



NORTH ORBIT

ACOUSTIC LABORATORIES

REPORT NUMBER	NOAL 26-02030
TEST METHOD	ASTM E90-23: Standard Test Method for Laboratory Measurement of Airborne Sound Transmission of Building Partitions and Elements
TEST SPONSOR	CEMCO®, 13191 Crossroads Pkwy N., Ste 325, City of Industry, CA 91746
ISSUED TO	CEMCO®, 13191 Crossroads Pkwy N., Ste 325, City of Industry, CA 91746
TEST SPECIMEN	Wall Assembly
RESULT SUMMARY	STC 59
TEST DATE	February 11, 2026
REPORT DATE	April 21, 2026
TEST SITE	North Orbit Acoustic Laboratory Facility, 917 Rice Street, Saint Paul, MN 55117
TECHNICIAN	D. Berg

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DAVID M. BERG – LABORATORY MANAGER

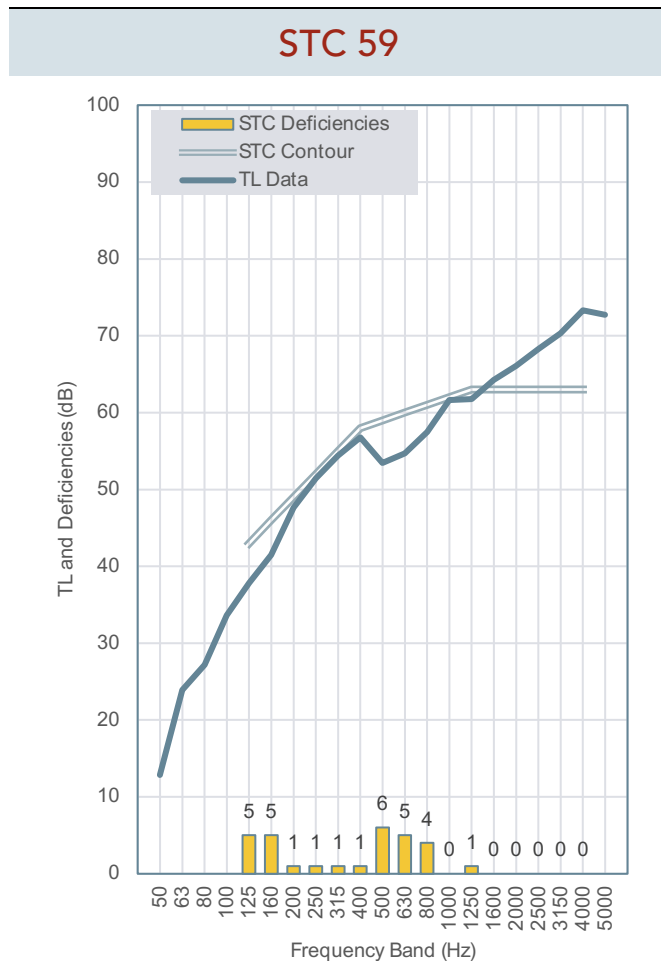
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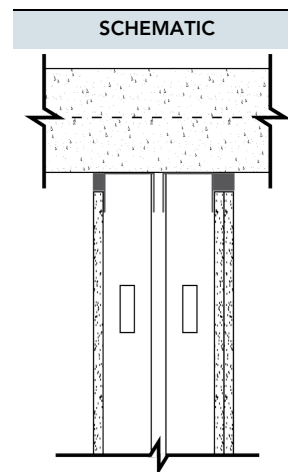


SECTION A – DATA SUMMARY



FREQUENCY (Hz)	TL (dB)	DEFICIENCIES (dB)
50	13	-
63	24	-
80	27	-
100	34	-
125	38	5
160	41	5
200	48	1
250	51	1
315	54	1
400	57	1
500	53	6
630	55	5
800	57	4
1,000	62	0
1,250	62	1
1,600	64	0
2,000	66	0
2,500	68	0
3,150	70	0
4,000	73	0
5,000	73	-
TOTAL DEFICIENCIES		30

ELEMENTS	FROM SOURCE ROOM SIDE TO RECEIVING ROOM SIDE
Composite	2-1/2" lightweight concrete
Floor	3" composite metal deck
Assembly	bare mineral fiber flute fill (33% compressed)
Joint Seal	CEMCO SMOKE & SOUND STOP BLUE (SSSB)
Sheathing	5/8" Type X gypsum panels; #6 x 1" type S screws spaced 16" OC
Framing	7/8" x 7/8" internal lateral bracing
Framing	double row 2-1/2" CEMCO 33 mil steel slotted top track
Framing	double row 2-1/2" CEMCO ViperStud® 18 mil steel studs spaced 24" OC
Framing	double row 2-1/2" CEMCO ViperTrack® 18 mil steel tracks
Insulation	double layer 2-1/2" unfaced glass fiber batt insulation (R8)
Sheathing	5/8" Type X gypsum panels; #6 x 1" type S screws spaced 16" OC
Sheathing	5/8" Type X gypsum panels; #6 x 1-5/8" type S screws spaced 12" OC
Joint Seal	CEMCO SMOKE & SOUND STOP BLUE (SSSB)



See Section C on page 4 and 5 for a full specimen description.



SECTION B – APPROACH

INSTALLATION

The specimen is a wall assembly that was originally constructed on February 11, 2026, at the Saint Paul, MN, acoustic laboratory facility. The assembly and building element descriptions can be found in Section C on pages 4 & 5 of this report.

Qualified representatives from North Orbit Acoustic Laboratories observed or performed the installation and inspected all major building elements when completed and prior to testing.

TEST METHODS

North Orbit Acoustic Laboratory (NOAL) is accredited through A2LA certificate number 4240.01 for this test method.

Test methods follow the published standards listed below.

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

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

All results reported herein were derived from tests performed in full accordance with the test method ASTM E90. The laboratory and measurement systems fully meet all requirements of the test standard and ASTM E90 Annex A2: Qualification of room sound fields and microphone systems used for sampling. All values stated are derived from single-direction transmission loss measurements.

The standard deviation of reproducibility is stated in ASTM E90 as <2 dB for frequencies from 125 Hz to 4 kHz. Detailed test procedures for this test method, the flanking limit report, repeatability measurements, and reference specimen tests are available upon request.

The Sound Transmission Class (STC) value was obtained by applying the Transmission Loss (TL) values to the STC reference contour of ASTM E413, which was used to calculate a single number rating.

FILLER WALL

A high-transmission-loss filler wall was constructed to fully occupy the 12' x 8' test opening. The assembly consisted of two individual decoupled 3-5/8" 33-mil steel stud frames separated by an airspace, with studs spaced 24" OC. Glass fiber batt insulation was friction-fit in each stud cavity of both frames. A single layer of 1-3/8" constrained-layer-damped gypsum panels was applied directly to the exterior face of each frame. The completed filler wall had an overall thickness of 15". The assembly was tested, and the results were retained for composite wall corrections. The filler wall was subsequently modified to create a decoupled opening for the test specimen in accordance with ASTM E90 Annex A3, *Procedures for Dealing with Specimens Smaller than the Test Opening*.

TEST REPORTS

This report does not constitute certification of the assembly or test item nor an opinion or endorsement by this laboratory. The report applies only to the specimen tested and may not be reproduced, except in full, without the permission of the client or test sponsor. It is the exclusive property of the test sponsor so named herein.

CONFIDENTIALITY

The test sponsor has full control over this information. Any release of information will be only to the test sponsor. The specific testing results are deemed confidential and are to be used exclusively by the test sponsor. Reproduction of this report, except in full, is prohibited.



SECTION C – SPECIMEN DESCRIPTION

The test sponsor supplied steel framing, SMOKE & SOUND STOP BLUE (SSSB), and the mineral fiber flute filler. All other materials were purchased through regional retail or wholesale channels.

COMPOSITE FLOOR ASSEMBLY

The composite floor assembly was constructed on February 9, 2026, and was retained from previous tests in the series.

A sample composite floor assembly consisting of a composite metal deck and a poured concrete slab was installed at the top of the specimen opening. The composite floor assembly measured 102" x 11.25" x 5.5" and was supported by two filler wall sections and a center anchor point for the non-load-bearing wall assembly constructed below. The three sections of 20-gauge composite metal deck profile with rolled-in embossments measured 36" x 11-1/4" x 3" high. A slab made of lightweight concrete was poured into the 3" metal deck to the depth of a 2.5" topping in March 2025 and allowed to cure. The trapezoidal flutes of the deck profile were filled with 33% compressed bare mineral fiber safing (nom. 4 PCF).

The sides and top, concrete edge of the head of wall was sealed to the specimen opening with non-hardening acoustic sealant and 7/8" dense putty tape. The notches in the bottom flange of the fluted deck were packed with mineral fiber insulation.

FRAMING

Framing was constructed on February 11, 2026, and was retained for subsequent tests in the series.

A double steel stud frame was constructed within the perimeter of the laboratory test specimen opening. The frame consisted of two rows of 33 mil designated thickness (20 ga.) 2-1/2" x 3" steel slotted top track, two rows of 2-1/2" x 1-1/4" 18 mil designated thickness bottom track, and two rows of 18 mil designated thickness 2-1/2" x 1-1/4" steel studs installed vertically, spaced 24" on centers (OC). The studs in each row were offset 12", resulting in six studs on the source side and five studs on the receiving side. Each row of studs was separated by a 1" air space. The sides and bottom perimeter of the frame was sealed at the specimen opening with non-hardening acoustic sealant.

Top Track: CEMCO 250CST300-33 20 GA 33 KSI
Bottom Track: CEMCO 250VT125-18 NS 33 KSI
Studs: CEMCO 250VS125-18 NS 33 KSI

LATERAL BRACING

Lateral bracing was installed mid-height. The lateral-bracing was 33 mil designated thickness 7/8" x 7/8" steel V-channels. The V-channels were fed through the mid-height stud knockouts and seated in place with the pre-notched slots.

INSULATION

Glass fiber insulation batts were friction fit into the stud cavities, resulting in two layers of batts. Six batts were 24" wide, two batts at 12" wide and 2-1/2" thick with an R-Value of R-8.

SHEATHING

Side: One layer of 5/8" Type X gypsum panels were applied parallel to the studs. The panels were attached to the frame with #6 x 1" type S drywall screws, spaced 16" OC, except at the top track, where no fasteners were used.

Receiving Side: Two layers of gypsum panels were applied to the framing.

Base layer: 5/8" Type X gypsum panels were applied parallel to the studs. The panels were attached to the frame with #6 x 1" type S drywall screws, spaced 16" OC, except at the top track, where no fasteners were used.

Face layer: 5/8" Type X gypsum panels were applied parallel to the studs. The panels were attached to the frame with #6 x 1-5/8" type S drywall screws, spaced 12" OC, except at the top track, where no fasteners were used. Joints were staggered one stud cavity to offset each layer.

All fasteners in the assembly were mechanically installed.



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SECTION C – SPECIMEN DESCRIPTION, CONT.

The panels were shimmed at installation so equal 1/4" gaps were maintained along the vertical perimeter and a 3/8" gap at the bottom perimeter. Shims were removed after the panels were fastened, and the specimen bottom and sides were sealed on the source and receiving room bottom and sides with non-hardening acoustical sealant and 7/8" dense putty tape.

JOINT SEAL (TOP)

The 3/4" joint above the drywall of both sides of the specimen was sealed to the bottom of the fluted deck with CEMCO SMOKE & SOUND STOP BLUE (SSSB) at the head of wall. SMOKE & SOUND STOP BLUE (SSSB) is a compressible foam that allows movement for dynamic joint applications. The joint products were friction fit in the joint gap on each side of the specimen.

SPECIMEN DETAIL

Specimen Face Dimensions	8.00' [2.44 m] x 8.00' [2.44 m]
Specimen Thickness	7.88" [20.0 cm]
Specimen Face Area	64.0 SF [5.95 m²]
Overall Mass	807 lb [366 kg]
Overall Surface Density	12.6 PSF [61.6 kg/m²]

Mass of fasteners, tape, and sealant is not represented in the above totals.

Photo of source side of specimen



Photo of receiving side of specimen



SECTION C – SPECIMEN DESCRIPTION (CONT.)

COMPOSITE FLOOR ASSEMBLY			
Material	lightweight concrete	Mass	317 lb [144 kg]
Dimensions	2.50" x 11.25" x 102.25" [6.4 cm x 28.6 cm x 259.7 cm]	Quantity	1.0000
		Unit Mass	317 lb [144 kg]
Material	composite metal deck	Mass	16.0 lb [7.26 kg]
Dimensions	3.00" x 11.75" x 36.00" [7.6 cm x 29.8 cm x 91.4 cm]	Quantity	3.000
		Unit Mass	5.33 lb [2.42 kg]
Material	bare mineral fiber flute fill	Mass	4.73 lb [2.14 kg]
Dimensions	3.00" x 5.00" x 7.00" x 7.88" [7.6 cm x 12.7 cm x 17.8 cm x 20.0 cm]	Quantity	8.000
		Unit Mass	0.591 lb [0.268 kg]
JOINT SEAL (TOP)			
Material	CEMCO SMOKE & SOUND STOP BLUE (SSSB)	Mass	0.0800 lb [0.0363 kg]
Dimensions	1.00" x 0.50" [2.5 cm x 1.3 cm]	Net Length	8.00' [2.44 m]
Lengths	1 @ 96.00" [243.8 cm]	Linear Density	0.01000 lb/ft [0.0149 kg/m]
SHEATHING SOURCE SIDE			
Material	Type X gypsum panels	Mass	136 lb [61.7 kg]
Thickness	0.63" [1.6 cm]	Net Area	60.5 SF [5.62 m ²]
Face Dimensions	1 @ 48.00" x 90.75" [121.9 cm x 230.5 cm] 1 @ 36.00" x 90.75" [91.4 cm x 230.5 cm] 1 @ 12.00" x 90.75" [30.5 cm x 230.5 cm]	Surface Density	2.25 PSF [11.0 kg/m ²]
FRAMING			
Material	internal lateral bracing	Mass	5.00 lb [2.27 kg]
Steel Thickness	0.0330" [838 µm]	Net Length	14.5' [4.42 m]
Dimensions	0.88" x 0.88" [2.2 cm x 2.2 cm]	Linear Density	0.345 lb/ft [0.513 kg/m]
Lengths	3 @ 50.00" [127.0 cm] 1 @ 24.00" [61.0 cm]		
FRAMING			
Material	CEMCO steel slotted top track	Mass	8.00 lb [3.63 kg]
Steel Thickness	0.0330" [838 µm]	Net Length	16.0' [4.88 m]
Dimensions	2.50" x 3.00" [6.4 cm x 7.6 cm]	Linear Density	0.500 lb/ft [0.744 kg/m]
Lengths	2 @ 96.00" [243.8 cm]		



SECTION C – SPECIMEN DESCRIPTION (CONT.)

FRAMING			
Material	CEMCO ViperStud® 18 mil steel studs	Mass	28.0 lb [12.7 kg]
Steel Thickness	0.0188" [478 µm]	Net Length	83.4' [25.4 m]
Dimensions	2.50" x 1.25" [6.4 cm x 3.2 cm]	Linear Density	0.336 lb/ft [0.500 kg/m]
Lengths	11 @ 91.00" [231.1 cm]		
FRAMING			
Material	CEMCO ViperTrack® 18 mil steel tracks	Mass	5.00 lb [2.27 kg]
Steel Thickness	0.0188" [478 µm]	Net Length	16.0' [4.88 m]
Dimensions	2.50" x 1.25" [6.4 cm x 3.2 cm]	Linear Density	0.313 lb/ft [0.465 kg/m]
Lengths	2 @ 96.00" [243.8 cm]		
INSULATION			
Material	unfaced glass fiber batt insulation	Mass	17.0 lb [7.71 kg]
Thickness	2.50" [6.4 cm]	Net Volume	22.4 CF [0.633 m³]
Face Dimensions	6 @ 24.00" x 92.00" [61.0 cm x 233.7 cm] 2 @ 12.00" x 92.00" [30.5 cm x 233.7 cm]	Density	0.760 PCF [12.2 kg/m³]
SHEATHING RECEIVING SIDE BASE LAYER			
Material	Type X gypsum panels	Mass	135 lb [61.2 kg]
Thickness	0.63" [1.6 cm]	Net Area	60.5 SF [5.62 m²]
Face Dimensions	1 @ 48.00" x 90.75" [121.9 cm x 230.5 cm] 2 @ 24.00" x 90.75" [61.0 cm x 230.5 cm]	Surface Density	2.23 PSF [10.9 kg/m²]
SHEATHING RECEIVING SIDE FACE LAYER			
Material	Type X gypsum panels	Mass	135 lb [61.2 kg]
Thickness	0.63" [1.6 cm]	Net Area	60.5 SF [5.62 m²]
Face Dimensions	2 @ 48.00" x 90.75" [121.9 cm x 230.5 cm]	Surface Density	2.23 PSF [10.9 kg/m²]
JOINT SEAL (TOP)			
Material	CEMCO SMOKE & SOUND STOP BLUE (SSSB)	Mass	0.120 lb [0.0544 kg]
Dimensions	1.00" x 1.00" [2.5 cm x 2.5 cm]	Net Length	8.00' [2.44 m]
Lengths	1 @ 96.00" [243.8 cm]	Linear Density	0.0150 lb/ft [0.0223 kg/m]

All materials were weighed prior to installation. The nominal dimensions and product information were provided by the test sponsor or obtained from manufacturer data sheets.



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SECTION D – MEASUREMENT SET-UP

ENVIRONMENTAL CONDITIONS

Source Room Temperature	68.1 °F [20.1 °C]
Source Room Relative Humidity	40.5%
Receiving Room Temperature	66.9 °F [19.4 °C]
Receiving Room Relative Humidity	40.3%

CHAMBER VOLUME

Source Room	7,630 CF [216.1 m³]
Receiving Room	12,330 CF [349.2 m³]
Source Niche Depth	2.63" [6.67 cm]
Receiving Niche Depth	4.50" [11.4 cm]

INSTRUMENTATION

DESCRIPTION	BRAND	MODEL	SERIAL
Analyzer	Sinus	Apollo	7510
Software	Sinus	Samurai	ver. 2.8.3
Microphone	Brüel & Kjær	4166	1620281
Microphone	Brüel & Kjær	4166	1620312
Preamplifier	Brüel & Kjær	2669	2025373
Preamplifier	Brüel & Kjær	2669	2083679
Calibrator	Brüel & Kjær	4231	2314028
Thermohygrometer	Kestrel	5200	2807716
Thermohygrometer	Kestrel	5200	2947354



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SECTION E – TEST RESULTS

FREQUENCY BAND (Hz)	TL (dB)	DATA FLAGS (see below)	95% C.I. (dB)	FLANKING LIMIT (dB)	DEFICIENCIES (dB)
50	12.8		±4.0	44.8	-
63	23.9		±3.6	46.8	-
80	27.2		±2.1	52.8	-
100	33.6		±1.5	59.2	-
125	37.8		±1.4	65.2	5
160	41.5		±1.1	69.7	5
200	47.6		±1.1	72.8	1
250	51.5		±0.8	77.7	1
315	54.4		±0.7	82.6	1
400	56.8		±0.6	88.3	1
500	53.4		±0.6	93.4	6
630	54.7		±0.5	95.6	5
800	57.5		±0.5	100.5	4
1,000	61.6		±0.4	105.0	0
1,250	61.7		±0.4	107.9	1
1,600	64.3		±0.4	105.9	0
2,000	66.1		±0.4	106.0	0
2,500	68.3		±0.4	105.7	0
3,150	70.3		±0.3	105.2	0
4,000	73.3		±0.4	103.4	0
5,000	72.7		±0.3	100.7	-
6,300	71.1	*	±0.4	99.0	-
8,000	69.0	*	±0.5	95.8	-
10,000	64.5	*	±0.7	92.5	-
TOTAL DEFICIENCIES BELOW CONTOUR [dB]					30
STC RATING [ASTM E413]					59

Note: Composite 95% confidence intervals from room qualification testing. Extended frequency results below 80 Hz and above 5000 Hz are for reference only. Specimen TL rounded to 0.1 dB provided in this table for reference. Specimen TL rounded to whole decibels found on page 2.

Data Flags:

* Actual transmission loss of specimen may be higher than measured at this frequency band. Signal-to-noise in the receiving room less than 6 dB, therefore the result is "an estimate of the lower limit".

