Environmental Noise Assessment

Life Time Roseville Pickleball Conversion

City of Roseville, California

June 6, 2022

Project #220513

Prepared for:

Life Time Property Development
2900 Corporate Place
Chanhassen, MN 55317

Prepared by:

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INTRODUCTION

The Life Time Roseville Pickleball Project is located at 1435 E. Roseville Parkway, Roseville, CA 95661. The project will consist of the conversion of 7 tennis courts to 14 pickleball courts at the western boundary of the project site. Four (4) of the existing courts are clay courts, which will be resurfaced and re-striped, and the other three (3) existing courts are hard-surface courts, which will simply be re-striped. The primary noise source comes from the operation of the proposed pickleball and existing tennis courts. Single family residential land uses are located to the north of the project site. The purpose of this analysis is to predict the noise generation associated with these uses and to achieve compliance with the applicable City of Roseville noise level standards.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site and noise measurement locations.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

Fundamentals of Acoustics

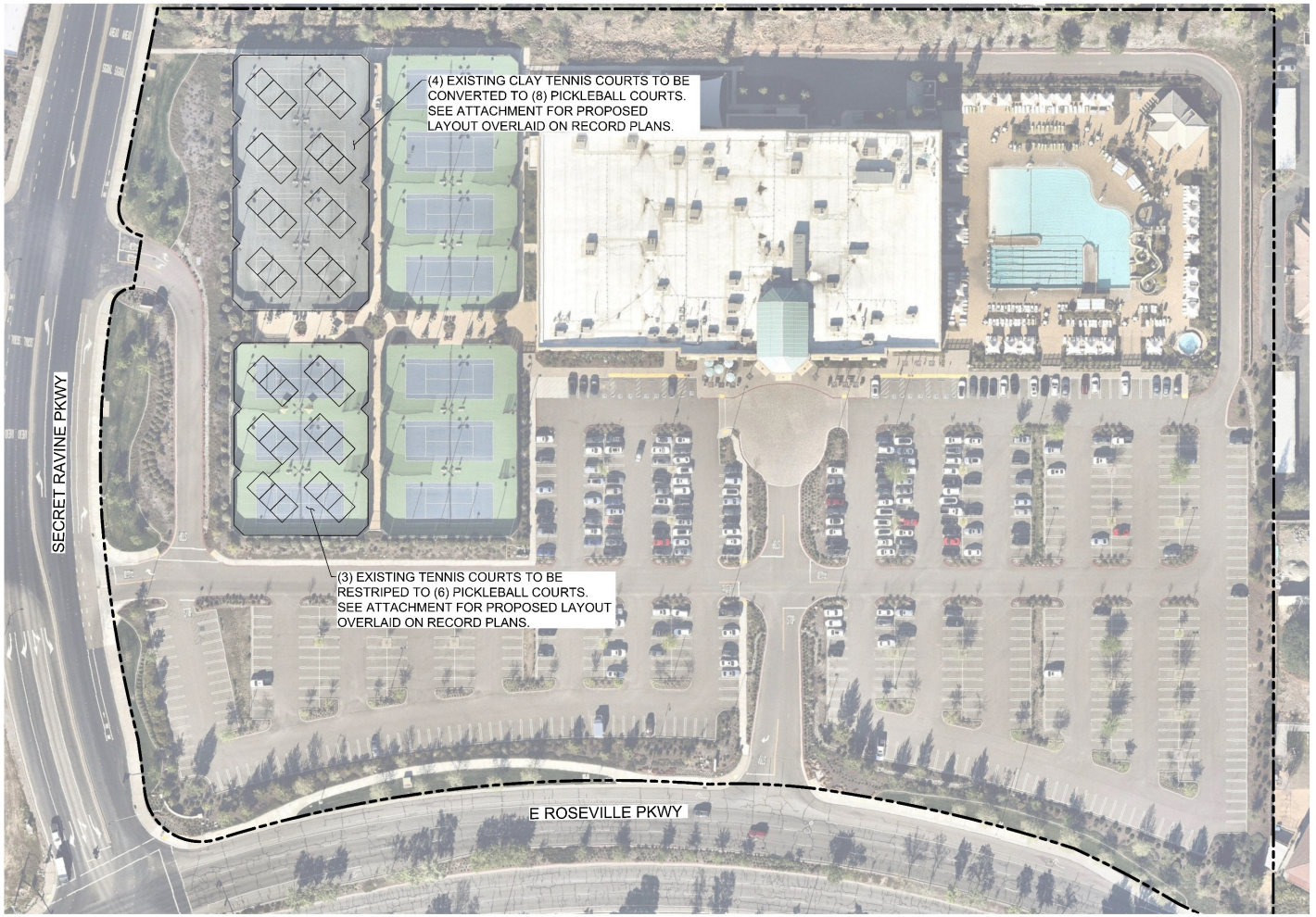
Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

Attachment 2



No.	REVISIONS	DATE	BY

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KHA PROJECT	197117004
DATE	5/17/2022
SCALE	AS SHOWN
DESIGNED BY	SA
DRAWN BY	EC
CHECKED BY	SA

PRELIMINARY SITE PLAN
LIFE TIME FITNESS
1435 E ROSEVILLE PARKWAY,
ROSEVILLE, CA 95661

SHEET NUMBER
C1.0

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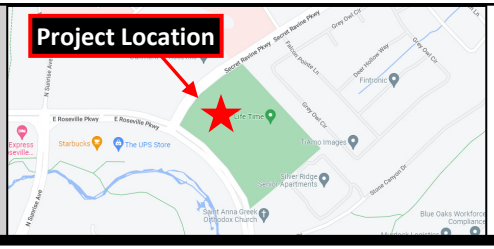
Life Time Roseville Pickleball Courts

City of Roseville, California

Figure 1

Project Site Plan



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Attachment 2

Life Time Pickleball Conversion

City of Roeville, California

Figure 2

Noise Measurement Site

Legend

Project Site

Noise Measurement Site - Long Term

10 m 30 m 50 m 70 m

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 05/31/2022

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The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AMBIENT NOISE LEVELS

The existing noise environment in the project area is defined primarily by local roadway traffic and existing tennis operations at Life Time.

Saxelby Acoustics conducted a continuous noise measurement survey to quantify the existing ambient noise environment at the project site. The noise measurement location is shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meter was programmed to record the maximum, median, and average noise levels at the project site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

A Larson Davis Laboratories (LDL) model 831 precision integrating sound level meter was used for the ambient noise level measurement survey. The meter was calibrated before and after use with a CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Location	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1	5/26/2022 to 5/27/2022	54	53	51	67	46	44	59
(Backyard)		49	48	46	62	41	39	54

*Notes: * Noise measurements at LT-1 were taken in front of the existing 6-foot tall masonry sound wall. The levels in this row have been reduced by 5 dBA to account for typical sound wall noise reduction in the residential backyard.*

- *All values shown in dBA*
- *Daytime hours: 7:00 a.m. to 10:00 p.m.*
- *Nighttime Hours: 10:00 p.m. to 7:00 a.m.*
- *Source: Saxelby Acoustics 2022*

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

There are no state regulations related to noise that apply to the Proposed Project.

LOCAL

City of Roseville General Plan

The City of Roseville General Plan Noise Element Table IX-1 (**Table 3**) establishes an acceptable interior and exterior noise levels for various uses within the City. The relevant criteria are reproduced below:

TABLE 3: CITY OF ROSEVILLE LAND USE COMPATIBILITY CHART IX-1

Land Use	Outdoor Activity, Areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals. Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Musics Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	65	--	45
Schools, Libraries, Musuems	--	--	45
Playground, Neighborhood Parks	70	--	--

[1]*Outdoor activity areas for residential developments are considered to be the backyard patios or decks of single family dwelling, and the patios or common areas where people generally congregate for multi family developments.*

Outdoor activity areas for non-residential developments are considered to be those common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities.

Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]*As determined for a typical worst-case hour during periods of use.*

[3]*Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 75 dBA L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.*

Source: City of Roseville General Plan Noise Element 2035.

The City of Roseville General Plan Noise Element Table 1X-3 (**Table 4**) establishes an acceptable exterior noise levels for stationary noise sources.

TABLE 4: CITY OF ROSEVILLE NOISE ELEMENT TABLE 1X-3

Source: City of Roseville General Plan Noise Element 2035.

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

For municipal power plants consisting primarily of broadband, stead state noise sources, the hourly (L_{eq}) noise standards may be increased up to 10 dB(A), but no exceed 55 dB(A) Hourly L_{eq}, dB.

Each of the noise levels specified above should be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recuring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints. These noise level standards do not apply to resident units established in conjunction with industrial or commercial uses.

No standards have been included for interior noise levels. Standard construction practices should, with exterior noise levels identified, result in acceptable interior noise levels.

Source: City of Roseville General Plan Noise Element 2035.

Based upon review of the City of Roseville General Plan Noise Element standards, hourly noise level limits of 50 dBA L_{eq} / 70 dBA L_{max} during the daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA L_{eq} / 65 dBA L_{max} during the nighttime (10:00 p.m. to 7 a.m.). However, the City applies a -5 dB penalty to noise which includes recurring repetitive sounds. The sound emanating from tennis facilities, basketball courts, and pickleball are typically considered to be repetitive. Therefore, this report assumes that the City's standards will be lowered to 45 dBA L_{eq} / 65 dBA L_{max} during daytime hours and 40 dBA L_{eq} / 60 dBA L_{max} during nighttime hours.

EVALUATION OF PROJECT OPERATIONAL NOISE ON EXISTING SENSITIVE RECEPTORS

The primary noise source on the proposed project site would be operational noise from 14-proposed pickleball courts.

Saxelby Acoustics used reference pickleball noise data from Bollard Acoustical Consultants (BAC) collected from a similar facility.[1] Saxelby Acoustics assumes that courts could be used during daytime (7:00 pm to 10:00 pm) hours. Therefore, this analysis looks at compliance with the City's daytime noise standard of 50 dBA, reduced by 5 dBA to account for tonal/repetitive noise of Pickleball play. Pickleball noise level is expected to produce noise levels of approximately 58 dBA L_{eq} at 25 feet from the edge of a single court. Additionally, it was assumed that a 10-foot-tall acoustical fencing would be located on the perimeter of the courts, as shown on **Figure 3**. Fencing was assumed to consist of AcoustiFence® Soundproofing Material (**Attachment 1**), or similar exterior noise barrier material with a sound transmission class (STC) rating of 28, or higher.

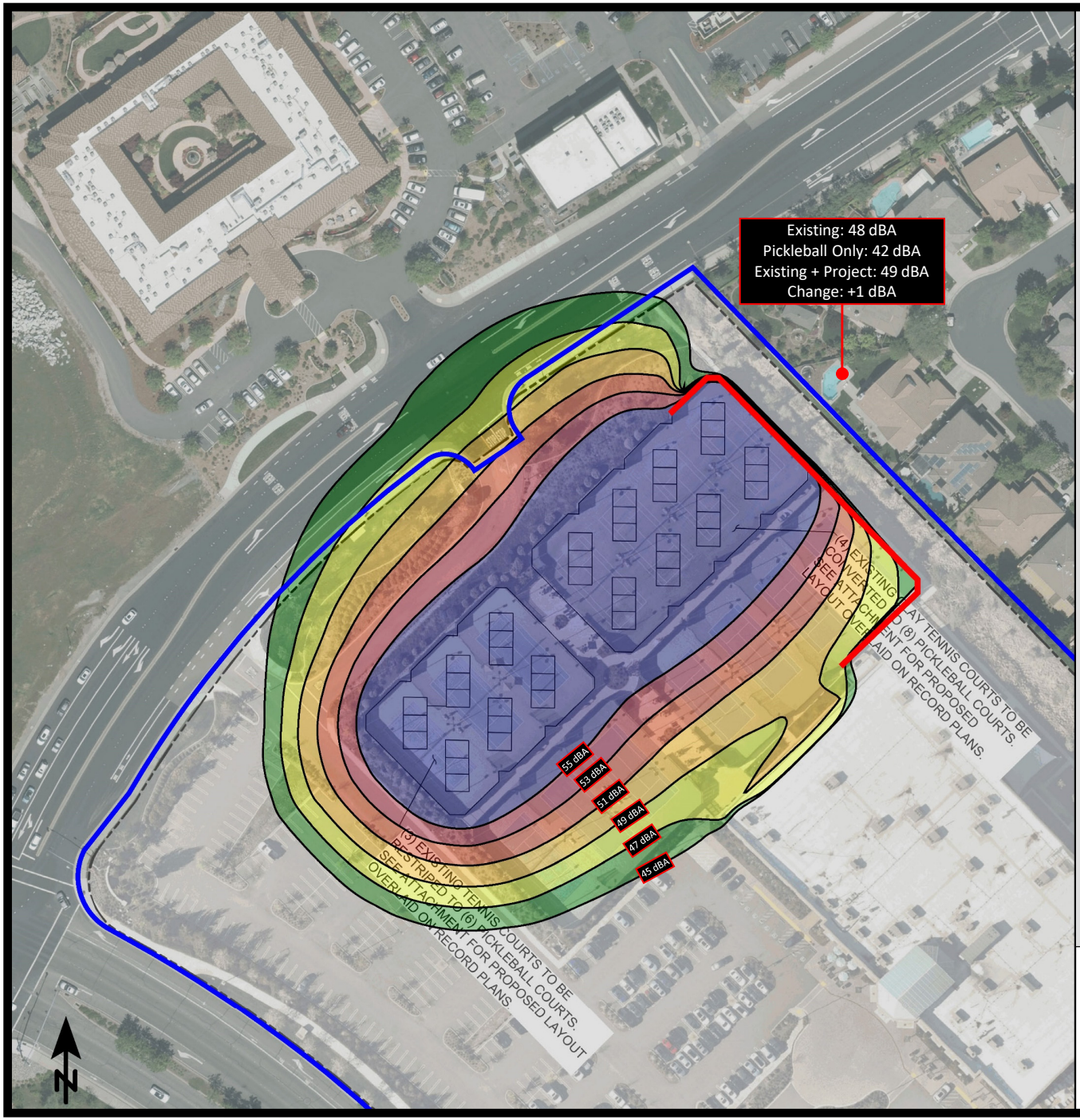
It should be noted that maximum (L_{max}) noise levels from the pickleball play is predicted to be approximately 19 dBA higher than average (L_{eq}) noise levels. The City of Roseville noise standards for maximum noise levels are 20 dB higher than the average standards. Therefore, compliance with the average (L_{eq}) noise standard will result in maximum noise levels which are 1 dBA less than the City's L_{max} standard. Therefore, for simplicity, this analysis will focus on the more restrictive (L_{eq}) standard.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed amenities, existing and proposed buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation.

Figure 3 shows the operational noise contour map at each of the closest residential lots.

[1] *Environmental Noise Assessment, Sun City Lincoln Hills Pickleball Courts.* Bollard Acoustical Consultants, Inc. October 4, 2017.

Attachment 2



Life Time Pickleball Conversion

City of Roseville, California

Figure 3

Pickleball Noise Contours with Acoustic Fencing (dBA L^{eq}) – 14 Active Pickleball Courts

Signs and symbols

- Property Line
- 10' Tall Acoustic Fencing

Levels in dB(A)

<= 45
45 - 47
47 - 49
49 - 51
51 - 53
53 - 55
> 55

1 : 1450

0 5 10 20 30 40 m

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CONCLUSIONS

The noise analysis for the proposed conversion of 7 existing tennis courts to 14 pickleball courts indicates that property line noise levels at the nearest sensitive receptors would comply with the City of Roseville exterior noise standards, with a minor increase of 1 dBA in noise levels to the existing tennis noise levels. This analysis assumes the following noise control measures are to be implemented into the project design:

- There is an existing acoustic barrier in place around the tennis courts adjacent to the residential neighbors to the north. The existing barrier is recommended to be replaced as part of this scope. In order to comply with the noise standards, a replacement acoustic barrier shall be installed on portions of the perimeter pickleball court fencing. It is assumed that this material would extend 10-feet above grade and would not have substantial openings or penetrations facing the adjacent residential uses. We recommend use of AcoustiFence® Soundproofing Material (**Attachment 1**), or similar exterior noise barrier material with a sound transmission class (STC) rating of 28, or higher. **Figure 3** shows the specific curtain locations.

- The hour of operation for the proposed outdoor pickleball will match the existing hours of operation at the club for tennis: Monday – Friday 8am – 10pm, and Saturday and Sunday 8am – 8pm.

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SoundPLAN. SoundPLAN GmbH. Backnang, Germany. http://www.soundplan.eu/english/

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

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Appendix B: Continuous Ambient Noise Measurement Results

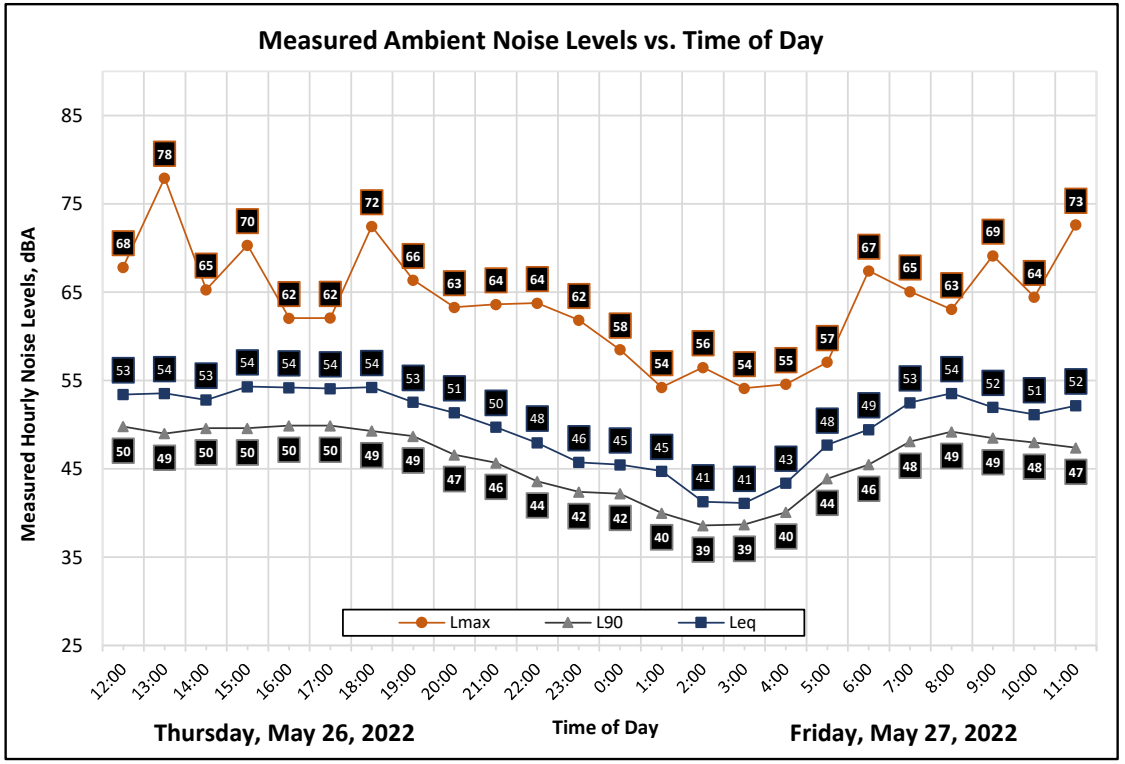
Attachment 2

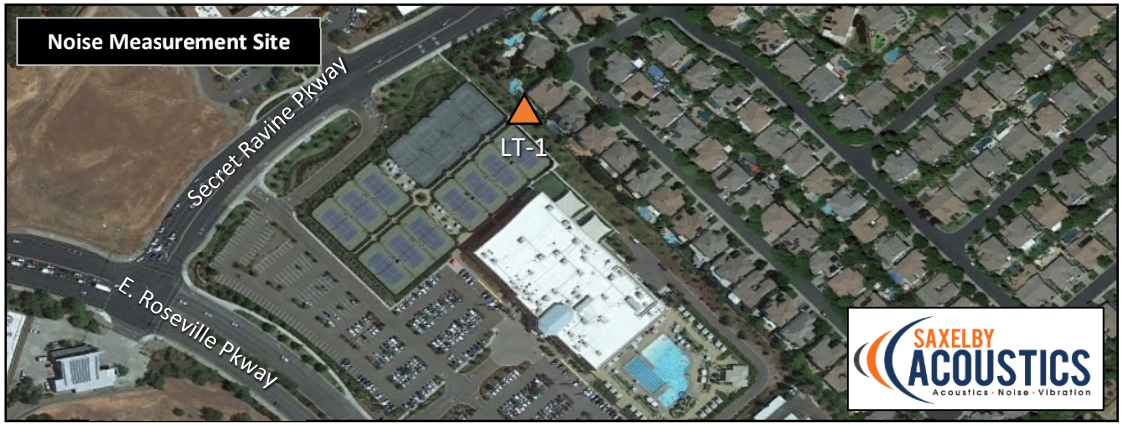
Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: Life Time West Roseville CA Pickleball
Location: Northern Project Boundary
Coordinates: 38.7628875°, -121.2449750°
Meter: LDL 831-1
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Thursday, May 26, 2022	12:00	53	68	52	50
Thursday, May 26, 2022	13:00	54	78	52	49
Thursday, May 26, 2022	14:00	53	65	52	50
Thursday, May 26, 2022	15:00	54	70	53	50
Thursday, May 26, 2022	16:00	54	62	53	50
Thursday, May 26, 2022	17:00	54	62	53	50
Thursday, May 26, 2022	18:00	54	72	53	49
Thursday, May 26, 2022	19:00	53	66	51	49
Thursday, May 26, 2022	20:00	51	63	49	47
Thursday, May 26, 2022	21:00	50	64	48	46
Thursday, May 26, 2022	22:00	48	64	46	44
Thursday, May 26, 2022	23:00	46	62	45	42
Friday, May 27, 2022	0:00	45	58	44	42
Friday, May 27, 2022	1:00	45	54	43	40
Friday, May 27, 2022	2:00	41	56	40	39
Friday, May 27, 2022	3:00	41	54	40	39
Friday, May 27, 2022	4:00	43	55	42	40
Friday, May 27, 2022	5:00	48	57	47	44
Friday, May 27, 2022	6:00	49	67	49	46
Friday, May 27, 2022	7:00	53	65	51	48
Friday, May 27, 2022	8:00	54	63	52	49
Friday, May 27, 2022	9:00	52	69	51	49
Friday, May 27, 2022	10:00	51	64	50	48
Friday, May 27, 2022	11:00	52	73	50	47

Statistics	Leq	Lmax	L50	L90
Day Average	53	67	51	49
Night Average	46	59	44	42
Day Low	50	62	48	46
Day High	54	78	53	50
Night Low	41	54	40	39
Night High	49	67	49	46
Ldn	54	Day %		89
CNEL	55	Night %		11





Attachment 1: AcoustiFence
Noise Reducing Fence Material

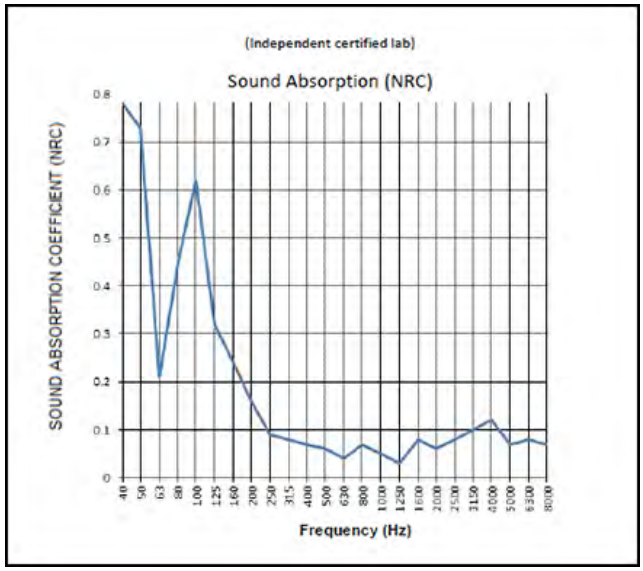
Product Data Sheet

Product Name

AcoustiFence® Noise Reducing Fences

For Manufacturer Info:

Contact:
Acoustiblok, Inc.
6900 Interbay Boulevard
Tampa, FL 33616
Call - (813) 980-1400
Fax - (813)849-6347
Email - sales@acoustiblok.com
www.acoustiblok.com



Sound Absorption Test Results

Product Description

Basic Use

AcoustiFence was originally developed by Acoustiblok, Inc. for noise isolation on offshore oil rigs, but has since proven successful in many other demanding outdoor settings, such as construction sites, commercial/industrial facilities, and residential communities.

AcoustiFence Noise Reducing Fences

AcoustiFence is a unique, heavy-mineral filled, barium free, viscoelastic acoustical material that is made in the U.S.A. Unlike fences or shrubs, this material does extraordinarily well in blocking direct sound, and a unique characteristic of the material sets it apart from other sound barriers when dealing with very low frequencies.

Benefits:

- Effectively reduces exterior noise
- Over 300 UL Classifications
- Easy to install
- Resistant to UV, dirt and water
- Resistant to corrosion, mold and mildew

Product Name

AcoustiFence® Noise Reducing Fences

AcoustiFence Noise Reducing Fences continued…

In frequencies of 50Hz and below, the heavy limp AcoustiFence material actually begins to vibrate from low frequency sound waves. In essence it is transforming these low frequency sound waves into mechanical movement and internal friction energy. Laboratory tests indicate that this transformation process inhibits these lower frequencies from penetrating AcoustiFence, reducing their level by over 60 percent relative to the human ear. In addition, AcoustiFence becomes an absorbent material in these frequencies with test results show an NRC (noise reduction coefficient) as high as 0.78 (with 1.00 being the max). As such it is clear that AcoustiFence not only reduces sound as a barrier, but also acts as an acoustical absorbent material in very low frequencies, as opposed to reflecting those frequencies back like most other barriers. It is worth noting that lead sheets (which are toxic) work in the same manner.

Green AcoustiFence

One of Acoustiblok's most popular products, designed as an advanced sound barrier that easily attaches to most types of fencing, is now available in a new green shade that easily blends into the environment. This makes it ideal for landscaping projects, residential home use and any outdoor applications where blending into the natural foliage is a concern.

Green AcoustiFence has the same sound deadening properties and features as our original black AcoustiFence. In addition, this new version features advanced reinforced edging and stainless steel cable ties. Made and sourced in the USA, It comes in 6x30 foot sections and is one of the most effective first steps in reducing noise for industrial, commercial and residential projects.

Acoustiblok® quieting the world

Product Data Sheet

Product Name

AcoustiFence® Noise Reducing Fences

Sound Transmission Class (STC)

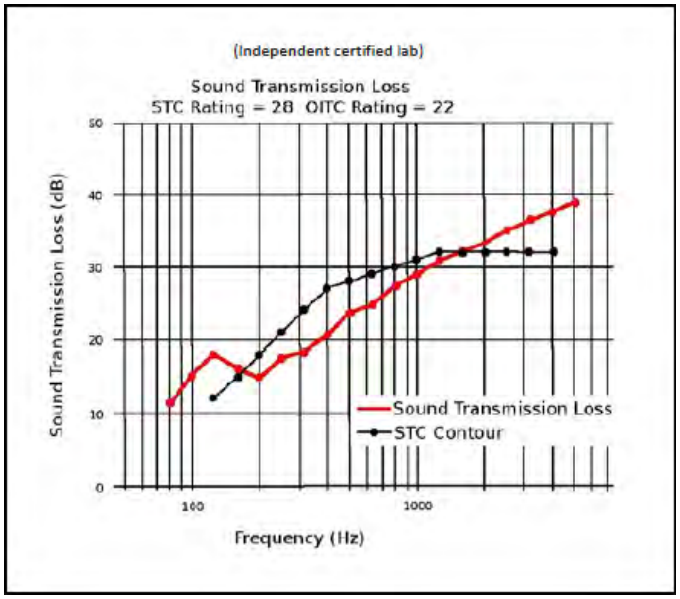
Sound Transmission Class (STC) is a single number that represents the sound blocking capacity of a partition such as a wall or ceiling.

STC numbers are often called out in architectural specifications, to assure that partitions will reduce noise levels adequately. For performance similar to laboratory test numbers, it is necessary to adhere closely to the construction materials and techniques used in the tested partition.

STC is calculated by comparing the actual sound loss measured when 18 test frequencies pass through a partition, with fixed values for each STC level. The highest STC curve that the measured sound loss numbers fit under, determines the STC rating of the partition.

STC calculations emphasize sound frequencies that match the human voice. A high STC partition will block the sound of human speech and block noise that interferes with human speech. To estimate high and low frequency performance, consult the Sound Transmission Loss graph included in STC test reports. Impact Insulation Class (IIC) measure transmitted impact noise and are specified for floor-ceiling assemblies only.

Acoustical test reports for numerous wall and floor/ceiling designs are available from Acoustiblok on request. All our test data is taken directly from independent 3rd party laboratories under NVLAP certification.



Sound Transmission Loss Test Results

Product Data Sheet

Product Name

AcoustiFence® Noise Reducing Fences

Physical Properties

- Barium free
- Minimum STC 28 per ASTM E90-02 & ASTM E413-87
- Minimum sound attenuation 24 dBA @ 100Hz & 16dBA @ 40Hz
- Size - 6 ft.(1.83m) x 30 ft.(9.14m) x 0.125 in. (.3mm) – 180 ft² (16.83m²)
- Color - black or green
- High UV resistance
- Heat tolerance: 200°F (93°C) for 7 days, less than 1% shrinkage with no deformation.
- Freezes at -40°F (-40°C). Do not unroll or flex frozen material. Properties not affected by freeze/thaw cycles.
- No fungal or algal growth and no visible disfigurement, per ASTM D3273 and ASTM D3274 (rating=10)
- Tensile Strength - min. 365 PSI
- Weight per section: 185 lbs. (84Kg)

Material Specifications – Part # "Acoustifence 6x30 Industrial"

Acoustical Rating	STC 28 / OITC 22
Size	6 ft. (1.83m) x 30 ft. (9. 14m) x 0.125 in .(3mm) 180 ft² (16.72m²)
Weight	185 lbs. (84Kg)
Fastening	Black brass grommets every 6 in. (152mm) along top edge with four grommets spaced along the bottom edge. Commonly installed horizontally.
Color	Black
(This is an industrial product and minor surface blemishes are a possibility.)	

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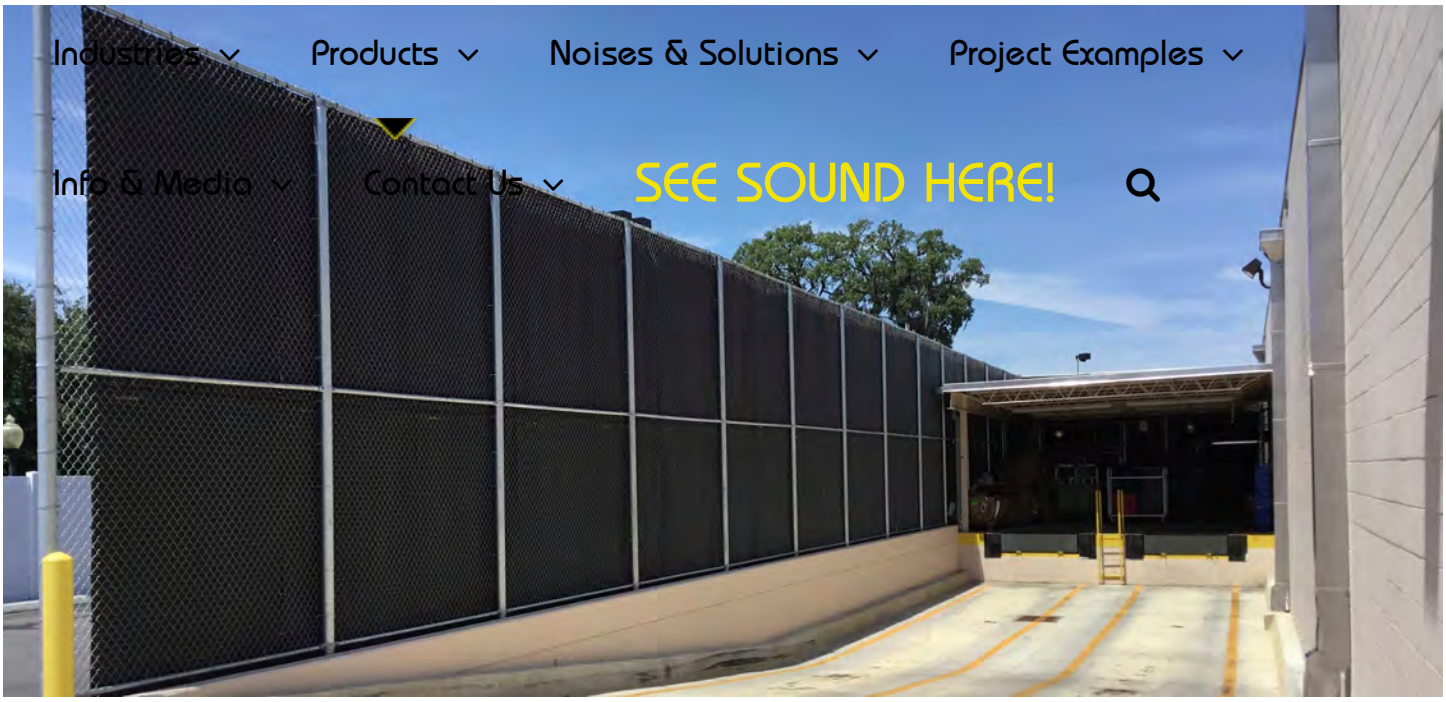
Attachment 2



Acoustifence®
(Patented)
Noise Reducing Fences

The Right Material

Acoustifence-Noise Reducing Fences – Acoustifence® AF-6 is a patented, highly effective, yet simple to install, outdoor acoustical barrier. The U.V. and mold resistant qualities of Acoustifence make it uniquely suited to outdoor use. You can also paint it to blend in to any environment.

Attachment 2

performance using Acoustifence than you would using typical construction materials. This also means that Acoustifence is a great solution compared to a wooden fence or any other type of reflective barrier.

Ease of Use

Acoustifence is extremely easy to install. You can secure it to a chain link fence, sandwich it between a wooden shadow box fence, or secure it to a frame as a stand alone material. This allows for a quick installation and a quick resolution to any noise complaints.

Acoustifence comes equipped with standard edge reinforcement and mounting grommets. We offer installation suggestions for each type of installation.

Details

Acoustifence is 1/8” thick and comes in standard sizes of 6’ x 30’. You can also order custom lengths and if your project involves greater heights,

Attachment 2

direction, humidity and temperature.

Contact Us

Feel free to contact us to speak with one of our Acoustifence specialists. We look forward to helping you with your outdoor noise and sound issues.