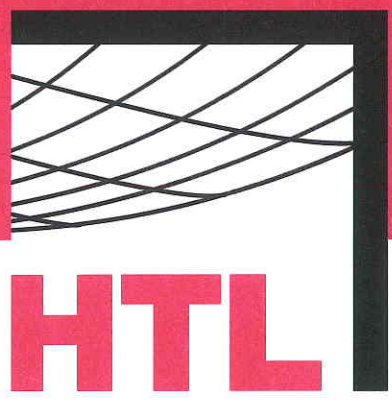
HTL
Compliance Test Report



FLORIDA GEORGIA TEXAS

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Model 600-HP Sun Control Louvers

Uniform Structural Load Test 100 psf Positive 100 psf Negative

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Savannah Trims

3567 91st Street North, Ste #4
Lake Park, FL 33403
Sun-Control Louvers
Test Mock-Up
HTL Report #: 0044-0909-08

Linking Manufacturers with Knowledge, Experience & Service in Architectural Testing

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6655 Garden Road
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Savannah Trims

3567 91st Street North, Ste #4
Lake Park, FL 33403
Test Report #: 0044-0909-08

1.0 MANUFACTURER'S IDENTIFICATION

1.1	Name of Applicant:	Savannah Trims 3567 91st Street north, Ste #4 Lake Park, FL 33403 Voice: (561) 656-2556 Fax: (561) 656-2599
1.2	Contact Person:	Dennis Dudash

2.0 LABORATORY IDENTIFICATION

2.1	HTL Test Notification:	N/A
2.2	HTL Lab Certifications:	Miami-Dade County (05-1014.01); Florida Building Code; (TST1527); IAS (TL-244); AAMA; WDMA; Keystone Certificate; Texas Department of Insurance

3.0 SCOPE OF WORK

3.1 Introduction

Savannah Trims retained HTL, LLC to conduct Static Load testing per the requirements of the Florida Building Code.

3.2 Report Information

Specimen#1 test performed on 9/24/08
Specimen#2 test performed on 9/25/08

4.0 PRODUCT IDENTIFICATION

4.1	Product Type:	Sun Louvers
4.2	Model Designation:	Savannah Trims Sun-Control Louvers
4.3	Performance Class:	N/A
4.4	Overall Size:	120-5/8"(w) x 61-7/8" (h)
4.5	Number of Operable Panels:	N/A
4.6	Configuration:	Fixed
4.7	Drawing:	This test report is incomplete if not accompanied by Savannah Trims drawings labeled Savannah Trims Sun-Control Louvers Test Mock-Up (sheets E1, S1, S2), SVT-1 (Louver Die Drawing), and HD-Rack Arm Type 600-HP, bearing the ink stamp of Hurricane Test Laboratory, LLC.
4.8	Sample Source:	Savannah Trims

ENGINEER OF RECORD

Vinu J. Abraham, P.E.
FL Reg. #53820
11/14/08

5.0 PRODUCT DESCRIPTION

5.1 Construction

HTL verified the test specimen construction per Savannah trims Sun-Control Louvers Test Mock Up drawings labeled E1, S1, S2, SVT-1 (Louver Die Drawing), and HD-Rack Arm Type 600-HP located in Appendix A. Any deviations are noted herein or on the drawings.

The framing members were fabricated parts defined in Table #1.

Table #1: Parts Description

Description	Material
Heavy Duty Rackarm (vertical member)	Aluminum
Louver, Flat 6" wide x 120-1/2" long	Aluminum
Drive shaft	Aluminum
Gear Box Support	Aluminum
Linkarm	Aluminum
Operating Strip	Aluminum
Bearing Bracket	Aluminum
Pivot arm	Plastic
Mounting angles used to mount Rackarm 2"x2"x1/8" thk x 1-1/2" long	Aluminum
Angle used at top of buck to mount fixed Louver 2"x1"x.050" thk x 120" long	Aluminum
Angle used at either end of fixed Louver mounted to wood buck 3"x2"x 3.7" long	Aluminum
Slat Clip	Plastic

6.0 PRODUCT INSTALLATION

Table #2 provides a detailed summary of the product installation. The Louver system was installed into a 2 x 10" Wood Buck.

6.1.1 General Description And Installation The Louver assembly was installed in a wood buck which was fabricated from 2" x 10" pine planks. The inside dimensions were 120-5/8" x 61-7/8". The (3) Rack arms were assembled identically (please see drawing HD-Rack Arm Type 600-HP) and attached to the head and sill of the buck using (2) 2"x2"x1/8" thk x 1-1/2" long aluminum angles at either end. Each angle was fastened to the wood with ¼" x 2-1/4" long HH bolts with washer and nut. The buck had wood attached to the outside to give bolts longer embedment. The Gear Box support was fastened to the wood using (2) 1-1/2" long PH wood Screws.

An Angle 2"x 1"x 0.050" thk x 120" long was used at the top of the buck to mount a fixed Louver. It was fastened with (9) 1-1/2" long PH wood screws equally spaced. (8) 1/8" x ½" long self tapping screws were fastened thru the angle and thru the fixed louver. At either end of this fixed louver an angle 3" x 2"x 3.7" long was fastened into the wood using (2) 1-1/2" long PH wood Screws and snapped into the inner dimension of the louver

6.1.2 Deviations From Drawings Wood Buck is 2" x 10" not 12" as on the drawing. There is not an Aluminum Frame as shown in drawings the assembly was attached inside the wood buck.

7.0 TEST SEQUENCE

Table 7.1 provides a summary of the test sequence for each test specimen tested.

Table 7.1: Test Sequence

Test Specimen 1	Test Specimen 2
1. Positive Static Ramp Load	1. Negative Static Ramp Load

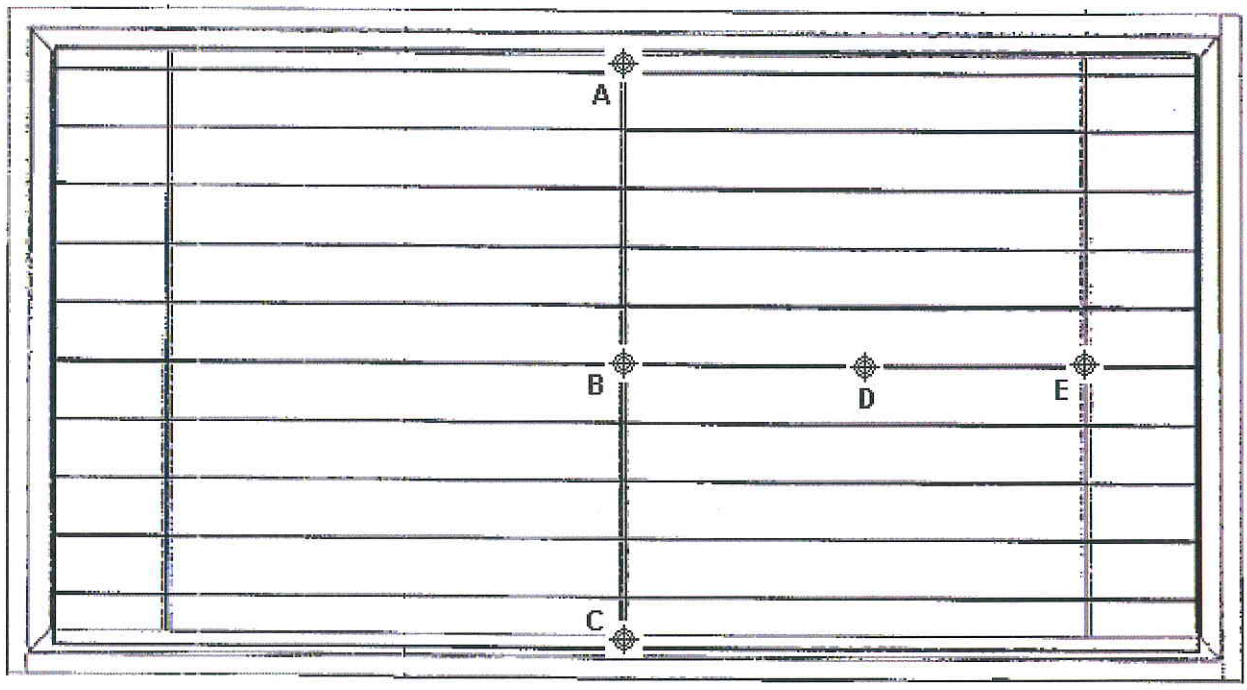
8.0 TEST RESULTS

8.1 Uniform Static Load Test

8.1.1 Deflection Gage Locations

Figure 8.1 shows the deflection gage locations for the uniform static load test.

Figure 8.1: Deflection Gage Locations
Uniform Static Load Test



8.1.2 Positive Load Test Results

Table 8.1.2 provides the positive uniform static load test results for the deflection gage locations shown in Section 8.1.1. The deflection reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

Table 8.1.2: Positive Uniform
Static Load Test Results

Specimen #	Gage Location	Load (psf)	Deflection (in.)	Permanent Set (in.)	Percent Recovery
1	B	+5.00	0.064	0.000	100.00
		+10.00	0.140	0.000	100.00
		+15.00	0.250	0.000	100.00
		+20.00	0.277	0.000	100.00
		+25.00	0.324	0.000	100.00
		+30.00	0.409	0.000	100.00
		+35.00	0.455	0.005	98.90
		+40.00	0.524	0.008	98.48
		+45.00	0.594	0.010	98.32
		+50.00	0.740	0.031	95.88
		+60.00	0.754	0.007	99.07
		+70.00	0.903	0.038	95.84
		+80.00	1.079	0.083	92.35
		+90.00	1.261	0.142	88.73
		+100.00	1.263	0.232	81.67
		+125.00	Failure		
	D	+5.00	0.018	0.000	100.00
		+10.00	0.089	0.001	99.44
		+15.00	0.063	0.000	100.00
		+20.00	0.083	0.000	100.00
		+25.00	0.111	0.000	100.00
		+30.00	0.124	0.005	96.36
		+35.00	0.137	0.006	95.99
		+40.00	0.153	0.006	98.76
		+45.00	0.168	0.000	100.00
		+50.00	0.190	0.000	100.00
		+60.00	0.223	0.000	100.00
		+70.00	0.261	0.000	100.00
		+80.00	0.157	0.007	95.86
		+90.00	0.167	0.019	88.89
		+100.00	0.173	0.000	100.00
		+125.00	Failure		

8.1.3 Negative Uniform Static Load Test Results

Table 8.1.3 provides the negative uniform static load test results for the locations presented in Section 8.1.1.

Table 8.1.3: Negative Uniform Static Load Test Results

Specimen #	Gage Location	Load (psf)	Deflection (in.)	Permanent Set (in.)	Percent Recovery
2	B	-5.00	0.083	0.002	98.59
		-10.00	0.144	0.000	100.00
		-15.00	0.214	0.000	100.00
		-20.00	0.273	0.000	100.00
		-25.00	0.319	0.000	100.00
		-30.00	0.371	0.000	100.00
		-35.00	0.395	0.000	100.00
		-40.00	0.349	0.000	100.00
		-45.00	0.591	0.000	100.00
		-50.00	0.647	0.000	100.00
		-60.00	0.793	0.007	99.18
		-70.00	0.880	0.018	97.95
		-80.00	1.086	0.035	96.78
		-90.00	1.340	0.138	89.73
		-100.00	1.635	0.360	78.01
		-121.54	Failure		
	D	-5.00	0.026	0.011	56.86
		-10.00	0.055	0.007	87.16
		-15.00	0.095	0.005	94.74
		-20.00	0.117	0.000	100.00
		-25.00	0.178	0.000	100.00
		-30.00	0.214	0.000	100.00
		-35.00	0.275	0.000	100.00
		-40.00	0.378	0.000	100.00
		-45.00	0.306	0.000	100.00
		-50.00	0.331	0.002	99.55
		-60.00	0.309	0.005	98.38
		-70.00	0.419	0.006	98.56
		-80.00	0.528	0.006	98.86
		-90.00	0.549	0.031	94.44
		-100.00	0.748	0.080	89.36
		-121.54	Failure		

8.1.3.1 Conclusion – Uniform Static Load Test

HTL observed no signs of failure in any area of these test specimens during the uniform static load test. In addition, each specimen met the deflection and permanent set requirements; as such, these test specimens satisfy the uniform static load test requirements of ASTM E330.

9.0 SUMMARY

Table 9.1 provides a summary of the test results for Savannah Trim's Sun-Control Louvers.

Table 9.1: Summary of Test Results

Specimen #	Test Method	Test Conditions	Test Conclusion
1	Static Load Test (ASTM E 330)	Positive Ramp	N/A
2	Static Load Test (ASTM E 330)	Negative Ramp	N/A

10.0 CERTIFICATION AND DISCLAIMER STATEMENT

All tests performed on these test specimens were conducted in accordance with the specifications of the applicable codes, standards and test methods listed below by HTL, LLC. HTL, LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested at HTL. HTL is not owned, operated or controlled by any company manufacturing or distributing products it tests. This report is only intended for the use of the entity named in Section 1.0 of this report. Detailed assembly drawings showing wall thickness of all members, corner construction and hardware applications are on file and have been compared to the test specimens submitted. A copy of this test report along with representative sections of the test specimen will be retained at HTL for a period of three (3) years. All results obtained apply only to the specimens tested and they do indicate compliance with the performance requirements of the test methods and specifications listed in the following section.

11.0 APPLICABLE CODES, STANDARDS, AND TEST METHODS

ASTM E330-02 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

12.0 WITNESSES (ALL OR PARTIAL)

Vinu J. Abraham, P.E.	CEO	HTL, LLC
Kristin Norville, E.I.	Assistant Operations Manager	HTL, LLC
Rico Torres	Technician	HTL, LLC
Freddie Henderson	Technician	HTL, LLC
Martin Gibbard	Technician	HTL, LLC
Ron Pretto	Technician	HTL, LLC
John Spallina	Technician	HTL, LLC
Dennis Dudash		Savannah Trims

ENGINEER OF RECORD

11/14/08

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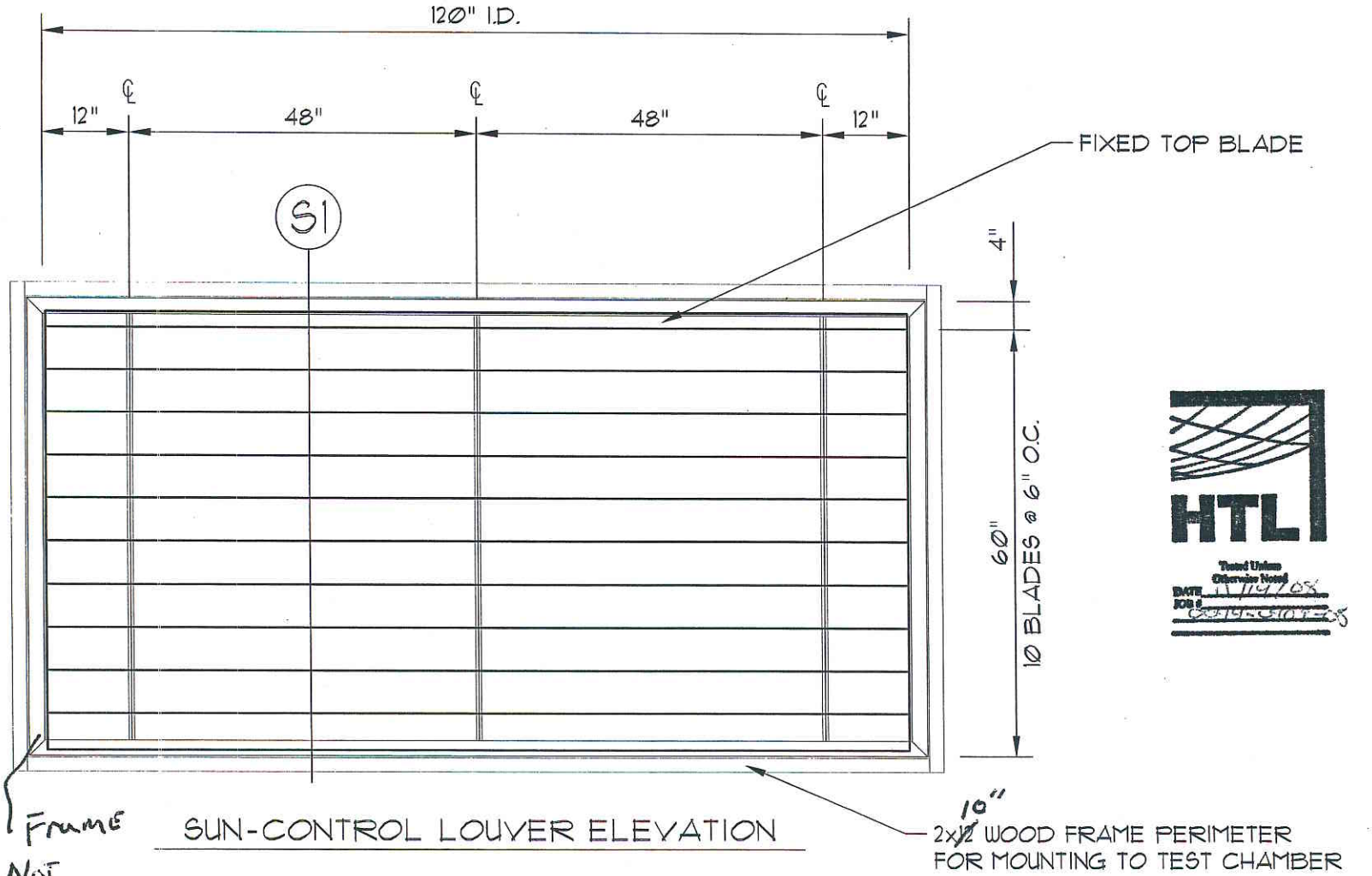
APPENDIX A:

Savannah Trims
Sun-Control Louvers Test Mock-Ups
Pages E1, S1, S2, SVT-1 (Louver Die Drawing), and HD-Rack Arm Type 600-HP

ENGINEER OF RECORD

11/14/08



SUN-CONTROL LOUVER ELEVATION

HTL

Tested Unless Otherwise Noted

DATE 11/19/08

JOB # 08116-0101-05

SAVANNAH TRIMS
SUN-CONTROL LOUVERS
TEST MOCK-UP

No.	Revision	Date

FIRM NAME & ADDRESS

SAVANNAH TRIMS, Inc.
3567 91st Street N – Suite 4
Lake Park, FL 33418
Phone: 561.656.2556
Fax: 561.656.2599
www.SavannahTrims.com

PROJECT NAME & ADDRESS

DATE: October 30, 2008

SCALE: 1/4"=1'-0"

DRAWN BY:

SHEET

E1

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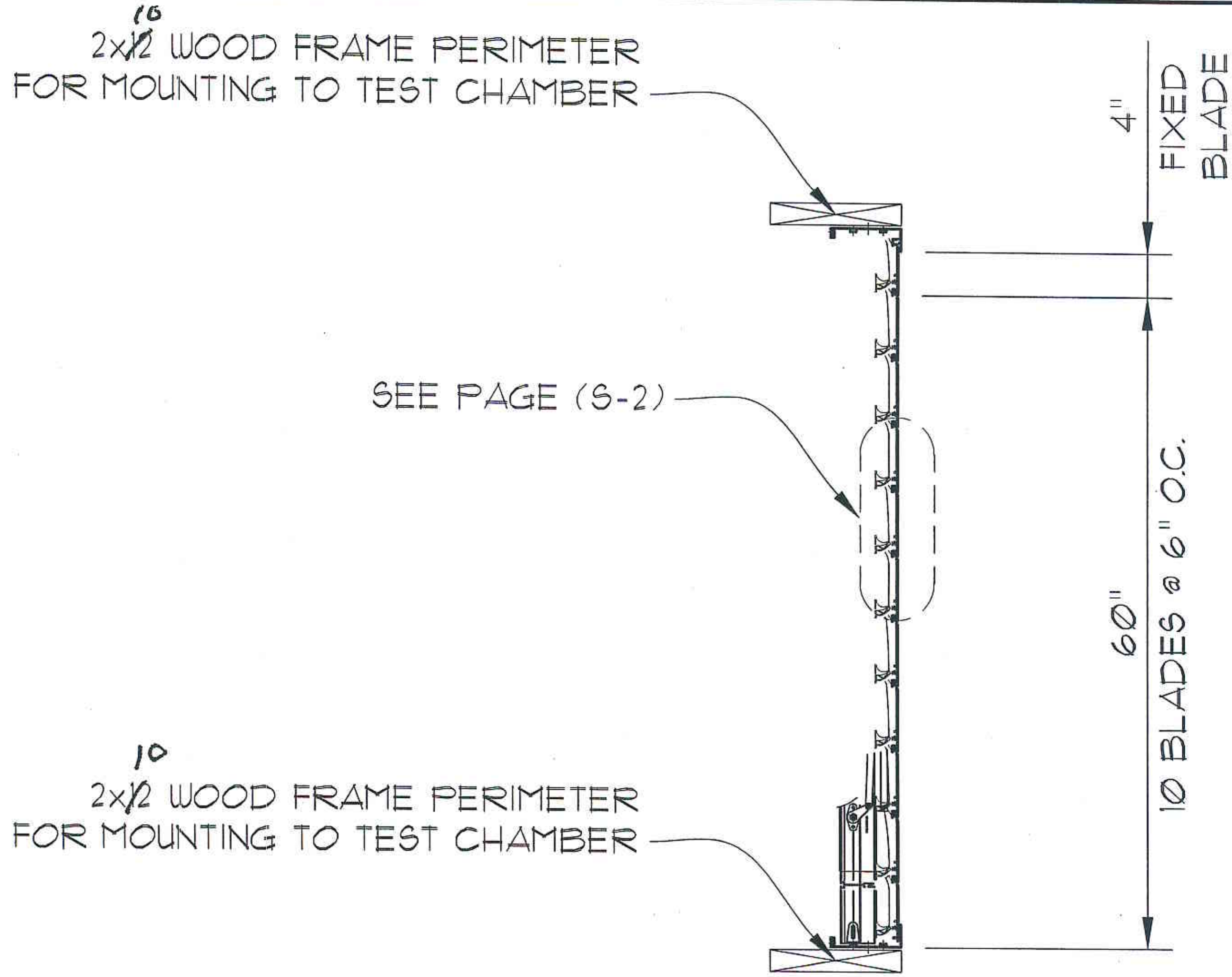

SUN-CONTROL LOUVER SECTION

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DATE 11/14/08
JOB # [illegible]

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SAVANNAH TRIMS
SUN-CONTROL LOUVERS
TEST MOCK-UP

No.	Revision	Date

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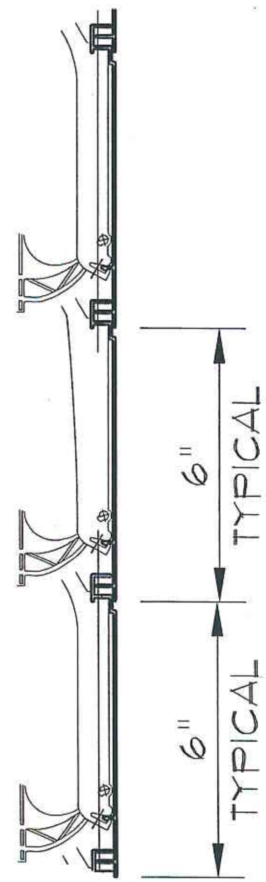
www.SavannahTrims.com

PROJECT NAME & ADDRESS

DATE: October 30, 2008
SCALE: 1/4"=1'-0"
DRAWN BY:

SHEET
S1



SUN-CONTROL LOUVER SECTION BLOW-UP

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JOB #

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SAVANNAH TRIMS
SUN-CONTROL LOUVERS
TEST MOCK-UP

No.	Revision	Date

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Lake Park, FL 33418
Phone: 561.656.2556
Fax: 561.656.2599
www.SavannahTrims.com

PROJECT NAME & ADDRESS

DATE: October 30, 2008
SCALE: 1/4"=1'-0"
DRAWN BY:

SHEET
S2

HTL

Tweed Union
Otherwise Noted
DATE 7/21/08
JOB # 60414-090708

PRELIMINARY

FOR APPROVAL ONLY
MUST BE SIGNED BEFORE RELEASE

AUTHORIZATION TO BEGIN DIE CONSTRUCTION

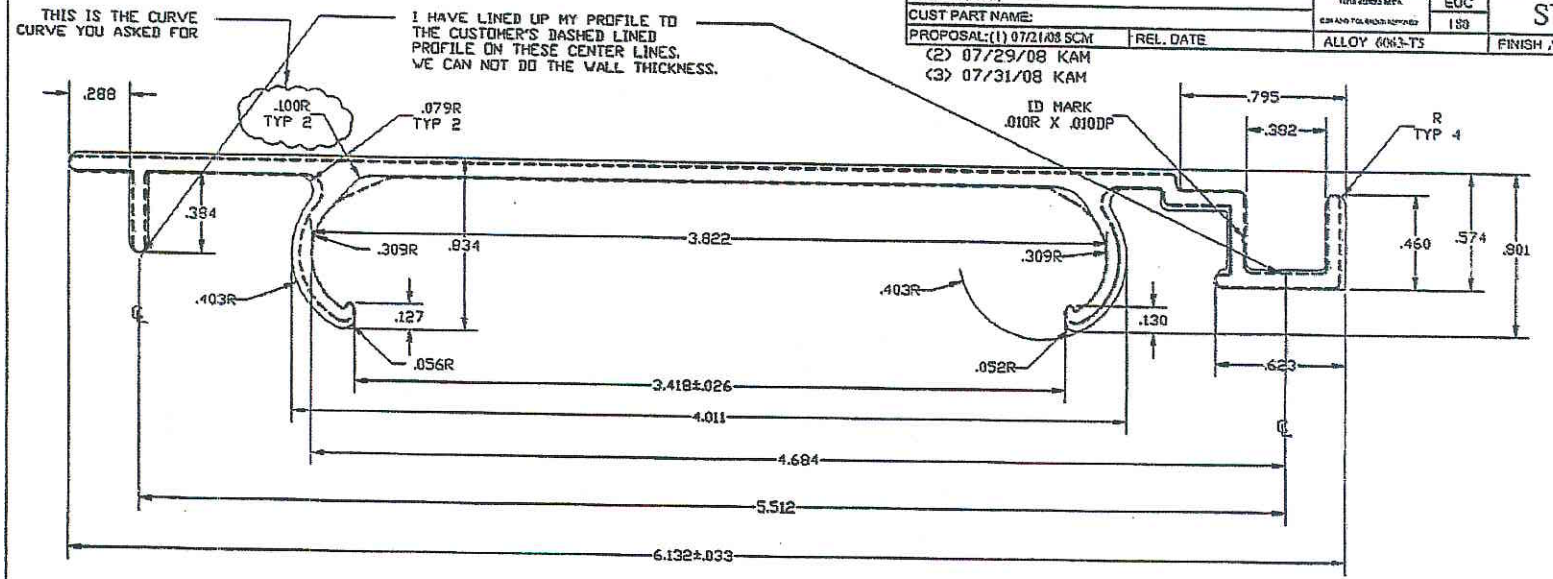
This drawing is not necessarily an exact copy of the customer's original. By your signature on this print you agree to accept the design, dimensions, and ID mark location as shown and to accept all legal responsibility for infringement of patents, copyright or industrial design relating to this drawing and to hold the WILLIAM L BONNELL COMPANY and its affiliates harmless from any claims, suits, actions, or demands arising therefrom. Please sign and return as soon as possible. Die construction cannot proceed until signed approval is received. If not shown, please indicate exposed surfaces.

APPROVED BY: _____ APPROVAL DATE: 7-25-08

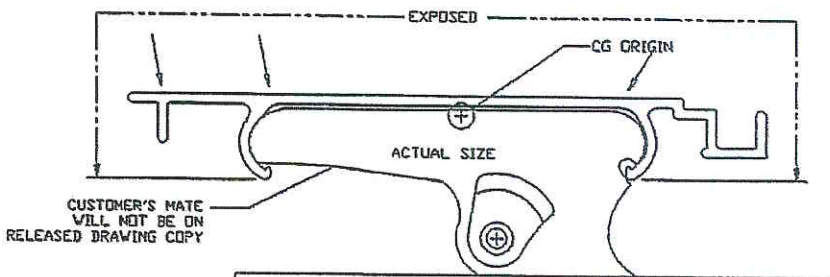
Standard Aluminum Association tolerances apply unless otherwise noted.

CUST PART #:		DIE NUMBER	REV
CUST PART NAME:	EUC 189	SVT-1	
PROPOSAL: (1) 07/21/08 SCM / REL. DATE	ALLOY 6063-T5	FINISH AE, PAINT, VELO	

(2) 07/29/08 KAM
(3) 07/31/08 KAM



ONCE YOU AGREE WITH THESE CHANGES, I WILL HAVE TO PASS BY THE PLANT AGAIN SINCE WE'VE MADE SO MANY CHANGES JUST TO MAKE SURE EVERYTHING IS STILL OK.



SERIES 600 HP

Standard Nominal Wall Thickness Tolerance Chart (±) for Circumscribing Circle Sizes Less than 10 inches				
Up thru 0.124	.006	0.250 - 0.499	.008	0.750 - 0.999 .010
0.125 - 0.249	.007	0.500 - 0.749	.009	hollows 10% .010 min .000 max

Structural values estimated for reference only.					
Ix:	.0166 x 10^4 mm^4	.040 in^4	Iy:	1.3615 x 10^6 mm^4	3.271 in^4
Sx:	1.018 x 10^3 mm^3	.062 in^3	Sy:	16.751 x 10^3 mm^3	1.022 in^3
CGx:	16.36 mm	.644 in	CGy:	81.28 mm	3.200 in

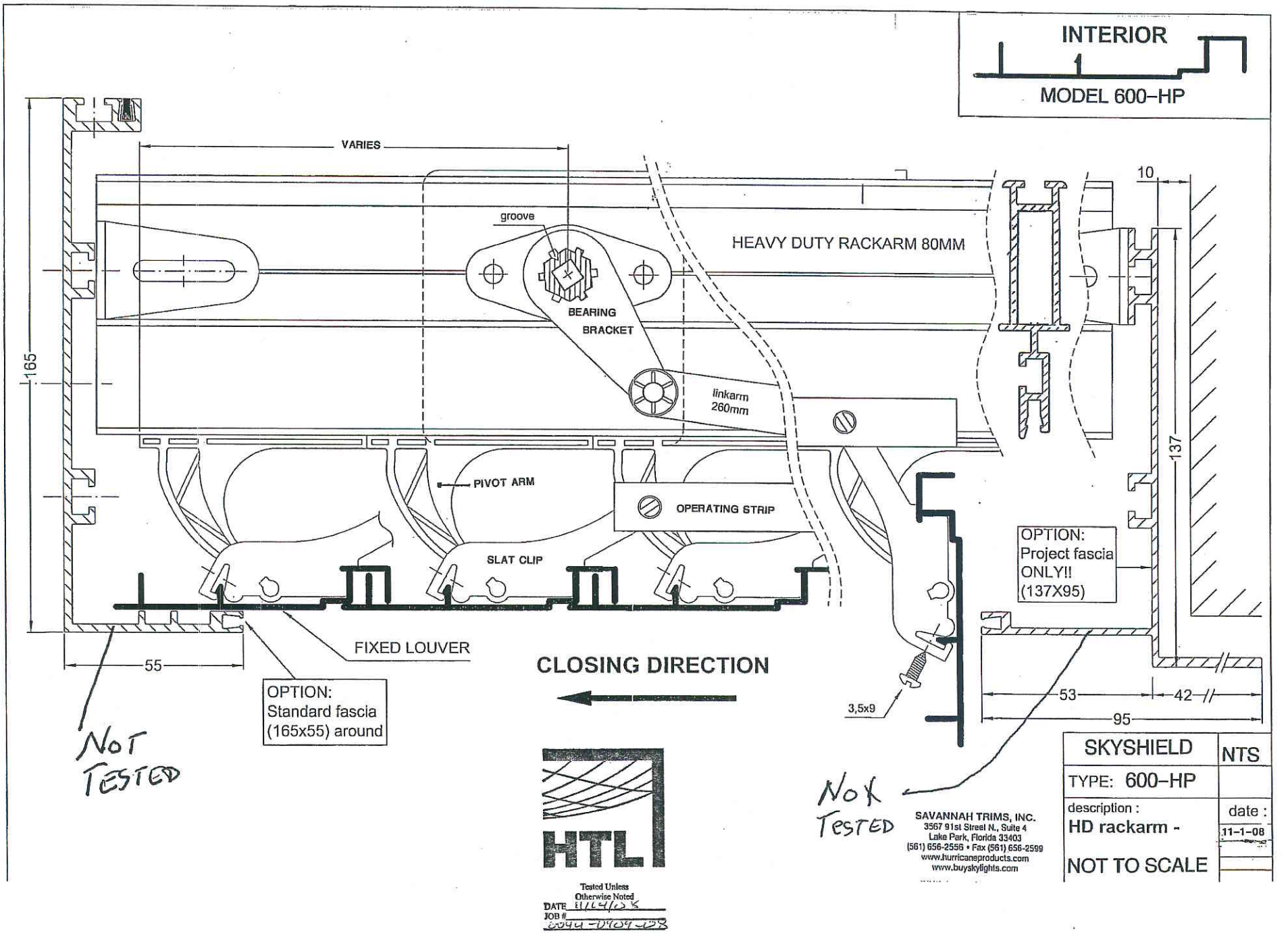
SVT-1

574.52

SAVANNAH TRIMS, INC.
3567 91ST ST NORTH, STE 4
LAKE PARK FL 33403

BONNELL

UNSPECIFIED WALLS:	2.39 mm	.094 in	MASS:	1.552 kg/m	1.043 lb/ft
UNSPECIFIED RADII:	.41R mm	.016R in	EST PER:	453.49 mm	17.854 in
			OUT PER:	mm	in
DATE:	07/21/08		EXP PER:	mm	in
DRAWN:	SCM		BUFF PER:	mm	in
SCALE:	2:1		BUFF TURNS:	CLASS:	Solid
THM BAR:	NO		FACTOR:	292 metric	17 imperial
P&D CODE:	NO		C.C.D.:	157.19 mm	6.189 in
			P&D AREA:	mm^2	in^2


INTERIOR
MODEL 600-HP
VARIES
groove
HEAVY DUTY RACKARM 80MM
BEARING
BRACKET
linkarm
260mm
10
165
137
PIVOT ARM
OPERATING STRIP
SLAT CLIP
FIXED LOUVER
55
OPTION:
Standard fascia
(165x55) around
NOT
TESTED
CLOSING DIRECTION
OPTION:
Project fascia
ONLY!!
(137X95)
3,5x9
53
42
95
NOT
TESTED
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Otherwise Noted
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JOB # 8044-0909-28
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(561) 656-2556 • Fax (561) 656-2599
www.hurricaneproducts.com
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SKYSHIELD
NTS
TYPE: 600-HP
description :
HD rackarm -
date :
11-1-08
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Revision Log

Rev. #	Date	Page(s)	Section #	Revision(s)
0	11/14/08	N/A	N/A	Original report issued.