

# CLARKDIETRICH ACOUSTICAL PERFORMANCE TEST REPORT

## **SCOPE OF WORK**

ASTM E90 AND ASTM E492 TESTING ON CERAMIC TILE

## **SPECIMEN TYPE**

Open Web Truss with CDSC Sound Clips and Type C Drywall

#### **REPORT NUMBER**

P2294.07-113-11-R0

## **TEST DATE**

09/23/22

## **ISSUE DATE**

10/17/22

## **RECORD RETENTION END**

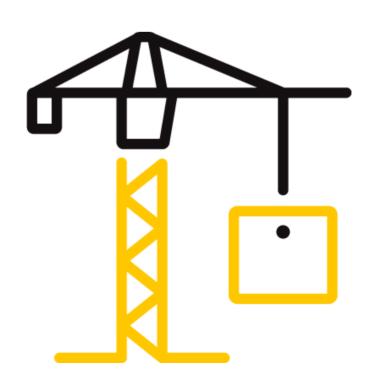
09/23/26

#### **PAGES**

15

## **DOCUMENT CONTROL**

RTTDS-R-AMER-Test-2844 (03/23/22) © 2017 INTERTEK





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## TEST REPORT FOR CLARKDIETRICH BUILDING SYSTEMS, LLC

Report No.: P2294.07-113-11-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 Ceramic Tile. 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.	P2294.07
SERIES/MODEL:	Ceramic Tile
STC	61
IIC	51
HIIC	51

COMPLETED BY:	Corey S. Kohler	<b>COMPLETED BY:</b>	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 1249.1 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	17310	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	

<sup>\*</sup> 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 <sup>3</sup>

## **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	THICKNESS	MANUFACTURER AND	QUANTITY	AVERAGE			
IVIATERIAL	(mm)	(mm)	SERIES	QUANTITY	WEIGHT			
	600.1 by 298.4	10.5	Lamosa	10.98 m²	21.39 kg/m²			
Ceramic Tile	tile and wiped cle The mortar was s	ean. The ceramic ti set using a 6.35 mn	as placed into the 6.35 mm ( le was placed onto a bed of l n by 6.35 mm (0.25" by 0.25' nufacturer's specifications.	Laticrete Platinum	254 mortar.			
	3023 by 3632	19.1	Maxxon Gyp-Crete	10.98 m²	53.8 kg/m²			
Gypsum Concrete			loor, cured a minimum of 14 n. 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							
Onen Web Truck	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.							
Saved Clin	77 by 35.2	24.5	ClarkDietrich CDSC	36 clips	0.09 kg/clip			
Souria 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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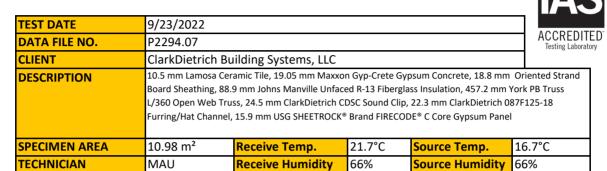
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#### **SECTION 10**

## **TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS**



FREQ	BACKGROUND	ABSORPTION	SOURCE	RECEIVE	SPECIMEN	95%	NUMBER
FREQ	SPL	ADSORPTION	SPL	SPL	TL	SAMPLING	OF
(Hz)	(dB)	m²	(dB)	(dB)	(dB)	LIMIT	DEFICIENCIES
50	37.9	25.2	108	72	33	3.4	-
63	36.2	16.7	106	69	37	5.0	-
80	34.5	14.6	100	69	30	3.3	-
100	28.0	8.8	99	65	36	2.1	-
125	25.8	11.2	102	61	42	2.7	3
160	26.2	9.3	100	60	42	1.4	6
200	21.9	10.8	97	50	48	2.0	3
250	19.7	10.0	99	50	50	1.3	4
315	20.8	10.0	102	53	51	1.0	6
400	19.5	8.2	102	49	56	0.9	4
500	20.2	7.2	98	42	59	0.7	2
630	22.6	7.8	97	38	61	1.0	1
800	21.0	7.6	98	38	62	0.7	1
1000	23.7	7.3	99	37	64	0.4	0
1250	21.6	7.7	99	35	67	0.7	0
1600	16.8	7.7	99	33	69	0.3	0
2000	12.6	8.3	99	32	69	0.4	0
2500	10.7	9.3	94	28	68	0.5	0
3150	8.6	10.0	92	23	70	0.6	0
4000	8.1	11.0	92	18	75	0.6	0
5000	8.1	12.4	91	13	79	0.6	-
6300	8.8	14.8	89	8	80	0.7	-
8000	9.4	18.0	91	8	81	1.0	-
10000	10.0	18.0	89	8	80	1.3	-
STC Ratin	<mark>1g</mark> 61	(Sound Transmi	ssion Class)		Sum o	f Deficiencies	30

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 <u>blue</u> 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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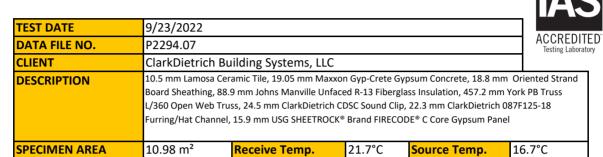
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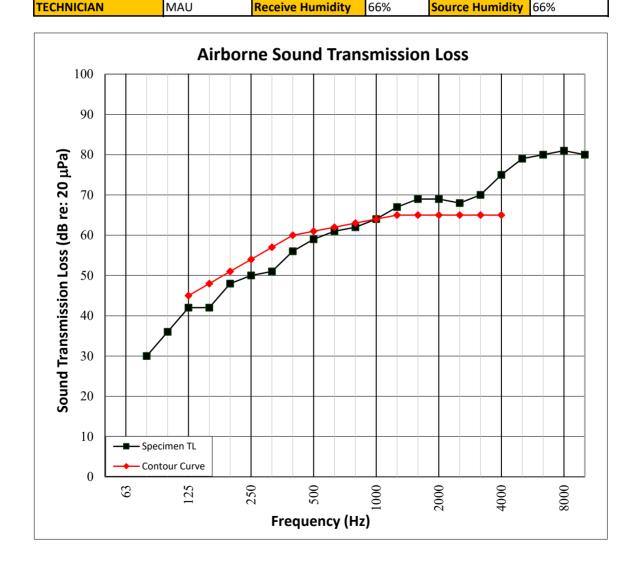
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#### **SECTION 11**

## **TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH**







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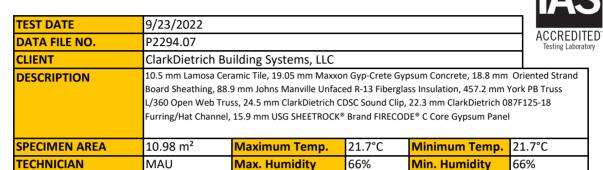
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#### **SECTION 12**

## **TEST RESULTS - IMPACT SOUND TRANSMISSION**



FREQ	BACKGROUND	ABSORPTION	NORMALIZED IMPACT SPL	95%	NUMBER
FREQ	SPL	ABSORPTION	NORIVIALIZED IIVIPACT SPL	SAMPLING	OF
(Hz)	(dB)	m²	(dB)	LIMIT	DEFICIENCIES
80	33.7	14.2	63	2.5	-
100	29.0	8.7	61	2.3	0
125	27.4	10.9	62	0.8	1
160	25.7	8.8	63	1.2	2
200	21.9	11.1	65	0.8	4
250	18.4	10.2	64	0.4	3
315	19.5	10.2	65	0.5	4
400	19.0	8.7	63	0.6	3
500	18.2	7.5	61	0.4	2
630	22.1	7.6	58	0.3	0
800	20.5	7.7	58	0.3	1
1000	22.0	7.4	54	0.2	0
1250	19.9	7.7	50	0.2	0
1600	16.5	7.8	47	0.2	0
2000	14.2	8.3	48	0.2	1
2500	12.8	9.4	49	0.1	5
3150	10.4	9.9	43	0.3	2
4000	9.3	11.0	37	0.2	-
5000	8.8	12.4	33	0.2	-
6300	8.9	14.8	27	0.4	-
8000	9.4	18.1	26	0.4	-
10000	9.9	18.1	23	0.4	-
<b>IIC Ratin</b>	<mark>g</mark> 51	(Impact Insulat	ion 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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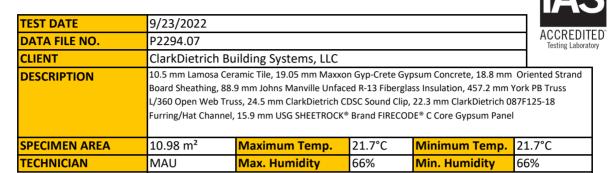
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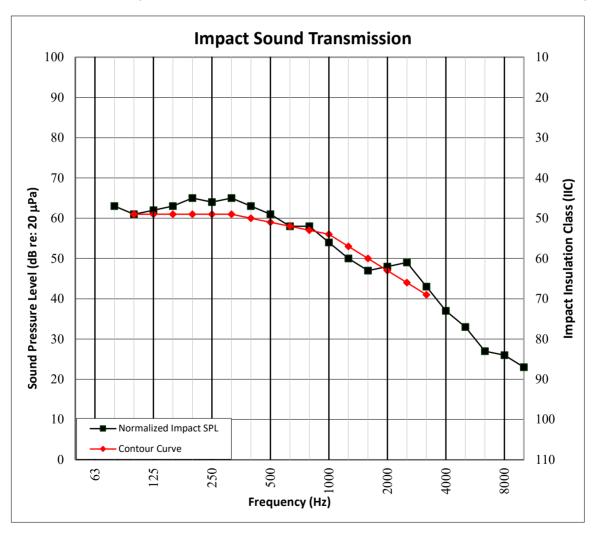
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## **SECTION 13**

## **TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH**







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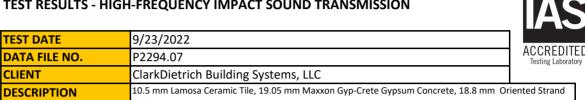
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## **SECTION 14**

## **TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION**



	L/360 Open Web Trus	9 mm Johns Manville Unface ss, 24.5 mm ClarkDietrich Cl 15.9 mm USG SHEETROCK®	OSC Sound Clip,	22.3 mm ClarkDietrich 08	87F125-18
SPECIMEN AREA	10.98 m <sup>2</sup>	Maximum Temp.	21.7°C	Minimum Temp.	21.7°C
TECHNICIAN	MAU	Max. Humidity	66%	Min. Humidity	66%

FREQ	BACKGROUND SPL	ABSORPTION	NORMALIZED IMPACT SPL	95% SAMPLE CONFIDENCE	NUMBER OF
(Hz)	(dB)	m²	(dB)	LIMIT	DEFICIENCIES
400	19.0	8.7	63	0.6	3.2
500	18.2	7.5	61	0.4	1.8
630	22.1	7.6	58	0.3	0.3
800	20.5	7.7	58	0.3	0.5
1000	22.0	7.4	54	0.2	0.0
1250	19.9	7.7	50	0.2	0.0
1600	16.5	7.8	47	0.2	0.0
2000	14.2	8.3	48	0.2	1.3
2500	12.8	9.4	49	0.1	4.6
3150	10.4	9.9	43	0.3	1.8
<b>HIIC Ra</b>	ting 51	(High-Frequen	cy Impact Insulation Class)	Sum of Deficienci	es 13.5

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



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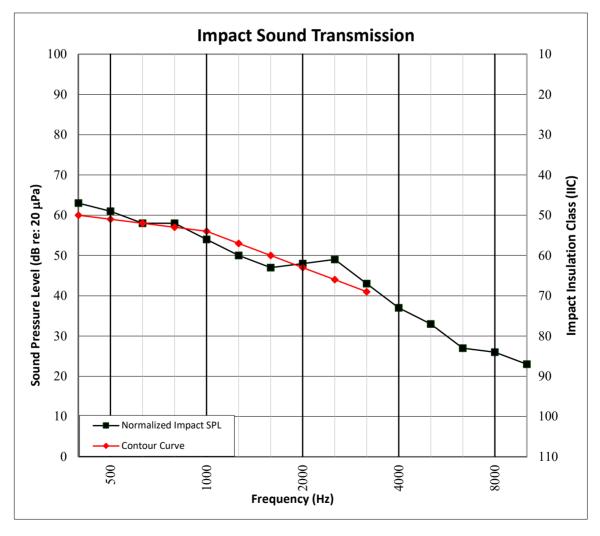
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## **SECTION 15**

## **TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH**



TECHNICIAN	MAU	Max. Humidity	66%	Min. Humidity	66%
SPECIMEN AREA	10.98 m²	Maximum Temp.	21.7°C	Minimum Temp.	21.7°C
DESCRIPTION	Board Sheathing, L/360 Open Web	0.5 mm Lamosa Ceramic Tile, 19.05 mm Maxxon Gyp-Crete Gypsum Concrete, 18.8 mm Oriented Strand oard Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 457.2 mm York PB Truss /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			
CLIENT	ClarkDietrich	arkDietrich Building Systems, LLC			
DATA FILE NO.	P2294.07	2294.07			
TEST DATE	9/23/2022	23/2022			





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## **SECTION 16**

## **PHOTOGRAPHS**

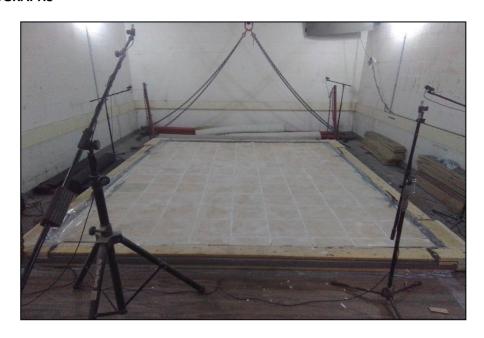


Photo No. 1 Source Room View of Test Specimen Installation



Photo No. 2
Receive Room View of Test Specimen Installation



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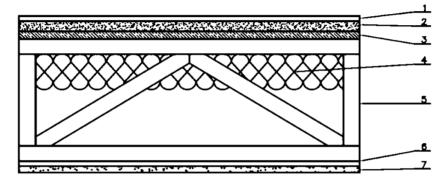
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## **SECTION 17**

## **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**

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