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CALIFORNIA EXPANDED METAL COMPANY (CEMCO) ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A WALL SYSTEM WITH 3-5/8" STEEL STUDS SPACED 16"OC WITH RC1-XD RESILIENT CHANNEL ON INTERIOR SPACED 24" OC, ONE LAYER 5/8" USG TYPE X SOURCE (SCREW SPACING 8" ON PERIMETER 12" IN THE FIELD)/ONE LAYER 5/8" USG TYPE X RECEIVE (SCREW SPACING 12"OC)

REPORT NUMBER
M0016.01-303-11-R1

TEST DATE
03/03/21

ISSUE DATE **REVISION DATE**
03/22/21 08/02/22

PAGES
11

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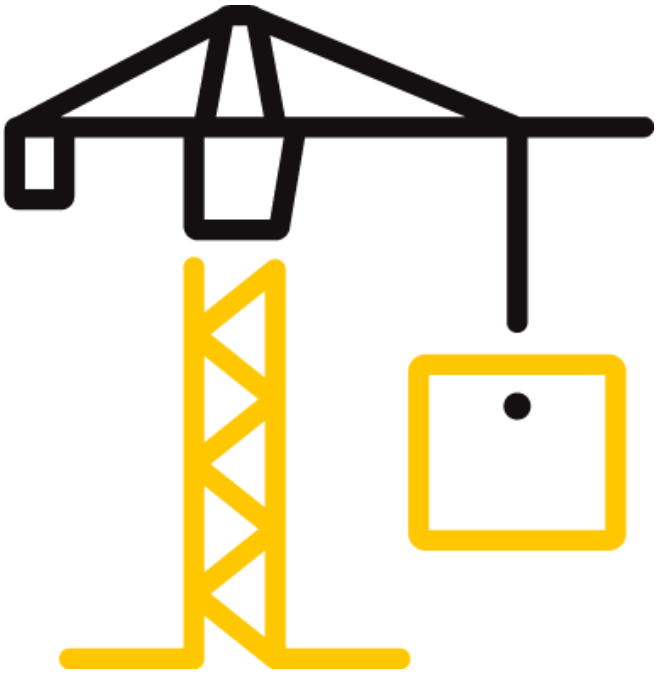
RT-R-AMER-Test-2758 (01/17/21)



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TEST REPORT FOR CALIFORNIA EXPANDED METAL COMPANY (CEMCO)
Report No.: M0016.01-303-11-R1
Revision 1 Date: 08/02/22 Date: 03/22/21

REPORT ISSUED TO
CALIFORNIA EXPANDED METAL COMPANY (CEMCO)
13191 Crossroads Parkway North, Suite 325
City of Industry, California 91746

SECTION 1
SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by California Expanded Metal Company (CEMCO) 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 Lake Forest, California.

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.

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.

For INTERTEK B&C:

COMPLETED BY:	Marco T. Santa Rosa	**REVIEWED BY:**	Todd D. Kister
TITLE:	Technician Acoustical Testing	**TITLE:**	Regional Manager Acoustical Testing
SIGNATURE:	Marco T. Santa Rosa Digitally Signed for: Marco T. Santa Rosa by Janine Sobell	**SIGNATURE:**	Todd D. Kister Digitally Signed by: Todd D. Kister
DATE:	08/02/22	**DATE:**	08/02/22

MTS/LSH:jmcs

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SECTION 2
SUMMARY OF TEST RESULTS

TYPE	Wall System
DESCRIPTION	3-5/8" Steel Studs spaced 16"OC with RC1-XD Resilient Channel on Interior spaced 24" OC, One Layer 5/8" USG Type X Source (screw spacing 8" on perimeter 12" in the field)/One Layer 5/8" USG Type X Receive (screw spacing 12"OC)
DATA FILE NO.	M0016.01
STC	51
OITC	31

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 a 168" wide by 120" high by 12" deep steel frame test opening. Dense neoprene foam (3/8" thick by 3" wide) was adhered to the steel frame perimeter. Top and bottom plates and end studs were placed over the foam and fastened to the steel frame by TEK screws (3" long) with isolation washers.

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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	PXIe-4464	Data Acquisition Card	INT00392	10/19
Data Acquisition Card*	National Instruments	PXIe-4464	Data Acquisition Card	INT00394	10/19
Data Acquisition Card*	National Instruments	PXIe-4464	Data Acquisition Card	INT00395	09/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00234	04/20
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00235	04/20
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00236	04/20
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00237	04/20
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT00238	04/20
Receive Room Microphone	PBC Piezotronics	378C20	Microphone and Preamplifier	INT00229	04/20
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00230	04/20
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT01542	04/20
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00232	04/20
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00233	04/20
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00299	07/20
Source Room Environmental Indicator	Comet	T7510	Source Room	INT00300	07/20
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	INT00288	10/20

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

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	231 m³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	196 m³	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
Marco Santa Rosa	Intertek B&C
Leeland Hoover	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

GYPSUM BOARD	One Layer USG 5/8" Type X
STUDS	3-5/8" Steel, 16" Centers
INSULATION	R-13 Fiberglass
RESILIENT CHANNEL	CEMCO RC1-XD
GYPSUM BOARD	One Layer USG 5/8" Type X

MATERIAL	ACTUAL DIMENSIONS (inches)	ACTUAL THICKNESS (inches)	MANUFACTURER AND SERIES	QUANTITY	AVERAGE WEIGHT
GYPSUM BOARD	48 by 120	0.625	USG Type X	3.5 sheets	2.1 lbs/ft^2
	Note: Screws spaced 8" OC on the perimeter and 12" OC in the field. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.				
STUD	2 by 120	3.6	CEMCO 362 VS125-18MIL (0.018")	11 pieces	0.5 lbs/linear ft
	Note: Spaced on 16" centers. Screwed to top and bottom plates.				
INSULATION	16 by 120	3.5	R-13 Fiberglass	11 batts	0.25 lbs/ft^2
	Note: N/A				
RESILIENT CHANNEL	2 by 168	0.027	CEMCO RC1-XD	6 pieces	0.30 lbs/linear ft
	Note: Spaced on 24" vertical centers.				
GYPSUM BOARD	48 by 120	0.625	USG Type X	3.5 sheets	2.1 lbs/ft^2
	Note: Screws spaced on 12" centers. Perimeter and joints sealed with acoustical sealant and duct tape. Screw heads sealed with duct tape.				
TOP PLATES	2 by 168	3.6	CEMCO 362VT125-18MIL	1 piece	0.44 lbs/linear ft
	Note: N/A				
BOTTOM PLATES	2 by 168	3.6	CEMCO 362VT125-18MIL	1 piece	0.44 lbs/linear ft
	Note: N/A				

N/A-Not Applicable

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TOTAL WEIGHT (lbs)	**AVERAGE WEIGHT** (lbs/ft^2)
725.52	5.18

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

ASTM E90
AIRBORNE SOUND TRANSMISSION LOSS

IAS ACCREDITED Testing Laboratory

TEST DATE	03/03/21				
DATA FILE NO.	M0016.01				
CLIENT	California Expanded Metal Company (CEMCO)				
DESCRIPTION	3-5/8" Steel Studs spaced 16"OC with RC1-XD Resilient Channel on Interior spaced 24" OC, One Layer 5/8" USG Type X Source (screw spacing 8" on perimeter 12" in the field) / One Layer 5/8" USG Type X Receive (screw spacing 12"OC)				
SPECIMEN AREA	13.01 m²	**RECEIVE TEMP.**	18.5 °C	**SOURCE TEMP**	18.2 °C
TECHNICIAN	Marco T San	**RECEIVE HUMIDITY**	43%	**SOURCE HUMIDITY**	44%

FREQ (Hz)	**BACKGROUND SPL** (dB)	**ABSORPTION** (m²)	**SOURCE SPL** (dB)	**RECEIVE SPL** (dB)	**SPECIMEN TL** (dB)	**95% CONFIDENCE LIMIT**	**NUMBER OF DEFICIENCIES**
80	36.1	8.5	101	89	13	1.85	-
100	34.3	6.0	101	86	18	1.11	-
125	44.7	5.5	102	78	28	0.99	7
160	43.9	5.1	103	73	34	0.88	4
200	37.0	6.2	106	71	39	0.60	2
250	28.6	6.9	107	65	44	0.61	0
315	29.4	7.1	106	59	49	0.46	0
400	34.0	5.9	106	56	53	0.60	0
500	21.3	5.3	106	54	56	0.60	0
630	19.5	5.7	106	51	59	0.32	0
800	22.7	5.8	105	47	62	0.22	0
1000	14.4	6.0	107	47	63	0.36	0
1250	13.2	6.1	105	45	63	0.28	0
1600	7.9	6.7	103	46	60	0.18	0
2000	6.3	8.2	101	55	48	0.27	7
2500	5.9	9.4	101	55	47	0.20	8
3150	5.8	10.9	100	50	51	0.14	4
4000	5.8	13.7	97	41	56	0.22	0
5000	6.2	17.9	93	32	59	0.35	-
STC RATING		51	*(Sound Transmission Class)*				
DEFICIENCIES		32	*(Sum of Deficiencies)*				
OITC RATING		31	*(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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ASTM E90
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IAS ACCREDITED Testing Laboratory

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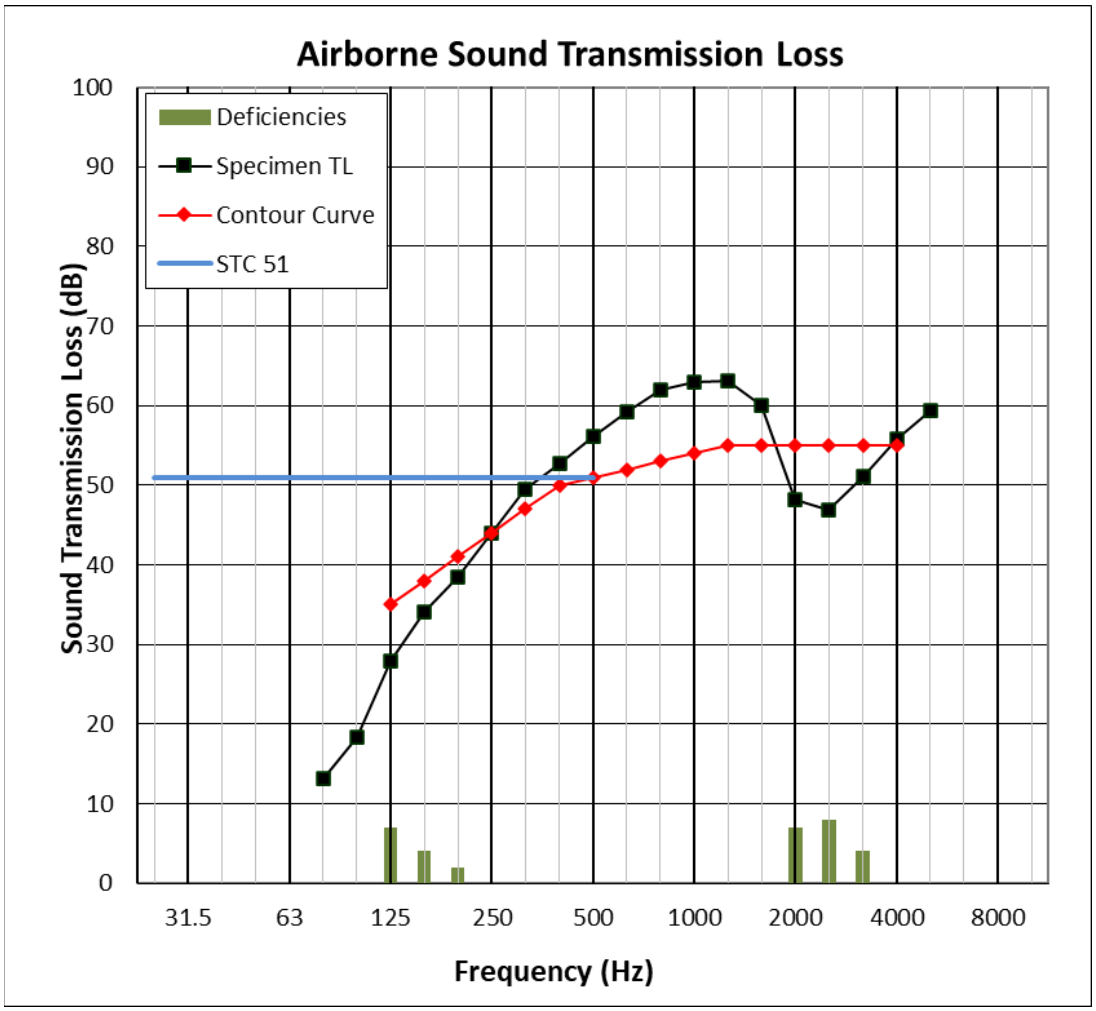

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SECTION 11

PHOTOGRAPHS

Photo No. 1
Source Room View of Test Specimen

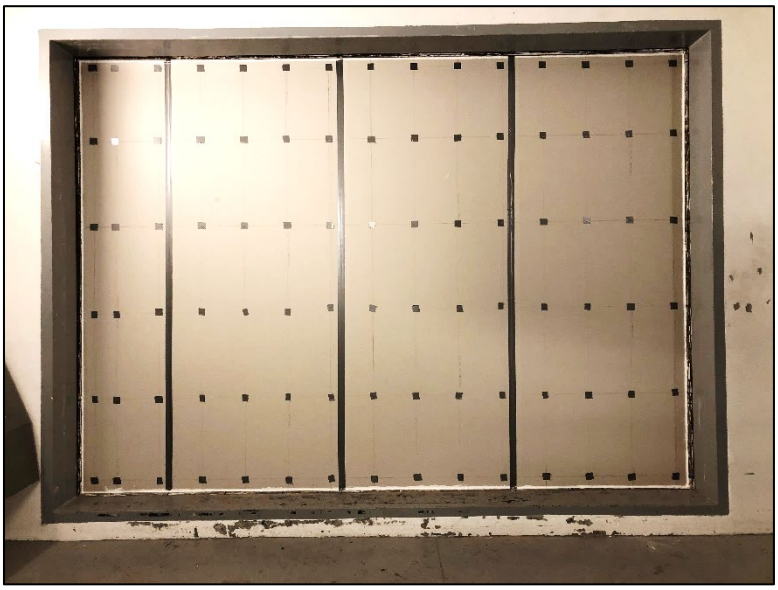

Photo No. 2
Receive Room View of Test Specimen

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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/22/21	N/A	Original Report Issue
1	08/02/22	1, 3, 8, 9	Corrected resilient channel spacing
1	08/02/22	1, 3	Changed Series/Model to Description