

# VULCRAFT/VERCO GROUP

## ACOUSTICAL PERFORMANCE TEST REPORT

### SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON FOREST RX RUBBER BACK SHEET VINYL

### SPECIMEN TYPE

Vulcraft 20 Gage Dove Tail 2.00 Steel Deck

### REPORT NUMBER

H7786.04-113-11-R1

### TEST DATE

02/10/18

### ISSUE DATE

03/22/18

### REVISED DATE

04/04/18

### RECORD RETENTION END

02/10/22

### PAGES

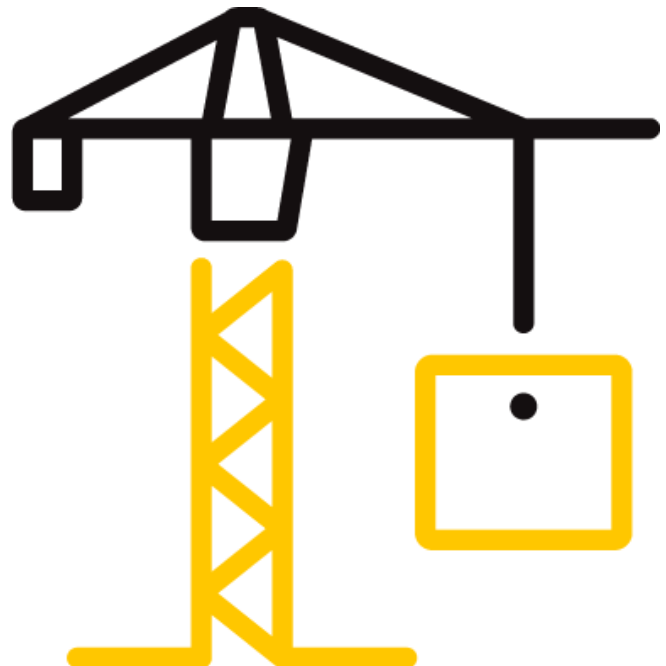
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### DOCUMENT CONTROL

ATI 00629 (09/19/17)

RTTDS-R-AMER-Test-2844

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**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.04-113-11-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 Forest Rx Rubber Back Sheet Vinyl. 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**

<b>DATA FILE NO.</b>	H7786.04
<b>SERIES/MODEL:</b>	Forest Rx Rubber Back Sheet Vinyl
<b>STC</b>	51
<b>IIC</b>	51

**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 Tail 2.00 Steel Deck) 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 2922.5 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.

<b>VT RECEIVE ROOM VOLUME</b>	158.99 m <sup>3</sup>
<b>VT SOURCE ROOM VOLUME</b>	190 m <sup>3</sup>

### 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
Rubber Back Sheet Vinyl	3023 by 1829	7.0	ECORE Forest Rx	10.98 m <sup>2</sup>	6.05 kg/m <sup>2</sup>
	Note: A sheet of 2 mil polyethylene plastic was adhered to the floor slab with 3M Super 77 spray adhesive. The floor topping 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 <sup>2</sup>	248.08 kg/m <sup>2</sup>
	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 <sup>2</sup>	12.01 kg/m <sup>2</sup>
	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.				

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**SECTION 10**
**TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS**


<b>TEST DATE</b>	2/10/2018				
<b>DATA FILE NO.</b>	H7786.04				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	7 mm ECORE Forest Rx Rubber Back Sheet Vinyl, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	19.1°C	<b>Source Temp.</b>	18.3°C
<b>TECHNICIAN</b>	ZPG	<b>Receive Humidity</b>	62%	<b>Source Humidity</b>	62%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	36.3	17.4	109	69	39	2.8	-
100	29.2	14.1	106	66	39	1.7	-
125	28.6	10.1	105	66	39	1.9	0
160	27.4	10.5	105	67	39	0.8	0
200	21.1	10.4	103	66	37	1.5	4
250	30.3	10.9	103	64	40	0.6	4
315	20.5	10.3	104	62	42	1.0	5
400	20.9	8.4	103	57	47	0.7	3
500	24.5	8.4	102	55	48	0.5	3
630	21.8	7.9	104	59	46	0.5	6
800	23.5	7.4	103	53	52	0.5	1
1000	18.4	7.6	103	49	56	0.6	0
1250	15.8	7.7	103	47	57	0.5	0
1600	13.7	7.5	103	44	61	0.4	0
2000	10.9	8.3	103	42	62	0.4	0
2500	8.9	9.0	101	40	62	0.5	0
3150	7.1	9.9	102	38	65	0.3	0
4000	6.1	11.3	103	38	65	0.5	0
5000	6.0	13.2	103	35	67	0.4	-
6300	6.3	16.4	97	21	75	0.4	-
8000	6.5	21.3	97	16	79	0.7	-
10000	6.7	26.7	92	9	80	0.5	-
<b>STC Rating</b>	<b>51</b>	<i>(Sound Transmission Class)</i>			<b>Sum of Deficiencies</b>	<b>26</b>	

- 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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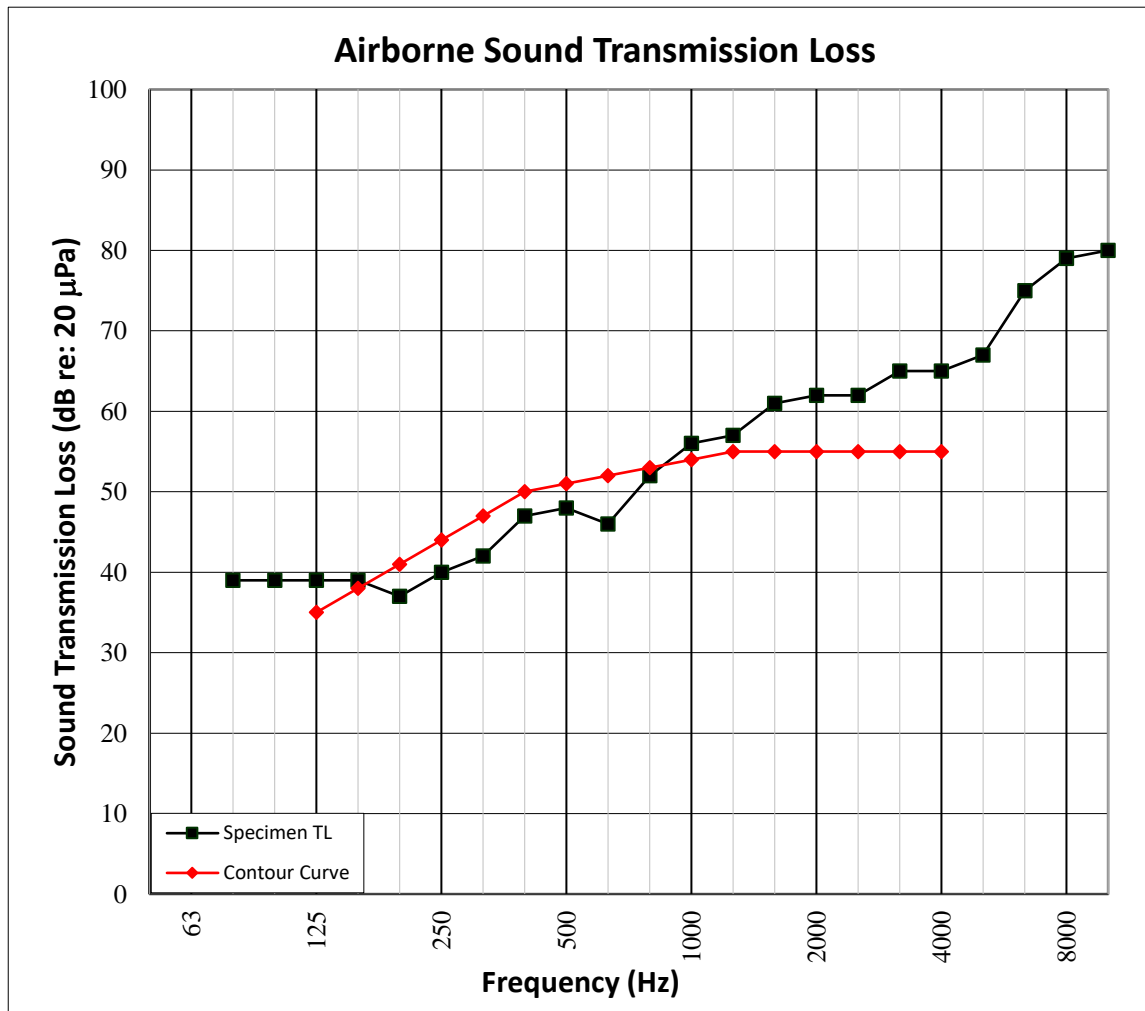
Date: 04/04/18

**SECTION 11**

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



<b>TEST DATE</b>	2/10/2018				
<b>DATA FILE NO.</b>	H7786.04				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	7 mm ECORE Forest Rx Rubber Back Sheet Vinyl, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Receive Temp.</b>	19.1°C	<b>Source Temp.</b>	18.3°C
<b>TECHNICIAN</b>	ZPG	<b>Receive Humidity</b>	62%	<b>Source Humidity</b>	62%





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**SECTION 12**
**TEST RESULTS - IMPACT SOUND TRANSMISSION**


<b>TEST DATE</b>	2/10/2018				
<b>DATA FILE NO.</b>	H7786.04				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	7 mm ECORE Forest Rx Rubber Back Sheet Vinyl, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.6°C	<b>Minimum Temp.</b>	18.1°C
<b>TECHNICIAN</b>	ZPG	<b>Max. Humidity</b>	66%	<b>Min. Humidity</b>	56%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m <sup>2</sup>	NORMALIZED IMPACT SPL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	39.7	15.6	57	2.1	-
100	38.2	14.3	57	0.9	0
125	31.8	9.5	56	1.4	0
160	29.5	10.7	63	0.9	2
200	25.2	10.0	65	0.5	4
250	30.7	11.2	68	0.8	7
315	22.3	10.4	68	0.7	7
400	21.3	8.5	62	0.3	2
500	24.8	8.5	63	0.4	4
630	22.5	8.0	62	0.5	4
800	21.7	7.3	50	0.5	0
1000	18.4	7.6	37	0.4	0
1250	18.7	7.7	35	0.2	0
1600	13.9	7.5	31	0.3	0
2000	10.8	8.2	27	0.4	0
2500	8.9	8.9	25	0.4	0
3150	7.0	9.9	19	0.3	0
4000	6.0	11.3	19	0.5	-
5000	5.8	13.3	15	0.5	-
6300	6.3	16.4	11	0.4	-
8000	6.5	21.5	10	0.4	-
10000	6.7	26.8	11	0.4	-
<b>IIC Rating</b>	<b>51</b>	<i>(Impact Insulation Class)</i>		<b>Sum of Deficiencies</b>	<b>30</b>

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

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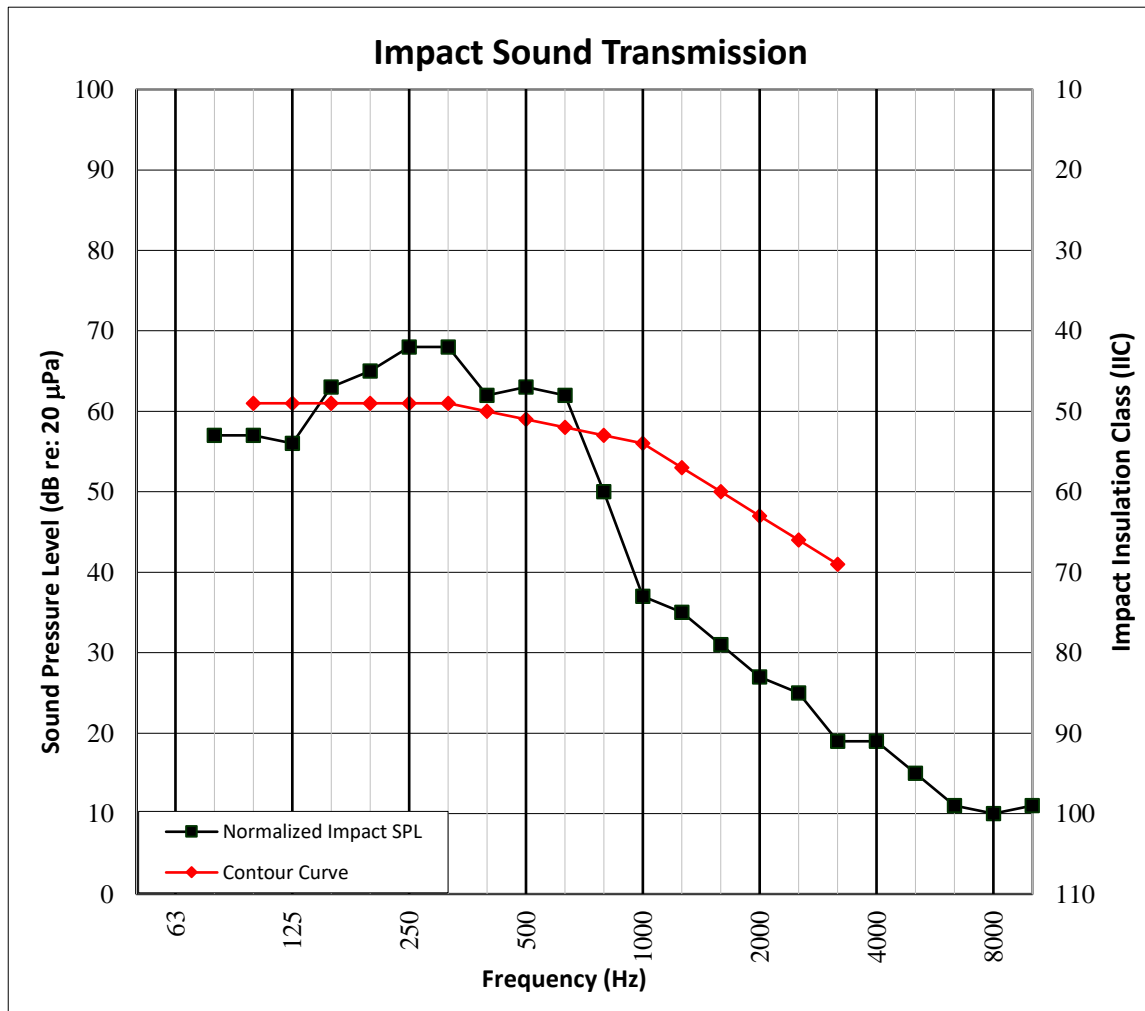
Date: 04/04/18

**SECTION 13**

**TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH**



<b>TEST DATE</b>	2/10/2018				
<b>DATA FILE NO.</b>	H7786.04				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	7 mm ECORE Forest Rx Rubber Back Sheet Vinyl, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	20.6°C	<b>Minimum Temp.</b>	18.1°C
<b>TECHNICIAN</b>	ZPG	<b>Max. Humidity</b>	66%	<b>Min. Humidity</b>	56%



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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**

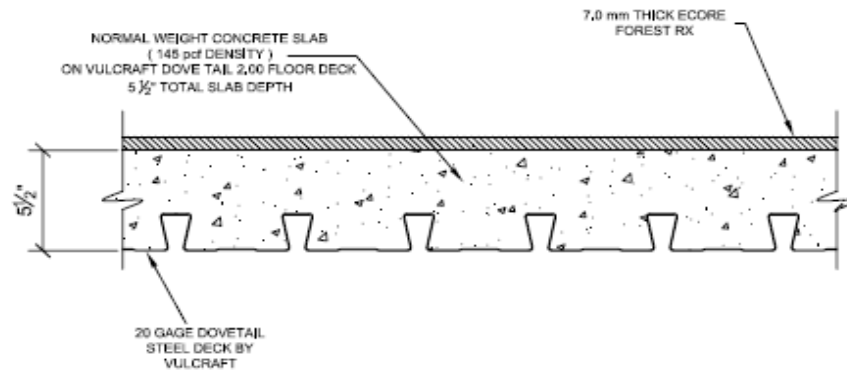
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### SECTION 15

#### 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](http://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 adjusted and drawing updated per client's request