



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

**WAYNE-DALTON CORPORATION
Rolling Door Division**

**Model 822
22' x 8'**

Report No:	01-46389.04
Test Date:	09/24/03
Report Date:	11/13/03
Expiration Date:	09/24/07

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: 01-46389.04

Test Date: 09/24/03

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 22' 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 22' 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:** 22' 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 18" on center for the steel jamb and 18" for center on the grout filled concrete block jamb. The curtain was fabricated with 22 gauge slats with windlocks on every other slat. The windlocks were fastened with two rivets per lock. Reference Wayne-Dalton Drawing # 035-0006 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
+15.0 psf (1/2 Design)	10 sec	Remove Slack					
+31.00 psf (Design)	10 sec	0.420	13.000	0.480	0.010	0.000	0.030
+47.00 psf (Overload)	10 sec	0.460	14.550	0.520	0.020	0.090	0.040
-15.5 psf (1/2 Design)	10 sec	Remove Slack					
-31.00 psf (Design)	10 sec	0.650	13.930	0.660	0.030	0.100	0.020
-47.00 psf (Overload)	10 sec	0.840	15.160	0.840	0.030	0.100	0.040
-56.0 psf (Overload)	10 sec	0.990	16.260	0.990	0.060	0.230	0.060
+28.0 psf (1/2 Test)	10 sec	Remove Slack					
+56.0 psf (Overload)	10 sec	0.530	16.250	0.630	0.020	0.570	0.000

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

List of Official Observers:

Mark Daus	Wayne-Dalton Corporation
Michael Mendez	Wayne-Dalton Corporation
George Yohe	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

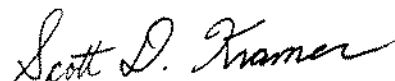
Test Results: The test results are shown on test logs 18894 through 18899 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	40,456	0.0031	805	53,294	29.40	28.50
2	39,662	0.0033	804	53,223	30.00	29.10
3	40,553	0.0030	797	52,462	31.30	28.90
4	38,083	0.0031	760	50,322	31.80	28.50
5	33,784	0.0031	756	50,051	33.80	27.80
6	34,199	0.0032	707	46,796	33.00	31.10
Average	37,790	0.0031	772	51,025	32.60	29.00

The average Tangent Modulus for the tested specimens was 31.1×10^6 psi.

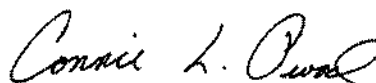
A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the samples tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory. This report may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

For ARCHITECTURAL TESTING, INC.:



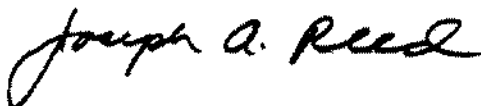
Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician



Digitally Signed by: Connie L. Owad

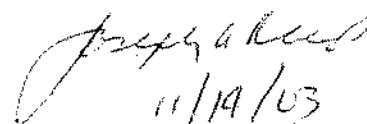
Connie Owad
Technician



Digitally Signed by: Joseph A. Reed

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

SDK:bav
01-46389.04



11/14/03

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

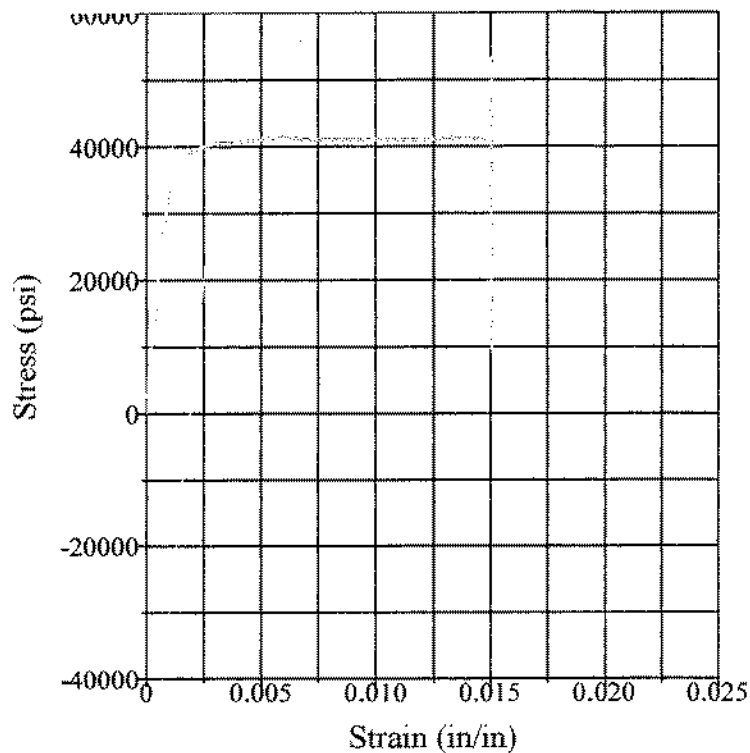
Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model 822, 16' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

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.

Report No.: 01-46389.04

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing on Model 822, 22' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

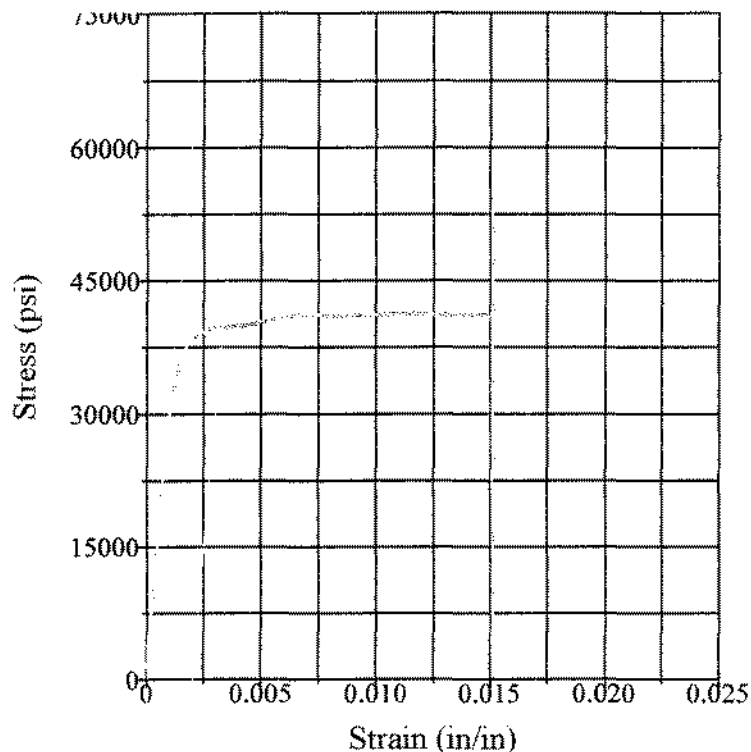


Test Results

Width: 0.5035 in
 After Test Width: 0.3935 in
 Thickness: 0.0300 in
 After Test Thickness: 0.0275 in
 Area: 0.0151 in²
 After Test Area: 0.0108 in²
 Tensile Strength: 53294 psi
 Peak Load: 805 lbf
 Load at Yield: 610.8900 lbf
 Position at Yield: 0.0621 in
 Time at Yield: 0.3137 min
 Strain at Yield: 0.0031 in/in
 Stress at Yield: 40456.2900 psi
 Elongation at Yield: 0.0062 in
 Reduction of Area: 28.5 %
 Total Elongation: 29.4000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.588 in
 Modulus of Elasticity: 33014500 psi

Test Summary

Counter: 18894
 Elapsed Time: 00:04:05
 ATI #: 01-46389
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 1
 Comments: 120-32 22 x 8
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/17/03
 Start Time: 11:00:50 AM
 End Date: 10/17/03
 End Time: 11:04:55 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

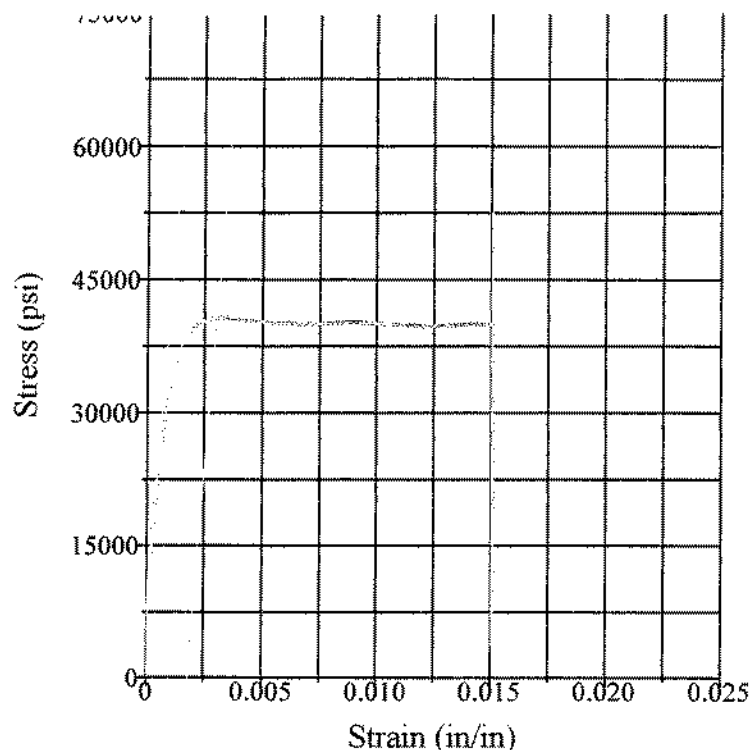


Test Results

Width: **0.5030 in**
 After Test Width: **0.3970 in**
 Thickness: **0.0300 in**
 After Test Thickness: **0.0270 in**
 Area: **0.0151 in²**
 After Test Area: **0.0107 in²**
 Tensile Strength: **53223 psi**
 Peak Load: **804 lbf**
 Load at Yield: **598.8940 lbf**
 Position at Yield: **0.0634 in**
 Time at Yield: **0.3204 min**
 Strain at Yield: **0.0033 in/in**
 Stress at Yield: **39661.8500 psi**
 Elongation at Yield: **0.0067 in**
 Reduction of Area: **29.1 %**
 Total Elongation: **30.0000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.60 in**
 Modulus of Elasticity: **29562500 psi**

Test Summary

Counter: **18895**
 Elapsed Time: **00:04:03**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **2**
 Comments: **120-32 22 x 8**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **11:10:23 AM**
 End Date: **10/17/03**
 End Time: **11:14:26 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**

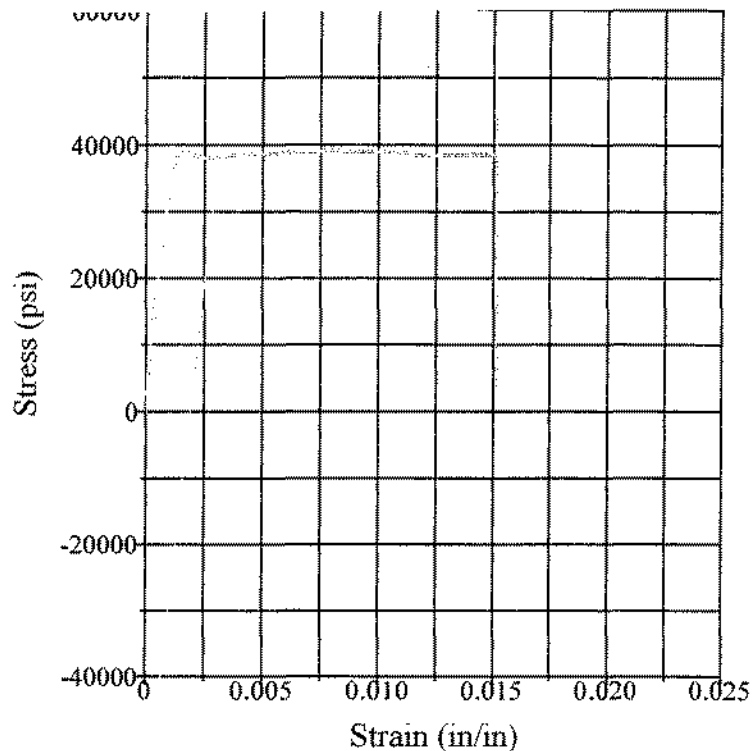


Test Results

Width: **0.5050 in**
 After Test Width: **0.3910 in**
 Thickness: **0.0300 in**
 After Test Thickness: **0.0275 in**
 Area: **0.0152 in²**
 After Test Area: **0.0108 in²**
 Tensile Strength: **52462 psi**
 Peak Load: **797 lbf**
 Load at Yield: **616.4034 lbf**
 Position at Yield: **0.0696 in**
 Time at Yield: **0.3514 min**
 Strain at Yield: **0.0030 in/in**
 Stress at Yield: **40552.8500 psi**
 Elongation at Yield: **0.0060 in**
 Reduction of Area: **28.9 %**
 Total Elongation: **31.2750 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.6255 in**
 Modulus of Elasticity: **33398200 psi**

Test Summary

Counter: **18896**
 Elapsed Time: **00:04:14**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **3**
 Comments: **120-32 22 x 8**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **11:18:20 AM**
 End Date: **10/17/03**
 End Time: **11:22:34 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**

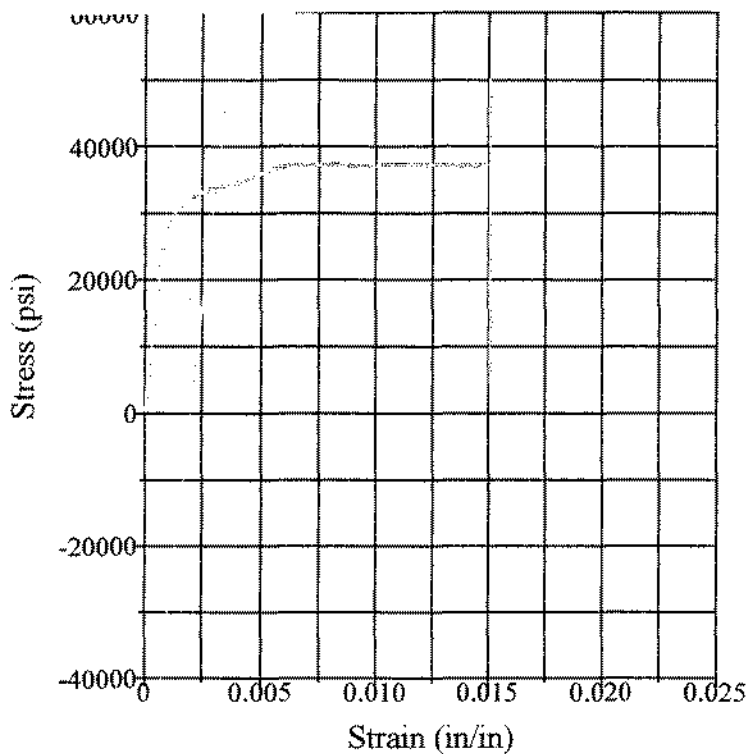


Test Results

Width: **0.5040 in**
 After Test Width: **0.3945 in**
 Thickness: **0.0300 in**
 After Test Thickness: **0.0275 in**
 Area: **0.0151 in²**
 After Test Area: **0.0108 in²**
 Tensile Strength: **50322 psi**
 Peak Load: **760 lbf**
 Load at Yield: **575.0517 lbf**
 Position at Yield: **0.0444 in**
 Time at Yield: **0.2252 min**
 Strain at Yield: **0.0031 in/in**
 Stress at Yield: **38082.8900 psi**
 Elongation at Yield: **0.0062 in**
 Reduction of Area: **28.5 %**
 Total Elongation: **31.7500 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.635 in**
 Modulus of Elasticity: **32085400 psi**

Test Summary

Counter: **18897**
 Elapsed Time: **00:04:11**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **4**
 Comments: **120-32 22 x 8**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **11:24:58 AM**
 End Date: **10/17/03**
 End Time: **11:29:09 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**

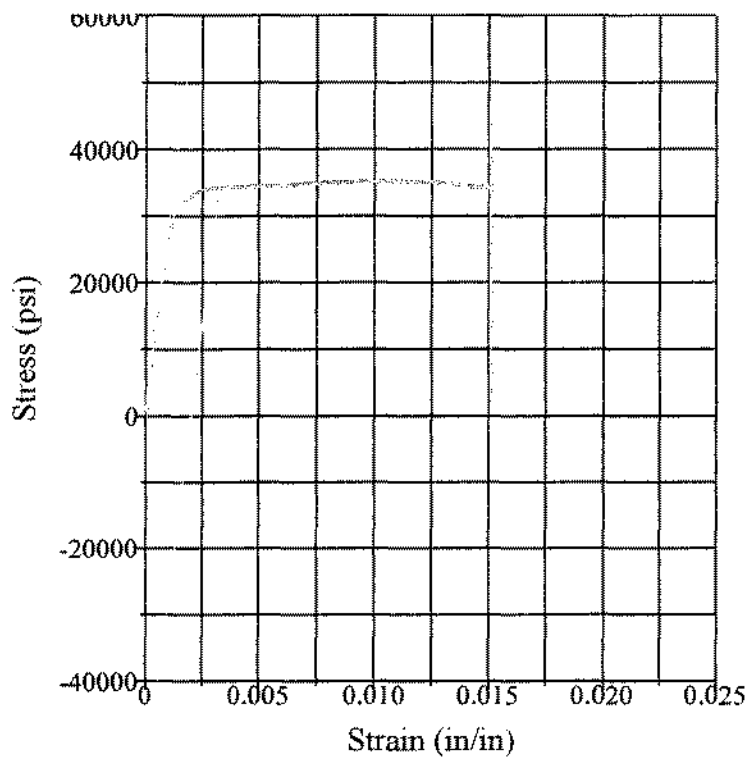


Test Results

Width:	0.5045 in
After Test Width:	0.4030 in
Thickness:	0.0300 in
After Test Thickness:	0.0270 in
Area:	0.0151 in ²
After Test Area:	0.0109 in ²
Tensile Strength:	50051 psi
Peak Load:	756 lbf
Load at Yield:	510.1432 lbf
Position at Yield:	0.0289 in
Time at Yield:	0.1481 min
Strain at Yield:	0.0031 in/in
Stress at Yield:	33784.3200 psi
Elongation at Yield:	0.0062 in
Reduction of Area:	27.8 %
Total Elongation:	33.7500 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.675 in
Modulus of Elasticity:	31086700 psi

Test Summary

Counter:	18898
Elapsed Time:	00:04:18
ATI #:	01-46389
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	5
Comments:	120-32 22 x 8
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/17/03
Start Time:	11:31:32 AM
End Date:	10/17/03
End Time:	11:35:50 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

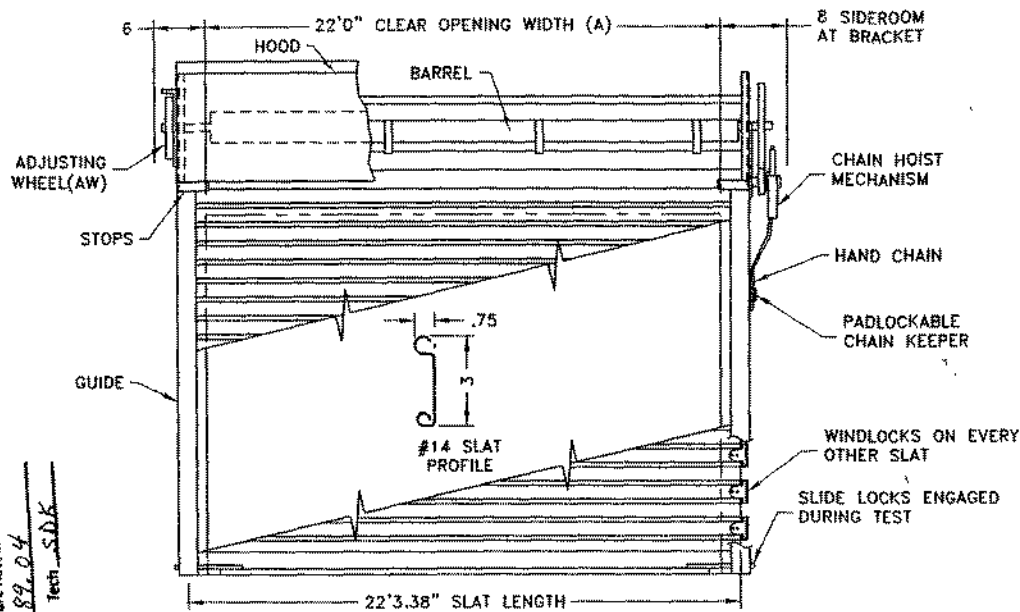


Test Results

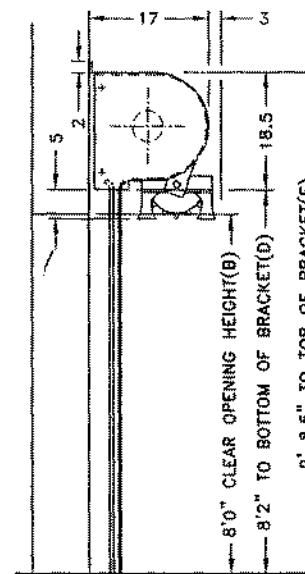
Width: **0.5040 in**
 After Test Width: **0.3870 in**
 Thickness: **0.0300 in**
 After Test Thickness: **0.0270 in**
 Area: **0.0151 in²**
 After Test Area: **0.0104 in²**
 Tensile Strength: **46796 psi**
 Peak Load: **707 lbf**
 Load at Yield: **516.4082 lbf**
 Position at Yield: **0.0398 in**
 Time at Yield: **0.2025 min**
 Strain at Yield: **0.0032 in/in**
 Stress at Yield: **34199.2200 psi**
 Elongation at Yield: **0.0065 in**
 Reduction of Area: **31.1 %**
 Total Elongation: **33.0000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.66 in**
 Modulus of Elasticity: **27426900 psi**

Test Summary

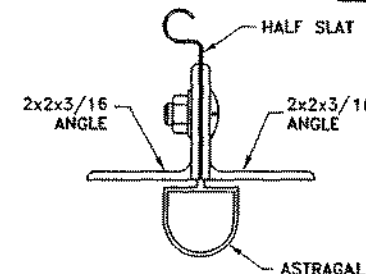
Counter: **18899**
 Elapsed Time: **00:04:36**
 ATI #: **01-46389**
 Client: **Wayne Dalton Corporation**
 Material Type: **Steel Door**
 Sample #: **6**
 Comments: **120-32 22 x 8**
 Procedure Name: **ASTM E 8-01, Tensile Testing of**
 Start Date: **10/17/03**
 Start Time: **11:37:59 AM**
 End Date: **10/17/03**
 End Time: **11:42:35 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Connie**



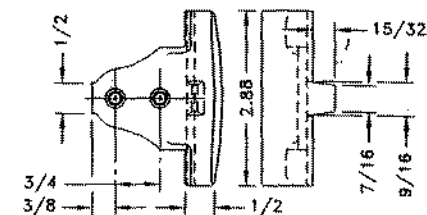
COILSIDE ELEVATION



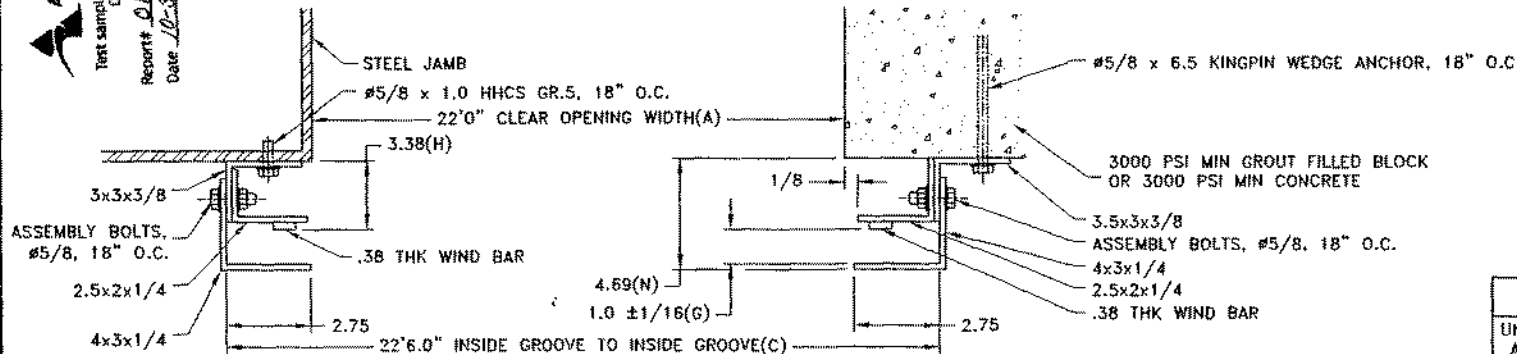
VERTICAL DETAIL



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	APPROV. BY	TOLERANCES (UNLESS OTHERWISE SPECIFIED)
REFERENCE		WINDLOAD TEST, 822, 22' x 8', #14 SLAT, ±37 PSF DESIGN (±56 PSF TEST)	M. DAUS			LINEAR .X ± .060 LINEAR .XX ± .030 LINEAR .XXX ± .010 ANGULAR ± .50° DIMENSIONS IN INCHES
		MATERIAL AS SHOWN	SCALE - WHEN THIS BOX IS .50" HIGH NONE	ORIGINAL RELEASE		

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Wayne Dalton
Rolling Door Division
44512 Lincoln Way E.
Delfon, Ohio 44018

REV.	REV'D. BY	APPVD. BY	RELEASE	DESCRIPTION
				REVISIONS

SIZE	DRAWING NO.	REVISION
B	035-0006	