	19.2	14.5	5.3
Vac 20	Ldn	30.7	-0.4	6.8	10.3	13.4	14.7	10.6	7.1	6.7	4.7	0.8	3.1	3.5	7.2	10.7	12.0	14.8	13.3	18.9	21.1	21.7	23.1	23.6	20.6	18.5	13.6	4.2
Vac 20	Ldn	30.9	-0.3	6.9	10.4	13.5	14.8	10.7	7.2	6.8	4.8	1.0	3.3	4.9	7.3	10.9	12.1	14.9	13.5	19.0	21.2	21.8	23.2	23.8	20.8	18.7	13.9	4.5
Vac 21	Ldn	31.0	-0.2	7.0	10.5	13.6	14.9	10.8	7.4	7.0	5.0	1.1	3.4	5.0	7.4	11.0	12.3	15.1	13.6	19.1	21.3	21.9	23.4	23.9	21.0	18.9	14.1	4.8
Vac 22	Ldn	31.1	0.0	7.2	10.7	13.8	15.1	10.9	7.5	7.1	5.1	1.3	3.6	5.1	7.5	11.1	12.4	15.2	13.7	19.2	21.4	22.0	23.5	24.0	21.1	19.1	14.3	5.0
Vac 23	Ldn	31.2	0.1	7.3	10.8	13.9	15.2	11.1	7.6	7.2	5.2	1.4	3.7	5.3	7.6	11.2	12.5	15.3	13.8	19.3	21.5	22.1	23.6	24.1	21.2	19.2	14.4	5.2
Vac 24	Ldn	31.3	0.1	7.3	10.8	13.9	15.2	11.1	7.7	7.3	5.3	1.5	3.8	5.3	7.7	11.3	12.6	15.3	13.8	19.4	21.6	22.2	23.7	24.2	21.3	19.3	14.5	5.3
Vac 25	Ldn	31.4	0.2	7.4	10.9	14.0	15.3	11.2	7.8	7.4	5.4	1.6	3.9	5.4	7.8	11.4	12.6	15.4	13.9	19.4	21.6	22.3	23.7	24.3	21.4	19.4	14.7	5.5
Vac 26	Ldn	30.6	-0.6	6.6	10.1	13.2	14.5	10.4	6.9	6.5	4.5	0.6	2.9	3.3	7.0	10.6	11.8	14.7	13.2	18.7	20.9	21.5	23.0	23.4	20.4	18.3	13.4	3.9

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Facade 01"	Ldn																												
Remaining contrib. of src "Facade 02"	Ldn																												
Remaining contrib. of src "Facade 03"	Ldn																												
Remaining contrib. of src "Facade 04"	Ldn																												
Remaining contrib. of src "Roof 01"	Ldn																												
Remaining contrib. of src "Transmissive	Ldn																												
Remaining contrib. of src "Transmissive	Ldn																												
Remaining contrib. of src "Vac 1"	Ldn																												
Remaining contrib. of src "Vac 2"	Ldn																												
Remaining contrib. of src "Vac 3"	Ldn																												
Remaining contrib. of src "Vac 4"	Ldn																												
Remaining contrib. of src "Vac 5"	Ldn																												
Remaining contrib. of src "Vac 6"	Ldn																												
Remaining contrib. of src "Vac 7"	Ldn																												
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												
Remaining contrib. of src "Vac 24"	Ldn																												
Remaining contrib. of src "Vac 25"	Ldn																												
Remaining contrib. of src "Vac 26"	Ldn																												
Receiver -105,164 Fl GF dB(A) Ldn 62.9 dB(A) Sigma(Ldn) 0.0 dB(A)																													
Facade 01	Ldn	2.6					-0.1			-6.4			-3.3			-10.9			-14.1			-28.4			-46.5			-74.4	
Facade 02	Ldn	17.3					13.0			8.1			12.4			9.5			0.3			-12.9			-27.5			-43.9	
Facade 03	Ldn	18.1					12.4			8.7			14.3			10.5			1.8			-10.9			-25.1			-39.8	
Facade 04	Ldn	14.1					11.2			5.2			8.4			1.5			-1.4			-14.8			-31.3			-53.9	
Roof 01	Ldn	17.7					12.7			7.9			14.0			9.0			-0.3			-13.8			-28.5			-45.2	
Transmissive area 01	Ldn	62.5					38.3			48.9			55.4			57.2			58.6			50.1			39.0			22.3	
Transmissive area 01	Ldn	44.2					24.6			32.0			35.5			33.2			42.3			32.6			17.4			-12.4	

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 1	Ldn	34.1	1.3	8.5	12.0	15.1	16.4	14.7	11.4	11.0	8.9	5.3	7.6	8.0	10.3	13.8	15.1	17.9	16.7	22.1	24.2	24.9	26.5	27.1	24.4	22.6	18.2	9.5
Vac 2	Ldn	34.7	1.7	8.9	12.4	15.5	19.3	15.2	11.8	11.4	9.4	5.8	8.1	8.5	10.7	14.3	15.6	18.1	17.3	22.7	24.8	25.5	27.0	27.7	25.0	23.2	18.9	10.4
Vac 3	Ldn	35.3	2.2	9.4	12.9	16.0	19.8	15.7	12.4	12.0	9.9	6.4	8.7	9.1	11.3	14.9	16.2	18.9	17.7	23.1	25.3	26.0	27.5	28.2	25.5	23.9	19.7	11.3
Vac 4	Ldn	35.8	2.7	9.9	13.4	16.5	20.3	16.2	12.9	12.5	10.5	7.0	9.3	9.7	11.9	15.5	16.7	19.5	18.2	23.6	25.8	26.5	28.0	28.8	26.1	24.5	20.4	12.2
Vac 5	Ldn	36.4	3.3	10.5	14.0	17.1	20.8	16.7	13.5	13.1	11.1	7.6	9.9	10.3	12.5	16.1	17.4	20.1	18.8	24.2	26.3	27.0	28.6	29.4	26.8	25.3	21.2	13.1
Vac 6	Ldn	37.0	3.9	11.0	14.5	20.1	21.4	17.3	14.0	13.6	11.6	8.3	10.6	10.9	13.1	16.7	18.0	20.6	19.3	24.7	26.8	27.6	29.2	30.0	27.4	25.9	22.0	14.1
Vac 7	Ldn	38.0	4.8	12.0	15.5	21.0	22.3	18.2	15.0	14.6	12.6	9.3	11.6	12.0	14.1	17.7	19.0	21.5	20.2	25.6	27.7	28.4	30.1	30.9	28.4	27.1	23.3	15.5
Vac 8	Ldn	38.6	5.4	12.6	16.1	21.6	22.9	18.8	15.6	15.2	13.2	10.0	12.3	12.7	14.8	18.4	19.7	22.0	20.6	26.1	28.2	29.0	30.6	31.5	29.1	27.8	24.1	16.5
Vac 9	Ldn	39.2	6.1	13.3	19.1	22.2	23.5	19.4	16.3	15.9	13.9	10.8	13.1	13.5	15.5	19.1	20.4	22.5	21.1	26.6	28.7	29.5	31.2	32.1	29.7	28.5	25.0	17.5
Vac 10	Ldn	37.6	6.7	13.9	17.4	20.5	21.8	17.7	14.7	14.3	12.3	9.3	11.6	12.0	13.9	17.5	18.8	20.9	19.4	25.0	27.1	27.9	29.6	30.5	28.2	27.0	23.6	16.2
Vac 11	Ldn	39.5	7.4	14.6	18.1	21.2	22.5	18.4	15.4	15.0	13.0	10.1	12.4	12.8	14.7	18.3	19.6	21.6	21.5	27.0	29.1	29.9	31.6	32.5	30.2	29.1	25.6	18.3
Vac 12	Ldn	35.0	2.7	9.9	13.4	16.5	17.8	13.7	10.4	10.0	8.0	4.5	6.8	7.2	11.1	14.7	15.9	18.7	17.6	23.0	25.1	25.8	27.3	28.0	25.3	23.7	19.4	11.0
Vac 13	Ldn	35.6	3.3	10.5	14.0	17.1	18.4	14.3	11.1	10.6	8.6	5.2	7.5	9.5	11.7	15.3	16.5	19.2	18.0	23.5	25.6	26.3	27.9	28.6	25.9	24.3	20.2	12.0
Vac 14	Ldn	36.2	4.0	11.2	14.7	17.8	19.1	15.0	11.8	11.4	9.4	6.1	8.3	10.2	12.4	15.9	17.2	19.8	18.6	24.0	26.2	26.9	28.5	29.2	26.6	25.1	21.1	13.1
Vac 15	Ldn	36.9	4.7	11.9	15.4	18.5	19.8	15.7	12.6	12.2	10.2	6.9	9.2	10.9	13.1	16.7	17.9	20.5	19.2	24.6	26.8	27.5	29.1	29.9	27.4	25.9	22.0	14.1
Vac 16	Ldn	37.6	5.5	12.7	16.2	19.2	20.5	16.4	13.3	12.9	10.9	7.8	10.0	11.7	13.8	17.4	18.6	21.1	19.8	25.2	27.3	28.1	29.7	30.5	28.1	26.7	22.9	15.2
Vac 17	Ldn	37.4	6.4	13.6	17.1	20.2	21.4	17.3	14.3	13.9	11.9	8.8	11.1	11.5	13.5	17.1	18.4	20.7	19.4	24.8	26.9	27.7	29.4	30.3	27.9	26.7	23.1	15.7
Vac 18	Ldn	38.2	7.2	14.4	17.9	21.0	22.3	18.2	15.2	14.8	12.8	9.8	12.1	12.5	14.5	18.1	19.3	21.5	20.1	25.5	27.6	28.4	30.1	31.1	28.8	27.6	24.2	16.9
Vac 19	Ldn	39.3	8.3	15.5	19.0	22.1	23.4	19.3	16.3	15.9	13.9	11.1	13.4	13.8	15.7	19.3	20.6	22.6	21.1	26.6	28.7	29.5	31.3	32.2	30.0	28.9	25.6	18.5
Vac 20	Ldn	35.2	2.9	10.1	13.6	16.7	18.0	13.9	10.7	10.3	8.2	4.8	7.1	7.5	11.3	14.8	16.1	18.9	17.7	23.1	25.2	25.9	27.5	28.2	25.5	23.9	19.7	11.3
Vac 20	Ldn	35.7	3.6	10.8	14.3	17.4	18.7	14.6	11.3	10.9	8.9	5.5	7.8	8.2	11.9	15.5	16.7	19.4	18.2	23.6	25.7	26.4	28.0	28.8	26.1	24.6	20.5	12.3
Vac 21	Ldn	36.4	4.2	11.4	14.9	18.0	19.3	15.2	12.0	11.6	9.6	6.3	8.6	10.4	12.5	16.1	17.4	20.0	18.8	24.2	26.3	27.0	28.6	29.4	26.8	25.3	21.4	13.3
Vac 22	Ldn	37.1	5.0	12.2	15.7	18.8	20.1	16.0	12.8	12.4	10.4	7.2	9.5	11.1	13.3	16.9	18.1	20.6	19.4	24.8	26.9	27.6	29.3	30.1	27.6	26.1	22.3	14.5
Vac 23	Ldn	36.8	5.8	13.0	16.5	19.6	20.9	16.8	13.7	13.3	11.3	8.1	10.4	10.8	12.9	16.5	17.7	20.1	18.9	24.3	26.4	27.2	28.8	29.7	27.2	26.0	22.3	14.8
Vac 24	Ldn	37.6	6.6	13.8	17.3	20.4	21.7	17.6	14.5	14.1	12.1	9.1	11.4	11.8	13.8	17.4	18.7	20.9	19.6	25.1	27.2	28.0	29.7	30.5	28.2	27.0	23.4	16.1
Vac 25	Ldn	38.7	7.6	14.8	18.3	21.4	22.7	18.6	15.6	15.2	13.2	10.3	12.6	13.0	15.0	18.5	19.8	21.9	20.5	26.0	28.1	28.9	30.6	31.5	29.2	28.2	24.8	17.6
Vac 26	Ldn	34.6	2.4	9.6	13.1	16.2	17.5	13.4	10.1	9.6	7.6	4.1	6.4	6.8	10.7	14.3	15.5	18.4	17.3	22.7	24.8	25.4	27.0	27.6	24.9	23.2	18.9	10.4
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Transmissive	Ldn																												
Remaining contrib. of src "Transmissive	Ldn																												
Remaining contrib. of src "Vac 1"	Ldn																												
Remaining contrib. of src "Vac 2"	Ldn																												
Remaining contrib. of src "Vac 3"	Ldn																												
Remaining contrib. of src "Vac 4"	Ldn																												
Remaining contrib. of src "Vac 5"	Ldn																												
Remaining contrib. of src "Vac 6"	Ldn																												
Remaining contrib. of src "Vac 7"	Ldn																												
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)
Remaining contrib. of src "Vac 18"	Ldn																											
Remaining contrib. of src "Vac 19"	Ldn																											
Remaining contrib. of src "Vac 20"	Ldn																											
Remaining contrib. of src "Vac 20"	Ldn																											
Remaining contrib. of src "Vac 21"	Ldn																											
Remaining contrib. of src "Vac 22"	Ldn																											
Remaining contrib. of src "Vac 23"	Ldn																											
Remaining contrib. of src "Vac 24"	Ldn																											
Remaining contrib. of src "Vac 25"	Ldn																											
Remaining contrib. of src "Vac 26"	Ldn																											
Receiver -139,41 FI GF dB(A)	Ldn 57.0 dB(A)	Sigma(Ldn) 0.0 dB(A)																										
Facade 01	Ldn	12.8					7.4			3.3			8.8			5.1			-4.0			-17.3			-32.6			-52.5
Facade 02	Ldn	16.1					11.6			7.1			11.8			7.5			-2.1			-16.1			-32.6			-53.3
Facade 03	Ldn	0.8					-2.0			-8.4			-4.7			-10.8			-22.1			-36.8			-52.9			-73.5
Facade 04	Ldn	16.3					11.7			7.2			12.1			7.9			-1.5			-15.3			-31.4			-51.8
Roof 01	Ldn	14.8					8.4			4.5			11.4			7.7			-1.4			-13.1			-27.4			-46.7
Transmissive area 01	Ldn	37.8					22.0			28.9			33.1			31.7			31.3			22.1			9.7			-12.4
Transmissive area 01	Ldn	56.8					33.3			43.6			49.6			51.5			52.9			43.8			31.4			9.6
Vac 1	Ldn	32.3	2.0	9.2	12.7	15.8	17.1	13.0	9.6	9.2	7.2	3.7	5.9	6.3	8.6	12.2	13.4	16.0	14.5	19.9	22.1	22.8	24.4	25.1	22.5	21.0	16.8	8.4
Vac 2	Ldn	31.7	1.5	8.7	12.2	15.3	16.6	12.5	9.1	8.7	6.7	3.1	5.4	5.7	8.0	11.6	12.9	15.5	14.0	19.4	21.6	22.3	23.9	24.6	21.9	20.3	16.0	7.5
Vac 3	Ldn	31.1	1.0	8.2	11.7	14.8	16.1	12.0	8.6	8.2	6.2	2.5	4.8	5.1	7.5	11.0	12.3	14.9	13.5	18.9	21.0	21.7	23.3	24.0	21.3	19.6	15.2	6.5
Vac 4	Ldn	30.6	0.5	7.7	11.2	14.3	15.6	11.5	8.1	7.7	5.7	1.9	4.2	4.6	6.9	10.5	11.8	14.4	13.0	18.4	20.5	21.2	22.8	23.4	20.7	18.9	14.4	5.6
Vac 5	Ldn	30.1	0.1	7.3	10.8	13.9	15.2	11.1	7.6	7.2	5.2	1.4	3.7	4.1	6.4	10.0	11.3	14.0	12.5	17.9	20.0	20.7	22.3	22.9	20.1	18.3	13.7	4.7
Vac 6	Ldn	25.1	-0.3	6.9	10.4	13.4	12.2	7.9	4.3	3.7	1.5	-1.8	0.2	0.4	2.2	5.6	6.7	9.1	7.5	12.8	14.8	15.3	16.7	17.1	14.1	12.0	7.0	-2.4
Vac 7	Ldn	24.2	-1.0	6.2	9.7	12.8	11.7	7.4	3.7	3.1	0.9	-2.4	-0.4	-0.3	1.5	4.8	5.7	8.0	6.3	12.8	14.6	14.9	15.9	15.8	12.1	9.3	3.6	-6.6
Vac 8	Ldn	23.8	-1.3	5.9	9.4	12.5	11.4	7.2	3.5	2.9	0.7	-2.6	-0.6	-0.5	1.2	4.5	5.5	7.7	5.9	12.5	14.3	14.5	15.5	15.3	11.5	8.5	2.6	-7.8
Vac 9	Ldn	22.8	-1.7	5.5	9.0	12.1	11.0	6.7	3.0	2.3	0.1	-3.2	-1.3	-1.3	0.4	3.6	4.4	6.5	4.6	11.6	13.3	13.4	14.2	13.9	9.8	6.3	0.0	-10.9

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 10	Ldn	22.6	-2.1	5.1	8.6	11.7	10.9	6.6	2.8	2.2	-0.1	-3.3	-1.4	-1.4	0.2	3.4	4.2	6.3	4.4	11.5	13.2	13.2	14.0	13.7	9.5	6.0	-0.6	-11.7
Vac 11	Ldn	21.6	-2.4	4.8	8.3	11.4	10.9	6.5	2.7	2.0	-0.3	-3.5	-1.6	-1.7	-0.1	3.0	3.8	5.8	3.8	10.2	11.8	11.8	12.6	12.2	8.1	4.5	-2.1	-13.3
Vac 12	Ldn	30.8	0.7	7.9	11.4	14.5	15.8	11.7	8.3	7.9	5.9	2.1	4.4	4.8	7.1	10.7	12.0	14.6	13.2	18.6	20.7	21.4	23.0	23.6	20.9	19.2	14.7	6.0
Vac 13	Ldn	30.4	0.3	7.5	11.0	14.1	15.4	11.3	7.8	7.4	5.4	1.7	3.9	4.3	6.7	10.2	11.5	14.2	12.7	18.1	20.4	21.1	22.6	23.2	20.4	18.6	14.1	5.1
Vac 14	Ldn	29.9	-0.2	7.0	10.5	13.6	14.9	10.8	7.4	7.0	4.9	1.1	3.4	3.8	6.2	9.7	11.0	13.7	12.3	17.7	19.9	20.6	22.1	22.7	19.9	17.9	13.3	4.2
Vac 15	Ldn	29.4	-0.6	6.6	10.1	13.2	14.5	10.4	6.9	6.5	4.5	0.7	2.9	3.3	5.7	9.3	10.5	13.3	11.8	17.2	19.5	20.2	21.6	22.2	19.3	17.3	12.6	3.3
Vac 16	Ldn	29.0	-0.9	6.3	9.8	12.9	14.2	10.1	6.5	6.1	4.1	0.2	2.5	2.9	5.3	8.9	10.1	12.9	11.5	16.9	19.2	19.8	21.2	21.8	18.9	16.8	12.0	2.6
Vac 17	Ldn	28.4	-1.3	5.9	9.4	12.5	13.8	9.7	6.1	5.7	3.7	-0.2	2.1	2.4	4.9	8.4	9.7	12.5	11.0	16.4	18.6	19.2	20.7	21.2	18.3	16.2	11.2	1.7
Vac 18	Ldn	28.1	-1.7	5.5	9.0	12.1	13.4	9.3	5.8	5.4	3.3	-0.6	1.7	2.0	4.5	8.1	9.3	12.2	10.7	16.1	18.2	18.8	20.3	20.8	17.8	15.7	10.6	1.0
Vac 19	Ldn	27.6	-2.0	5.2	8.7	11.8	13.1	9.0	5.4	5.0	3.0	-1.0	1.3	1.6	4.1	7.7	8.9	11.8	10.3	15.7	17.8	18.4	19.9	20.3	17.3	15.1	10.0	0.1
Vac 20	Ldn	30.6	0.5	7.7	11.2	14.3	15.6	11.5	8.1	7.7	5.6	1.9	4.2	4.6	6.9	10.5	11.8	14.4	13.0	18.4	20.5	21.2	22.7	23.4	20.7	18.9	14.4	5.6
Vac 20	Ldn	30.2	0.1	7.3	10.8	13.9	15.2	11.1	7.6	7.2	5.2	1.4	3.7	4.1	6.4	10.0	11.3	14.0	12.5	17.9	20.2	20.8	22.4	23.0	20.2	18.3	13.7	4.7
Vac 21	Ldn	29.7	-0.3	6.9	10.4	13.5	14.8	10.7	7.2	6.8	4.8	0.9	3.2	3.6	6.0	9.6	10.8	13.6	12.1	17.5	19.8	20.4	21.9	22.5	19.7	17.7	13.0	3.9
Vac 22	Ldn	29.2	-0.7	6.5	10.0	13.1	14.4	10.3	6.8	6.4	4.3	0.5	2.8	3.1	5.5	9.1	10.4	13.1	11.7	17.1	19.4	20.0	21.5	22.0	19.1	17.1	12.3	3.0
Vac 23	Ldn	28.8	-1.1	6.1	9.6	12.7	14.0	9.9	6.4	6.0	3.9	0.0	2.3	2.7	5.1	8.7	10.0	12.8	11.3	16.7	19.0	19.6	21.1	21.6	18.6	16.6	11.7	2.2
Vac 24	Ldn	28.3	-1.4	5.8	9.3	12.3	13.6	9.5	6.0	5.6	3.6	-0.4	1.9	2.3	4.7	8.3	9.6	12.4	10.9	16.3	18.4	19.1	20.5	21.1	18.1	16.0	11.0	1.4
Vac 25	Ldn	27.9	-1.8	5.4	8.9	12.0	13.3	9.2	5.6	5.2	3.2	-0.8	1.5	1.9	4.3	7.9	9.1	12.0	10.5	15.9	18.0	18.6	20.1	20.6	17.6	15.4	10.4	0.6
Vac 26	Ldn	31.1	0.9	8.1	11.6	14.7	16.0	11.9	8.5	8.1	6.1	2.4	4.7	5.1	7.4	11.0	12.2	14.9	13.4	18.8	21.0	21.7	23.2	23.9	21.2	19.5	15.1	6.4
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											
Remaining contrib. of src "Vac 2"	Ldn																											
Remaining contrib. of src "Vac 3"	Ldn																											

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 4"	Ldn																												
Remaining contrib. of src "Vac 5"	Ldn																												
Remaining contrib. of src "Vac 6"	Ldn																												
Remaining contrib. of src "Vac 7"	Ldn																												
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												
Remaining contrib. of src "Vac 24"	Ldn																												
Remaining contrib. of src "Vac 25"	Ldn																												
Remaining contrib. of src "Vac 26"	Ldn																												
Receiver -180,131 Fl GF dB(A) Ldn 54.9 dB(A) Sigma(Ldn) 0.0 dB(A)																													
Facade 01	Ldn	9.3					5.3			0.6			4.8			-1.1			-12.4			-27.6			-44.2			-64.1	
Facade 02	Ldn	14.6					11.3			5.6			9.6			3.3			-8.3			-22.9			-38.5			-56.1	
Facade 03	Ldn	12.6					8.0			3.5			8.5			3.4			-6.8			-21.0			-37.0			-53.8	
Facade 04	Ldn	26.5					20.9			17.4			22.7			18.8			9.7			-3.4			-18.0			-34.5	
Roof 01	Ldn	21.9					14.9			11.8			18.8			14.8			5.4			-6.8			-19.9			-35.5	
Transmissive area 01	Ldn	53.7					33.2			42.8			48.3			48.6			48.2			37.7			24.4			5.4	
Transmissive area 01	Ldn	48.5					30.0			39.4			43.9			43.1			41.9			31.2			18.0			-3.5	
Vac 1	Ldn	23.9	-0.1	6.8	10.0	12.8	13.7	9.2	5.4	4.5	1.8	-1.4	0.2	-0.1	0.7	3.5	3.9	6.8	4.9	11.5	13.3	13.7	15.1	15.6	11.8	8.7	2.6	-7.6	
Vac 2	Ldn	21.0	-1.9	4.7	7.5	9.9	10.4	5.4	1.2	-0.2	-3.4	-7.0	-5.8	-6.5	-6.1	-3.6	-3.2	-1.7	-3.4	9.7	11.6	11.9	12.8	12.5	8.5	5.1	-0.5	-9.6	
Vac 3	Ldn	20.7	-3.0	3.5	6.2	8.5	8.9	3.9	-0.3	-1.6	-4.7	-7.9	-6.7	-7.3	-6.9	-4.3	-3.9	-2.2	-3.8	9.7	11.6	11.9	12.8	12.6	8.6	5.3	-0.3	-9.2	
Vac 4	Ldn	18.6	-3.3	3.2	5.9	8.2	8.6	3.6	-0.5	-1.9	-5.0	-8.1	-6.8	-7.4	-7.0	-4.4	-3.8	-2.1	-3.7	6.1	8.1	8.6	9.7	9.9	6.5	4.1	-0.5	-8.9	
Vac 5	Ldn	18.7	-3.2	3.3	6.0	8.3	8.8	3.8	-0.3	-1.6	-4.7	-7.8	-6.4	-7.0	-6.7	-4.1	-3.7	-2.0	-3.6	6.2	8.2	8.6	9.8	10.0	6.6	4.3	-0.3	-8.6	
Vac 6	Ldn	18.7	-3.3	3.3	5.9	8.3	8.7	3.7	-0.4	-1.7	-4.8	-7.9	-6.5	-7.2	-6.8	-4.2	-3.6	-1.9	-3.4	6.3	8.3	8.7	9.9	10.1	6.8	4.5	-0.1	-8.3	
Vac 7	Ldn	18.9	-3.0	3.5	6.2	8.5	9.0	4.0	-0.1	-1.5	-4.5	-7.6	-6.3	-6.9	-6.6	-4.0	-3.4	-1.7	-3.2	6.3	8.3	8.8	10.0	10.2	6.9	4.6	0.1	-8.1	
Vac 8	Ldn	19.0	-2.7	3.8	6.5	8.9	9.3	4.3	0.2	-1.2	-4.2	-7.4	-6.0	-6.7	-6.3	-3.7	-3.3	-1.7	-3.2	6.3	8.3	8.8	10.0	10.2	6.9	4.6	0.1	-8.1	
Vac 9	Ldn	19.2	-2.3	4.3	6.9	9.3	9.7	4.7	0.5	-0.8	-4.0	-7.2	-5.9	-6.6	-6.2	-3.6	-3.1	-1.5	-3.0	6.4	8.4	8.8	10.0	10.2	6.9	4.6	0.1	-8.1	
Vac 10	Ldn	19.8	-1.1	5.5	8.3	10.7	11.2	6.2	2.1	0.7	-2.5	-6.1	-4.9	-5.6	-5.2	-2.6	-2.4	-0.8	-2.5	6.6	8.5	8.9	10.1	10.2	6.9	4.6	0.1	-8.2	
Vac 11	Ldn	23.9	1.2	8.2	11.5	14.4	15.4	11.0	7.4	6.6	4.1	0.8	2.5	2.3	3.4	6.3	6.8	8.2	5.9	11.1	12.6	12.5	13.3	13.1	9.8	7.5	2.9	-5.7	
Vac 12	Ldn	23.6	-3.0	3.9	7.1	9.9	10.9	6.4	2.7	1.8	-0.7	-3.0	-1.3	-1.5	-0.8	2.1	2.6	7.8	6.5	12.8	14.6	14.9	15.8	15.6	11.6	8.0	1.1	-10.5	
Vac 13	Ldn	23.5	-3.1	3.8	7.0	9.9	10.8	6.4	2.6	1.8	-0.7	-3.0	-1.2	-1.4	-0.8	2.1	2.6	3.5	6.4	12.7	14.5	14.8	15.7	15.5	11.5	7.8	0.9	-10.6	
Vac 14	Ldn	23.5	-2.7	4.2	7.3	10.1	11.1	6.6	2.8	2.0	-0.5	-2.9	-1.1	-1.3	-0.7	2.2	2.7	3.6	6.3	12.6	14.5	14.7	15.6	15.4	11.3	7.7	0.7	-10.7	
Vac 15	Ldn	20.3	-2.7	4.2	7.4	10.2	11.1	6.7	2.9	2.1	-0.5	-2.8	-1.0	-1.3	-0.6	2.3	2.8	3.7	2.8	8.3	9.8	9.8	10.6	10.3	6.3	3.0	-3.0	-12.5	
Vac 16	Ldn	20.3	-2.6	4.3	7.5	10.3	11.2	6.7	3.0	2.1	-0.4	-2.7	-1.0	-1.2	-0.6	2.3	2.8	3.7	2.8	8.3	9.8	9.9	10.6	10.3	6.3	3.1	-3.0	-12.4	
Vac 17	Ldn	20.3	-2.8	4.2	7.4	10.2	11.2	6.7	3.0	2.1	-0.4	-2.7	-1.0	-1.2	-0.6	2.3	2.9	3.8	2.9	8.3	9.9	9.9	10.7	10.4	6.4	3.1	-2.9	-12.3	
Vac 18	Ldn	20.4	-2.5	4.5	7.7	10.4	11.4	6.9	3.2	2.3	-0.2	-2.6	-0.9	-1.1	-0.5	2.4	2.9	3.8	2.9	8.4	9.9	9.9	10.7	10.4	6.4	3.1	-2.9	-12.3	
Vac 19	Ldn	20.6	-2.1	4.9	8.1	10.8	11.8	7.3	3.5	2.6	0.0	-2.5	-0.8	-1.0	-0.4	2.5	3.0	3.9	2.9	8.4	9.9	9.9	10.7	10.4	6.4	3.2	-2.9	-12.3	

SS Thunderbird
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 20	Ldn	23.6	-3.2	3.8	7.0	9.8	10.8	6.4	2.6	1.8	-0.6	-2.9	-1.1	-1.3	-0.6	2.3	2.9	3.8	6.6	12.8	14.7	14.9	15.8	15.6	11.6	8.0	1.1	-10.7
Vac 20	Ldn	23.5	-3.3	3.7	6.9	9.8	10.8	6.3	2.6	1.9	-0.6	-2.9	-1.1	-1.2	-0.6	2.4	2.9	3.9	6.5	12.8	14.6	14.8	15.7	15.5	11.5	7.9	0.9	-10.8
Vac 21	Ldn	23.5	-2.8	4.1	7.3	10.1	11.0	6.6	2.8	2.0	-0.4	-2.7	-1.0	-1.1	-0.5	2.5	3.0	3.9	6.4	12.7	14.5	14.7	15.7	15.4	11.4	7.7	0.7	-10.9
Vac 22	Ldn	22.7	-2.8	4.2	7.3	10.1	11.1	6.7	2.9	2.1	-0.4	-2.7	-0.9	-1.1	-0.4	2.5	3.0	4.0	6.3	11.7	13.5	13.7	14.6	14.4	10.4	6.9	0.1	-11.2
Vac 23	Ldn	20.4	-3.0	3.9	7.2	10.0	11.0	6.6	2.9	2.1	-0.4	-2.7	-0.9	-1.1	-0.4	2.5	3.1	4.0	3.1	8.5	10.0	10.1	10.8	10.5	6.6	3.3	-2.7	-12.7
Vac 24	Ldn	20.5	-2.8	4.2	7.4	10.2	11.2	6.7	3.0	2.2	-0.3	-2.6	-0.8	-1.0	-0.4	2.6	3.1	4.0	3.1	8.5	10.0	10.1	10.9	10.6	6.6	3.3	-2.7	-12.6
Vac 25	Ldn	20.6	-2.5	4.5	7.7	10.5	11.4	7.0	3.2	2.4	-0.1	-2.5	-0.7	-0.9	-0.3	2.6	3.2	4.1	3.2	8.6	10.1	10.1	10.9	10.6	6.6	3.4	-2.6	-12.6
Vac 26	Ldn	23.8	-3.0	3.9	7.1	10.0	10.9	6.5	2.7	1.9	-0.6	-2.9	-1.1	-1.3	-0.6	2.3	2.9	8.0	6.7	12.9	14.7	15.0	15.9	15.7	11.8	8.2	1.3	-10.6
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											
Remaining contrib. of src "Vac 2"	Ldn																											
Remaining contrib. of src "Vac 3"	Ldn																											
Remaining contrib. of src "Vac 4"	Ldn																											
Remaining contrib. of src "Vac 5"	Ldn																											
Remaining contrib. of src "Vac 6"	Ldn																											
Remaining contrib. of src "Vac 7"	Ldn																											
Remaining contrib. of src "Vac 8"	Ldn																											

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												
Remaining contrib. of src "Vac 24"	Ldn																												
Remaining contrib. of src "Vac 25"	Ldn																												
Remaining contrib. of src "Vac 26"	Ldn																												

Appendix D

Traffic Noise Calculation

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	SSCW 5810 WEST THUNDERBIRD BLVD	JOB #:	0222-2020-08
ROADWAY:	THUNDERBIRD BLVD	DATE:	5-Feb-21
LOCATION:	EXISTING - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,000	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIS	25	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,500	

RECEIVER INPUT DATA

RECEIVER DISTANCE =	50	
DIST C/L TO WALL =	0	
RECEIVER HEIGHT =	5.0	
WALL DISTANCE FROM RECEIVER	10	
PAD ELEVATION =	0.0	
ROADWAY VIEW: LF ANGLE=	-90	
RT ANGLE=	90	
DF ANGLE=	180	

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.105	0.9742
MEDIUM TRUCK	0.489	0.022	0.489	0.0184
HEAVY TRUCKS	0.473	0.054	0.473	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	48.51	- -
MEDIUM TRUCKS	4.0	48.42	- -
HEAVY TRUCKS	8.0	48.51	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.6	63.3	57.2	65.7	66.3
MEDIUM TRUCKS	58.3	54.4	47.0	55.7	61.8	61.9
HEAVY TRUCKS	59.2	55.1	51.7	56.4	62.6	62.7
NOISE LEVELS (dBA)	67.8	65.4	63.6	61.2	68.5	68.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.6	64.6	63.3	57.2	65.7	66.3
MEDIUM TRUCKS	58.3	54.4	47.0	55.7	61.8	61.9
HEAVY TRUCKS	59.2	55.1	51.7	56.4	62.6	62.7
NOISE LEVELS (dBA)	67.8	65.4	63.6	61.2	68.5	68.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	42	90	194	418
LDN	39	85	183	395