



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

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

**Model DS-350 Round
12'x 8'**

Report No:	01-46385.05
Test Date:	09/16/03
Report Date:	11/13/03
Expiration Date:	09/16/07

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



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

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

Report No: 01-46385.05

Test Date: 09/16/03

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 Round commercial roll-up sheet door. The door was 12' wide by 8' high. The door was tested to a +/-28.0 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 12' 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 Round commercial roll-up sheet door

Door Opening: 12' 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 for 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 # 035-0014 and 035-0016 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
+14.00 psf (1/2 Design)	10 sec	Remove Slack					
+28.00 psf (Design)	10 sec	0.520	7.720	0.420	0.100	0.620	0.060
+42.00 psf (Overload)	10 sec	0.630	8.440	0.450	0.040	0.720	0.130
-14.00 psf (1/2 Design)	10 sec	Remove Slack					
-28.00 psf (Design)	10 sec	0.980	10.360	0.930	0.160	1.960	0.130
-42.00 psf (Overload)	10 sec	1.150	10.880	1.080	0.200	2.280	0.170

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
Eric Rock	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 18845 through 18850 (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	41,997	0.0033	519	48,486	34.00	24.30
2	36,656	0.0035	515	48,106	29.50	33.60
3	42,301	0.0035	511	48,167	32.50	31.10
4	40,356	0.0039	514	48,060	30.00	33.60
5	41,747	0.0037	514	50,874	31.00	16.80
6	40,074	0.0034	493	48,373	31.50	36.30
Average	40,522	0.0036	511	48,678	31.40	29.30

The average Tangent Modulus for the tested specimens was 25.2×10^6 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.:

Scott D. Kramer

Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician

Connie L. Owad

Digitally Signed by: Connie L. Owad

Connie Owad
Technician

Joseph A. Reed

Digitally Signed by: Joseph A. Reed

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

SDK:baw
01-46385.05

Joseph A. Reed
11/13/03

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.

Report No.: 01-46385.02

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing of Series/Model DS-350, 12' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

Report No.: 01-46385.03

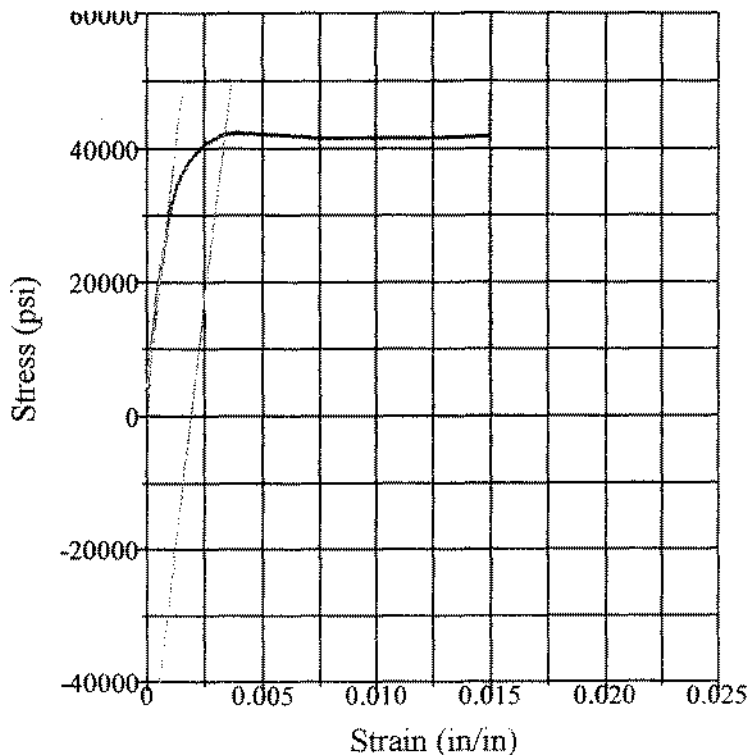
Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing of Series/Model DS-350, 16' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

Report No.: 01-46385.04

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing of Series/Model DS-350 Round, 10' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

Report No.: 01-46385.05

Requested by: Mark Daus, Wayne Dalton Corporation
Purpose: ASTM E 330 testing of Series/Model DS-350, 12' x 8'.
Issued Date: 11/13/03
Comments: Florida P.E. seal required on report.

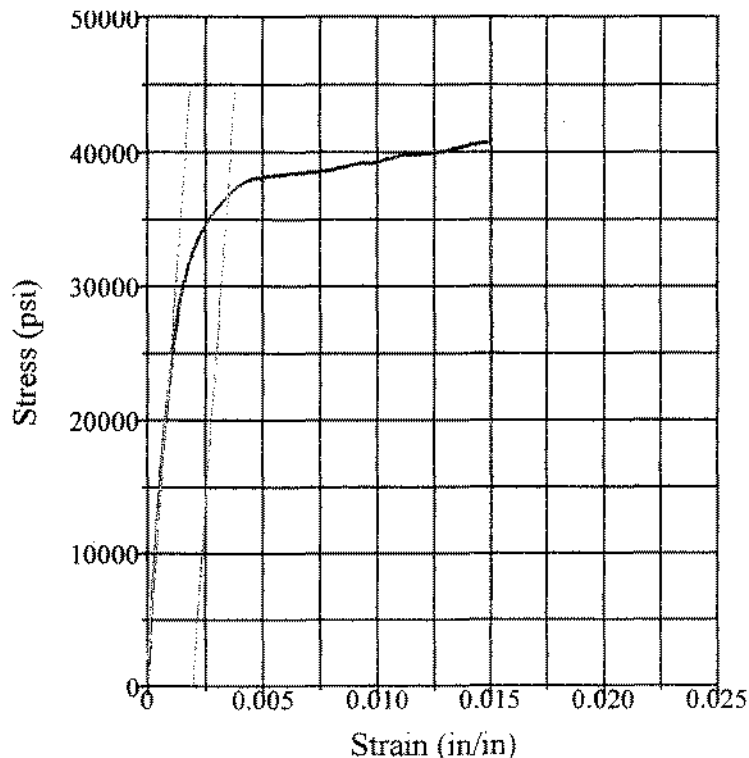


Test Results

Width:	0.5115 in
After Test Width:	0.4280 in
Thickness:	0.0210 in
After Test Thickness:	0.0190 in
Area:	0.0107 in ²
After Test Area:	0.0081 in ²
Tensile Strength:	48486 psi
Peak Load:	519 lbf
Load at Yield:	449.3667 lbf
Position at Yield:	0.0499 in
Time at Yield:	0.2530 min
Strain at Yield:	0.0033 in/in
Stress at Yield:	41996.8900 psi
Elongation at Yield:	0.0067 in
Reduction of Area:	24.3 %
Total Elongation:	34.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.68 in
Modulus of Elasticity:	28964600 psi

Test Summary

Counter:	18845
Elapsed Time:	00:04:24
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	1
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	9:35:08 AM
End Date:	10/16/03
End Time:	9:39:32 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

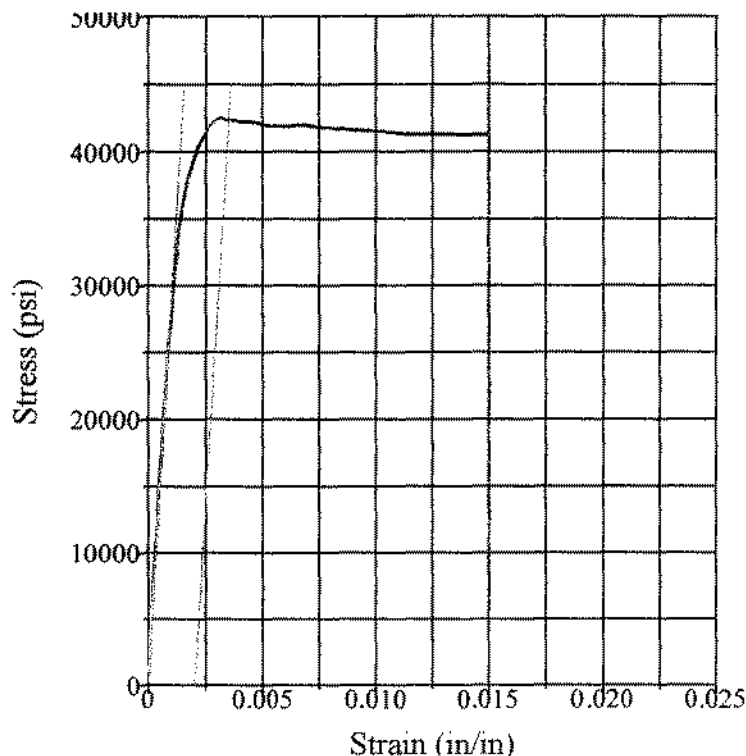


Test Results

Width:	0.5095 in
After Test Width:	0.4170 in
Thickness:	0.0210 in
After Test Thickness:	0.0170 in
Area:	0.0107 in ²
After Test Area:	0.0071 in ²
Tensile Strength:	48106 psi
Peak Load:	515 lbf
Load at Yield:	392.2223 lbf
Position at Yield:	0.0585 in
Time at Yield:	0.2962 min
Strain at Yield:	0.0035 in/in
Stress at Yield:	36656.2900 psi
Elongation at Yield:	0.0069 in
Reduction of Area:	33.6 %
Total Elongation:	29.5000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.59 in
Modulus of Elasticity:	23607300 psi

Test Summary

Counter:	18846
Elapsed Time:	00:04:08
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	2
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	9:45:04 AM
End Date:	10/16/03
End Time:	9:49:12 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

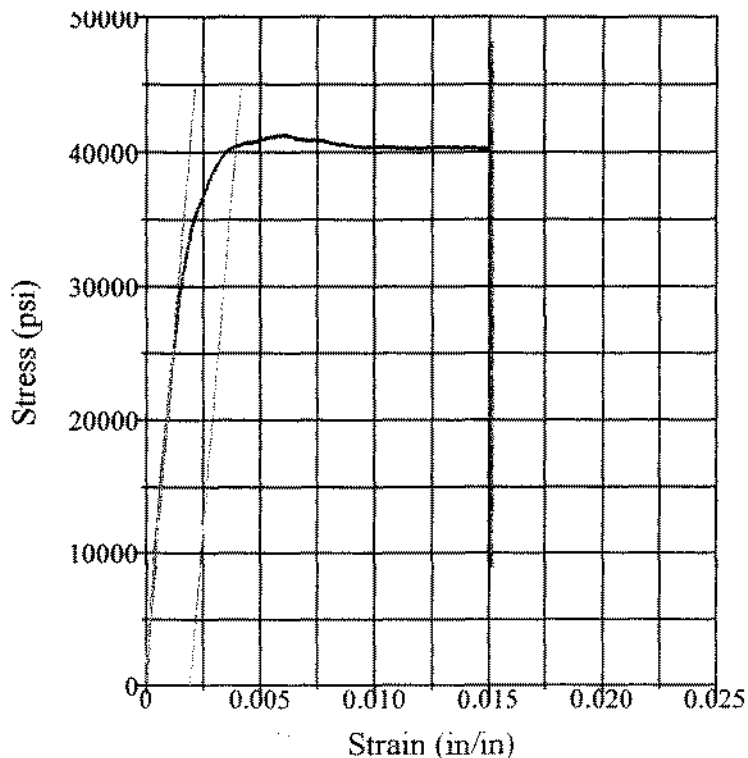


Test Results

Width:	0.5070 in
After Test Width:	0.4080 in
Thickness:	0.0210 in
After Test Thickness:	0.0180 in
Area:	0.0106 in ²
After Test Area:	0.0073 in ²
Tensile Strength:	48167 psi
Peak Load:	511 lbf
Load at Yield:	448.3910 lbf
Position at Yield:	0.0432 in
Time at Yield:	0.2194 min
Strain at Yield:	0.0035 in/in
Stress at Yield:	42301.0400 psi
Elongation at Yield:	0.0070 in
Reduction of Area:	31.1 %
Total Elongation:	32.5000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.65 in
Modulus of Elasticity:	28300000 psi

Test Summary

Counter:	18847
Elapsed Time:	00:04:18
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	3
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	9:53:02 AM
End Date:	10/16/03
End Time:	9:57:20 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

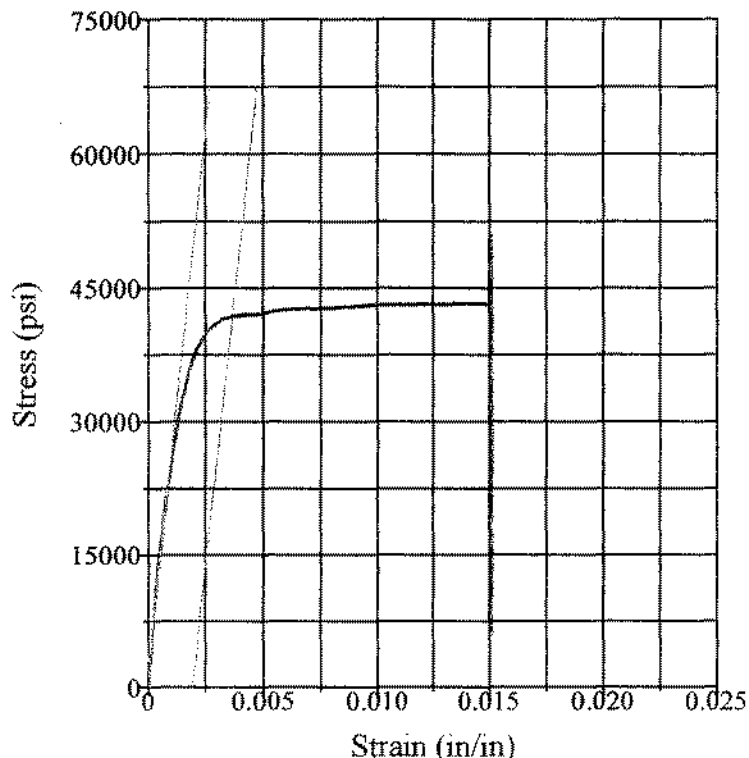


Test Results

Width:	0.5095 in
After Test Width:	0.4150 in
Thickness:	0.0210 in
After Test Thickness:	0.0170 in
Area:	0.0107 in ²
After Test Area:	0.0071 in ²
Tensile Strength:	48060 psi
Peak Load:	514 lbf
Load at Yield:	431.8040 lbf
Position at Yield:	0.0742 in
Time at Yield:	0.3744 min
Strain at Yield:	0.0039 in/in
Stress at Yield:	40355.5200 psi
Elongation at Yield:	0.0078 in
Reduction of Area:	33.6 %
Total Elongation:	30.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.60 in
Modulus of Elasticity:	20214400 psi

Test Summary

Counter:	18848
Elapsed Time:	00:04:11
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	4
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	10:00:12 AM
End Date:	10/16/03
End Time:	10:04:23 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

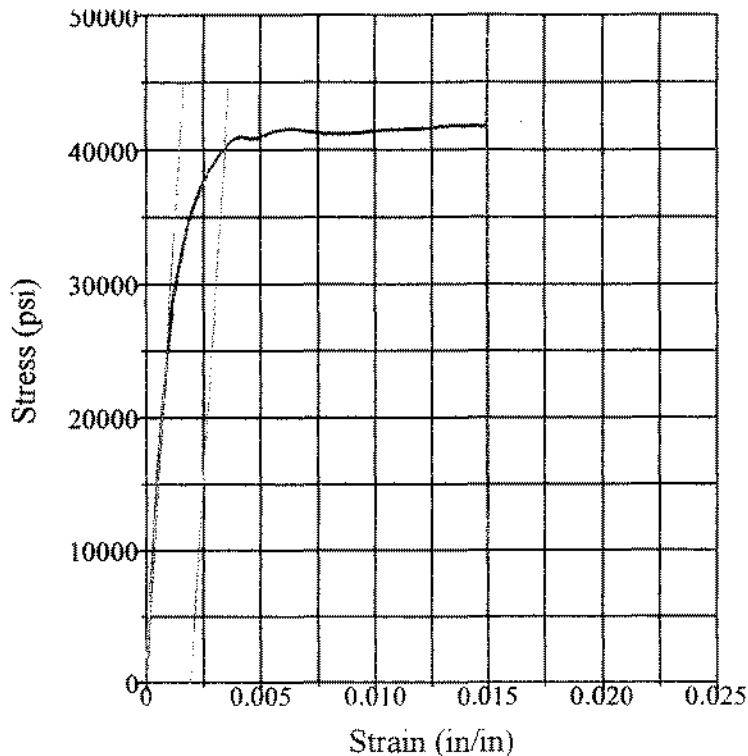


Test Results

Width:	0.5070 in
After Test Width:	0.4400 in
Thickness:	0.0200 in
After Test Thickness:	0.0190 in
Area:	0.0101 in ²
After Test Area:	0.0084 in ²
Peak Load:	514 lbf
Tensile Strength:	50874 psi
Elongation at Yield:	0.0073 in
Stress at Yield:	41747.2600 psi
Strain at Yield:	0.0037 in/in
Time at Yield:	0.3715 min
Position at Yield:	0.0736 in
Load at Yield:	421.6474 lbf
Reduction of Area:	16.8 %
Total Elongation:	31.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.62 in
Modulus of Elasticity:	23790400 psi

Test Summary

Counter:	18849
Elapsed Time:	00:04:17
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	5
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	10:06:51 AM
End Date:	10/16/03
End Time:	10:11:08 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

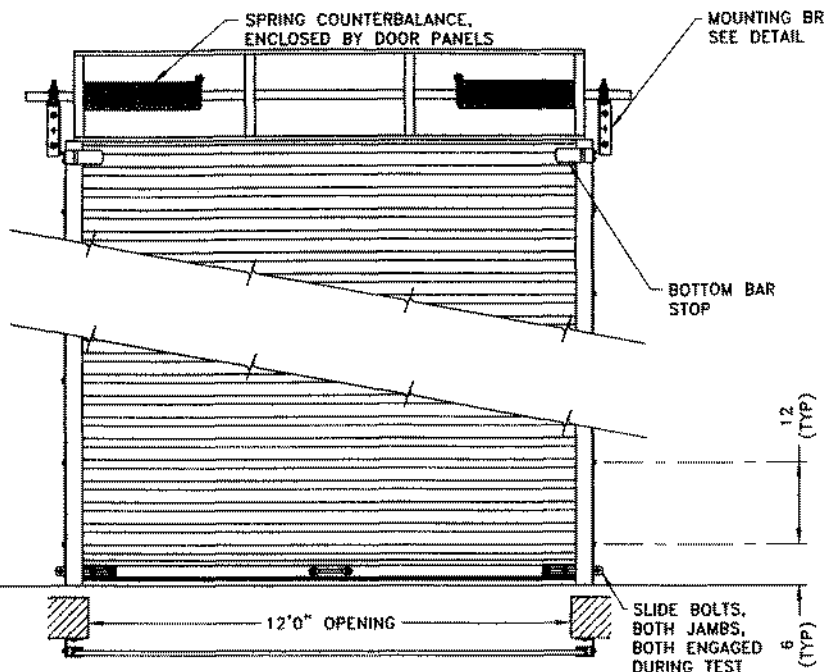


Test Results

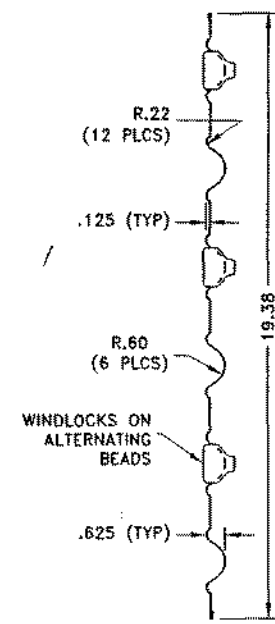
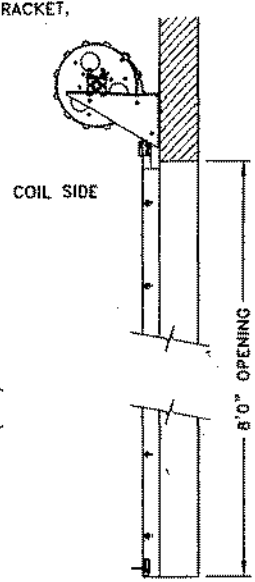
Width:	0.5090 in
After Test Width:	0.4040 in
Thickness:	0.0200 in
After Test Thickness:	0.0160 in
Area:	0.0102 in ²
After Test Area:	0.0065 in ²
Tensile Strength:	48373 psi
Peak Load:	493 lbf
Load at Yield:	408.7567 lbf
Position at Yield:	0.0594 in
Time at Yield:	0.3005 min
Strain at Yield:	0.0034 in/in
Stress at Yield:	40074.1900 psi
Elongation at Yield:	0.0068 in
Reduction of Area:	36.3 %
Total Elongation:	31.5000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.63 in
Modulus of Elasticity:	26265500 psi

Test Summary

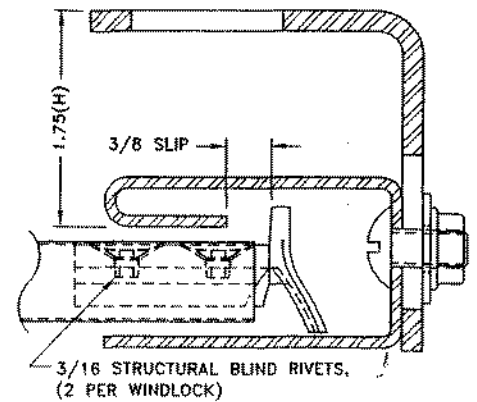
Counter:	18850
Elapsed Time:	00:04:52
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	6
Comments:	12 x 8 Round
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	10:18:53 AM
End Date:	10/16/03
End Time:	10:23:45 AM
Workstation:	Architectural Testing Inc.
Tested By:	Connie



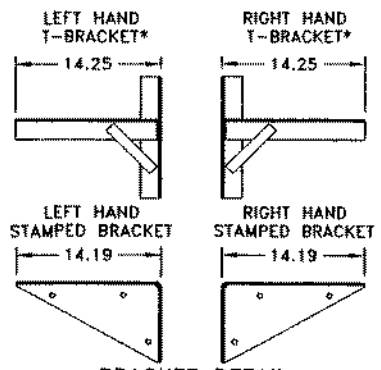
COILSIDE ELEVATION
SCALE = NONE



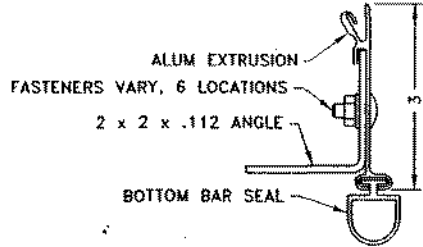
PANEL DETAIL
SCALE = 1:4



GUIDE DETAIL
SCALE = FULL



BRACKET DETAIL
SCALE = 1:12



BOTTOM BAR DETAIL
SCALE = 1:2

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 035-0016 FOR COMPONENT DETAILS

Architectural Testing
Test sample complies with these details.
Deviations are noted.
Report# 01-46385.05
Date 10-31-03 Tech SDK

TEST	DATE	TEST REPORT NUMBER	RESULTS
UNIFORM STATIC AIR PRESSURE			
TENSILE			

PART NUMBER	WEIGHT (LB.)	TITLE
REFERENCE		WINDLOAD TEST, DS-350, 12' x 8', ROUND PROFILE PANEL, ±28 PSF DESIGN (±42 PSF TEST)
		MATERIAL AS SHOWN

DRAWN BY	CHECKED BY	APPVD. BY
M. DAUS 10/15/2003		
SCALE - WHEN THIS BOX IS .50" HIGH AS SHOWN	ORIGINAL RELEASE	

TOLERANCES (UNLESS OTHERWISE SPECIFIED)
LINEAR .X ± .060
LINEAR .XX ± .030
LINEAR .XXX ± .010
ANGULAR ± .50°
DIMENSIONS IN INCHES

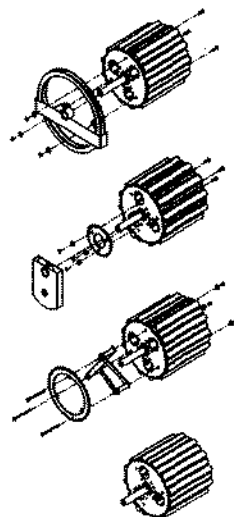


Wayne Dalton
Roller Door Division
14512 Lincoln Way E.
Dalton, Ohio 44618

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

SIZE	DRAWING NO.	REVISION
B	035-0014	



DIRECT DRIVE CHAIN HOIST OPERATION

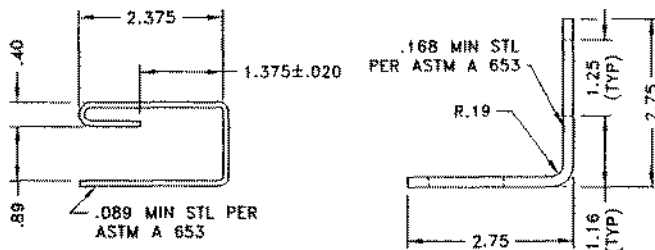
REDUCED DRIVE CHAIN HOIST OPERATION*

MOTOR OPERATION*

MANUAL OPERATION*

OPERATION DETAIL

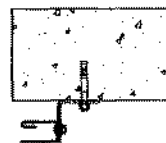
SCALE = NONE



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



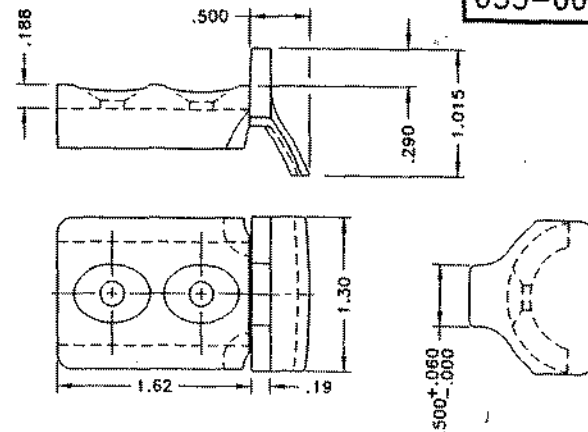
MASONRY JAMB #1
GROUT FILLED BLOCK, 3000PSI MIN GROUT
#3/8 x 3 KINGPIN WEDGE ANCHOR



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

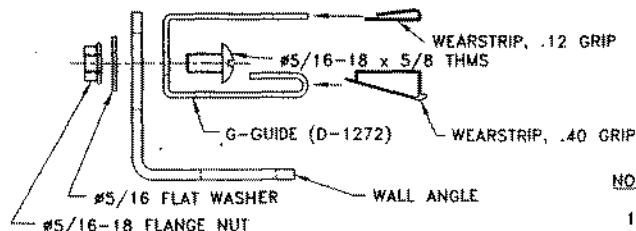
JAMB DETAIL

SCALE = NONE



WINDLOCK DETAIL

SCALE = FULL



GUIDE ASSEMBLY DETAIL

SCALE = 1:2

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 035-0013, -0014, -0015 FOR TEST DETAILS



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# **01-46385.05**

Date **10-31-03** Tech **S&K**

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, ROUND PROFILE PANEL, COMPONENT DETAILS	M. DAUS 10/15/2003			LINEAR .X ± .060 LINEAR .XX ± .030 LINEAR .XXX ± .010 ANGULAR ± .50° DIMENSIONS IN INCHES
		MATERIAL AS SHOWN	SCALE - WHEN THIS BOX IS .50" HIGH AS SHOWN	ORIGINAL RELEASE		

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



Wayne Dalton
Rolling Door Division
4312 Lincoln Way E.
Culver, Ohio 44818

SIZE	DRAWING NO.	REVISION
B	035-0016	.