

GAMCO CORPORATION ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A FG451, STOREFRONT

REPORT NUMBER

K1721.02-113-11-R0

TEST DATE

09/12/19

ISSUE DATE

10/08/19

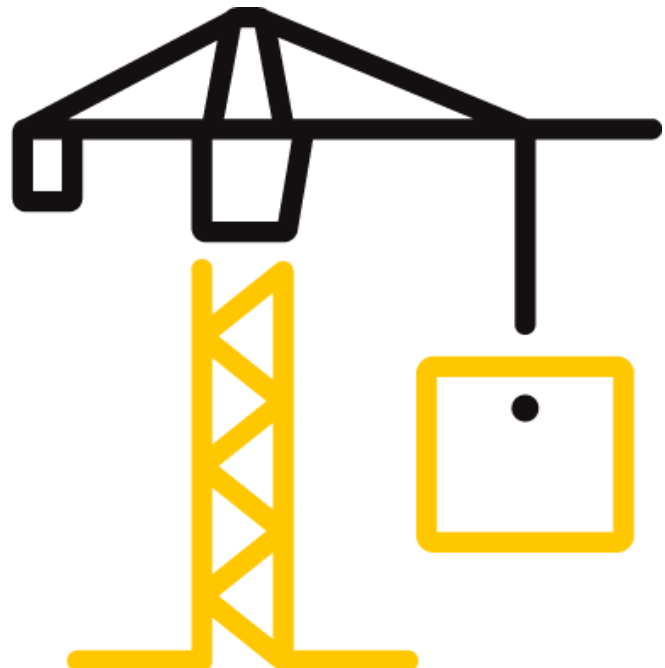
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TEST REPORT FOR GAMCO CORPORATION

Report No.: K1721.02-113-11-R0

Date: 10/08/19

REPORT ISSUED TO

GAMCO CORPORATION

131-10 Maple Avenue
Flushing, New York 11355

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Gamco Corporation 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:	10/08/19	DATE:	10/08/19

ZPG:jmcs

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SECTION 2

SUMMARY OF TEST RESULTS

SERIES/MODEL	FG451
TYPE	Storefront
GLAZING (Nominal Dimensions)	1" IG (1/4" tempered exterior, 1/2" air space, 1/4" laminated interior), Glass temperature 75°F
DATA FILE NO.	K1721.01B
STC	35
OITC	28

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 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4

SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The 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. Operable portions of the test specimen, if any, were cycled at least five times 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	65125*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3*	04/18
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	12/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65969	04/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65103	03/19
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64905	03/19
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	64906	03/19
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/19
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	01/19
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/19
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/19

*- 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
Zachary P. Golden	Intertek B&C
Brian D. Deickman	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 the test specimens per the client's request.

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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SPECIMEN DESCRIPTION

FRAME	
SIZE	78-3/4" by 78-3/4"
THICKNESS	4-1/2"
CORNERS	Butted
FASTENERS	Screws
SEAL METHOD	Sealant
MATERIAL	Aluminum
REINFORCEMENT	N/A
THERMAL BREAK MATERIAL	N/A
DAYLIGHT OPENING SIZE (X2)	36" by 74-1/4"

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.924"
SPACER TYPE	Aluminum

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.222"	0.463"	0.239"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Tempered	Air*	Laminated
LAMINATE MATERIAL	N/A	N/A	PVB

GLAZING METHOD	Pocket
GLAZING MATERIAL	EPDM
GLAZING BEAD MATERIAL	Aluminum

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	No weatherstrip		
HARDWARE	No hardware		
DRAINAGE	No drainage		

TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
292	6.78

* - Stated per Client/Manufacturer, N/A-Not Applicable

Photographs are included in Section 11.

A drawing of the test specimen is included in Section 12.

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SECTION 10
TEST RESULTS

K1721.01B DATA

SPECIMEN AREA	4.00 m ²	RECEIVE TEMP.	22.6 °C	SOURCE TEMP	21.7 °C
TECHNICIAN	Zachary Gol	RECEIVE HUMIDITY	50%	SOURCE HUMIDIT	52%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	42.6	6.2	99	75	23	2.07	-
100	36.0	5.4	100	69	31	1.73	-
125	39.5	6.1	100	74	25	1.40	0
160	40.6	5.5	102	76	25	0.95	0
200	39.5	5.4	102	81	19	0.62	6
250	34.0	5.6	98	76	21	0.78	7
315	27.5	6.0	98	71	25	0.48	6
400	23.3	6.2	97	65	30	0.47	4
500	18.8	6.5	97	63	32	0.29	3
630	21.1	6.1	97	60	35	0.25	1
800	16.8	6.2	95	55	38	0.38	0
1000	12.1	6.4	96	54	41	0.37	0
1250	10.0	7.0	95	50	43	0.27	0
1600	9.4	7.3	95	50	43	0.19	0
2000	8.4	7.7	95	54	39	0.26	0
2500	7.8	8.8	96	56	36	0.15	3
3150	8.4	10.3	95	51	40	0.25	0
4000	8.9	12.7	92	42	45	0.21	0
5000	9.7	16.1	93	37	49	0.26	-
STC RATING	35 (Sound Transmission Class)						
DEFICIENCIES	30 (Sum of Deficiencies)						
OITC RATING	28 (Outdoor-Indoor Transmission Class)						

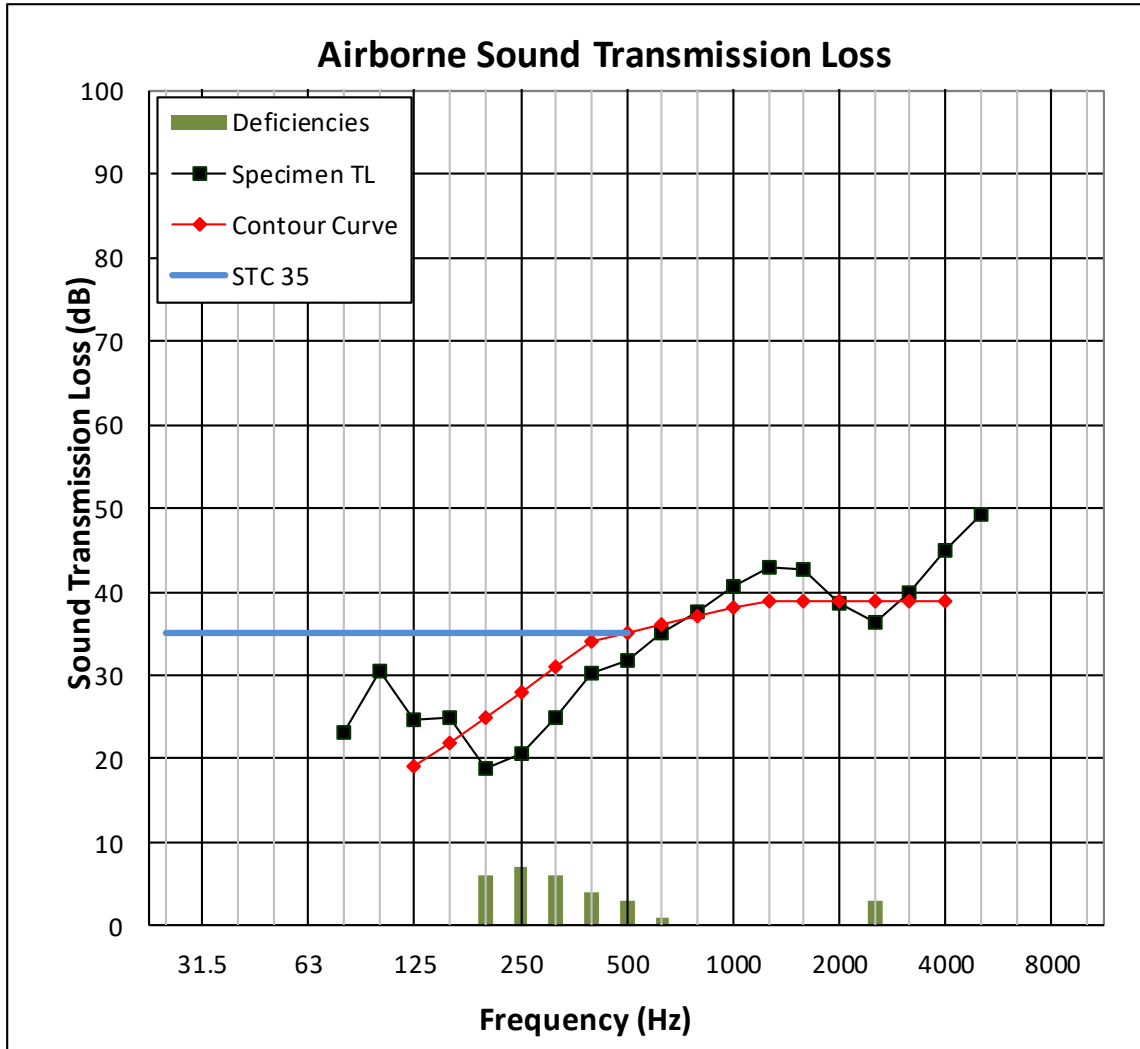
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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K1721.01B GRAPH



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SECTION 11 PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Test Specimen



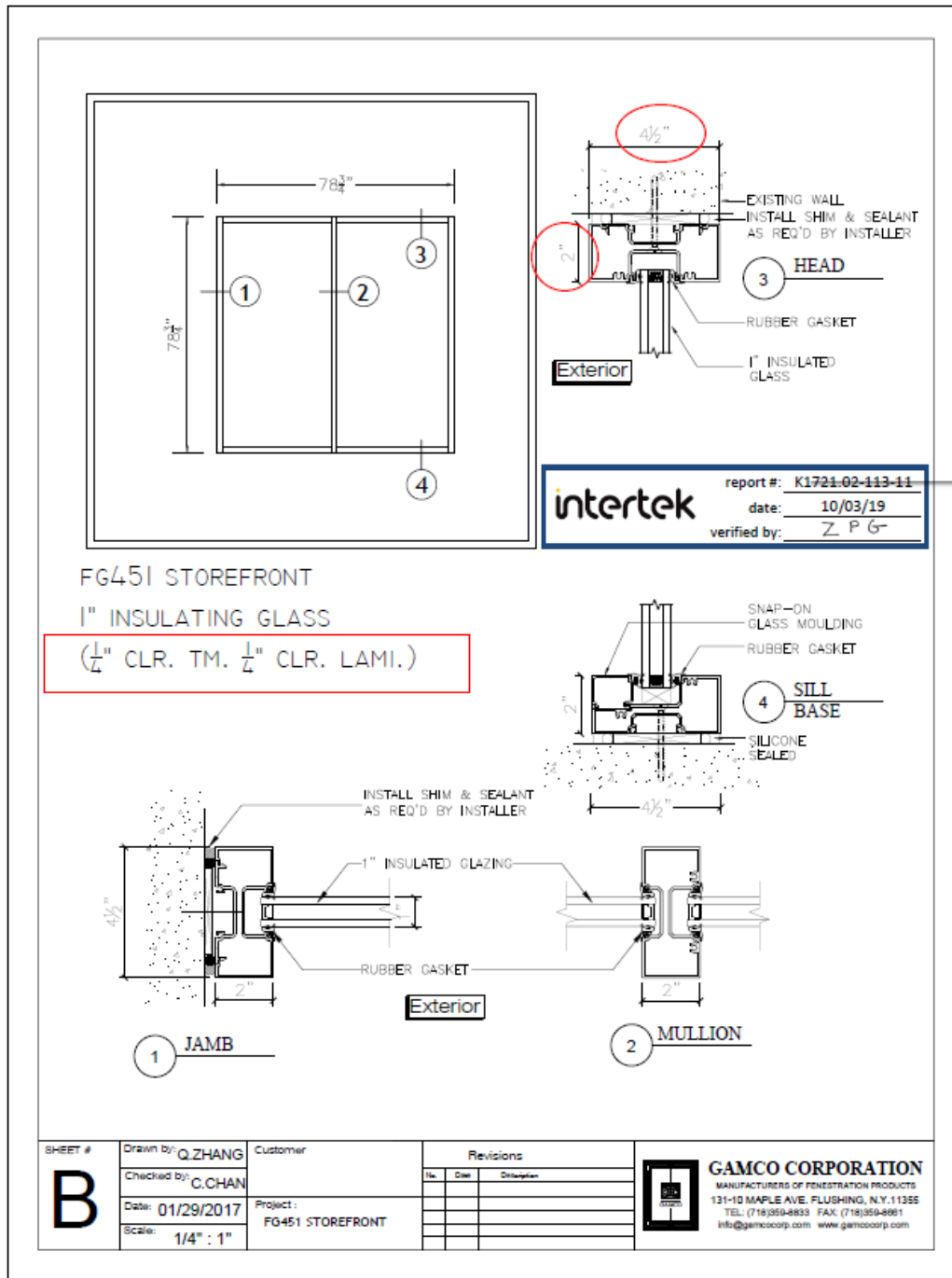
Photo No. 2
Source Room View of Installed Test Specimen

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SECTION 12 DRAWING





Total Quality. Assured.

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SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/08/19	N/A	Original Report Issue