



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

**WAYNE-DALTON CORPORATION
Door and Systems Division**

**Model DS-75 Square
10'x 8'**

Report No:	01-46384.01
Test Date:	08/21/03
Report Date:	11/21/03
Expiration Date:	08/21/07

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PERFORMANCE TEST REPORT

Rendered to:

WAYNE-DALTON CORPORATION
Door and Systems Division
2589 County Road 168
Dundee, Ohio 44624

Report No: 01-46384.01
Test Date: 08/21/03
Report Date: 11/21/03

Project Summary: Architectural Testing, Inc. (ATI) was contracted by Wayne-Dalton Corporation to perform wind load testing per ASTM E 330-97. The test was performed upon a Model DS-75 Square mini storage roll-up sheet door. The door was 10' wide by 8' high. The door was tested to a +/-34.0 psf design pressure. This report includes test data and drawings.

Test Procedure: The test specimen was evaluated in accordance with ASTM E 330-97, *Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference*. Testing was conducted at positive and negative loads as listed in the test results.

General Description: The steel test chamber provided a clear opening measuring 10' 0" wide by 8' 0" high. Two jamb conditions were provided. A steel tube with a 5/16" wall thickness was utilized on the left jamb and a 3,000 psi grout filled concrete block column for the right jamb. The head was comprised of two 12" steel channels that were stacked and welded.

Test Specimen

Product: Model DS-75 Square mini storage roll-up sheet door

Door Opening: 10' 0" wide by 8' 0" high

Assembly Details: "G" guides were utilized for both the steel and the grout filled concrete block jambs. The guide anchor spacing was 6" from the bottom and 12" on center thereafter on the steel and the grout filled concrete block jambs. The curtain was fabricated with 0.018" thick sheet steel with windlocks on alternating beads. The windlocks were fastened with two rivets per lock. Reference Wayne-Dalton Drawing # 035-0007 and 035-0008 for further details.

Test Results: The following results have been recorded:

ASTM E 330-97: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

Note: Polyethylene film and tape were used in a manner that did not influence the test results. Deflection was measured at the midspan and ends of the door with linear transducers.

Test Pressure	Duration	Maximum Deflection Transducer Number			Permanent Set Transducer Number		
		#1	#2	#3	#1	#2	#3
+17.00 psf (1/2 Design)	10 sec	Remove Slack					
+34.00 psf (Design)	10 sec	0.240"	5.330"	0.260"	0.000"	0.210"	0.010"
+51.00 psf (Overload)	10 sec	0.290"	6.100"	0.270"	0.010"	0.350"	0.010"
-17.00 psf (1/2 Design)	10 sec	Remove Slack					
-34.00 psf (Design)	10 sec	0.740"	6.600"	0.690"	0.030"	0.510"	0.030"
-51.00 psf (Overload)	10 sec	0.920"	7.600"	1.100"	0.030"	0.600"	0.030"

There was no visible damage and the door was operable at the conclusion of testing.

List of Official Observers :

Mark Daus	Wayne-Dalton Corporation
Michael Mendez	Wayne-Dalton Corporation
Scott Kramer	Architectural Testing, Inc.

ASTM E8-01

Test Method: The test specimens were evaluated in accordance with ASTM E8-01, *Standard Test Methods for Tensile Testing of Metallic Materials*. The test specimens were machined and sized in compliance with section 6.0 of the standard. The specimens were tested using a Satec 50UD Universal Machine with a cross head speed of 0.2 in/min

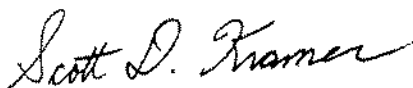
Test Results: The test results are shown on test logs 18839 through 18844 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	34,001	0.0034	521	39,749	32.00	42.70
2	37,068	0.0032	514	44,708	35.00	36.50
3	43,503	0.0034	518	49,338	35.50	33.30
4	40,926	0.0035	524	46,767	32.50	36.60
5	42,719	0.0033	514	48,930	33.50	34.30
6	37,603	0.0034	520	44,870	32.50	40.50
Average	39,303	0.0034	519	45,727	33.50	37.30

The average Tangent Modulus for the tested specimens was 27.1×10^6 psi.

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the samples tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory. This report may not be reproduced except in full without the approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC.:



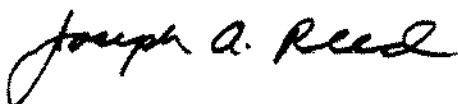
Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician



Digitally Signed by: Connie L. Owad

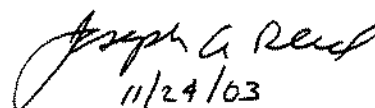
Connie Owad
Technician



Digitally Signed by: Joseph A. Reed

Joseph A. Reed, P.E.
Director - Engineering and Product Testing

SDK:baw
01-46384.01

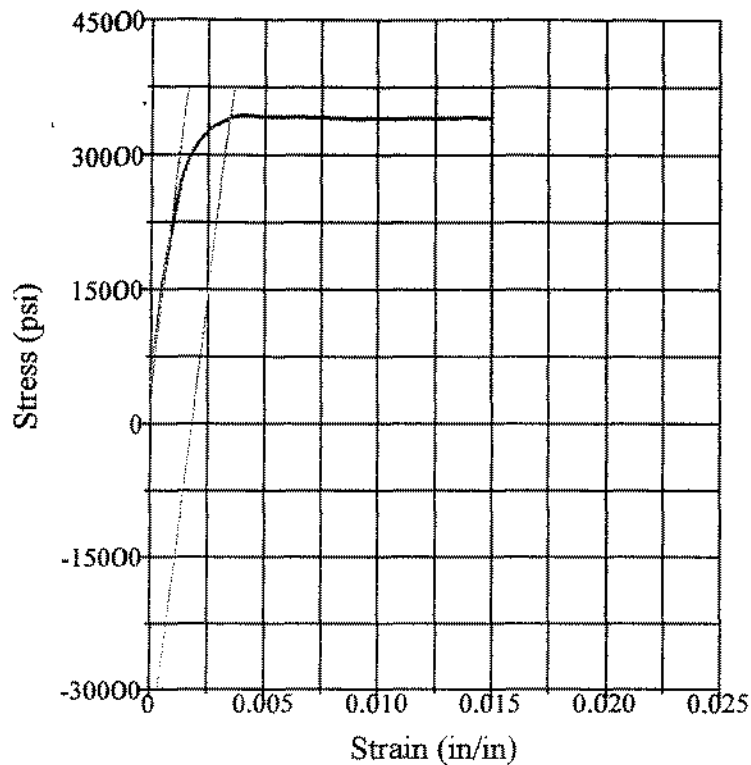


DOCUMENT CONTROL ADDENDUM #01-46384.00

Current Issue Date: 11/21/03

Report No.: 01-46384.01

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model DS-75, 10' x 8'.
Issued Date: 11/21/03
Comments:

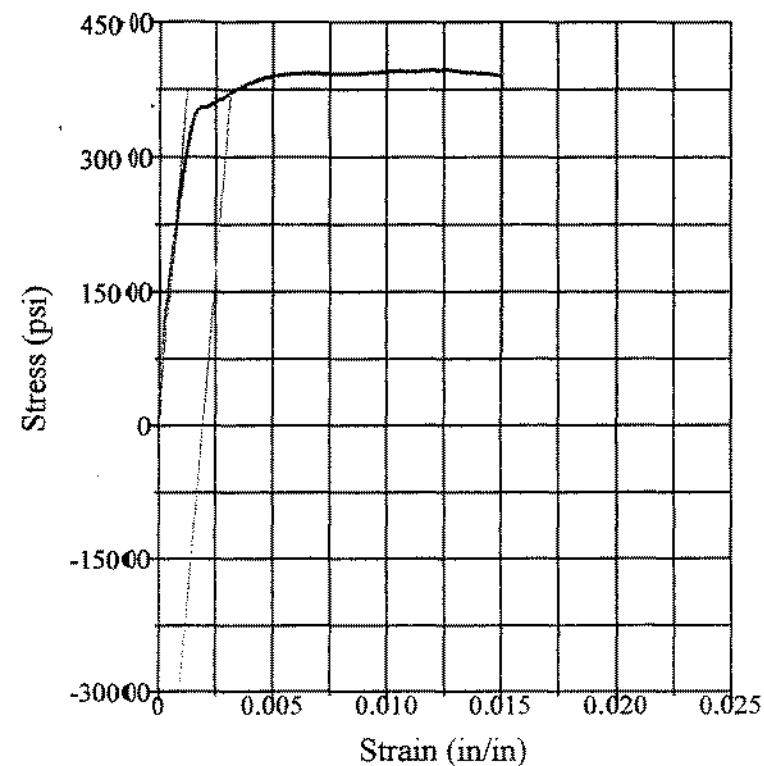


Test Results

Width:	0.5050 in
After Test Width:	0.4160 in
Thickness:	0.0260 in
After Test Thickness:	0.0180 in
Area:	0.0131 in ²
After Test Area:	0.0075 in ²
Tensile Strength:	39749 psi —
Peak Load:	521 lbf —
Load at Yield:	445.4210 lbf
Position at Yield:	0.0603 in
Time at Yield:	0.3047 min
Strain at Yield:	0.0034 in/in —
Stress at Yield:	34001.6000 psi —
Elongation at Yield:	0.0069 in
Reduction of Area:	42.7 % —
Total Elongation:	32.0000 % —
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.64 in
Modulus of Elasticity:	20768800 psi — <i>Ave.</i>

Test Summary

Counter:	18839
Elapsed Time:	00:04:17
ATI #:	01-46384
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	1
Comments:	120 - 32 10 X 8
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	8:42:34 AM
End Date:	10/16/03
End Time:	8:46:51 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

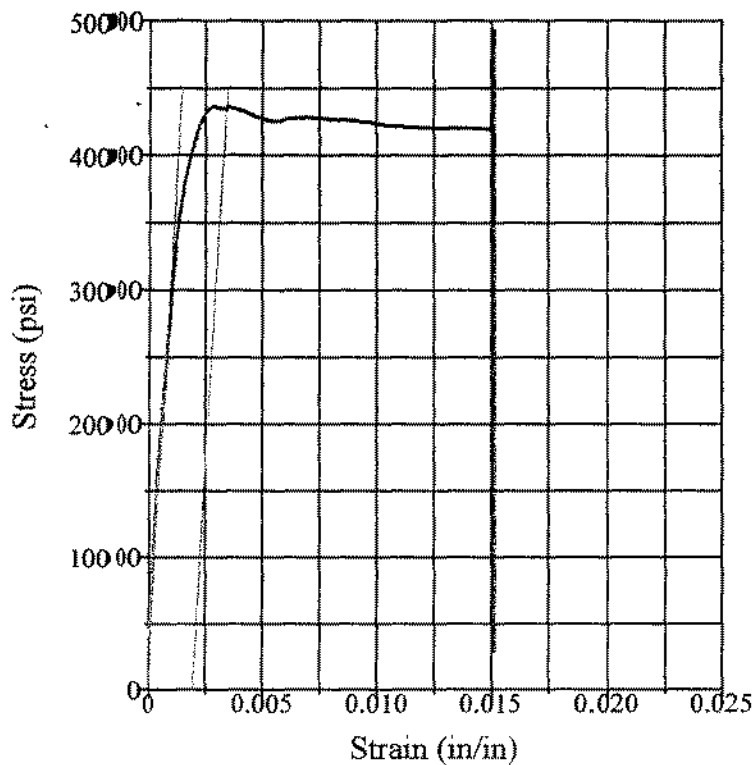


Test Results

Width: 0.5020 in
 After Test Width: 0.4080 in
 Thickness: 0.0230 in
 After Test Thickness: 0.0180 in
 Area: 0.0115 in²
 After Test Area: 0.0073 in²
 Peak Load: 514 lbf
 Tensile Strength: 44708 psi
 Elongation at Yield: 0.0064 in
 Stress at Yield: 37068.1800 psi
 Strain at Yield: 0.0032 in/in
 Time at Yield: 0.3878 min
 Position at Yield: 0.0769 in
 Load at Yield: 426.2840 lbf
 Reduction of Area: 36.5 %
 Total Elongation: 35.0000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.70 in
 Modulus of Elasticity: 29104300 psi

Test Summary

Counter: 18840
 Elapsed Time: 00:04:34
 ATI #: 01-46384
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 2
 Comments: 120-32 10 x 8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 8:52:10 AM
 End Date: 10/16/03
 End Time: 8:56:44 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

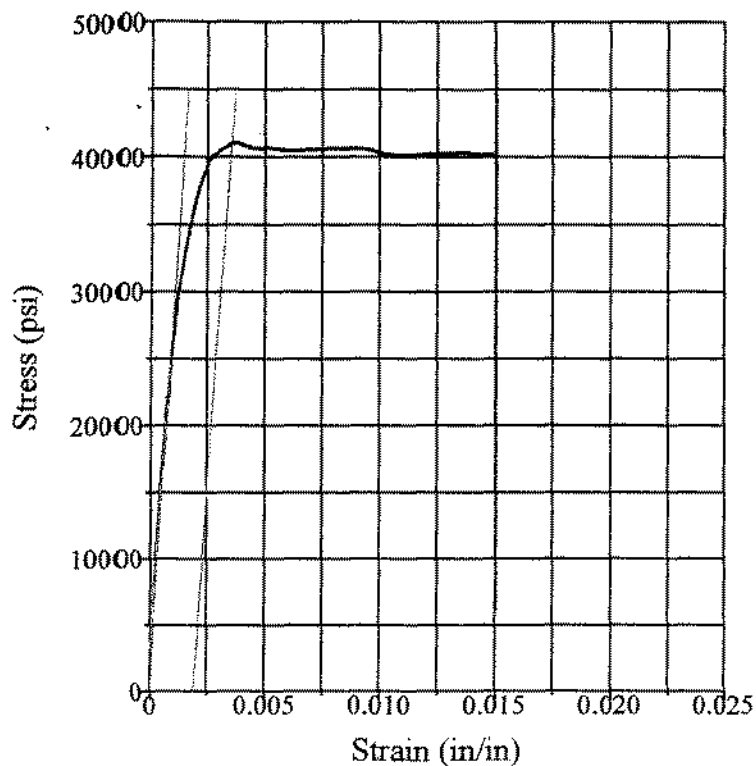


Test Results

Width: 0.5010 in
 After Test Width: 0.4110 in
 Thickness: 0.0210 in
 After Test Thickness: 0.0170 in
 Area: 0.0105 in²
 After Test Area: 0.0070 in²
 Peak Load: 518 lbf
 Tensile Strength: 49338 psi
 Elongation at Yield: 0.0068 in
 Stress at Yield: 43503.5300 psi
 Strain at Yield: 0.0034 in/in
 Time at Yield: 0.3293 min
 Position at Yield: 0.0652 in
 Load at Yield: 456.7870 lbf
 Reduction of Area: 33.3 %
 Total Elongation: 35.5000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.71 in
 Modulus of Elasticity: 29264100 psi

Test Summary

Counter: 18841
 Elapsed Time: 00:04:35
 ATI #: 01-46384
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 3
 Comments: 120 x 32 10 x 8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 9:00:48 AM
 End Date: 10/16/03
 End Time: 9:05:23 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

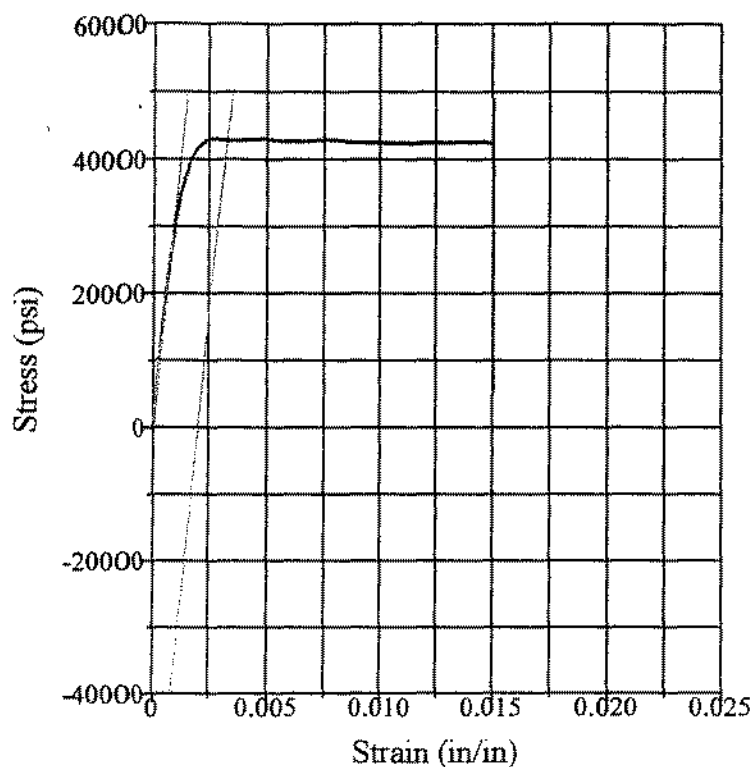


Test Results

Width: 0.5070 in
 After Test Width: 0.4190 in
 Thickness: 0.0220 in
 After Test Thickness: 0.0170 in
 Area: 0.0112 in²
 After Test Area: 0.0071 in²
 Tensile Strength: 46767 psi
 Peak Load: 524 lbf
 Load at Yield: 458.3719 lbf
 Position at Yield: 0.0641 in
 Time at Yield: 0.3237 min
 Strain at Yield: 0.0035 in/in
 Stress at Yield: 40926.0600 psi
 Elongation at Yield: 0.0070 in
 Reduction of Area: 36.6 %
 Total Elongation: 32.5000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.65 in
 Modulus of Elasticity: 25398600 psi

Test Summary

Counter: 18842
 Elapsed Time: 00:04:28
 ATI #: 01-46384
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 4
 Comments: 120.32 10x8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 9:08:45 AM
 End Date: 10/16/03
 End Time: 9:13:13 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

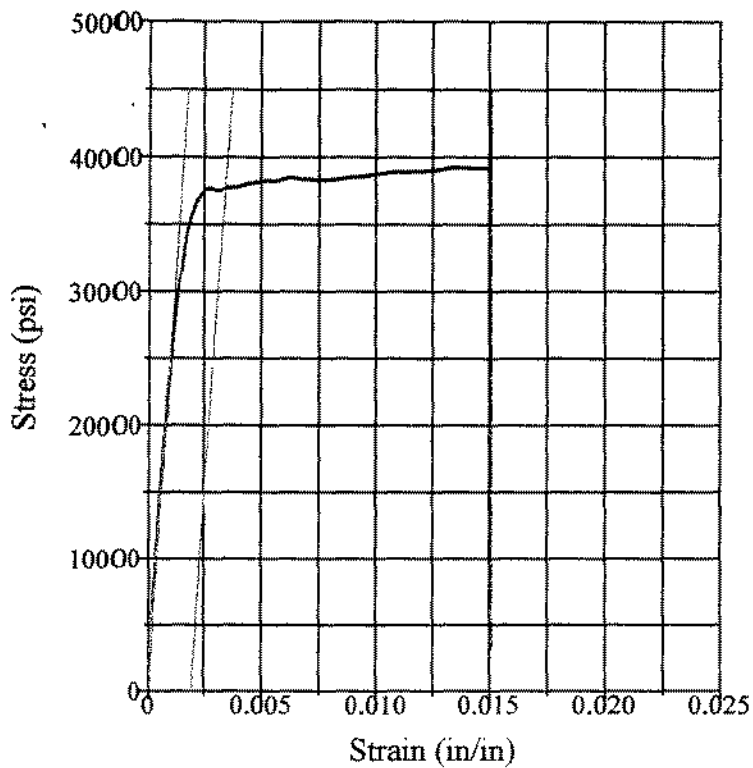


Test Results

Width: 0.5020 in
 After Test Width: 0.4080 in
 Thickness: 0.0210 in
 After Test Thickness: 0.0170 in
 Area: 0.0105 in²
 After Test Area: 0.0069 in²
 Tensile Strength: 48930 psi
 Peak Load: 514 lbf
 Load at Yield: 448.5522 lbf
 Position at Yield: 0.0573 in
 Time at Yield: 0.2899 min
 Strain at Yield: 0.0033 in/in
 Stress at Yield: 42719.2600 psi
 Elongation at Yield: 0.0066 in
 Reduction of Area: 34.3 %
 Total Elongation: 33.5000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.67 in
 Modulus of Elasticity: 33115700 psi

Test Summary

Counter: 18843
 Elapsed Time: 00:04:27
 ATI #: 01-46384
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 5
 Comments: 120-32 10 x 8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 9:17:11 AM
 End Date: 10/16/03
 End Time: 9:21:38 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

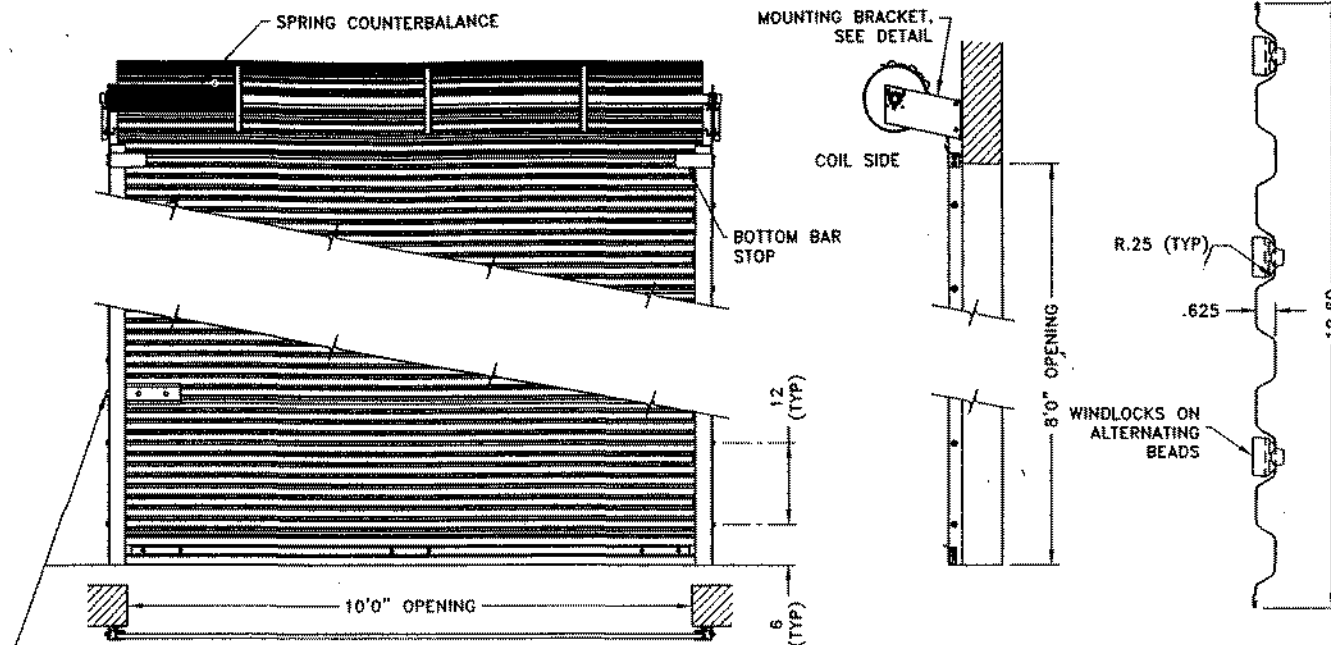


Test Results

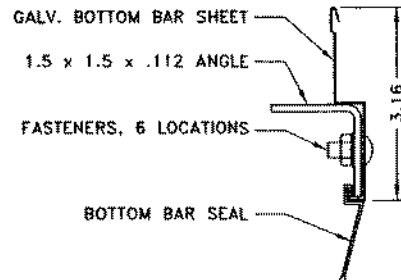
Width: 0.5040 in
 After Test Width: 0.4070 in
 Thickness: 0.0230 in
 After Test Thickness: 0.0170 in
 Area: 0.0116 in²
 After Test Area: 0.0069 in²
 Tensile Strength: 44870 psi
 Peak Load: 520 lbf
 Load at Yield: 436.2040 lbf
 Position at Yield: 0.0660 in
 Time at Yield: 0.3334 min
 Strain at Yield: 0.0034 in/in
 Stress at Yield: 37603.7900 psi
 Elongation at Yield: 0.0069 in
 Reduction of Area: 40.5 %
 Total Elongation: 32.5000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.65 in
 Modulus of Elasticity: 24565500 psi

Test Summary

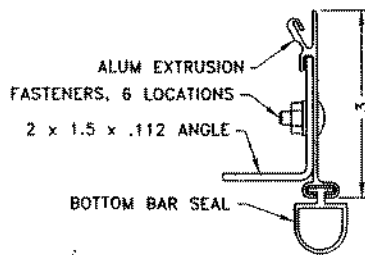
Counter: 18844
 Elapsed Time: 00:04:14
 ATI #: 01-46384
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 6
 Comments: 120-32 10 x 8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 9:24:07 AM
 End Date: 10/16/03
 End Time: 9:28:21 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie


COILSIDE ELEVATION

SCALE = NONE


DS-75 BOTTOM BAR DETAIL

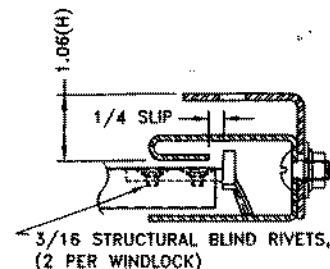
SCALE = 1:2


DS-100 BOTTOM BAR DETAIL*

SCALE = 1:2

PANEL DETAIL

SCALE = 1:4


GUIDE DETAIL

SCALE = FULL

LH BRACKETS:
RH BRACKETS:

STAMPED

BEARING*

TENSION-PRO

BRACKET DETAIL

SCALE = 1:12

NOTES:

1. UNIFORM STATIC AIR PRESSURE TEST PERFORMED PER ASTM E 330
2. TENSILE TEST PERFORMED ON CURTAIN PER ASTM E 8
3. TESTED BY ARCHITECTURAL TESTING, INC.
4. CURTAIN IS .018 MIN STEEL PER ASTM A 653, GR.40
5. SEE 035-0008 FOR COMPONENT DETAILS


Test sample complies with these details.
Deviations are noted.

Report# **01-46384.01**

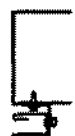
Date **10-31-03** Tech **SBK**

TEST	DATE	TEST REPORT NUMBER	RESULTS
UNIFORM STATIC AIR PRESSURE			
TENSILE			

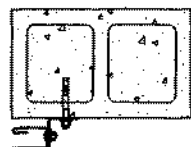
*DENOTES UNTESTED CONFIGURATIONS APPROVED BY COMPARATIVE ANALYSIS

PART NUMBER	WEIGHT (LB.)	TITLE	DRAWN BY	CHECKED BY	APPVD. BY	TOLERANCES (UNLESS OTHERWISE SPECIFIED)	Wayne Dalton
REFERENCE		WINDLOAD TEST, DS-75/DS-100, 10' x 8', SQUARE PROFILE PANEL, ±34 PSF DESIGN (±51 PSF TEST)	M. DAUS			LINEAR .X ± .060 LINEAR .XX ± .030 LINEAR .XXX ± .010 ANGULAR ± .50° DIMENSIONS IN INCHES	Wayne Dalton Building Door Division 14512 Lincoln Way E. Dalton, Ohio 44618
		MATERIAL AS SHOWN	SCALE - WHEN THIS Dwg IS .50" HIGH AS SHOWN	ORIGINAL RELEASE			
REV.	REV. BY	APPVD. BY	RELEASE	DESCRIPTION	SIZE	DRAWING NO.	REVISION
					B	035-0007	

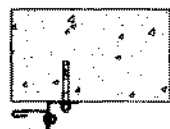
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STEEL JAMB
#5/16-12 x 1 SELFDRILLING SCREW

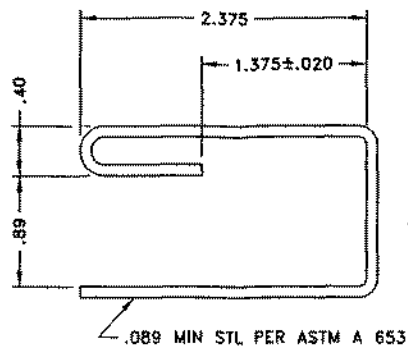


MASONRY JAMB #1
GROUT FILLED BLOCK, 3000PSI MIN GROUT
#3/8 x 3 KINGPIN WEDGE ANCHOR

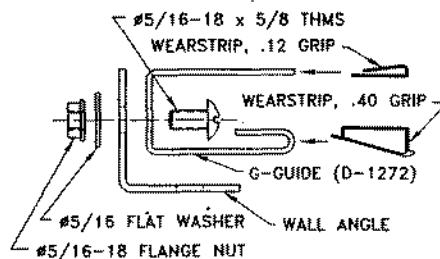


MASONRY JAMB #2*
CONCRETE, 3000PSI MIN
#3/8 x 3 KINGPIN WEDGE ANCHOR

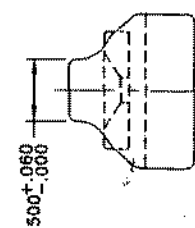
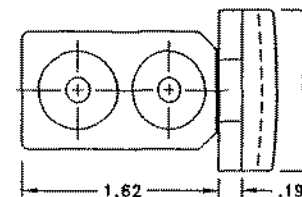
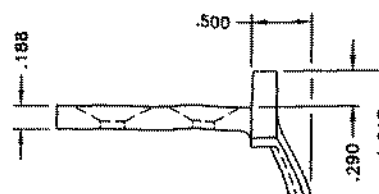
JAMB DETAIL
SCALE = NONE



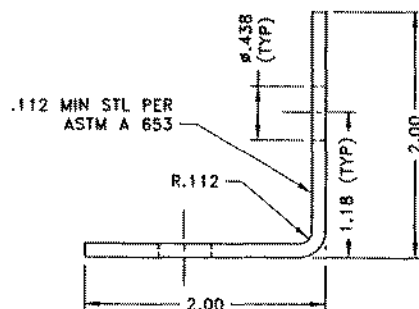
G-GUIDE DETAIL
SCALE = FULL



GUIDE ASSEMBLY DETAIL
SCALE = 1:2



WINDLOCK DETAIL
SCALE = FULL



WALL ANGLE DETAIL
SCALE = FULL



Test sample complies with these details.
Deviations are noted.

Report# 01-46384.01

Date 10-31-03 Tech SAK

NOTE:

1. UNIFORM STATIC AIR PRESSURE TEST PERFORMED PER ASTM E 330
2. TENSILE TEST PERFORMED PER ASTM E 8
3. TESTED BY ARCHITECTURAL TESTING, INC.
4. SEE 035-0007 FOR TEST DETAILS

TEST	DATE	TEST REPORT NUMBER	RESULTS
UNIFORM STATIC AIR PRESSURE			
TENSILE			

*DENOTES UNTESTED CONFIGURATIONS APPROVED BY COMPARATIVE ANALYSIS

PART NUMBER	WEIGHT (LB.)	TITLE	DRAWN BY	CHECKED BY	APPVD. BY	TOLERANCES (UNLESS OTHERWISE SPECIFIED)
REFERENCE		WINDLOAD TEST, DS-75/DS-100, SQUARE PROFILE PANEL, COMPONENT DETAILS	M. DAUS			LINEAR .X ± .060
		MATERIAL AS SHOWN	10/15/2003			LINEAR .XX ± .030
			SCALE - WHEN THIS BOX IS .50" HIGH	ORIGINAL RELEASE		LINEAR .XXX ± .010
			AS SHOWN			ANGULAR ± .50°
						DIMENSIONS IN INCHES



Wayne Dalton
Rolling Door Division
4512 Lincoln Way E.
Dalton, Ohio 44618

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REV.	REVD. BY	APPVD. BY	RELEASE	DESCRIPTION
				REVISIONS

SIZE	DRAWING NO.	REVISION
B	035-0008	