

CANAM STEEL CORPORATION ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 AND ASTM E492 TESTING ON 2.0 MM SHAW EXPO LUXURY VINYL TILE OVER
1.5 MM SHAW GROUNDWORKS ACOUSTICAL UNDERLAYMENT

SPECIMEN TYPE

88.9 mm (3.5") Normal Weight Concrete on UFX 1 5/16" 24 Ga Form Deck over
Vescom Composite Steel Joist be CSC

REPORT NUMBER

S2730.04-113-11-R0

TEST DATE

05/22/25

ISSUE DATE

06/26/25

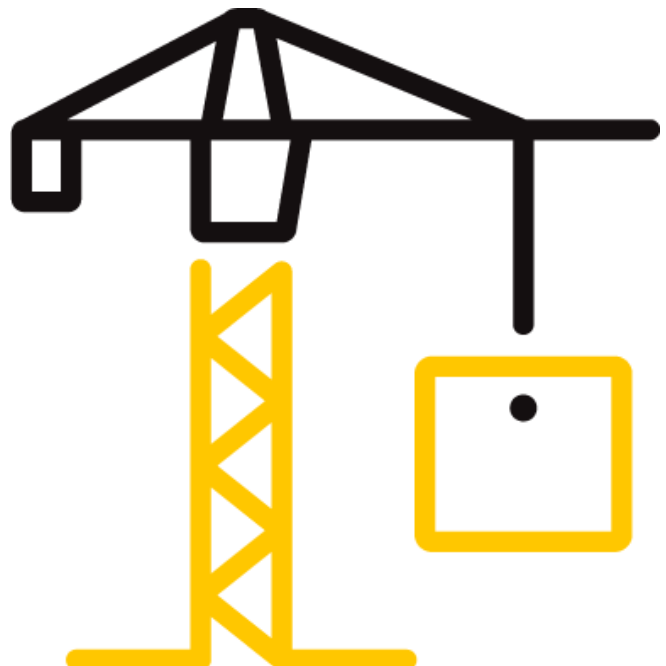
PAGES

14

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TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

REPORT ISSUED TO

CANAM STEEL CORPORATION

22253 West Southern Avenue

Buckeye, Arizona 85326

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Canam Steel Corporation to perform testing in accordance with ASTM E90 AND ASTM E492 on 2.0 mm Shaw Expo Luxury Vinyl tile over 1.5 mm Shaw Groundworks Acoustical Underlayment. Results obtained are tested values and were secured by using the designated test methods. 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.	S2730.04
SERIES/MODEL:	2.0 mm Shaw Expo Luxury Vinyl tile over 1.5 mm Shaw Groundworks Acoustical Underlayment
STC	55
IIC	58
LIIC	60
HIIC	63

COMPLETED BY: Corey S. Kohler
Technician - Acoustical
TITLE: Testing

SIGNATURE:

DATE: 06/26/25

REVIEWED BY: Daniel B. Mohler
Project Manager - Acoustical
TITLE: Testing

SIGNATURE:

DATE: 06/26/25

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TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 3**TEST METHODS**

The specimen was evaluated in accordance with the following:

ASTM E90-23, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*

ASTM E413-22, *Classification for Rating Sound Insulation*

ASTM E492-22, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM E989-21, *Classification for Determination of Impact Insulation Class (IIC)*

ASTM E2235-04 (2020), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

ASTM E3207-21, *Standard Classification for Determination of Low-Frequency Impact Sound Ratings*

ASTM E3222-20, *Standard Classification for Determination of High-Frequency Impact Sound Ratings*

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 (88.9 mm (3.5") Normal Weight Concrete on UFX 1 5/16" 24 Ga Form Deck over Vescom Composite Steel Joist be CSC) 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 2338.4 kg / 5155 lbs. B&C will store samples of the test specimen for four years. Photographs of the test specimen are included in the report. The client did not supply drawings of the test specimen.

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.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule, also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 5 EQUIPMENT

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE	
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02672	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02673	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02674	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02675	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02676	10/24	*
2-Channel Analog Input	National Instruments	NI 9250	2-Channel Analog Input	INT02677	10/24	*
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	64908	01/25	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT037389	10/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	INT03720	10/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	07/24	
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	09/24	
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	07/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64340	09/24	
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT037389	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	INT00936	07/24	

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

VT RECEIVE ROOM VOLUME	155.77 m ³ (5500.85 ft ³)
VT SOURCE ROOM VOLUME	190 m ³ (6709.79 ft ³)

SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Morgan S. J. Kennedy	Intertek B&C
Daniel B. Mohler	Intertek B&C

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

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 average temperature and humidity of both the source and receive rooms are listed in Sections 10 and 11. The maximum and minimum temperatures and humidities of the receive room from the duration of the test are listed in Sections 12 and 13.

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. Two 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), IIC (Impact Insulation Class), LIIC (Low-Frequency Impact Insulation Class), and HIIC (High-Frequency Impact Insulation Class) ratings were calculated in accordance with ASTM E413, ASTM E989, ASTM E3207, and ASTM E3222, respectively.

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 9

TEST SPECIMEN DESCRIPTION

MATERIAL	Dimensions (mm/inch)	Thickness (mm/inch)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
Luxury Vinyl Tile	1219.2 by 152.4 48 by 6	2 / 0.08	Shaw Expo V3042/VPS48	10.98 m ² 118.19 ft ²	3.47 kg/m ² 0.71 lb/ft ²
	Note: Loose laid				
Acoustical Underlayment	3023 by 939.8 119 by 37	1.5 / 0.06	Shaw GroundWorks	10.98 m ² 118.19 ft ²	0.49 kg/m ² 0.1 lb/ft ²
	Note: A sheet of 2 mil polyethylene plastic was adhered to the floor slab with Sprayway Fast Tack 85 spray adhesive. The underlayment was adhered to the sheeting with LokWorx+ 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.				
Normal Weight Concrete	3556 by 2952.8 140 by 116.3	88.9 / 3.5	N/A	10.98 m ² 118.19 ft ²	180.67 kg/m ² 37 lb/ft ²
	Note: Poured directly on the steel deck, cured for 21 days. No shrinkage or cracking was visible on the specimen.				
UFX 1 5/16" 24 Ga Form Deck	3635 by 3023 143.1 by 119	33.3 / 1.31	N/A	10.98 m ² 118.19 ft ²	5.99 kg/m ² 1.23 lb/ft ²
	Note: Fastened to joists with 76.20 mm by 9.53 mm ShearFlex® HD Screws per each deck rib. The measured steel thickness was 0.75 mm.				
Composite Steel Joist by CSC	2743.2 by 184.1 108 by 7.2	355.6 / 14	Vescom	3 trusses	33.57 kg/truss 74.01 lb/truss
	Note: Installed on 1219 mm centers				
Furring/Hat Channel	3657.6 by 76.2 144 by 3	22.3 / 0.88	ClarkDietrich 087F125-18	29.1 lin m 95.47 lin ft	0.48 kg/m 0.32 lb/ft
	Note: Wire-tied on 406 mm centers perpendicular to the trusses. The measured thickness of the metal was 0.7 mm.				
Gypsum Panel	1219 by 3023 48 by 119	15.9 / 0.63	National Gypsum Type C	10.98 m ² 118.19 ft ²	11.9 kg/m ² 2.44 lb/ft ²
	Note: Fastened to the channels on 305 mm centers with 25.4 mm Type S bugle head screws. The seams of the gypsum panels were sealed with Pecora AC-20 FTR caulk and covered with pressure sensitive tape.				

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 10
TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS


TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck, 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	18.6°C (65.5°F)	Source Temp.	21.2°C (70.1°F)
TECHNICIAN	MSJK	Receive Humidity	75%	Source Humidity	75%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
50	36.2	28.8	102	62	37	3.2	-
63	34.3	24.3	103	60	41	3.1	-
80	36.0	16.7	94	59	35	2.9	-
100	27.6	9.3	90	54	38	2.8	-
125	27.7	9.7	93	55	40	2.9	0
160	25.7	8.6	90	49	42	0.9	0
200	21.7	9.5	91	45	48	1.2	0
250	17.4	11.1	95	49	46	1.1	2
315	24.8	9.4	98	54	45	1.4	6
400	21.9	8.0	96	49	49	1.0	5
500	20.0	7.6	95	46	51	0.6	4
630	23.0	7.2	96	45	53	0.5	3
800	26.1	7.0	97	44	55	0.7	2
1000	25.4	7.2	97	43	56	0.6	2
1250	24.1	7.2	97	39	60	0.4	0
1600	21.6	7.3	96	38	59	0.5	0
2000	18.8	7.9	98	40	59	0.3	0
2500	14.8	8.8	95	39	57	0.5	2
3150	12.2	9.1	93	31	63	0.4	0
4000	10.0	9.6	93	27	66	0.4	0
5000	9.1	10.5	93	25	69	0.7	-
6300	9.3	11.8	93	20	73	0.8	-
8000	9.8	12.9	92	13	79	1.0	-
10000	10.8	12.9	92	12	81	1.3	-
STC Rating	55	<i>(Sound Transmission Class)</i>			Sum of Deficiencies	26	

- Notes:**
- 1) Receive Room levels less than 6 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 CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

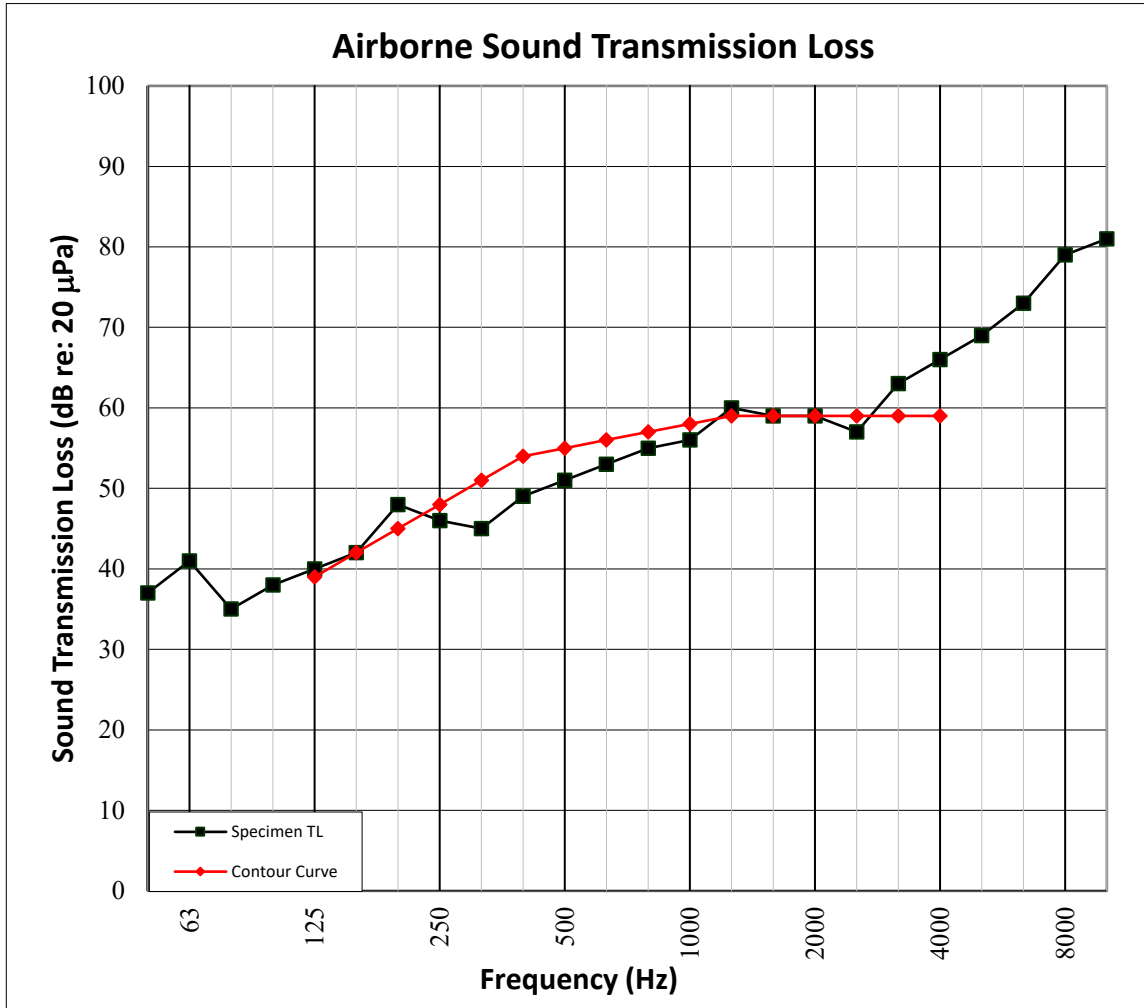
Date: 06/26/25

SECTION 11

TEST RESULTS - AIRBORNE SOUND TRANSMISSION LOSS GRAPH



TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck , 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Receive Temp.	18.6°C (65.5°F)	Source Temp.	21.2°C (70.1°F)
TECHNICIAN	MSJK	Receive Humidity	75%	Source Humidity	75%



TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 12
TEST RESULTS - IMPACT SOUND TRANSMISSION


TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck, 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	18.6°C (65.5°F)	Minimum Temp.	18.6°C (65.4°F)
TECHNICIAN	MSJK	Max. Humidity	75%	Min. Humidity	75%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% SAMPLING LIMIT	NUMBER OF DEFICIENCIES
50	35.5	26.9	64	2.0	-
63	30.8	22.8	57	2.2	-
80	34.9	15.9	53	1.5	-
100	26.1	11.2	55	1.4	1
125	24.5	8.5	60	1.5	6
160	22.6	9.1	59	1.1	5
200	19.7	9.5	56	0.5	2
250	16.7	10.8	59	0.7	5
315	22.7	9.5	59	0.7	5
400	20.1	8.2	54	0.6	1
500	20.4	7.4	53	0.3	1
630	21.4	7.2	51	0.3	0
800	23.7	7.0	45	0.2	0
1000	23.6	7.2	40	0.4	0
1250	22.6	7.2	33	0.6	0
1600	20.8	7.3	28	0.5	0
2000	18.4	7.8	23	0.4	0
2500	14.1	8.8	20	0.3	0
3150	11.4	9.2	15	0.4	0
4000	9.3	9.3	10	0.5	-
5000	8.7	10.0	8	0.4	-
6300	9.2	10.8	8	0.4	-
8000	9.8	11.8	9	0.5	-
10000	10.8	11.8	10	0.4	-
IIC Rating	58	(Impact Insulation Class)		Sum of Deficiencies	26
LIIC Rating	60	(Low-Frequency Impact Insulation Class)			

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

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

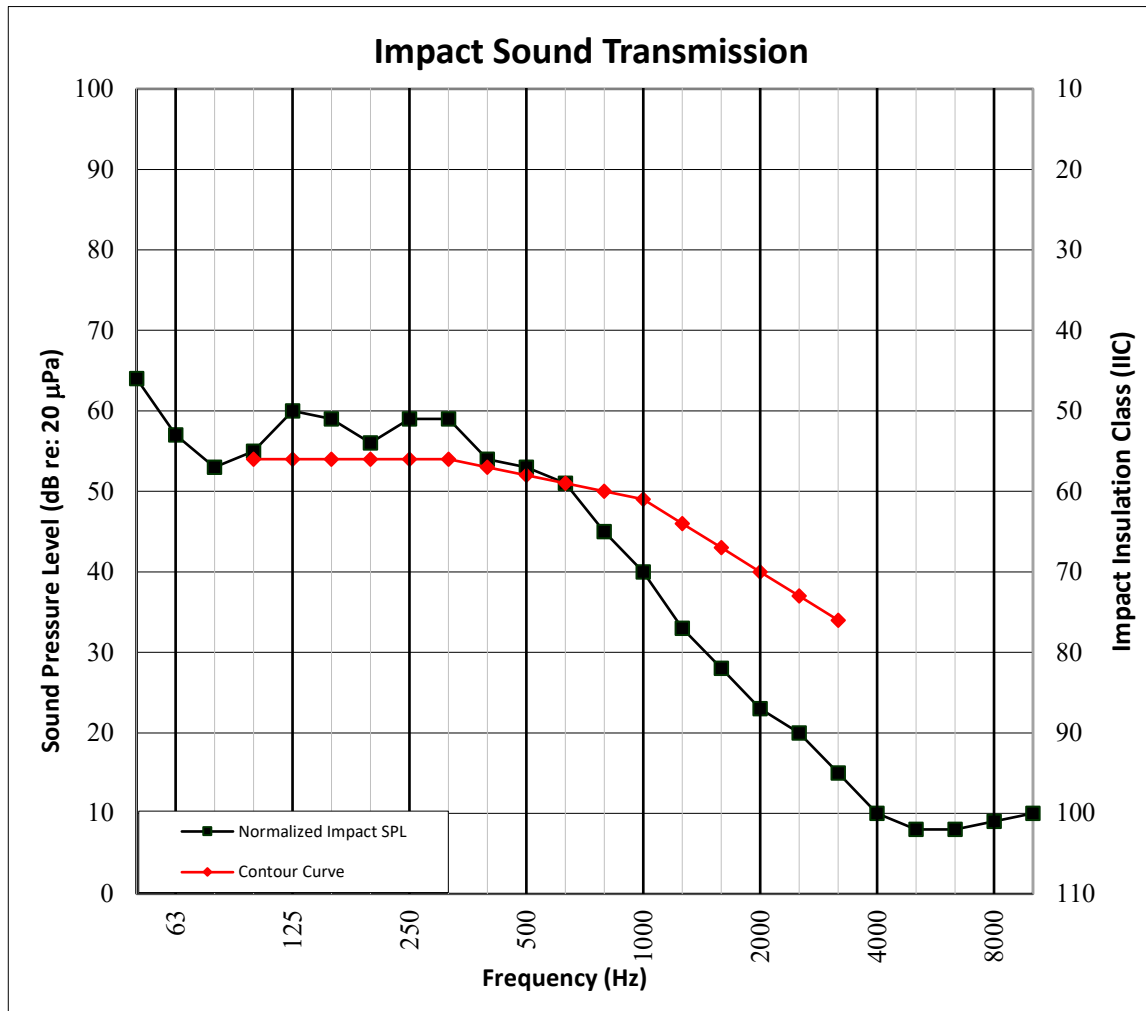
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SECTION 13

TEST RESULTS - IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck , 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	18.6°C (65.5°F)	Minimum Temp.	18.6°C (65.4°F)
TECHNICIAN	MSJK	Max. Humidity	75%	Min. Humidity	75%



TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 14

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION



TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck , 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	18.6°C (65.5°F)	Minimum Temp.	18.6°C (65.4°F)
TECHNICIAN	MSJK	Max. Humidity	75%	Min. Humidity	75%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION m ²	NORMALIZED IMPACT SPL (dB)	95% SAMPLE CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
400	20.1	8.2	54	0.6	6.3
500	20.4	7.4	53	0.3	5.6
630	21.4	7.2	51	0.3	4.7
800	23.7	7.0	45	0.2	0.4
1000	23.6	7.2	40	0.4	0.0
1250	22.6	7.2	33	0.6	0.0
1600	20.8	7.3	28	0.5	0.0
2000	18.4	7.8	23	0.4	0.0
2500	14.1	8.8	20	0.3	0.0
3150	11.4	9.2	15	0.4	0.0
HIIC Rating	63	(High-Frequency Impact Insulation Class)		Sum of Deficiencies	16.9

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

TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

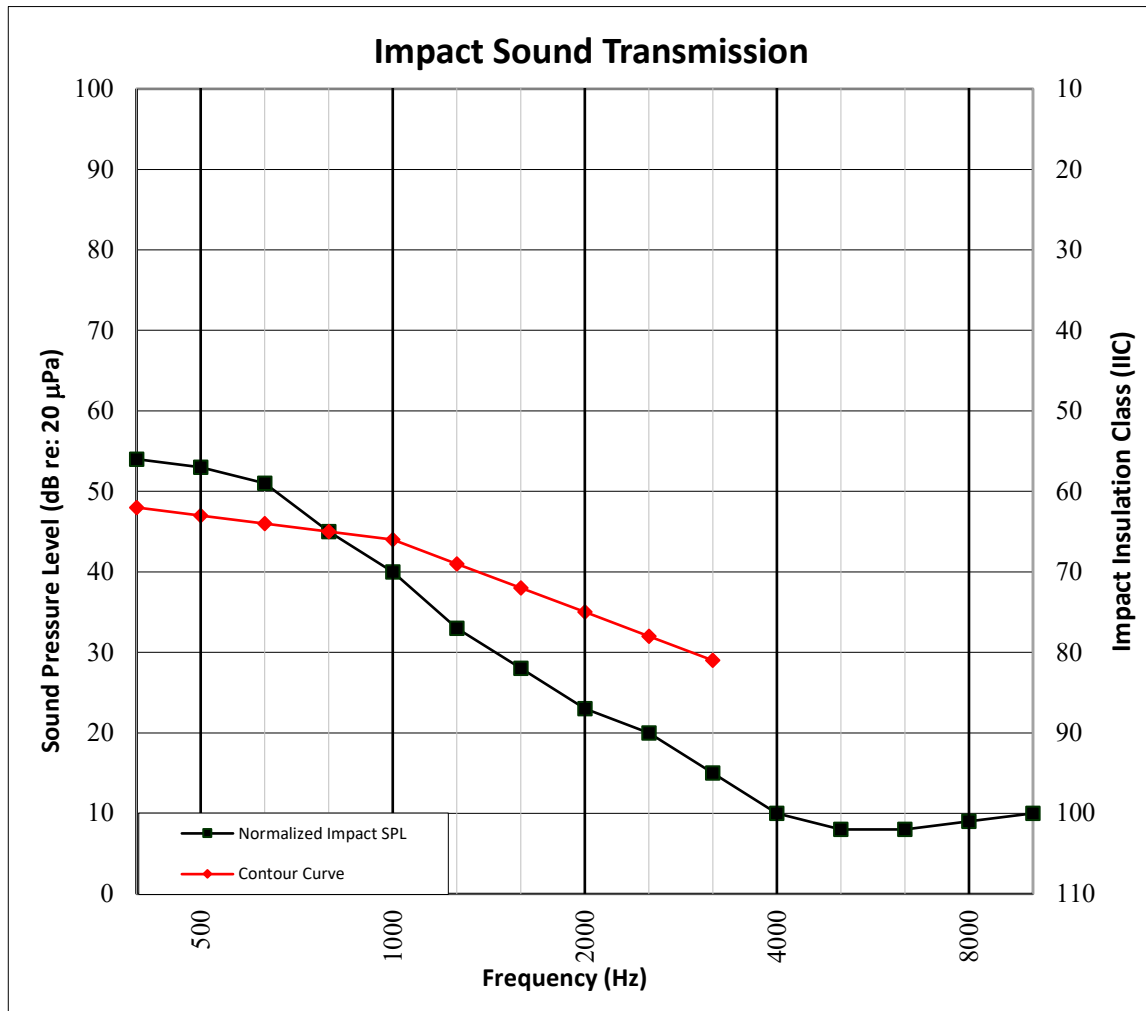
Date: 06/26/25

SECTION 15

TEST RESULTS - HIGH-FREQUENCY IMPACT SOUND TRANSMISSION GRAPH



TEST DATE	5/22/2025				
DATA FILE NO.	S2730.04				
CLIENT	Canam Steel Corporation				
DESCRIPTION	2 mm (0.08") Shaw Expo V3042/VPS48 Luxury Vinyl Tile, 1.5 mm (0.06") Shaw GroundWorks Acoustical Underlayment, 88.9 mm (3.5") Normal Weight Concrete, 33.34 mm (1.31") UFX 1 5/16" 24 Ga Form Deck , 355.6 mm (14") Vescom Composite Steel Joist by CSC, 22.3 mm (0.88") ClarkDietrich 087F125-18 Furring/Hat Channel, 15.9 mm (0.63") National Gypsum Type C Gypsum Panel				
SPECIMEN AREA	10.98 m ²	Maximum Temp.	18.6°C (65.5°F)	Minimum Temp.	18.6°C (65.4°F)
TECHNICIAN	MSJK	Max. Humidity	75%	Min. Humidity	75%



TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 16

PHOTOGRAPHS



Photo No. 1
Source Room View of Test Specimen Installation



Photo No. 2
Receive Room View of Test Specimen Installation



Total Quality. Assured.

130 Derry Court
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TEST REPORT FOR CANAM STEEL CORPORATION

Report No.: S2730.04-113-11-R0

Date: 06/26/25

SECTION 17

REVISION LOG

REVISION #	DATE	PAGES	DESCRIPTION
R0	06/26/25	N/A	Original Report Issue