

UNIQUE DESIGN SOLUTIONS ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON
VERTICAL ILLUSION, 3D WALL TILE ON A WALL SYSTEM

REPORT NUMBER

P0781.01-113-11-R0

TEST DATE

08/19/22

ISSUE DATE

08/24/22

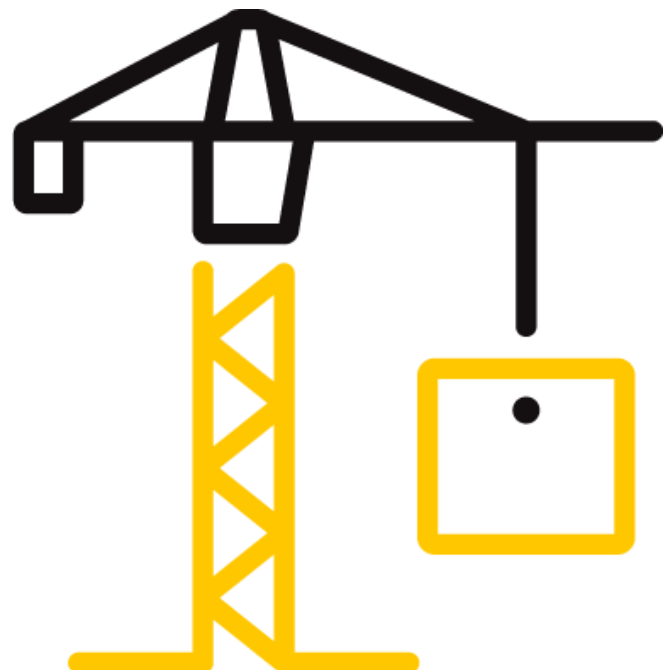
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TEST REPORT FOR UNIQUE DESIGN SOLUTIONS

Report No.: P0781.01-113-11-R0

Date: 08/24/22

REPORT ISSUED TO

UNIQUE DESIGN SOLUTIONS

2514 East Mohawk Lane, Suite #101

Phoenix, Arizona 85050

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Unique Design Solutions 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.

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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:	08/24/22	DATE:	08/24/22

CLF:jmcs

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	Vertical Illusion
TYPE	3D Wall Tile

DESCRIPTION	Base Wall Assembly
DATA FILE NO.	P0781.01A
STC	32
OITC	25

DESCRIPTION	Base Wall Assembly with Vertical Illusion, 3D Wall Tile
DATA FILE NO.	P0781.01B
STC	37
OITC	27

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 E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *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

The specimen was constructed in the laboratory. A sound transmission loss test was initially performed on a filler wall. The 96" wide by 96" high 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.

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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	INT02579	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02580	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02581	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02583	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02584	03/22
2-Channel Analog Input	National Instruments	NI-9250	2-Channel Analog Input	INT02585	03/22
Source Room Microphone	National Instruments	378C20	Microphone and Preamplifier	INT02910	02/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02911	02/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02256	02/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02427	01/22
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01089	02/22
Receive Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT02912	02/22
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64908	02/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	01/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	01/22
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/22
Receive Room Environmental Indicator	T7510	T7510	Receive Room	64915	02/22
Source Room Environmental Indicator	T7510	T7510	Source Room	64914	03/22
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/22

*- 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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LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Cody L. French	Intertek B&C
Zachary P. Golden	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

SOURCE SIDE GYPSUM BOARD	One Layer, 5/8" Type X
STUDS	2X4 Wood
INSULATION	None
RECEIVE SIDE GYPSUM BOARD	One Layer, 5/8" Type X
3D WALL TILE	Vertical Illusion

MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
SOURCE SIDE GYPSUM BOARD	48 by 96	0.625	National Gypsum Type X	2 sheets	2.3 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter sealed with duct seal. Joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.</i>				
STUD	1.5 by 93	3.5	Wood	7 pieces	1 lbs/linear ft
	<i>Note: Spaced on 16" centers. Screwed to top and bottom plates.</i>				
INSULATION	N/A	N/A	N/A	N/A	N/A
	<i>Note: N/A</i>				
RECEIVE SIDE GYPSUM BOARD	48 by 96	0.625	National Gypsum Type X	2 sheets	2.3 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter sealed with duct seal. Joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.</i>				
3D WALL TILE	14 by 14	Minimum 0.5	Unique Design Solutions Vertical Illusion	47 tiles	1.10 lbs/ft ²
		Maximum 2			
<i>Note: Adhered to base wall on the receive side with Shaw 200 TPS adhesive.</i>					
TOP PLATES	1.5 by 96	3.5	Wood	1 piece	1 lbs/linear ft
	<i>Note: N/A</i>				
BOTTOM PLATES	1.5 by 96	3.5	Wood	1 piece	1 lbs/linear ft
	<i>Note: N/A</i>				

N/A-Not Applicable

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OPTION	TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
P0781.01A	364.65	5.70
P0781.01B	430.05	6.72

Photographs are included in Section 11.

The client did not supply a report drawing of the test specimen.

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SECTION 10

TEST RESULTS

P0781.01A DATA (Base Wall Assembly)

SPECIMEN AREA	5.95 m ²	RECEIVE TEMP.	22.1 °C	SOURCE TEMP	21.4 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	51%	SOURCE HUMIDIT	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	41.8	5.7	105	85	21	2.26	-
100	32.5	6.4	106	84	22	1.47	-
125	36.0	5.5	107	87	20	1.04	0
160	40.7	5.6	107	92	15	1.06	4
200	38.4	6.0	108	93	14	1.14	8
250	30.4	5.6	104	81	23	1.03	2
315	25.1	5.8	104	76	28	0.36	0
400	22.2	6.0	103	75	28	0.30	3
500	18.4	6.1	104	71	33	0.51	0
630	19.2	5.9	103	65	38	0.40	0
800	15.3	6.4	102	63	39	0.52	0
1000	11.1	6.5	103	61	42	0.32	0
1250	8.7	6.9	101	58	43	0.33	0
1600	6.8	7.4	99	57	41	0.15	0
2000	6.4	7.8	101	65	35	0.27	1
2500	6.4	8.9	102	65	36	0.23	0
3150	6.9	10.5	101	59	39	0.21	0
4000	7.6	13.1	99	48	47	0.31	0
5000	8.5	16.2	99	44	51	0.36	-
STC RATING	32 (Sound Transmission Class)						
DEFICIENCIES	18 (Sum of Deficiencies)						
OITC RATING	25 (Outdoor-Indoor Transmission Class)						

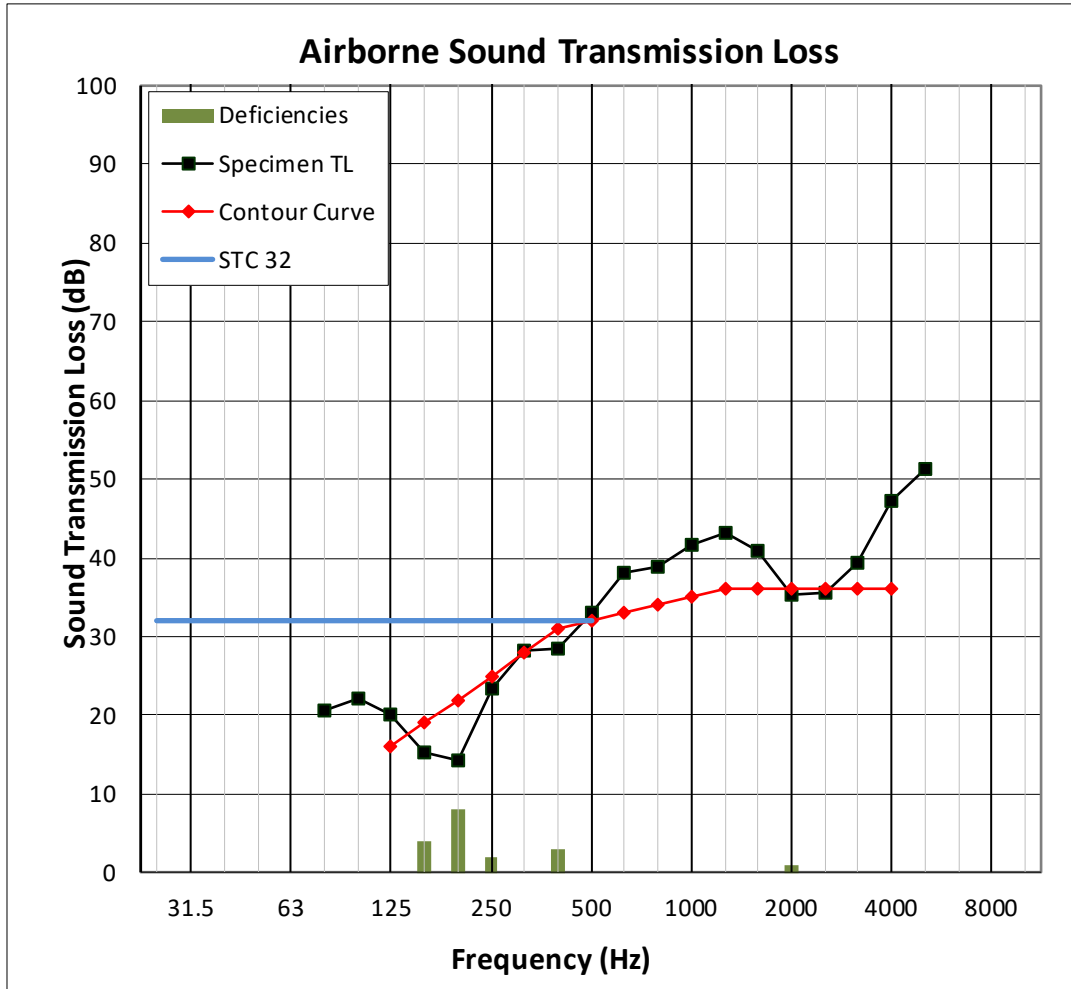
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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P0781.01A GRAPH (Base Wall Assembly)



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P0781.01B DATA (Base Wall Assembly with Vertical Illusion 3D Wall Tile)

SPECIMEN AREA	5.95 m ²	RECEIVE TEMP.	21.9 °C	SOURCE TEMP	21.2 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	49%	SOURCE HUMIDIT	48%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
80	50.1	5.2	105	84	22	2.25	-
100	35.8	6.3	106	81	25	1.50	-
125	37.1	6.0	107	86	21	1.25	0
160	40.8	5.6	107	91	16	1.14	8
200	39.8	5.6	107	89	19	1.10	8
250	33.2	5.6	104	79	26	0.98	4
315	27.9	5.9	104	74	30	0.46	3
400	23.4	6.0	103	71	32	0.31	4
500	19.2	6.1	104	66	37	0.44	0
630	19.9	6.0	104	63	41	0.42	0
800	16.2	6.5	102	60	41	0.49	0
1000	11.7	6.5	103	59	44	0.33	0
1250	9.7	7.0	102	56	44	0.42	0
1600	7.6	7.5	99	54	44	0.15	0
2000	7.0	8.0	101	59	41	0.15	0
2500	7.6	9.1	102	58	42	0.19	0
3150	10.0	10.8	101	52	46	0.14	0
4000	9.5	13.5	99	42	53	0.29	0
5000	12.5	16.8	99	37	58	0.40	-
STC RATING	37 (Sound Transmission Class)						
DEFICIENCIES	27 (Sum of Deficiencies)						
OITC RATING	27 (Outdoor-Indoor Transmission Class)						

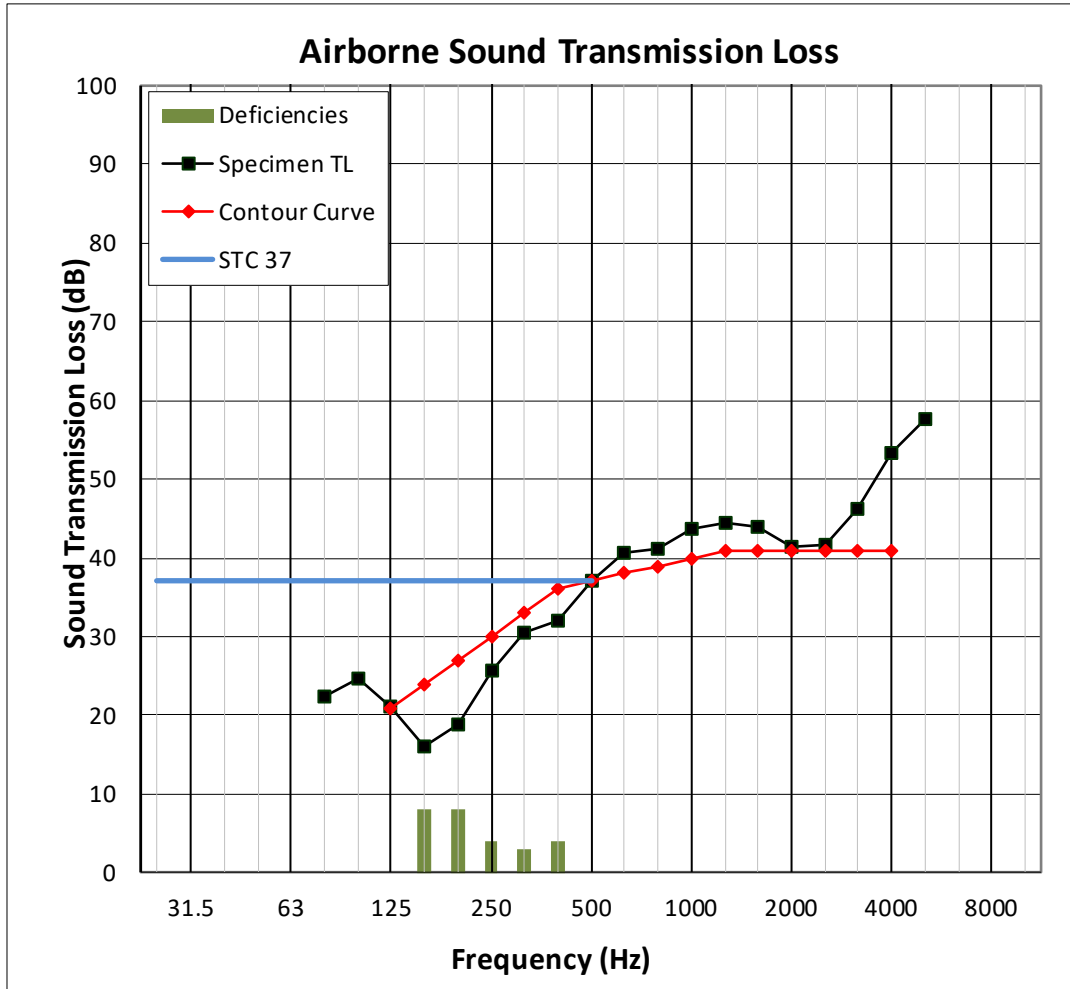
- Notes:**
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P0781.01B GRAPH (Base Wall Assembly with Vertical Illusion 3D Wall Tile)



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SECTION 11

PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Specimen



Photo No. 2
Source Room View of Installed Specimen



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SECTION 12

REVISION LOG

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