

VULCRAFT/VERCO GROUP ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON
ATTAIN LVT OVER 2 MM ECOSILENCE UNDERLAYMENT

SPECIMEN TYPE

Vulcraft 20 Gage Dove 2.00 Tail Steel Deck with Gypsum Board Ceiling

REPORT NUMBER

H7786.09-113-11-R1

TEST DATE

02/11/18

ISSUE DATE

03/22/18

REVISED DATE

04/04/18

RECORD RETENTION END

02/11/22

PAGES

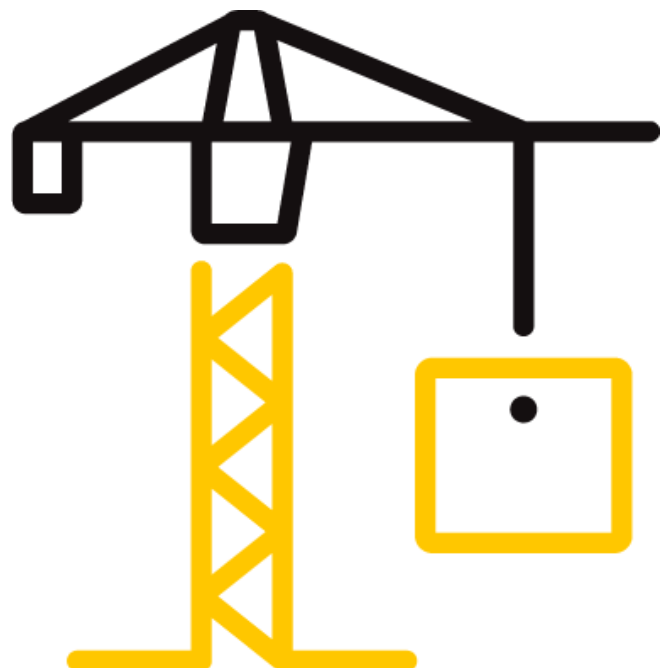
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TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7786.09-113-11-R1

Date: 04/04/18

REPORT ISSUED TO

VULCRAFT/VERCO GROUP

7205 Gault Avenue North
Fort Payne, Alabama 35967

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by to perform testing in accordance with ASTM E90 AND ASTM E492 on Attain LVT over 2 mm ECOSilence Underlayment. Results obtained are tested values and were secured by using the designated test method(s). 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.	H7786.09
SERIES/MODEL:	Attain LVT over 2 mm ECOSilence Underlayment
STC	52
IIC	50

COMPLETED BY: Daniel B. Mohler
Project Lead - Acoustical
TITLE: Testing
SIGNATURE:
DATE: 04/04/18

COMPLETED BY: Jordan Strybos
Project Manager - Acoustical
TITLE: Testing
SIGNATURE:
DATE: 04/04/18

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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 E989-06 (2012), *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

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 (Vulcraft 20 Gage Dove 2.00 Tail Steel Deck with Gypsum Board Ceiling) 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 3064.9 kg. B&C 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.

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.

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SECTION 5 EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition Card	63763-1	06/16 *
Data Acquisition Unit	National Instruments	PXI-4462	Input Card	63763-4	07/16 *
Data Acquisition Unit	National Instruments	PXI-4462	Input Card	63763-5	06/16 *
Microphone Calibrator	Norsonic	1251	Pistonphone calibrator	INT00127	03/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65617	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63744	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63745	05/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63746	09/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63747	05/17
Receive Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	63810	10/17
				63811	10/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63738	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63739	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63740	04/17
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	63742	04/17
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	63741	04/17
Source Room Environmental Indicator	Comet	T7510	Temperature and Humidity Transmitter	INT00603	03/17
Tapping Machine	Norsonic	Nor277	Tapping Machine	INT00936	12/17

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

VT RECEIVE ROOM VOLUME	158.86 m ³
VT SOURCE ROOM VOLUME	190 m ³

SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Daniel B. Mohler	Intertek B&C
Jordan Strybos	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 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. Four 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) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E413 and ASTM E989, respectively.

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SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	DIMENSIONS (mm/inch)	THICKNESS (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Luxury Vinyl Tile	914.4 by 152.4	2.5	ECORE Attain	10.98 m ²	3.37 kg/m ²
	Note: Adhered to the underlayment with ECORE™ EGrip™ III adhesive using a 0.79 mm by 1.59 mm by 0.79 mm trowel. Adhesive was allowed to cure per manufacturer's specifications.				
Rubber Underlayment	3023 by 1219	2.0	ECOsilence	10.98 m ²	1.86 kg/m ²
	Note: A sheet of 2 mil polyethylene plastic was adhered to the floor slab with 3M Super 77 spray adhesive. The underlayment was adhered to the sheeting with ECORE™ EGrip™ III adhesive, which was spread using a 0.79 mm by 1.59 mm by 0.79 mm trowel. Adhesive was allowed to cure per manufacturer's specifications.				
Standard 4000 PSI Concrete	3023 by 3632	139.7	N/A	10.98 m ²	248.08 kg/m ²
	Note: Poured directly on the floor deck and allowed to cure for a minimum of 28 days.				
Steel Deck	3023 by 609.6	139.7	20 Gage Vulcraft Dove Tail 2.00	10.98 m ²	12.01 kg/m ²
	Note: Installed per manufacturer's specifications in a test frame with the top of the concrete flush with the source room. All seams and gaps underneath the deck were plugged with backer rod and sealed with Pecora AC-20 Acoustical Sealant.				
25 Gage Furring Channel	3022.6 by 63.6	38.1	ClarkDietrich	21.16 lin m	0.98 kg/m
	Note: The furring channels were attached directly to the bottom of the steel deck, spaced 610 mm on center. The measured steel thickness was 1.2 mm.				
Gypsum Panel	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C Core	10.98 m ²	11.91 kg/m ²
	Note: Fastened with 25.4 mm fine thread drywall screws on 610 mm centers. Seams and perimeter sealed with Pecora AC-20® Acoustical Sealant and covered with pressure-sensitive tape.				

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SECTION 10
TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS


TEST DATE	2/11/2018				
DATA FILE NO.	H7786.09				
CLIENT	Vulcraft/Verco Group				
DESCRIPTION	2.5 mm ECORE Attain Luxury Vinyl Tile, 2 mm ECOSilence Rubber Underlayment, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck, 38.1 mm ClarkDietrich 25 Gage Furring Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	17.4°C	Source Temp.	19.8°C
TECHNICIAN	ZPG	Receive Humidity	59%	Source Humidity	59%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	30.9	17.5	108	70	36	4.1	-
100	28.7	16.7	106	67	37	2.6	-
125	26.2	16.0	105	68	35	1.3	1
160	22.3	12.3	105	69	36	1.1	3
200	18.2	13.1	103	69	34	1.7	8
250	15.4	11.4	102	60	42	0.6	3
315	16.1	11.1	103	58	45	0.9	3
400	13.6	8.8	102	54	49	0.8	2
500	15.0	8.2	101	48	54	0.6	0
630	17.4	7.9	103	48	56	0.5	0
800	18.6	7.4	102	46	58	0.5	0
1000	19.7	7.3	102	43	61	0.7	0
1250	14.5	7.6	102	40	63	0.7	0
1600	13.1	7.8	102	39	65	0.6	0
2000	11.1	8.7	102	38	65	0.4	0
2500	9.7	9.5	100	35	66	0.4	0
3150	7.4	10.5	102	32	70	0.4	0
4000	7.0	12.1	103	30	72	0.4	0
5000	6.4	14.2	103	27	74	0.4	-
6300	6.9	18.2	97	17	77	0.6	-
8000	6.8	24.1	96	13	80	0.6	-
10000	6.8	30.1	92	7	80	0.7	-
STC Rating	52	<i>(Sound Transmission Class)</i>			Sum of Deficiencies	20	

- 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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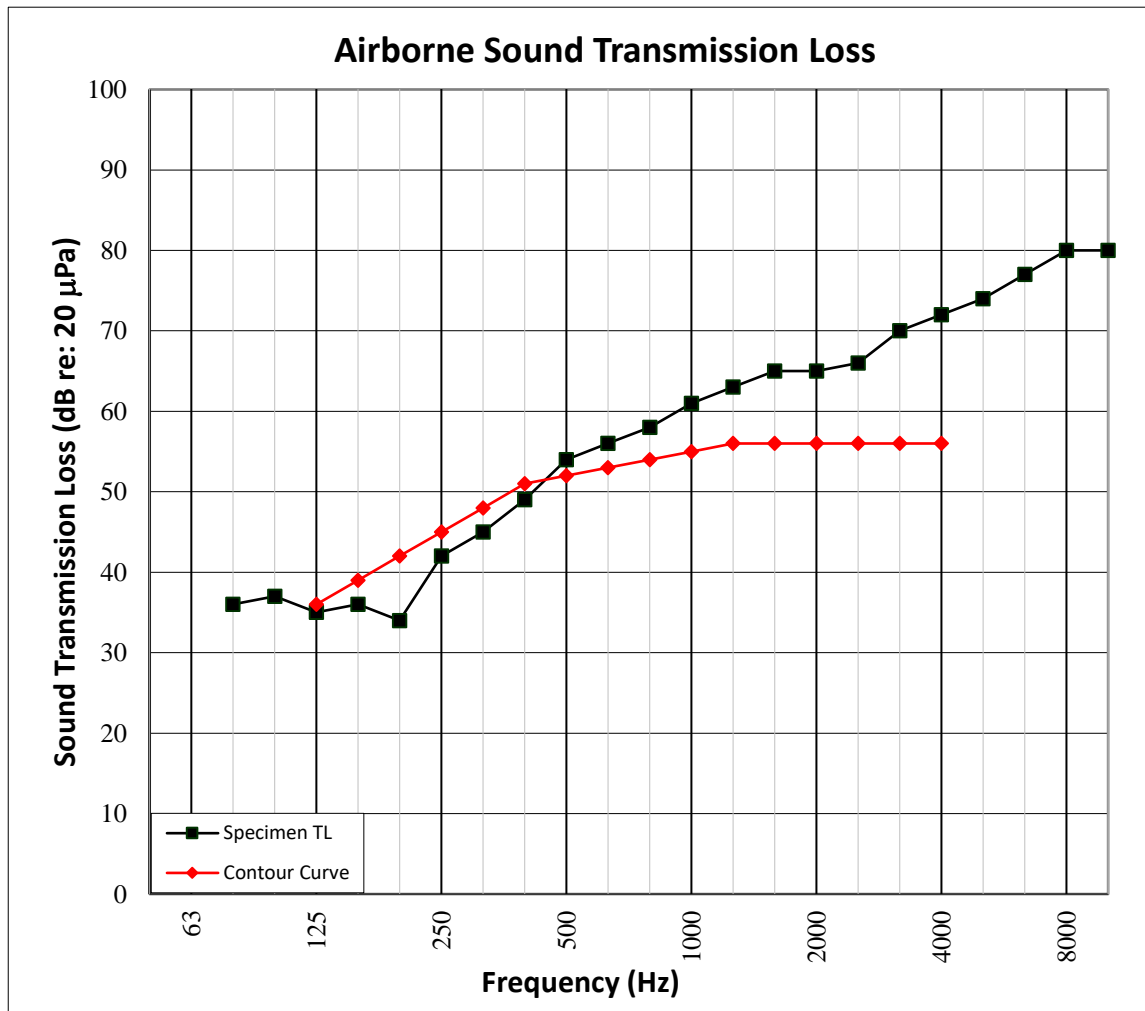
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SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	2/11/2018				
DATA FILE NO.	H7786.09				
CLIENT	Vulcraft/Verco Group				
DESCRIPTION	2.5 mm ECORE Attain Luxury Vinyl Tile, 2 mm ECOSilence Rubber Underlayment, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck, 38.1 mm ClarkDietrich 25 Gage Furring Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	17.4°C	Source Temp.	19.8°C
TECHNICIAN	ZPG	Receive Humidity	59%	Source Humidity	59%



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SECTION 12
TEST RESULTS - IMPACT SOUND TRANSMISSION


TEST DATE	2/11/2018				
DATA FILE NO.	H7786.09				
CLIENT	Vulcraft/Verco Group				
DESCRIPTION	2.5 mm ECORE Attain Luxury Vinyl Tile, 2 mm ECOSilence Rubber Underlayment, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck, 38.1 mm ClarkDietrich 25 Gage Furring Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.4°C	Minimum Temp.	17.4°C
TECHNICIAN	ZPG	Max. Humidity	59%	Min. Humidity	59%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	29.2	18.1	61	2.3	-
100	25.4	17.1	62	1.2	0
125	28.7	15.0	67	1.7	5
160	22.9	13.1	70	0.7	8
200	18.2	11.4	69	0.9	7
250	15.3	11.2	66	0.6	4
315	16.2	11.2	64	0.3	2
400	13.1	8.7	61	0.5	0
500	14.9	8.4	58	0.3	0
630	17.9	7.8	55	0.3	0
800	19.2	7.3	52	0.4	0
1000	18.5	7.3	47	0.4	0
1250	15.2	7.5	42	0.3	0
1600	13.9	7.8	38	0.4	0
2000	11.1	8.8	33	0.6	0
2500	8.3	9.6	26	0.5	0
3150	6.8	10.6	24	0.3	0
4000	6.4	12.0	19	0.4	-
5000	6.5	14.3	16	0.7	-
6300	6.6	18.4	12	0.9	-
8000	6.6	23.6	14	1.3	-
10000	6.7	30.1	15	1.5	-
IIC Rating	50	<i>(Impact Insulation Class)</i>		Sum of Deficiencies	26

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

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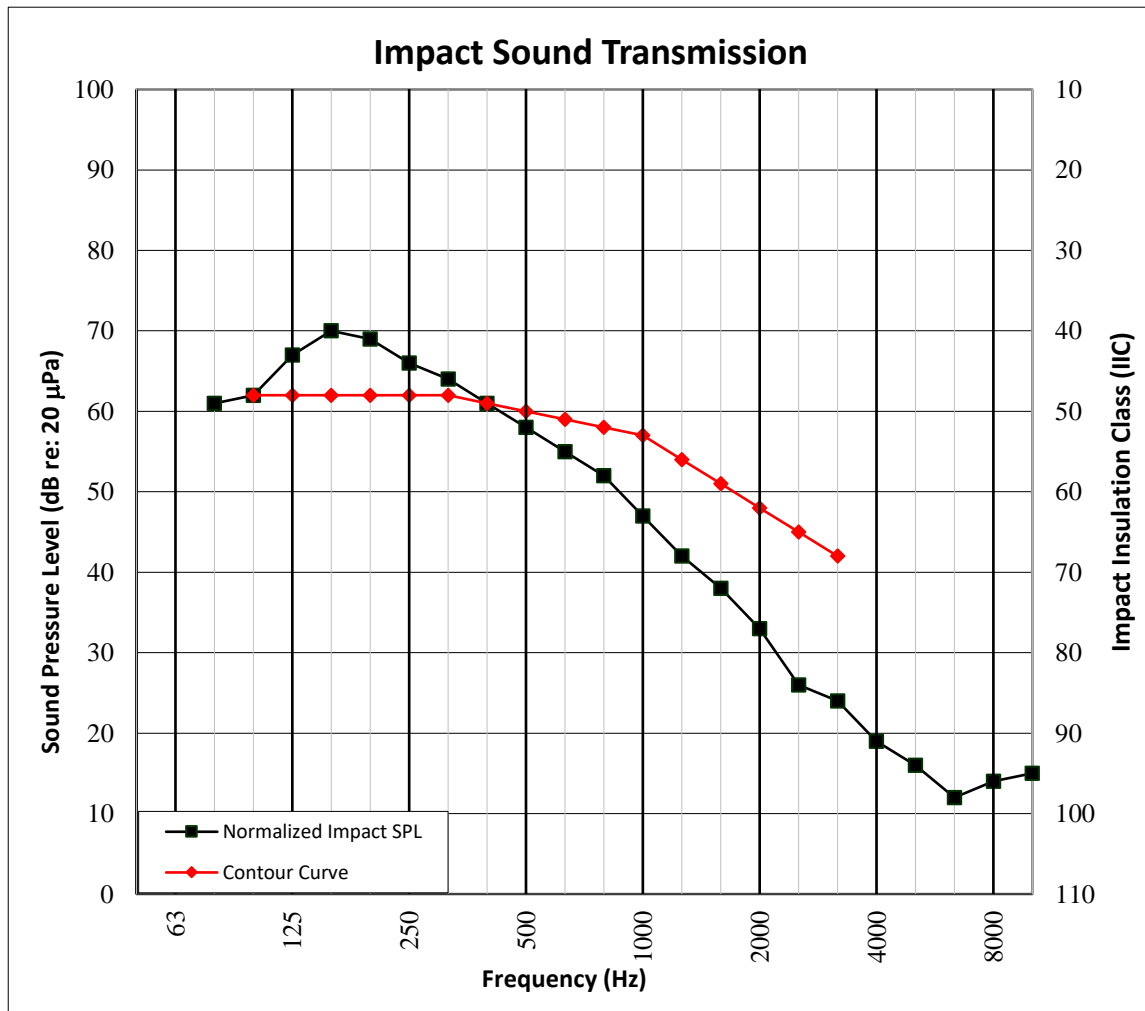
Date: 04/04/18

SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	2/11/2018			
DATA FILE NO.	H7786.09			
CLIENT	Vulcraft/Verco Group			
DESCRIPTION	2.5 mm ECORE Attain Luxury Vinyl Tile, 2 mm ECOSilence Rubber Underlayment, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck, 38.1 mm ClarkDietrich 25 Gage Furring Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Panel			
SPECIMEN AREA	10.98 m ²	Maximum Temp.	17.4°C	Minimum Temp. 17.4°C
TECHNICIAN	ZPG	Max. Humidity	59%	Min. Humidity 59%



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SECTION 14

PHOTOGRAPHS



Photo No. 1

Source Room View of Test Specimen Installation



Photo No. 2

Receive Room View of Test Specimen Installation

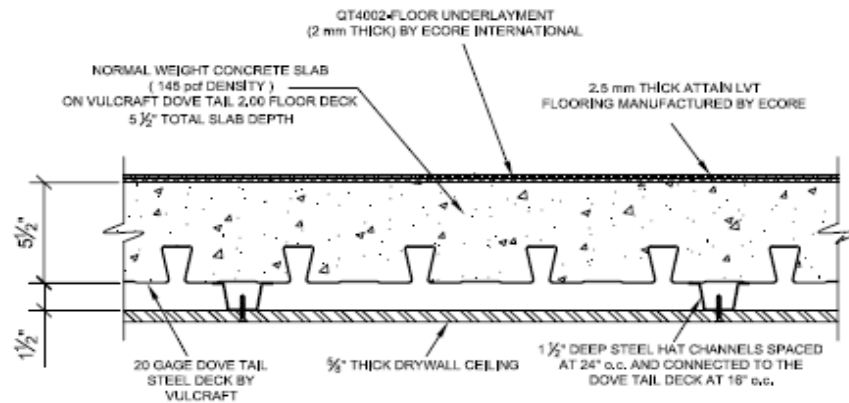
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SECTION 15

DRAWING



Drawing of Test Specimen (supplied by Client)



Total Quality. Assured.

130 Derry Court
York, PA 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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SECTION 16

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	03/22/18	N/A	Original Report Issue
R1	04/04/18	1, 6-10, 12	Steel deck name and flooring name adjusted, drawing updated per client's request