

**ASTM E 90 SOUND TRANSMISSION LOSS
TEST REPORT**

Rendered to:

ALUMIN TECHNO

SERIES/MODEL: F50/PG

TYPE: Pressure Glazed Two-Lite Curtain Wall System

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
D0488.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	33	27

Reference should be made to Architectural Testing, Inc. Report No. D0488.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

ALUMIN TECHNO
Selitskogo Str., 12
Minsk, 220075
BELARUS

Report No: D0488.01-113-11
Test Date: 04/23/14
Report Date: 05/06/14
Record Retention End Date: 04/23/18

Test Sample Identification:

Series/Model: F50/PG

Type: Pressure Glazed Two-Lite Curtain Wall System

Overall Size: 80" by 80"

Glazing (Nominal Dimensions): 1" IG (1/4" Tempered, 1/2" Air Space, 1/4" Tempered)

Project Scope: Architectural Testing, Inc. was contracted by Alumin Techno to conduct sound transmission loss tests on a Series/Model F50/PG, pressure glazed two-lite curtain wall system. A summary of the results is listed in the Test Results section, and the complete test data is included as Appendix B of this report. The sample was provided by the client.

Test Methods: The acoustical tests were conducted in accordance with the following:

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

ASTM E 413-10, Classification for Rating Sound Insulation.

ASTM E 1332-10a, Standard Classification for Rating Outdoor-Indoor Sound Attenuation.

ASTM E 2235-04 (Reapproved 2012), Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.

Test Equipment: The equipment used to conduct these tests meets the requirements of ASTM E 90. The microphones were calibrated before conducting sound transmission loss tests. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation: Sound transmission loss tests were initially performed on a filler wall that was designed to test curtain wall specimens. The filler wall achieved an STC rating of 68.

The specimen plug was removed from the filler wall assembly. The curtain wall system was placed on an isolation pad in the test opening. Duct seal was used to seal the perimeter of the test specimen to the test opening on both sides. The interior side of the curtain wall frame, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing.

Test Procedure: The sound transmission loss test was performed in accordance with the ASTM E 90 test method using a single direction of measurement. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Frame Construction:

		Frame
Size		80" by 80"
Thickness		5-1/4"
Corners		Butted
	Fasteners	Screws
	Seal Method	None
Material		Aluminum
	Thermal Break Material	Insulbar
	Reinforcement	N/A
Daylight Opening Size		36-13/16" by 75-7/8"

N/A-Non Applicable

Sample Descriptions: (Continued)

Glazing:

Measured Overall Insulation Glass Unit Thickness	0.996"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.226"	0.542"	0.228"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered	Air*	Tempered
Laminate Material	N/A	N/A	N/A
Glazing Method	Pressure glazed		

Components:

	TYPE	QUANTITY	LOCATION
Weatherstrip			
	No weatherstrip		
Hardware			
	No hardware		
Drainage			
	No drainage		

* - Stated per Client/Manufacturer, N/A-Non Applicable

Comments: The weight of the test sample was 318 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model F50/PG, pressure glazed two-lite curtain wall system. The dimensions on the drawings that are circled and/or checked were verified against the accessible components of the test specimen. The test specimen was returned per the client's request, so the internal components and dimensions could not be verified against the drawings. Photographs of the test specimen are included in Appendix D.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the sound transmission loss test results on the Series/Model F50/PG, pressure glazed two-lite curtain wall system is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
D0488.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	33	27

The complete test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Architectural Testing will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Architectural Testing for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

Kurt A. Golden
Senior Technician - Acoustical Testing

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

KAG:jmcs

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (2)
- Appendix-C: Design drawings (4)
- Appendix-D: Photographs (1)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	05/06/14	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Analyzer	Hewlett Packard	HP35670A	Real time analyzer	004112	06/13 *
Data Acquisition Unit	Agilent	34970A	Data Acquisition Unit	62211	07/13
Receive Room Microphone	GRAS	40 AR	1/2" Microphone	Y003247	02/14
Source Room Microphone	GRAS	40 AR	1/2" Microphone	Y003239	02/14
Receive Room Preamplifier	GRAS	26 AK	1/2" Preamplifier	Y003251	09/13
Source Room Preamplifier	GRAS	26 AK	1/2" Preamplifier	005656	06/13
Microphone Calibrator	Bruel & Kjaer	Type 4228	Pistonphone Calibrator	Y002816	02/14
Noise Source	Delta Electronics	SNG-1	Noise Generator	Y002181	N/A
Equalizer	Rane	RPE 228	Programmable Equalizer	Y002180	N/A
Power Amplifiers	Crown	Xti 2000	Two, Amplifiers	005769 005770	N/A
Receive Room Loudspeakers	Renkus-Heinz Inc.	Trap Jr./9	Two, Loudspeakers	Y001784 Y001785	N/A
Source Room Loudspeakers	Renkus-Heinz Inc.	Trap Jr./9	Two, Loudspeakers	Y002649 Y002650	N/A
Receive Room Environmental Indicator	Vaisala	HMW92	Temperature and Humidity Sensor	064286	05/13
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature and Humidity Sensor	Y002653	05/13
Weather Station	Davis Instruments	VantagePRO 6150C	Weather Station	Y003257	06/13

*- 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 (8291.3 ft ³)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m ³ (7296.3 ft ³)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable

Appendix B
Complete Test Results

SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	04/23/14		
ATI No.	D0488.01		
Client	Alumin Techno		
Specimen	Series/Model: F50/PG, pressure glazed two-lite curtain wall system with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)		
Operator	Kurt Golden		
Sample Area	4.13 m ²		
Filler Area	8.87 m ²		
	Source	Receive	Specimen
Temp C	22	23	23
RH %	48	50	50

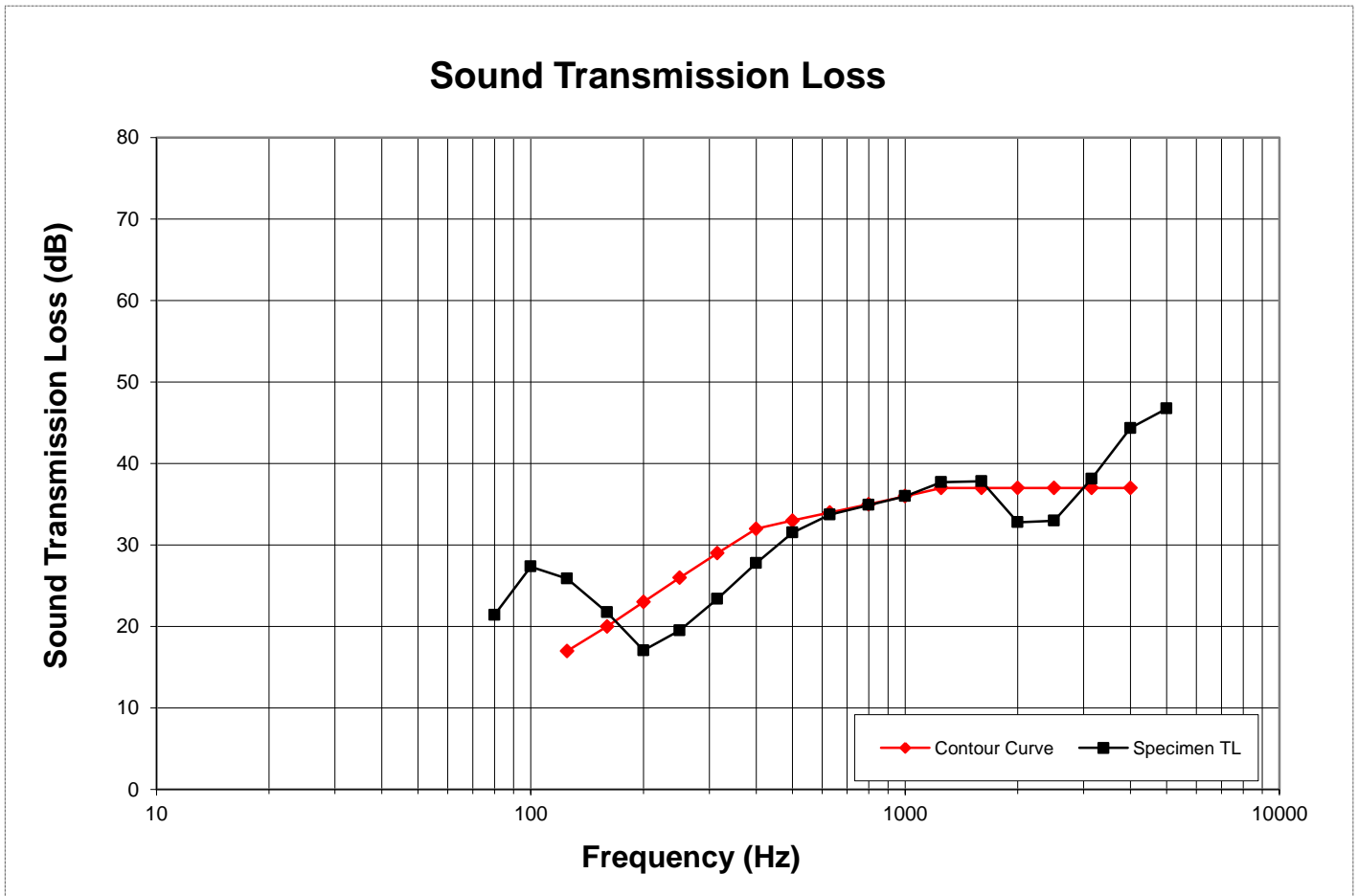
Freq (Hz)	Bkgrd SPL (dB)	Absorp (m ²)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	37	6.0	89	67	29	21	1.8	-	5.9
100	34	5.7	91	64	35	27	2.6	-	6.0
125	37	5.6	95	67	45	26	1.9	0	15.4
160	35	4.7	95	73	47	22	1.2	0	22.3
200	33	5.1	101	83	56	17	1.2	6	36.0
250	31	5.6	101	80	60	20	1.3	6	36.9
315	27	5.6	102	78	66	23	1.1	6	38.8
400	23	5.9	102	73	69	28	0.8	4	37.6
500	18	6.0	102	69	68	32	0.8	1	32.9
630	22	5.6	104	69	69	34	0.5	0	31.8
800	13	5.8	105	68	70	35	0.3	0	32.2
1000	11	6.0	105	67	73	36	0.5	0	34.1
1250	10	6.6	103	63	72	38	0.6	0	31.1
1600	8	6.8	106	66	71	38	0.4	0	30.1
2000	6	7.3	104	69	71	33	0.3	4	35.2
2500	6	8.2	104	68	76	33	0.2	4	39.6
3150	6	9.8	106	64	78	38	0.2	0	36.8
4000	6	11.7	106	57	81	44	0.3	0	33.8
5000	7	15.1	104	52	84	47	0.6	-	33.8

STC Rating **33** *(Sound Transmission Class)*
Deficiencies **31** *(Number of deficiencies versus contour curve)*
OITC Rating **27** *(Outdoor Indoor Transmission Class)*

- Notes:
- 1) Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. These cells are highlighted red.
 - 2) Transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. These cells are highlighted green.
 - 3) Receive Room levels less than 5 dB above the background levels are highlighted in yellow.

SOUND TRANSMISSION LOSS
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Sample Area	4.13 m ²		
Filler Area	8.87 m ²		
	Source	Receive	Sample
Temp C	22	23	23
RH %	48	50	50

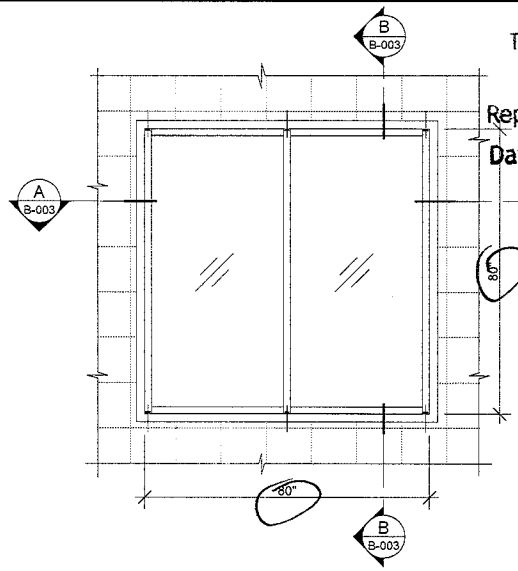


Note: To obtain the Sound Transmission Class (STC), read the Sound Transmission Loss of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve cannot exceed 32. The maximum deficiency at any one frequency cannot exceed 8.

Appendix C
Design Drawings





Test sample complies with these details.
Deviations are noted.

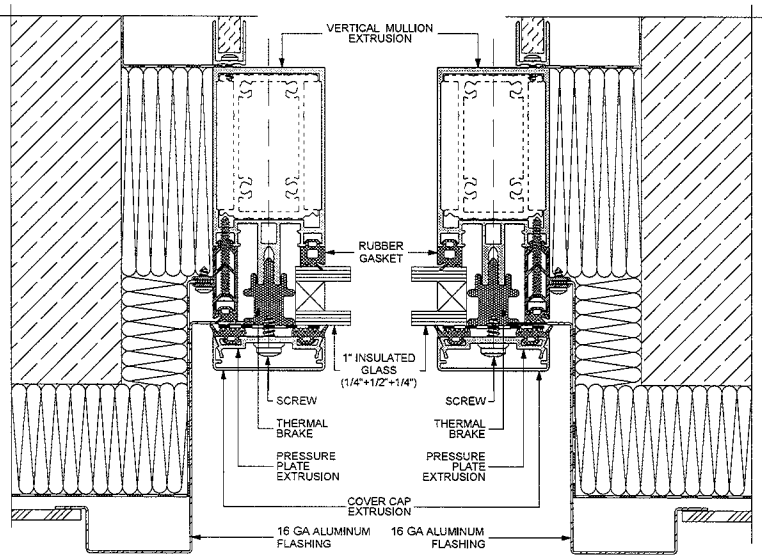
Report# D0488-01-113-11
Date 4/30/14 Tech KB.



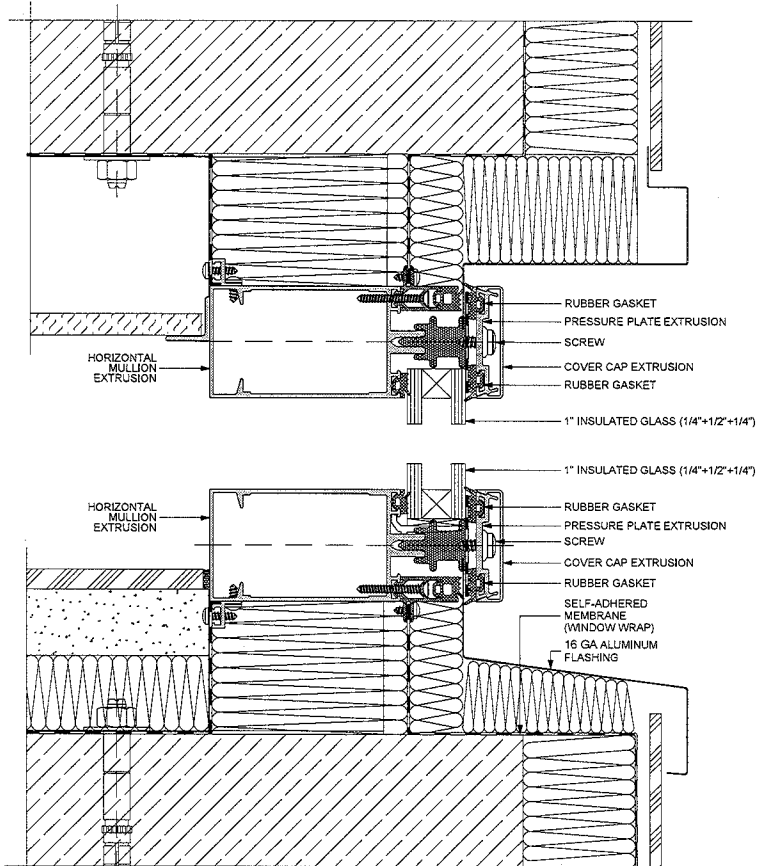
1 SCHEME OF ANCHORING
SCALE: 3/8" = 1'-0"

SYMBOL LEGEND:

-  - 3/8" x 1-7/8" HEAVY DUTY SLEEVE ANCHORS, HEX HEAD, CARBON STEEL ZINC PLATED
-  - Glass
-  - Center line
-  - Section number Sheet reference



2 SECTION A-A
SCALE: 6" = 1'-0"



3 SECTION B-B
SCALE: 6" = 1'-0"

CLIENT:
ALUTECH SRO

PREPARED BY:
Professional Grade CONSTRUCTION GROUP INC
701 39th St. Brooklyn, NY 11232
tel: 718.382.8400
fax: 718.382.8402

PROJECT ADDRESS:
**130 Derry Court I
York, PA 17406**

DATE	REVISION	#

APPROVED
APPROVED VIA E-MAIL
DATE: 12 / 28 / 2013

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ALL DIMENSIONS TO BE FIELD VERIFIED PRIOR TO ANY FABRICATION.

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INSTALLATION DRAWINGS

DATE: 12.12.2013

DRAWN BY: AG

CHECKED BY: AA

DRAWING No: SIZE: B

B-003

File name:
ACOUSTIC TESTS PRESSURE GLAZED CURTAIN WALL WINDOW 0407 B-003.dwg 03 OF 04

Appendix D

Photographs



Receive Room View of Installed Test Specimen



Source Room View of Installed Test Specimen