

G0516.02-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90, ASTM E 492, ASTM E 2179

Rendered to

SUNCO AMERICA LLC

Series/Model: 3.18 mm (0.125") Steico Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors

Specimen Type: Concrete Slab - 152 mm (6")

Overall Size: 3023 mm by 3632 mm (119" by 143")

STC	50
IIC	55
Δ IIC	25

Test Specimen Identification:

Floor Topping: 8 mm (0.31") Flooring Industries™ Ashland Laminate Flooring

Floor Underlayment: 3.18 mm (0.13") Steico Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors

Floor Slab: 152.4 mm (6") Concrete Slab

Reference should be made to Intertek-ATI Report G0516.02-113-11 for complete test specimen description. This page alone is not a complete report.



Acoustical Performance Test Report

SUNCO AMERICA LLC
1801 NE 123rd Street, Suite 409
North Miami, Florida 33181

Report G0516.02-113-11
Test Date 07/01/16
Report Date 08/01/16

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct airborne sound transmission loss, impact sound transmission, and delta impact sound transmission tests. The complete test data is included as attachments to this report. The client provided the test specimen. The specimen was constructed on the date of testing.

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 2179-03(2016), Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors

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 delta impact insulation test was conducted in accordance with ASTM E 2179 test method. In addition to the impact sound transmission test, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492 with only the concrete slab installed.

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

Test Conditions

Source Room		Receive Room	
Average Temperature	21.9°C (71.4°F)	Average Temperature	21.4°C (70.5°F)
Average Relative Humidity	74%	Average Relative Humidity	54%

Test Calculations

The STC (Sound Transmission Class), IIC (Impact Insulation Class), and Δ IIC (Delta Impact Insulation Class) ratings were calculated in accordance with ASTM E 413, ASTM E 989, and ASTM E 2179, respectively.

Test Specimen Materials and Installation Details

Material	Dimensions (mm/inch)	Thickness (mm/inch)	Manufacturer and Series	Quantity	Average Weight
Laminate Flooring	127 by 1219 5 by 48	8 / 0.31	Flooring Industries™ Ashland	10.98 m ² 118.19 ft ²	6.09 kg/m ² 1.25 lb/ft ²
	<i>Note: Loose laid</i>				
Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors	584.2 by 787.4 23 by 31	3.2 / 0.13	Steico	10.98 m ² 118.19 ft ²	0.88 kg/m ² 0.18 lb/ft ²
	<i>Note: Loose laid with seams taped</i>				
Concrete Slab	3023 by 3632 119 by 143	152.4 / 6	N/A	10.98 m ² 118.19 ft ²	366.18 kg/m ² 75 lb/ft ²
	<i>Note: The concrete slab was installed in a test frame flush to the source room.</i>				

Comments

The total weight of the floor/ceiling assembly was 4097.2 kg / 9033.3 lbs. 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.

This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

FOR INTERTEK-ATI:


Digitally Signed by: Cody Snyder


Digitally Signed by: Jordan Strybos

Cody R. Snyder
Technician II - Acoustical Testing

Jordan Strybos
Project Manager - Acoustical Testing

Attachments (9 Pages): This report is complete only when all attachments are included.

** Stated by Client/Manufacturer*

N/A - Non Applicable



Revision Log

<u>Revision</u>	<u>Date</u>	<u>Page(s)</u>	<u>Description</u>
R0	08/01/16	N/A	Original Report Issue

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**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 Piezotronics	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	378B20	63746	06/16
Receive Room Microphone	PCB Piezotronics	378B20	63747	06/16
Receive Room Environmental Indicator	Comet	T7510	63810	10/15
			63811	10/15
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	11/15
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	158.86 m ³ (5610.1 ft ³)
VT Source Room Volume	190 m ³ (6709.79 ft ³)



G0516.02-113-11-R0



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	07/01/16
Data File No.	G0516.02
Client	Sunco America LLC
Description	8 mm (0.31") Flooring Industries™ Ashland Laminate Flooring, 3.18 mm (0.13") Steico Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors, 152.4 mm (6") Concrete Slab
Specimen Area	10.98 m ²
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	34.2	15.9	107	66	40	3.40	-
100	30.7	12.8	105	65	40	1.20	-
125	33.6	10.2	103	68	36	1.50	0
160	25.5	10.4	104	69	36	1.90	1
200	21.7	12.0	103	71	32	2.30	8
250	21.7	11.9	101	64	37	1.10	6
315	20.5	11.0	102	64	38	0.90	8
400	17.9	9.8	101	60	42	0.90	7
500	19.7	9.0	102	51	53	0.50	0
630	17.1	8.8	104	47	59	0.60	0
800	16.3	8.9	103	42	63	0.70	0
1000	13.9	8.5	103	40	65	0.70	0
1250	12.3	8.8	103	38	67	0.60	0
1600	9.8	8.6	103	37	68	0.50	0
2000	6.7	9.1	102	36	68	0.50	0
2500	5.7	10.0	101	35	68	0.50	0
3150	4.8	10.8	102	34	69	0.50	0
4000	5.1	11.7	103	32	71	0.60	0
5000	5.5	12.9	103	29	73	0.70	-
6300	5.8	16.0	97	22	74	0.60	-
8000	6.2	19.8	96	17	77	0.70	-
10000	6.4	24.2	91	9	80	0.50	-

STC Rating **50** (*Sound Transmission Class*)
Deficiencies **30** (*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 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

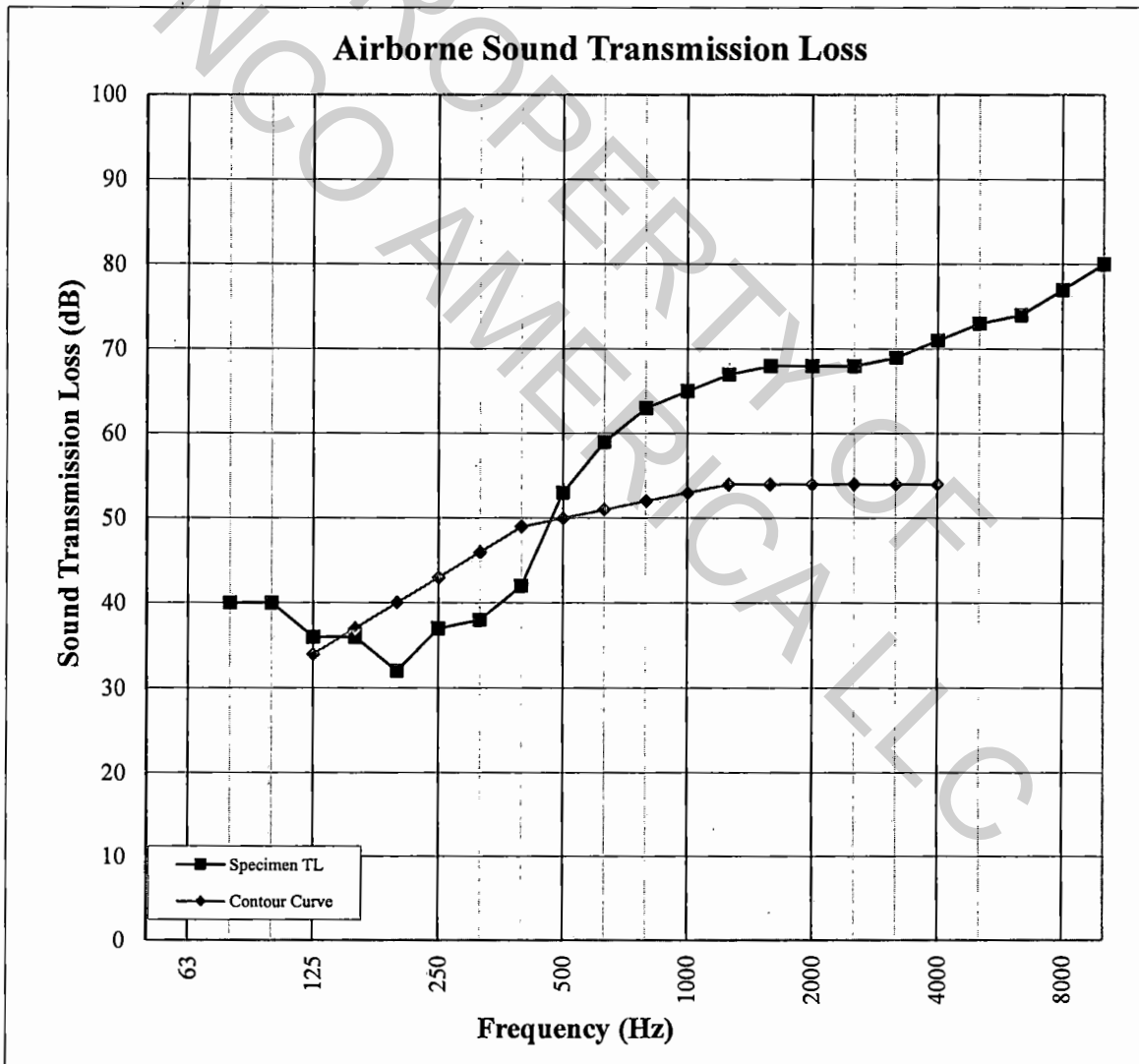


G0516.02-113-11-R0



AIRBORNE SOUND TRANSMISSION LOSS ASTM E 90

Test Date	07/01/16
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Specimen Area	10.98 m ²
Technician	Cody R. Snyder





G0516.02-113-11-R0



IMPACT SOUND TRANSMISSION
ASTM E 492

Test Date	07/01/16
Data File No.	G0516.02
Client	Sunco America LLC
Description	8 mm (0.31") Flooring Industries™ Ashland Laminate Flooring, 3.18 mm (0.13") Steico Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors, 152.4 mm (6") Concrete Slab
Specimen Area	10.98 m ²
Technician	Cody R. Snyder

Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Normalized Impact SPL (dB)	95% Confidence Limit	Number of Deficiencies
80	35.5	15.5	54	3.4	-
100	31.4	13.6	54	0.8	0
125	33.8	10.3	55	0.9	0
160	27.0	10.1	60	1.4	3
200	21.8	11.2	65	2.2	8
250	23.0	11.8	64	1.0	7
315	21.8	11.1	62	1.0	5
400	18.1	9.8	58	0.5	2
500	20.2	9.0	52	0.4	0
630	18.7	8.9	49	0.6	0
800	16.2	8.8	44	1.2	0
1000	14.4	8.4	38	0.8	0
1250	12.4	8.6	34	0.5	0
1600	8.6	8.6	31	0.7	0
2000	5.4	9.0	29	1.4	0
2500	4.8	10.2	24	1.3	0
3150	4.5	10.8	19	1.2	0
4000	4.9	11.6	16	0.9	-
5000	5.4	12.8	11	1.0	-
6300	5.8	16.1	9	1.0	-
8000	6.2	19.7	8	0.9	-
10000	6.5	24.3	9	0.9	-

IIC Rating **55** (*Impact Insulation Class*)
Deficiencies **25** (*Sum of Deficiencies*)

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

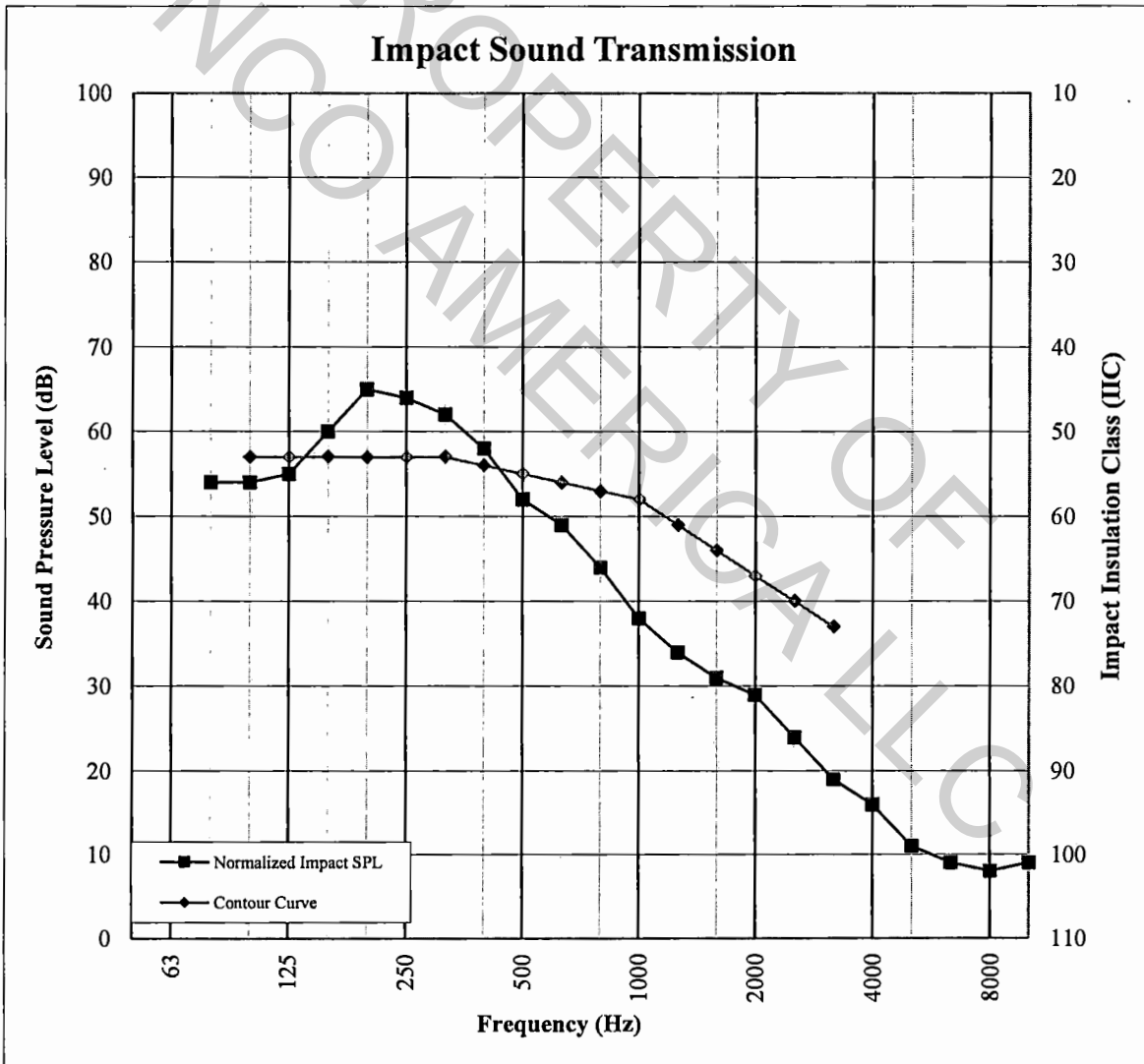


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IMPACT SOUND TRANSMISSION ASTM E 492

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Specimen Area	10.98 m ²
Technician	Cody R. Snyder





G0516.02-113-11-R0



DELTA IMPACT INSULATION
ASTM E 2179

Test Date	07/01/16
Data File No.	G0516.02
Client	Sunco America LLC
Description	8 mm (0.31") Flooring Industries™ Ashland Laminate Flooring, 3.18 mm (0.13") Steico Wood (Wooden) Underlayment for Laminate and Wood (Wooden) Floors, 152.4 mm (6") Concrete Slab
Specimen Area	10.98 m ²
Technician	Cody R. Snyder

Freq (Hz)	Bkgrd SPL (dB)	Absorption (Square Meters)	Normalized Impact SPL BARE (dB)	95% Conf Limit	Normalized Impact SPL SPEC (dB)	95% Conf Limit	Resulting Array L _{ref,c}	No. of Deficiencies
100	31.4	13.6	57.2	1.6	54.2	0.9	64	5
125	33.8	10.3	59.1	0.4	55.4	0.9	64	5
160	27.0	10.1	64.3	1.6	60.2	1.3	64	5
200	21.8	11.2	70.0	1.2	65.3	1.2	64	5
250	23.0	11.8	69.5	0.9	64.2	2.4	64	5
315	21.8	11.1	69.0	0.4	62.1	2.0	63	4
400	18.1	9.8	71.4	2.2	58.2	1.1	57	0
500	20.2	9.0	68.7	2.6	51.7	1.2	53	0
630	18.7	8.9	71.1	3.4	48.8	2.4	49	0
800	16.2	8.8	72.3	2.4	43.8	1.3	43	0
1000	14.4	8.4	72.4	4.4	38.0	0.6	38	0
1250	12.4	8.6	72.8	4.1	33.8	1.3	33	0
1600	8.6	8.6	73.9	3.6	31.1	1.0	29	0
2000	5.4	9.0	74.7	2.3	29.0	0.6	26	0
2500	4.8	10.2	74.3	3.2	24.1	0.8	22	0
3150	4.5	10.8	73.9	4.8	19.2	0.2	17	0

ΔIIC Rating **25** *(Delta Impact Insulation Class)*
Deficiencies **29** *(Sum of Deficiencies)*

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

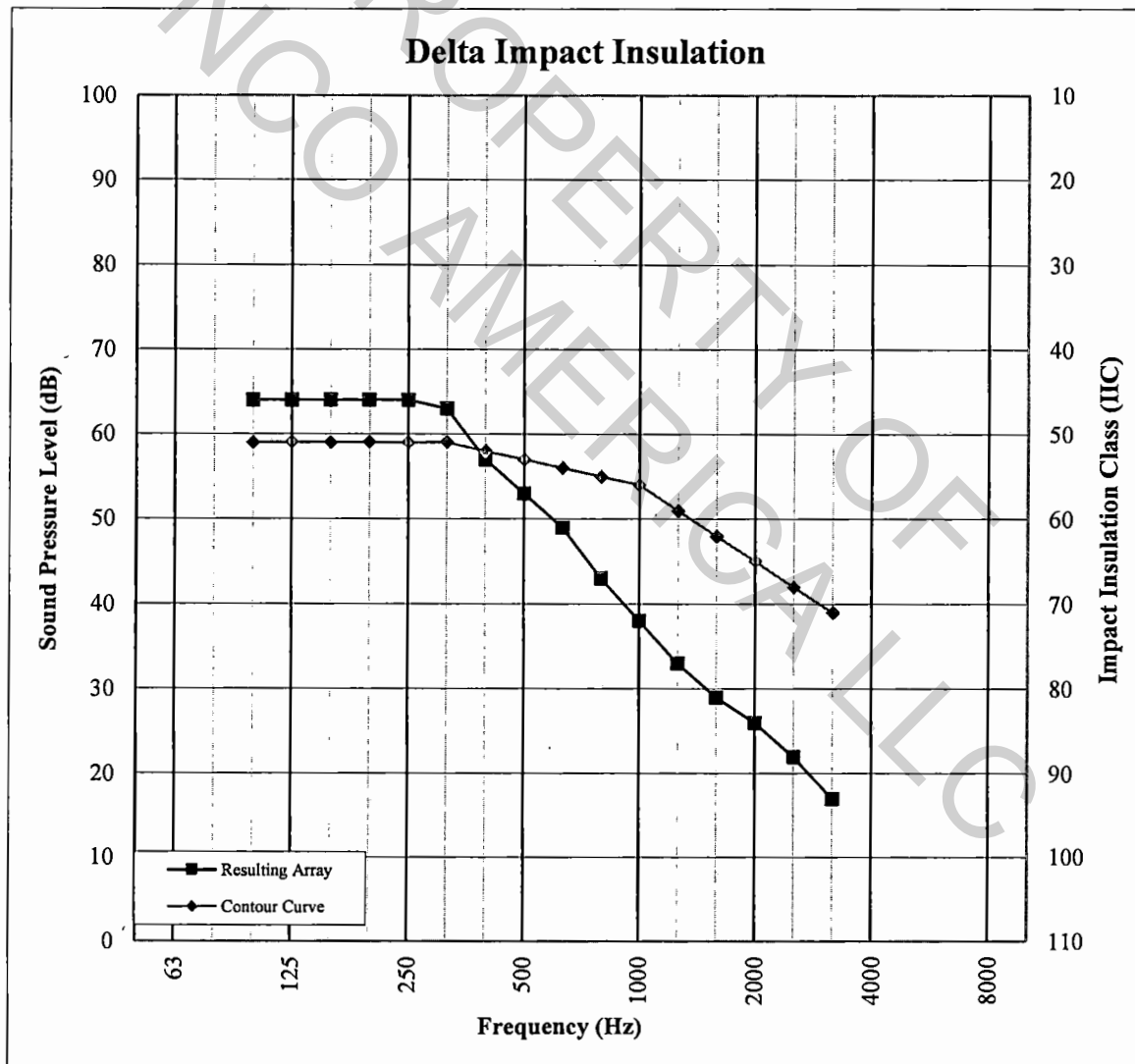


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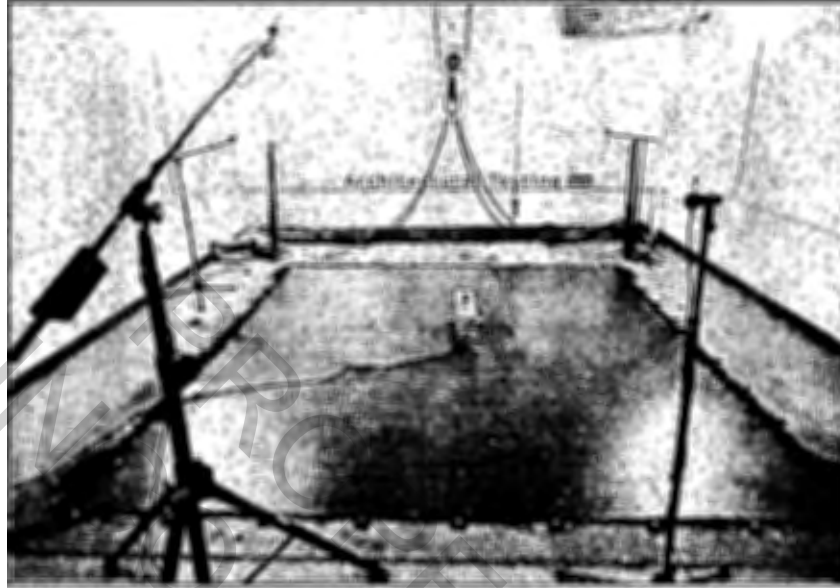


DELTA IMPACT INSULATION ASTM E 2179

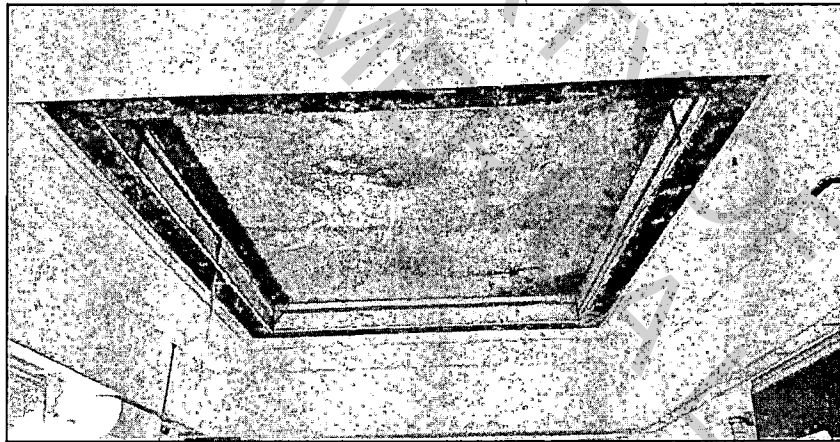
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Photographs



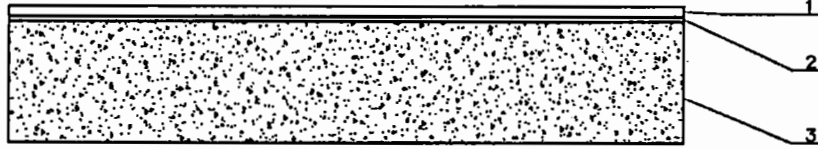
Source Room View of Test Specimen Installation



Receive Room View of Test Specimen Installation



Drawing



- 1-Floor Topping
- 2-Underlayment
- 3-Concrete Slab

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