G4260.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

US ARCHITECTURAL PRODUCTS, INC.

Series/Model: Plycem CemDeck - No Floor Topping

Specimen Type: 8J16 Steel Joist Assembly

Overall Size: 3023 by 3632

STC	**49**
IIC	**31**

Test Specimen Identification:
Subfloor: 20 mm Plycem CemDeck Cement Board Floor Panels
Insulation: 101.6 mm 4 PCF Rock Wool Insulation
Joist: 254 mm 8J16 Steel Floor Joists
Ceiling Isolation: 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel
Ceiling: 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel

Reference should be made to Intertek-ATI Report G4260.01-113-11 for complete test specimen description. This page alone is not a complete report.

Acoustical Performance Test Report

US ARCHITECTURAL PRODUCTS, INC.
103 Carnegie Center, Suite 320
Princeton, New Jersey 08540

Report	G4260.01-113-11
Test Date	11/23/16
Report Date	12/16/16

Project Scope

Architectural Testing, Inc., an Intertek company (Intertek-ATI), was contracted to conduct airborne sound transmission loss and impact sound transmission tests. The complete test data is included as attachments to this report. The full test specimen was assembled on the day of testing by Intertek-ATI. All materials provided by the client were installed on an existing Intertek-ATI assembly (8J16 Steel Joist Assembly) utilizing Intertek-ATI-supplied materials.

Test Methods

The acoustical tests were conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
ASTM E 413-10, Classification for Rating Sound Insulation
ASTM E 492-09(2016)e1, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
ASTM E 989-06 (2012), Classification for Determination of Impact Insulation Class (IIC)
ASTM E 2235-04 (2012) Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

Test Procedure

All testing was conducted in the VT test chambers at Intertek-ATI located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The airborne transmission loss test was conducted in accordance with the ASTM E 90 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. Four sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

Test Procedure (Continued)
The impact sound transmission test was conducted in accordance with the ASTM E 492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492, and five sound absorption measurements were conducted at each of five microphone positions.

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

Test Conditions

Source Room		Receive Room	
Average Temperature	23.1°C	Average Temperature	18.6°C
Average Relative Humidity	46%	Average Relative Humidity	49%

Test Calculations
The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E 413 and ASTM E 989, respectively.

Test Specimen Materials and Installation Details

Material	Dimensions ()	Thickness ()	Manufacturer and Series	Quantity	Average Weight
Cement Board Floor Panels	1219 by 2348	20.0	Plycem CemDeck	10.98 m²	23.92 kg/m²
	Note: Fastened to the joists with 47.6 mm #8 screws on 305 mm centers along perimeter and 406 mm centers along trusses				
Rock Wool Insulation	610 by 1219.2	101.6	4 PCF	10.98 m²	3.25 kg/m²
	Note: Installed in the cavity between joists flush with the subfloor. Hanger wire was used to keep insulation secure on 305 mm				
Steel Floor Joists	2889 by 42.5	254.0	8J16	7 joist	23.21 kg/joist
	Note: Installed on 610 mm centers using JUS414 hanger brackets.				
Furring/Hat Channel	3658 by 76.2	22.3	ClarkDietrich 087F125-18	29.1 lin m	0.48 kg/m
	Note: Fastened to the bottom flangers of the joists, spaced 406 mm on center.				
Gypsum Panel	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C Core	10.98 m²	11.9 kg/m²
	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.				

Comments
The total weight of the floor/ceiling assembly was 605.6 kg. Intertek-ATI will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. A drawing of the test specimen is included in the attachments.

Intertek-ATI 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 Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

FOR INTERTEK-ATI:

Digitally Signed by: Cody Snyder

Cody R. Snyder
Technician II - Acoustical Testing

Digitally Signed by: Jordan Strybos

Jordan Strybos
Project Manager - Acoustical Testing

Attachments (7 pages): This report is complete only when all attachments listed are included.

- Instrumentation (1)
- Airborne Sound Transmission Loss Data (2)
- Impact Sound Transmission Data (2)
- Photographs (1)
- Drawings (1)

** Stated by Client/Manufacturer*
N/A - Non Applicable

Revision Log

Revision	Date	Page(s)	Description
R0	12/16/16	N/A	Original Report Issue

Attachments

Instrumentation

Instrument	Manufacturer	Model	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	65124	06/16 *
Microphone Calibrator	Norsonic	1251	INT00127	01/16
Receive Room Microphone	PCB Piezontronics	378B20	63748	06/16
Receive Room Microphone	PCB Piezotronics	378B20	63744	06/16
Receive Room Microphone	PCB Piezotronics	378B20	63745	06/16
Receive Room Microphone	PCB Piezotronics	378C20	65617	06/16
Receive Room Microphone	PCB Piezotronics	378B20	63747	06/16
Receive Room Environmental Indicator	Comet	T7510	63810	10/16
			63811	10/16
Source Room Microphone	PCB Piezotronics	378B20	63738	05/16
Source Room Microphone	PCB Piezotronics	378B20	63739	05/16
Source Room Microphone	PCB Piezotronics	378B20	63740	05/16
Source Room Microphone	PCB Piezotronics	378B20	63742	05/16
Source Room Microphone	Scantek	378B20	63741	05/16
Source Room Environmental Indicator	Comet	T7510	63812	11/16
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	02/16

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

Test Chambers

VT Receive Room Volume	156.28 m³
VT Source Room Volume	190 m³

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	11/23/16
Data File No.	G4260.01
Client	US Architectural Products, Inc.
Description	20 mm Plycem CemDeck Cement Board Floor Panels, 101.6 mm 4 PCF Rock Wool Insulation, 254 mm 8J16 Steel Floor Joists, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel
Specimen Area	10.98
Technician	Cody R. Snyder

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m^2)	**Source SPL** (dB)	**Receive SPL** (dB)	**Specimen TL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	44.8	18.8	109	83	23	3.50	-
100	36.6	15.0	106	81	24	2.00	-
125	32.8	10.7	104	77	27	1.60	6
160	29.6	10.5	104	69	35	1.50	1
200	26.9	11.9	104	63	40	1.10	0
250	28.4	10.5	102	59	44	1.00	0
315	23.3	9.5	105	60	46	0.60	0
400	24.0	8.4	103	56	49	0.50	0
500	27.6	7.7	102	53	51	0.40	0
630	24.8	7.5	101	51	52	0.30	0
800	27.1	7.5	102	49	54	0.40	0
1000	29.3	7.3	101	48	55	0.30	0
1250	29.1	7.6	100	45	56	0.40	0
1600	26.5	7.5	100	52	50	0.30	3
2000	19.9	8.5	100	56	45	0.20	8
2500	14.2	9.7	96	48	49	0.30	4
3150	12.0	10.7	98	42	56	0.40	0
4000	7.4	12.7	98	37	61	0.40	0
5000	6.0	14.9	95	31	63	0.50	-
6300	6.2	18.8	93	22	69	0.70	-
8000	6.6	26.4	93	18	71	0.90	-
10000	6.8	33.4	91	13	73	1.10	-

STC Rating **49** *(Sound Transmission Class)*

Deficiencies 22 *(Sum of Deficiencies)*

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.
2) Specimen TL levels listed in blue 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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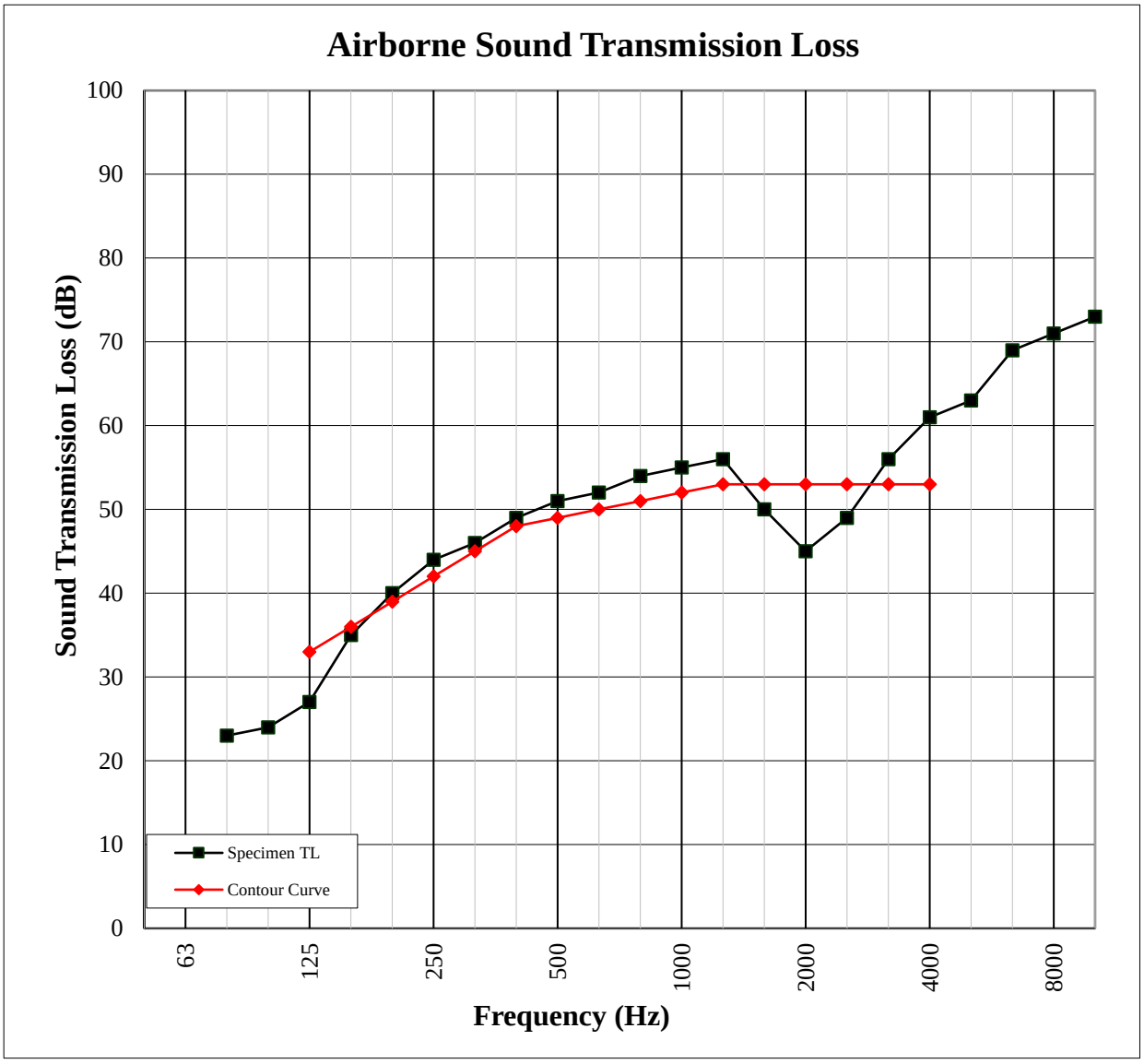

IMPACT SOUND TRANSMISSION

ASTM E 492

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Data File No.	G4260.01
Client	US Architectural Products, Inc.
Description	20 mm Plycem CemDeck Cement Board Floor Panels, 101.6 mm 4 PCF Rock Wool Insulation, 254 mm 8J16 Steel Floor Joists, 22.3 mm ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel
Specimen Area	10.98
Technician	Cody R. Snyder

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m^2)	**Normalized Impact SPL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	40.3	19.0	73	4.0	-
100	33.0	14.2	77	1.6	0
125	30.4	11.3	78	2.8	0
160	26.5	10.2	79	2.0	0
200	24.4	11.2	76	1.1	0
250	27.3	10.4	76	1.3	0
315	21.8	9.4	77	0.4	0
400	21.6	8.3	77	0.8	0
500	23.9	7.6	77	0.4	0
630	22.6	7.5	75	0.5	0
800	24.6	7.6	74	0.8	0
1000	27.5	7.4	74	0.4	0
1250	27.9	7.6	72	0.3	0
1600	24.2	7.5	73	0.3	3
2000	18.4	8.5	75	0.3	8
2500	13.1	9.6	71	0.3	7
3150	10.7	10.7	65	0.5	4
4000	6.5	12.8	59	0.3	-
5000	5.9	15.1	54	0.4	-
6300	6.2	19.0	47	1.1	-
8000	6.5	26.2	43	1.6	-
10000	6.8	33.6	40	2.0	-

IIC Rating **31** *(Impact Insulation Class)*

Deficiencies 22 *(Sum of Deficiencies)*

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

IMPACT SOUND TRANSMISSION

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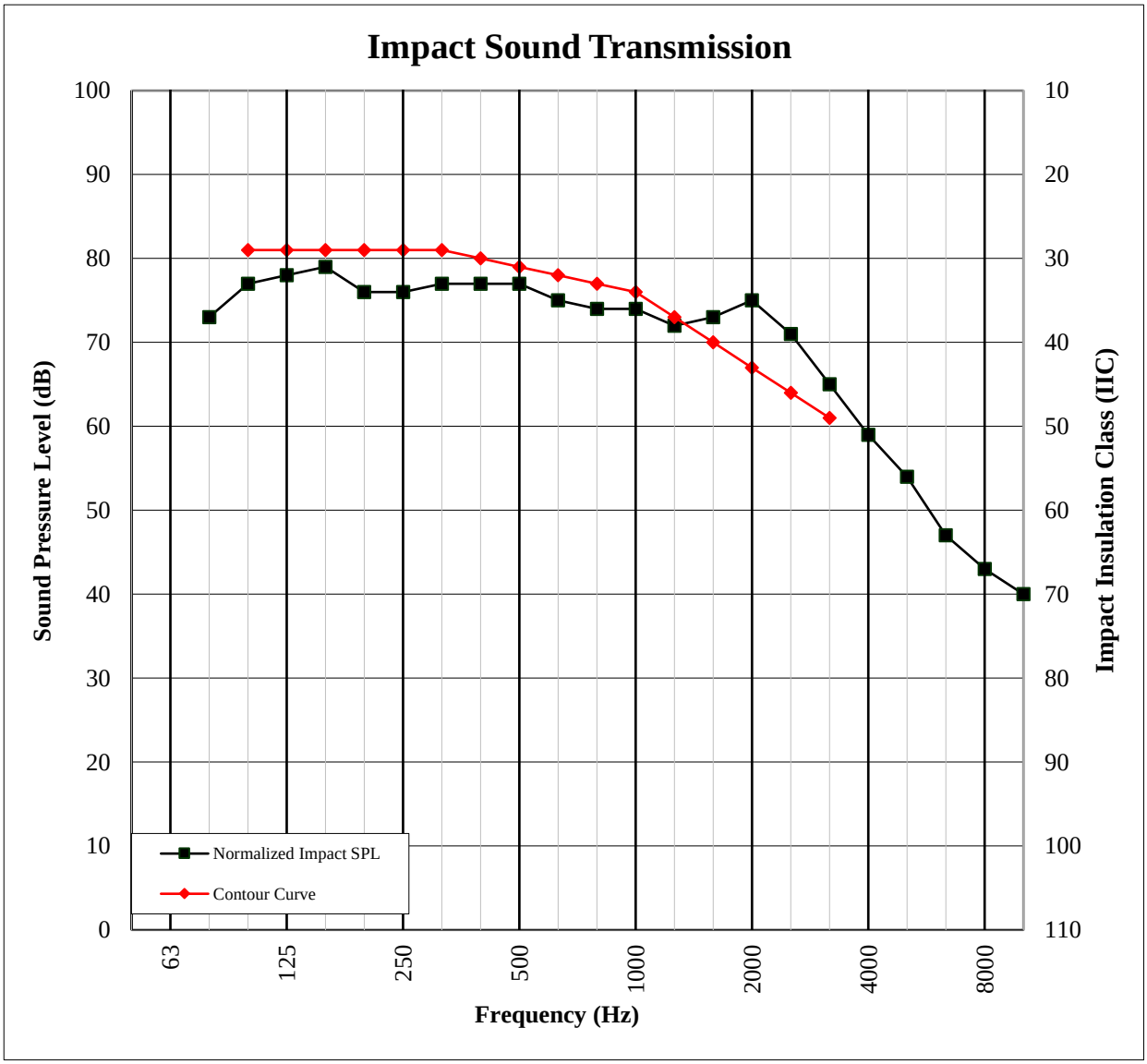
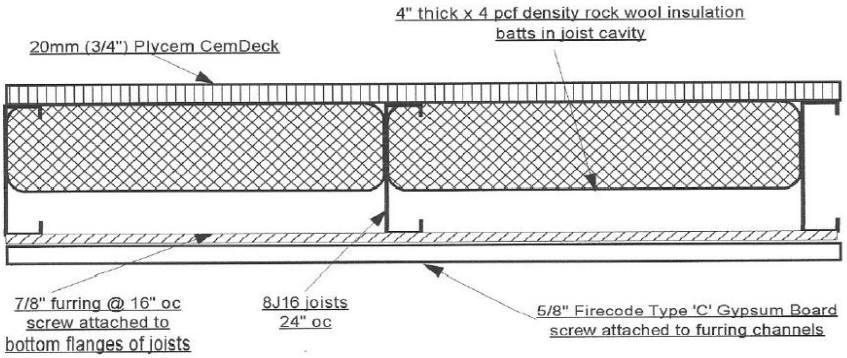


Photographs

Source Room View of Test Specimen Installation

Receive Room View of Test Specimen Installation

Drawing



Cross Section of Assembly