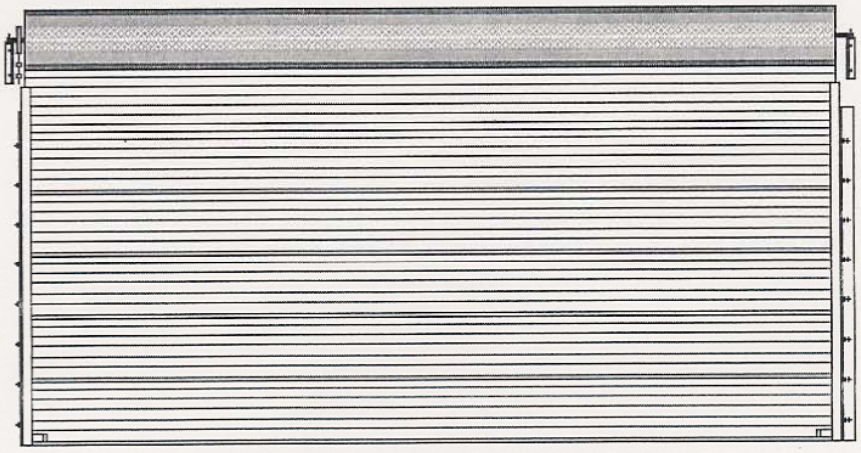
HURRICANE ENGINEERING & TESTING INC.

Computer Controlled Product Testing & Design,
.....Wind Load Analysis

Uniform Static Air Pressure Test

November 27th, 2001.

REPORT NUMBER:	**HETI-01-1110**
MANUFACTURER:	Wayne-Dalton Door Systems Division. 2589 Country Road 168, Dundee, OH 44624
TEST LOCATION:	Hurricane Engineering & Testing Inc. 8532 NW 64 Street Miami, FL 33166
SBCCI LISTING No.:	TL - 9596A
LAB. CERTIFICATION NUMBER:	01-0417.03 (MIAMI-DADE COUNTY, FLORIDA)
PRODUCT:	**Rolling Door**
MODEL:	DS-350
PRODUCT DESCRIPTION:	0.018" thick steel *(Tensile Test Report No. HETI-01-T109)*
PRODUCT SIZE:	192" w x 96"h (size of opening)
DRAWING NUMBERS:	701-0545-2, 701-0546-2 and 701-0547-2 by Wayne-Dalton Rolling Door Division. Dated 12-10-01.
NOTE:	*HETI stamped drawing is an integral part of this report.*
DESIGN LOADS (psf):	**+24, -27**
TEST WITNESSED BY:	(full or partial) Syed Waqar Ali, Ph. D. (HETI) Mr. Leonardo D. Savini, E.I. (HETI) Mr. Eddy Philippe (HETI)



Inrolled interior elevation, not to scale.

Construction Details

PRODUCT **Rolling Door**
MODEL DS-350

PRODUCT SIZE(S) 198 3/4"w x 110 3/8" (excluding roll).
192" w x 96"h (size of opening).

SPECIAL NOTE Inrolled. The panels were located @ 19" O.C. vertically and joined with a continuous horizontal seam that consisted of a 1/4" to 3/8" fold in the top and bottom of every panel.

TABLE OF COMPONENTS

COMPONENT	QUANTITY PER SAMPLE	SIZE	FASTENING PER COMPONENT
(5/16" BOLT & FLANGE NUT)	SEE COMPONENT	5/16"-18 X 5/8" TRUSS HEAD	---
PANELS	EIGHT	19.38" H X 196" X 0.63" D X 26 GA	SEE END WIND LOCKS AND SPECIAL NOTE
WIND LOCKS	SIX PER SECTION END @ 3 1/4" O.C.	2.20" X 1.30" X 1.1" X 0.33" TO 0.21" THICKNESS	TWO 1/8" X 0.42" STEEL RIVETS
ALUMINUM BOTTOM ANGLE CONNECTOR	ONE	2.94" H X 0.62" W X 196" X 0.066"	CONNECTED TO BOTTOM SEAM DESCRIBED IN SPECIAL NOTE
BOTTOM ANGLE	ONE	2" X 2" X 192" X 12 GA	SEE LOCK AND HANDLE
TRACK	TWO	2.44" W X 1.41" D X 100 3/8" H X 13 GA. ONE SIDE 1" DOUBLED	(8) (5/16" BOLT & FLANGE NUT) @ 12" O.C. START 6" FROM BOTTOM CONNECTED TO TRACK ADAPTER ANGLE.
TRACK ADAPTER ANGLE	TWO	2 3/4" X 2 3/4" X 95" H x 8 GA	SEE INSTALLATION

All steel components unless specified otherwise.

HARDWARE

Locks — (2) consisted of a pair of 1/4"-20 x 1" MS (machine screw) @ 2 5/8" O.C. and 3" from the ends of the bottom angle connector. The MS were installed through the bottom angle and the bottom angle connector. Each MS was secured with one nut without washer. Then a 1 1/4" wide x 12 GA x 9" long (2.17" throw with a 1/2" h x 5.3" hole) was placed encompassing the MS and nuts pair. Finally, one 0.88" washer was passed through each MS and secured with a flange nut.

Handle — (1) consisted of a pair of 1/4-20 x 5/8" carriage bolts. Located at midspan of bottom angle. The carriage bolts were inserted through the bottom angle, the bottom angle adapter and the handle. Then, one flange nut per bolt was installed.

Counterbalance — The door was mounted with a wound spring mechanism.

INSTALLATION

JAMB SUBSTRATUM One Side 3/16" thick steel and one side grout filled masonry blocks.

Connection	*Fastener Type*	*Quantity*	*Spacing*
track adapter angle - masonry substratum	3/8" x 5" Kingpin Wedge Anchor	8 per angle	12" O.C. starting 6" from bottom
track adapter angle - steel substratum	5/16"-12 x 1" Tek	8 per angle	12" O.C. starting 6" from bottom

The track angle was connected to the substratum prior to connecting it to the track.
The track adapter angle fasteners were located behind the track.

Test Results

Uniform Static Air Pressure Test

	Pressure (psf)	Deflection (inches)	Set (inches)	Recovery (%)	Duration (seconds)
Positive Load					
Half test load	+18	11.79	0.11	99	60
Design Load	+24	12.66	0.00	100	60
Test Load	+36	14.20	0.00	100	10
Negative Load					
Half Test Load	-21	13.98	0.22	98	60
Design Load	-27	14.45	0.33	98	60
Test Load	-41	15.80	0.40	97	10

Tested in accordance with ASTM E330-90 and Standard Building Code section 1707.4 requirements

Conclusion

The sample was tested as indicated along with the test results. At the end of the tests, the door was operational, all components were securely in place with no openings, ruptures or structural damage.

NOTE: The above results were obtained using the designated test methods which indicates compliance with the performance requirements of the referenced specifications. This report does not constitute certification of the specimens tested.

Syed Waqar Ali, Ph. D.
President

Arshad Viqar, P.E.
Engineer of Record