



Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

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

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

Report No:	01-46385.04
Test Date:	09/04/03
Report Date:	11/13/03
Expiration Date:	09/04/07

PERFORMANCE TEST REPORT

Rendered to:

WAYNE-DALTON CORPORATION

Door and Systems Division

1 Door Drive

Mount Hope, Ohio 44660

Report No: 01-46385.04

Test Date: 09/04/03

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 10' 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 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 Round 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" on 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 # 035-0015 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 #1	Transducer Number #2	Transducer Number #3	Transducer Number #1	Transducer Number #2	Transducer Number #3
+15.5 psf (1/2 Design)	10 sec	Remove Slack					
+31.0 psf (Design)	10 sec	0.350	2.290	0.510	0.010	0.000	0.010
+47.0 psf (Overload)	10 sec	0.370	6.120	0.560	0.010	0.000	0.020
-15.5 psf (1/2 Design)	10 sec	Remove Slack					
+31.0 psf (Design)	10 sec	0.880	4.840	0.560	0.050	0.830	0.030
+47.0 psf (Overload)	10 sec	1.020	5.700	0.680	0.280	0.270	0.060
+51.0 psf (Overload)	10 sec	0.960	7.340	0.680	0.060	0.380	0.090
+25.5 psf (1/2 Test)	10 sec	Remove Slack					
+51.0 psf (Overload)	10 sec	0.500	7.600	0.650	0.020	0.080	0.020
+56.0 psf (Overload)	10 sec	0.540	8.420	0.790	0.030	0.440	0.070
-28.0 psf (1/2 Test)	10 sec	Remove Slack					
-56.0 psf (Overload)	10 sec	1.040	8.060	0.770	0.060	0.200	0.050

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
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

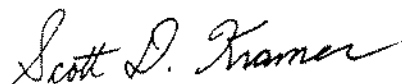
Test Results: The test results are shown on test logs 18863 through 18868 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	40,945	0.0037	517	48,811	30.00	36.80
2	38,672	0.0034	502	49,680	30.50	33.70
3	42,388	0.0034	512	50,234	33.00	37.30
4	41,982	0.0035	514	50,421	36.00	34.30
5	48,190	0.0035	516	51,084	31.00	24.80
6	44,912	0.0035	519	51,340	36.50	28.70
Average	42,848	0.0035	513	50,262	32.80	32.60

The average Tangent Modulus for the tested specimens was 26.9×10^6 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.:



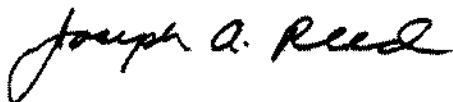
Digitally Signed by: Scott D. Kramer

Scott D. Kramer
Technician



Digitally Signed by: Connie L. Owad

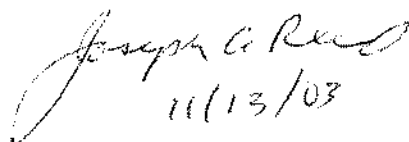
Connie Owad
Technician



Digitally Signed by: Joseph A. Reed

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

SDK:baw
01-46385.04


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.

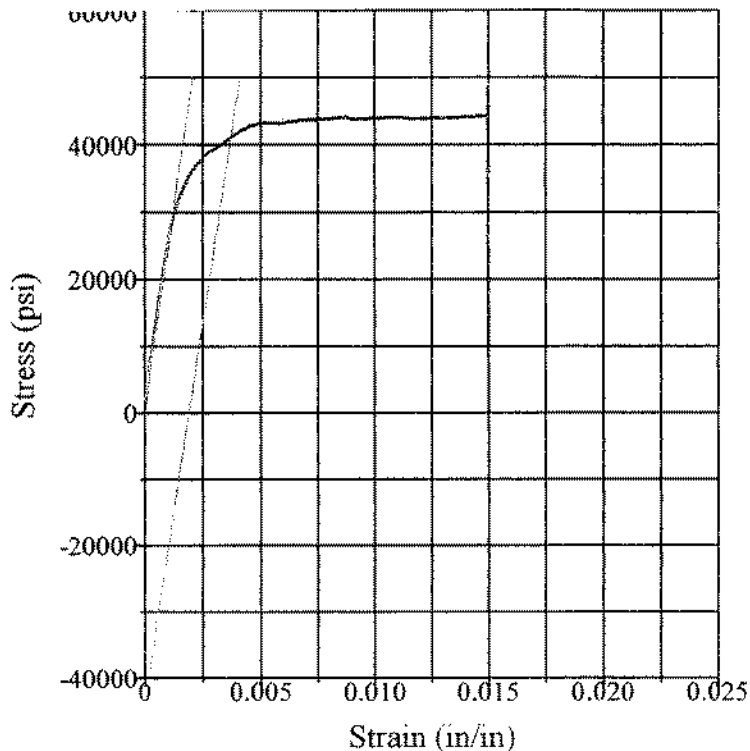
Report No.: 01-46385.04

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.

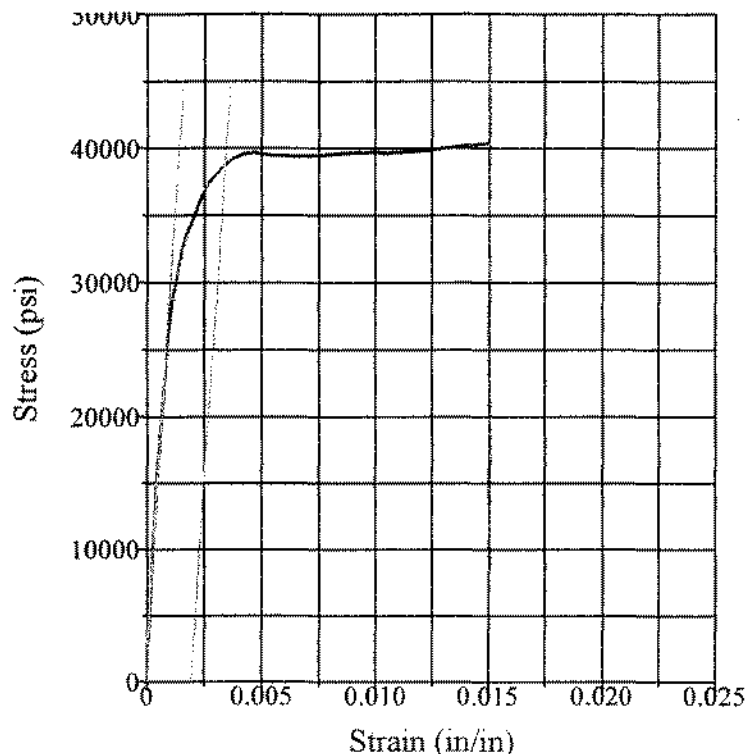


Test Results

Width: 0.5070 in
After Test Width: 0.4040 in
Thickness: 0.0210 in
After Test Thickness: 0.0165 in
Area: 0.0106 in²
After Test Area: 0.0067 in²
Tensile Strength: 48811 psi
Peak Load: 517 lbf
Load at Yield: 434.0166 lbf
Position at Yield: 0.0825 in
Time at Yield: 0.4157 min
Strain at Yield: 0.0037 in/in
Stress at Yield: 40944.9600 psi
Elongation at Yield: 0.0074 in
Reduction of Area: 36.8 %
Total Elongation: 30.0000 %
Pretest Punch Length: 2.000 in
Posttest Punch Length: 2.60 in
Modulus of Elasticity: 22968200 psi

Test Summary

Counter: 18863
Elapsed Time: 00:04:21
ATI #: 01-46385
Client: Wayne Dalton Corporation
Material Type: Steel Door
Sample #: 1
Comments: 10 x 8 Round 120-32
Procedure Name: ASTM E 8-01, Tensile Testing of
Start Date: 10/16/03
Start Time: 1:45:43 PM
End Date: 10/16/03
End Time: 1:50:04 PM
Workstation: Architectural Testing Inc.
Tested By: Connie

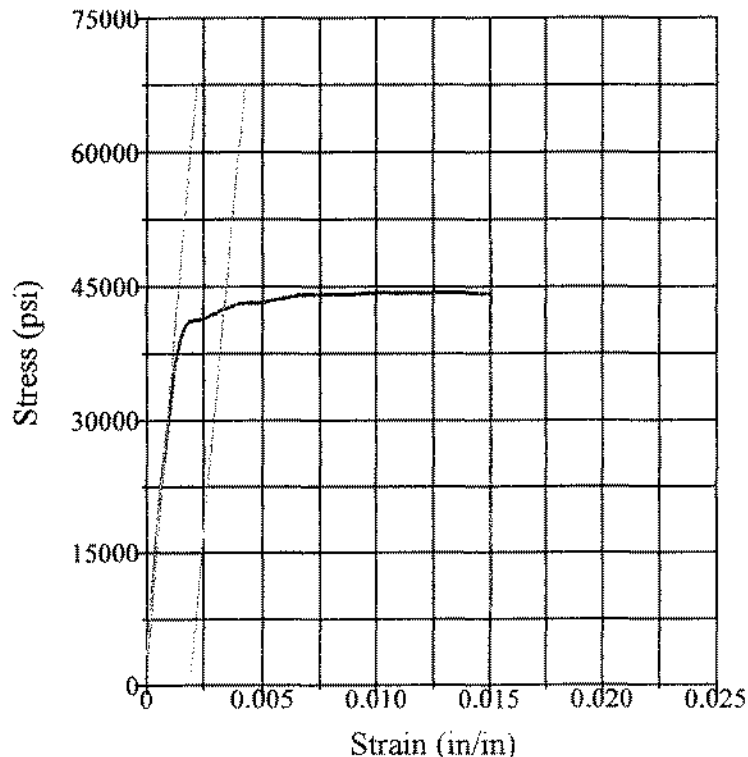


Test Results

Width: 0.5070 in
After Test Width: 0.4210 in
Thickness: 0.0200 in
After Test Thickness: 0.0160 in
Area: 0.0101 in²
After Test Area: 0.0067 in²
Tensile Strength: 49680 psi
Peak Load: 502 lbf
Load at Yield: 390.5866 lbf
Position at Yield: 0.0852 in
Time at Yield: 0.4293 min
Strain at Yield: 0.0034 in/in
Stress at Yield: 38671.9400 psi
Elongation at Yield: 0.0067 in
Reduction of Area: 33.7 %
Total Elongation: 30.5000 %
Pretest Punch Length: 2.000 in
Posttest Punch Length: 2.61 in
Modulus of Elasticity: 26479400 psi

Test Summary

Counter: 18864
Elapsed Time: 00:04:24
ATI #: 01-46385
Client: Wayne Dalton Corporation
Material Type: Steel Door
Sample #: 2
Comments: 10 x 8 Round 120-32
Procedure Name: ASTM E 8-01, Tensile Testing of
Start Date: 10/16/03
Start Time: 1:55:43 PM
End Date: 10/16/03
End Time: 2:00:07 PM
Workstation: Architectural Testing Inc.
Tested By: Connie

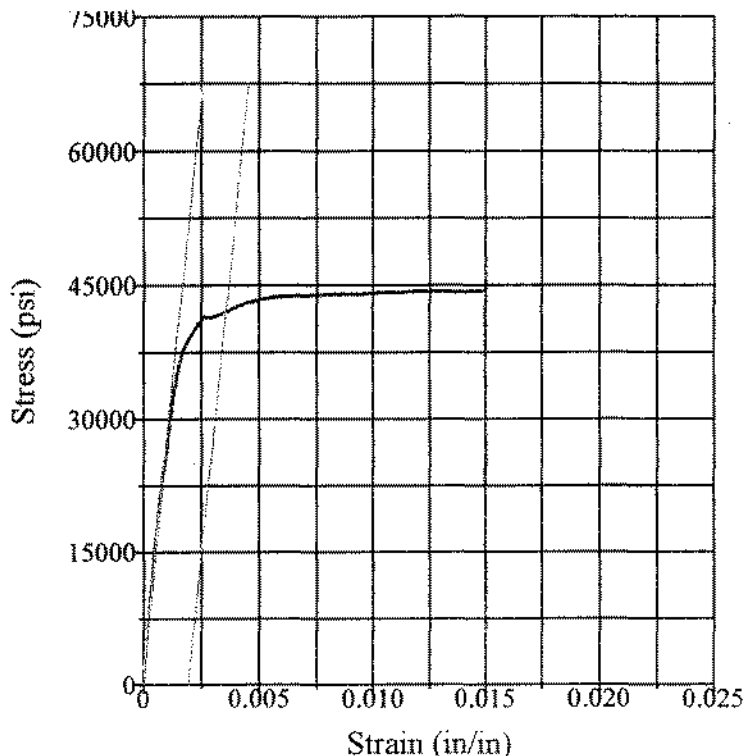


Test Results

Width:	0.5085 in
After Test Width:	0.4030 in
Thickness:	0.0200 in
After Test Thickness:	0.0160 in
Area:	0.0102 in ²
After Test Area:	0.0064 in ²
Tensile Strength:	50234 psi
Peak Load:	512 lbf
Load at Yield:	432.3545 lbf
Position at Yield:	0.0965 in
Time at Yield:	0.4858 min
Strain at Yield:	0.0034 in/in
Stress at Yield:	42387.7000 psi
Elongation at Yield:	0.0067 in
Reduction of Area:	37.3 %
Total Elongation:	33.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.66 in
Modulus of Elasticity:	29044800 psi

Test Summary

Counter:	18865
Elapsed Time:	00:04:36
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	3
Comments:	10 x 8 Round 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	2:02:41 PM
End Date:	10/16/03
End Time:	2:07:17 PM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

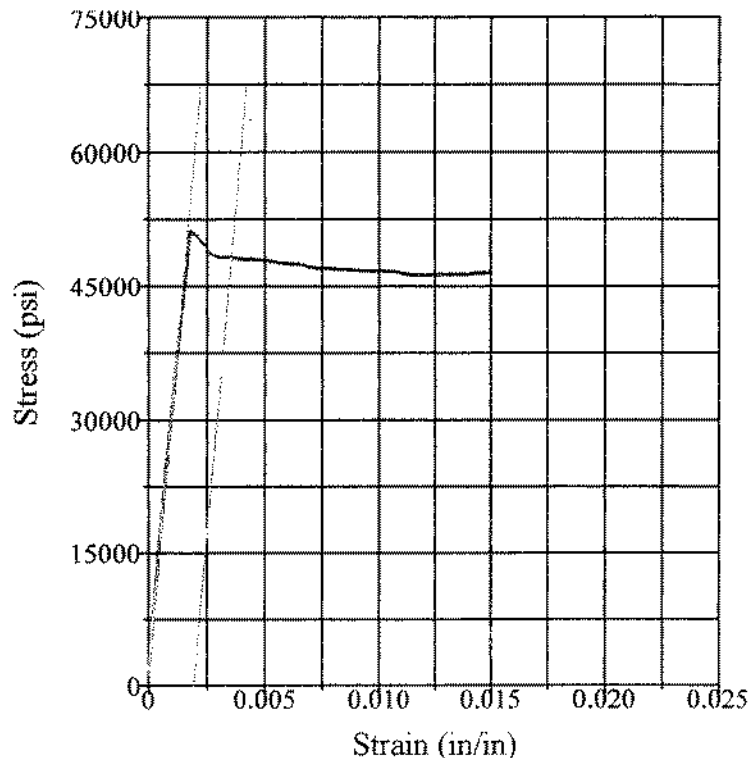


Test Results

Width:	0.5105 in
After Test Width:	0.4200 in
Thickness:	0.0200 in
After Test Thickness:	0.0160 in
Area:	0.0102 in ²
After Test Area:	0.0067 in ²
Tensile Strength:	50421 psi
Peak Load:	514 lbf
Load at Yield:	428.2183 lbf
Position at Yield:	0.0998 in
Time at Yield:	0.5023 min
Strain at Yield:	0.0035 in/in
Stress at Yield:	41982.1800 psi
Elongation at Yield:	0.0071 in
Reduction of Area:	34.3 %
Total Elongation:	36.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.72 in
Modulus of Elasticity:	25744500 psi

Test Summary

Counter:	18866
Elapsed Time:	00:05:01
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	4
Comments:	10 x 8 Round 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	2:10:12 PM
End Date:	10/16/03
End Time:	2:15:13 PM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

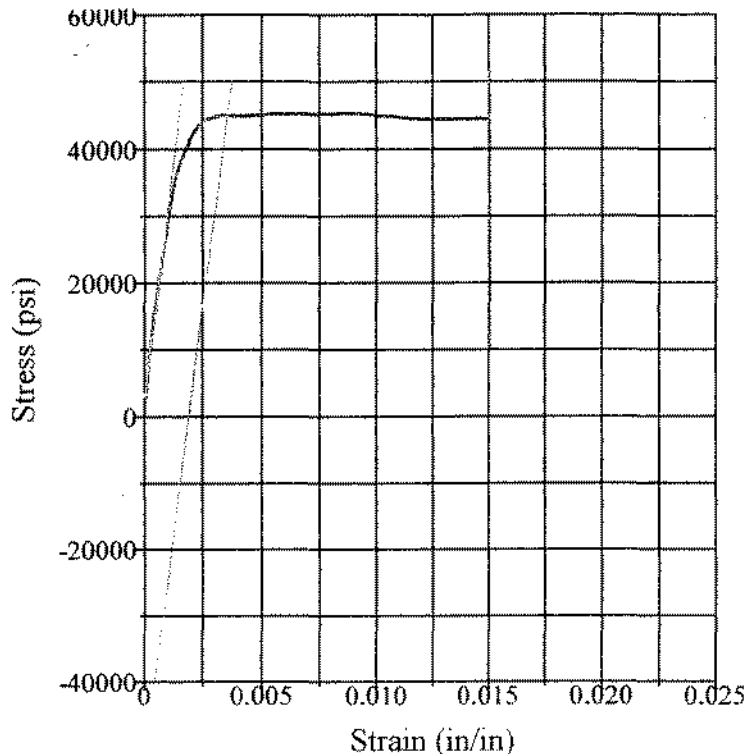


Test Results

Width:	0.5065 in
After Test Width:	0.4195 in
Thickness:	0.0200 in
After Test Thickness:	0.0180 in
Area:	0.0101 in ²
After Test Area:	0.0076 in ²
Tensile Strength:	51084 psi
Peak Load:	516 lbf
Load at Yield:	486.7187 lbf
Position at Yield:	0.0812 in
Time at Yield:	0.4093 min
Strain at Yield:	0.0035 in/in
Stress at Yield:	48189.9700 psi
Elongation at Yield:	0.0071 in
Reduction of Area:	24.8 %
Total Elongation:	31.0000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.62 in
Modulus of Elasticity:	29557800 psi

Test Summary

Counter:	18867
Elapsed Time:	00:04:12
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	5
Comments:	10 x 8 Round 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	2:17:38 PM
End Date:	10/16/03
End Time:	2:21:50 PM
Workstation:	Architectural Testing Inc.
Tested By:	Connie

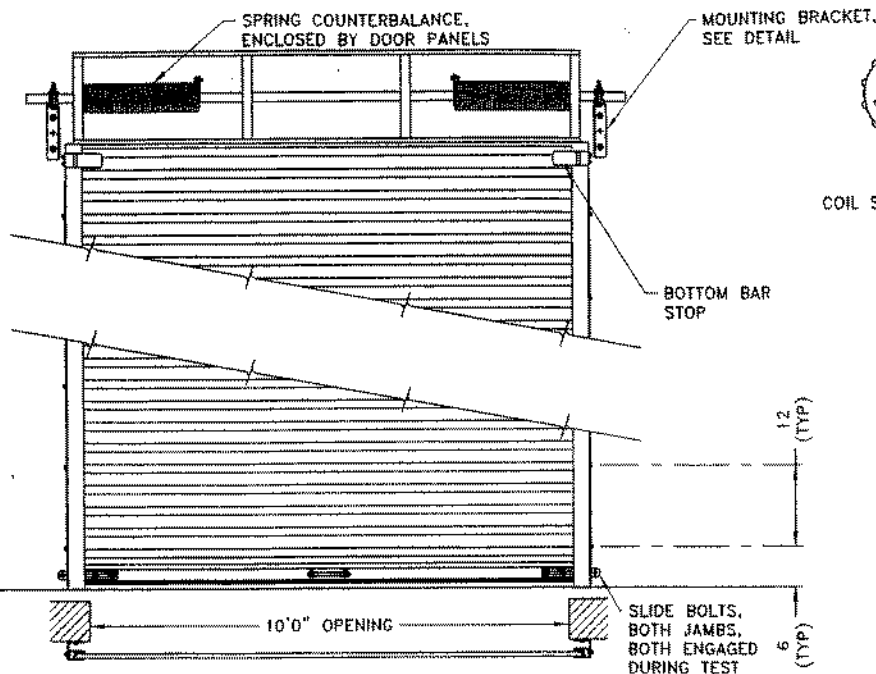


Test Results

Width:	0.5053 in
After Test Width:	0.4020 in
Thickness:	0.0200 in
After Test Thickness:	0.0180 in
Area:	0.0101 in ²
After Test Area:	0.0072 in ²
Tensile Strength:	51340 psi
Peak Load:	519 lbf
Load at Yield:	453.6100 lbf
Position at Yield:	0.0832 in
Time at Yield:	0.4196 min
Strain at Yield:	0.0035 in/in
Stress at Yield:	44911.8800 psi
Elongation at Yield:	0.0070 in
Reduction of Area:	28.7 %
Total Elongation:	36.5000 %
Pretest Punch Length:	2.000 in
Posttest Punch Length:	2.73 in
Modulus of Elasticity:	27610600 psi

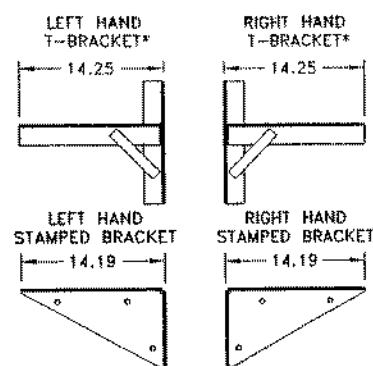
Test Summary

Counter:	18868
Elapsed Time:	00:04:29
ATI #:	01-46385
Client:	Wayne Dalton Corporation
Material Type:	Steel Door
Sample #:	6
Comments:	10 x 8 Round 120-32
Procedure Name:	ASTM E 8-01, Tensile Testing of
Start Date:	10/16/03
Start Time:	2:29:38 PM
End Date:	10/16/03
End Time:	2:34:07 PM
Workstation:	Architectural Testing Inc.
Tested By:	Connie



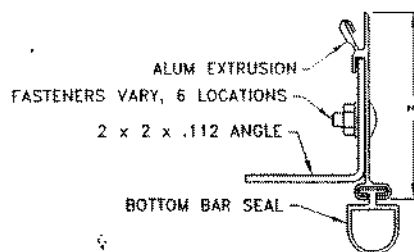
COILSIDE ELEVATION

SCALE = NONE



BRACKET DETAIL

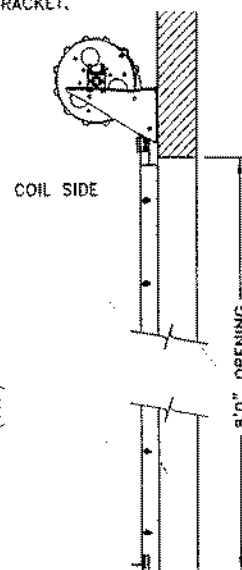
SCALE = 1:12



BOTTOM BAR DETAIL

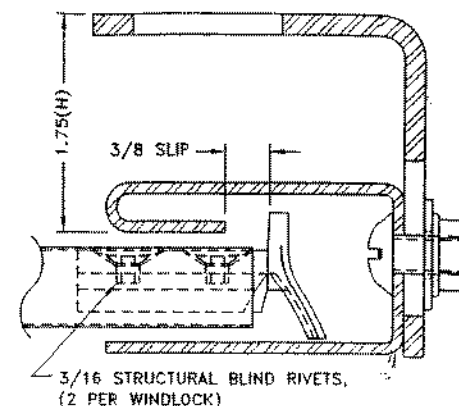
SCALE = 1:2

*DENOTES UNTESTED CONFIGURATIONS APPROVED BY COMPARATIVE ANALYSIS



PANEL DETAIL

SCALE = 1:4



GUIDE 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. 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# 01-46385.04
Date 11-21-03 Tech SAK

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)
REFERENCE		WINDLOAD TEST, DS-350, 10' x 8', ROUND PROFILE PANEL, ±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
		MATERIAL	SCALE - WHEN THIS BOX IS .50" HIGH AS SHOWN	ORIGINAL RELEASE		
			AS SHOWN			

Wayne Dalton

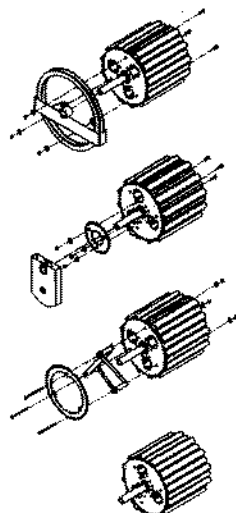
Wayne Dalton
Rolling Door Division
14512 Lincoln Way E.
Dalton, Ohio 44618

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

REVISIONS

SIZE	DRAWING NO.	REVISION
B	035-0015	



DIRECT DRIVE CHAIN HOIST OPERATION

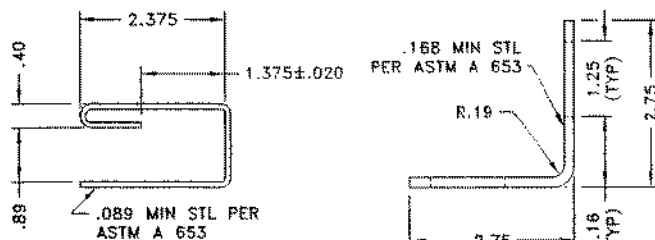
REDUCED DRIVE CHAIN HOIST OPERATION*

MOTOR OPERATION*

MANUAL OPERATION*

OPERATION DETAIL

SCALE = NONE



G-GUIDE DETAIL

SCALE = 1:2

WALL ANGLE DETAIL

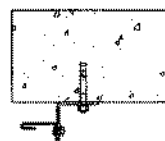
SCALE = 1:2



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



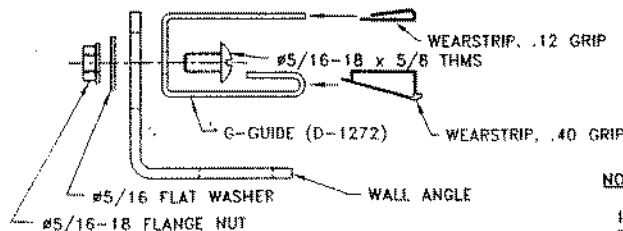
MASONRY JAMB #1
GROUT FILLED BLOCK, 3000PSI MIN GROUT
#3/8 x 3 KINGPIN WEDGE ANCHOR



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

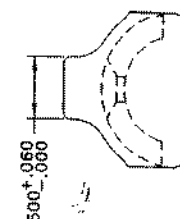
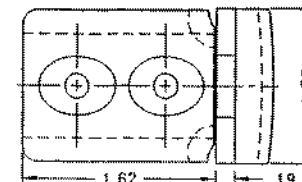
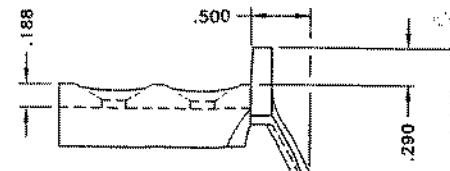
JAMB DETAIL

SCALE = NONE



GUIDE ASSEMBLY DETAIL

SCALE = 1:2



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



Test sample complies with these details.
Deviations are noted.

Report# 01-46385.04
Date 10-31-03 Tech SDK

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	APPRD. 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	SCALE - WHEN THIS BOX IS .50" HIGH	ORIGINAL RELEASE		
		AS SHOWN	AS SHOWN			

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Wayne Dalton
Rolling Door Division
14512 Lincoln Way E.
Dalton, Ohio 44416

SIZE DRAWING NO.
B 035-0016 REVISION

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