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CONSULTING ENGINEER
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TEL: (214) 340-0049

March 6, 2002

To whom it may concern:

The following test reports for General Aluminum Company of Texas issued by Dallas Laboratories, Inc. have been reviewed for completeness and authenticity. Dallas Laboratories, Inc. is accredited by the American Architectural Manufacturers Association (AAMA) to perform window and door structural load testing. Calibration reports for the test equipment used in performing the test have been reviewed and determined to be within the tolerances allowed. Detailed window assembly drawings representative of the test specimens indicating wall thicknesses of all members, corner constructions, and hardware applications are on file and have been compared to the actual test specimen. Corner sections of each window tested are being retained at Dallas Laboratories, Inc.. The results reported were secured by using the designated test methods as specified in AAMA/ NWWDA 101/I.S.2-97 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors".

Dallas Laboratories Report Numbers: 31239 & 31415

Date of Report: September 28, 2001 & November 27, 2001

Product Type: Aluminum True Divided Lite Single Hung Window with Flange Frame

Series Model: 1440

Frame Size: 4'-5-1/8" x 6'-0"

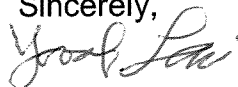
Sash Size: 4'-3-5/16" x 2'-11-5/16"

Configuration: O/X

Manufactures Model Variations: Series 1940 (Dual Glazed Fin Frame);
Series 1140 (Single Glazed Flange Frame);
Series 1540 (Dual Glazed Flange Frame)

Please do not hesitate to contact me should you have any questions.

Sincerely,



Yoosef Lavi, P.E.
YL/jb

Attachment: Test Reports (5 Pages total)



3-6-02

TELEPHONE (AREA CODE 214)

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CABLE ADDRESS "DALAB"

DALLAS LABORATORIES, INC.

CONSULTANTS AND TECHNOLOGISTS
ANALYTICAL AND RESEARCH CHEMISTS —
CHEMICAL ENGINEERS — PETROLEUM ENGINEERS

P. O. BOX 152837
1323 WALL ST.

DALLAS, TEXAS 75315

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AMERICAN NATIONAL STANDARDS INSTITUTE
AMERICAN SOCIETY FOR QUALITY CONTROL

Submitted by: General Aluminum Corp.
P.O. Box 819022
Dallas, TX 75381-9022

Date: November 27, 2001
(Reissue Date: 03-06-02)

Attn: Ivan Paredes

Report No.: 31415

REPORT

Product Type: Aluminum True Divided Lite Single Hung Window with Flange Frame

Specification: AAMA/NWWDA 101/I.S. 2-97; H-R40-53x72

Series Model: 1440

Frame Size: 4'5-1/8" x 6'0"

Sash Size: 4' 3-5/16" x 2' 11-5/16"

Configuration: O/X

Manufactures

Model Variations: Series 1940 (Dual Glazed Fin Frame); 1140 (Single Glazed Fin Frame); 1540 (Dual Glazed Flange Frame)

PRODUCT DESCRIPTION

Weatherstripping: Pile weatherstrip (0-.170" thickness) at exterior face of sash interlock rail. Pile weatherstrip with integral plastic fine (0.170" thickness) at exterior face of sash stile. Vinyl bulb seal was located along sash bottom rail.

Hardware: Metallic sweep lock approximately 9½" from each end of sash meeting rail (32" max. spacing). Spring latch at midpoint of operable sash bottom rail. Spiral type balance in each frame jamb.

Glass: Single strength annealed.

Glazing: Exterior glazed with backbedding compound and vinyl snap-in glazing bead.

Weep Arrangement: Screen retaining leg of sill notched 2-5/8" from end of member.

Sealant: Narrow joint sealant at frame jamb to fixed interlock connection. Frame sill to jamb corners sealed with narrow joint sealant.

Mutins: 12 5/16" x 16 ¾" divided lite assembly in fixed and operable sash. One horizontal T-bar secured by metal finger at jambs and stiles. Three vertical T-bar float at head and rails.

Installation: Test unit secured to 2x4 SPF lumber test buck, by twelve (12) # 8 x 1" screws through the countersunk pre-punched holes, in each jamb and head. The sill was anchored in place with silicon.

Other Features: Nylon spacer button at mid-point (interior face) of sash stiles. Nylon sash guide with spacer button at each end of sash stile (interior face). Frame corner construction by two (2) #6x3/4" "hex head" screws. Sash corner construction by one (1) #6x3/4" square-head screw at meeting rail and one (1) #6x3/4" square-head screw at bottom rail. The frame and sash were constructed of aluminum alloy #6063, temper #T-5.

Date Testing Started: November 27, 2001

Date Testing Completed: November 27, 2001

Test Performed at: General Aluminum Corp. testing facility in Carrollton, Texas.

PERFORMANCE TEST RESULTS

<u>SPECIFICATION PARAGRAPH NO.</u>	<u>TITLE OF TEST</u>	<u>TEST METHOD</u>	<u>MEASURED</u>	<u>ALLOWED</u>
4.4.2	Uniform Load Structural	ASTM E 330-96		
	-Exterior		60.0 PSF*	60.0 PSF*
	-Interior		60.0 PSF*	60.0 PSF*
	-Permanent Set		0.093"	0.213"

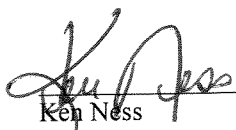
*No glass breakage, permanent deformation, or other damage causing the unit to be inoperable.

For all other paragraph 2 test results see **Dallas Laboratories, Inc. report # 30987/31239**

Detailed extrusion and assembly drawings indicating measured wall thickness, corner construction, and hardware application are on file and have been compared to the test sample submitted. Test sample will be retained at the testing laboratory. A copy of this report has been forwarded to ALI.

The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specifications. This report does not constitute certification of this product, which may only be granted by ALI.

DALLAS LABORATORIES, INC.
TESTING LABORATORY


Ken Ness

KN: kn

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Submitted by: General Aluminum Corp.
P.O. Box 819022
Dallas, TX 75381-9022

Attn: Ivan Paredes

Date September 28, 2001
(Reissue Date: 03-06-02)

Report No.: 31239
(Revised)

REPORT

Product Type: Aluminum True Divided Lite Single Hung Window with Flange Frame

Specification: AAMA/NWWDA 101/I.S. 2-97; H-R40-53x72

Series Model: 1440

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Hardware: Metallic sweep lock approximately 9½" from each end of sash meeting rail (32" max. spacing). Spring latch at midpoint of operable sash bottom rail. Spiral type balance in each frame jamb.

Glass: Double strength annealed.

Glazing: Exterior glazed with backbedding compound and vinyl snap-in glazing bead.

Weep Arrangement: Screen retaining leg of sill notched 2-5/8" from end of member.

Sealant: Narrow joint sealant at frame jamb to fixed interlock connection. Frame sill to jamb corners sealed with narrow joint sealant.

Mutins: 12 5/16" x 16 ¾" divided lite assembly in fixed and operable sash. One horizontal T-bar secured by metal finger at jambs and stiles. Three vertical T-bar float at head and rails.

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Date Testing Started: Sept 24, 2001

Date Testing Completed: September 24, 2001

Test Performed at: General Aluminum Corp. testing facility in Carrollton, Texas.

PERFORMANCE TEST RESULTS

<u>SPECIFICATION PARAGRAPH NO.</u>	<u>TITLE OF TEST</u>	<u>TEST METHOD</u>	<u>MEASURED</u>	<u>ALLOWED</u>
2.2.2.5.1	Operating Force		24 lbs	30 lbs
2.1.2	Air Infiltration	ASTM E 283-91	0.02 CFM/Ft ²	0.30 CFM/Ft ²
2.1.3	Water Resistance @2.86 psf (With and without screen)	ASTM E 547-96	No Leakage	No Leakage
4.3	Water Resistance @6.0 psf (With and without screen)	ASTM E 547-96	No Leakage	No Leakage
2.1.4.2	Uniform Load Structural -Exterior -Interior -Permanent Set	ASTM E 330-96	22.5 PSF* 22.5 PSF* Negligible	22.5 PSF* 22.5 PSF* 0.213"
4.4.2	Uniform Load Structural -Exterior -Interior -Permanent Set	ASTM E 330-96	60.0 PSF* 60.0 PSF* 3/32"	60.0 PSF* 60.0 PSF* 0.213"

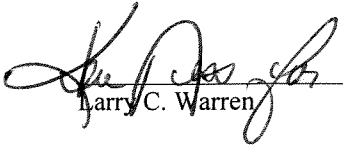
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For all other paragraph 2 test results see **Dallas Laboratories, Inc. report # 30987.**

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DALLAS LABORATORIES, INC.
TESTING LABORATORY


Harry C. Warren

LCW: lw