

# Laboratory Acoustical Test Report

Report No. FC25-0004R1

March 28, 2025

Impact Insulation Class, Delta Impact Insulation Class, and Sound  
Transmission Class  
ASTM E492, E2179, E90

## Test Assembly:

Urban Surfaces InstaGrip 20 LVP  
Urban Surfaces Floor Silencer Pro  
6-inch Concrete Slab

**IIC- 53**

**$\Delta$ IIC- 23**

**HIIC- 54**

**$\Delta$ HIIC- 27**

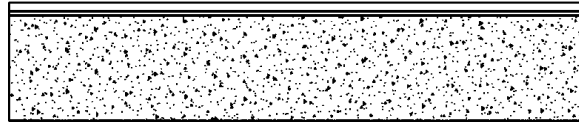
**LIIC- 65**

**STC- 50**

## Urban Surfaces

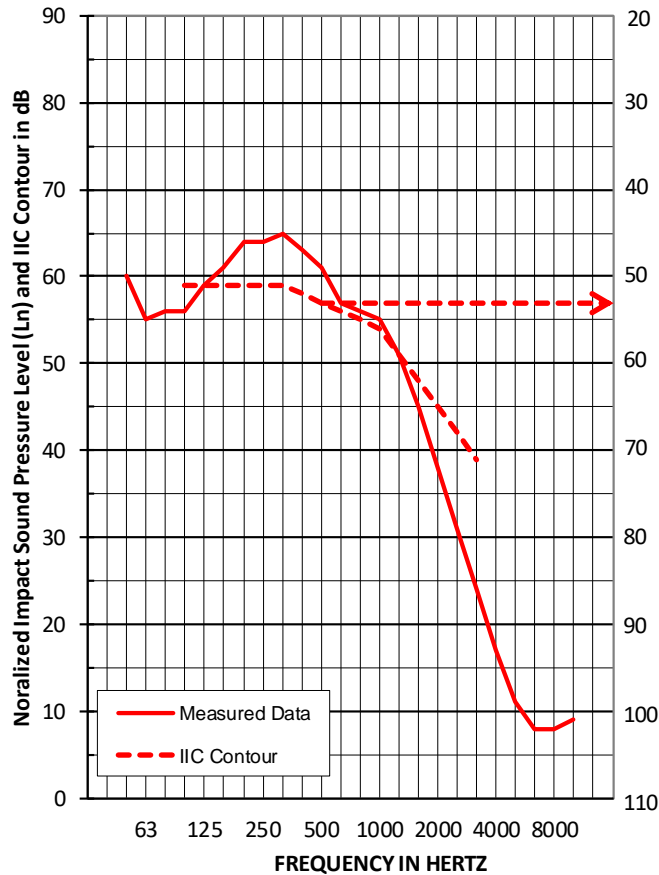
2380 Railroad Street, Suite 101  
Corona, California 92878

**Impact Insulation Class Test FC25-0004: IIC 53**



Finish Flooring	Urban Surfaces 4.5 mm InstaGrip 20 LVP
Acoustical Underlayment	Urban Surfaces 1.5 mm Floor Silencer Pro
Concrete Slab	152.4 mm, 5000 PSI

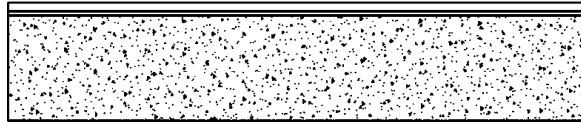
Test Date:	1/31/2025	
Construction Date:	1/31/2025	
Test Specimen Area:	11	sq.m.
Receiving Room Volume:	159	cu.m.
Receiving Room Temperature:	18.8-19.1	degrees C
Receiving Room Relative Humidity:	58-61	percent



Freq	95% Confidence	
	Limit	Ln
50	1.8	60
63	2.8	55
80	2.2	56
100	1.5	56
125	1.2	59
160	0.4	61
200	0.8	64
250	0.7	64
315	0.7	65
400	0.4	63
500	0.5	61
630	0.5	57
800	0.5	56
1000	0.4	55
1250	0.4	51
1600	0.4	45
2000	0.4	38
2500	0.7	31
3150	0.8	24
4000	1.1	<u>17</u>
5000	0.9	<u>11</u>
6300	0.3	<u>8</u>
8000	0.1	<u>8</u>
10000	0.1	<u>9</u>

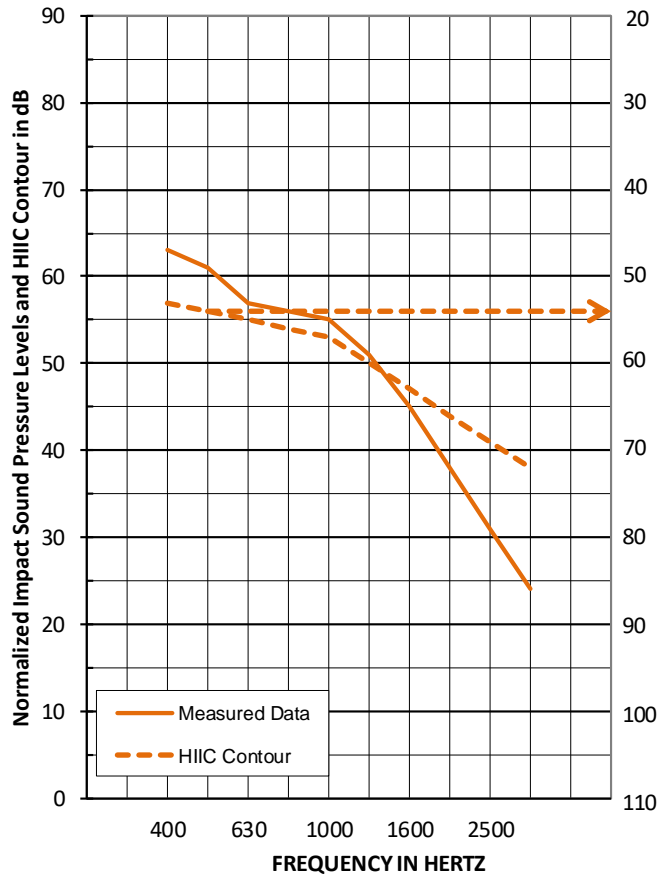
Background Affected

High-frequency Impact Insulation Class Test FC25-0004: HIIC 54



Finish Flooring	Urban Surfaces 4.5 mm InstaGrip 20 LVP
Acoustical Underlayment	Urban Surfaces 1.5 mm Floor Silencer Pro
Concrete Slab	152.4 mm, 5000 PSI

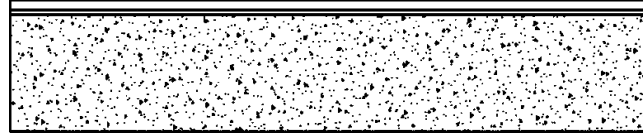
Test Date:	1/31/2025	
Construction Date:	1/31/2025	
Test Specimen Area:	11	sq.m.
Receiving Room Volume:	159	cu.m.
Receiving Room Temperature:	18.8-19.1	degrees C
Receiving Room Relative Humidity:	58-61	percent



95% Confidence		
Freq	Limit	Ln
400	0.4	63
500	0.5	61
630	0.5	57
800	0.5	56
1000	0.4	55
1250	0.4	51
1600	0.4	45
2000	0.4	38
2500	0.7	31
3150	0.8	24

No Ln values were affected by background noise or flanking.

**Improvement in Impact Insulation Class Test FC25-0004: ΔIIC 23**



Finish Flooring Acoustical Underlayment Concrete Slab	Urban Surfaces 4.5 mm InstaGrip 20 LVP Urban Surfaces 1.5 mm Floor Silencer Pro 152.4 mm, 5000 PSI
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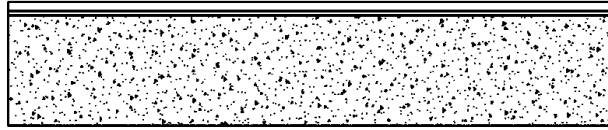
Test Date:	1/31/2025	
Construction Date:	1/31/2025	
Test Specimen Area:	11	sq.m.
Receiving Room Volume:	159	cu.m.
Receiving Room Temperature:	18.8-19.1	degrees C
Receiving Room Relative Humidity:	58-61	percent

Freq	Third-Octave Band Sound Pressure Level				
	Bare Concrete	Floor Tested	Difference in dB	Reference Floor	Final Array
100	57.1	56.0	1.1	67.0	66.0
125	63.0	59.3	1.1	67.5	64.0
160	64.0	61.4	3.7	68.0	65.0
200	67.5	63.7	2.6	68.5	65.0
250	68.5	63.9	3.8	69.0	64.0
315	70.5	64.7	4.6	69.5	64.0
400	68.1	62.6	5.8	70.0	65.0
500	71.6	60.7	5.5	70.5	60.0
630	73.4	56.6	10.9	71.0	54.0
800	72.5	55.5	16.8	71.5	55.0
1000	74.3	54.8	17.0	72.0	52.0
1250	74.4	50.7	19.5	72.0	48.0
1600	73.8	44.6	23.7	72.0	43.0
2000	72.5	37.5	29.2	72.0	37.0
2500	72.4	30.7	35.0	72.0	30.0
3150	71.9	24.0	41.7	72.0	24.0

No receiving levels were affected by background noise.

**Calculated Improvement in Impact Insulation Class: ΔIIC 23**

Improvement in High-frequency Impact Insulation Class Test FC25-0004: ΔHIIC 27



Finish Flooring Acoustical Underlayment Concrete Slab	Urban Surfaces 4.5 mm InstaGrip 20 LVP Urban Surfaces 1.5 mm Floor Silencer Pro 152.4 mm, 5000 PSI
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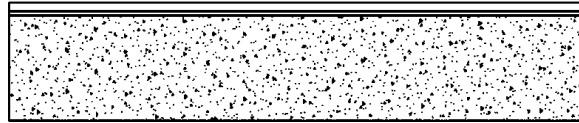
Test Date: 1/31/2025  
 Construction Date: 1/31/2025  
 Test Specimen Area: 11 sq.m.  
 Receiving Room Volume: 159 cu.m.  
 Receiving Room Temperature: 18.8-19.1 degrees C  
 Receiving Room Relative Humidity: 58-61 percent

Freq	Third-Octave Band Sound Pressure Level				
	Bare Concrete	Floor Tested	Difference in dB	Reference Floor	Final Array
400	68.1	62.6	5.5	70.0	65.0
500	71.6	60.7	10.9	70.5	60.0
630	73.4	56.6	16.8	71.0	54.0
800	72.5	55.5	17.0	71.5	55.0
1000	74.3	54.8	19.5	72.0	52.0
1250	74.4	50.7	23.7	72.0	48.0
1600	73.8	44.6	29.2	72.0	43.0
2000	72.5	37.5	35.0	72.0	37.0
2500	72.4	30.7	41.7	72.0	30.0
3150	71.9	24.0	47.9	72.0	24.0

No receiving levels were affected by background noise.

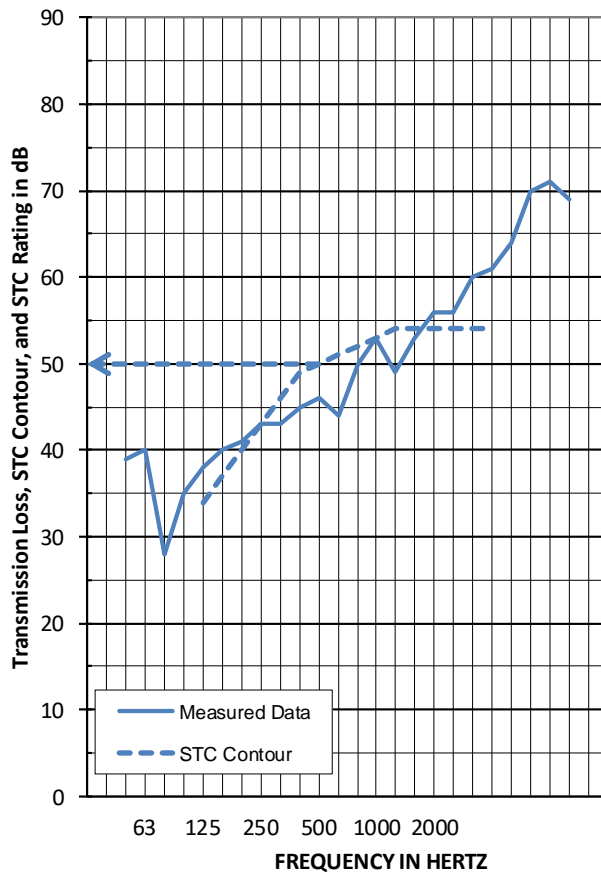
**Calculated Improvement in High-frequency Impact Insulation Class: ΔHIIC 27**

Sound Transmission Class Test FC25-0004: STC 50



Finish Flooring Acoustical Underlayment Concrete Slab	Urban Surfaces 4.5 mm InstaGrip 20 LVP Urban Surfaces 1.5 mm Floor Silencer Pro 152.4 mm, 5000 PSI
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Test Date:	1/31/2025	
Construction Date:	1/31/2025	
Test Specimen Area:	11	sq.m.
Source/Receiving Room Volume:	190/159	cu.m.
Source/Receiving Room Temperature:	18.9/15.8	degrees C
Source/Receiving Room Relative Humidity:	59/59	percent



Freq	TL
50	<b>39</b>
63	<b>40</b>
80	28
100	<b>35</b>
125	<b>38</b>
160	<b>40</b>
200	41
250	43
315	43
400	45
500	46
630	44
800	50
1000	53
1250	49
1600	53
2000	56
2500	56
3150	60
4000	61
5000	64
6300	<u>70</u>
8000	<u>71</u>
10000	<u>69</u>

Background Affected  
Flanking Affected

## 1.0 TEST PROCEDURES

### 1.1 *Impact Insulation Tests*

All tests were conducted in accordance with ASTM E492, "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine." The IIC is a single-number rating derived from the Impact Sound Pressure Level in accordance with ASTM E989, "Standard Classification for Determination of Impact Insulation Class (IIC)." Results are presented above.

95% confidence intervals represent uncertainty for microphone averaging, not tapping positions.

### 1.2 *High-frequency Impact Insulation Class Tests*

The HIIC is the High-frequency Impact Insulation Class and is meant to assess the high-frequency impact noise on a floor-ceiling assembly. The higher the value, the better the floor, meaning less noise from high-frequency impacts in the space below.

All tests were conducted in accordance with the requirements of ASTM E492, "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine," using ASTM E3222 "Standard Classification for Determination of High-frequency Impact Sound Ratings" to calculate the High-frequency Impact Insulation Class (HIIC). Results are presented above.

### 1.3 *Low-frequency Impact Insulation Class Tests*

The LIIC is the Low-frequency Impact Insulation Class and is meant to assess the low-frequency impact noise on a floor-ceiling assembly. The higher the value, the better the floor, meaning less noise from low-frequency impacts in the space below.

All tests were conducted in accordance with the requirements of ASTM E492, "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine," using ASTM E3207 "Standard Classification for Determination of Low-frequency Impact Noise Ratings" to calculate the Low-frequency Impact Insulation Class (LIIC).

**Measured result is LIIC-65.**

### 1.4 *Delta Impact Insulation Class Tests*

All tests were conducted in accordance with ASTM E2179, "Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission through Concrete Floors." The Delta Impact Insulation Class ( $\Delta$ IIC) describes the effectiveness of floor coverings in reducing impact noise from a standard tapping machine. The test is conducted exclusively using concrete subfloor assemblies.

Averaging time used during measurement of sound pressure levels was not specified. Results are presented above.

### 1.5 High-frequency Delta Impact Insulation Class Tests

The  $\Delta$ HIIC is the High-frequency Delta Impact Insulation Class and is meant to describe the effectiveness of floor coverings in reducing impact noise from a standard tapping machine within the high-frequency range per ASTM E3222. The higher the value, the more effective the floor covering is at reducing high-frequency impact sounds.

All tests were conducted in accordance with ASTM E2179, "Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission through Concrete Floors," using ASTM E3222 "Standard Classification for Determination of High-frequency Impact Sound Ratings." Averaging time used during measurement of sound pressure levels was not specified. Results are presented above.

### 1.6 Transmission Loss Tests

All tests were conducted in accordance with ASTM E90, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions," using the single-direction method. STC is a single-number rating derived from measured values of Sound Transmission Loss through a test specimen in accordance with ASTM E413, "Classification for Rating Sound Insulation." Results are presented above.

## 2.0 TEST ASSEMBLY

### 2.1 Assembly Description

The test assembly consists of:

- Urban Surfaces InstaGrip 20 Luxury Vinyl Plank;
- Urban Surfaces Floor Silencer Pro Premium Acoustical Underlayment;
- 6-inch thick concrete slab (5000 PSI) with 2-mil polyethylene protective sheeting.

Total mass of the floor-ceiling assembly was 4123.5 kg, having an area density of 375.5 kg/m<sup>2</sup>.

Product/Element	Thickness	Dimensions	Area	Area Density
Urban Surfaces LVP	4.5 mm	1524 mm x 229 mm	10.98 m <sup>2</sup>	7.75 kg/m <sup>2</sup>
Urban Surfaces Underlayment	1.5 mm	3023 mm x 914 mm	10.98 m <sup>2</sup>	1.61 kg/m <sup>2</sup>
Concrete Slab	152 mm	3023 mm x 3632 mm	10.98 m <sup>2</sup>	366 kg/m <sup>2</sup>

## 2.2 Installation

The materials were installed in the following manner:

- Finish flooring: Adhered to underlayment with manufacturer's adhesive. Adhesive allowed to cure per manufacturer's specifications.
- Acoustical underlayment: Adhered to the sheeting with the manufacturer's adhesive. Adhesive allowed to cure per manufacturer's specifications.
- Protective sheeting: 2-mil polyethylene plastic sheeting installed on top of concrete slab. Sheetting adhered to floor slab with 3M Super 77 spray adhesive.
- Concrete slab: Installed in a test frame flush to the source room. Mats of #5 reinforcing bars were placed 1 inch from both the top and bottom of the slab, with bars spaced on 305 mm centers in both directions. The test frame was isolated from the structure with a dense neoprene gasket. This slab was an existing assembly, reused. No noticeable shrinkage or cracking was visible.

The assembly was constructed on January 31, 2025.

## 3.0 TESTING PROTOCOL

This report summarizes laboratory acoustical testing contracted by Westside to be completed for Urban Surfaces on InstaGrip 20 luxury vinyl plank and Floor Silencer Pro acoustical underlayment. The scope of the acoustical testing is for Impact Insulation Class (IIC), Low-frequency Impact Insulation Class (LIIC), High-frequency Impact Insulation Class (HIIC), Delta Impact Insulation Class ( $\Delta$ IIC), Delta High-frequency Impact Insulation Class ( $\Delta$ HIIC), and Sound Transmission Class (STC), in accordance with ASTM standards E492, E2179, E90.

The tests were conducted on January 31, 2025. Details of the tests are contained in this report. Testing was completed in strict accordance with the following standards:

- ASTM E90, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions"
- ASTM E413, "Classification for Rating Sound Insulation"
- ASTM E492, "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine"
- ASTM E989, "Standard Classification for Determination of Impact Insulation Class (IIC)"
- ASTM E2179, "Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission through Concrete Floors"
- ASTM E2235, "Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods"
- ASTM E3207, "Standard Classification for Determination of Low-frequency Impact Noise Ratings."

- ASTM E3222, "Standard Classification for Determination of High-frequency Impact Sound Ratings."

### 3.1 *Equipment*

Equipment list and information associated with this test, including calibration information, is included in the Appendix.

### 3.2 *Accreditation and Reporting*

Report must be distributed in its entirety except with written authorization from Westside. Test was conducted at IAS-accredited and NVLAP-accredited test facility; the full report is available upon request. Detailed test procedures, data for flanking limit tests, repeatability measurements, and reference specimen tests are available on request.

Westside provides no warranties, expressed or implied, regarding the structural integrity or fitness of these assemblies for a specific installation. Any advertising which utilizes this test report or test data must not imply product certification or endorsement by Westside, NVLAP, NIST or the U.S. Government.

Please feel free to contact us with any questions.

Sincerely,  
**Westside Acoustics**



John LoVerde, FASA  
President

# APPENDIX

Test Equipment and Photos

Instrument	Manufacturer	Model	Description	Serial Number	Calibration Date
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02586	03/24
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02587	03/24
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02608	03/24
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02609	03/24
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02610	03/24
2-CHANNEL ANALOG INPUT	NATIONAL INSTRUMENTS	NI 9250	2-CHANNEL ANALOG INPUT	INT02612	03/24
2-CHANNEL ANALOG OUTPUT	NATIONAL INSTRUMENTS	NI 9260	2-CHANNEL ANALOG OUTPUT	INT02611	N/A
MICROPHONE CALIBRATOR	NORSONIC	34093	ACOUSTICAL CALIBRATOR	65105	08/24
RECEIVE ROOM MICROPHONE	PCB PIEZOTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	INT03739	10/24
RECEIVE ROOM MICROPHONE	PCB PIEZOTRONICS	378B20	MICROPHONE AND PREAMPLIFIER	INT02912	03/24
RECEIVE ROOM MICROPHONE	PCB PIEZOTRONICS	378B20	MICROPHONE AND PREAMPLIFIER	64902	09/24
RECEIVE ROOM MICROPHONE	PCB PIEZOTRONICS	378B20	MICROPHONE AND PREAMPLIFIER	64903	07/24
RECEIVE ROOM MICROPHONE	PCB PIEZOTRONICS	378B20	MICROPHONE AND PREAMPLIFIER	INT03720	10/24
RECEIVE ROOM ENVIRONMENTAL INDICATOR	COMET	T7510	TEMPERATURE AND HUMIDITY TRANSMITTER	63810	09/24
				63811	09/24
SOURCE ROOM MICROPHONE	PCB PIEZOTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	63745	10/24
SOURCE ROOM MICROPHONE	PCB PIEZOTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	64340	09/24
SOURCE ROOM MICROPHONE	PCB PIEZOTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	INT03738	10/24
SOURCE ROOM MICROPHONE	PCB PIEZOTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	64909	07/24
SOURCE ROOM MICROPHONE	PCB ELECTRONICS	378C20	MICROPHONE AND PREAMPLIFIER	64911	09/24
SOURCE ROOM ENVIRONMENTAL INDICATOR	COMET	T7510	TEMPERATURE AND HUMIDITY TRANSMITTER	63812	11/24
TAPPING MACHINE	NORSONIC	NOR277	TAPPING MACHINE	INT03333	02/24
Test Chamber Receive Room Volume				159 m <sup>3</sup>	
Test Chamber Source Room Volume				190 m <sup>3</sup>	



*Photo 1: View of Source Chamber, finish flooring installation observed*



*Photo 2: View of Receive Chamber, bottom of concrete slab observed*