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CLARKDIETRICH BUILDING SYSTEMS, LLC

ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A UL-V438, WALL SYSTEM

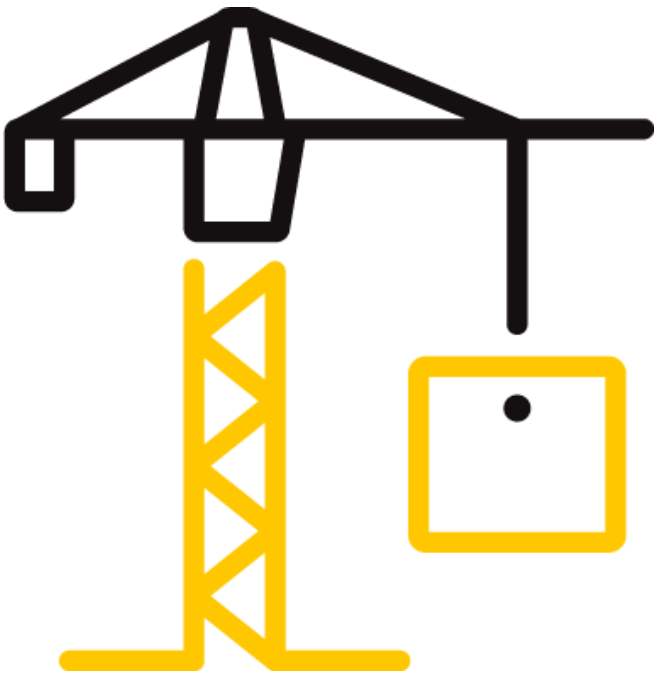
REPORT NUMBER
L3173.09-113-11-R0

TEST DATE
10/16/20

ISSUE DATE
01/05/21

PAGES
11

DOCUMENT CONTROL NUMBER
RT-R-AMER-Test-2758 (01/24/19)



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Report No.: L3173.09-113-11-R0
Date: 01/05/21

REPORT ISSUED TO

CLARKDIETRICH BUILDING SYSTEMS, LLC
9050 Centre Pointe Drive
West Chester, Ohio 45069

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by ClarkDietrich Building Systems, LLC to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test methods. The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT 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. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Zachary P. Golden	**REVIEWED BY:**	Kurt A. Golden
TITLE:	Technician Team Leader Acoustical Testing	**TITLE:**	Project Lead Acoustical Testing
SIGNATURE:	Digitally Signed by: Zachary Golden	**SIGNATURE:**	Digitally Signed by: Kurt A. Golden
DATE:	01/05/21	**DATE:**	01/05/21

ZPG:jmcs

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SECTION 2
SUMMARY OF TEST RESULTS

SERIES/MODEL	UL-V438
TYPE	Wall System
DATA FILE NO.	L3173.01F
INSULATION TYPE	R-13 Fiberglass Unfaced
STC	49
OITC	34

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

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

SECTION 4
SPECIMEN INSTALLATION

The specimen was constructed in the laboratory. A sound transmission loss test was initially performed on a filler wall. The 96" wide by 96" high specimen plug was removed from the filler wall assembly. The specimen was placed on an isolation pad in the test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing.

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SECTION 5
EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3*	04/20
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125*	05/20
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126*	05/20
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65968	01/20
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	09/20
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65103	03/20
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	03/20
Source Room Microphone	PCB piezotronics	378B20	Microphone and Preamplifier	64906	03/20
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	01/20
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64908	01/20
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	01/20
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	01/20
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65586	08/20
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	01/20
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	02/20
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/20

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

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m^3	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m^3	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

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SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Adam Shoemaker	ClarkDietrich Building Systems, LLC
Zachary Golden	Intertek B&C
Kurt Golden	Intertek B&C

SECTION 7
TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

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 receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

SECTION 8
ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating
To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating
The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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SECTION 9
SPECIMEN DESCRIPTION

SOURCE SIDE GYPSUM BOARD	One Layer 1/2" Type C
FURRING CHANNELS	25 Gauge (18 mil)
STUD TREATMENT	ClarkDietrich Sound Clip (CDSC)
STUDS	2-1/2" ProSTUD 25 (15 mil), 25-Gauge Equivalent Steel, 24" Centers
TRACK	2-1/2" ProTRAK 25 (15 mil), 25-Gauge Equivalent Steel
INSULATION	R-13 Fiberglass unfaced
RECEIVE SIDE GYPSUM BOARD	One Layer 1/2" Type C

MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
SOURCE SIDE GYPSUM BOARD	48 by 96	0.5	1/2" USG Sheetrock® Brand Firecode® C Panels (UL Type C)	2 sheets	2.00 lbs/ft^2
	Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.				
FURRING CHANNEL	2-23/32 by 96	0.002	7/8" Steel, 25 gauge (18 mil)	5 pieces	0.24 lbs/linear ft
	Note: Spaced on 24" centers perpendicular to studs, friction fit into clips.				
STUD TREATMENT	3 by 1-1/4	0.04	ClarkDietrich Sound Clip™ (CDSC)	15 pieces	0.13 lbs each
	Note: Used to attach furring channels. Clips spaced on 48" centers.				
STUD	1-1/4 by 96	2-1/2	ClarkDietrich ProSTUD® 25 (15 mil), Steel	5 pieces	0.28 lbs/linear ft
	Note: Spaced on 24" centers. Screwed to top and bottom track. Staggered 12" from receive side wall				
INSULATION	24 by 96	3.5	Johns Manville unfaced fiberglass batts	4 pieces	0.21 lbs/ft^2
	Note: Fiction fit				
RECEIVE SIDE GYPSUM BOARD	48 by 96	0.5	1/2" USG Sheetrock® Brand Firecode® C Panels (UL Type C)	2 sheets	2.00 lbs/ft^2
	Note: Screws spaced on 8" centers on edge and 12" centers in field. Perimeter and joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.				
TOP/ BOTTOM TRACK	1-1/4 by 96	2-1/2	ClarkDietrich ProTRAK® 25 (15 mil), Steel	2 pieces	0.32 lbs/linear ft

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TOTAL WEIGHT (lbs)	**AVERAGE WEIGHT** (lbs/ft^2)
297.31	4.65

Photographs are included in Section 11.

The client did not supply a report drawing of the test specimen.

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SECTION 10

TEST RESULTS

L3173.01F DATA

SPECIMEN AREA	5.95 m²	**RECEIVE TEMP.**	21.1 °C	**SOURCE TEMP**	21.0 °C
TECHNICIAN	Zachary Gol	**RECEIVE HUMIDITY**	51%	**SOURCE HUMIDIT**	49%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	40.8	6.2	106	87	19	1.90	-
100	32.4	5.9	107	86	22	2.06	-
125	36.8	6.7	107	81	25	1.33	8
160	38.2	5.7	111	78	33	0.93	3
200	35.2	5.1	110	73	38	0.78	1
250	31.1	5.5	107	65	42	0.76	0
315	25.4	5.8	109	60	49	0.53	0
400	25.0	6.3	110	58	52	0.82	0
500	20.3	6.3	109	55	54	0.48	0
630	21.2	6.1	107	54	53	0.27	0
800	17.6	6.3	107	50	56	0.29	0
1000	12.2	6.5	108	45	62	0.41	0
1250	13.0	7.0	107	42	65	0.48	0
1600	9.8	7.4	105	38	66	0.49	0
2000	8.1	8.0	106	41	63	0.29	0
2500	8.1	9.1	106	48	57	0.29	0
3150	7.6	10.7	105	44	58	0.15	0
4000	8.0	13.2	103	35	64	0.21	0
5000	8.8	16.8	103	29	69	0.35	-
STC RATING		49	*(Sound Transmission Class)*				
DEFICIENCIES		12	*(Sum of Deficiencies)*				
OITC RATING		34	*(Outdoor-Indoor Transmission Class)*				

Notes: *1) Receive Room levels less than 5 dB above the Background levels are red.*
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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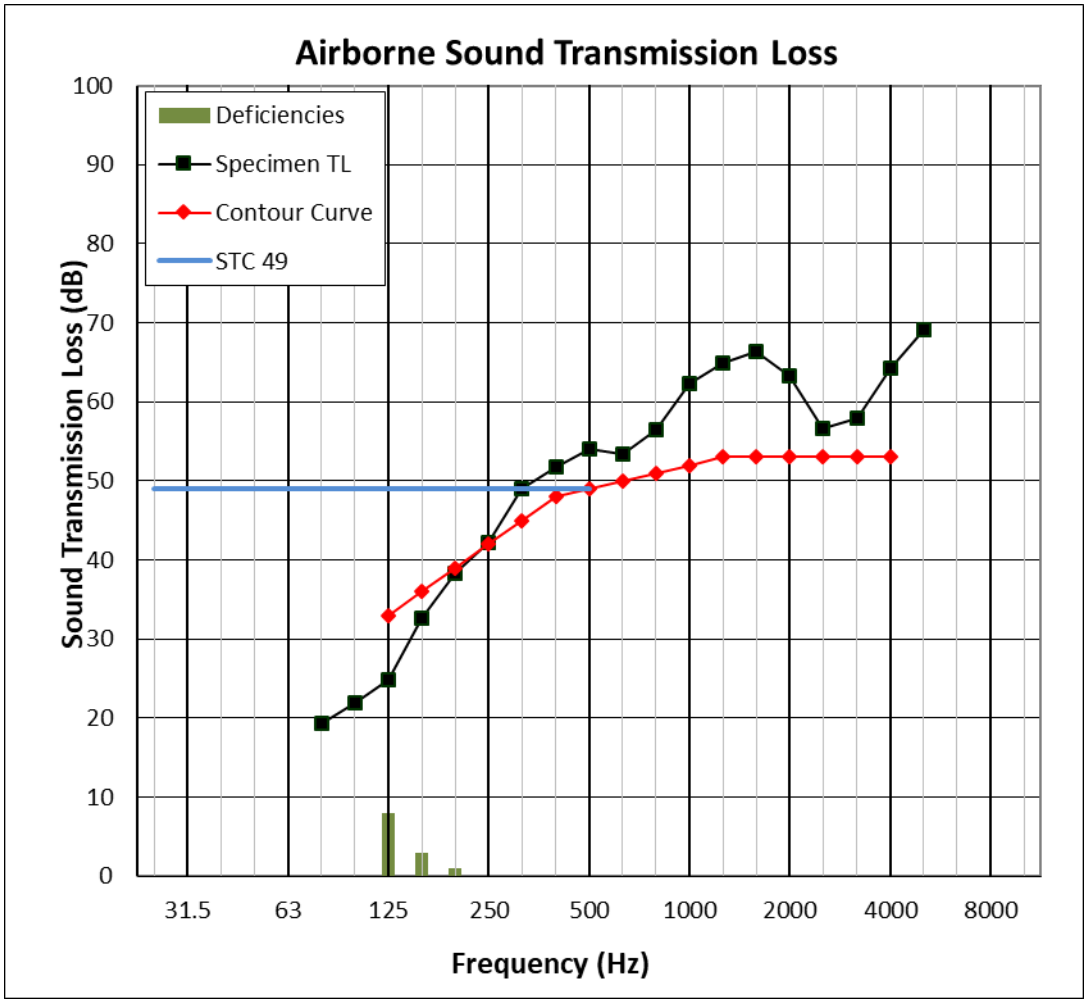
L3173.01F GRAPH



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SECTION 11
PHOTOGRAPHS

Photo No. 1
Receive Room View of Installed Specimen

Photo No. 2
Source Room View of Installed Specimen

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SECTION 12
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/05/21	N/A	Original Report Issue