

# VULCRAFT/VERCO GROUP

## ACOUSTICAL PERFORMANCE TEST REPORT

### SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON  
ENGINEERED WOOD OVER 5 MM ECOSILENCE UNDERLAYMENT

### SPECIMEN TYPE

Vulcraft 20 Gage Dove Tail 2.00 Steel Deck

### REPORT NUMBER

H7786.05-113-11-R1

### TEST DATE

02/10/18

### ISSUE DATE

03/22/18

### REVISED DATE

04/04/18

### RECORD RETENTION END

02/10/22

### PAGES

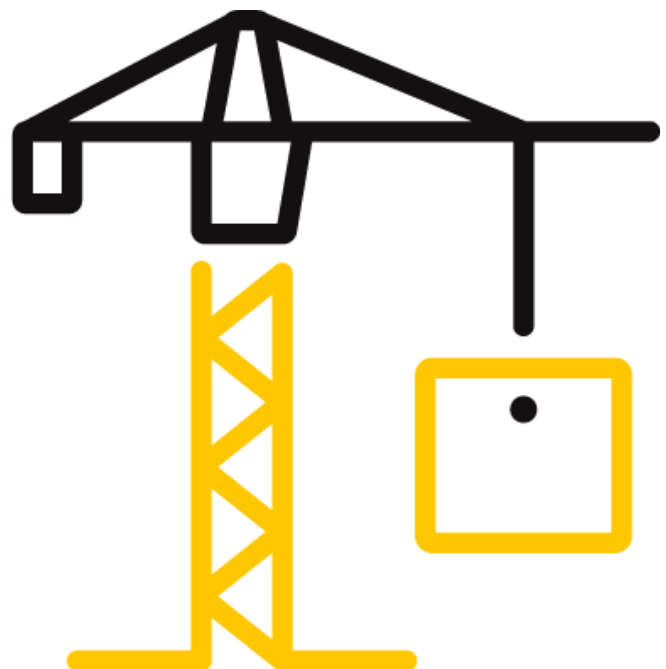
13

### DOCUMENT CONTROL

ATI 00629 (09/19/17)

RTTDS-R-AMER-Test-2844

© 2017 INTERTEK



**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-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 Engineered Wood 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> | H7786.05  |
| <b>SERIES/MODEL:</b> | Engineered Wood over 5 mm ECOsilence Underlayment |
| <b>STC</b>           | 50  |
| <b>IIC</b>           | 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

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

Date: 04/04/18

**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 2974.7 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.

## TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7786.05-113-11-R1

Date: 04/04/18

### 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 |

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

Report No.: H7786.05-113-11-R1

Date: 04/04/18

### **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.

## TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7786.05-113-11-R1

Date: 04/04/18

### SECTION 9

#### TEST SPECIMEN DESCRIPTION

| MATERIAL                      | DIMENSIONS<br>(mm/inch)   | THICKNESS<br>(mm/inch) | MANUFACTURER AND<br>SERIES         | QUANTITY             | AVERAGE<br>WEIGHT        |
|-------------------------------|---|------------------------|------------------------------------|----------------------|--------------------------|
| Engineered<br>Wood            | 914.4 by 127  | 12.7                   | Armstrong                          | 10.98 m <sup>2</sup> | 6.59 kg/m <sup>2</sup>   |
|                               | Note: Loose laid  |                        |                                    |                      |                          |
| Rubber<br>Underlayment        | 3023 by 1219  | 5.0                    | ECOsilence                         | 10.98 m <sup>2</sup> | 4.2 kg/m <sup>2</sup>    |
|                               | Note: Loose laid  |                        |                                    |                      |                          |
| Standard 4000<br>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<br>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. |                        |                                    |                      |                          |

# TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7786.05-113-11-R1

Date: 04/04/18

## SECTION 10

### TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS



|               |  |                  |        |                 |        |
|---------------|--|------------------|--------|-----------------|--------|
| TEST DATE     | 2/10/2018  |                  |        |                 |        |
| DATA FILE NO. | H7786.05   |                  |        |                 |        |
| CLIENT        | Vulcraft/Verco Group   |                  |        |                 |        |
| DESCRIPTION   | 12.7 mm Armstrong Engineered Wood, 5 mm ECOSilence Rubber Underlayment, 139.7 mm Standard 4000 PSI Concrete, 139.7 mm 20 Gage Vulcraft Dove Tail 2.00 Steel Deck |                  |        |                 |        |
| SPECIMEN AREA | 10.98 m <sup>2</sup>   | Receive Temp.    | 19.1°C | Source Temp.    | 18.6°C |
| TECHNICIAN    | ZPG  | Receive Humidity | 62%    | Source Humidity | 62%    |

| FREQ<br>(Hz) | BACKGROUND<br>SPL<br>(dB) | ABSORPTION<br>m <sup>2</sup> | SOURCE<br>SPL<br>(dB) | RECEIVE<br>SPL<br>(dB) | SPECIMEN<br>TL<br>(dB) | 95%<br>CONFIDENCE<br>LIMIT | NUMBER<br>OF<br>DEFICIENCIES |
|--------------|---------------------------|------------------------------|-----------------------|------------------------|------------------------|----------------------------|------------------------------|
| 80           | 36.1                      | 17.9                         | 109                   | 68                     | 39                     | 2.5                        | -                            |
| 100          | 34.7                      | 14.3                         | 106                   | 66                     | 39                     | 1.4                        | -                            |
| 125          | 30.0                      | 9.6                          | 105                   | 66                     | 40                     | 1.8                        | 0                            |
| 160          | 27.2                      | 10.8                         | 106                   | 68                     | 38                     | 0.9                        | 0                            |
| 200          | 23.6                      | 10.9                         | 103                   | 67                     | 36                     | 1.4                        | 4                            |
| 250          | 30.6                      | 10.9                         | 103                   | 65                     | 38                     | 0.6                        | 5                            |
| 315          | 22.4                      | 10.0                         | 104                   | 65                     | 39                     | 0.8                        | 7                            |
| 400          | 21.3                      | 8.6                          | 103                   | 61                     | 43                     | 1.0                        | 6                            |
| 500          | 23.4                      | 8.3                          | 101                   | 56                     | 46                     | 0.7                        | 4                            |
| 630          | 20.3                      | 8.0                          | 103                   | 56                     | 48                     | 0.4                        | 3                            |
| 800          | 19.5                      | 7.4                          | 103                   | 48                     | 56                     | 0.5                        | 0                            |
| 1000         | 17.5                      | 7.5                          | 103                   | 44                     | 61                     | 0.6                        | 0                            |
| 1250         | 13.7                      | 7.7                          | 103                   | 42                     | 63                     | 0.6                        | 0                            |
| 1600         | 13.5                      | 7.5                          | 103                   | 40                     | 65                     | 0.4                        | 0                            |
| 2000         | 10.7                      | 8.1                          | 103                   | 38                     | 66                     | 0.5                        | 0                            |
| 2500         | 8.5                       | 8.9                          | 101                   | 36                     | 67                     | 0.4                        | 0                            |
| 3150         | 6.5                       | 9.8                          | 103                   | 33                     | 70                     | 0.4                        | 0                            |
| 4000         | 5.5                       | 11.3                         | 103                   | 32                     | 72                     | 0.5                        | 0                            |
| 5000         | 5.6                       | 13.3                         | 103                   | 29                     | 74                     | 0.4                        | -                            |
| 6300         | 6.2                       | 16.4                         | 97                    | 19                     | 77                     | 0.4                        | -                            |
| 8000         | 6.4                       | 21.5                         | 97                    | 14                     | 80                     | 0.4                        | -                            |
| 10000        | 6.5                       | 26.5                         | 92                    | 8                      | 81                     | 0.4                        | -                            |
| STC Rating   | 50                        | (Sound Transmission Class)   |                       |                        | Sum of Deficiencies    | 29                         |                              |

- 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

**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

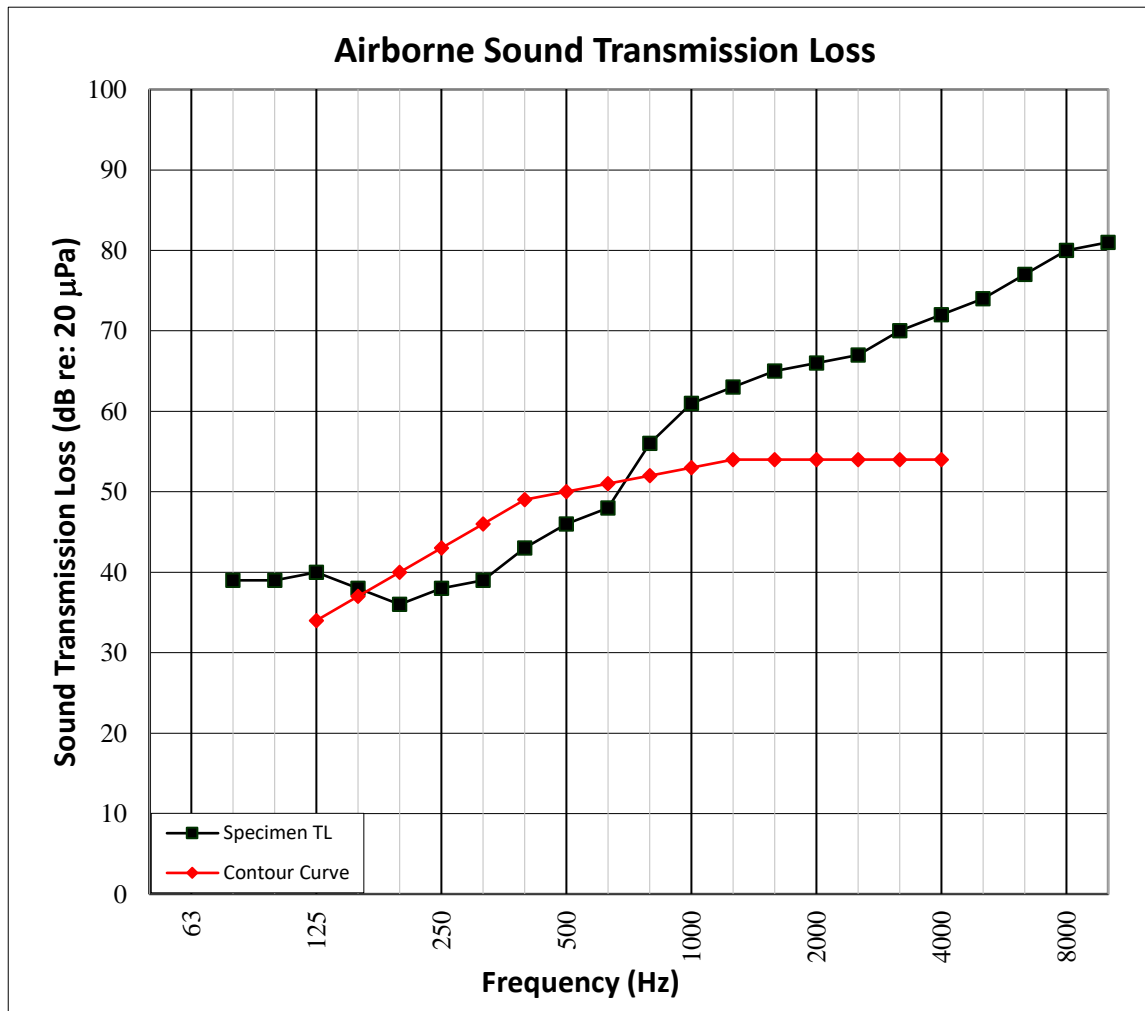
Date: 04/04/18

**SECTION 11**

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



|                      |  |                         |        |                        |        |
|----------------------|--|-------------------------|--------|------------------------|--------|
| <b>TEST DATE</b>     | 2/10/2018  |                         |        |                        |        |
| <b>DATA FILE NO.</b> | H7786.05   |                         |        |                        |        |
| <b>CLIENT</b>        | Vulcraft/Verco Group   |                         |        |                        |        |
| <b>DESCRIPTION</b>   | 12.7 mm Armstrong Engineered Wood, 5 mm ECOSilence Rubber Underlayment, 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>    | 18.6°C |
| <b>TECHNICIAN</b>    | ZPG  | <b>Receive Humidity</b> | 62%    | <b>Source Humidity</b> | 62%    |





**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

Date: 04/04/18

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


|                      |  |                      |        |                      |        |
|----------------------|--|----------------------|--------|----------------------|--------|
| <b>TEST DATE</b>     | 2/10/2018  |                      |        |                      |        |
| <b>DATA FILE NO.</b> | H7786.05   |                      |        |                      |        |
| <b>CLIENT</b>        | Vulcraft/Verco Group   |                      |        |                      |        |
| <b>DESCRIPTION</b>   | 12.7 mm Armstrong Engineered Wood, 5 mm ECOSilence Rubber Underlayment, 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<br>(Hz)      | BACKGROUND<br>SPL<br>(dB) | ABSORPTION<br>m <sup>2</sup>     | NORMALIZED IMPACT SPL<br>(dB) | 95%<br>CONFIDENCE<br>LIMIT | NUMBER<br>OF<br>DEFICIENCIES |
|-------------------|---------------------------|----------------------------------|-------------------------------|----------------------------|------------------------------|
| 80                | 35.2                      | 16.3                             | 56                            | 2.0                        | -                            |
| 100               | 29.5                      | 14.7                             | 57                            | 1.0                        | 0                            |
| 125               | 26.2                      | 10.4                             | 56                            | 1.6                        | 0                            |
| 160               | 25.5                      | 10.9                             | 63                            | 0.8                        | 1                            |
| 200               | 20.2                      | 10.7                             | 66                            | 0.7                        | 4                            |
| 250               | 30.2                      | 11.5                             | 69                            | 0.9                        | 7                            |
| 315               | 21.2                      | 10.1                             | 69                            | 0.6                        | 7                            |
| 400               | 21.6                      | 8.3                              | 64                            | 0.3                        | 3                            |
| 500               | 23.9                      | 8.3                              | 63                            | 0.3                        | 3                            |
| 630               | 21.7                      | 8.2                              | 64                            | 0.4                        | 5                            |
| 800               | 22.0                      | 7.3                              | 57                            | 0.5                        | 0                            |
| 1000              | 19.6                      | 7.5                              | 50                            | 0.4                        | 0                            |
| 1250              | 16.1                      | 7.6                              | 45                            | 0.2                        | 0                            |
| 1600              | 18.1                      | 7.4                              | 38                            | 0.2                        | 0                            |
| 2000              | 14.4                      | 8.2                              | 34                            | 0.4                        | 0                            |
| 2500              | 11.5                      | 9.0                              | 33                            | 0.3                        | 0                            |
| 3150              | 9.7                       | 9.9                              | 29                            | 0.3                        | 0                            |
| 4000              | 7.8                       | 11.2                             | 26                            | 0.3                        | -                            |
| 5000              | 6.0                       | 13.1                             | 21                            | 0.3                        | -                            |
| 6300              | 6.4                       | 16.4                             | 14                            | 0.3                        | -                            |
| 8000              | 6.7                       | 21.4                             | 12                            | 0.4                        | -                            |
| 10000             | 7.1                       | 26.5                             | 12                            | 0.2                        | -                            |
| <b>IIC Rating</b> | <b>50</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.

**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

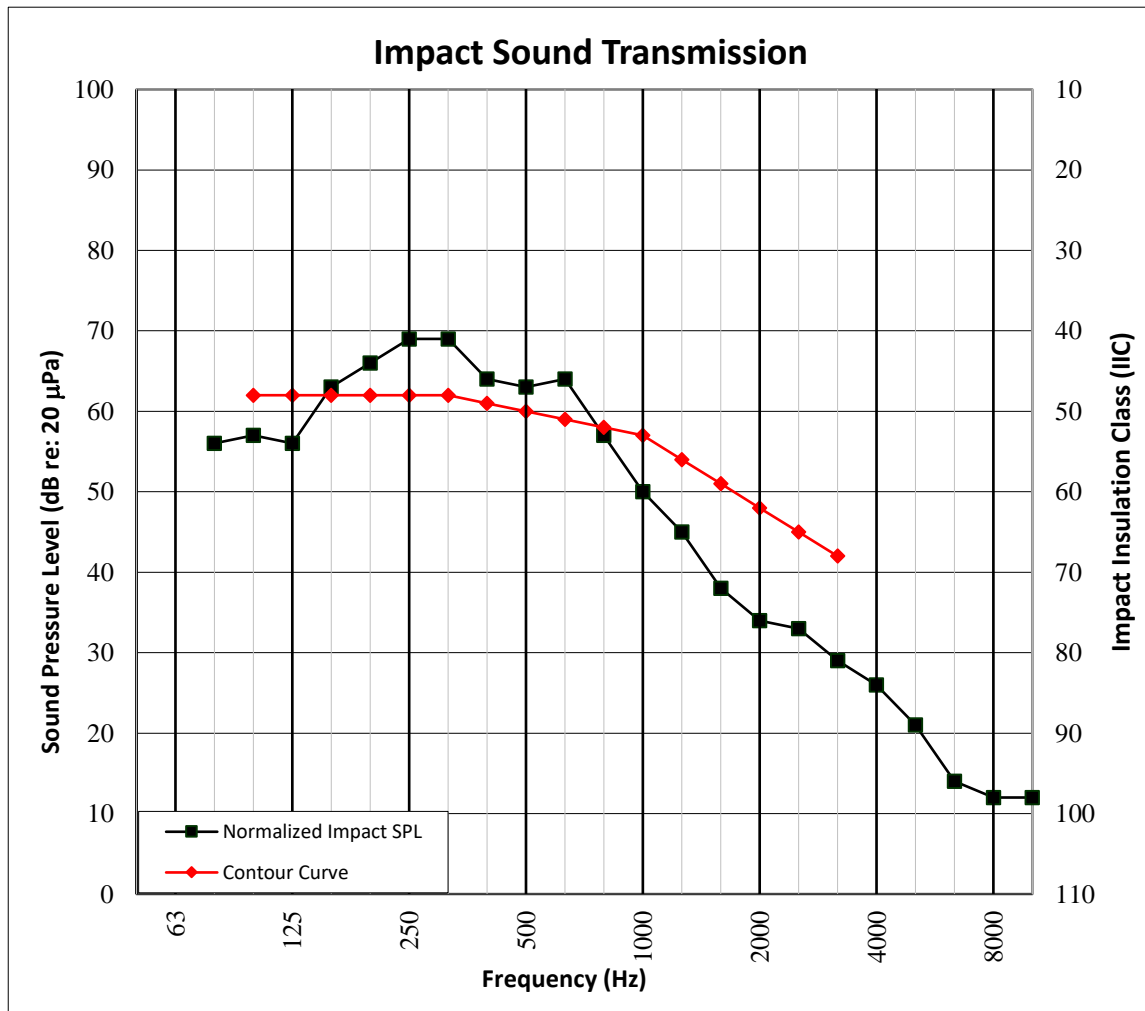
Date: 04/04/18

**SECTION 13**

**TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH**



|                      |  |                      |        |                      |        |
|----------------------|--|----------------------|--------|----------------------|--------|
| <b>TEST DATE</b>     | 2/10/2018  |                      |        |                      |        |
| <b>DATA FILE NO.</b> | H7786.05   |                      |        |                      |        |
| <b>CLIENT</b>        | Vulcraft/Verco Group   |                      |        |                      |        |
| <b>DESCRIPTION</b>   | 12.7 mm Armstrong Engineered Wood, 5 mm ECOSilence Rubber Underlayment, 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%    |



**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

Date: 04/04/18

**SECTION 14**

**PHOTOGRAPHS**



**Photo No. 1**

**Source Room View of Test Specimen Installation**



**Photo No. 2**

**Receive Room View of Test Specimen Installation**

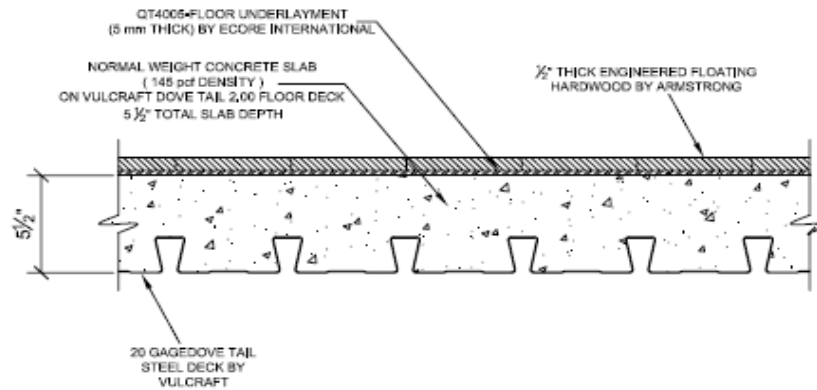
# TEST REPORT FOR VULCRAFT/VERCO GROUP

Report No.: H7786.05-113-11-R1

Date: 04/04/18

## SECTION 15

### DRAWING



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

**TEST REPORT FOR VULCRAFT/VERCO GROUP**

Report No.: H7786.05-113-11-R1

Date: 04/04/18

**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 |