

CLARKDIETRICH ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON SHAW EXPO GLUE-DOWN LUXURY VINYL PLANK

SPECIMEN TYPE Open Web Truss with CDSC Sound Clips and Type C Drywall

REPORT NUMBER P2294.05-113-11-R0

TEST DATE 09/22/22

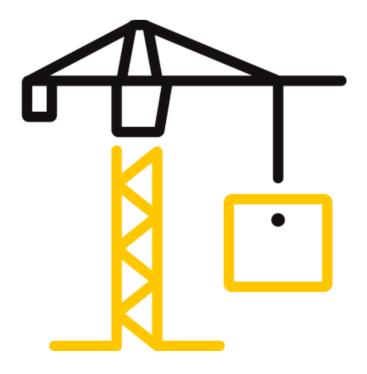
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TEST REPORT FOR CLARKDIETRICH BUILDING SYSTEMS, LLC

Report No.: P2294.05-113-11-R0 Date: 10/17/22

REPORT ISSUED TO

CLARKDIETRICH BUILDING SYSTEMS, LLC 9050 Centre Pointe Drive. Suite 400 West Chester, Ohio 45069

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by ClarkDietrich Building Systems, LLC to perform testing in accordance with ASTM E90 AND ASTM E492 on Shaw Expo Glue-Down Luxury Vinyl Plank. 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.	P2294.05
SERIES/MODEL:	Shaw Expo Glue-Down Luxury Vinyl Plank
STC	62
IIC	54
HIIC	55

COMPLETED BY:	Corey S. Kohler	COMPLETED BY:	Daniel B. Mohler
TITLE:	Technician - Acoustical Testing	TITLE:	Manager - Acoustical Testing
SIGNATURE:		SIGNATURE:	
DATE:	10/17/22	DATE:	10/17/22

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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 E413-16, Classification for Rating Sound Insulation

ASTM E492-09(2016)e1, 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 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 with CDSC Sound Clips and Type C Drywall) 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 1052.4 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 DA	TE
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02586	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02587	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02608	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02609	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02610	04/22	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02612	04/22	*
Microphone Calibrator	Norsonic	34093	Acoustical Calibrator	65105	10/21	
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63741	06/22	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63740	04/22	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64340	10/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	09/21	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65968	01/22	
Receive Room Environmental	Comet	T7510	Temperature and Humidity	, 63810	10/21	
Indicator	Comet	17510	Transmitter	63811	10/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65103	02/22	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64902	12/21	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63739	07/22	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	63742	04/22	
Source Room Microphone	PCB Electronics	378C20	Microphone and Preamplifier	64906	04/22	
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter 63812		10/21	
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	02/22	

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

VT RECEIVE ROOM VOLUME	155.77 m³
VT SOURCE ROOM VOLUME	190 m ³

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Morgan S. J. Kennedy	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				
	1219.2 by 152.4	2.0	Shaw Expo	10.98 m²	3.47 kg/m²				
Luxury Vinyl Tile	Note: A sheet of 2 mil polyethylene plastic was adhered to the subfloor topping with Sprayway Fast Tack 85 spray adhesive. The underlayment was adhered to the sheeting with Shaw S150 spray adhesive. Adhesive was allowed to cure per manufacturer's specifications.								
	3023 by 3632	19.1	Maxxon Gyp-Crete	10.98 m²	53.8 kg/m²				
Gypsum Concrete			loor, cured a minimum of 14 1. No noticeable shrinkage or						
	1219 by 2438	18.8	N/A	10.98 m²	11.67 kg/m²				
Oriented Strand Board Sheathing	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	520.7 by 3023	88.9	Johns Manville Unfaced R- 13	10.98 m²	1.32 kg/m²				
Insulation	Note: Installed in the cavity between trusses, stapled flush with the subfloor								
	88.9 by 2933.7	457.2	York PB Truss L/360	7 trusses	19.05 kg/truss				
Open Web Truss	Note: Installed on 610 mm centers using JUS414 hanger brackets.								
	77 by 35.2	24.5	ClarkDietrich CDSC	36 clips	0.09 kg/clip				
Sound Clip	Note: Fastened to the joist bottoms in a 610 mm by 1219 mm grid pattern								
Furring/Hat	3657.6 by 76.2	22.3	ClarkDietrich 087F125-18	29.1 lin m	0.48 kg/m				
Channel	Note: Installed into the ceiling clips, 610 mm on center								
	1219 by 3023	15.9	USG SHEETROCK [®] Brand FIRECODE [®] C Core	10.98 m²	11.91 kg/m²				
Gypsum Panel			305 mm centers with 25.4 m ealed with Pecora AC-20 FTR						



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SECTION 10

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	9/22/2022				ACCREDITE			
DATA FILE NO.	P2294.05	2294.05						
CLIENT	ClarkDietrich Bu	arkDietrich Building Systems, LLC						
DESCRIPTION	Strand Board Sheathi Truss L/360 Open We	mm Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete Gypsum Concrete, 18.8 mm Oriented trand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB russ L/360 Open Web Truss, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 urring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel						
SPECIMEN AREA	10.98 m²	Receive Temp.	22.1°C	Source Temp.	19.9°C			
TECHNICIAN	MSJK	Receive Humidity	74%	Source Humidity	74%			

EDEO	BACKGROUND		SOURCE	RECEIVE	SPECIMEN	95%	NUMBER
FREQ	SPL	ABSORPTION	SPL	SPL	TL	SAMPLING	OF
(Hz)	(dB)	m²	(dB)	(dB)	(dB)	LIMIT	DEFICIENCIES
50	34.3	26.7	106	73	31	3.7	-
63	33.1	15.6	104	71	33	4.7	-
80	30.8	13.5	100	69	31	2.6	-
100	25.3	8.9	99	66	36	2.1	-
125	21.9	11.5	102	60	43	1.7	3
160	19.5	9.0	100	57	45	1.3	4
200	16.2	10.7	97	51	48	1.8	4
250	13.5	10.3	98	49	51	0.8	4
315	16.1	10.0	102	52	52	0.9	6
400	14.5	8.4	102	49	56	0.7	5
500	15.7	7.2	98	41	60	0.8	2
630	17.0	7.7	97	37	62	0.9	1
800	16.9	7.7	98	38	62	0.8	2
1000	20.3	7.6	99	37	64	0.3	1
1250	18.4	7.9	99	35	67	0.6	0
1600	13.7	7.7	99	33	68	0.6	0
2000	10.2	8.5	99	32	69	0.4	0
2500	8.6	9.4	94	27	69	0.5	0
3150	7.5	10.0	91	22	71	0.4	0
4000	7.7	11.0	92	18	75	0.5	0
5000	8.0	12.1	91	13	79	0.6	-
6300	8.8	14.1	88	9	80	0.6	-
8000	9.6	17.3	91	9	81	1.0	-
10000	10.1	17.3	89	9	80	1.2	-
STC Rat	ing 62	(Sound Transm	ission Class)	Sum	of Deficiencies	32

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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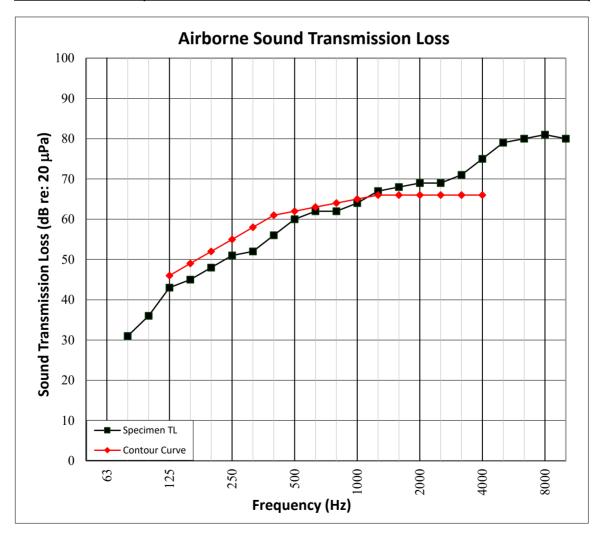
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE DATA FILE NO. CLIENT	9/22/2022 P2294.05 ClarkDietrich Bu							
DESCRIPTION	Strand Board Sheath Truss L/360 Open We	runs Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete Gypsum Concrete, 18.8 mm Oriented trand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB russ L/360 Open Web Truss, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 urring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel						
SPECIMEN AREA	10.98 m²	Receive Temp.	22.1°C	Source Temp.	19.9°C			
TECHNICIAN	MSJK	Receive Humidity	74%	Source Humidity	74%			





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SECTION 12

TEST RESULTS - IMPACT SOUND TRANSMISSION



TEST DATE DATA FILE NO. CLIENT	9/22/2022 P2294.05 ClarkDietrich Bu	2294.05 ClarkDietrich Building Systems, LLC						
DESCRIPTION	Strand Board Sheathi Truss L/360 Open We	mm Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete Gypsum Concrete, 18.8 mm Oriented trand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB russ L/360 Open Web Truss, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 urring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel						
SPECIMEN AREA	10.98 m²	Maximum Temp.	22.1°C	Minimum Temp.	22.1°C			
TECHNICIAN	MSJK	Max. Humidity	74%	Min. Humidity	74%			

FREQ	BACKGROUND SPL	ABSORPTION	NORMALIZED IMPACT SPL	95% SAMPLING	NUMBER OF
(Hz)	(dB)	m²	(dB)	LIMIT	DEFICIENCIES
<u> </u>					DEFICIENCIES
80	36.9	14.5	63	2.1	-
100	26.2	8.8	60	1.5	2
125	25.5	10.8	60	0.9	2
160	24.2	9.4	60	0.9	2
200	21.1	11.5	61	0.6	3
250	16.2	10.6	60	0.5	2
315	18.1	10.3	61	0.6	3
400	18.5	8.4	58	0.6	1
500	17.1	7.0	58	0.6	2
630	18.8	7.8	56	0.3	1
800	18.9	7.6	56	0.3	2
1000	20.4	7.5	52	0.3	0
1250	18.8	7.9	48	0.2	0
1600	15.6	7.7	45	0.2	0
2000	11.7	8.3	45	0.2	1
2500	9.6	9.2	45	0.3	4
3150	8.2	10.1	39	0.4	1
4000	8.0	10.8	34	0.4	-
5000	8.0	12.1	30	0.3	-
6300	8.8	14.2	25	0.5	-
8000	9.6	17.2	24	0.4	-
10000	10.1	17.2	20	0.4	-
IIC Ratin	<mark>g</mark> 54	(Impact Insulati	on Class)	Sum of Deficiencies	26

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



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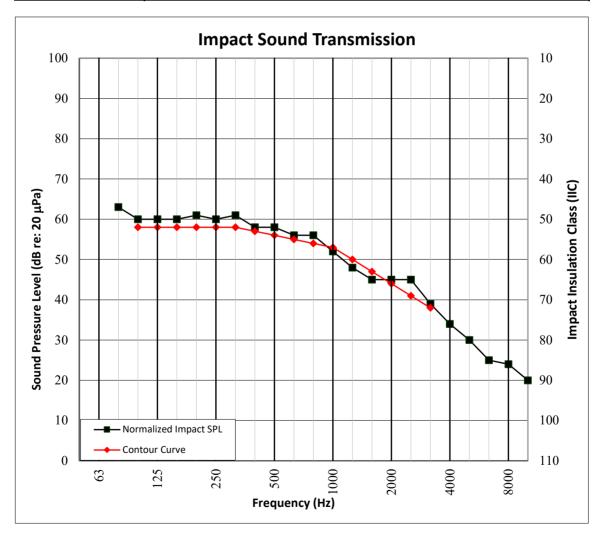
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE DATA FILE NO. CLIENT	9/22/2022 P2294.05 ClarkDietrich Bu							
DESCRIPTION	Strand Board Sheathi Truss L/360 Open We	er mm Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete Gypsum Concrete, 18.8 mm Oriented trand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Fruss L/360 Open Web Truss, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel						
SPECIMEN AREA	10.98 m²	Maximum Temp.	22.1°C	Minimum Temp.	22.1°C			
TECHNICIAN	MSJK	Max. Humidity	74%	Min. Humidity	74%			





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SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION



TEST DATE DATA FILE NO.	9/22/2022 P2294.05				ACCREDITE Testing Laborato
CLIENT	ClarkDietrich Building Systems, LLC				
DESCRIPTION	2 mm Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete 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, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel				
SPECIMEN AREA	10.98 m²	Maximum Temp.	22.1°C	Minimum Temp.	22.1°C
TECHNICIAN	MSJK	Max. Humidity	74%	Min. Humidity	74%

FREQ	BACKGROUND SPL	ABSORPTION	NORMALIZED IMPACT SPL	95% SAMPLE CONFIDENCE	NUMBER OF
(Hz)	(dB)	m²	(dB)	LIMIT	DEFICIENCIES
400	18.5	8.4	58	0.6	2.0
500	17.1	7.0	58	0.6	2.7
630	18.8	7.8	56	0.3	2.4
800	18.9	7.6	56	0.3	2.6
1000	20.4	7.5	52	0.3	0.0
1250	18.8	7.9	48	0.2	0.0
1600	15.6	7.7	45	0.2	0.0
2000	11.7	8.3	45	0.2	2.4
2500	9.6	9.2	45	0.3	5.0
3150	8.2	10.1	39	0.4	2.3
HIIC Rat	ting 55	(High-Frequent	cy Impact Insulation Class)	Sum of Deficiencies	<mark>s</mark> 19.4

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



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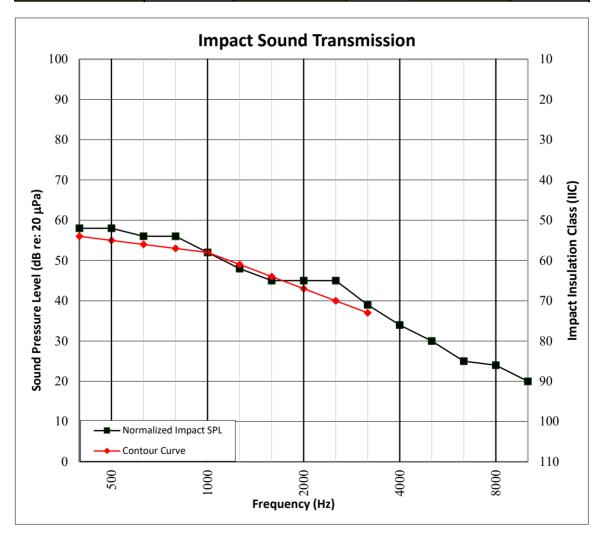
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SECTION 15

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH



TEST DATE DATA FILE NO. CLIENT	9/22/2022 P2294.05 ClarkDietrich Building Systems, LLC				ACCREDITE Testing Laborator
DESCRIPTION	2 mm Shaw Expo Lux Strand Board Sheath Truss L/360 Open We	2 mm Shaw Expo Luxury Vinyl Tile, 19.05 mm Maxxon Gyp-Crete 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, 24.5 mm ClarkDietrich CDSC Sound Clip, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm USG SHEETROCK [®] Brand FIRECODE [®] C Core Gypsum Panel			
SPECIMEN AREA	10.98 m²	Maximum Temp.	22.1°C	Minimum Temp.	22.1°C
TECHNICIAN	MSJK	Max. Humidity	74%	Min. Humidity	74%





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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

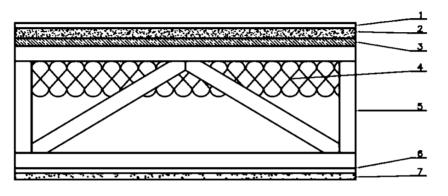


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SECTION 17

DRAWING



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



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SECTION 18

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
RO	10/17/22	N/A	Original Report Issue