

April 24, 2025

Ms. Chelsea Austin
SSCW Companies
960 W. Behrend Drive, Suite 1
Phoenix, AZ 85027

**Subject: SuperStar Express Car Wash at Loop 303 & Indian School – Noise Impact Study –
City of Goodyear, AZ**

Dear Ms. Austin:

MD Acoustics, LLC (MD) has completed a noise assessment for the proposed SuperStar Express Car Wash located near the southeast corner of Arizona State Route 303 and Indian School Road in the City of Goodyear, AZ. This assessment reviews the projected car wash operational noise levels and compares them to the City's noise ordinance. The project proposes a 113-foot car wash tunnel with 17 covered vacuum bays. For your convenience, a noise fundamentals section is provided in Appendix A to explain noise-related terms.

1.0 Assessment Overview

This assessment evaluates the projections of operational noise and compares them 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. The project site is zoned as single family residential. Land uses surrounding the site include general commercial to the north, vacant land to the west and south, and single family residential to the southeast and east. The nearest residences are approximately 490 feet to the southwest of the site.

2.0 Local Acoustical Requirements

The City of Goodyear provides its noise regulations within Chapters 9 and 11 of the Municipal Code. The General Plan states in Standard 42 that land uses that create significant noise shall not extend beyond property lines.

Article 9-1 FREEWAY DEVELOPMENT OVERLAY DISTRICT

9-1-2 Applicability.

All residential development and other noise sensitive land uses located within five hundred (500) feet of Freeway alignments shall comply with the provisions of this Overlay District. Noise sensitive land uses shall include schools, places of worship, childcare facilities, hospitals, nursing homes, libraries, and similar facilities, as determined by the Zoning Administrator, or his or her designee. Abatement measures are generally not required for new commercial and industrial developments. Abatement measures are generally required only with respect to structures designed for human occupancy within the specified distance from the Freeway right-of-way boundaries.

9-1-3 Sound Attenuation Plan.

A. 2. The sound attenuation plan shall include the proposed attenuation measures needed to reasonably predict that the projected exterior noise levels on the property at ground level shall not exceed the (Leq) sixty-seven (67) dBA noise level.

These regulations do not apply to the project but can be used as a point of reference for noise-sensitive uses and their limits.

Chapter 11 OFFENSES

11-1-8 Noise.

Operation of construction or landscaping equipment. It shall be unlawful for any person to operate equipment or perform any outside construction, landscaping, or repair work on residences, buildings, structures, or projects or to operate any pile driver, power shovel, electric-, battery-, or gasoline-powered blower, hedge, or tree trimming equipment, pneumatic hammer, derrick, power hoist or any other construction or landscaping type device within a residential zoning district, or within 500 feet of a residential zoning district, except within the time periods specified herein, unless a permit has been obtained beforehand from the City Manager or his or her authorized representative.

(E) Construction and landscaping start/stop times.

(1) Concrete. From April 15th to October 15th inclusive, concrete may be poured each day between the hours of 5:00 a.m. and 7:00 p.m. or at such times as authorized by permit. From October 16th to April 14th inclusive, concrete may be poured each day between the hours of 6:00 a.m. to 7:00 p.m. or at such times as authorized by permit.

(2) All other construction, landscaping, or repair work activities in residential zoning districts or within 500 feet of a residential zoning district. . From April 15th to October 15th inclusive, construction, landscaping, or repair work shall not begin prior to 6:00 a.m. and must stop by 7:00 p.m. each day in or within 500 feet of a residential zoning district or at such times as authorized by permit. From October 16th to April 14th inclusive, all other construction, landscaping, or repair work shall not begin prior to 7:00 a.m. and must stop by 7:00 p.m. each day in or within 500 feet of a residential zoning district or at such times as authorized by permit.

(3) Commercial and industrial zoning districts. Construction and repair work in commercial and industrial zoning districts not within 500 feet of a residential zoning district may be conducted seven days a week, 24 hours a day at any time of the year.

(F) Weekends and holidays. Notwithstanding the foregoing, construction, landscaping, or repair work within a residential zoning district, or within 500 feet of a residential zoning district, shall not begin prior to 7:00 a.m. and must stop by 7:00 p.m. on any Saturday, Sunday or a legally recognized city holiday, unless such other times are authorized by permit.

Exhibit A
Location Map

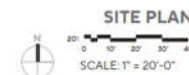


4



SITE DATA TABLE		GENERAL	
ADDRESS	SEC 100P 303 & W. INDIAN SCHOOL RD, 00050-0434 BEES		
ZONING	PA2 (PLANNED AREA DEVELOPMENT) IN APPROPD C-2 (GENERAL COMMERCIAL DISTRICT)		
PROPOSED USE	ACTIVATED FURNISH, PAID SERVICE PARK (210 CARPARKS & 75 PERSONS)		
COLOR OF CURB PAINT	PA2 - TRUCKS (RED)		
ADDRESS OF PARCEL NO.	301-0-002		
SPR GROSS AREA	15,600 SQ FT		
PLANNING DISTRICT AREA	1.68 AC		
CONSTRUCTION TYPE	1-B / FULLY SPRINKLERED		
OCCUPANCY	B-BUSINESS		
	REQUIRED / ALLOWED		PROVIDED
TRAFFIC FLOOR AREA RATIO	-		0.0717 (B-K) 0.07
TRAFFIC LOT COVERAGE	TRAFFIC 35%		1.12% (B-K) 0.07
LANDSCAPE COVERAGE	-		SEE LANDSCAPE PLAN
TRAFFIC ETPDES	-		1
MIN. BUILDING HEIGHT	10'0"		10'0"
MIN. FRONT YARD SETBACK	25'0"		0'0"
MIN. SIDE SETBACK	-		0
MIN. REAR SETBACK	-		0
PARKING CALCULATIONS			
PARKING SPACES PROVIDED			
EXIST. REQUIRED PARKING	10 SPACES		
PROPOSED REQUIRED ACCOMMODATION ACCESSIBLE	1 SPACES (INCLUDES 4" SIDEWALKS)		
TOTAL REQUIRED PARKING	11 SPACES (INCLUDES 4" SIDEWALKS)		
PROPOSED PROVIDED PARKING	21 SPACES (INCLUDES 4" SIDEWALKS)		
PROPOSED PROVIDED PARKING	21 SPACES		
PARKING	REQUIRED		PROVIDED
SEC. 8-4.2	1 SPACES		2 SPACES

71	PEDESTRIAN ACCESS (ADA COMPLIANT)
72	THREE LANE QUEUE AND P.O.S. TERMINALS, TYP.
73	CONCRETE PAD
74	SERVICE ENTRANCE SECTION, OPTION LOCATIONS WITH FINAL LOCATION TO BE DETERMINED BY POWER.
75	BICYCLE PARKING
76	NOT USED.
77	TRASH ENCLOSURE PER CITY STANDARDS
78	ACCESSIBLE PARKING, SIGNAGE AND STRIPING PER CITY STANDARDS.
79	VEHICLE ESCAPE LANE
80	CONCRETE PAVING
81	6" CURB & GUTTER
82	LANDSCAPING
83	12"x20" VACUUM STATIONS
84	LPR ARCH
85	RIGHT-OUT ONLY
86	PROPOSED 45 DEGREE PARKING



A1.0

Scale	1" = 10'-0"
Job No.	2024-0292
Date	2025-03-20

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. 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 model assumes that the car wash tunnel and equipment building is approximately 4,000 square feet. The tunnel is approximately 113 feet long with a 12-foot-tall by 16-foot-wide exit and entrance opening.

The blowers (an IDC Black Widow blower system or equivalent) were modeled at 10 feet high as point sources. The blowers will be located approximately 5 to 10 feet inside the exit of the tunnel. The reference equipment sound level data is provided in Appendix C.

The SP model assumes a total of 17 vacuums and the dryer system are operating simultaneously (worst-case scenario) when in actuality the noise will be intermittent and lower in noise level. The reference vacuum equipment sound level data is provided in Appendix C.

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

4.0 Findings and Recommendations

Existing Exterior Noise

Three (3) 15-minute ambient noise measurements were conducted at the project site on November 5th, 2024. The sound level meter measured the 15-minute Leq, Lmin, Lmax, and other statistical data (e.g., L2, L8...). The noise measurement was taken to determine the existing ambient noise levels. Noise data indicates that traffic along Indian School Road is the primary source of noise impacting the site and the adjacent uses. This assessment utilizes the ambient noise data as a basis and compares project operational levels to said data.

The results of the short-term noise data are presented in Table 1.

Table 1: Short-Term Noise Measurement Data (dBA)¹

Location	Start Time	Stop Time	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)	L(90)
NM1	1:34 PM	1:49 PM	55.1	59.7	49.2	58.6	57.5	56.1	54.7	51.6
NM2	1:52 PM	2:07 PM	68.9	86.6	46.8	78.9	73.5	64.4	58.9	50.8
NM3	2:12 PM	2:27 PM	61.6	81.5	51.0	66.8	63.0	60.2	57.2	53.5
Notes:										
1. Short-term noise monitoring locations are illustrated in Appendix B.										

Noise data indicates the ambient noise level is at 55 to 69 dBA Leq near the project site and surrounding area. Additional field notes and photographs are provided in Appendix B.

For this evaluation, MD has compared the project's projected noise levels to the minimum existing ambient level near the residential properties.

Future Exterior Noise

Sensitive receptors affected by the project operational noise include residences to the southeast and east. A total of three (3) receptors were modeled to accurately evaluate the future operational noise levels at the sensitive receptors. A yellow dot denotes a receptor. R1, R2, and R3 represent the noise level at the residential uses to the southeast of the project site. R4 and R5 represent the future commercial properties.

Table 2 presents the measured ambient noise level, the project's noise level, and the combined project plus ambient noise level condition. Ambient noise levels were determined by noise measurement. See Appendix D for SoundPLAN inputs and outputs.

Table 2: Worst-Case Predicted Operational Noise Levels (dBA)¹

Receptor ¹	Existing Ambient Noise Level (dBA, Leq) ²	Project Noise Level (dBA, Leq) ³	Total Combined Noise Level (dBA, Leq)	Change in Noise Level as Result of Project
1	55	37	55	0
2	55	34	55	0
3	55	34	55	0
4	62	65	67	5
5	62	57	63	1
Notes: ¹ Receptors 1 and 2 represent residential properties. Receptor 3 represents a pickleball court. Receptor 4 represents the future commercial property line. Receptor 5 represents the future drive thru. ² See Appendix B for the ambient noise measurement. ³ See Exhibit C for the operational noise level projections at said receptors.				

Exhibit C shows the future noise level projections and contours based on the proposed project design. The model indicates that the project-only noise level will be up to 37 dBA Leq at the residential receptors. The project plus ambient noise level is projected to be up to 55 dBA Leq at the residential receptors. The project will not increase the existing ambient noise level at the residential uses. The adjacent commercial properties will be up to 65 dBA Leq.

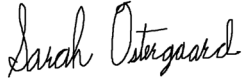
The noise code doesn't have a specific standard for residential uses, but the traffic noise standard of 67 dBA Leq will be used as a guide. The combined noise level at the residential receptor is below this benchmark and, thus, will not be significant.

Increasing the height of the existing property line wall will not have a significant effect on the overall noise levels. See Appendix D.

5.0 Conclusions

MD is pleased to provide this noise review for the SuperStar Express Car Wash project. If you have any questions regarding this analysis, please call our office at (602) 774-1950.

Sincerely,
MD Acoustics, LLC

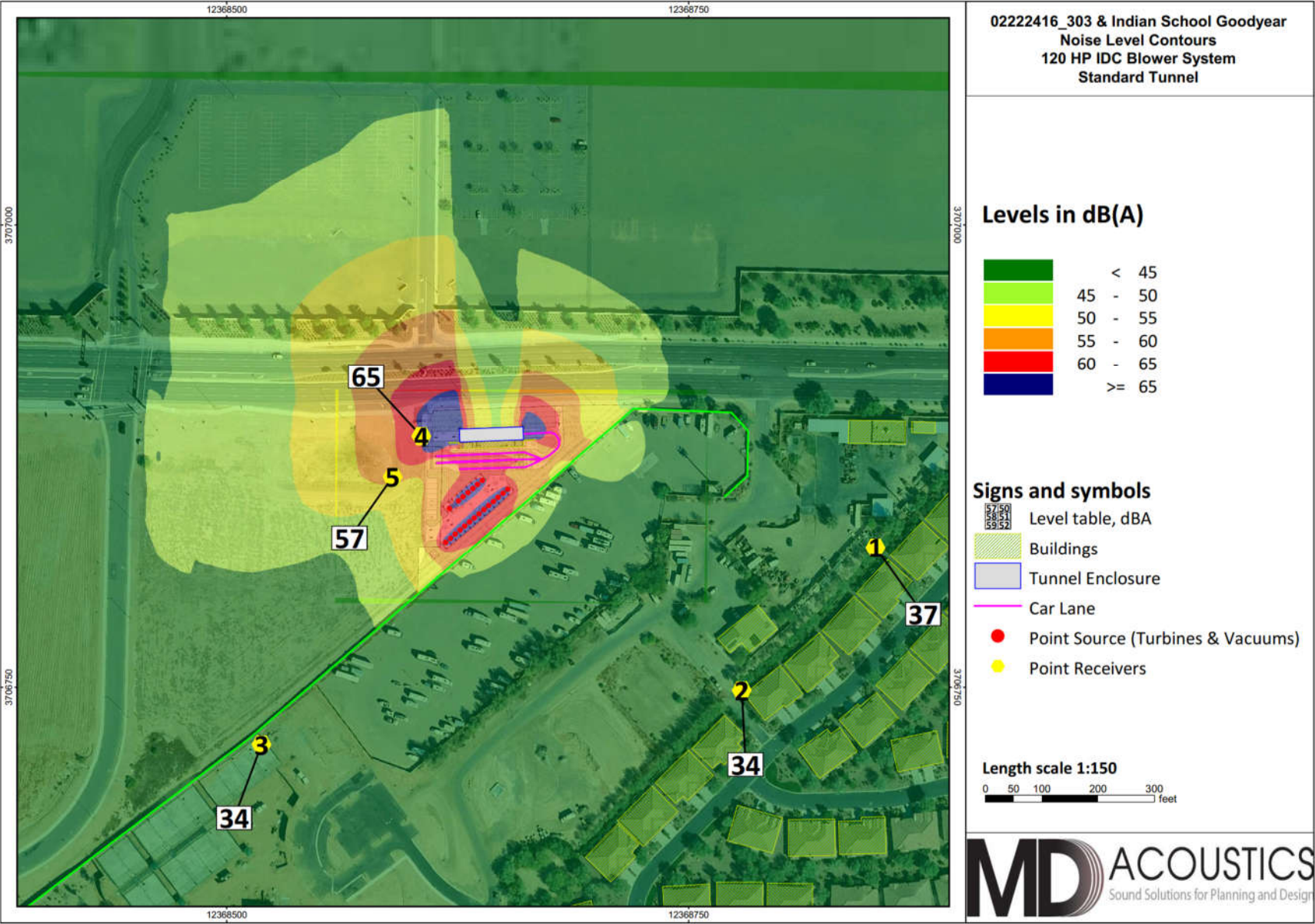


Sarah Ostergaard, INCE-USA
Acoustical Consultant



Claire Pincock, INCE-USA
Sr. Acoustical Consultant

Exhibit C
Operational Noise Levels



Appendix A

Fundamentals of Noise

1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic, or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

3 Sound Pressure Levels and Decibels

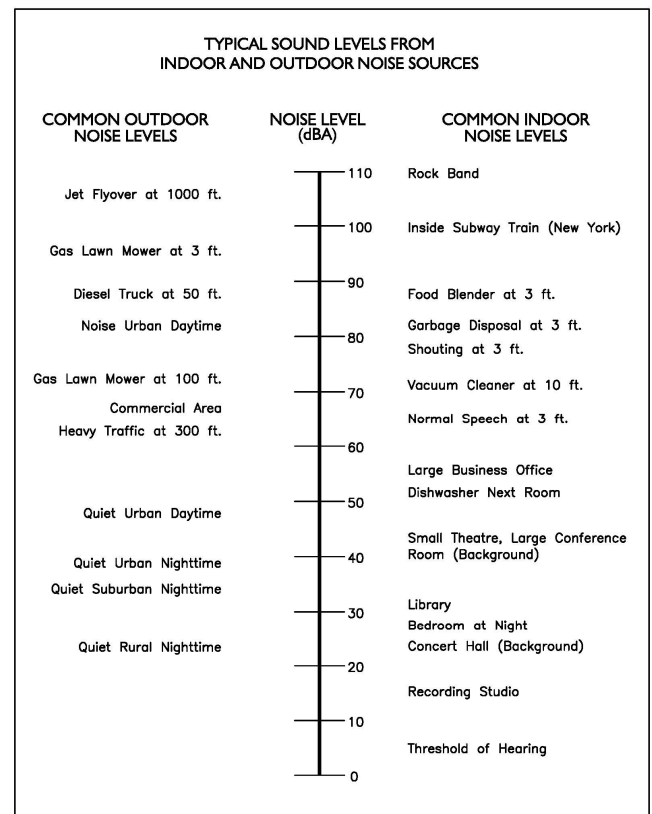
The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m²), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.0000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels abbreviated dB. Exhibit C illustrates reference sound levels for different noise sources.

4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds of equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.



6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

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.

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: Any 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...".

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.

7 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity and turbulence can further impact how far sound can travel.

Appendix B
Field Sheet

15-Minute Continuous Noise Measurement Datasheet - NM-1, NM-2, NM-3

Project Name: 303 & Indian School
Project: #/Name: 0222-2024-016
Site Address/Location: Loop 303 & Indian School Rd
Date: 11/05/2024
Field Tech/Engineer:

Site Observations:
Measurement one was taken approximately 140 feet from the pickleball courts and 47 feet from the road. Pickleball playing could be heard at this location. Location 2 is approximately 116 feet from W Indian School Road. Several Jets flew over during the measurement. Location 3 was taken 124 feet from W Indian School Rd. Indian school road was the main source of noise.

Sound Meter: XL2, NTI **SN:** A2A-16164-E0
Settings: A-weighted, slow, 1-sec, 15-minute interval
Site Id: NM-1, NM-2, NM-3



15-Minute Continuous Noise Measurement Datasheet - Cont. - NM-1, NM-2, NM-3

Project Name: 303 & Indian School

Calibrator:

Site Address/Location: Loop 303 & Indian School Rd

Cal Check: Pre-test:

Post Test:

Site Id: NM-1, NM-2, NM-3

Figure 1: NM-1



Figure 2: NM-2



Figure 3: NM-3

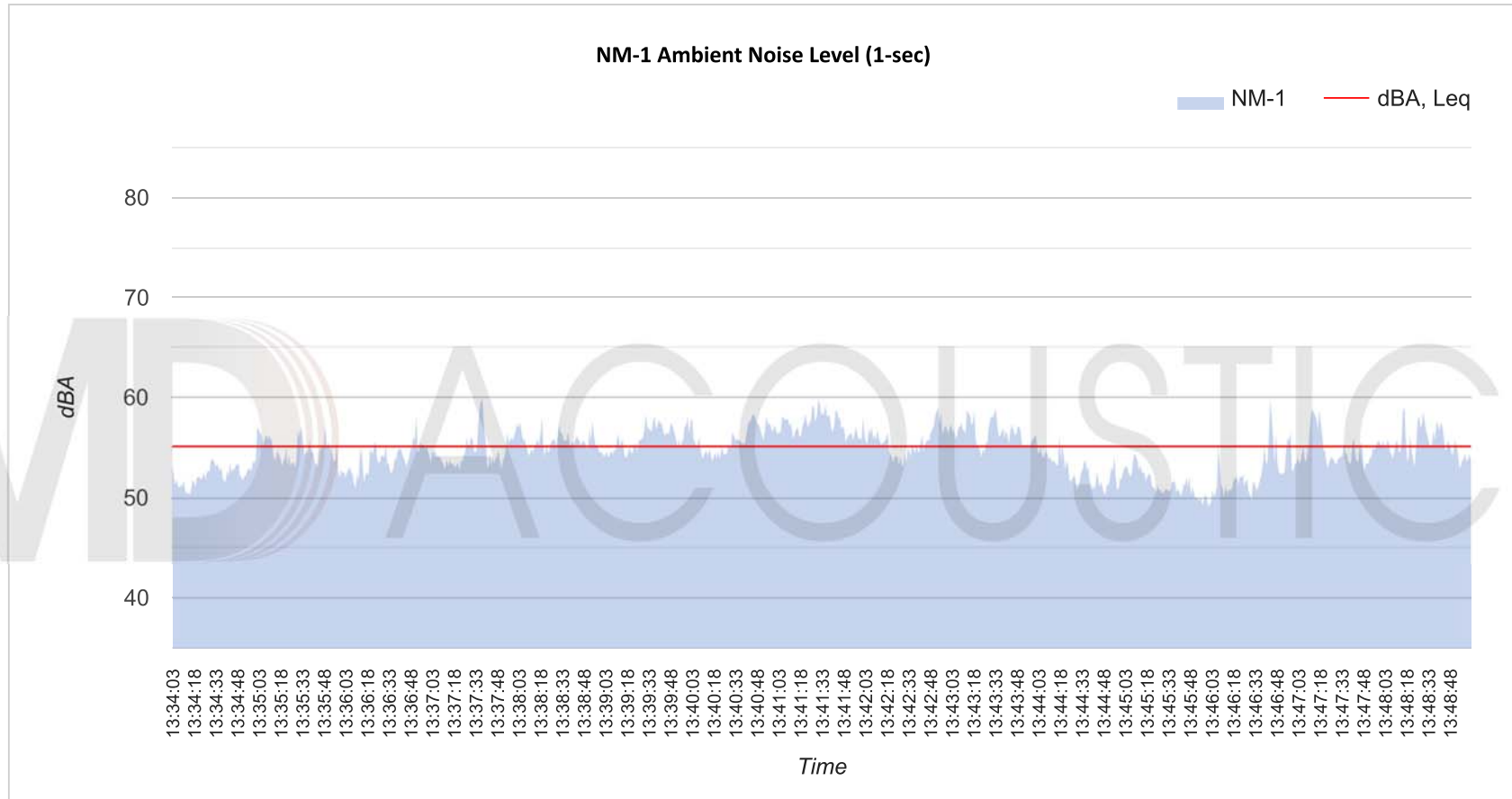


Table 1: Baseline Noise Measurement Summary

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
NM-1	1:34 PM	1:49 PM	55.1	59.7	49.2	58.6	57.5	56.1	54.7	51.6
NM-2	1:52 PM	2:07 PM	68.9	86.6	46.8	78.9	73.5	64.4	58.9	50.8
NM-3	2:12 PM	2:27 PM	61.6	81.5	51.0	66.8	63	60.2	57.2	53.5

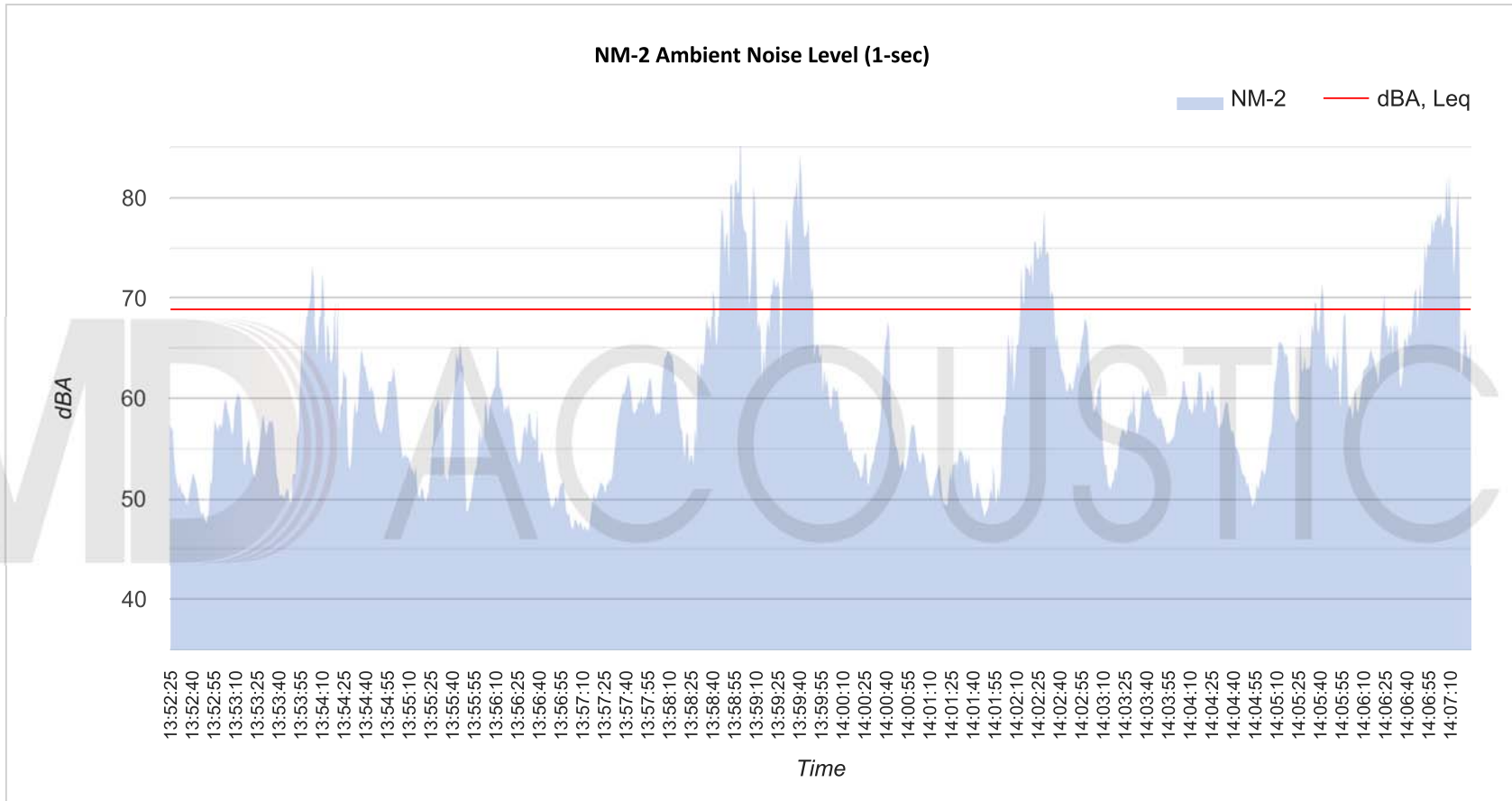
15-Minute Continuous Noise Measurement Datasheet - Cont. - NM-1

Project Name:	303 & Indian School	Site Topo:	Flat	Noise Source(s) w/ Distance:
Site Address/Location:	Loop 303 & Indian School Rd	Meteorological Cond.:	Clear Skies, 80degrees	Approximately 140feet from Pickleball Courts
Site Id:	NM-1	Ground Type:	soft	



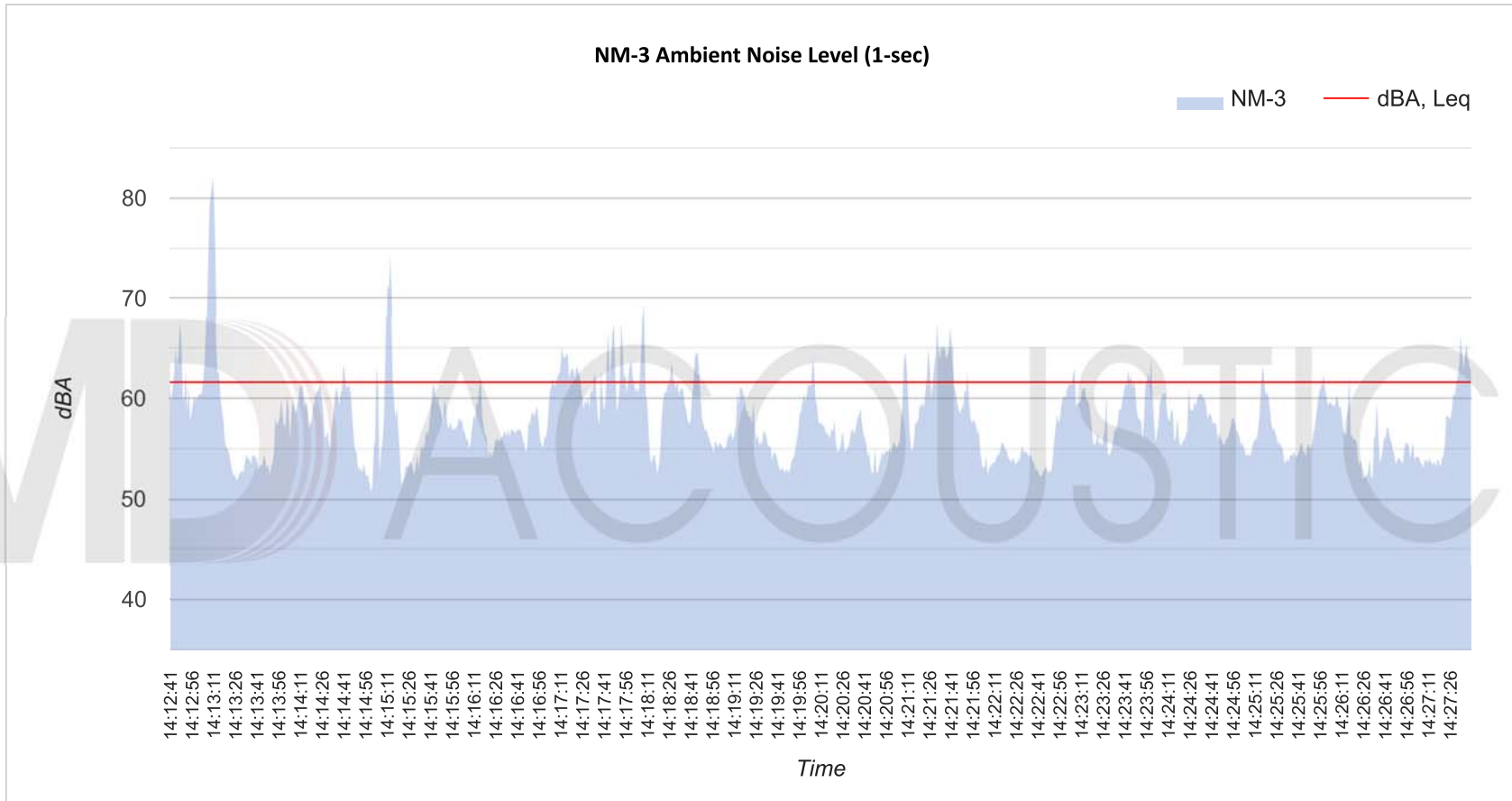
15-Minute Continuous Noise Measurement Datasheet - Cont. - NM-2

Project Name:	303 & Indian School	Site Topo:	Flat	Noise Source(s) w/ Distance:
Site Address/Location:	Loop 303 & Indian School Rd	Meteorological Cond.:	Clear Skies, 80 degrees	
Site Id:	NM-2	Ground Type:	soft	

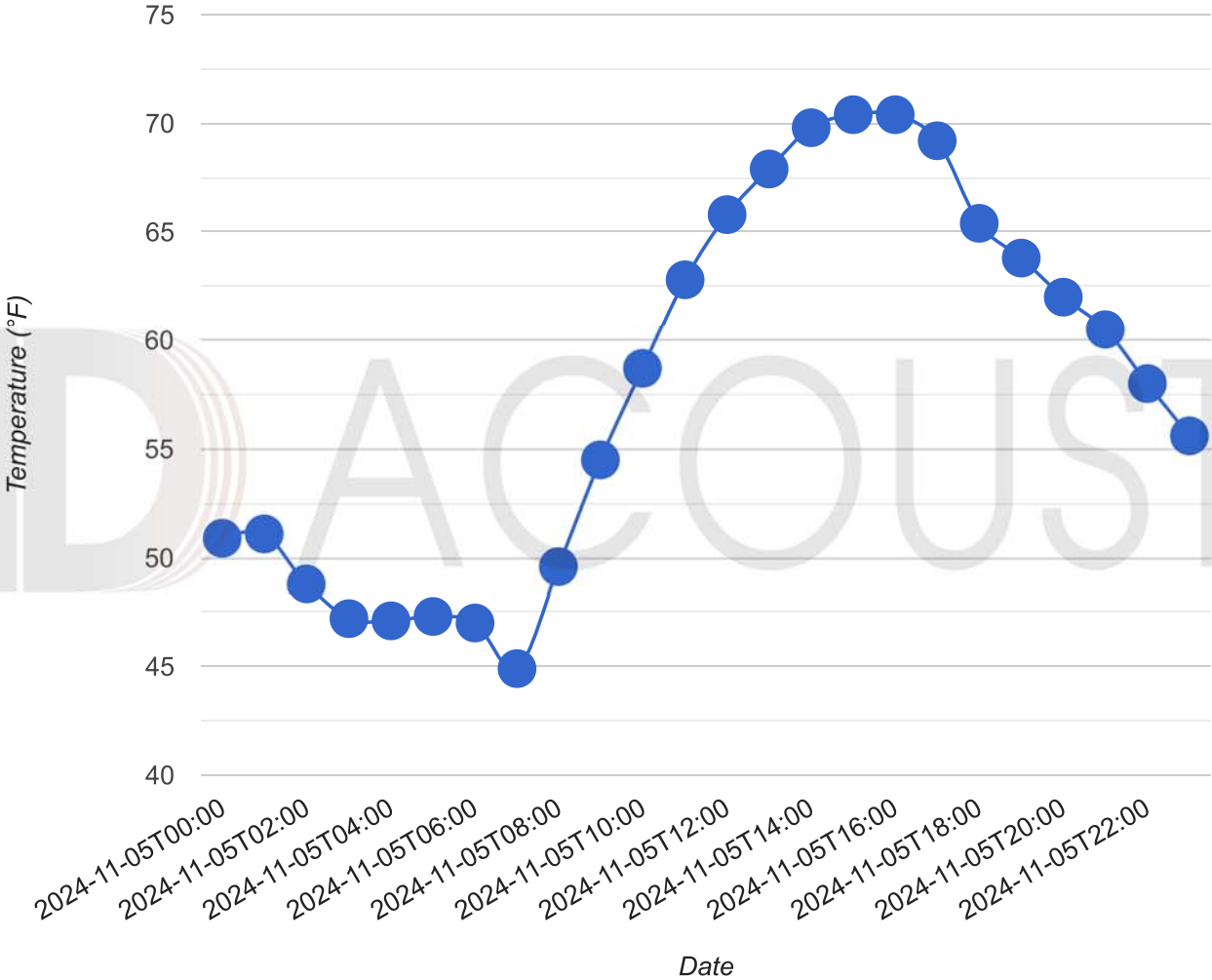


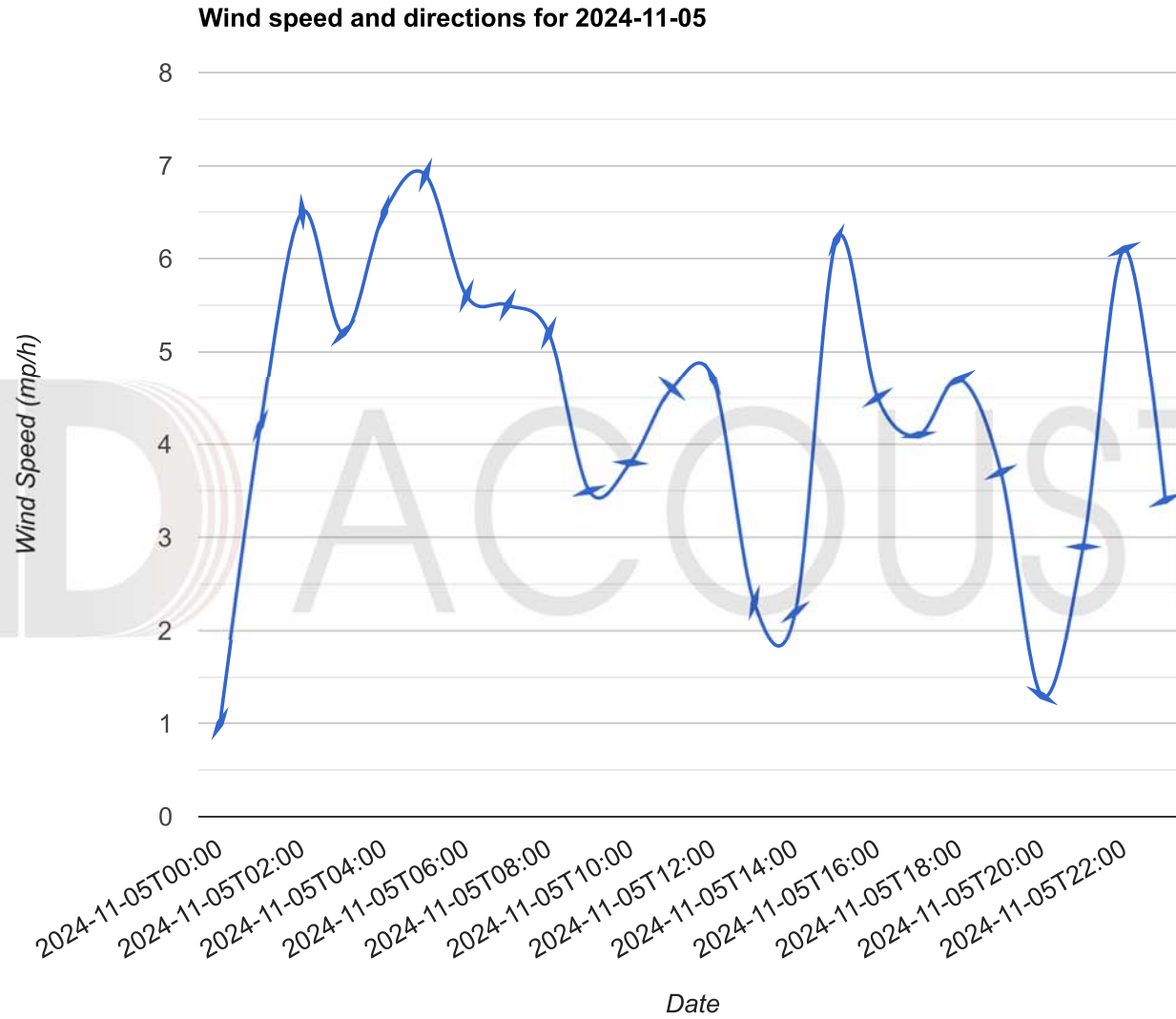
15-Minute Continuous Noise Measurement Datasheet - Cont. - NM-3

Project Name:	303 & Indian School	Site Topo:	Flat	Noise Source(s) w/ Distance:
Site Address/Location:	Loop 303 & Indian School Rd	Meteorological Cond.:	Clear Skies, 80 degrees	
Site Id:	NM-3	Ground Type:	Soft	



Weather forecast for 2024-11-05





Source: Global Forecast System (GFS) weather forecast model

Appendix C
Sound Reference Data



STEALTH PREDATOR DRYING SYSTEM



THE FIRST "ULTRA QUIET" DRYING SYSTEM

- ✓Patent pending Reverse flow technology
- ✓Producers constructed from 304 surgical stainless steel
- ✓Over 11,000 cubic feet per minute (CFM) per 10HP motor
- ✓Meets or exceeds most U.S. and International sound regulations
- ✓Sound & Performance studies done in reverberant sound room ISO 3741:2010, 3747:2010



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Cary, IL 60013

Stealth Predator Ultra-Quiet Drying System Specifications

30HP System - Total Sound 60Hz

80HP System - Total Sound 60Hz

Q = sound source

65 dBA at Q=1, 30 feet

61.8 dBA at Q=1, 45 feet

60.2 dBA at Q=1, 55 feet

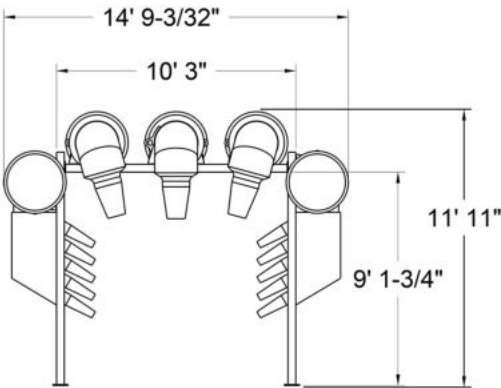
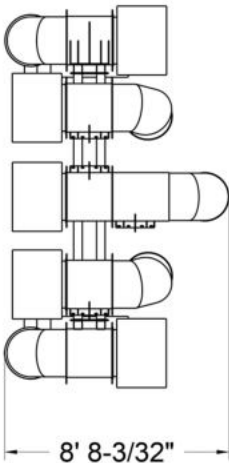
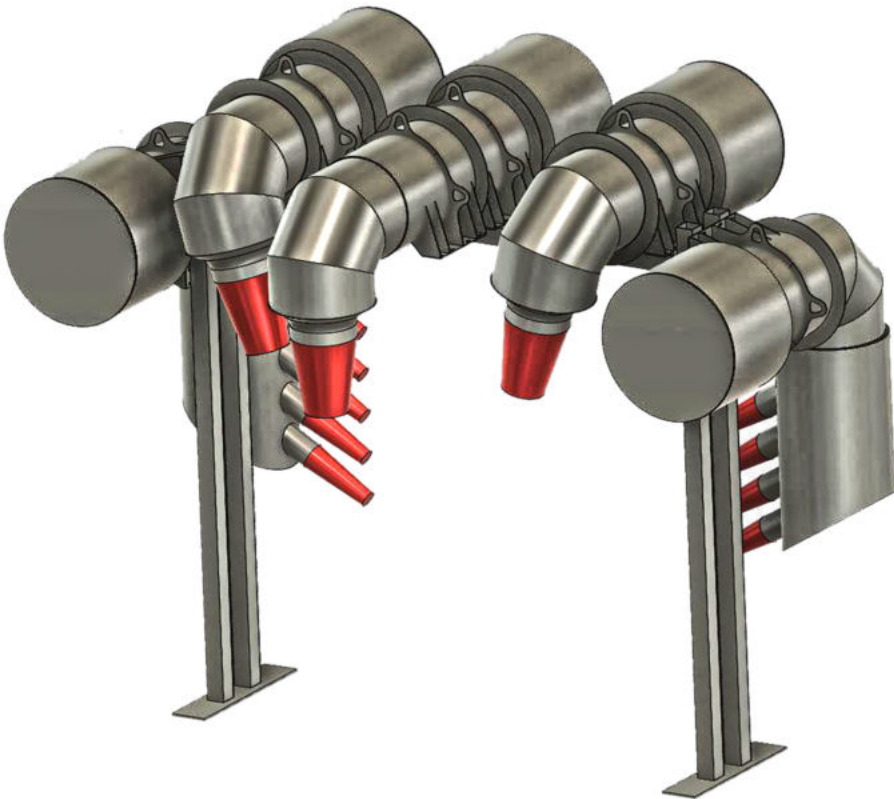
69.4 dBA at Q=1, 30 feet

66.5 dBA at Q=1, 45 feet

64.9 dBA at Q=1, 55 feet

Meets OSHA Sound Exposure Requirements

✓ The Stealth Predator features patent pending "Reverse flow air technology" which creates the first "Ultra-Quiet Dryer" and is the most powerful Ultra Quiet Dryer ever designed.



SPECIFICATIONS

15' 2" Bay Width
12' 0" Ceiling Height
96" Standard Clearance

Closed cell foam nozzles available in red, blue, black

Ducts-Stainless Steel
Molded Aluminum Impellers
Stainless Steel Motor Housings

Slotted flanges for adjustability of air outlet and air intake direction

Project: SuperStar Car Wash Chula Vista
Site Location: 1555 W Warner Rd, Gilbert, AZ 85233
Date: 4/5/2018
Field Tech/Engineer: Robert Pearson
Source/System: Vacutec System

Site Observations:

Clear sky, measurements were performed within 1.5ft of source. Measurements were performed while the vacuum was positioned at three (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.

Location: Vac Bay 1
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-sec, 10-sec duration
Meteorological Cond.: 80 degrees F, 2 mph wind

Table 1: Summary Measurement Data

Source	System	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	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Vacutec (Holstered)	Vacuum	63.3	9	17	22	29	31	35	40	41	44	43	46	48	47	49	51	51	52	53	52	52	50	52	53	50	47	47	48	45	39	30	
Vacutec (Unholstered)	Vacuum	80.7	6	19	22	28	34	37	40	43	47	46	48	48	48	49	54	55	58	58	62	65	68	70	74	75	73	69	67	65	63	60	55
Vacutec (Inside Car)	Vacuum	69.6	16	28	31	38	42	45	49	51	52	55	60	61	57	55	59	53	55	56	54	57	57	57	57	57	55	54	51	48	46	42	36
Average Level*	Vacuum	76.3	13	24	28	34	38	41	45	47	49	51	56	57	53	52	56	54	56	56	59	61	64	66	69	70	68	64	62	60	58	55	50

* Refers to the logarithmic average of all measurements. This measurement represents an average of the multiple vacuum positions.

Figure 1: Example Measurement Position

Figure 1: Holstered



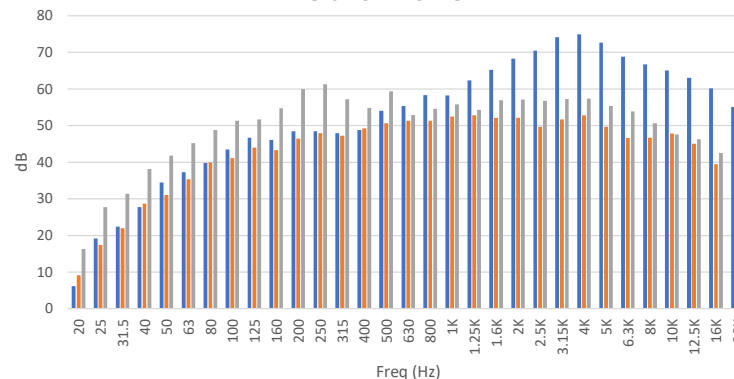
Figure 2: Unholstered



Figure 3: Inside Car



1.5ft from Nozzle





SOUND LEVEL METER READINGS

MODEL: FT-DD-T340HP4 (40hp VACSTAR TURBINE VACUUM PRODUCER)

READING ONE: 43 DB-A, 3 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING TWO: 36 DB-A, 10 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING THREE: 24 DB-A, 20 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING FOUR: 12 DB-A, 30 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

NOTE: THESE READINGS WERE TAKEN OUTSIDE OF 8'x10'x8' CINDER BLOCK ENCLOSURE WITH CONCRETE SLAB AND WOOD JOIST ROOF.

SOUND LEVEL METER USED:

SIMPSON MODEL #40003 – MSHA APPROVED.
MEETS OSHA & WALSH-HEALY REQUIREMENTS FOR NOISE CONTROL.
CONFORMS TO ANSI S1.4-1983, IEC 651 SPECS FOR METER TYPE.

Vacutech
1350 Hi-Tech Drive, Sheridan WY, 82801
PHONE: (800) 917-9444 FAX: (303) 675-1988
EMAIL: info@vacutechllc
WEB SITE: vacutechllc.com

Appendix D
SoundPLAN Inputs/Outputs

303 & Indian School Goodyear

Octave spectra of the sources in dB(A) - 002 - 140 HP IDC - Standard: Outdoor SP

3

Name	Source type	l or A m,m²	Li dB(A)	Rw dB	L'w dB(A)	Lw dB(A)	KI dB	KT dB	DO-Wall dB	Emission spectrum	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	Area	206.01	87.1	57.0	37.2	60.4	0.0	0.0	3	1990_Facade 01_	50.2	47.4	57.8	54.8	42.1	35.4	25.0	15.6	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	Area	26.85	81.6	57.0	33.4	47.6	0.0	0.0	3	1992_Facade 02	35.7	32.4	46.0	41.0	22.3	6.4	-14.6		
001 - Black Widow IDC - Stndard Tunnel-Facade 03	Area	206.01	87.1	57.0	37.2	60.4	0.0	0.0	3	1994_Facade 03_	50.2	47.4	57.8	54.8	42.1	35.4	25.0	15.7	
001 - Black Widow IDC - Stndard Tunnel-Facade 04	Area	33.17	89.5	57.0	39.1	54.3	0.0	0.0	3	1996_Facade 04_	44.2	41.6	51.4	49.1	37.1	30.7	20.4	11.6	
001 - Black Widow IDC - Stndard Tunnel-Roof 01	Area	242.96	87.1	57.0	37.1	61.0	0.0	0.0	0	1984_Roof 01_	50.7	47.9	58.4	55.5	42.7	36.0	25.7	16.3	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	Area	9.29	90.1	0.0	90.1	99.8	0.0	0.0	3	1997_Transmissive area 01	69.1	80.5	92.6	96.1	93.1	90.9	83.9	73.5	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	Area	15.61	81.5	0.0	81.5	93.4	0.0	0.0	3	1993_Transmissive area 02	63.0	73.6	89.6	90.6	80.9	68.7	51.0	37.2	
Car Lane	Line	94.10			62.8	82.5	0.0	0.0	0	Drive-Thru - Idiling Car @ 6ft	66.2	67.7	70.5	75.5	76.0	77.3	73.8	65.8	
Car Lane	Line	57.61			62.8	80.4	0.0	0.0	0	Drive-Thru - Idiling Car @ 6ft	64.1	65.6	68.4	73.3	73.9	75.2	71.7	63.7	
Car Lane	Line	46.00			62.8	79.4	0.0	0.0	0	Drive-Thru - Idiling Car @ 6ft	63.1	64.6	67.4	72.3	72.9	74.2	70.7	62.7	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	

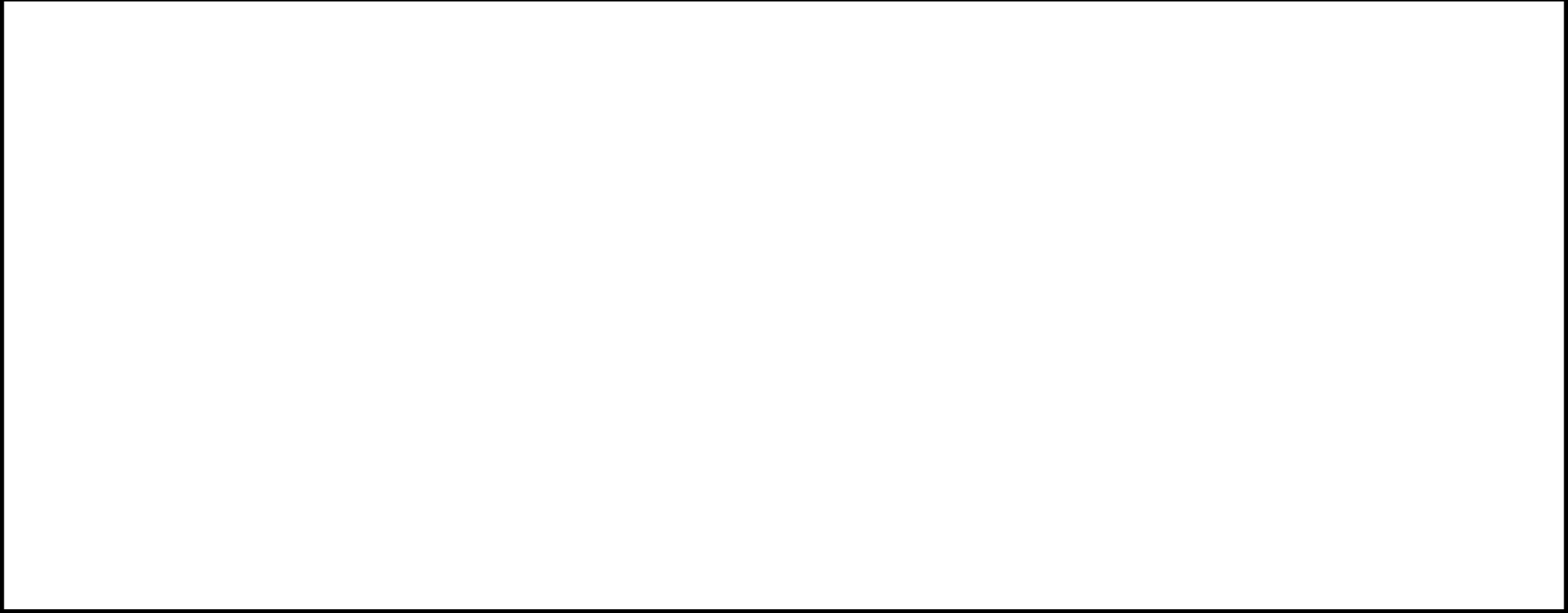
MD Acoustics LLC 4960 S Gilbert Rd Chandler AZ 85249 USA

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303 & Indian School Goodyear
Octave spectra of the sources in dB(A) - 002 - 140 HP IDC - Standard: Outdoor SP

3

Name	Source type	I or A	Li	Rw	L'w	Lw	KI	KT	DO-Wall	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Vac	Point				81.0	81.0	0.0	0.0	0	Vacutech - in car	62.4	69.2	75.8	72.6	71.3	73.2	72.6	67.8	



303 & Indian School Goodyear

Contribution spectra - 002 - 140 HP IDC - Standard: Outdoor SP

Source	Sum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver R1	FI G	Lr,lim	dB(A)	Leq,d	36.7 dB(A)	Sigma(Leq,d)	0.0 dB(A)	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	-0.4	-6.9	-14.4	-3.2	-7.6	-20.9	-29.1	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	-9.5	-18.8	-26.1	-11.5	-15.8			
001 - Black Widow IDC - Stndard Tunnel-Facade 03	-8.2	-11.6	-20.9	-12.2	-18.4			
001 - Black Widow IDC - Stndard Tunnel-Facade 04	-14.3	-17.3	-26.8	-18.9	-24.4			
001 - Black Widow IDC - Stndard Tunnel-Roof 01	0.5	-8.8	-14.6	-2.0	-5.2	-17.5	-24.7	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	22.8	5.2	8.0	17.3	18.0	16.1	13.8	0.8
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	35.2	8.2	14.6	31.1	32.4	23.6	11.3	-11.5
Car Lane	20.6	9.2	6.0	9.0	12.0	14.6	16.2	8.2
Car Lane	18.8	6.9	3.7	5.5	9.8	13.1	14.9	6.8
Car Lane	16.6	6.1	2.9	4.7	8.1	10.5	12.1	3.7
Vac	16.4	5.0	6.7	12.6	8.0	5.9	7.6	0.1
Vac	16.3	4.9	6.6	12.5	7.9	5.8	7.5	0.0
Vac	16.2	4.8	6.5	12.4	7.8	5.7	7.5	-0.1
Vac	16.5	5.0	6.8	12.7	8.1	5.9	7.7	0.2
Vac	16.7	5.3	7.1	13.0	8.4	6.1	7.8	0.5
Vac	16.6	5.2	7.0	12.9	8.3	6.0	7.8	0.4
Vac	16.5	5.1	6.9	12.8	8.2	6.0	7.7	0.3
Vac	17.7	5.1	7.2	12.2	7.6	9.1	12.0	5.5
Vac	17.7	5.2	7.3	12.3	7.7	9.1	11.9	5.4
Vac	17.8	5.2	7.4	12.4	7.7	9.2	11.9	5.5
Vac	17.6	5.0	7.1	12.1	7.5	9.0	11.9	5.4
Vac	17.3	4.7	6.7	11.8	7.1	8.7	11.7	5.1
Vac	17.4	4.8	6.9	12.0	7.3	8.9	11.8	5.2
Vac	17.5	4.9	7.0	12.0	7.4	8.9	11.9	5.3
Vac	15.9	4.6	6.3	12.1	7.5	5.6	7.1	-0.4
Vac	16.0	4.6	6.4	12.2	7.6	5.6	7.3	-0.3
Vac	16.1	4.7	6.4	12.3	7.7	5.7	7.4	-0.2
Vac	15.8	4.5	6.2	12.1	7.4	5.5	7.0	-0.5
Vac	15.6	4.2	5.9	11.8	7.1	5.3	6.9	-0.7
Vac	15.6	4.3	6.0	11.9	7.2	5.4	7.0	-0.6
Vac	15.7	4.4	6.1	12.0	7.3	5.4	6.9	-0.6
Receiver R2	FI G	Lr,lim	dB(A)	Leq,d	34.2 dB(A)	Sigma(Leq,d)	0.0 dB(A)	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	-0.1	-5.0	-12.5	-3.5	-8.1	-21.7		
001 - Black Widow IDC - Stndard Tunnel-Facade 02	-10.7	-17.2	-25.0	-13.0	-19.0			
001 - Black Widow IDC - Stndard Tunnel-Facade 03	-5.1	-7.4	-16.9	-10.7	-17.1			
001 - Black Widow IDC - Stndard Tunnel-Facade 04	-12.9	-15.6	-24.3	-18.1	-23.7			
001 - Black Widow IDC - Stndard Tunnel-Roof 01	1.9	-5.5	-11.3	-1.0	-4.1	-16.4	-23.8	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	22.5	7.1	10.8	17.7	17.7	14.5	11.9	0.0
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	28.6	8.8	13.6	25.8	24.7	13.4	-2.5	-26.0
Car Lane	21.6	12.0	10.0	10.0	12.9	15.2	16.7	9.7
Car Lane	20.2	9.1	6.8	8.0	11.1	13.9	15.8	9.0
Car Lane	18.8	8.4	5.7	6.5	10.4	12.6	14.0	7.2
Vac	18.2	6.3	8.2	12.7	7.6	8.7	12.5	6.7
Vac	18.2	6.3	8.2	12.7	7.5	8.9	12.5	6.7
Vac	17.7	6.2	8.1	12.6	7.5	6.3	11.9	6.2
Vac	16.5	6.4	8.3	12.8	7.6	4.0	7.1	0.6
Vac	16.4	6.5	8.4	12.9	7.7	4.1	4.8	2.0
Vac	16.5	6.4	8.4	12.8	7.7	4.1	5.9	1.9
Vac	16.6	6.4	8.3	12.8	7.7	4.1	7.1	1.9
Vac	19.6	6.5	8.8	12.4	9.6	11.6	14.8	9.2
Vac	19.8	6.5	8.9	12.5	10.2	11.7	14.8	9.9
Vac	19.7	6.6	8.9	12.5	10.3	11.7	14.3	9.9

303 & Indian School Goodyear

Contribution spectra - 002 - 140 HP IDC - Standard: Outdoor SP

Source	Sum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac	19.6	6.5	8.8	12.4	9.5	11.5	14.7	9.1
Vac	18.8	6.3	8.6	12.2	7.4	11.2	13.4	7.8
Vac	19.4	6.4	8.7	12.3	7.6	12.1	14.6	9.0
Vac	19.4	6.4	8.8	12.4	7.6	11.7	14.7	9.1
Vac	16.1	6.1	8.0	12.5	7.3	4.1	5.7	-1.4
Vac	17.6	6.2	8.0	12.5	7.4	6.1	11.8	6.1
Vac	17.7	6.2	8.1	12.6	7.4	6.2	11.9	6.2
Vac	16.0	6.1	7.9	12.4	7.3	3.9	5.2	-1.7
Vac	17.5	5.9	7.7	12.2	7.0	8.2	11.5	5.8
Vac	17.8	5.9	7.8	12.3	7.1	9.6	11.7	6.0
Vac	17.9	6.0	7.8	12.3	7.2	9.7	11.9	6.1
Receiver R3 FI G Lr,lim dB(A) Leq,d 34.2 dB(A) Sigma(Leq,d) 0.0 dB(A)								
001 - Black Widow IDC - Stndard Tunnel-Facade 01	-2.6	-7.6	-15.1	-6.1	-10.5	-23.8		
001 - Black Widow IDC - Stndard Tunnel-Facade 02	-20.9	-24.6		-23.4				
001 - Black Widow IDC - Stndard Tunnel-Facade 03	-8.0	-10.5	-19.8	-13.1	-19.5			
001 - Black Widow IDC - Stndard Tunnel-Facade 04	-7.5	-12.1	-19.6	-11.4	-15.0	-27.8		
001 - Black Widow IDC - Stndard Tunnel-Roof 01	-1.0	-8.4	-14.3	-4.0	-7.1	-19.4	-26.7	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	28.6	10.2	15.2	24.2	24.8	19.3	13.4	0.6
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	16.9	0.5	3.5	14.7	11.7	1.7	-10.5	
Car Lane	19.2	9.0	6.0	5.5	8.4	12.7	15.4	8.7
Car Lane	18.1	7.7	4.8	4.3	7.1	11.5	14.2	7.8
Car Lane	16.9	6.7	3.8	3.2	6.1	10.5	12.9	6.2
Vac	18.6	6.8	9.4	12.6	7.3	9.7	12.7	8.4
Vac	18.8	7.0	9.5	12.8	7.5	9.9	12.9	8.6
Vac	19.0	7.2	9.7	13.0	7.7	10.1	13.0	8.8
Vac	18.4	6.7	9.2	12.4	7.1	9.6	12.6	8.2
Vac	17.9	6.3	8.7	11.9	6.6	9.1	12.0	7.5
Vac	18.1	6.4	8.8	12.1	6.8	9.2	12.2	7.7
Vac	18.3	6.6	9.0	12.3	7.0	9.5	12.5	8.0
Vac	18.7	6.8	9.3	12.6	7.3	9.7	13.0	8.7
Vac	18.5	6.7	9.1	12.4	7.1	9.5	12.8	8.5
Vac	18.3	6.5	9.0	12.2	6.9	9.4	12.7	8.3
Vac	18.9	7.0	9.5	12.7	7.4	9.9	13.2	8.9
Vac	19.5	7.5	10.2	13.5	8.2	10.6	13.6	9.7
Vac	19.2	7.3	9.9	13.1	7.8	10.2	13.5	9.4
Vac	19.1	7.1	9.7	12.9	7.6	10.1	13.3	9.2
Vac	19.5	7.6	10.3	13.6	8.3	10.6	13.5	9.4
Vac	19.3	7.5	10.1	13.4	8.1	10.4	13.4	9.2
Vac	19.1	7.3	9.9	13.2	7.9	10.2	13.2	9.0
Vac	19.7	7.8	10.5	13.8	8.5	10.7	13.6	9.5
Vac	20.2	8.3	11.1	14.4	9.2	11.3	14.1	10.0
Vac	20.0	8.1	10.9	14.2	9.0	11.1	13.9	9.8
Vac	19.8	8.0	10.7	14.0	8.7	10.9	13.7	9.7
Receiver R4 FI G Lr,lim dB(A) Leq,d 65.2 dB(A) Sigma(Leq,d) 0.0 dB(A)								
001 - Black Widow IDC - Stndard Tunnel-Facade 01	7.3	4.0	-4.0	2.9	-3.3	-17.8	-26.1	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	-9.6	-12.8	-22.7	-13.5	-21.1			
001 - Black Widow IDC - Stndard Tunnel-Facade 03	15.8	10.6	4.5	12.0	8.8	-3.6	-11.5	-24.2
001 - Black Widow IDC - Stndard Tunnel-Facade 04	19.8	12.7	7.8	16.0	14.4	3.6	-1.9	-12.7
001 - Black Widow IDC - Stndard Tunnel-Roof 01	13.8	7.9	1.5	10.6	6.6	-6.6	-14.6	-27.1
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	65.1	37.7	47.0	56.5	60.7	59.4	57.5	50.0
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	29.2	12.1	16.1	26.1	25.1	15.5	2.7	-16.8
Car Lane	39.8	26.6	25.9	25.7	30.1	33.2	35.5	31.8
Car Lane	39.1	25.9	25.3	24.7	28.9	32.4	34.9	31.1

303 & Indian School Goodyear

Contribution spectra - 002 - 140 HP IDC - Standard: Outdoor SP

Source	Sum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Car Lane	35.2	21.9	21.2	19.8	23.7	28.2	31.5	27.5
Vac	33.7	15.8	20.2	25.7	21.2	22.7	28.5	28.2
Vac	33.8	15.8	20.2	25.8	21.2	22.9	28.8	28.3
Vac	33.9	15.8	20.2	25.7	21.2	23.0	29.2	28.3
Vac	33.4	15.7	20.1	25.7	21.1	22.5	28.2	27.9
Vac	32.5	15.4	19.7	25.2	20.6	21.8	27.4	26.2
Vac	32.8	15.5	19.9	25.4	20.8	22.1	27.7	26.8
Vac	33.2	15.6	20.0	25.5	21.0	22.3	28.0	27.5
Vac	34.9	17.8	22.5	28.2	24.6	24.0	28.5	28.9
Vac	36.5	18.0	22.9	28.8	24.5	27.5	31.4	30.2
Vac	36.3	17.9	22.8	28.6	24.3	27.3	31.0	30.0
Vac	35.3	17.8	22.5	28.3	24.7	24.2	28.9	29.7
Vac	35.0	17.4	22.1	27.9	24.0	24.0	28.6	29.6
Vac	35.5	17.7	22.4	28.2	24.5	24.5	29.4	30.1
Vac	35.5	17.8	22.5	28.3	24.6	24.4	29.3	30.1
Vac	33.9	15.6	20.0	25.4	20.9	23.2	29.6	28.0
Vac	33.9	15.7	20.1	25.6	21.0	23.1	29.4	28.2
Vac	33.9	15.8	20.2	25.7	21.1	23.1	29.3	28.2
Vac	33.6	15.5	19.8	25.2	20.6	22.7	29.0	27.9
Vac	32.7	15.0	19.2	24.4	19.8	21.8	27.9	27.3
Vac	33.0	15.2	19.5	24.7	20.1	22.1	28.3	27.5
Vac	33.3	15.4	19.7	25.0	20.4	22.4	28.7	27.7
Receiver R5 FI G Lr,lim dB(A) Leq,d 56.7 dB(A) Sigma(Leq,d) 0.0 dB(A)								
001 - Black Widow IDC - Stdard Tunnel-Facade 01	8.9	3.6	-3.2	5.6	1.0	-12.7	-21.3	
001 - Black Widow IDC - Stdard Tunnel-Facade 02	-12.1	-15.7	-25.3	-15.6	-23.5			
001 - Black Widow IDC - Stdard Tunnel-Facade 03	6.5	3.4	-4.3	1.5	-3.2	-16.7	-25.5	
001 - Black Widow IDC - Stdard Tunnel-Facade 04	10.6	4.0	-1.2	6.6	5.2	-5.4	-11.8	-23.2
001 - Black Widow IDC - Stdard Tunnel-Roof 01	9.8	3.5	-2.8	6.9	2.8	-10.7	-19.3	
001 - Black Widow IDC - Stdard Tunnel-Transmissive area 01	56.0	27.7	37.1	46.9	51.4	50.6	48.9	41.0
001 - Black Widow IDC - Stdard Tunnel-Transmissive area 02	26.1	9.4	13.3	23.3	21.7	12.1	-0.5	-20.2
Car Lane	36.6	21.6	20.8	21.0	25.0	29.1	33.2	29.5
Car Lane	35.7	21.1	20.5	20.5	24.8	28.4	32.0	28.6
Car Lane	32.3	16.1	15.2	16.8	21.1	24.1	29.0	25.9
Vac	33.8	15.5	19.9	25.3	20.7	23.1	29.6	28.0
Vac	34.1	15.7	20.2	25.6	21.1	23.4	29.8	28.3
Vac	34.4	15.9	20.4	26.0	21.4	23.6	30.0	28.5
Vac	33.6	15.3	19.6	24.9	20.3	22.9	29.3	27.7
Vac	32.6	14.6	18.8	23.6	19.0	21.2	28.6	26.8
Vac	32.9	14.9	19.1	24.1	19.4	21.6	28.8	27.1
Vac	33.2	15.1	19.4	24.5	19.8	22.6	29.1	27.4
Vac	34.8	16.9	21.6	27.5	23.3	23.9	29.3	29.3
Vac	34.4	16.5	21.2	27.0	22.6	23.4	28.9	28.8
Vac	33.9	16.2	20.8	26.5	22.0	23.0	28.5	28.4
Vac	35.3	17.3	22.0	27.9	23.9	24.3	29.6	29.7
Vac	36.7	18.8	23.5	29.3	26.1	25.5	30.5	31.2
Vac	36.1	18.2	22.9	28.7	25.1	25.0	30.4	30.6
Vac	35.7	17.8	22.5	28.3	24.6	24.6	29.8	30.2
Vac	34.9	16.4	21.0	26.8	22.3	24.1	30.3	29.1
Vac	34.8	16.2	20.8	26.6	22.1	23.9	30.2	28.9
Vac	34.6	16.1	20.6	26.3	21.8	23.8	30.1	28.7
Vac	35.0	16.5	21.1	27.0	22.5	24.1	30.3	29.2
Vac	35.0	16.6	21.2	27.1	22.8	24.1	30.0	29.4
Vac	35.1	16.6	21.2	27.1	22.7	24.1	30.2	29.4

303 & Indian School Goodyear
Contribution spectra - 002 - 140 HP IDC - Standard: Outdoor SP

Source	Sum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac	35.0	16.5	21.2	27.1	22.7	24.2	30.3	29.3

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303 & Indian School Goodyear
Assessed contribution level - 002 - 140 HP IDC - Standard:

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Source				Source type	Leq,d dB(A)	
Receiver R1	FI G	Lr,lim dB(A)	Leq,d 36.7 dB(A)	Sigma(Leq,d) 0.0 dB(A)		
	001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02			Area	35.2	
	001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01			Area	22.8	
	Car Lane			Line	20.6	
	Car Lane			Line	18.9	
	Vac			Point	17.8	
	Vac			Point	17.7	
	Vac			Point	17.7	
	Vac			Point	17.6	
	Vac			Point	17.5	
	Vac			Point	17.4	
	Vac			Point	17.3	
	Vac			Point	16.7	
	Vac			Point	16.6	
	Car Lane			Line	16.6	
	Vac			Point	16.5	
	Vac			Point	16.5	
	Vac			Point	16.4	
	Vac			Point	16.3	
	Vac			Point	16.2	
	Vac			Point	16.1	
	Vac			Point	16.0	
	Vac			Point	15.9	
	Vac			Point	15.8	
	Vac			Point	15.7	
	Vac			Point	15.6	
	Vac			Point	15.6	
	001 - Black Widow IDC - Stndard Tunnel-Roof 01			Area	0.5	
	001 - Black Widow IDC - Stndard Tunnel-Facade 01			Area	-0.4	
	001 - Black Widow IDC - Stndard Tunnel-Facade 03			Area	-8.1	
	001 - Black Widow IDC - Stndard Tunnel-Facade 02			Area	-9.4	
	001 - Black Widow IDC - Stndard Tunnel-Facade 04			Area	-14.3	
Receiver R2	FI G	Lr,lim dB(A)	Leq,d 34.2 dB(A)	Sigma(Leq,d) 0.0 dB(A)		
	001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02			Area	28.6	
	001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01			Area	22.5	
	Car Lane			Line	21.6	
	Car Lane			Line	20.2	
	Vac			Point	19.8	
	Vac			Point	19.7	
	Vac			Point	19.6	
	Vac			Point	19.6	
	Vac			Point	19.4	
	Vac			Point	19.4	
	Car Lane			Line	18.8	

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303 & Indian School Goodyear
Assessed contribution level - 002 - 140 HP IDC - Standard:

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Source	Source type	Leq,d dB(A)	
	Vac Point	18.8	
	Vac Point	18.2	
	Vac Point	18.2	
	Vac Point	17.9	
	Vac Point	17.8	
	Vac Point	17.7	
	Vac Point	17.7	
	Vac Point	17.6	
	Vac Point	17.5	
	Vac Point	16.6	
	Vac Point	16.5	
	Vac Point	16.5	
	Vac Point	16.4	
	Vac Point	16.1	
	Vac Point	16.0	
001 - Black Widow IDC - Stndard Tunnel-Roof 01	Area	1.9	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	Area	-0.1	
001 - Black Widow IDC - Stndard Tunnel-Facade 03	Area	-5.1	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	Area	-10.7	
001 - Black Widow IDC - Stndard Tunnel-Facade 04	Area	-12.9	
Receiver R3 FI G Lr,lim dB(A) Leq,d 34.2 dB(A) Sigma(Leq,d) 0.0 dB(A)			
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	Area	28.6	
	Vac Point	20.2	
	Vac Point	20.0	
	Vac Point	19.8	
	Vac Point	19.7	
	Vac Point	19.5	
	Vac Point	19.5	
	Vac Point	19.3	
Car Lane	Line	19.2	
	Vac Point	19.2	
	Vac Point	19.1	
	Vac Point	19.1	
	Vac Point	19.0	
	Vac Point	18.9	
	Vac Point	18.8	
	Vac Point	18.7	
	Vac Point	18.6	
	Vac Point	18.5	
	Vac Point	18.4	
	Vac Point	18.3	
	Vac Point	18.3	
	Vac Point	18.1	
Car Lane	Line	18.1	
	Vac Point	17.9	

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303 & Indian School Goodyear
Assessed contribution level - 002 - 140 HP IDC - Standard:

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Source	Source type	Leq,d dB(A)	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	Area	16.9	
Car Lane	Line	16.9	
001 - Black Widow IDC - Stndard Tunnel-Roof 01	Area	-1.0	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	Area	-2.6	
001 - Black Widow IDC - Stndard Tunnel-Facade 04	Area	-7.5	
001 - Black Widow IDC - Stndard Tunnel-Facade 03	Area	-8.0	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	Area	-20.4	
Receiver R4 FI G Lr,lim dB(A) Leq,d 65.2 dB(A) Sigma(Leq,d) 0.0 dB(A)			
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	Area	65.1	
Car Lane	Line	39.8	
Car Lane	Line	39.1	
Vac	Point	36.5	
Vac	Point	36.3	
Vac	Point	35.5	
Vac	Point	35.5	
Vac	Point	35.3	
Car Lane	Line	35.2	
Vac	Point	35.0	
Vac	Point	34.9	
Vac	Point	33.9	
Vac	Point	33.9	
Vac	Point	33.9	
Vac	Point	33.9	
Vac	Point	33.8	
Vac	Point	33.7	
Vac	Point	33.6	
Vac	Point	33.4	
Vac	Point	33.3	
Vac	Point	33.2	
Vac	Point	33.0	
Vac	Point	32.8	
Vac	Point	32.7	
Vac	Point	32.5	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	Area	29.2	
001 - Black Widow IDC - Stndard Tunnel-Facade 04	Area	19.8	
001 - Black Widow IDC - Stndard Tunnel-Facade 03	Area	15.8	
001 - Black Widow IDC - Stndard Tunnel-Roof 01	Area	13.8	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	Area	7.3	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	Area	-9.6	
Receiver R5 FI G Lr,lim dB(A) Leq,d 56.7 dB(A) Sigma(Leq,d) 0.0 dB(A)			
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 01	Area	56.0	
Vac	Point	36.7	
Car Lane	Line	36.6	
Vac	Point	36.1	

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303 & Indian School Goodyear
Assessed contribution level - 002 - 140 HP IDC - Standard:

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Source	Source type	Leq,d dB(A)	
	Car Lane Line	35.7	
	Vac Point	35.7	
	Vac Point	35.3	
	Vac Point	35.1	
	Vac Point	35.0	
	Vac Point	35.0	
	Vac Point	35.0	
	Vac Point	34.9	
	Vac Point	34.8	
	Vac Point	34.8	
	Vac Point	34.6	
	Vac Point	34.4	
	Vac Point	34.4	
	Vac Point	34.1	
	Vac Point	33.9	
	Vac Point	33.8	
	Vac Point	33.6	
	Vac Point	33.2	
	Vac Point	32.9	
	Vac Point	32.6	
	Car Lane Line	32.3	
001 - Black Widow IDC - Stndard Tunnel-Transmissive area 02	Area	26.1	
001 - Black Widow IDC - Stndard Tunnel-Facade 04	Area	10.6	
001 - Black Widow IDC - Stndard Tunnel-Roof 01	Area	9.8	
001 - Black Widow IDC - Stndard Tunnel-Facade 01	Area	8.9	
001 - Black Widow IDC - Stndard Tunnel-Facade 03	Area	6.5	
001 - Black Widow IDC - Stndard Tunnel-Facade 02	Area	-12.1	

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