

ACOUSTIK ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON 8.4 MM ENGINEERED WOOD OVER
6 MM ACOUSTIK RUBBER UNDERLAYMENT

SPECIMEN TYPE

Open Web Truss - 457 mm

REPORT NUMBER

R5380.05-113-11-R0

TEST DATE

07/26/24

ISSUE DATE

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TEST REPORT FOR ACOUSTIK

Report No.: R5380.05-113-11-R0

Date: 08/27/24

REPORT RENDERED BY MANUFACTURER FOR ACOUSTICAL SURFACES INC.

123 Columbia Court N.

Chaska, Minnesota 55318

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by the client to perform testing in accordance with ASTM E90 AND ASTM E492 on 8.4 mm Engineered Wood over 6 mm ACOUSTIK Rubber Underlayment. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted in the VT 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.

SECTION 2

SUMMARY OF TEST RESULTS

DATA FILE NO.	R5380.05
SERIES/MODEL:	8.4 mm Engineered Wood over 6 mm ACOUSTIK Rubber Underlayment
STC	61
IIC	58
HIIC	68

COMPLETED BY: Corey S. Kohler
Technician - Acoustical
TITLE: Testing

SIGNATURE: 
Digitally Signed by: Corey Kohler

DATE: 08/27/24

REVIEWED BY: Daniel B. Mohler
Project Manager - Acoustical
TITLE: Testing

SIGNATURE: 
Digitally Signed by: Daniel Mohler

DATE: 08/27/24

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SECTION 3**TEST METHODS**

The specimen was evaluated in accordance with the following:

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

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

ASTM E492-22, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM E989-21, *Classification for Determination of Impact Insulation Class (IIC)*

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

ASTM E3207-21, *Standard Classification for Determination of Low-Frequency Impact Sound Ratings*

ASTM E3222-20, *Standard Classification for Determination of High-Frequency Impact Sound Ratings*

SECTION 4**MATERIAL SOURCE/INSTALLATION**

The full test specimen was assembled on the day of testing by B&C. All materials provided by the client were installed on an existing B&C assembly (Open Web Truss - 457 mm) utilizing B&C-supplied materials. The assembly was installed in a steel test frame which was installed into the opening between the source and receive rooms in the test chamber. The test frame was isolated from the structure with dense neoprene gasket.

The total weight of the floor/ceiling assembly was 930.8 kg. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. A drawing of the test specimen is included in the report.

B&C will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by B&C 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.

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SECTION 5 EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02672	10/23	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02673	10/23	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02674	10/23	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02675	10/23	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02676	10/23	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02677	10/23	*
2-Channel Analog Output	National Instruments	NI 9260	2-Channel Analog Output	INT02611	N/A	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	09/23	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64908	01/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	07/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT02912	03/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	09/23	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	02/24	
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/23	
				63811	10/23	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64911	09/23	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64907	01/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT02256	01/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00235	06/24	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	INT00236	06/24	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63812	11/23	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT03333	02/24	

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

VT RECEIVE ROOM VOLUME	155.77 m ³
VT SOURCE ROOM VOLUME	190 m ³

SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Michael A. Unnone	Intertek B&C
Daniel B. Mohler	Intertek B&C

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SECTION 7**TEST PROCEDURE**

The microphones were calibrated before conducting the tests. The air temperature and relative humidity conditions were monitored and recorded during all measurements. The average temperature and humidity of both the source and receive rooms are listed in Sections 10 and 11. The maximum and minimum temperatures and humidities of the receive room from the duration of the test are listed in Sections 12 and 13.

The airborne transmission loss test was conducted in accordance with the ASTM E90 test method using the single direction method. 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 both rooms, at each of five microphone positions.

The impact sound transmission test was conducted in accordance with the ASTM E492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E492, and five sound absorption measurements were conducted at each of five microphone positions.

Detailed test procedures, data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

SECTION 8**TEST CALCULATIONS**

The STC (Sound Transmission Class), IIC (Impact Insulation Class), and HIIC (High-Frequency Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, and ASTM E3222, respectively.

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SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm)	THICKNESS (mm)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Engineered Wood	127 by Varied	8.4	Shaw	10.98 m ²	7.32 kg/m ²
	Note: Loose laid				
Rubber Underlayment	1219.2 by 3023	6.0	ACOUSTIK	10.98 m ²	4.05 kg/m ²
	Note: Loose laid				
Gypsum Concrete	3023 by 3632	19.1	USG Levelrock® Brand 2500	10.98 m ²	36.62 kg/m ²
	Note: Poured directly onto the subfloor underlayment, cured a minimum of 14 days. The gypsum panel had a closed cell foam perimeter isolation. No noticeable shrinkage or cracking was visible on the specimen.				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	10.98 m ²	11.67 kg/m ²
	Note: Adhered to the floor trusses with Loctite PL 400 Subfloor adhesive. Fastened with 9D nails on 203 mm centers along perimeter and 305 mm centers along trusses.				
Fiberglass Insulation	520.7 by 3023	88.9	Johns Manville Unfaced R-13	10.98 m ²	1.32 kg/m ²
	Note: Installed in the cavity between trusses, stapled flush with the subfloor				
Open Web Truss	88.9 by 2933.7	457.2	York PB Truss L/360	7 trusses	19.05 kg/truss
	Note: Installed on 610 mm centers using JUS414 hanger brackets.				
Resilient Channel	68.6 by 3454.4	12.7	ClarkDietrich RC Deluxe™	31.05 lin m	0.33 kg/m
	Note: Installed on 305 mm centers perpendicular to the trusses. The measured thickness of the metal was 0.7 mm.				
Gypsum Panel	1219 by 3023	15.9	National Gypsum Gold Bond® Fire-Shield C™	10.98 m ²	10.74 kg/m ²
	Note: Fastened to the channels on 305 mm centers with 25.4 mm Type S bugle head screws. The seams of the gypsum panels were sealed with Pecora AC-20 FTR caulk and covered with pressure sensitive tape.				

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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m²	Receive Temp.	25.4°C	Source Temp.	24.8°C
TECHNICIAN	MAU	Receive Humidity	63%	Source Humidity	63%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
50	36	26.8	94	60	31	3.2	-
63	34.1	24.1	92	56	34	5.6	-
80	34.9	15.2	89	59	29	3.6	-
100	27.6	7.6	85	55	34	1.8	-
125	27.0	9.4	89	50	41	2.1	4
160	24.2	8.1	90	50	43	1.4	5
200	20.0	9.7	90	43	49	1.5	2
250	17.5	8.9	93	44	51	1.0	3
315	19.4	8.6	96	46	53	1.0	4
400	17.0	8.5	96	43	55	1.1	5
500	16.9	7.5	95	40	58	1.1	3
630	20.3	7.3	97	39	60	0.6	2
800	17.5	7.0	96	36	63	0.4	0
1000	19.0	7.3	96	34	65	0.3	0
1250	16.6	7.3	96	31	67	0.5	0
1600	14.5	7.5	95	30	68	0.5	0
2000	11.9	8.0	96	29	69	0.3	0
2500	10.0	8.7	94	27	69	0.5	0
3150	8.4	8.7	92	23	71	0.5	0
4000	8.3	12.8	93	20	73	0.5	0
5000	8.8	16.3	93	19	73	0.6	-
6300	9.3	14.3	87	9	78	0.8	-
8000	9.9	23.3	87	9	75	0.9	-
10000	10.6	23.3	81	9	69	1.2	-
STC Rating	61	(Sound Transmission Class)			Sum of Deficiencies	28	

Notes:

- 1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
- 2) Specimen TL levels listed in red are potentially limited by the laboratory flanking limit.
- 3) Specimen TL levels listed in blue indicate the lower limit of the transmission loss.
- 4) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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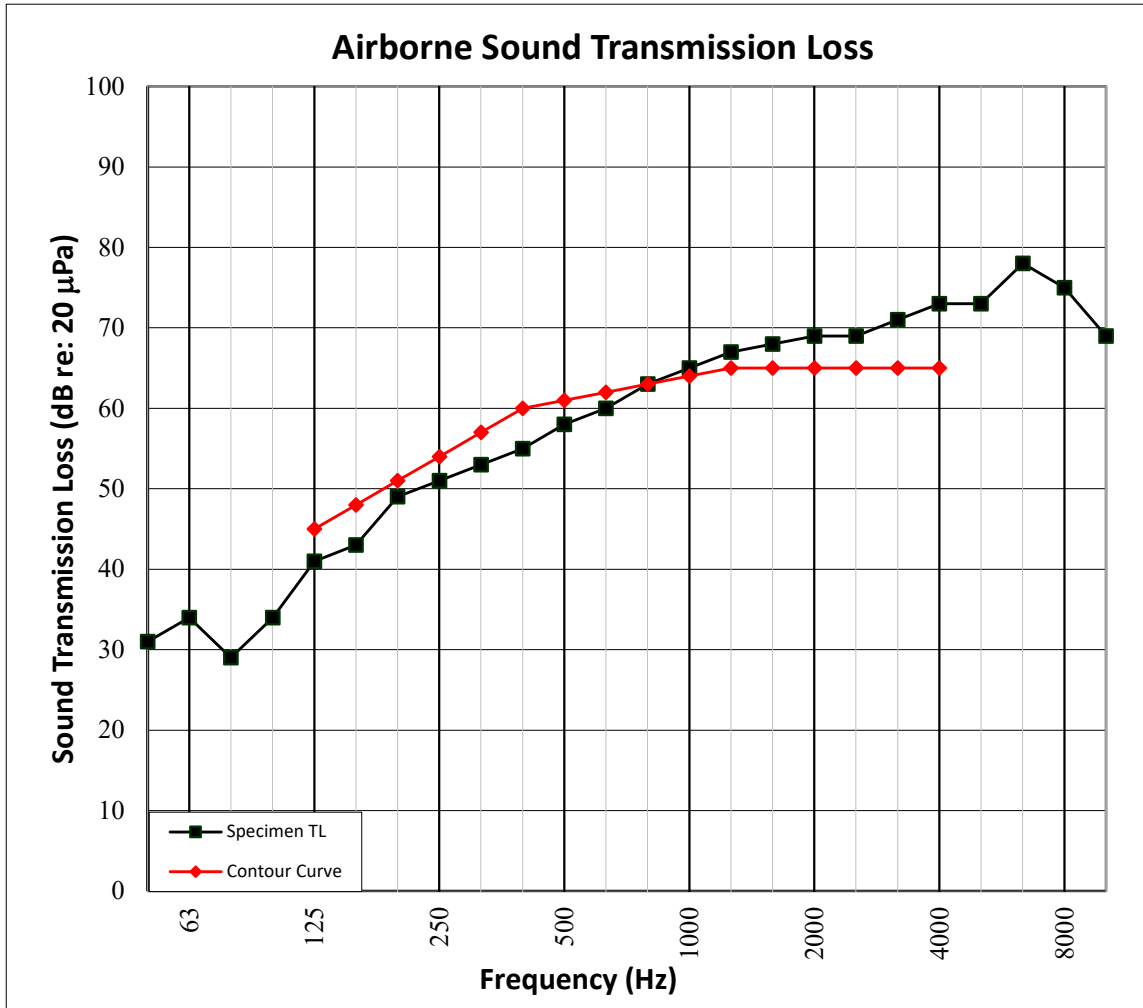
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelrock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	25.4°C	Source Temp.	24.8°C
TECHNICIAN	MAU	Receive Humidity	63%	Source Humidity	63%



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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m²	Maximum Temp.	25.4°C	Minimum Temp.	25.4°C
TECHNICIAN	MAU	Max. Humidity	64%	Min. Humidity	62%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m²	NORMALIZED IMPACT SPL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
50	35.3	28.0	74	3.0	-
63	33.7	22.8	64	1.9	-
80	35.1	14.9	66	1.5	-
100	26.5	7.8	62	1.3	8
125	26.3	8.8	59	0.8	5
160	24.0	8.4	61	0.4	7
200	20.6	9.0	59	0.6	5
250	16.6	9.5	57	0.5	3
315	19.1	8.4	54	0.5	0
400	16.6	8.3	53	0.5	0
500	16.9	7.3	48	0.4	0
630	21.6	7.4	42	0.4	0
800	17.9	7.1	40	0.4	0
1000	18.1	7.3	34	0.4	0
1250	17.3	7.4	30	0.4	0
1600	15.2	7.4	28	0.4	0
2000	12.1	8.0	29	0.5	0
2500	10.8	8.8	29	0.2	0
3150	8.8	8.7	23	0.4	0
4000	8.5	12.8	17	0.7	-
5000	8.8	16.3	12	0.4	-
6300	9.3	14.3	9	0.4	-
8000	9.9	23.3	12	0.4	-
10000	10.6	23.3	12	0.4	-
IIC Rating	58	(Impact Insulation Class)		Sum of Deficiencies	28

Notes: Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.

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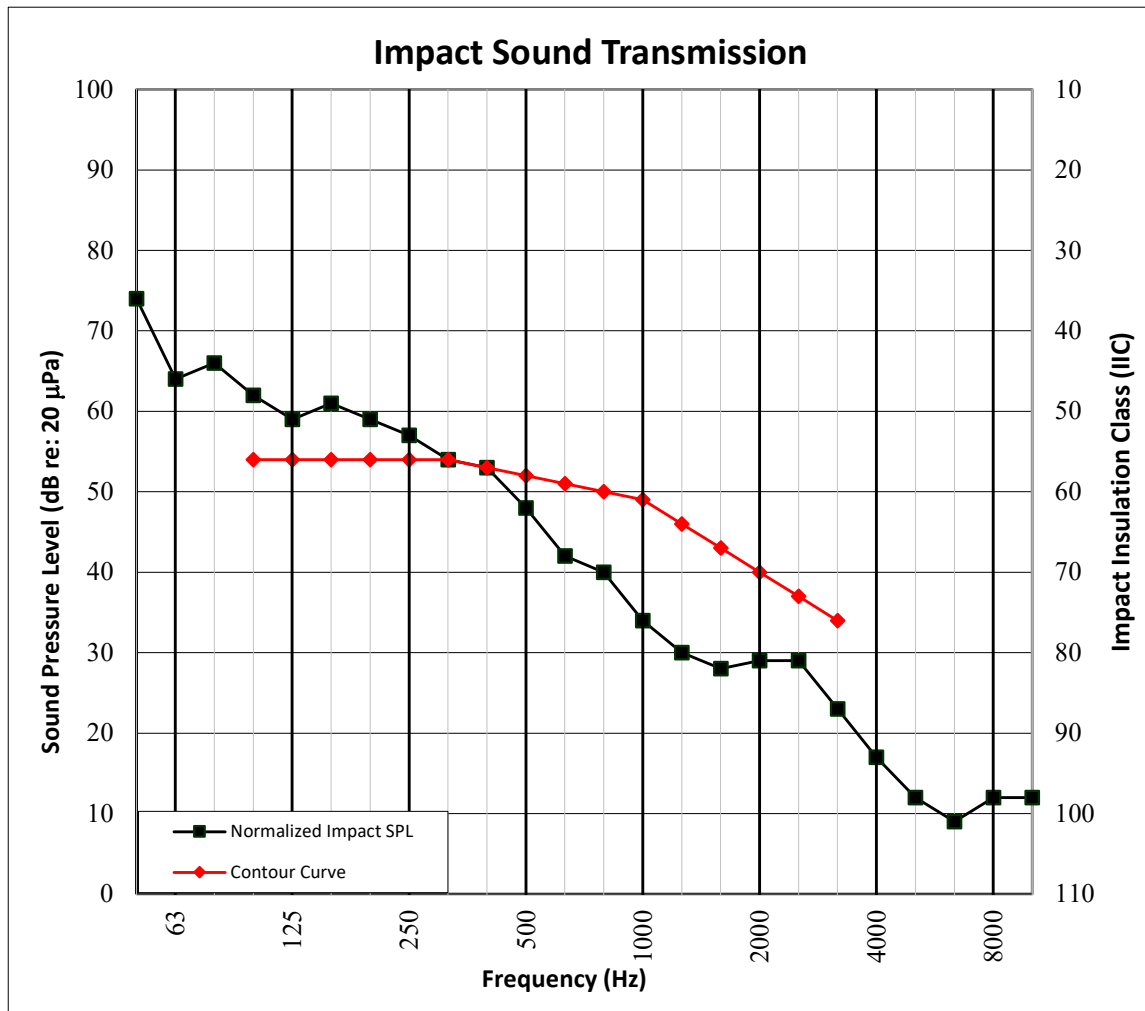
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelrock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	25.4°C	Minimum Temp.	25.4°C
TECHNICIAN	MAU	Max. Humidity	64%	Min. Humidity	62%



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SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelrock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	25.4°C	Minimum Temp.	25.4°C
TECHNICIAN	MAU	Max. Humidity	64%	Min. Humidity	62%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% SAMPLE CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
400	16.6	8.3	53	0.5	9.5
500	16.9	7.3	48	0.4	5.7
630	21.6	7.4	42	0.4	0.9
800	17.9	7.1	40	0.4	0.0
1000	18.1	7.3	34	0.4	0.0
1250	17.3	7.4	30	0.4	0.0
1600	15.2	7.4	28	0.4	0.0
2000	12.1	8.0	29	0.5	0.0
2500	10.8	8.8	29	0.2	1.9
3150	8.8	8.7	23	0.4	0.0
HIIC Rating	68	(High-Frequency Impact Insulation Class)		Sum of Deficiencies	18.0

Notes: Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.

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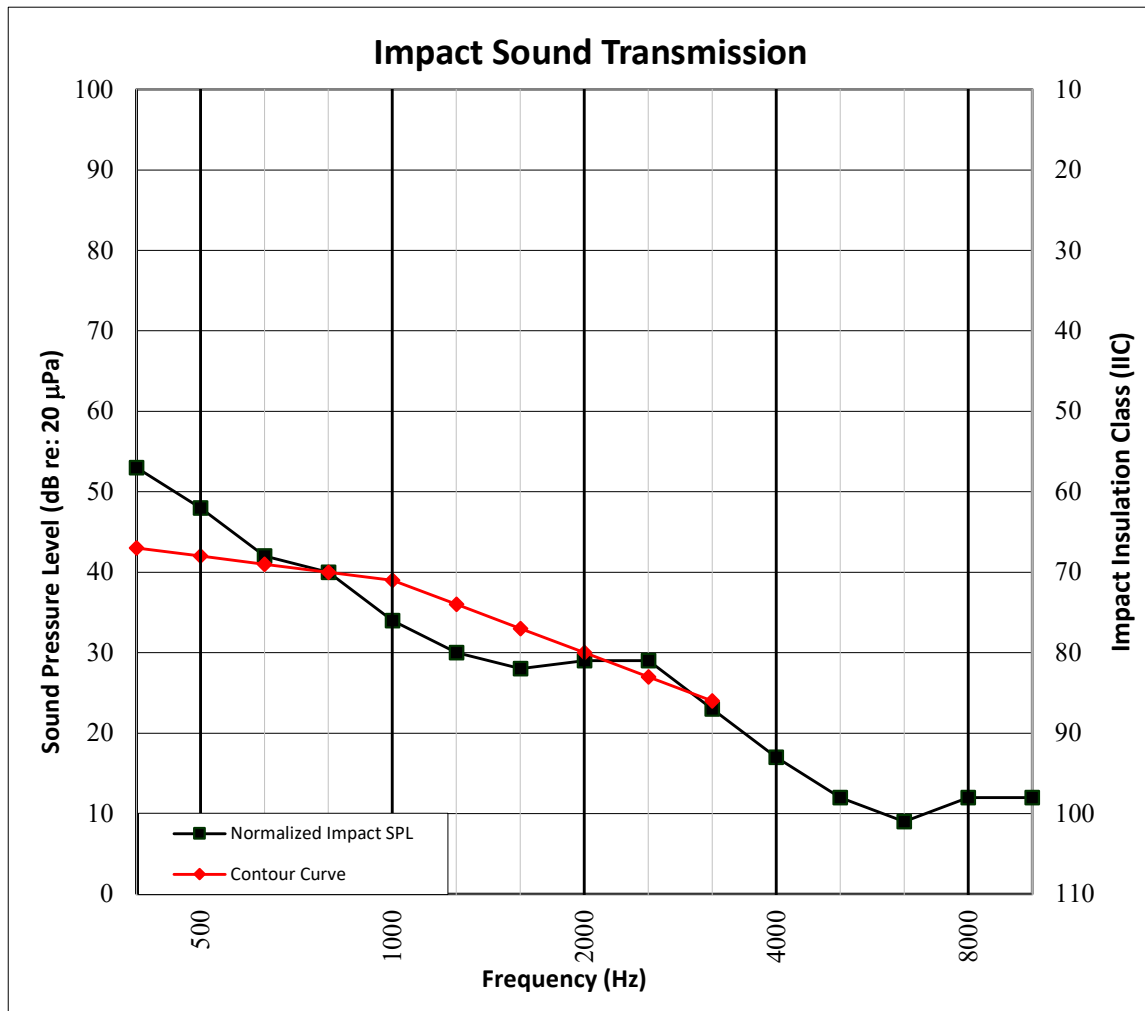
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SECTION 15

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	7/26/2024				
DATA FILE NO.	R5380.05				
CLIENT	Acoustical Surfaces, Inc.				
DESCRIPTION	8.4 mm Shaw Engineered Wood, 6 mm ACOUSTIK Rubber Underlayment, 19.05 mm USG Levelrock® Brand 2500 Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm National Gypsum Gold Bond® Fire-Shield C™ Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	25.4°C	Minimum Temp.	25.4°C
TECHNICIAN	MAU	Max. Humidity	64%	Min. Humidity	62%



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SECTION 16**PHOTOGRAPHS****Photo No. 1****Source Room View of Test Specimen Installation****Photo No. 2****Receive Room View of Test Specimen Installation**

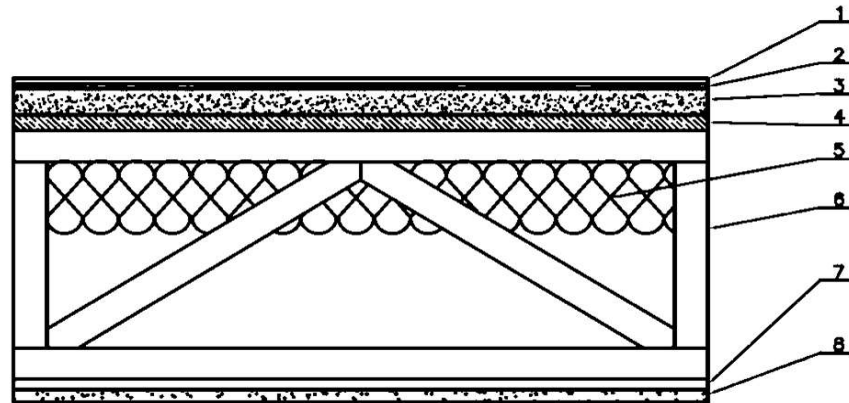
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SECTION 17

DRAWING



- 1-Floor Topping
- 2-Underlayment
- 3-Subfloor Topping
- 4-Subfloor
- 5-Insulation
- 6-Truss
- 7-Ceiling Isolation
- 8-Ceiling



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SECTION 18

REVISION LOG

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