

# VULCRAFT/VERCO GROUP

## ACOUSTICAL PERFORMANCE TEST REPORT

### SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON  
CERAMIC TILE OVER 5 MM ECOSILENCE UNDERLAYMENT

### SPECIMEN TYPE

Vulcraft 20 Gage Dove Tail 3.50 Steel Deck

### REPORT NUMBER

H7787.06-113-11-R0

### TEST DATE

02/17/18

### ISSUE DATE

04/04/18

### RECORD RETENTION END

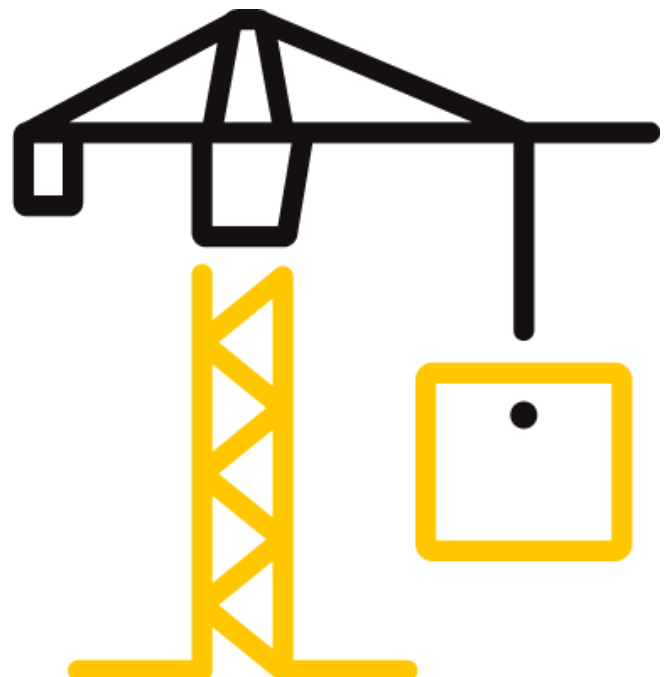
02/17/22

### PAGES

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### DOCUMENT CONTROL

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## TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7787.06-113-11-R0

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 Ceramic Tile over 5 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

<b>DATA FILE NO.</b>	H7787.06
<b>SERIES/MODEL:</b>	Ceramic Tile over 5 mm ECOsilence Underlayment
<b>STC</b>	50
<b>IIC</b>	42

**COMPLETED BY:** Jason P. Taylor  
Technician II - 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 3.50 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 3322.3 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>	158.86 m <sup>3</sup>
<b>VT SOURCE ROOM VOLUME</b>	190 m <sup>3</sup>

### SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jason P. Taylor	Intertek B&C
Jordan Strybos	Intertek B&C

## **TEST REPORT FOR VULCRAFT/VERCO GROUP**

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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
Ceramic Tile	304.8 by 304.8	8.5	Daltile	10.98 m <sup>2</sup>	15.72 kg/m <sup>2</sup>
	Note: Laticrete Permacolor grout was placed into the 6.35 mm joints between the porcelain tile and wiped clean. The ceramic tile was placed with light pressure onto a bed of Laticrete Platinum 254 mortar on the underlayment. The mortar was set using a 6.35 mm by 6.35 mm trowel. Both the grout and mortar were allowed to cure to manufacturer's specifications.				
Rubber Underlayment	3023 by 1219	5.0	ECOsilence	10.98 m <sup>2</sup>	4.2 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 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	152.4	N/A	10.98 m <sup>2</sup>	270.63 kg/m <sup>2</sup>
	Note: Poured directly on the floor deck and allowed to cure for a minimum of 28 days.				
Dove Tail 3.50 Steel Deck	3023 by 609.6	152.4	20 Gage Vulcraft	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



TEST DATE	2/17/2018				
DATA FILE NO.	H7787.06				
CLIENT	Vulcraft/Verco Group				
DESCRIPTION	8.5 mm Daltile Ceramic Tile, 5 mm ECOSilence Rubber Underlayment, 152.4 mm Standard 4000 PSI Concrete, 152.4 mm 20 Gage Vulcraft Dove Tail 3.50 Steel Deck				
SPECIMEN AREA	10.98 m <sup>2</sup>	Receive Temp.	18.9°C	Source Temp.	20°C
TECHNICIAN	JPT	Receive Humidity	57%	Source Humidity	57%

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	29.1	16.3	109	68	40	2.6	-
100	25.8	13.6	106	65	40	2.0	-
125	26.4	10.1	105	65	40	1.3	0
160	20.4	9.7	107	69	38	1.2	0
200	22.3	10.8	105	68	38	1.5	2
250	31.6	10.9	104	64	41	1.2	2
315	18.1	10.4	106	62	45	0.7	1
400	19.9	9.1	105	65	41	0.7	8
500	23.8	8.0	104	60	45	0.5	5
630	21.8	8.0	105	56	51	0.6	0
800	18.6	7.7	104	55	51	0.3	1
1000	17.2	7.4	105	54	53	0.4	0
1250	15.0	7.2	104	50	56	0.3	0
1600	10.3	7.3	105	48	59	0.4	0
2000	6.4	8.2	104	47	59	0.3	0
2500	5.1	9.1	103	43	61	0.2	0
3150	4.0	10.2	104	37	67	0.5	0
4000	4.6	11.6	104	34	70	0.4	0
5000	5.3	13.8	104	30	73	0.5	-
6300	5.9	17.7	98	20	76	0.5	-
8000	6.4	23.8	97	18	76	1.2	-
10000	6.7	29.7	92	16	72	0.6	-
STC Rating	50	(Sound Transmission Class)			Sum of Deficiencies	19	

- 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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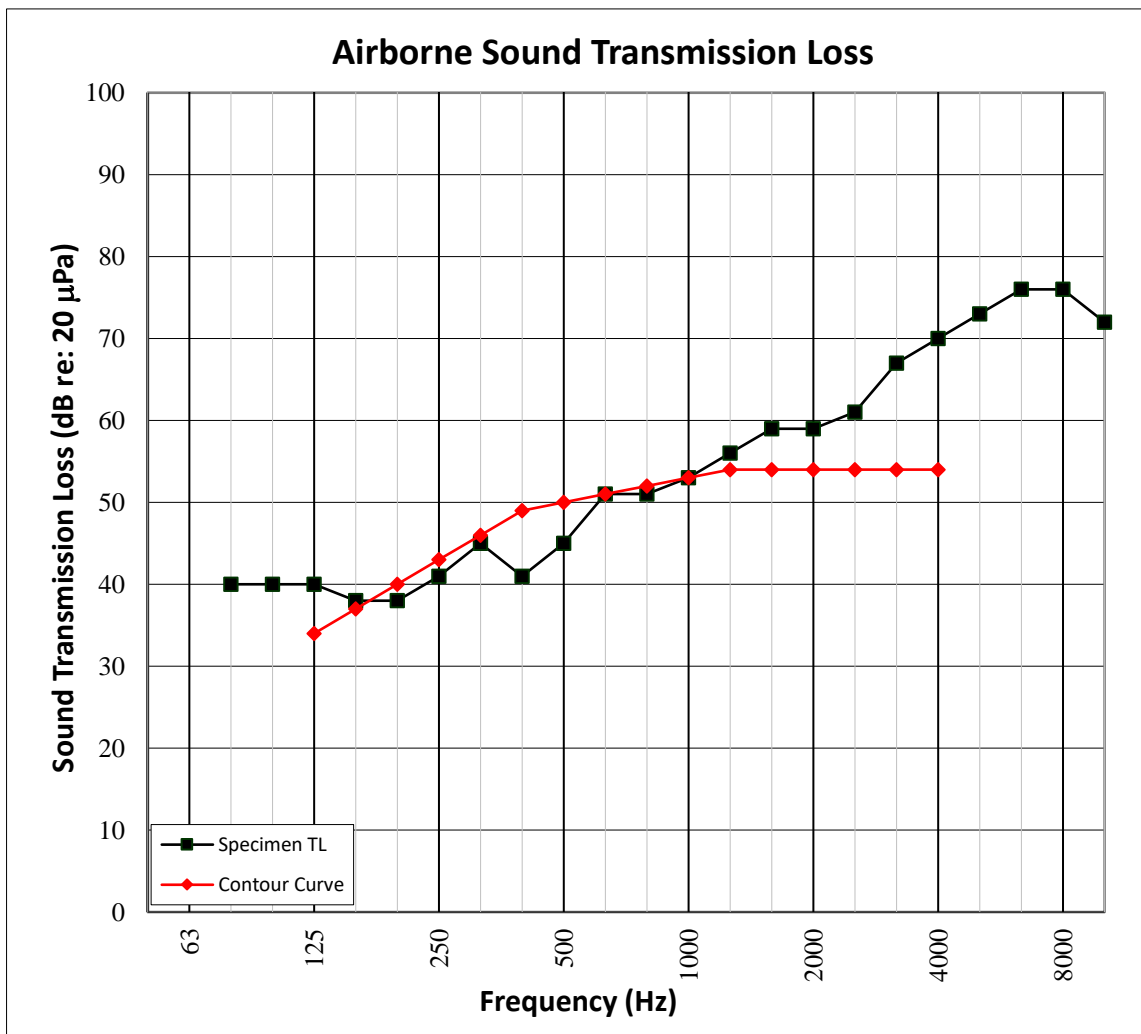
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### SECTION 11

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



TEST DATE	2/17/2018				
DATA FILE NO.	H7787.06				
CLIENT	Vulcraft/Verco Group				
DESCRIPTION	8.5 mm Daltile Ceramic Tile, 5 mm ECOSilence Rubber Underlayment, 152.4 mm Standard 4000 PSI Concrete, 152.4 mm 20 Gage Vulcraft Dove Tail 3.50 Steel Deck				
SPECIMEN AREA	10.98 m <sup>2</sup>	Receive Temp.	18.9°C	Source Temp.	20°C
TECHNICIAN	JPT	Receive Humidity	57%	Source Humidity	57%





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### SECTION 12

#### TEST RESULTS - IMPACT SOUND TRANSMISSION



<b>TEST DATE</b>	2/17/2018				
<b>DATA FILE NO.</b>	H7787.06				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	8.5 mm Daltile Ceramic Tile, 5 mm ECOSilence Rubber Underlayment, 152.4 mm Standard 4000 PSI Concrete, 152.4 mm 20 Gage Vulcraft Dove Tail 3.50 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	18.9°C	<b>Minimum Temp.</b>	18.9°C
<b>TECHNICIAN</b>	JPT	<b>Max. Humidity</b>	57%	<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	33.0	17.0	56	1.6	-
100	33.2	14.2	58	1.2	0
125	25.1	10.0	61	1.8	0
160	25.8	10.2	62	0.6	0
200	23.3	10.7	67	0.8	0
250	31.8	11.1	69	0.7	0
315	17.6	10.2	70	0.8	0
400	19.3	9.1	76	0.7	7
500	23.1	8.0	73	0.4	5
630	14.4	7.9	71	0.4	4
800	15.8	7.6	72	0.4	6
1000	14.4	7.5	70	0.5	5
1250	10.7	7.2	62	0.7	0
1600	8.9	7.5	57	0.2	0
2000	6.8	8.3	58	0.5	2
2500	7.3	9.1	55	0.5	2
3150	7.2	10.2	49	0.3	0
4000	8.0	11.6	45	0.3	-
5000	8.9	13.9	41	0.4	-
6300	9.8	17.7	37	0.5	-
8000	10.7	23.9	39	0.5	-
10000	11.6	29.4	38	0.3	-
<b>IIC Rating</b>	<b>42</b>	<i>(Impact Insulation Class)</i>		<b>Sum of Deficiencies</b>	<b>31</b>

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

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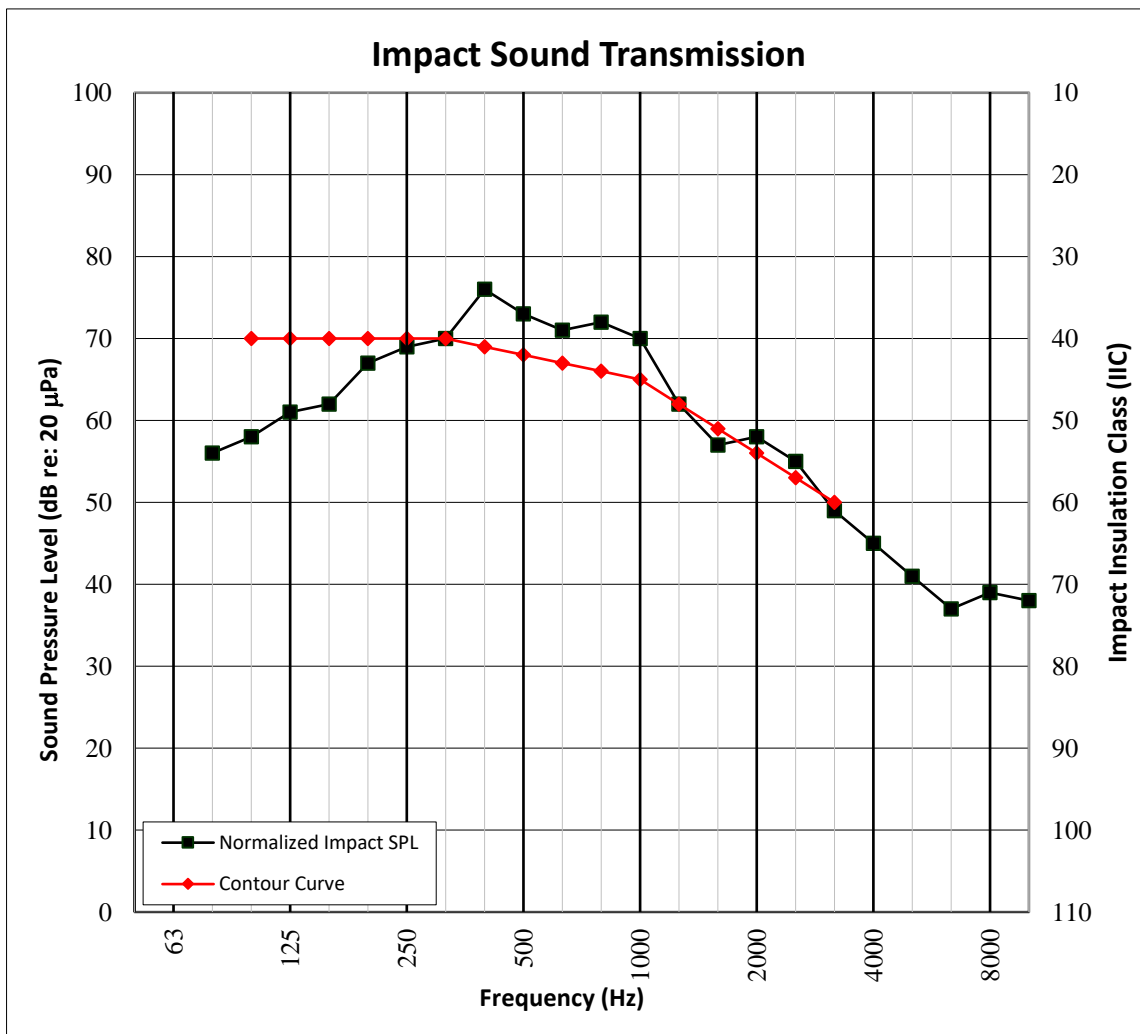
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### SECTION 13

#### TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



<b>TEST DATE</b>	2/17/2018				
<b>DATA FILE NO.</b>	H7787.06				
<b>CLIENT</b>	Vulcraft/Verco Group				
<b>DESCRIPTION</b>	8.5 mm Daltile Ceramic Tile, 5 mm ECOSilence Rubber Underlayment, 152.4 mm Standard 4000 PSI Concrete, 152.4 mm 20 Gage Vulcraft Dove Tail 3.50 Steel Deck				
<b>SPECIMEN AREA</b>	10.98 m <sup>2</sup>	<b>Maximum Temp.</b>	18.9°C	<b>Minimum Temp.</b>	18.9°C
<b>TECHNICIAN</b>	JPT	<b>Max. Humidity</b>	57%	<b>Min. Humidity</b>	56%



## TEST REPORT FOR VULCRAFT/VERCO GROUP

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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

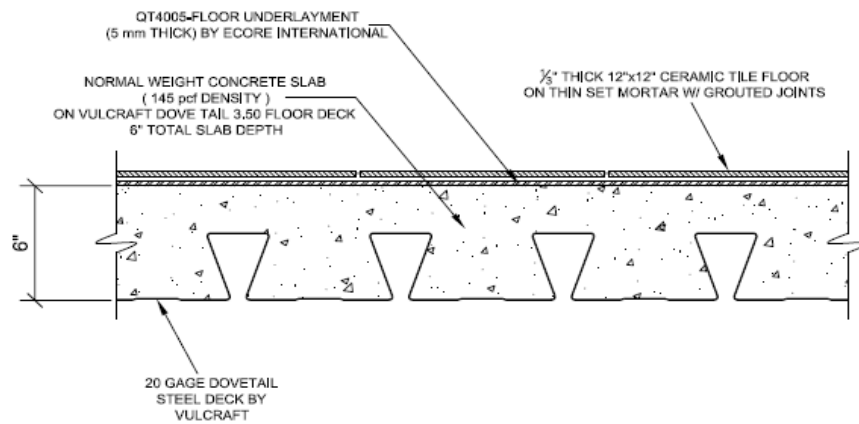
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### SECTION 15

#### DRAWING



**Drawing of Test Specimen (supplied by Client)**

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**SECTION 16**

**REVISION LOG**

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R0	04/04/18	N/A	Original Report Issue