

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

Rendered to:

ALUMIN TECHNO

SERIES/MODEL: W62/TT

TYPE: Tilt-Turn Window

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
D0487.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	34	29

Reference should be made to Architectural Testing, Inc. Report No. D0487.01-113-11 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: D0487.01-113-11
Test Date: 04/22/14
Report Date: 05/06/14
Record Retention End Date: 04/22/18

Test Sample Identification:

Series/Model: W62/TT

Type: Tilt-Turn Window

Overall Size: 47-1/4" by 59"

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 a sound transmission loss test on a Series/Model W62/TT, tilt-turn window. 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 test was 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 this test meets the requirements of ASTM E 90. The microphones were calibrated before conducting the sound transmission loss test. 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 window specimens. The filler wall achieved an STC rating of 67.

A filler wall-reducing element was used to adjust the test opening size. The reducing element consisted of two separate 2x6 wood frames filled with concrete to reduce the test opening size to accommodate the test specimen. A dense neoprene gasket was placed between the two wood and concrete frames. The window was placed on an isolation pad in the new test opening. Duct seal was used to seal the perimeter of the window to the test opening on both sides. The interior side of the window 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. The vent was opened and closed at least five times prior to testing.

Test Procedure: The window was closed and locked for this test. The sound transmission loss tests were conducted 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		47-1/4" by 59"
Thickness		2-7/16"
Corners		Mitered
	Fasteners	Keyed and staked
	Seal Method	Sealant
Material		Aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar

N/A-Non Applicable

Sample Descriptions: (Continued)

Vent Construction:

		Vent
Size		43-3/4" by 55-1/2"
Thickness		2-3/4"
Corners		Mitered
	Fasteners	Keyed and staked
	Seal Method	Sealant
Material		Aluminum
	Reinforcement	N/A
	Thermal Break Material	Insulbar
Daylight Opening Size		36-1/16" by 47-7/8"

Vent Glazing:

Measured Overall Insulation Glass Unit Thickness	0.995"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.228"	0.539"	0.228"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered	Air*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Interior
Glazing Material	EPDM
Glazing Bead Material	Aluminum / EPDM

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

Sample Descriptions: (Continued)

Components:

TYPE	QUANTITY	LOCATION
Weatherstrip		
7/8" Leaf gasket with 1/4" leaf extension	1 Row	Frame perimeter
Hollow bulb gasket with 3/16" leaf	1 Row	Vent perimeter
Hardware		
Tilt-turn hinge system	1	Hinge jamb
Multi-point lock system	1	Vent perimeter
Keeper	5	Frame perimeter
Drainage		
1-1/4" by 3/16" Weep slot	2	Sill
3/16" Diameter weep hole	3	Sill

Comments: The weight of the test sample was 132 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model W62/TT, tilt-turn window. 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 W62/TT, tilt-turn window is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
D0487.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	34	29

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	04/22/14		
ATI No.	D0487.01		
Client	Alumin Techno		
Specimen	Series/Model: W62/TT, tilt-turn window with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)		
Operator	Kurt Golden		
Sample Area	1.80 m ²		
Filler Area	11.20 m ²		
	Source	Receive	Specimen
Temp C	23	23	23
RH %	55	53	54

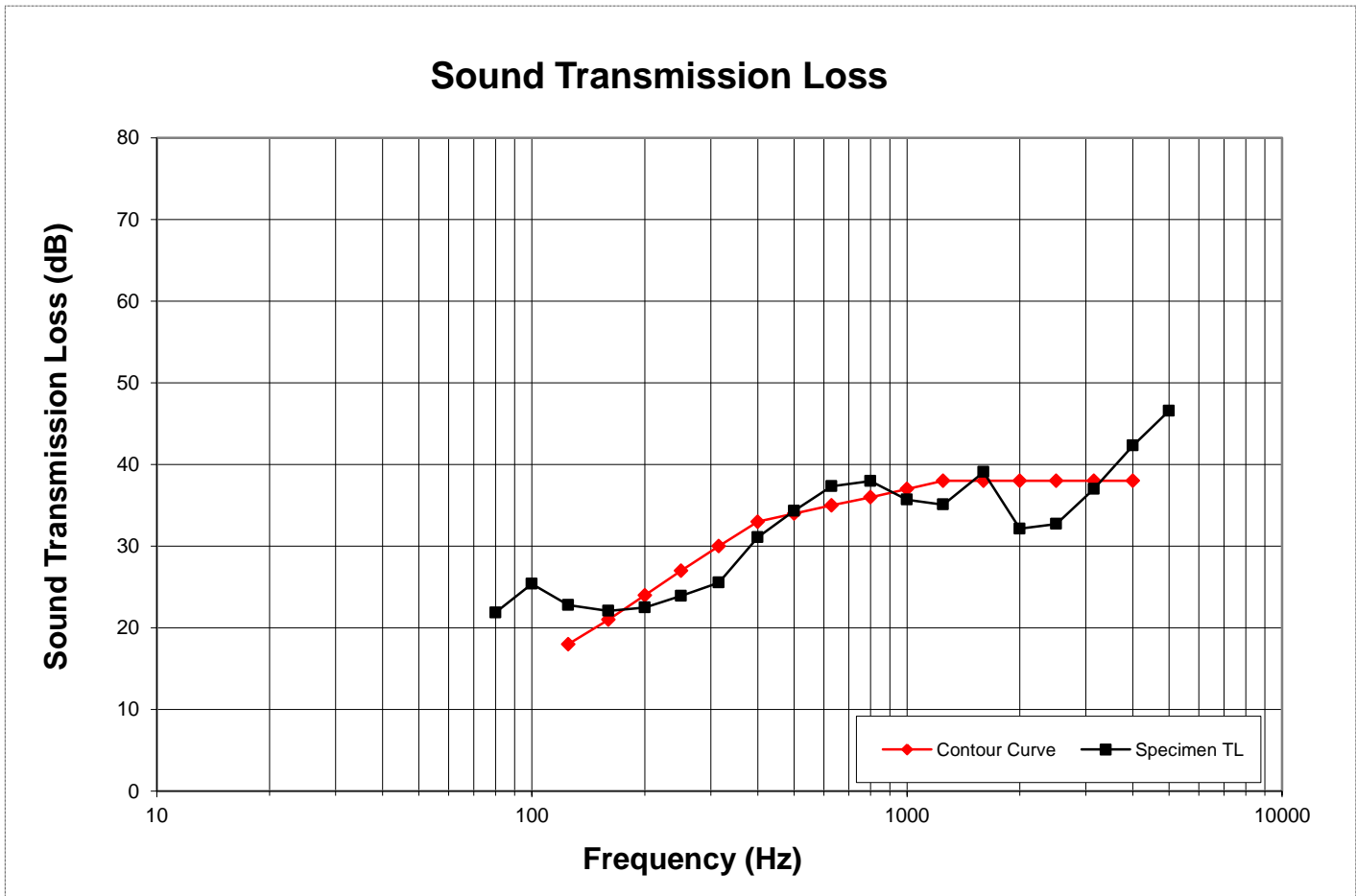
Freq (Hz)	Bkgrd SPL (dB)	Absorp (m ²)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	36	5.8	91	65	29	22	1.6	-	0.8
100	33	5.9	93	64	35	25	2.9	-	3.4
125	34	5.0	96	69	45	23	2.9	0	14.0
160	37	4.6	97	70	47	22	1.3	0	17.3
200	34	4.9	102	75	56	22	1.5	2	26.0
250	32	5.2	102	74	60	24	1.2	3	27.9
315	28	5.4	103	72	66	26	1.1	4	32.1
400	26	5.7	102	66	69	31	1.0	2	29.6
500	20	6.0	102	63	68	34	0.7	0	25.5
630	20	5.6	104	62	69	37	0.4	0	23.6
800	14	6.0	105	62	70	38	0.3	0	24.5
1000	11	6.2	105	64	73	36	0.4	1	29.8
1250	9	6.7	103	62	72	35	0.4	3	29.0
1600	7	6.8	106	61	71	39	0.4	0	24.2
2000	5	7.1	105	67	71	32	0.3	6	31.2
2500	5	7.9	105	66	76	33	0.2	5	35.2
3150	5	9.6	106	62	78	37	0.4	1	33.3
4000	6	11.4	106	56	81	42	0.3	0	31.2
5000	7	14.5	105	49	84	47	0.6	-	29.4

STC Rating **34** *(Sound Transmission Class)*
Deficiencies **27** *(Number of deficiencies versus contour curve)*
OITC Rating **29** *(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
ASTM E 90

Test Date	04/22/14		
ATI No.	D0487.01		
Client	Alumin Techno		
Specimen	Series/Model: W62/TT, tilt-turn window with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)		
Operator	Kurt Golden		
Sample Area	1.80 m ²		
Filler Area	11.20 m ²		
	Source	Receive	Sample
Temp C	23	23	23
RH %	55	53	54



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# D0487.01-113-11

Date 4/30/14 Tech K6

CLIENT:

ALUTECH SRO

PREPARED BY:

Professional Grade
CONSTRUCTION GROUP INC
701 39th St, Brooklyn, NY 11232
Tel: 718.382.8400
Fax: 718.382.8401

PROJECT ADDRESS:

130 Derry Court I
York, PA 17406

DATE	REVISION	#

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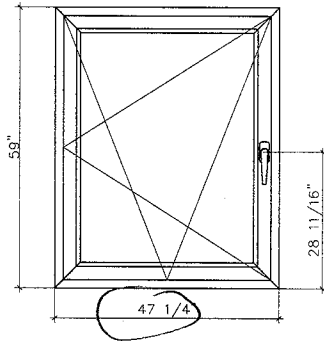
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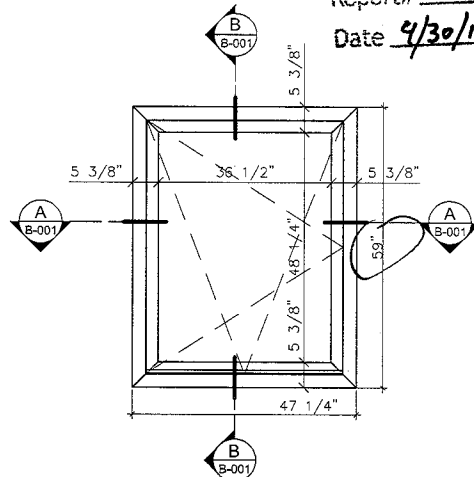
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WINDOW 41 14402 B-001.dwg

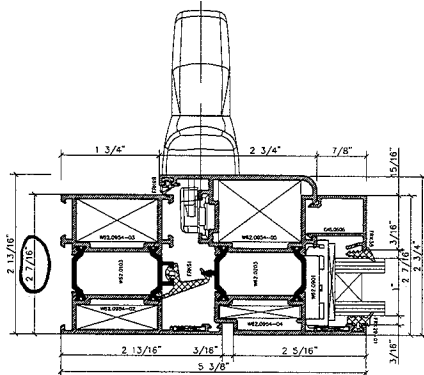
01 OF 04



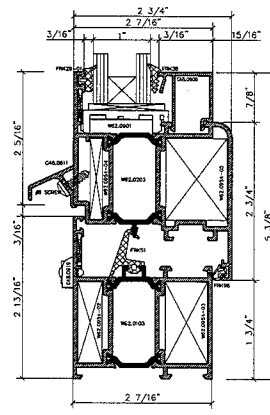
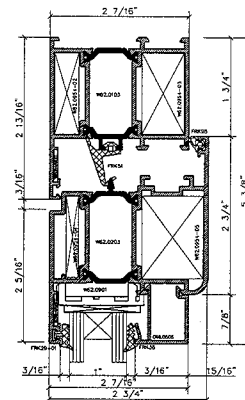
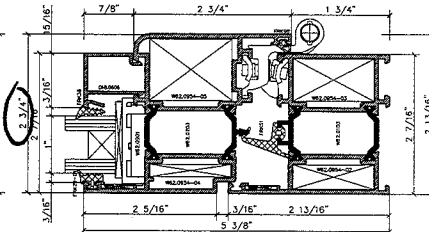
1 HANDLE LOCATION INSIDE VIEW
SCALE: 1/2" = 1'-0"



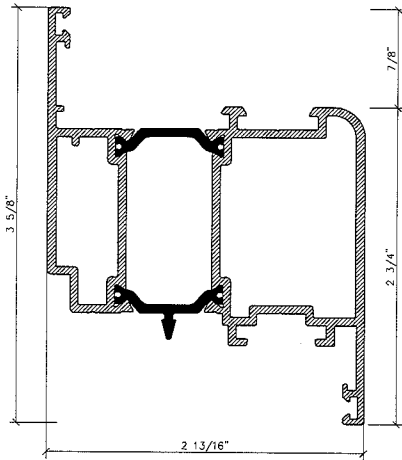
2 WINDOW ELEVATION
SCALE: 1/2" = 1'-0"



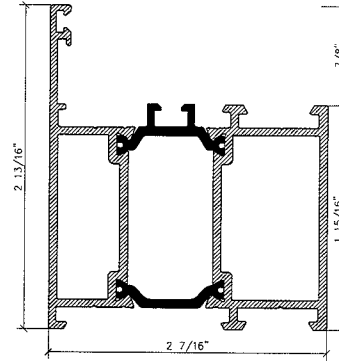
3 SECTION A-A
SCALE: 6" = 1'-0"



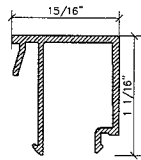
4 SECTION B-B
SCALE: 6" = 1'-0"



1 THERMALLY BROKEN WINDOW
FRAME EXTRUSION W62.0203
SCALE: 1'-0" = 1'-0"



2 THERMALLY BROKEN WINDOW
PANEL EXTRUSION W62.0103
SCALE: 1'-0" = 1'-0"



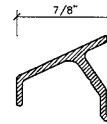
3 SNAP MOLDING
EXTRUSION C48.0606
SCALE: 1'-0" = 1'-0"



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# D0487-01-113-11
Date 4/30/14 Tech K6.



4 WATER DEFLECTOR
EXTRUSION C48.0611
SCALE: 1'-0" = 1'-0"

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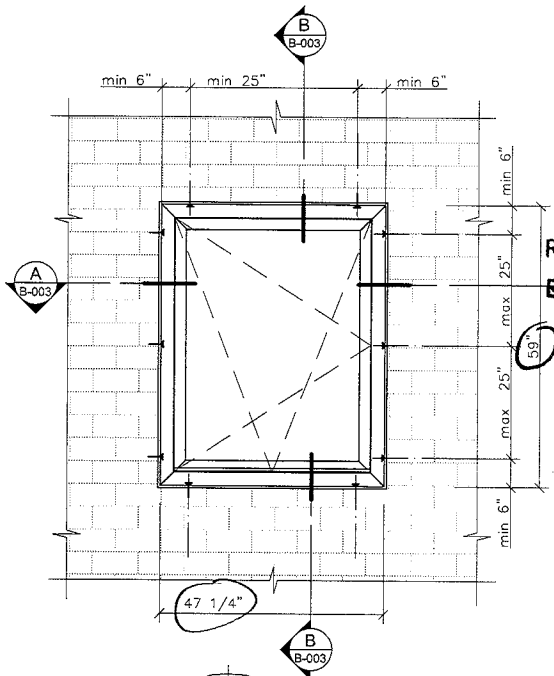
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WINDOW AT LUTECR. Batec.com

02 OF 04



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Deviations are noted.

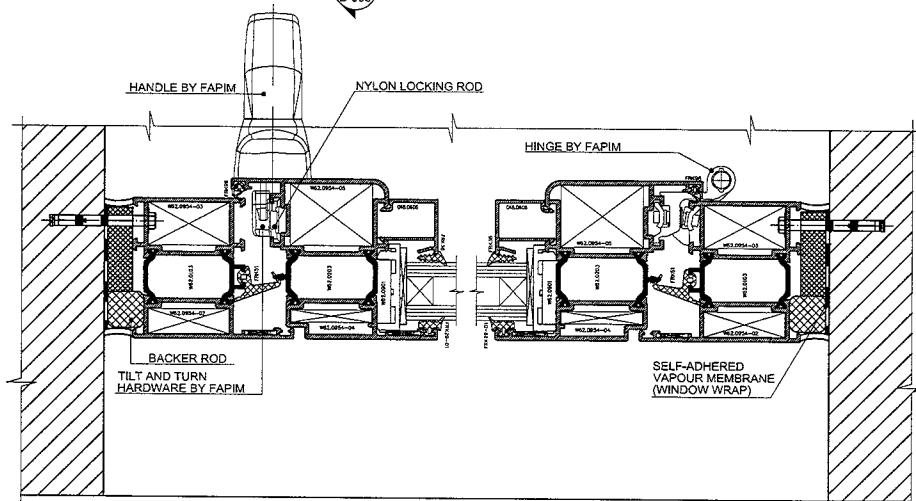
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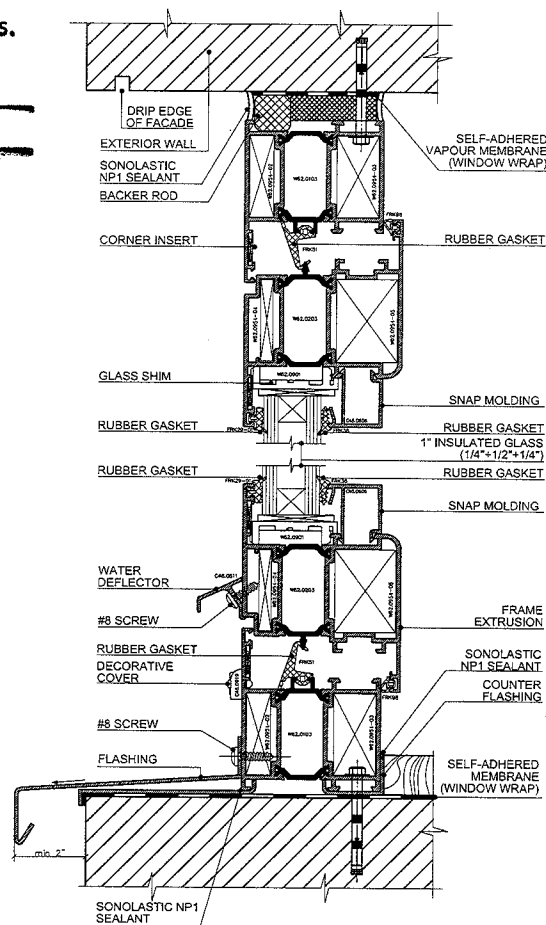
SYMBOL LEGEND:

- 3/8" x 1-7/8" HEAVY DUTY SLEEVE ANCHORS,
HEX HEAD, CARBON STEEL ZINC PLATED

① SCHEME OF ANCHORING
SCALE: 1/2" = 1'-0"



② SECTION A-A
SCALE: 6" = 1'-0"



③ SECTION B-B
SCALE: 6" = 1'-0"

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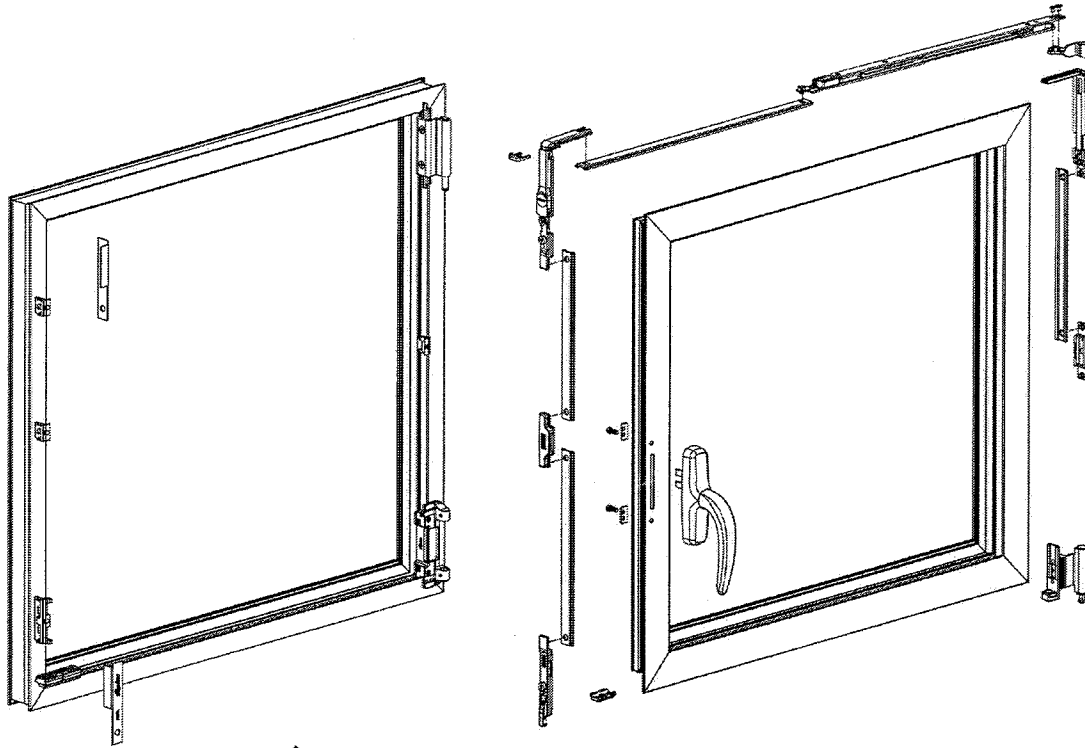
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B-003

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ACQUISITION TESTS TILT AND TURN WINDOW AT 14105P - B-003.dwg

03 OF 04



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# D0487-01-113-11
Date 4/30/14 Tech KG

Illustration	Article	Description	Q-ty
	0760Bi	NEFER handle by FAPIM HC=28 11/16"	1
	1599	Connecting dowel by FAPIM	1
	1405i	Higne couple by FAPIM	1
	1481i	T&T basic kit by FAPIM	1
	1450Aj	Medium compass arm by FAPIM	1
	1495Aj	Additional corner by FAPIM	1
	1585	Additional locking point by FAPIM	1
	1597i	Universal keeper by FAPIM	1
	W62.0203	Window panel extrusion L= 43 3/4" L45°	2
	W62.0203	Window panel extrusion L= 55 1/2" L45°	2
	W62.0103	Frame extrusion L= 47 1/4" L45°	2
	W62.0103	Frame extrusion L= 59" L45°	2
	FRK38	Rubber gasket L= 193"	1
	FRK 29-01	Rubber gasket L= 193"	1
	FRK98	Rubber gasket L= 205"	1
	FRK51	Rubber gasket L= 205"	1
	IG unit	1" Insulated glass(1/4" CLTPx1/2" AIRx1/4" CL TP)37 1/2"x49 1/4"	1
	C48.0611	Water deflector L= 41 1/4"	1
	C48.0919	Decorative cover	2
	W62.0954-02	Corner insert	4
	W62.0954-03	Corner insert	4
	W62.0954-04	Corner insert	4
	W62.0954-05	Corner insert	4
	C48.0606	Snap molding 90° L= 38 1/4"	2
	C48.0606	Snap molding 90° L= 48 1/4"	2
	W62.0901	Glass shim	6
	FRK52	Rubber angle	4
	W62.0957	Corner insert	8
	5429A	Nylon transmission rods by FAPIM	4
	11213400	Glass shim 3 15/16"x1 1/4"x1/16"	6
	11213600	Glass shim 3 15/16"x1 1/4"x1/8"	6
	2482	#8 1/2" Phillips pan head zinc plated steel screw	5

CLIENT:

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ACOUSTIC TESTS FL1 AND TURN WINDOW 47.1.1307 - Issue.dwg

04 OF 04

Appendix D

Photographs



Receive Room View of Installed Test Specimen



Source Room View of Installed Test Specimen