

**NFRC 102-2010 THERMAL PERFORMANCE
TEST REPORT**
(Revised)

Rendered to:

TUBELITE, INC.

SERIES/MODEL: Standard Non-Thermal Entrance Door - Single Door, Narrow

TYPE: Swinging Door with Frame

Summary of Results	
Standardized Thermal Transmittance (U-Factor)	0.73
Unit Size	37-3/4" x 82-1/2" (959 mm x 2096 mm) (Model Size)
Layer 1	1/4" Clear Tempered
Gap 1	0.53" Gap, Azon Warm-Light® Spacer (A2-D), Air-Filled*
Layer 2	1/4" PPG Sungate 500 (e=0.215*, #3) Tempered

Reference must be made to Report No. B3828.01-116-46, dated 01/06/12 for complete test specimen description and data.

NFRC 102-2010 THERMAL PERFORMANCE TEST REPORT

(Revised)

Rendered to:

TUBELITE, INC.
4878 Mackinaw Trail
Reed City, Michigan 49677

Report Number:	B3828.01-116-46
Test Date:	12/06/11
Original Report Date:	01/05/12
Test Record Retention Date:	12/06/15
Revised Report Date:	01/06/12

Test Sample Identification:

Series/Model: Standard Non-Thermal Entrance Door - Single Door, Narrow

Type: Swinging Door with Frame

Overall Size: 37-3/4" x 82-1/2" (959 mm x 2096 mm) (Model Size)

NFRC Standard Size: 37.8" x 82.3" (960 mm wide x 2090 mm high)

Test Sample Submitted by: Client

Test Procedure: U-factor tests were performed in a Guarded Hot Box in accordance with NFRC 102-2010, *Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems*.

Test Results Summary:

Standardized U-factor (U_{st}): 0.73 Btu/hr·ft²·F CTS Method

Test Sample Description:

CONSTRUCTION	Frame	Panel
Size (in.)	37-3/4" x 82-1/2"	34-1/8" x 79-7/8"
Daylight Opening (in.)	N/A	27-3/4" x 71-3/4"
CORNERS	Butted	Butted
Fasteners	Screws	Bolts & Screws
Sealant	No	No
MATERIAL	AL	AL
Color Exterior	Gray	Gray
Finish Exterior	Anodized	Anodized
Color Interior	Gray	Gray
Finish Interior	Anodized	Anodized
GLAZING METHOD	N/A	Exterior

Glazing Information:

Layer 1	1/4" Clear Tempered
Gap 1	0.53" Gap, Azon Warm-Light® Spacer (A2-D), Air-Filled*
Layer 2	1/4" PPG Sungate 500 (e=0.215*, #3) Tempered
Gas Fill Method	N/A*

**Stated per Client/Manufacturer*

N/A Non-Applicable

See Description Table Abbreviations

Test Sample Description: (Continued)

COMPONENTS		
Type	Quantity	Location
WEATHERSTRIP		
Polypile with center fin	1 row	Head and jambs
Flexible hollow bulb gasket	1 row	Interior and exterior glazing perimeter
HARDWARE		
Lock assembly	1	Lock stile
Full-mortise butt hinge	2	Hinge jamb/stile
Metal handles	2	Lock stile
Aluminum threshold	1	Sill
DRAINAGE		
Sloped sill	1	Sill

Thermal Transmittance (U-factor)

Measured Test Data

Heat Flows

1. Total Measured Input into Metering Box (Q_{total})	1296.30 Btu/hr
2. Surround Panel Heat Flow (Q_{sp})	28.54 Btu/hr
3. Surround Panel Thickness	6.00 inches
4. Surround Panel Conductance	0.0291 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Q_{mb})	29.13 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0398*EMF + 0.000
7. Flanking Loss Heat Flow (Q_f)	11.45 Btu/hr
8. Net Specimen Heat Loss (Q_s)	1227.18 Btu/hr

Areas

1. Test Specimen Projected Area (A_s)	21.63 ft ²
2. Test Specimen Interior Total (3-D) Surface Area (A_h)	25.93 ft ²
3. Test Specimen Exterior Total (3-D) Surface Area (A_c)	22.65 ft ²
4. Metering Box Opening Area (A_{mb})	36.47 ft ²
5. Metering Box Baffle Area (A_{b1})	31.16 ft ²
6. Surround Panel Interior Exposed Area (A_{sp})	14.84 ft ²

Test Conditions

1. Average Metering Room Air Temperature (t_h)	69.82 F
2. Average Cold Side Air Temperature (t_c)	-0.39 F
3. Average Guard/Environmental Air Temperature	71.26 F
4. Metering Room Average Relative Humidity	6.35 %
5. Metering Room Maximum Relative Humidity	6.97 %
6. Metering Room Minimum Relative Humidity	5.81 %
7. Measured Cold Side Wind Velocity (Perpendicular Flow)	17.07 mph
8. Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04"H ₂ O

Average Surface Temperatures

1. Metering Room Surround Panel	67.33 F
2. Cold Side Surround Panel	1.19 F

Results

1. Thermal Transmittance of Test Specimen (U_s)	0.81 Btu/hr·ft ² ·F
2. Standardized Thermal Transmittance of Test Specimen (U_{st})	0.73 Btu/hr·ft ² ·F

Thermal Transmittance (U-factor)

Calculated Test Data

CTS Method

1. Warm Side Emittance of Glass (e_i)	0.84
2. Cold Side Emittance of Glass	0.84
3. Warm Side Frame Emittance	0.80
4. Cold Side Frame Emittance	0.80
5. Warm Side Sash/Panel/Vent Emittance	0.80
6. Cold Side Sash/Panel/Vent Emittance	0.80
7. Warm Side Baffle Emittance (e_{bi})	0.92
8. Equivalent Warm Side Surface Temperature	30.36 F
9. Equivalent Cold Side Surface Temperature	9.91 F
10. Warm Side Baffle Surface Temperature	68.73 F
11. Measured Warm Side Surface Conductance (h_h)	1.44 Btu/hr·ft ² ·F
12. Measured Cold Side Surface Conductance (h_c)	5.51 Btu/hr·ft ² ·F
13. Test Specimen Thermal Conductance (C_s)	2.78 Btu/hr·ft ² ·F
14. Convection Coefficient (K_c)	0.30 Btu/(hr·ft ² ·F ^{1.25})
15. Radiative Test Specimen Heat Flow (Q_{ri})	588.22 Btu/hr
16. Conductive Test Specimen Heat Flow (Q_{ci})	638.97 Btu/hr
17. Radiative Heat Flux of Test Specimen (q_{ri})	27.20 Btu/hr·ft ² ·F
18. Convective Heat Flux of Test Specimen (q_{ci})	29.54 Btu/hr·ft ² ·F
19. Standardized Warm Side Surface Conductance (h_{sth})	1.23 Btu/hr·ft ² ·F
20. Standardized Cold Side Surface Conductance (h_{stc})	5.28 Btu/hr·ft ² ·F
21. Standardized Thermal Transmittance (U_{st})	0.73 Btu/hr·ft ² ·F

Test Duration

1. The environmental systems were started at 06:48 hours, 12/05/11.
2. The test parameters were considered stable for two consecutive four hour test periods from 08:03 hours, 12/06/11 to 16:03 hours, 12/06/11.
3. The thermal performance test results were derived from 12:03 hours, 12/06/11 to 16:03 hours, 12/06/11.

The reported Standardized Thermal Transmittance (U_{st}) was determined using CTS Method, per Section 8.2(A) of NFRC 102.

Glazing Deflection (in):

	Panel
Edge Gap Width	0.53
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.56
Center gap width at laboratory ambient conditions on day of testing	0.56
Center gap width at test conditions	0.47

Glass collapse determined using a digital glass and air space meter

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

A calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 000001) in York, Pennsylvania was conducted in May 2011 in accordance with Architectural Testing Inc. calibration procedure.

"This test method does not include procedures to determine the heat flow due to either air movement through the specimen or solar radiation effects. As a consequence, the thermal transmittance results obtained do not reflect performances which may be expected from field installations due to not accounting for solar radiation, air leakage effects, and the thermal bridge effects that may occur due to the specific design and construction of the fenestration system opening. Therefore, it should be recognized that the thermal transmittance results obtained from this test method are for ideal laboratory conditions and should only be used for fenestration product comparisons and as input to thermal performance analyses which also include solar, air leakage and thermal bridge effects."

"Ratings included in this report are for submittal to an NFRC-licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) are to be used for labeling purposes."

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side. The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen.

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 1.52%.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Ratings included in this report are for submittal to an NFRC licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) are to be used for labeling purposes. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Tested By:

Reviewed By:

Ryan P. Moser
Technician

Shon W. Einsig
Senior Technician
Individual-In-Responsible-Charge

RPM:amg
B3828.01-116-46

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Description Table Abbreviations (1)
- Appendix-B: CTS Calibration Data (1)
- Appendix-C: Surround Panel Wiring Diagram (1)
- Appendix-D: Baffle Wiring Diagram (1)
- Appendix-E: Submittal Form and Drawings (14)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	01/05/12	All	Original Report Issue. Work requested by Tram Trinh of Tubelite, Inc.
.01R1	01/06/12	Appendix A	Assembly Drawings Revised

Appendix A: Description Table Abbreviations

CODE	Frame / Sash Types
AI	Aluminum w/ Vinyl Inserts (Caps)
AL	Aluminum
AP	Aluminum w/ Thermal Breaks - Partial
AS	Aluminum w/ Steel Reinforcement
AT	Aluminum w/ Thermal Breaks - All Members ($\geq 0.21"$)
AU	Aluminum Thermally Improved - All Members (0.062" - 0.209")
AV	Aluminum / Vinyl Composite
AW	Aluminum-clad Wood
FG	Fiberglass
PA	ABS Plastic w/ All Members Reinforced
PC	ABS Plastic-clad Aluminum
PF	ABS Plastic w/ Foam-filled Insulation
PH	ABS Plastic w/ Horizontal Members Reinforced
PI	ABS Plastic w/ Reinforcement - Interlock
PL	ABS Plastic
PP	ABS Plastic w/ Reinforcement - Partial
PV	ABS Plastic w/ Vertical Members Reinforced
PW	ABS Plastic-clad Wood
ST	Steel
VA	Vinyl w/ All Members Reinforced
VC	Vinyl-clad Aluminum
VF	Vinyl w/ Foam-filled Insulation
VH	Vinyl w/ Horizontal Members Reinforced
VI	Vinyl w/ Reinforcement - Interlock
VP	Vinyl w/ Reinforcement - Partial
VV	Vinyl w/ Vertical Members Reinforced
VW	Vinyl-clad Wood
VY	Vinyl
WA	Aluminum / Wood composite
WD	Wood
WV	Vinyl / Wood composite
WF	Fiberglass/Wood Combination
WC	Composite/Wood Composite (Shaped vinyl/wood composite members)
CW	Copper Clad Wood
CO	Vinyl/Wood Composite Material

CODE	Spacer Types (See sealant)
A1	Aluminum
A2	Aluminum (Thermally-broken)
A3	Aluminum-reinforced Polymer
A4	Aluminum / Wood
A5	Aluminum-reinforced Butyl (Swiggle)
A6	Aluminum / Foam / Aluminum
A7	Aluminum U-shaped
A8	Aluminum-Butyl (Corrugated) (Duraseal)
ER	EPDM Reinforced Butyl
FG	Fiberglass
GL	Glass
OF	Organic Foam
P1	Duralite
PU	Polyurethane Foam
SU	Stainless Steel, U-shaped
CU	Coated Steel, U-shaped (Intercept)
S2	Steel (Thermally-broken)
S3	Steel / Foam / Steel
S5	Steel-reinforced Butyl
S6	Steel U-channel w/ Thermal Cap
SS	Stainless Steel
CS	Coated Steel
TP	Thermo-plastic
WD	Wood
ZE	Elastomeric Silicone Foam
ZF	Silicone Foam
ZS	Silicone / Steel
N	Not Applicable
TS	Thermo-plastic w/ stainless steel substrate

CODE	Tint Codes
AZ	Azurlite
BL	Blue
BZ	Bronze
CL	Clear
EV	Evergreen
GD	Gold
GR	Green
GY	Gray
LE	Low 'e' Coating
OT	Other (use comment field)
RC	Solar or Reflective Coating
RG	Roller Shades between glazing
RS	Silver (reflective coating)
SF	Suspended Polyester Film
SR	Silver
BG	Blinds between the Glazing
DV	Dynamic Glazing-Variable
DY	Dynamic Glazing-NonVariable

CODE	Gap Fill Codes
AIR	Air
AR2	Argon/Krypton Mixture
AR3	Argon / Krypton / Air
ARG	Argon/Air
CO2	Carbon Dioxide
KRY	Krypton/Air
SF6	Sulfur Hexafluoride
XE2	Xenon/Krypton/Air
XE3	Xenon/Argon/Air
XEN	Xenon/Air
N	Not Applicable

DOOR DETAILS	
N	Not Applicable
CODE	Door Type
EM	Embossed
FL	Flush
LF	Full Lite
LH	1/2 - Lite
LQ	1/4 - Lite
LT	3/4 - Lite
RP	Raised Panel
CODE	Skin
AL	Aluminum
FG	Fiberglass
GS	Galvanized Steel
ST	Steel
WD	Wood
VY	Vinyl
CODE	Panel
FG	Fiberglass
PL	Plastic
WP	Wood - Plywood
WS	Wood - Solid
CODE	Sub-Structure
GS	Galvanized Steel
ST	Steel
WD	Wood
VY	Vinyl
CODE	Core Fill
CH	Cellular - Honeycomb
EP	Expanded Polystyrene
PI	Polyisocyanurate
PU	Polyurethane
WP	Wood - Plywood
WS	Wood - Solid
XP	Extruded Polystyrene

CODE	Spacer Sealant
D	Dual Seal Spacer System
S	Single Seal Spacer System

CODE	Grid Description
N	No Muntins
G	Grids between glass
S	Simulated Divided Lites
T	True Muntins

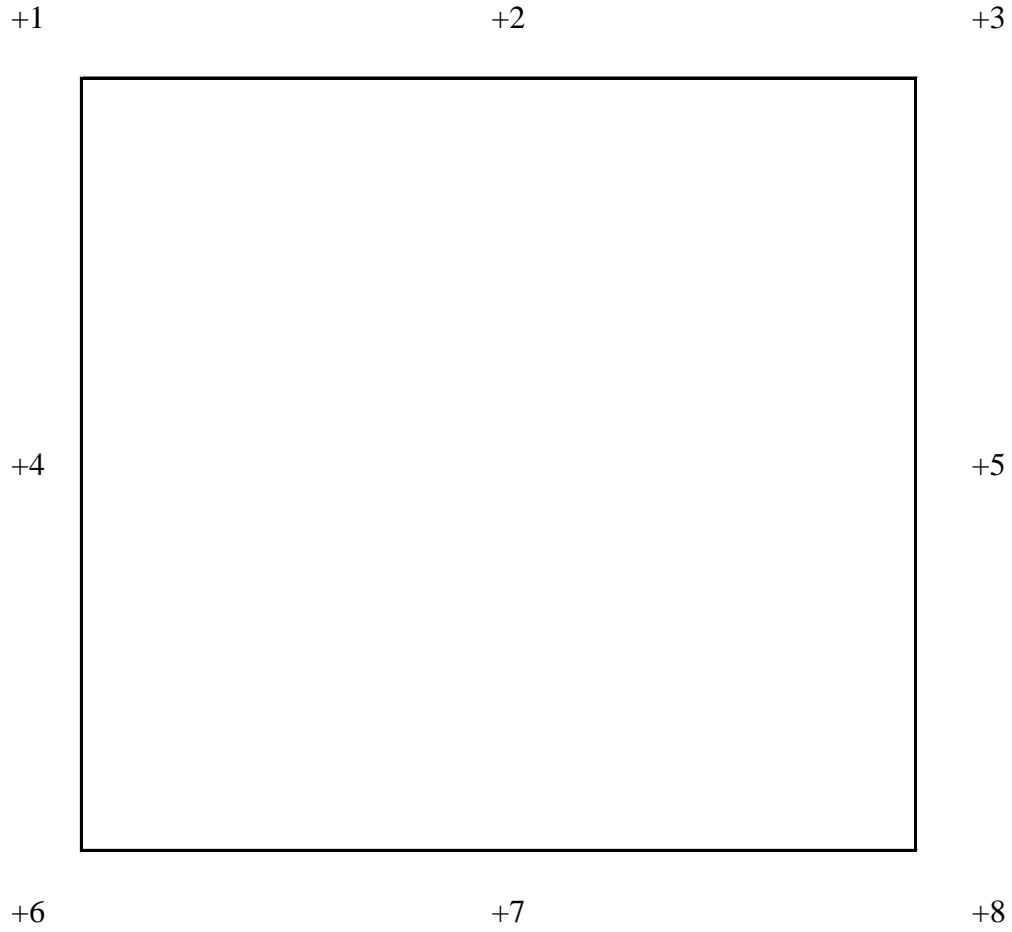
CODE	Grid Size Codes
	Blank for no grids
0.75	Grids < 1"
1.5	Grids $\geq 1"$

CODE	Thermal Breaks
F	Foam
U	Urethane
V	Vinyl
FB	Fiberglass
O	Other
AB	ABS
NE	Neoprene
AI	Air
N	Not Applicable
P	Polvamide

Appendix B: CTS Calibration Data

1. CTS Test Date	05/23/11
2. CTS Size	21.53 ft ²
3. CTS Glass/Core Conductance	0.39 Btu/hr·ft ² ·F
4. Warm Side Air Temperature	69.80 F
5. Cold Side Air Temperature	-0.44 F
6. Warm Side Average Surface Temperature	54.75 F
7. Cold Side Average Surface Temperature	3.20 F
8. Convection Coefficient (K _c)	0.30 Btu/(hr·ft ² ·F ^{1.25})
9. Measured Cold Side Surface Conductance (h _c)	5.51 Btu/hr·ft ² ·F
10. Measured Thermal Transmittance	0.30 Btu/hr·ft ² ·F

Appendix C: Surround Panel Wiring Diagram

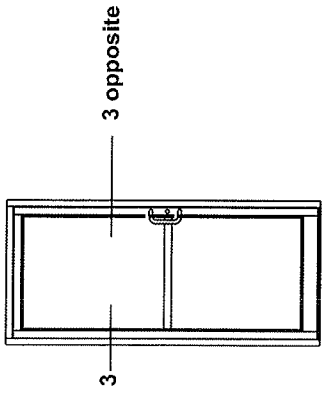


Appendix D: Baffle Wiring Diagram

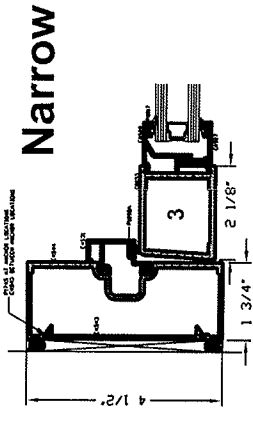
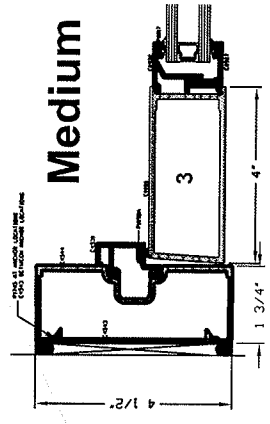
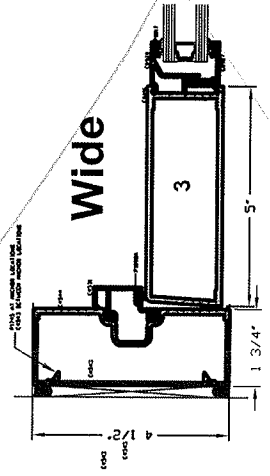


Appendix E: Drawings

Standard Doors - Single 1.75" Jamb detail Elevations & 1/4 Size Details



Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report# B3888
 Date 12/16/14 Tech RHM



TUBELITE
 DEPENDABLE
 LEADERS IN LEAD-FREE STOREFRONT
 CURTAINWALL AND ENTRANCE SYSTEMS
 2011

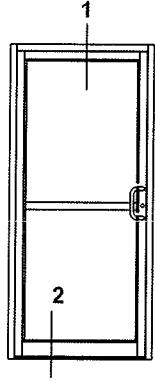
*SEALANT, ROD, & ANCHORS NOT BY TUBELITE

Test sample complies with these details.
Deviations are noted.

Report# 100808

Date 10/6/14

Tech RJM

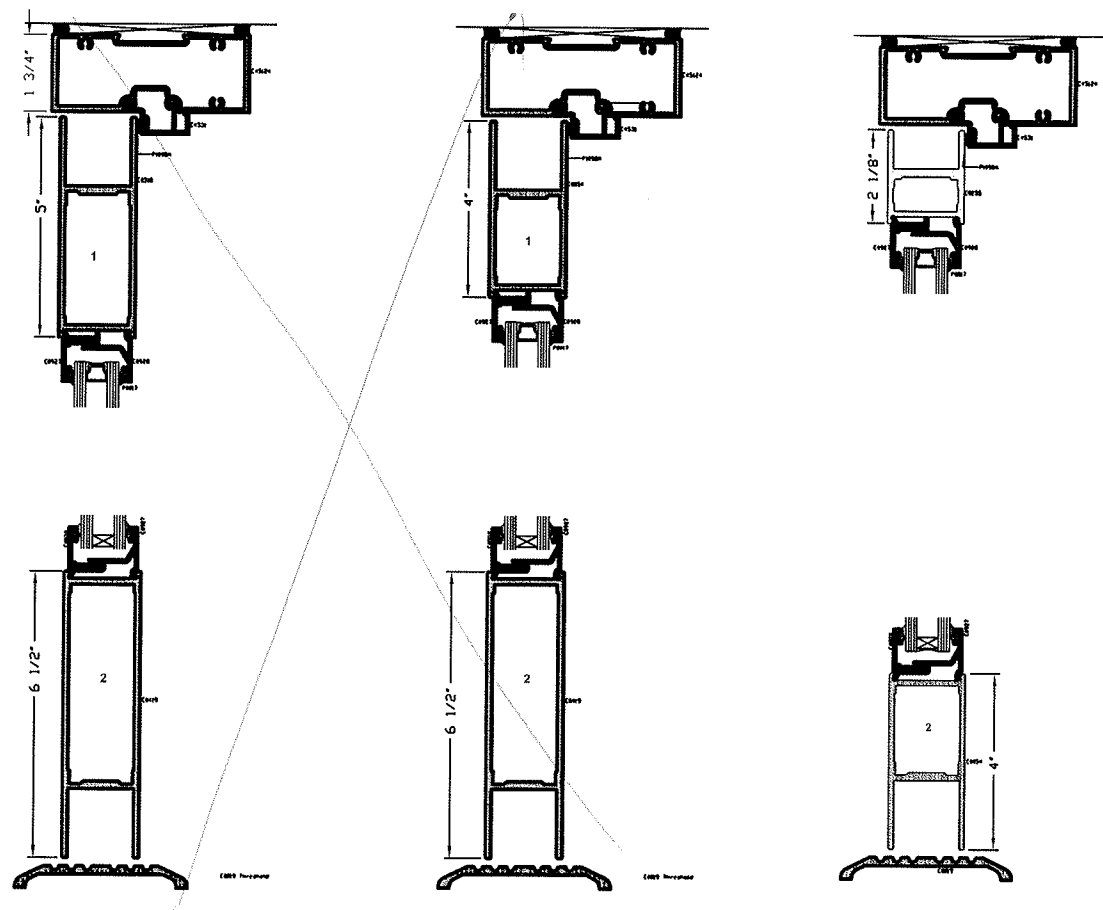


Standard Doors - Single 1.75 frame Elevations & 1/4 Size Details

Wide

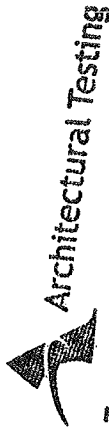
Medium

Narrow



*SEALANT, ROD, & ANCHORS NOT BY TUBELITE

STANDARD SINGLE DOOR SILENT SLIP FRAME



Test sample complies with these details.
Deviations are noted.

Report# B3838

Date 12/6/14

Tech ELM

FRAME:

Description	QTY	Length	Part number	Material
4500 Jamb 1.3/4" x 4 1/2"	2	82 3/8"	E4544	
Header 1 3/4" x 4 1/2"	1	34 1/4"	E45124	
	1	34 7/23"		
Header Door stops & Jambs	2	80 5/8"	E4531	
Weather pile	30 ft		P1098A	
closure open back plate	2		E4543	

DOOR:

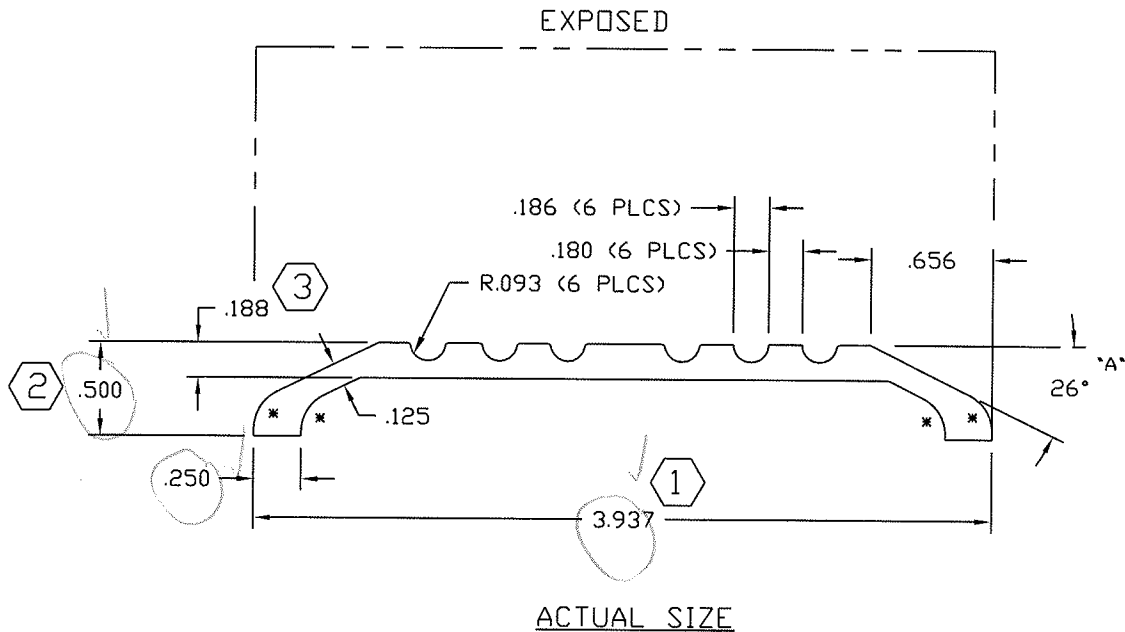
Description	QTY	Length	Narrow P/N	Medium P/N	Wide P/N	Material
Beveled Door Stiles	2	79 13/16"	E0055 - 2 1/8"	E0086- 4"	E0416 - 5"	
Door Top Rail	1	29 13/16"	E0255- 2 1/8"	E0054- 4"	E0318 - 5"	
Top Rail Lug	2		P168	P031	P339	AL
Door Bottom Rail	1	29 13/16"	E0054- 4"	E0419- 6 1/2"	E0419- 6 1/2"	
Bottom Rail Lug	2		P031	P341	P341	AL
Top Rail & Bottom Rail Tie Rods	2	33 1/4"	P020B	P020	P020	Steel
Washer for Tie Rods	4		P852	P853	P853	steel/AL
Hex nuts for Tie rods	4		S071A	S071A	S071A	Steel
Exterior Glass Stop 1" glass	4		E0927	E0927	E0927	
Interior Glass Stop 1" glass	4		E0928	E0928	E0928	
Gasket	35.42		P0017	P0017	P0017	
Adjustable Wedge Setting Block	2		P1911	P1911	P1911	Polypropylene
Self Adhesive Setting Block	3		P1912	P1912	P1912	EPDM
Threshold	1		E0019	E0019	E0019	
Threshold clip	2		P679	P679	P679	AL

MATERIAL:

E - All E part numbers are AL extrusions

E0019

A



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# B3828
Date 12/6/09 Tech RPm

INDICATES .218 RAD (4 PLCS)

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ALUMINUM ASSOCIATION STANDARD
TOLERANCES APPLY UNLESS NOTED
ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS

TUBELITE
DEPENDABLE

LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

WALL THK.	.125	SECTION CLASS	S	MAT'L	6063-T5	RATIO	85:1
PERIMETER OUT (TOTAL)	9.249	AREA	.649	WGT/FT	.763		
FACTOR	12	CIRCLE SIZE	3.937	INFILL VOLUME	N/A		

RXX	.119	SXX	.055	IXX	.009	CXX	.333
RYY	1.183	SYY	.461	IYY	.907	CYY	1.969

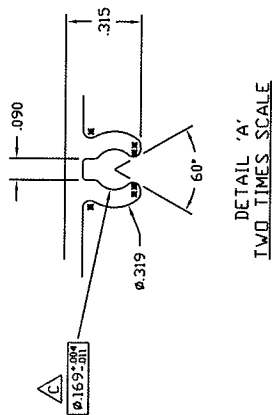
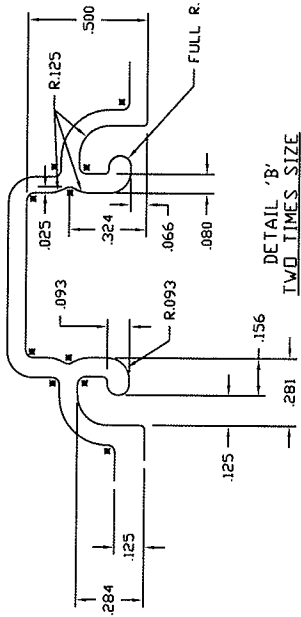
THRESHOLD 1/2" X 4"
STOCK FRAMES

REV	DATE	DESCRIPTION	INTL
A	3/4/92	REVISE AND RELEASE TO PROD. WAS 29°38'	KMH

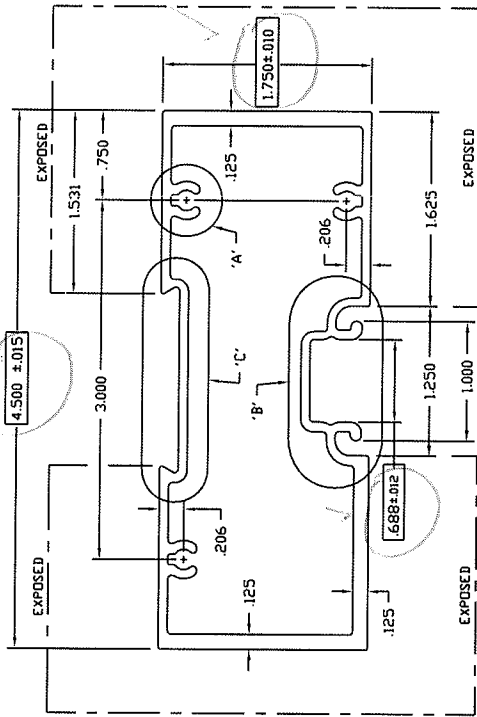
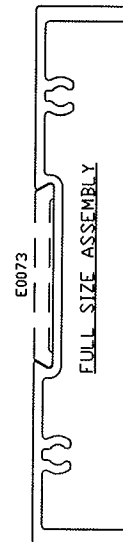
DRAWN BY	DH	DRVG DATE	03/16/84	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	090	E0019	REV	A	

E45124

C



DETAIL 'C'
TWO TIMES SCALE



INDICATES CRITICAL DIMENSION

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 ALUMINUM ASSOCIATION STANDARD
 TOLERANCES APPLY UNLESS NOTED
 * INDICATES .031 RADIUS
 □ DENOTES CRITICAL DIMENSION
 ALL DIMS PROPERTY OF TUBELITE

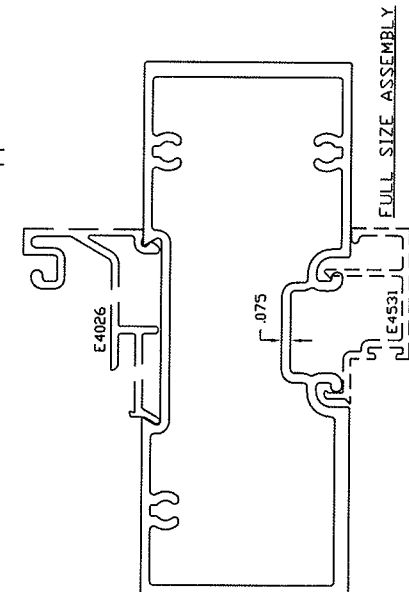
REV	DATE	DESCRIPTION	UNL
001	5/17/93	RELEASE TO TOOLING	MMH
002	7-22-93	REVISE CENTER T WAS E-5807	MMH
003	11-8-93	RELEASE TO PRODUCTION	MMH
004	11-8-93	RELEASE TO PRODUCTION	MMH
005	11-8-93	RELEASE TO TOOLING	MMH
006	02/07/03	REVISED TO PROCKET AND REGLET - REDUCED WEIGHT	MMH
007	02/07/03	REMOVED EXTERIS - RELEASE FOR PRODUCTION	MMH
008	09/15/10	169 *0047-001 WAS 161E1004	MMH

MAT'L	.075	CLASS	H	MAT'L	6063-T5	RATIO	40:1
PERIMETER	14.791(29.991)			AREA	1.392	WG/FT	1.637
FACTOR	19	CIRCLE SIZE	4.828	UNL	N/A		
RXX	1.589	SXX	1.539	IMX	3.516	CXX	2.285
RYX	.678	SYX	.701	IYX	.639	CYX	.913
DOOR HEADER 1 3/4" X 4 1/2"							
DRWN	SRD	DATE	12/08/02	APP'D		DATE	APP'D
SCALE	NOTED	PROJECT	160	E45124		REV	



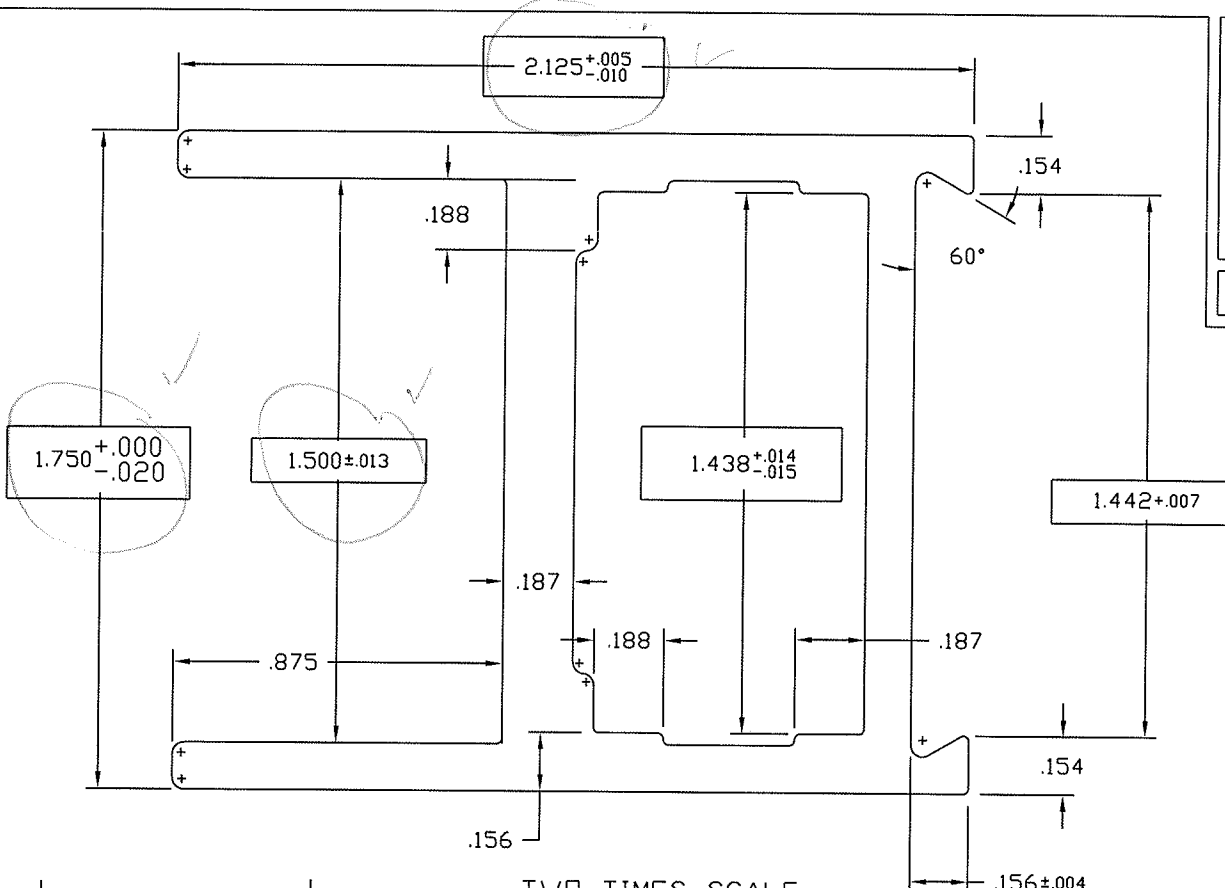
Test sample complies with these details.
 Deviations are noted.

Report# B3808
 Date 12/6/12 Tech RBM



E0255

A

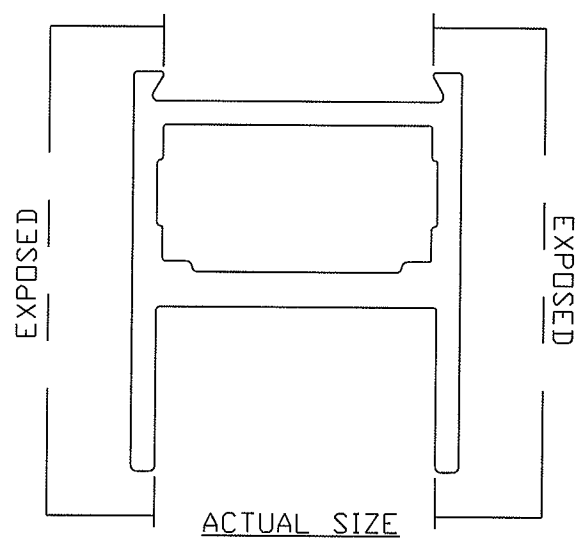


TWO TIMES SCALE



Test sample complies with these details. Deviations are noted.

Report# B3828
 Date 10/6/09 Tech Rpm



ACTUAL SIZE

- .125 +.003/-0.011 TYP WALL THICKNESS
- INDICATES CRITICAL DIMENSION
- SNAP FIT W/E-0437
- + INDICATES .031 RAD (10 PLCS)

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 * INDICATES .031 RADIUS
 DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE



3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK.	NOTED	SECTION CLASS	H	MAT'L	6063-T5	RATIO	53:1
PERIMETER OUT (TOTAL)	9.848(14.282)	AREA	1.043	WGT/FT	1.227		
FACTOR	12	CIRCLE SIZE	1.367	INFILL VOLUME	N/A		

RXX	.664	SXX	.526	IXX	.460	CXX	.875
RYY	.556	SYY	.269	IYY	.323	CYY	1.200

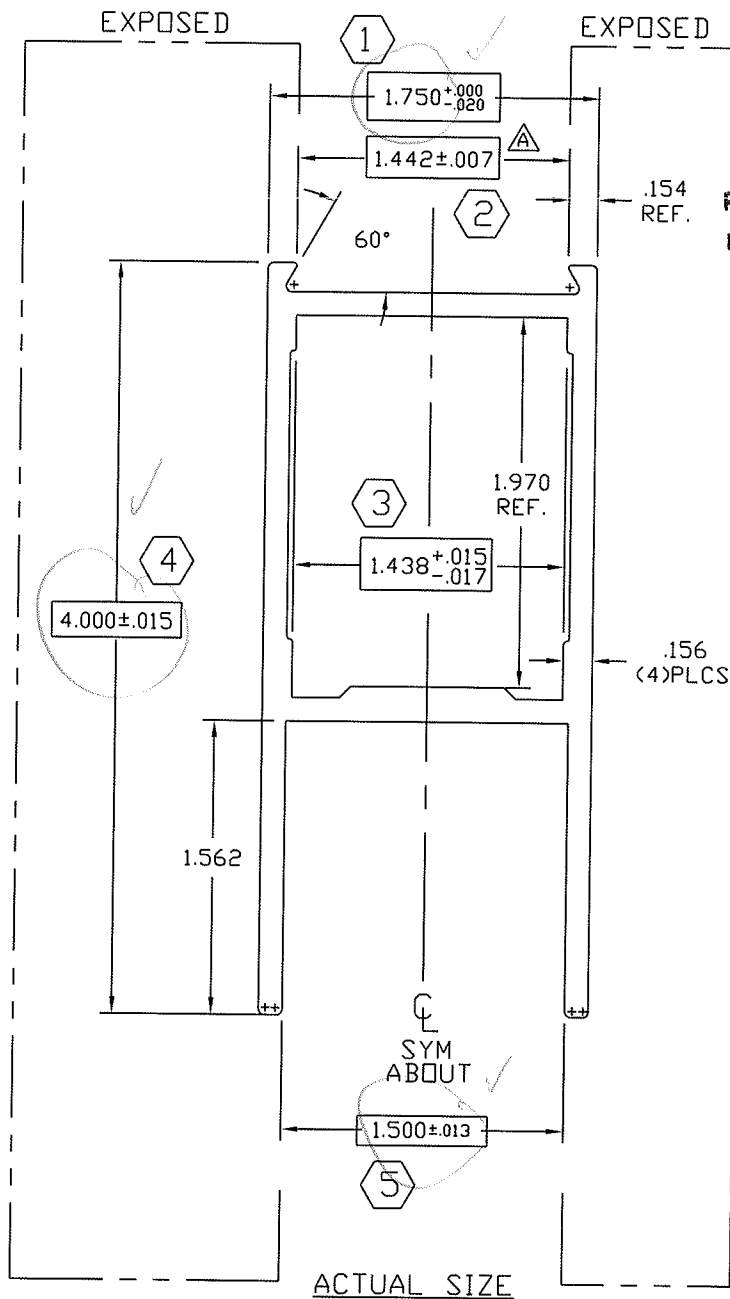
HORIZONTAL RAIL 2 1/8" X 1 3/4"
 STOCK DOORS

REV	DATE	DESCRIPTION	INTL
A	08/23/04	1.442 WAS 1.438	CRH

DRAWN BY	DH	DRWG DATE	04/24/84	APPV'D BY		DATE APPV'D	
DRWG SCALE	NOTED	PRODUCT CODE	100	E0255		REV	A

E0054

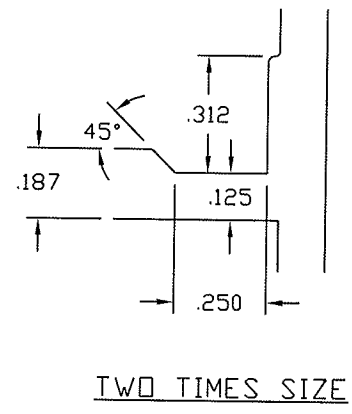
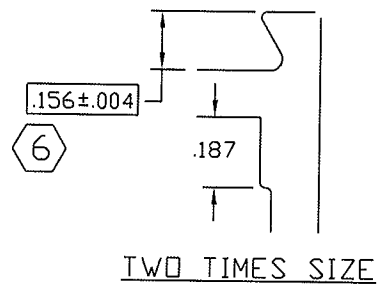
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Architectural Testing

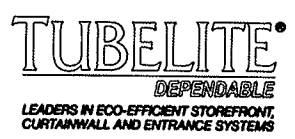
Test sample complies with these details.
Deviations are noted.

Report# B3828
Date 12/6/11 Tech RCM



7 SNAP FIT WITH E-0437
.125 ^{+ .003} / - .011 TYP WALL UNLESS NOTED

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3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK.	NOTED	SECTION CLASS	H	MAT'L	6063-T5	RATIO	38:1
PERIMETER OUT (TOTAL)	14.972(22.036)		AREA	1.460	WGT/FT	1.715	
FACTOR	13	CIRCLE SIZE	4.352	INFILL VOLUME	N/A		

RXX	1.153	SXX	.890	IXX	1.941	CXX	2.182
RYY	.717	SYY	.858	IYY	.751	CYY	.875

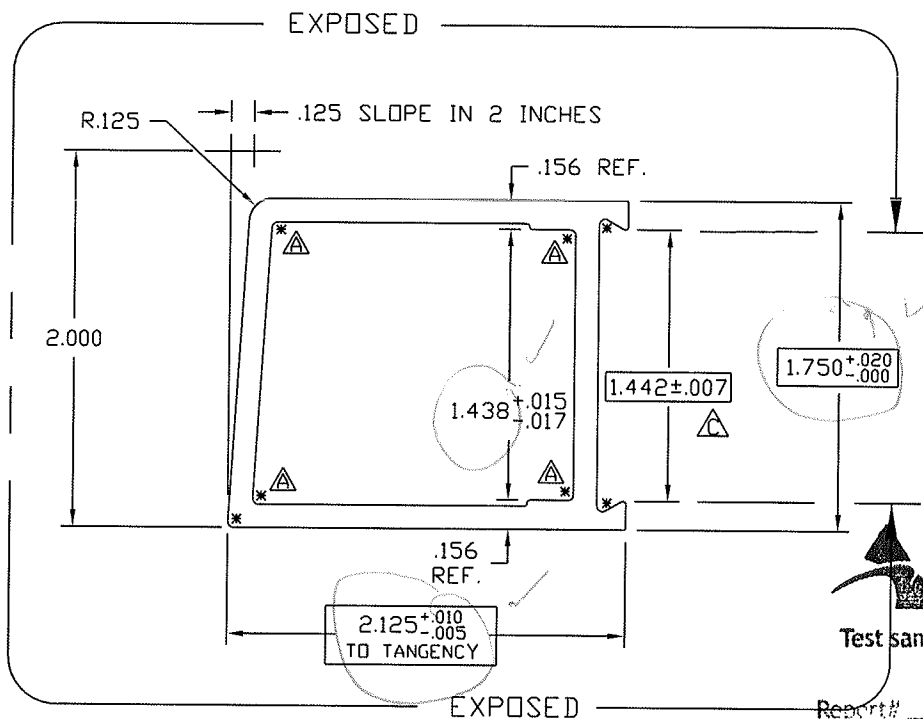
HORIZONTAL RAIL 4" X 1 3/4"
STOCK DOORS

REV	DATE	DESCRIPTION	INTL
A	11/22/91	REVISED CALCULATIONS	KMH
B	12/10/91	REVISED CALCULATIONS	KMH
C	4/2/02	WAS 1.438 +.011/- .013	CRH

DRAWN BY	DAT	DRWG DATE	03/31/84	APPV'D BY	DATE APPV'D
DWG SCALE	NOTED	PRODUCT CODE	100	E0054	REV C

E0055

C



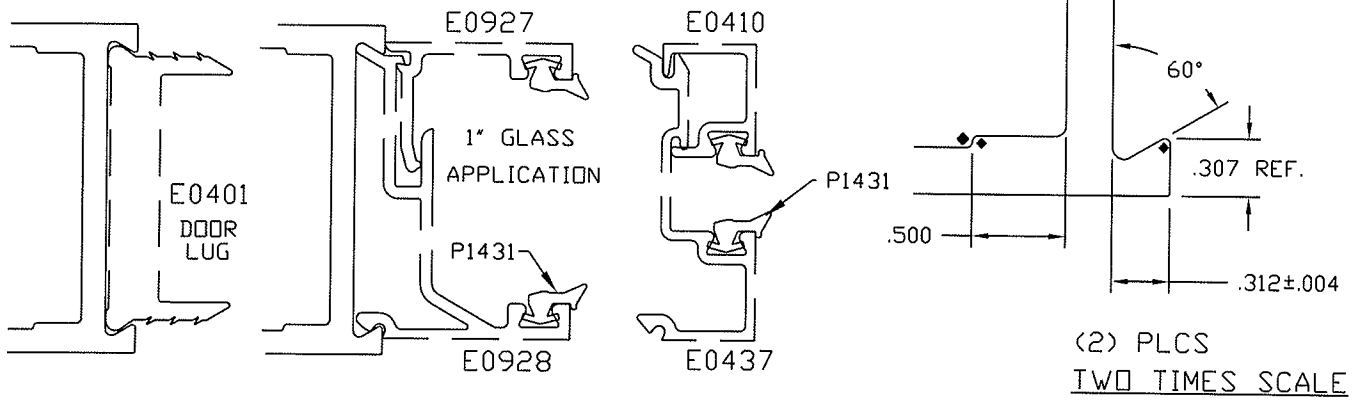
Architectural Testing

Test sample complies with these details. Deviations are noted.

Report# B3828

Date 12/6/11 Tech RBM

FULL SCALE



(2) PLCS
TWO TIMES SCALE

$.125 \begin{smallmatrix} +.003 \\ -.011 \end{smallmatrix}$ TYP WALL

INDICATES CRITICAL DIMENSION
SNAP FIT W/E0437(1/4\"GLASS) AND E0928(1\"GLASS)

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 LEADERS IN ECO-EFFICIENT STOREFRONT,
 CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

□ DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

WALL THK.	NOTED	SECTION CLASS	H	MAT'L	6063-T5	RATIO	61:1
PERIMETER OUT (TOTAL)	8.001(14.257)		AREA	.905	WGT/FT	1.064	
FACTOR	13	CIRCLE SIZE	2.753	INFILL VOLUME	N/A		

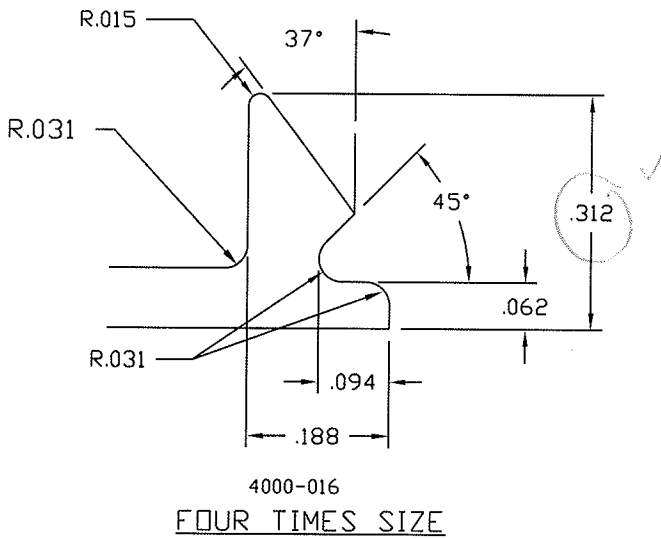
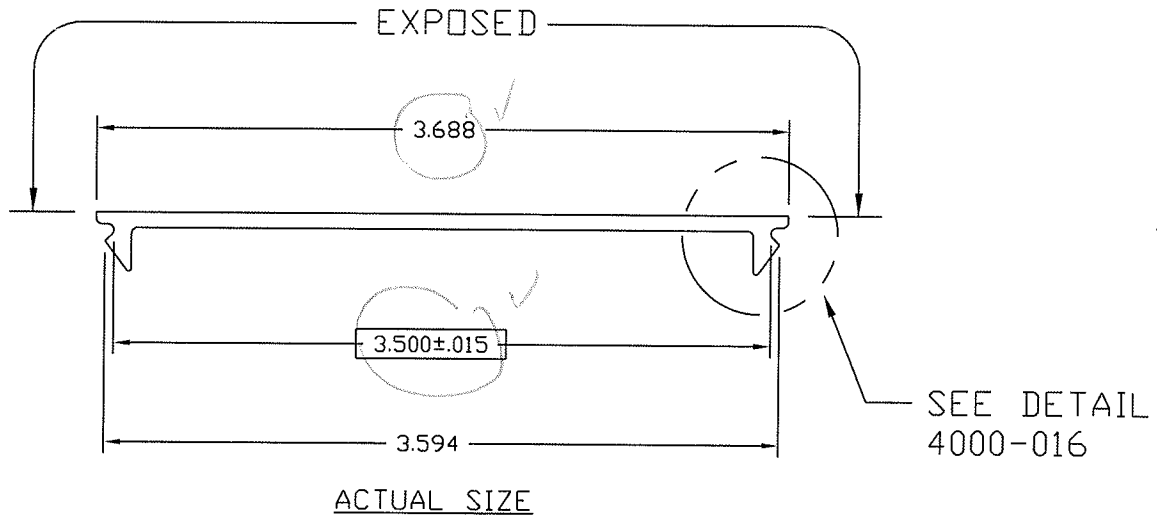
RXX	.680	SXX	.471	IXX	.418	CXX	.889
RYY	.738	SYY	.461	IYY	.493	CYY	1.068

REV	DATE	DESCRIPTION	INTL
A	08/23/00	1.449 WAS 1.438, ADDED .031R, UPDATED TITLE BLK	CRH
B	09/27/00	+0.005/-0.010 WAS +.015/-0.000	CRH
C	10/2/01	1.442+/-0.007 WAS 1.449+0.005/-0.010	CRH

DOOR STILE 2 1/8" X 2"
 STOCK DOORS

DRAWN BY	DAT	DRWG DATE	03/31/84	APPV'D BY	DATE APPV'D	REV	C
DWG SCALE	NOTED	PRODUCT CODE	100	E0055			

E4543



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# B3828

Date 12/6/11 Tech KPM

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WALKER, MICHIGAN 49544

WALL THK.	.080	SECTION CLASS	S	MAT'L	6063-T5	RATID	165:1
PERIMETER OUT (TOTAL)	8.341	AREA	.334	WGT/FT	.393		
FACTOR	21	CIRCLE SIZE	3.688	INFILL VOLUME	N/A		

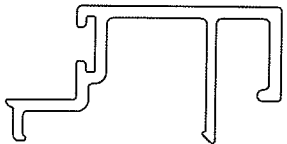
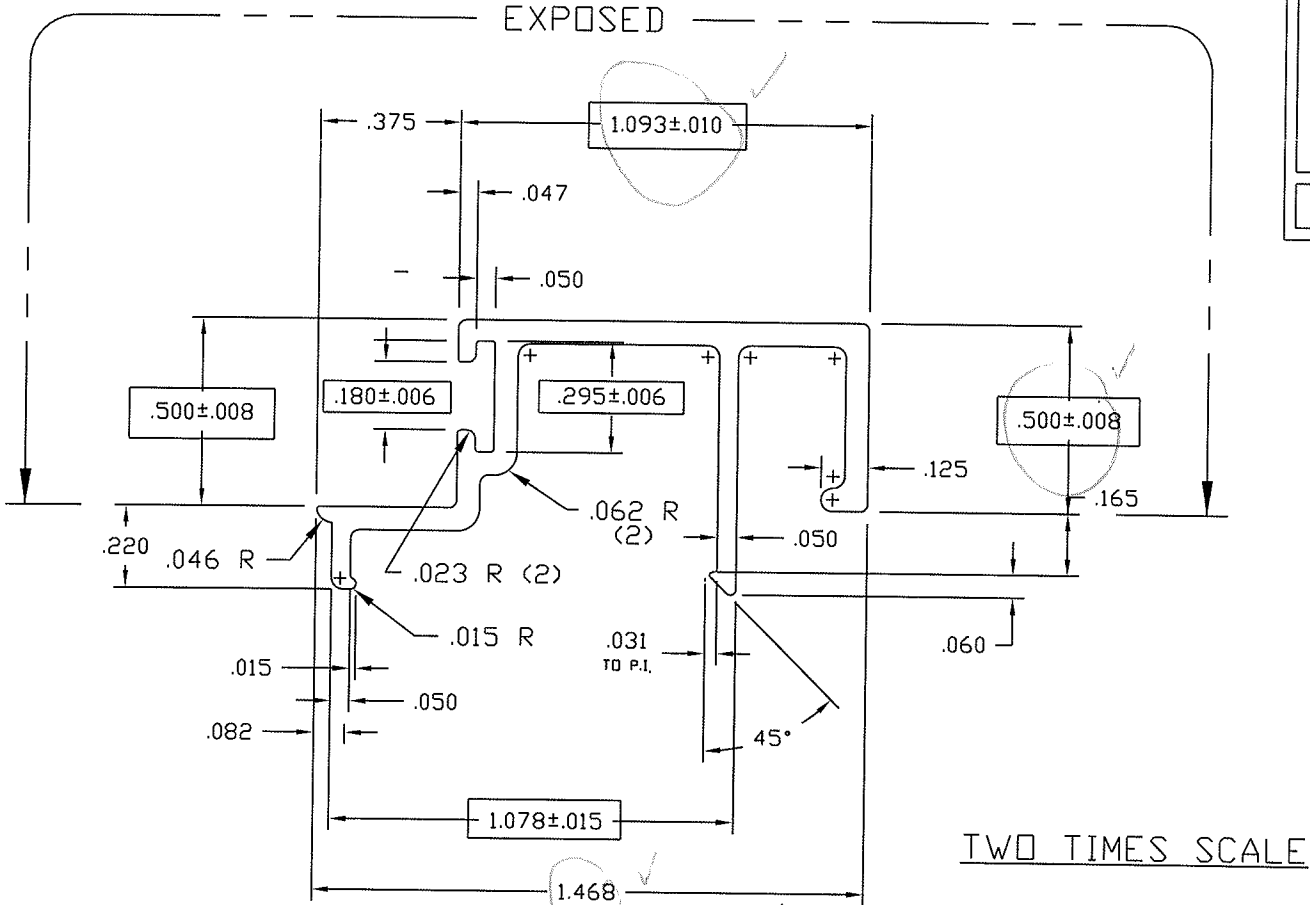
RXX	1.156	SXX	.242	IXX	.447	CXX	1.844
RYY	.054	SYY	.004	IYY	.001	CYY	.255

FLAT SNAP-IN FILLER
E4500 STOREFRONT

REV	DATE	DESCRIPTION	INTL
		RELEASE TO TOOLING	
	6/26/86	RELEASE TO PRODUCTION	

DRAWN BY	LS	DRWG DATE	10/22/85	APPV'D BY		DATE APPV'D	
DWG SCALE	FULL	PRODUCT CODE	160	E4543		REV	

E4531



ACTUAL SIZE



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# B3528
Date 10/6/11 Tecn Rfm

USED WITH 4500 SERIES
REPLACES E-4510

USE WITH P-1098A WEATHERING

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3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

☐ DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

REV	DATE	DESCRIPTION	INTL
	3/28/94	UPDATED SECTION PROPERTIES	TPB
	4/12/99	UPDATED EXPOSED	JEK

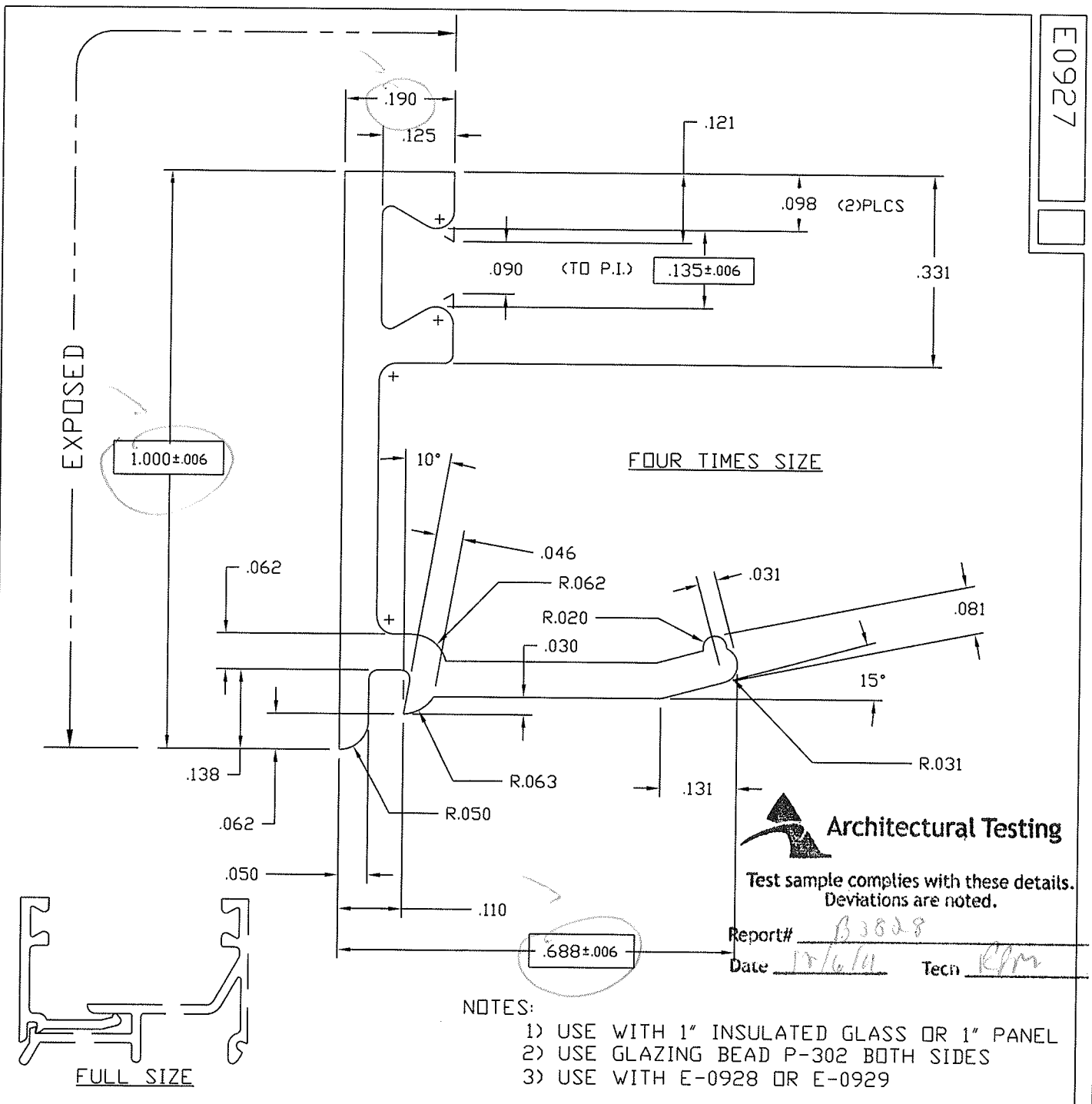
WALL THK.	.062	SECTION CLASS	S	MAT'L	6063-T5	RATIO	90
PERIMETER OUT (TOTAL)	6.966	AREA	.203	WGT/FT	.238		
FACTOR	29	CIRCLE SIZE	1.58	INFILL VOLUME	N/A		

RXX	.446	SXX	.049	IXX	.040	CXX	.824
RYY	.218	SYY	.021	IYY	.010	CYY	.461

DOOR STOP 1/2" X 1 3/32"
E4500 STOREFRONT

DRAWN BY	LS	DRWG DATE	02/07/85	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	160	E4531		REV	

E0927



- NOTES:
- 1) USE WITH 1" INSULATED GLASS OR 1" PANEL
 - 2) USE GLAZING BEAD P-302 BOTH SIDES
 - 3) USE WITH E-0928 OR E-0929

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 WALKER, MICHIGAN 49544

WALL THK.	.062	SECTION CLASS	S	MAT'L	6063-T5	RATIO	74:1
PERIMETER OUT (TOTAL)	4.001	AREA	.124	WGT/FT	.146		
FACTOR	27	CIRCLE SIZE	1.120	INFILL VOLUME	N/A		

RXX	.321	SXX	.023	IXX	.013	CXX	.321
RYY	.185	SYY	.008	IYY	.004	CYY	.185

GLASS STOP, 1" HIGH FOR 1" GLASS
 STOCK DOORS

REV	DATE	DESCRIPTION	INTL
X	xx/xx/xx	XXXXXXXXXXXXXXXX	XXX

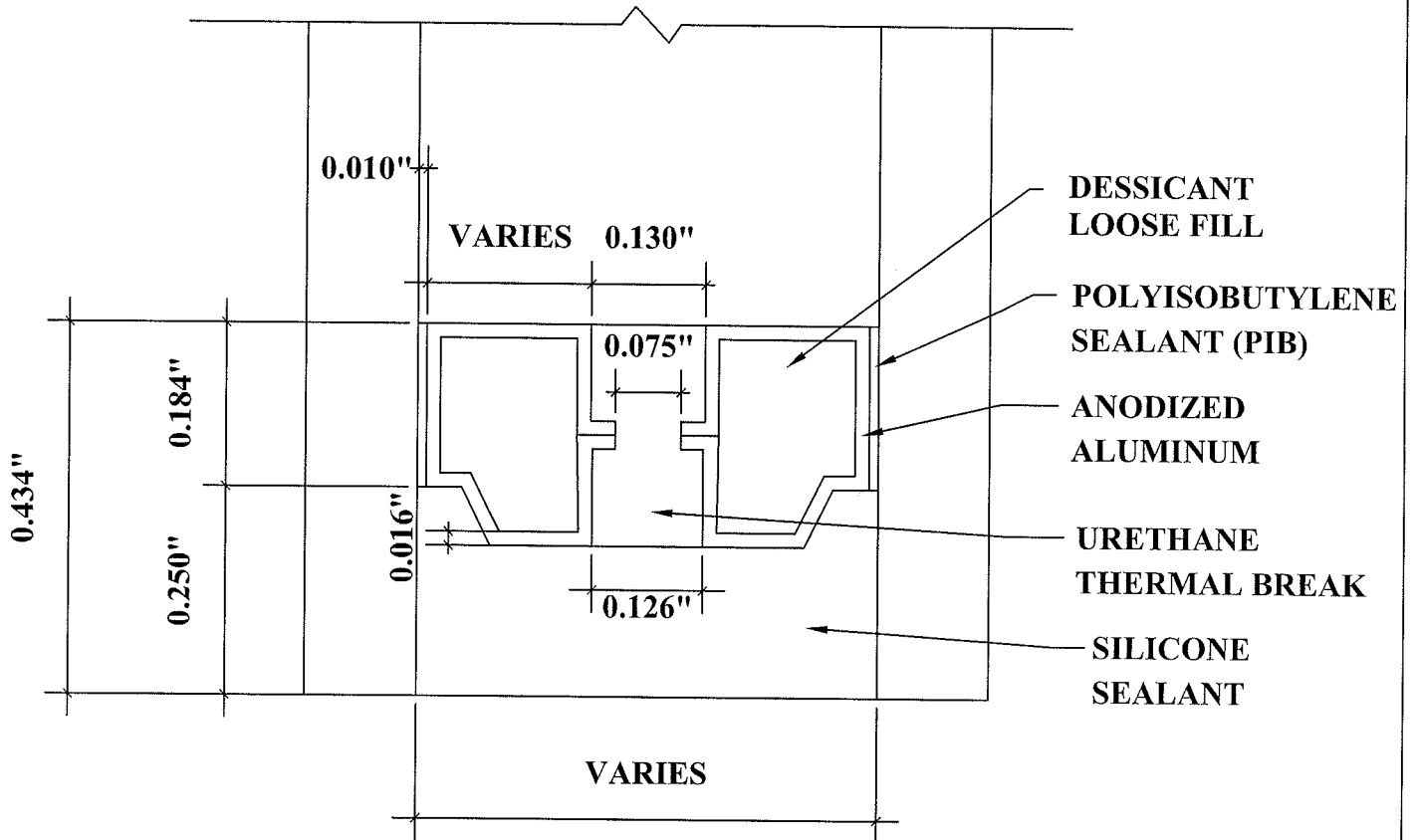
DRAWN BY	CRH	DRWG DATE	04/21/99	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	100	E0927			



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# A3828
Date 10/6/11 Tech RPM



DETAIL FOR THERMAL MODELING OF
AZON LOW PROFILE WARM-LIGHT SPACER (A2-D)