

NATURES COMPOSITES ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON AN
NCterra, PRIVACY FENCE ASSEMBLY

REPORT NUMBER

Q6284.01-113-11-R0

TEST DATE

12/18/23

ISSUE DATE

01/04/24

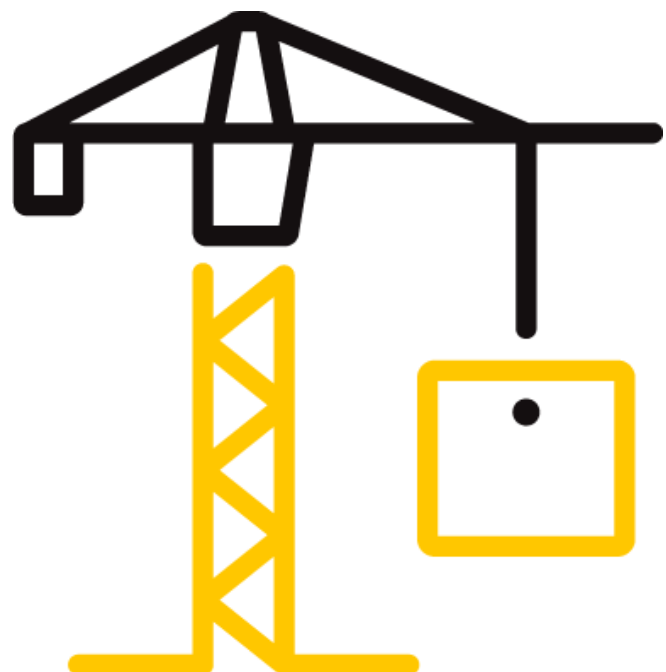
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TEST REPORT FOR NATURES COMPOSITES

Report No.: Q6284.01-113-11-R0

Date: 01/04/24

REPORT ISSUED TO

NATURES COMPOSITES

1302 Industrial Park Avenue
Torrington, Wyoming 82240

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Natures Composites to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test methods. The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

COMPLETED BY:	Cody L. French	REVIEWED BY:	Kurt A. Golden
	Technician		Manager
TITLE:	Acoustical Testing	TITLE:	Acoustical Testing
SIGNATURE:		SIGNATURE:	
DATE:	01/04/24	DATE:	01/04/24

CLF:jmcs

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	NCterra
TYPE	Privacy Fence Assembly
DATA FILE NO.	Q6284.01A
STC	24
OITC	22

SECTION 3

TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-22, *Classification for Rating Sound Insulation*

ASTM E1332-22, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2020), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4

SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

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SECTION 5 EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02572	06/23
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02574	06/23
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02575	06/23
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02576	06/23
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02577	06/23
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02578	06/23
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02427	02/23
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02912	02/23
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	07/23
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02256	01/23
Source Room Microphone	PCB piezotronics	378B20	Microphone and Preamplifier	65906	03/23
Receive Room Microphone	PBC Piezotronics	378C20	Microphone and Preamplifier	65969	03/23
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	01/23
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT03436	04/23
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64907	01/23
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	07/23
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64914	03/23
Source Room Environmental Indicator	Comet	T7510	Source Room	64915	02/23
Microphone Calibrator	Norsonic	Nor 1255	Acoustical Calibrator	INT03566	06/23

*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m ³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m ³	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Cody L. French	Intertek B&C

SECTION 7

TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure level measurements were made simultaneously in receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

SECTION 8

ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating

To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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SECTION 9

SPECIMEN DESCRIPTION

	ASSEMBLY
SIZE	69" by 72"
THICKNESS	2-1/2"
MATERIAL	Composite
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	No weatherstrip		
HARDWARE	No hardware		
DRAINAGE	No drainage		

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
97	2.83

N/A-Not Applicable

COMMENTS

Each picket measured 66-13/16" wide by 6-5/16" high by 7/8" thick. The pickets were semi-hollow, each with a tongue and groove. The pickets were stacked horizontally between two solid composite C-posts that measured 2-1/2" by 2-1/2" by 72" high.

Photographs are included in Section 11.

Drawings of the test specimen are included in Section 12.

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SECTION 10

TEST RESULTS

Q6284.01A DATA

SPECIMEN AREA	3.21 m ²	RECEIVE TEMP.	21.4 °C	SOURCE TEMP.	21.4 °C
TECHNICIAN	Cody French	RECEIVE HUMIDITY	50%	SOURCE HUMIDITY	50%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	41.0	7.4	104	86	15	2.14	-
100	32.2	7.1	107	84	19	1.48	-
125	37.2	6.7	107	85	19	1.28	0
160	40.0	6.2	109	88	18	0.90	0
200	37.5	6.7	108	87	18	1.00	0
250	32.3	7.0	105	83	18	0.63	0
315	29.9	6.3	105	82	20	0.42	0
400	28.6	6.0	105	79	23	0.40	0
500	27.1	6.1	104	78	23	0.32	1
630	25.6	6.3	103	75	25	0.40	0
800	26.2	6.6	102	73	27	0.21	0
1000	25.4	6.6	104	74	27	0.18	0
1250	26.6	7.0	103	73	26	0.37	2
1600	21.6	7.5	100	72	25	0.19	3
2000	12.0	7.9	102	73	25	0.22	3
2500	8.1	9.2	103	74	24	0.26	4
3150	7.5	11.0	101	73	23	0.24	5
4000	8.2	13.5	99	68	24	0.37	4
5000	8.9	16.8	99	62	30	0.42	-
STC RATING	24 (Sound Transmission Class)						
DEFICIENCIES	22 (Sum of Deficiencies)						
OITC RATING	22 (Outdoor-Indoor Transmission Class)						

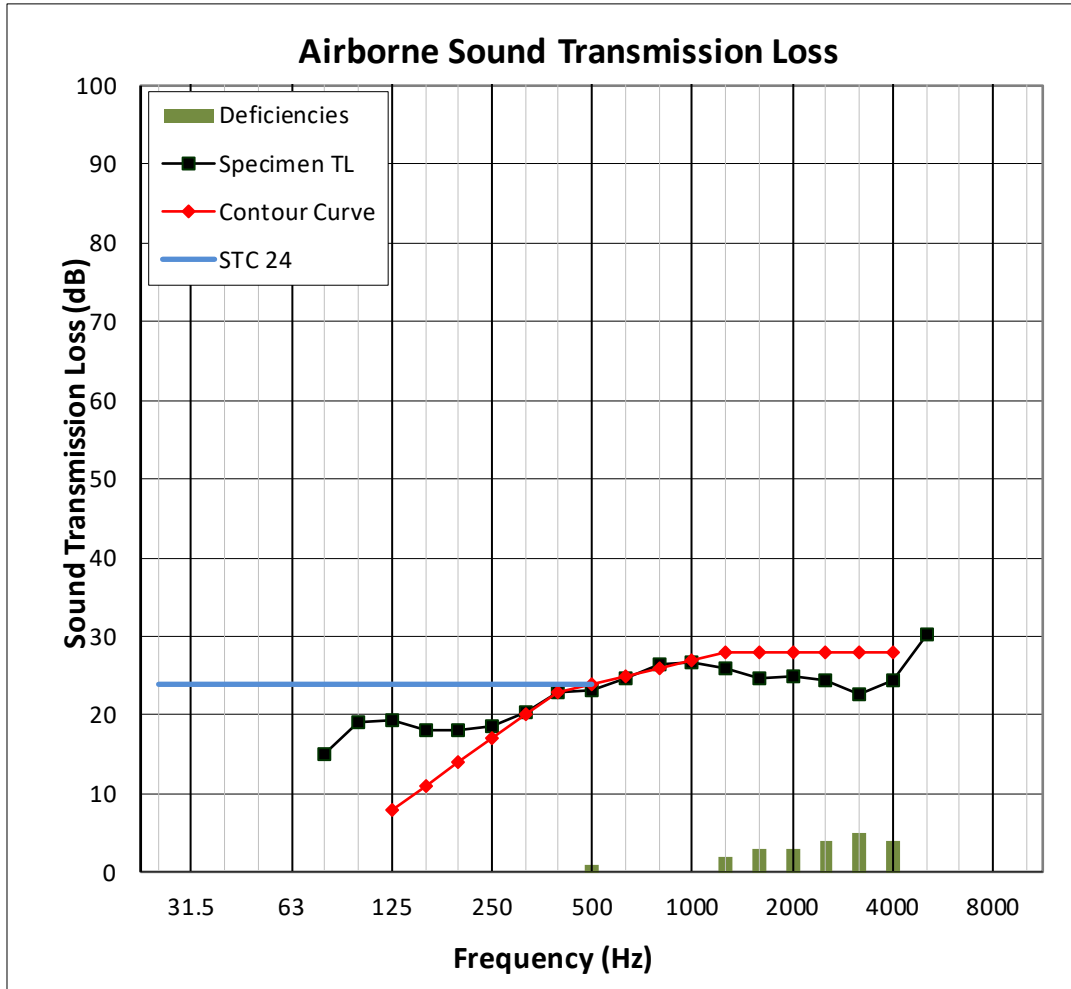
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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Q6284.01A GRAPH



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SECTION 11

PHOTOGRAPHS



Photo No. 1

Receive Room View of Installed Test Specimen



Photo No. 2

Receive Room View of Installed Test Specimen

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SECTION 12 DRAWINGS

NOTES

△ SHOWN RECOMMENDED FOOTER. FOR STRUCTURAL LOADS, FOOTINGS SHALL BE DESIGNED BY OTHER IN ACCORDANCE WITH LOCAL CODES. IN CASES WHERE DESIGN REQUIRES DEEPER BURIAL DEPTH OF POST THE LENGTH OF THE POST SHALL BE INCREASED ACCORDINGLY. FIRST AND/OR LAST FENCE BOARD MAY HAVE TO BE CUT TO THE CORRECT WIDTH TO FIT WITHIN FENCE PANEL DUE TO POST SPACING VARIATIONS.

△ CONCRETE IN WELL COMPACTED SOIL

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
-	INITIAL RELEASE	07/05/2023	AFM
A	UPDATED PARTS REQUIRED	12/1/2023	AFM

Report #: Q6284.01-113-11
Date: 01/04/24
Verified by: [Signature]

ITEM NO.	Part NO	DESCRIPTION	QTY.
10	ACSCR #10x1-3/4	Screw, Composite 10x1-3/4"	6
9	200721	Top Cap T&G Fit	2
8	200720	Support Block T&G Fit	2
7	200726	Top Cable Stop	2
6	300340	Hollow T&G Picket	11
5	TBD	Wire Compression Sleeve 1/16" Aluminum	2
4	TBD	Top Wire Rope 1/16" Galvanized Steel 7x7 Strand Core	1
3	TBD	Wire Stop 1/16" Aluminum	2
2	TBD	Bottom Wire Rope 1/16" Galvanized Steel 7x7 Strand Core	1
1	300722	Composite C Post T&G Fit	2

BOM Table

UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS AND INCHES	DRAWN	A.S. MITCHELL 07/05/2023
TOLERANCES:	ENG APPR.	
FRACTIONS: 1/16"		
ANGULAR: MATCH 1" BEND AT		
TWO PLACE DECIMAL: 0.00		
THREE PLACE DECIMAL: 0.000		

PROPRIETARY AND CONFIDENTIAL

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NC NATURES COMPOSITES

207-377-9422 FAX: 717-360-6655

TITLE:

FULL PRIVACY COMPOSITE POST 6 FT TALL X 6 FT WIDE

UNLESS OTHERWISE SPECIFIED:

SCALE: AS SPECIFIED

PROJ: AS SPECIFIED

DO NOT SCALE DRAWING

SIZE: B

DWG. NO.: 000

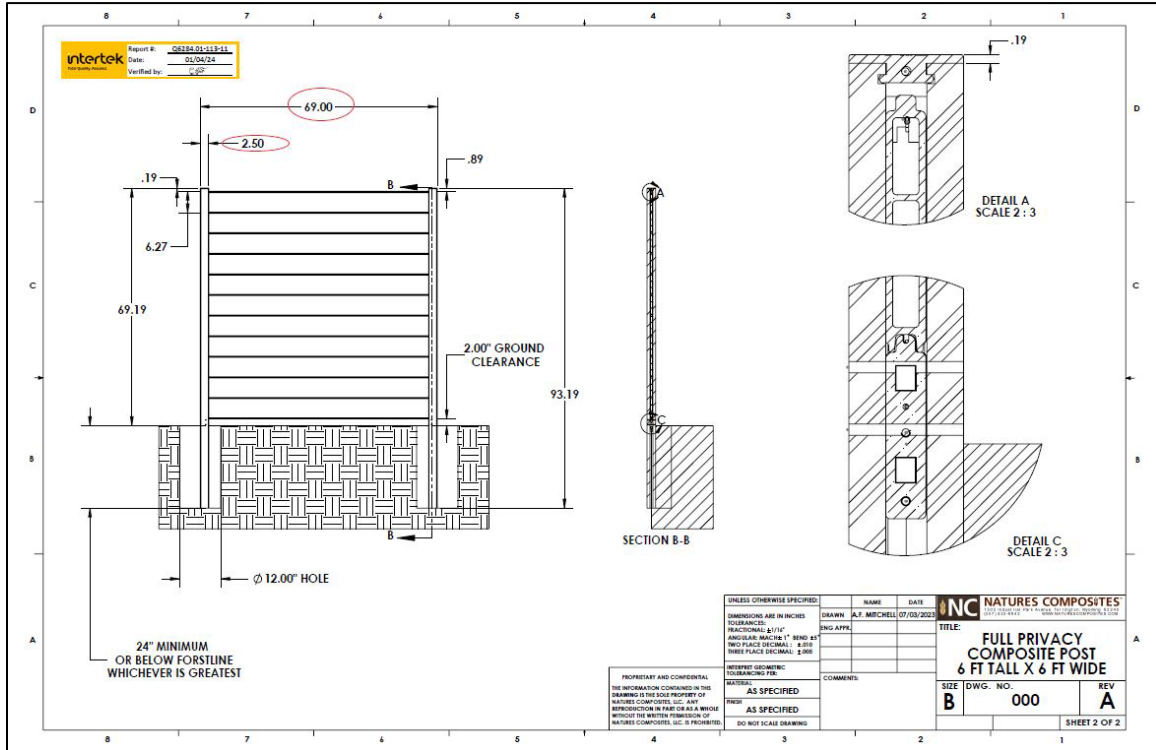
REV: A

SHEET 1 OF 2

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Total Quality. Assured.

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SECTION 13

REVISION LOG

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