

CLARKDIETRICH BUILDING SYSTEMS, LLC ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A UL-U344, WALL SYSTEM

REPORT NUMBER

L3173.19-113-11-R0

TEST DATE

10/21/20

ISSUE DATE

01/06/21

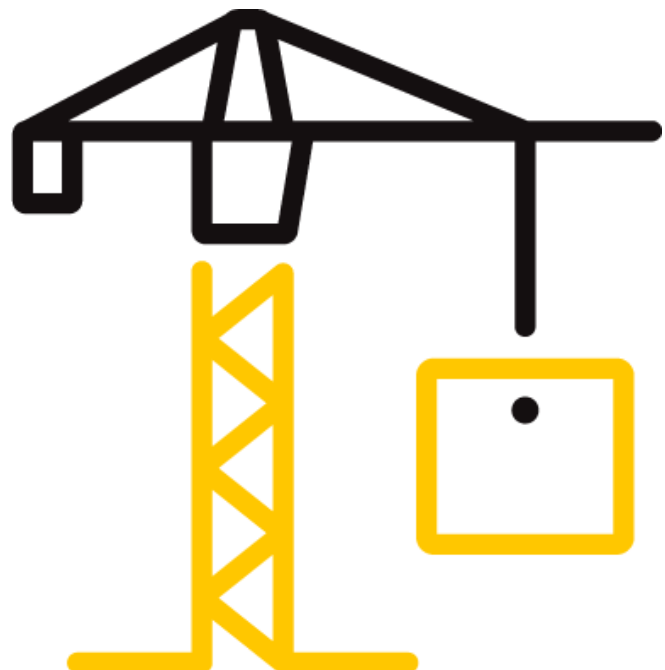
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DOCUMENT CONTROL NUMBER

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

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Report No.: L3173.19-113-11-R0

Date: 01/06/21

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:		SIGNATURE:	
DATE:	01/06/21	DATE:	01/06/21

ZPG:jmcs

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	UL-U344
TYPE	Wall System
DATA FILE NO.	L3173.01K
INSULATION TYPE	R-19 Fiberglass Unfaced
STC	57
OITC	41

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 5/8" Type X
FURRING CHANNELS	25 Gauge (18 mil)
STUD TREATMENT	ClarkDietrich Sound Clip (CDSC)
STUDS	2x4 Wood, 24" Centers
TRACK	2x4 Wood
INSULATION	R-19 Fiberglass unfaced
LATERAL BRACING	2x4 Wood
STRUCTURAL SHEATHING	One Layer 5/8" Plywood
RECEIVE SIDE GYPSUM BOARD	One Layer 5/8" Type X

MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
SOURCE SIDE GYPSUM BOARD	48 by 96	0.625	5/8" USG Sheetrock® Brand Firecode® X Panels (UL Type SCX)	2 sheets	2.20 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.</i>				
FURRING CHANNEL	2-23/32 by 96	0.002	7/8" Steel, 25 gauge (18 mil)	5 pieces	0.24 lbs/linear ft
	<i>Note: Spaced on 24" centers perpendicular to studs, friction fit into clips.</i>				
STUD TREATMENT	3 by 1-1/4	0.04	ClarkDietrich Sound Clip™ (CDSC)	17 pieces	0.13 lbs each
	<i>Note: Used to attach furring channels. Clips spaced on 48" centers.</i>				
STUD	1-1/2 by 93	3-1/2	Wood	5 pieces	1.13 lbs/linear ft
	<i>Note: Spaced on 24" centers. Screwed to top and bottom track.</i>				
INSULATION	23-1/2 by 93	6	Johns Manville unfaced fiberglass batts	4 pieces	0.28 lbs/ft ²
	<i>Note: Fiction fit.</i>				
LATERAL BRACING	1-1/2 by 23.5	3.5	Wood	4 pieces	1.13 lbs/linear ft
	<i>Note: Screwed to studs at the horizontal mid-point</i>				
STRUCTURAL SHEATHING	48 by 96	0.625	5/8" Plywood	2 sheets	1.34 lbs/ft ²
	<i>Note: Screws spaced on 6" centers on edge and 12" centers in field. Perimeter and joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.</i>				

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MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
RECEIVE SIDE GYPSUM BOARD	48 by 96	0.625	5/8" USG Sheetrock® Brand Firecode® X Panels (UL Type SCX)	2 sheets	2.20 lbs/ft ²
	<i>Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and foil tape. Screw heads sealed with foil tape.</i>				
TOP/ BOTTOM TRACK	1-1/2 by 96	3-1/2	Wood	2 pieces	1.13 lbs/linear ft

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
510.60	7.98

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

L3173.01K DATA

SPECIMEN AREA	5.95 m ²	RECEIVE TEMP.	22.3 °C	SOURCE TEMP	22.0 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	55%	SOURCE HUMIDIT	56%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	35.2	6.2	107	81	26	2.27	-
100	32.7	6.2	108	79	29	2.16	-
125	34.6	6.4	106	73	33	1.38	8
160	39.5	5.7	111	69	41	0.73	3
200	38.3	5.1	110	66	45	0.71	2
250	31.2	5.4	107	60	47	0.76	3
315	25.2	5.7	108	55	53	0.42	0
400	22.3	6.1	110	55	55	0.78	1
500	18.9	6.4	109	52	57	0.35	0
630	20.3	6.1	107	49	58	0.32	0
800	19.2	6.4	106	46	60	0.21	0
1000	16.9	6.6	108	42	65	0.37	0
1250	12.5	7.2	107	37	70	0.21	0
1600	10.9	7.4	105	33	71	0.21	0
2000	12.5	8.0	106	39	65	0.30	0
2500	8.9	8.9	106	39	65	0.33	0
3150	9.8	10.3	104	31	71	0.18	0
4000	9.6	12.6	103	24	76	0.25	0
5000	10.4	15.8	103	16	84	0.64	-
STC RATING	57		<i>(Sound Transmission Class)</i>				
DEFICIENCIES	17		<i>(Sum of Deficiencies)</i>				
OITC RATING	41		<i>(Outdoor-Indoor Transmission Class)</i>				

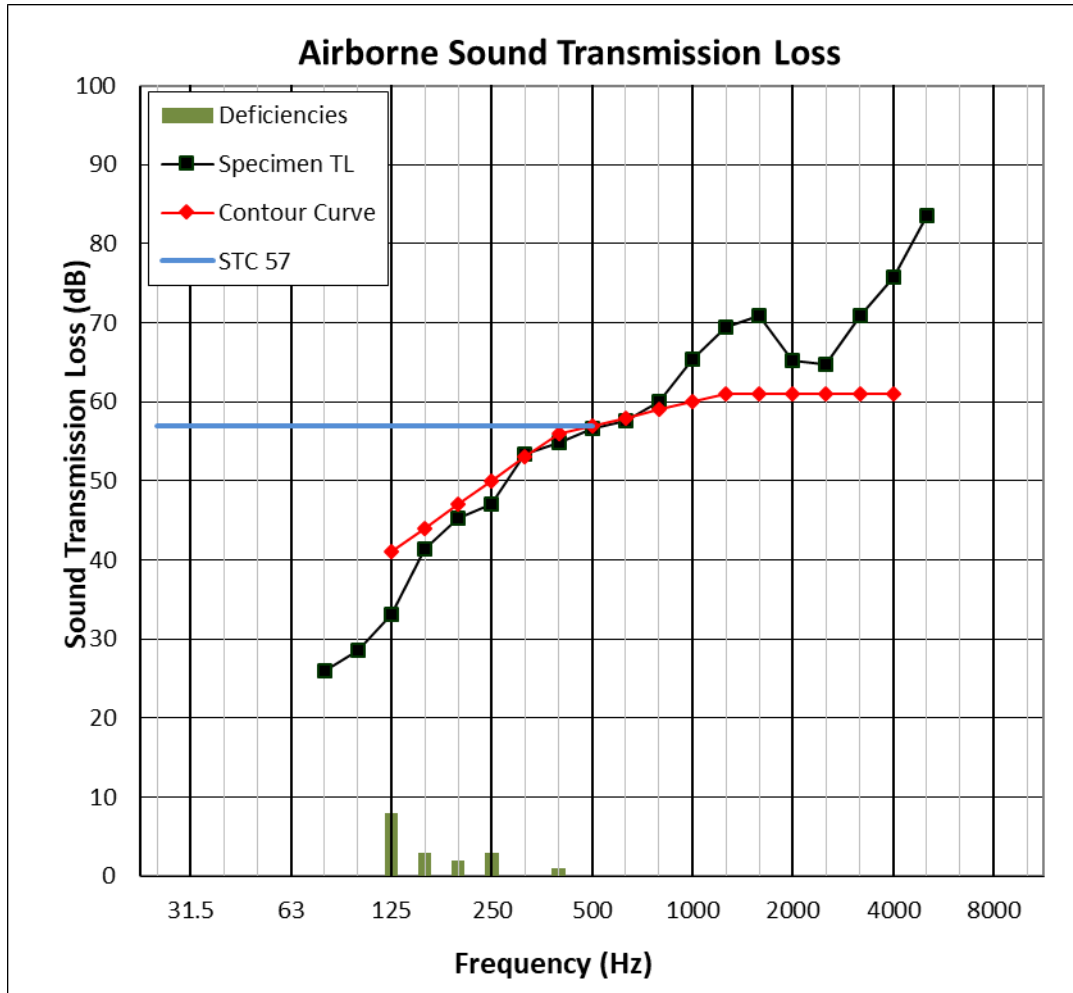
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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L3173.01K 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



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/06/21	N/A	Original Report Issue