



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

WAYNE-DALTON CORPORATION
Door and Systems Division

Model DS-350 Square
10'x 8'

Report No:	01-46385.01
Test Date:	09/03/03
Report Date:	11/13/03
Expiration Date:	09/03/07

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PERFORMANCE TEST REPORT

Rendered to:

WAYNE-DALTON CORPORATION
Door and Systems Division
1 Door Drive
Mount Hope, Ohio 44660

Report No: 01-46385.01

Test Date: 09/03/03

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 DS-350 Square commercial roll-up sheet door. The door was 10' wide by 8' high. The door was tested to a +/-44.0 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. 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-350 Square commercial 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" for center thereafter on the steel and the grout filled concrete block jambs. The curtain was fabricated with .018" sheet steel with windlocks on alternating beads. The windlocks were fastened with two rivets per lock. Reference Wayne-Dalton Drawing # 035-0011 and 035-0012 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
+25.0 psf (1/2 Design)	10 sec	Remove Slack					
+34.0 psf (Design)	10 sec	0.840	6.920	0.780	0.080	1.010	0.120
+51.0 psf (Overload)	10 sec	1.020	7.680	0.980	0.120	1.290	0.120
+55.5 psf (Overload)	10 sec	0.820	10.200	1.010	0.090	1.680	0.130
+60.0 psf (Overload)	10 sec	0.860	10.580	1.050	0.090	2.000	0.130
+66.0 psf (Overload)	10 sec	0.890	10.700	1.060	0.140	2.000	0.180
-25.5 psf (1/2 Design)	10 sec	Remove Slack					
-34.0 psf (Design)	10 sec	0.400	8.240	0.390	0.100	1.640	0.120
-51.0 psf (Overload)	10 sec	0.450	8.720	0.410	0.120	1.800	0.130
-55.5 psf (Overload)	10 sec	0.470	8.920	0.420	0.140	1.860	0.130
-60.0 psf (overload)	10 sec	0.470	9.100	0.420	0.090	1.380	0.100
-66.0 psf (Overload)	10 sec	0.459	9.850	0.410	0.150	3.590	0.140

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
Lance Cunningham	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

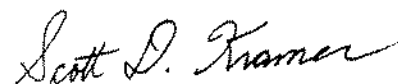
Test Results: The test results are shown on test logs 18851 through 18856 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	40,729	0.0034	524	46,779	34.00	40.20
2	41,589	0.0040	505	50,007	20.00	23.80
3	38,492	0.0038	511	45,596	33.00	39.30
4	41,005	0.0036	490	46,183	32.00	31.10
5	39,405	0.0037	505	45,536	30.00	40.50
6	41,377	0.0034	505	50,034	32.00	32.70
Average	40,433	0.0037	507	47,359	30.20	34.60

The average Tangent Modulus for the tested specimens was 23.8×10^6 psi.

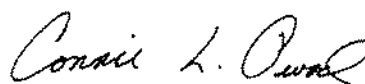
A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the samples tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory. This report may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

For ARCHITECTURAL TESTING, INC.:



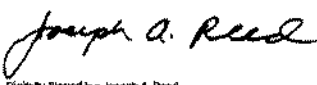
Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician



Digitally Signed by: Connie L. Owad

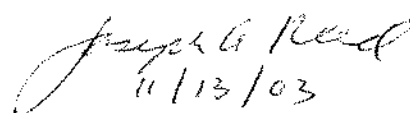
Connie Owad
Technician



Digitally Signed by: Joseph A. Reed

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

SDK:baw
01-46385.01



DOCUMENT CONTROL ADDENDUM #01-46385.00

Current Issue Date: 11/13/03

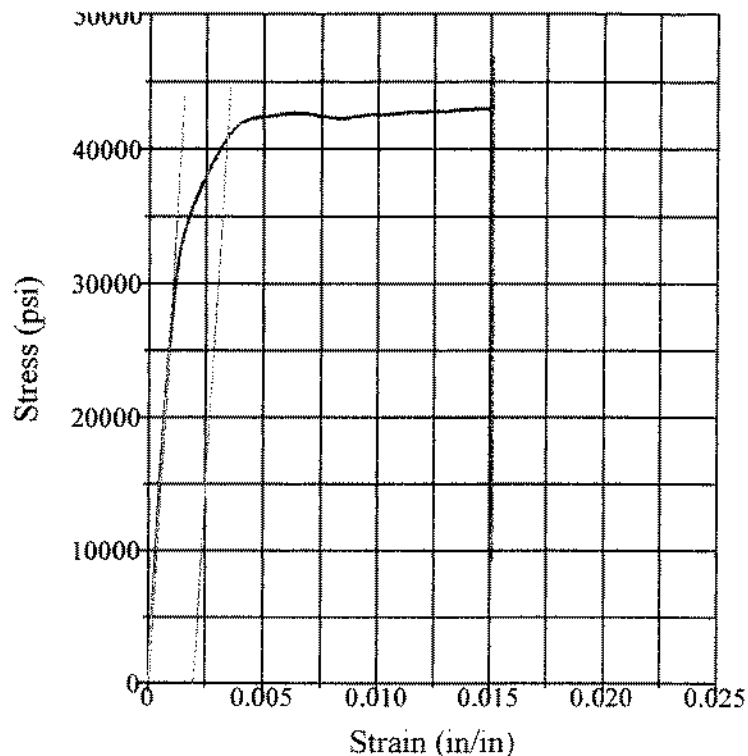
Report No.: 01-46385.01

Requested by: Mark Daus, Wayne Dalton Corporation

Purpose: ASTM E 330 testing of Series/Model DS-350, 10' x 8'.

Issued Date: 11/13/03

Comments: Florida P.E. seal required on report.

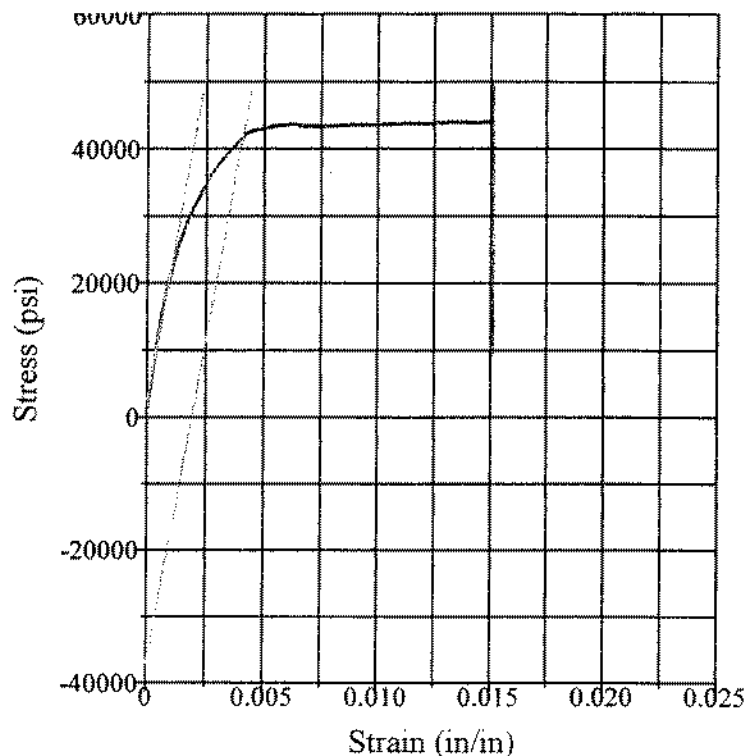


Test Results

Width: 0.5085 in
 After Test Width: 0.3840 in
 Thickness: 0.0220 in
 After Test Thickness: 0.0175 in
 Area: 0.0112 in²
 After Test Area: 0.0067 in²
 Tensile Strength: 46779 psi
 Peak Load: 524 lbf
 Load at Yield: 456.1626 lbf
 Position at Yield: 0.0650 in
 Time at Yield: 0.3283 min
 Strain at Yield: 0.0034 in/in
 Stress at Yield: 40728.8000 psi
 Elongation at Yield: 0.0068 in
 Reduction of Area: 40.2 %
 Total Elongation: 34.0000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.68 in
 Modulus of Elasticity: 28963700 psi

Test Summary

Counter: 18851
 Elapsed Time: 00:04:19
 ATI #: 01-46385
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 1
 Comments: 10 x 8 Square 120-32
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 10:45:36 AM
 End Date: 10/16/03
 End Time: 10:49:55 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

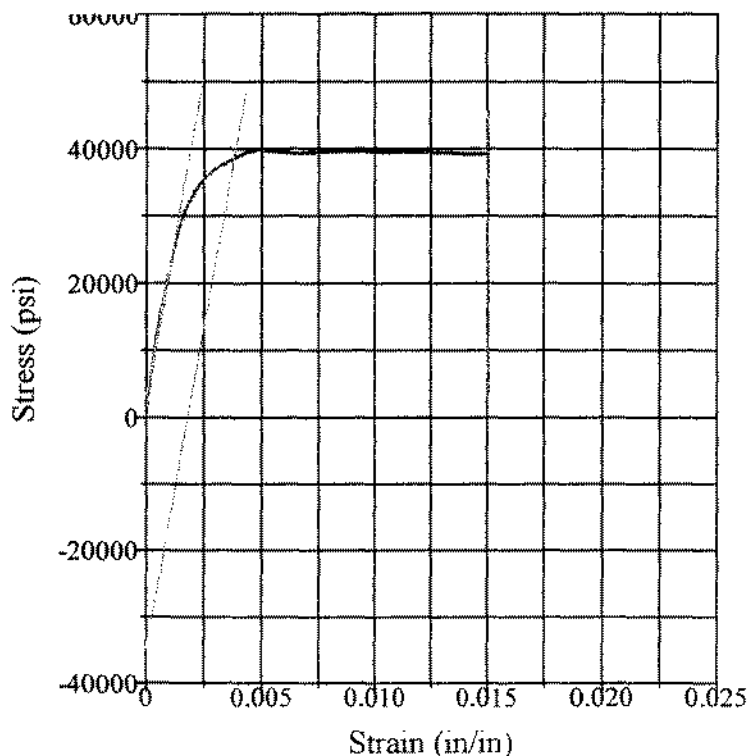


Test Results

Width:	0.5030 in
After Test Width:	0.4405 in
Thickness:	0.0200 in
After Test Thickness:	0.0175 in
Area:	0.0101 in ²
After Test Area:	0.0077 in ²
Tensile Strength:	50007 psi
Peak Load:	505 lbf
Load at Yield:	420.0449 lbf
Position at Yield:	0.0657 in
Time at Yield:	0.3320 min
Strain at Yield:	0.0040 in/in
Stress at Yield:	41588.6000 psi
Elongation at Yield:	0.0080 in
Reduction of Area:	23.8 %
Total Elongation:	20.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.4 in
Modulus of Elasticity:	19523800 psi

Test Summary

Counter:	18852
Elapsed Time:	00:02:55
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	2
Comments:	10 x 8 Square 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	11:20:01 AM
End Date:	10/16/03
End Time:	11:22:56 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

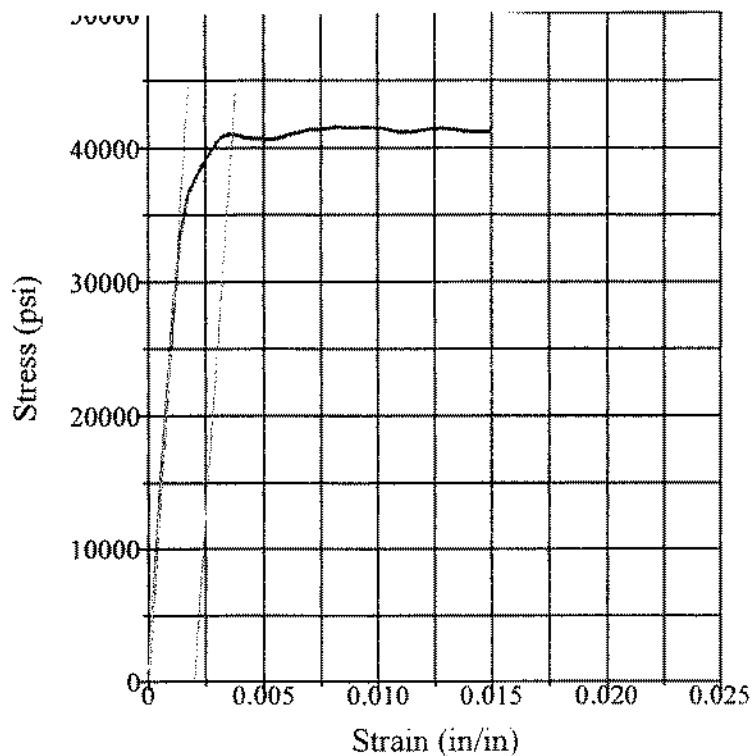


Test Results

Width: 0.5080 in
 After Test Width: 0.4240 in
 Thickness: 0.0220 in
 After Test Thickness: 0.0160 in
 Area: 0.0112 in²
 After Test Area: 0.0068 in²
 Tensile Strength: 45596 psi
 Peak Load: 511 lbf
 Load at Yield: 431.1066 lbf
 Position at Yield: 0.0841 in
 Time at Yield: 0.4238 min
 Strain at Yield: 0.0038 in/in
 Stress at Yield: 38491.6600 psi
 Elongation at Yield: 0.0076 in
 Reduction of Area: 39.3 %
 Total Elongation: 33.0000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.66 in
 Modulus of Elasticity: 19252000 psi

Test Summary

Counter: 18853
 Elapsed Time: 00:04:26
 ATI #: 01-46385
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 3
 Comments: 10 x 8 Square 120-32
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 11:26:08 AM
 End Date: 10/16/03
 End Time: 11:30:34 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

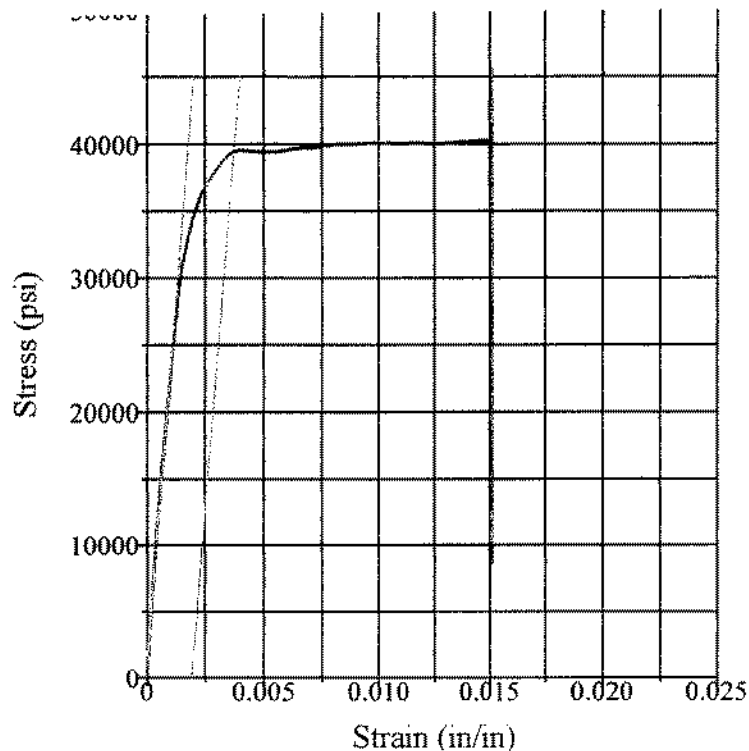


Test Results

Width: 0.5055 in
 After Test Width: 0.4310 in
 Thickness: 0.0210 in
 After Test Thickness: 0.0170 in
 Area: 0.0106 in²
 After Test Area: 0.0073 in²
 Tensile Strength: 46183 psi
 Peak Load: 490 lbf
 Load at Yield: 434.6557 lbf
 Position at Yield: 0.0634 in
 Time at Yield: 0.3205 min
 Strain at Yield: 0.0036 in/in
 Stress at Yield: 41005.2600 psi
 Elongation at Yield: 0.0073 in
 Reduction of Area: 31.1 %
 Total Elongation: 32.0000 %
 Pretest Punch Length: 2.000 in
 Posttest Punch Length: 2.64 in
 Modulus of Elasticity: 24937800 psi

Test Summary

Counter: 18854
 Elapsed Time: 00:04:13
 ATI #: 01-46385
 Client: Wayne Dalton Corporation
 Material Type: Steel Door
 Sample #: 4
 Comments: 10 x 8 Square 120-32
 Procedure Name: ASTM E 8-01, Tensile Testing of
 Start Date: 10/16/03
 Start Time: 11:34:14 AM
 End Date: 10/16/03
 End Time: 11:38:27 AM
 Workstation: Architectural Testing Inc.
 Tested By: Connie

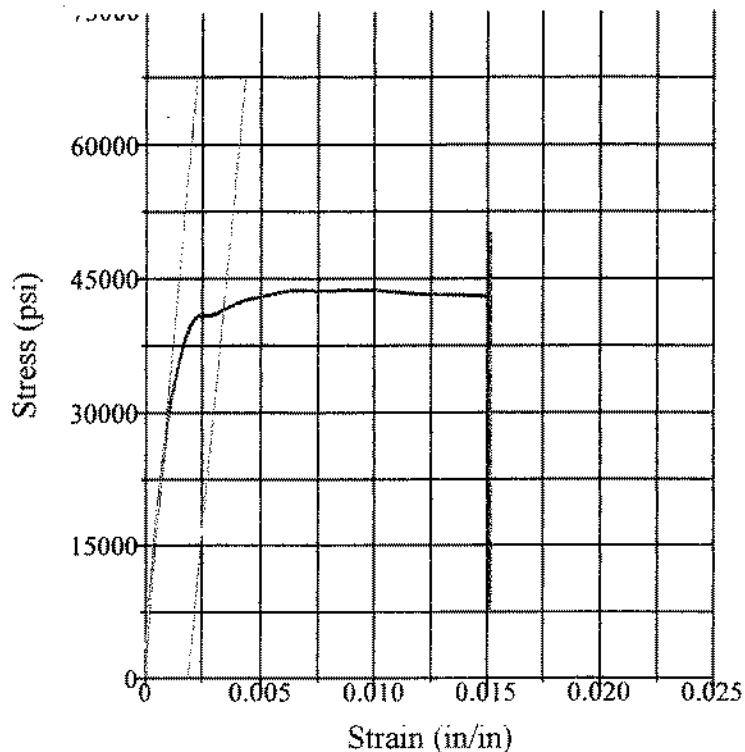


Test Results

Width:	0.5045 in
After Test Width:	0.4120 in
Thickness:	0.0220 in
After Test Thickness:	0.0160 in
Area:	0.0111 in ²
After Test Area:	0.0066 in ²
Tensile Strength:	45536 psi
Peak Load:	505 lbf
Load at Yield:	437.3969 lbf
Position at Yield:	0.0855 in
Time at Yield:	0.4308 min
Strain at Yield:	0.0037 in/in
Stress at Yield:	39405.1300 psi
Elongation at Yield:	0.0074 in
Reduction of Area:	40.5 %
Total Elongation:	30.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.60 in
Modulus of Elasticity:	21735700 psi

Test Summary

Counter:	18855
Elapsed Time:	00:04:05
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	5
Comments:	10 x 8 Square 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	11:41:12 AM
End Date:	10/16/03
End Time:	11:45:17 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

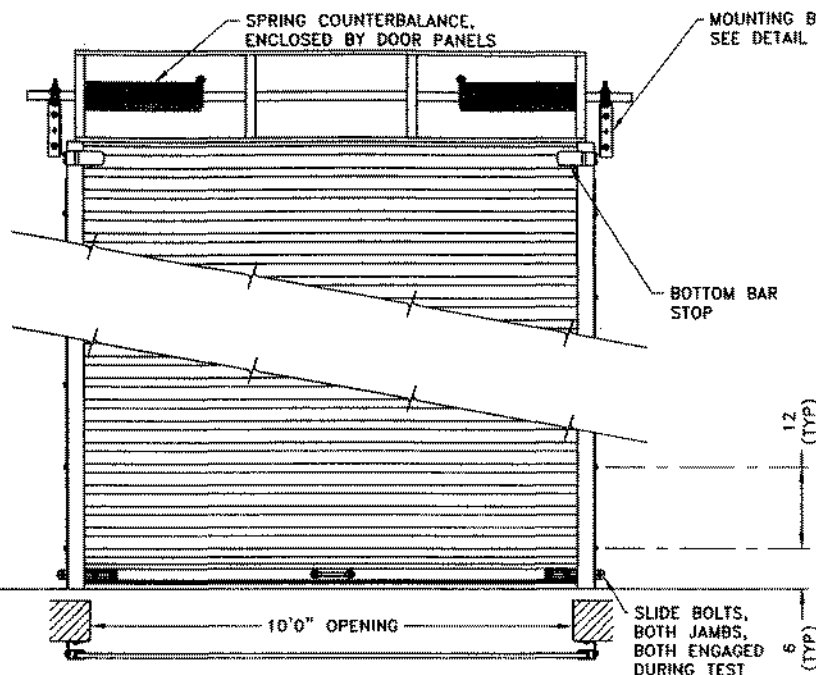


Test Results

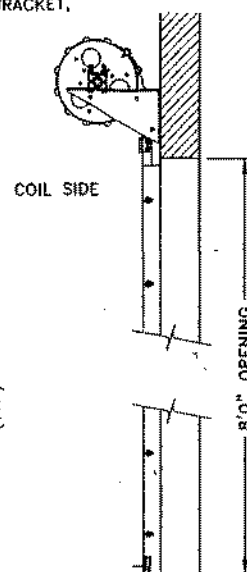
Width:	0.5070 in
After Test Width:	0.4260 in
Thickness:	0.0200 in
After Test Thickness:	0.0160 in
Area:	0.0101 in ²
After Test Area:	0.0068 in ²
Peak Load:	505 lbf
Tensile Strength:	50034 psi
Elongation at Yield:	0.0067 in
Stress at Yield:	41376.7400 psi
Strain at Yield:	0.0034 in/in
Time at Yield:	0.4237 min
Position at Yield:	0.0841 in
Load at Yield:	417.9050 lbf
Reduction of Area:	32.7 %
Total Elongation:	32.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.64 in
Modulus of Elasticity:	28074900 psi

Test Summary

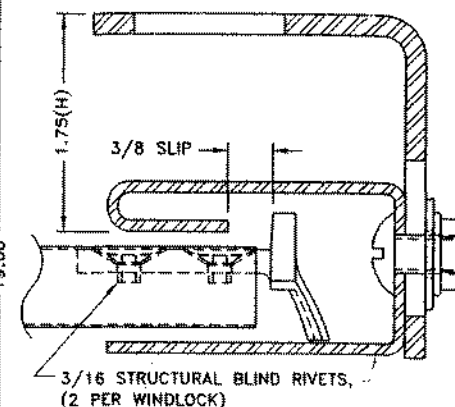
Counter:	18856
Elapsed Time:	00:04:19
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	6
Comments:	10 x 8 Square 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	11:48:13 AM
End Date:	10/16/03
End Time:	11:52:32 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie



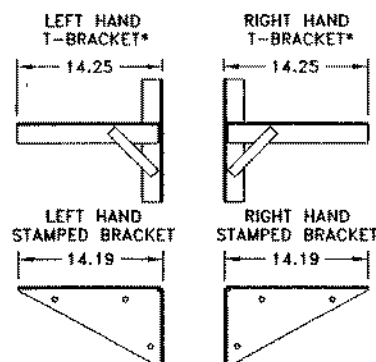
COILSIDE ELEVATION
 SCALE = NONE



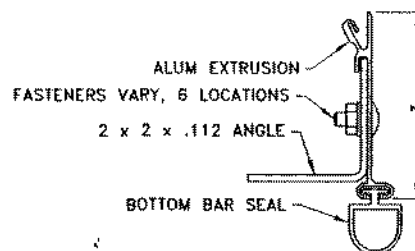
PANEL DETAIL
 SCALE = 1:4



GUIDE DETAIL
 SCALE = FULL



BRACKET DETAIL
 SCALE = 1:12



BOTTOM BAR DETAIL
 SCALE = 1:2



Report# 01-46385-01
 Date 10-31-03 Tech SDK

NOTES:

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. CURTAIN IS .018 MIN STEEL PER ASTM A 653, GR.40
5. SEE 035-0012 FOR COMPONENT 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-350, 10' x 8', SQUARE PROFILE PANEL, ±44 PSF DESIGN (±66 PSF TEST)	M. DAUS			LINEAR .X ± .060
		MATERIAL AS SHOWN	SCALE - WHEN THIS BOX IS .50" HIGH AS SHOWN	ORIGINAL RELEASE		LINEAR .XX ± .030
						LINEAR .XXX ± .010
						ANGULAR ± .50°
						DIMENSIONS IN INCHES

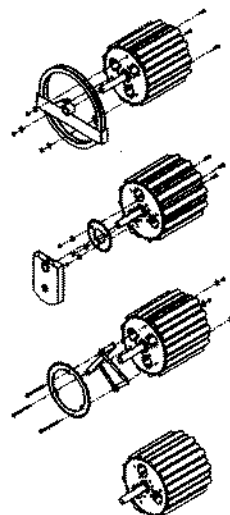


Wayne Dalton
 Rolling Door Division
 14512 Liner Way E.
 Bolton, Ohio 44018

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REV.	REV. BY	APPVD. BY	RELEASE	DESCRIPTION

SIZE	DRAWING NO.	REVISION
B	035-0011	



DIRECT DRIVE CHAIN HOIST OPERATION

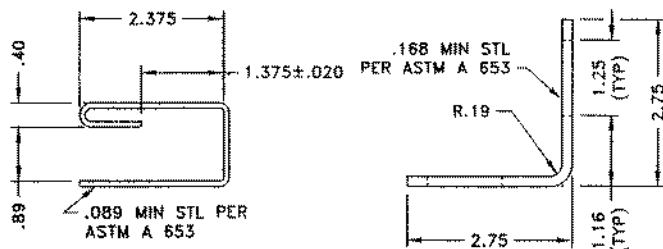
REDUCED DRIVE CHAIN HOIST OPERATION*

MOTOR OPERATION*

MANUAL OPERATION*

OPERATION DETAIL

SCALE = NONE



G-GUIDE DETAIL

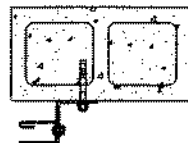
SCALE = 1:2

WALL ANGLE DETAIL

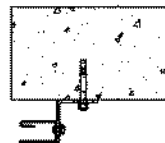
SCALE = 1:2



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



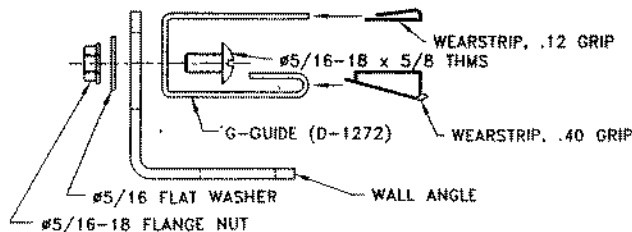
MASONRY JAMB #1
GROUT FILLED BLOCK, 3000PSI MIN GROUT
#3/8 x 3 KINGPIN WEDGE ANCHOR



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

JAMB DETAIL

SCALE = NONE



GUIDE ASSEMBLY DETAIL

SCALE = 1:2

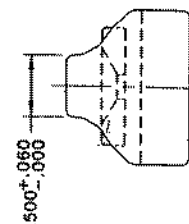
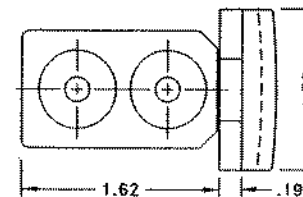
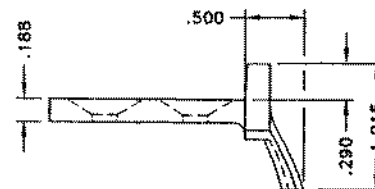


Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 01-46385.01

Date 10-31-03 Tech SDK



WINDLOCK DETAIL

SCALE = FULL

NOTES:

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 035-0009, -0010, & -0011 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-350, SQUARE PROFILE PANEL, COMPONENT DETAILS	M. DAUS			LINEAR .XX ± .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

REV.	REV. BY	APPVD. BY	RELEASE	DESCRIPTION
				REVISIONS

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SIZE	DRAWING NO.	REVISION
B	035-0012	.

Wayne Dalton

Wayne Dalton
Rolling Door Division
14512 Lincoln Way E.
Dalton, Ohio 44418