



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

**WAYNE-DALTON CORPORATION
Rolling Door Division**

**Model 822
16' x 8'**

Report No:	01-46389.03
Test Dates:	09/11/03
Report Date:	11/13/03
Expiration Date:	09/11/07

130 Derry Court
York, PA 17402-9405
phone: 717.764.7700
fax: 717.764.4129
www.archtest.com



PERFORMANCE TEST REPORT

Rendered to:

WAYNE-DALTON CORPORATION
Rolling Door Division
14512 Lincoln Way East
Dalton, Ohio 44618

Report No: 01-46389.03
Test Date: 09/11/03
Report Date: 11/13/03

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 822 rolling steel slat door. The door was 16' wide by 8' high. The door was tested to a +/- 37.0 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 16' 0" wide by 8' 0" high. Two jamb conditions were provided. 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.

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Test Specimen:

Product: Model 822 rolling steel slat door

Door Opening: 16' 0" wide by 8' 0" high

Assembly Details: An "E" guide was utilized for the steel jamb and a "Z" guide for the grout filled concrete block jamb. The guide anchor spacing was 24" on center for the steel jamb and 12" on center for the grout filled concrete block jamb. The curtain was fabricated with 22 gauge slats with windlocks every other slat. The windlocks were fastened with two rivets per lock. Reference Wayne-Dalton Drawing # 035-0004 for these 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 (Inch)			Permanent Set (Inch)		
		Transducer Number			Transducer Number		
		#1	#2	#3	#1	#2	#3
+28.00 psf (1/2 Design)	10 sec	Remove Slack					
+56.00 psf (Overload)	10 sec	0.380	12.400	0.38	0.150	0.230	0.150
-28.00 psf (1/2 Design)	10 sec	Remove Slack					
-56.00 psf (Overload)	10 sec	0.850	13.100	0.890	0.060	0.320	0.160

There was no visible damage and the door was operational at the conclusion of testing. The test specimen is the same door tested in ATI Report No. 01-46389.02. The fastener spacing was decreased to 12" on center on the concrete block guide. Higher loads were performed in addition to those performed in ATI Report No. 01-46389.02.

List of Official Observers:

Mark Daus	Wayne-Dalton Corporation
Michael Mendez	Wayne-Dalton Corporation
Tim Graham	Architectural Testing, Inc.
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

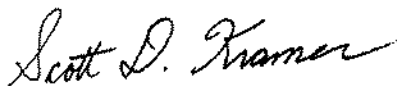
Test Results: The test results are shown on test logs 18882 through 18887 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	38,818	0.0033	811	50,383	29.50	30.40
2	38,527	0.0035	822	50,746	27.20	31.50
3	38,678	0.0034	826	51,619	31.00	36.20
4	41,706	0.0034	828	53,048	29.95	31.40
5	38,551	0.0034	823	51,115	24.25	42.20
6	40,325	0.0030	818	50,790	32.00	36.60
Average	39,434	0.0033	821	51,284	29.00	34.70

The average Tangent Modulus for the tested specimens was 27.7×10^6 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.:



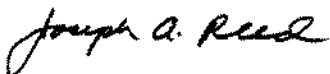
Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician



Digitally Signed by: Connie L. Owad

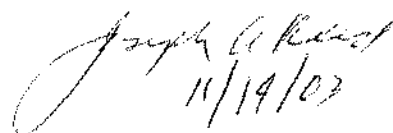
Connie Owad
Technician



Digitally Signed by: Joseph A. Reed

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

SDK:baw
01-46389.03



DOCUMENT CONTROL ADDENDUM #01-46389.00

Current Issue Date: 11/13/03

Report No.: 01-46389.01

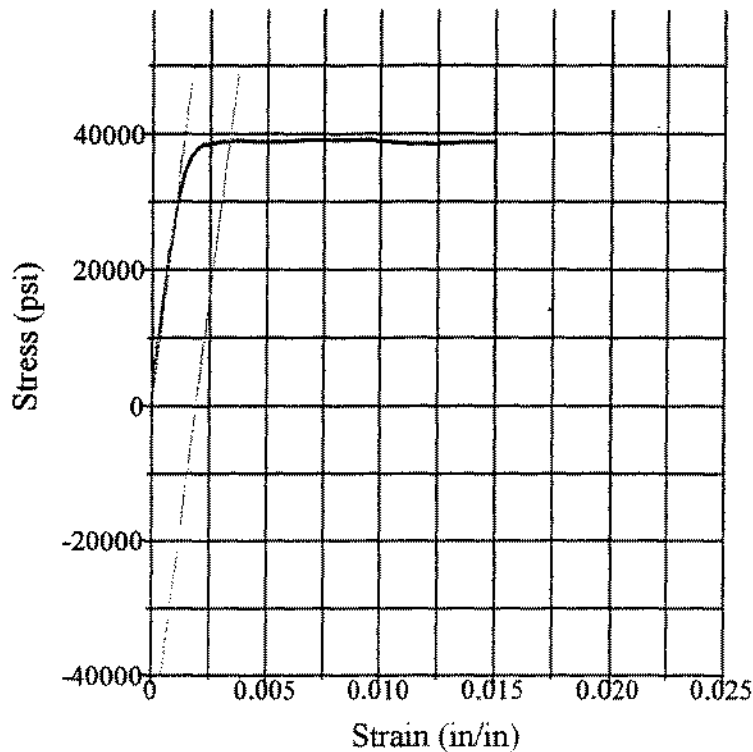
Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model 822, 10' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

Report No.: 01-46389.02

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model 822, 16' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

Report No.: 01-46389.03

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model 822, 16' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

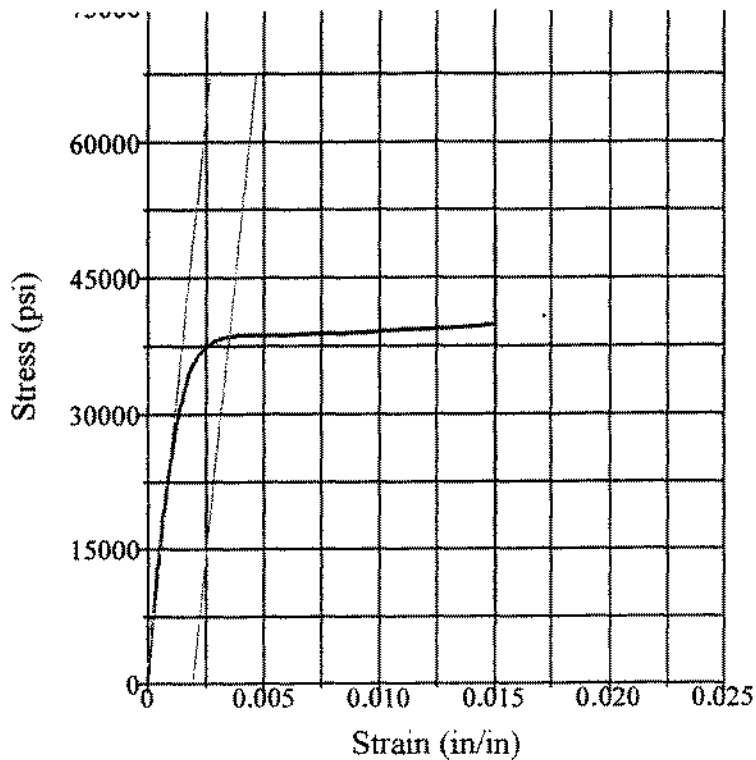


TEST RESULTS

Width: **0.5020 in**
 After Test Width: **0.3855 in**
 Thickness: **0.0320 in**
 After Test Thickness: **0.0290 in**
 Area: **0.0161 in²**
 After Test Area: **0.0112 in²**
 Tensile Strength: **50383 psi**
 Peak Load: **811 lbf**
 Load at Yield: **624.9666 lbf**
 Position at Yield: **0.0675 in**
 Time at Yield: **0.3408 min**
 Strain at Yield: **0.0033 in/in**
 Stress at Yield: **38817.8000 psi**
 Elongation at Yield: **0.0067 in**
 Reduction of Area: **30.4 %**
 Total Elongation: **29.5000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.59 in**
 Modulus of Elasticity: **27168600 psi**

Test Summary

Counter: **18882**
 Elapsed Time: **00:04:27**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **1**
 Comments: **16 x 8 120-32**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **9:11:23 AM**
 End Date: **10/17/03**
 End Time: **9:15:50 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**

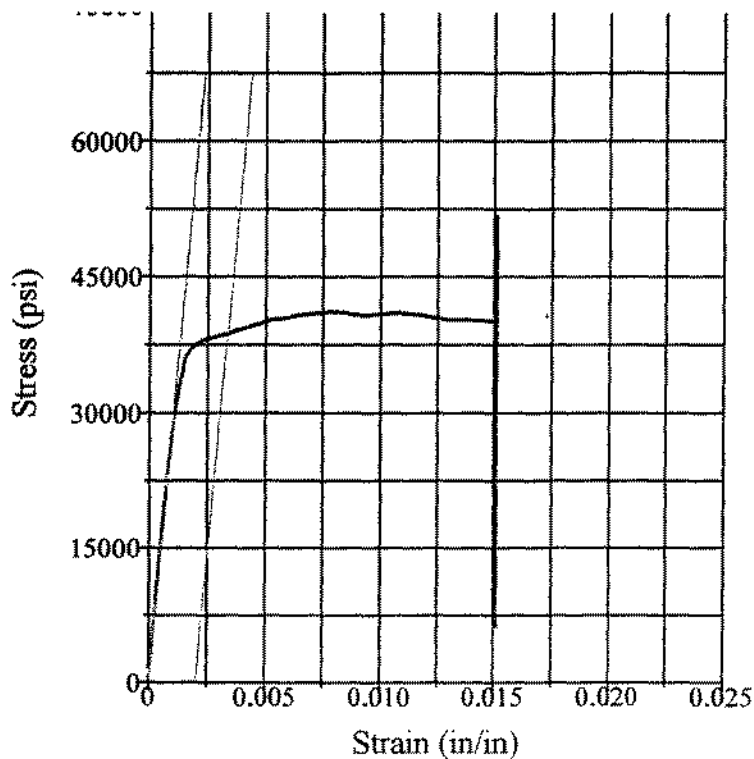


Test Results

Width: 0.5075 in
After Test Width: 0.3975 in
Thickness: 0.0320 in
After Test Thickness: 0.0280 in
Area: 0.0162 in²
After Test Area: 0.0111 in²
Tensile Strength: 50746 psi
Peak Load: 822 lbf
Load at Yield: 624.1406 lbf
Position at Yield: 0.0737 in
Time at Yield: 0.3719 min
Strain at Yield: 0.0035 in/in
Stress at Yield: 38527.1900 psi
Elongation at Yield: 0.0069 in
Reduction of Area: 31.5 %
Total Elongation: 27.2000 %
Pretest Punch Length: 2.000 in
Posttest Punch Length: 2.544 in
Modulus of Elasticity: 24632000 psi

Test Summary

Counter: 18883
Elapsed Time: 00:03:56
ATI #: 01-46389
Client: Wayne Dalton Corporation
Material Type: Steel Door
Sample #: 2
Comments: 16 x 8 120-32
Procedure Name: ASTM E 8-01, Tensile Testing of
Start Date: 10/17/03
Start Time: 9:18:44 AM
End Date: 10/17/03
End Time: 9:22:40 AM
Workstation: Architectural Testing Inc.
Tested By: Connie

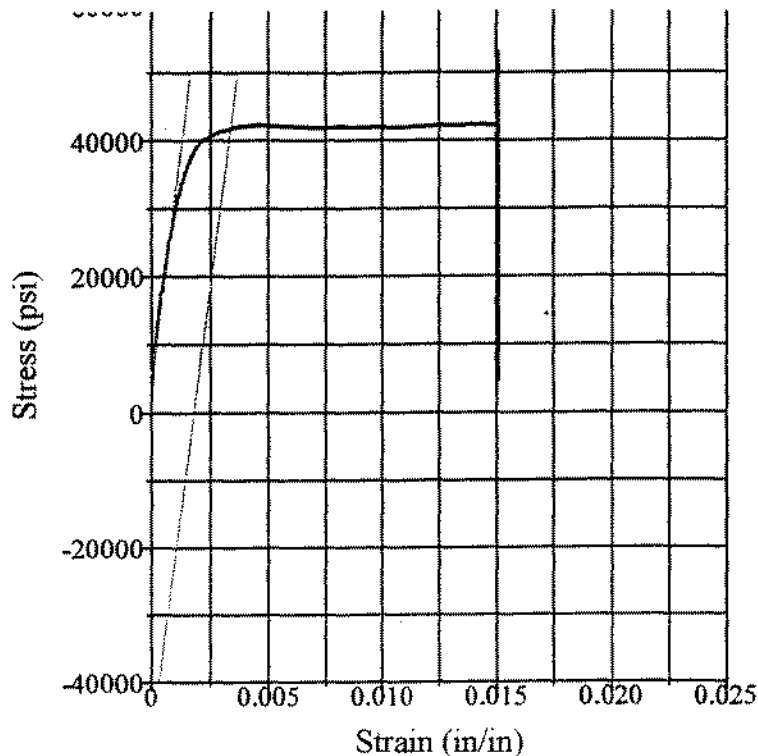


TEST RESULTS

Width: **0.5010 in**
 After Test Width: **0.4000 in**
 Thickness: **0.0320 in**
 After Test Thickness: **0.0255 in**
 Area: **0.0160 in²**
 After Test Area: **0.0102 in²**
 Tensile Strength: **51619 psi**
 Peak Load: **826 lbf**
 Load at Yield: **618.8536 lbf**
 Position at Yield: **0.0875 in**
 Time at Yield: **0.4410 min**
 Strain at Yield: **0.0034 in/in**
 Stress at Yield: **38678.3600 psi**
 Elongation at Yield: **0.0067 in**
 Reduction of Area: **36.2 %**
 Total Elongation: **31.0000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.62 in**
 Modulus of Elasticity: **28617300 psi**

Test Summary

Counter: **18884**
 Elapsed Time: **00:04:18**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **3**
 Comments: **16 x 8 120-32**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **9:25:27 AM**
 End Date: **10/17/03**
 End Time: **9:29:45 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**

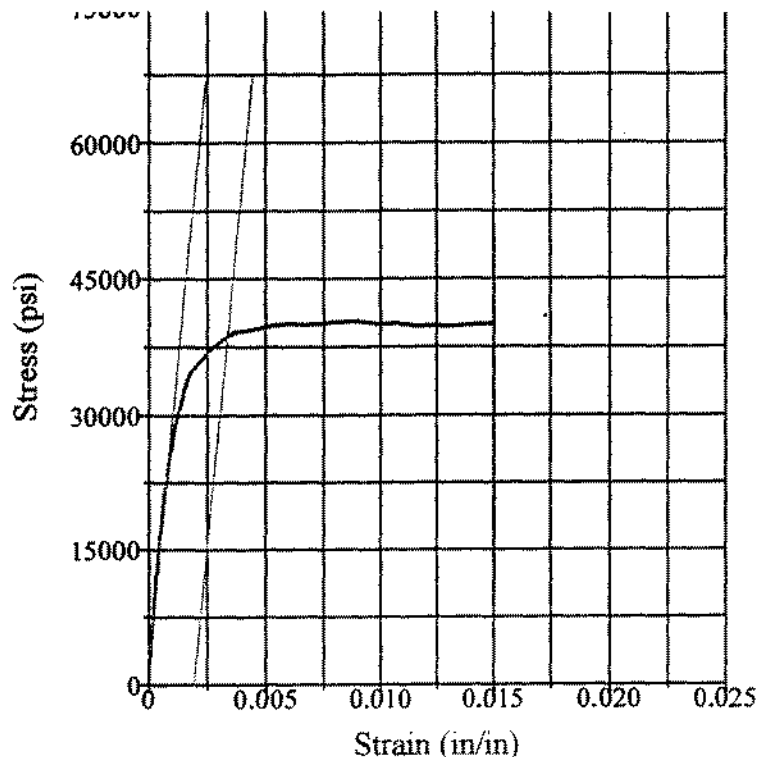


TEST RESULTS

Width:	0.5030 in
After Test Width:	0.3965 in
Thickness:	0.0310 in
After Test Thickness:	0.0270 in
Area:	0.0156 in ²
After Test Area:	0.0107 in ²
Tensile Strength:	53048 psi
Peak Load:	828 lbf
Load at Yield:	650.6140 lbf
Position at Yield:	0.0680 in
Time at Yield:	0.3433 min
Strain at Yield:	0.0034 in/in
Stress at Yield:	41706.0200 psi
Elongation at Yield:	0.0067 in
Reduction of Area:	31.4 %
Total Elongation:	29.9500 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.599 in
Modulus of Elasticity:	26726200 psi

Test Summary

Counter:	18885
Elapsed Time:	00:04:10
ATI #:	01-46389
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	4
Comments:	16 x 8 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/17/03
Start Time:	9:33:45 AM
End Date:	10/17/03
End Time:	9:37:55 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

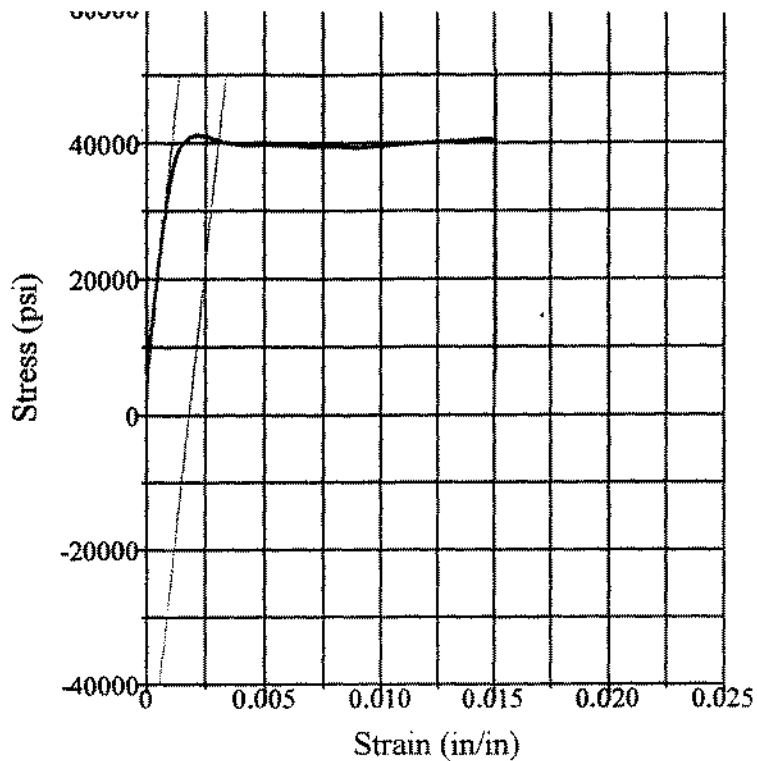


TEST RESULTS

Width:	0.5020 in
After Test Width:	0.3865 in
Thickness:	0.0320 in
After Test Thickness:	0.0240 in
Area:	0.0161 in ²
After Test Area:	0.0093 in ²
Tensile Strength:	51115 psi
Peak Load:	823 lbf
Load at Yield:	620.6761 lbf
Position at Yield:	0.0654 in
Time at Yield:	0.3302 min
Strain at Yield:	0.0034 in/in
Stress at Yield:	38551.3100 psi
Elongation at Yield:	0.0067 in
Reduction of Area:	42.2 %
Total Elongation:	34.2250 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.6845 in
Modulus of Elasticity:	26582500 psi

Test Summary

Counter:	18886
Elapsed Time:	00:04:32
ATI #:	01-46389
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	5
Comments:	16 x 8 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/17/03
Start Time:	9:40:26 AM
End Date:	10/17/03
End Time:	9:44:58 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie



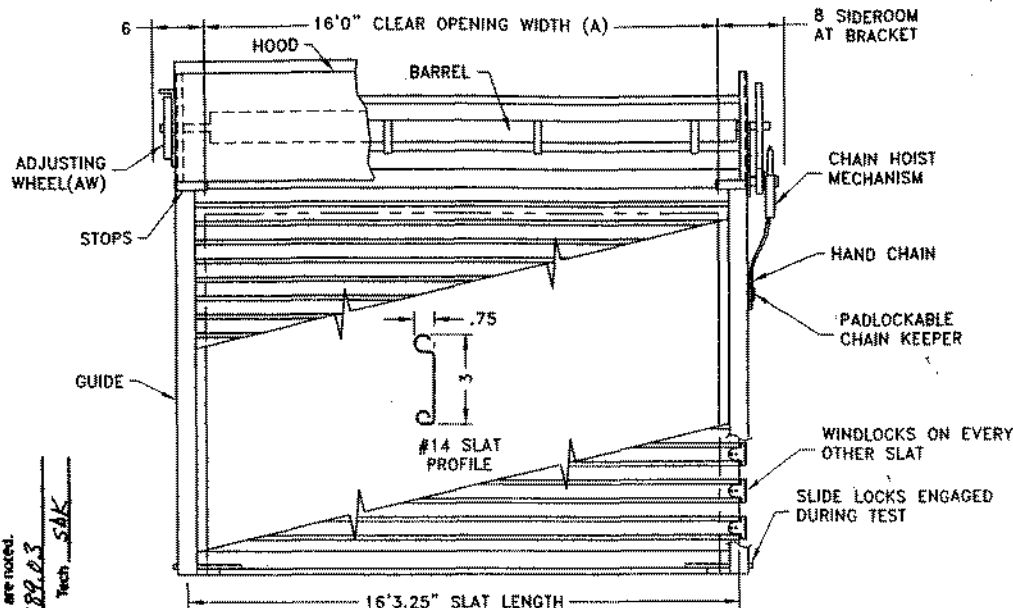
Test Results

Width: 0.5045 in
After Test Width: 0.3918 in
Thickness: 0.0320 in
After Test Thickness: 0.0260 in
Area: 0.0161 in²
After Test Area: 0.0102 in²
Tensile Strength: 50790 psi
Peak Load: 818 lbf
Load at Yield: 649.2332 lbf
Position at Yield: 0.0760 in
Time at Yield: 0.3833 min
Strain at Yield: 0.0030 in/in
Stress at Yield: 40325.0400 psi
Elongation at Yield: 0.0061 in
Reduction of Area: 36.6 %
Total Elongation: 32.0000 %
Pretest Punch Length: 2.000 in
Posttest Punch Length: 2.64 in
Modulus of Elasticity: 32305000 psi

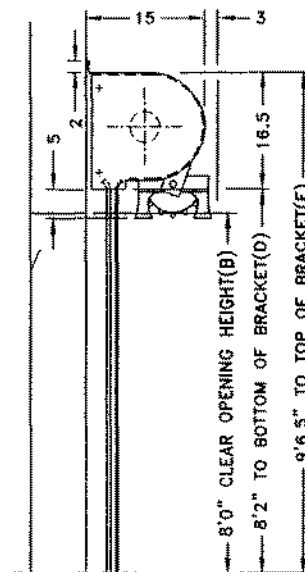
Test Summary

Counter: 18887
Elapsed Time: 00:04:10
ATI #: 01-46389
Client: Wayne Dalton Corporation
Material Type: Steel Door
Sample #: 6
Comments: 16 x 8 120-32
Procedure Name: ASTM E 8-01, Tensile Testing of
Start Date: 10/17/03
Start Time: 9:47:57 AM
End Date: 10/17/03
End Time: 9:52:07 AM
Workstation: Architectural Testing Inc.
Tested By: Connie

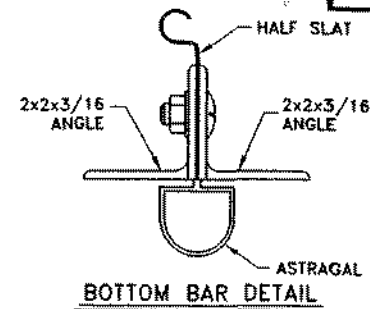
DRAWING NO.
035-0004



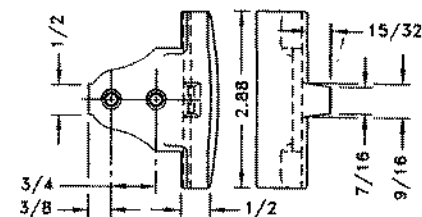
COILSIDE ELEVATION



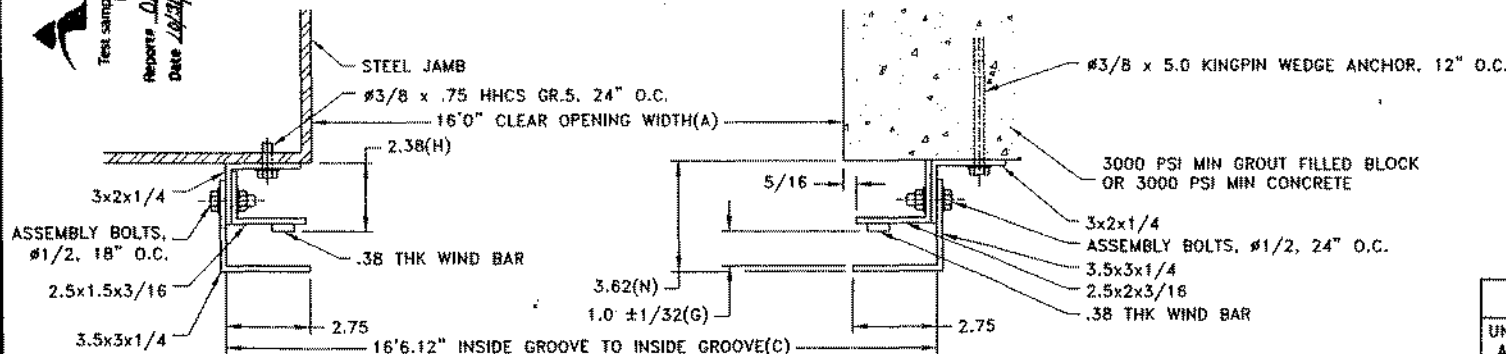
VERTICAL DETAIL



BOTTOM BAR DETAIL



WINDLOCK DETAIL



GUIDE DETAIL

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 .028 MIN STEEL PER ASTM A 653, GR.40
5. GUIDE ANGLES ARE STRUCTURAL STEEL PER ASTM A 36
6. HOOD IS 24GA GALVANIZED STEEL

TEST	DATE	TEST REPORT NUMBER	RESULTS
UNIFORM STATIC AIR PRESSURE			
TENSILE			

PART NUMBER	WEIGHT (LB.)	TITLE	DRAWN BY	CHECKED BY	APPVD. BY	TOLERANCES (UNLESS OTHERWISE SPECIFIED)	Wayne Dalton
REFERENCE		WINDLOAD TEST, 822. 16' x 8', #14 SLAT. ±37 PSF DESIGN (±56 PSF TEST)	M. DAUS 10/15/2003			LINEAR .X ± .060 LINEAR .XX ± .030 LINEAR .XXX ± .010 ANGULAR ± .50° DIMENSIONS IN INCHES	 Wayne Dalton Rolling Door Division 14512 Lincoln Way E. Dalton, Ohio 44618
		MATERIAL AS SHOWN	SCALE - WHEN THIS BOX IS .56" HIGH NONE	ORIGINAL RELEASE			
REV.	REV'D. BY	APPVD. BY	RELEASE	DESCRIPTION	THIS DRAWING IS THE PROPERTY OF WAYNE DALTON AND IS LOANED WITH THE EXPRESSED AGREEMENT THAT THE DRAWINGS AND INFORMATION THEREIN CONTAINED ARE THE PROPERTY OF WAYNE DALTON AND WILL NOT BE REPRODUCED, COPIED, OR OTHERWISE DISPOSED OF, DIRECTLY OR INDIRECTLY, AND WILL NOT BE USED IN WHOLE OR IN PART TO ASSIST IN MAKING OR TO FURNISH ANY INFORMATION FOR THE MAKING OF DRAWINGS, PRINTS, OR OTHER REPRODUCTION THEREOF, OR FOR THE MAKING OF APPARATUS OR PARTS THEREOF, EXCEPT UPON WRITTEN PERMISSION OF WAYNE DALTON FIRST OBTAINED AND SPECIFIC AS TO EACH CASE. THE ACCEPTANCE OF THIS DRAWING WILL BE CONSIDERED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.		
REVISIONS					SIZE	DRAWING NO. B 035-0004	REVISION

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report **01-46389.03**
Date **10/15/03** Tech **SAK**