

**AAMA 1503-09 THERMAL PERFORMANCE  
TEST REPORT**

**Rendered to:**

**TUBELITE, INC.**

**SERIES/MODEL: 400CW with Fiberglass Pressure Plates - Curtain Wall**

**TYPE: Glazed Wall Systems (Site-built)**

<b>Summary of Results</b>	
Thermal Transmittance (U-Factor)	0.42
Condensation Resistance Factor - Frame (CRF <sub>f</sub> )	76
Condensation Resistance Factor - Glass (CRF <sub>g</sub> )	69
Unit Size	79-3/4" x 79-3/4" (2026 mm x 2026 mm)
Layer 1	1/4" Clear Heat-Strengthened
Gap 1	0.50" Gap, Stainless Steel Spacer (SS-D), Air-Filled*
Layer 2	1/4" Viracon VE1-2M (e=0.040*, #3) Heat-Strengthened

Reference must be made to Report No. B9235.02-116-46, dated 06/19/12 for complete test specimen description and data.

**AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT**

Rendered to:

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

Report Number: B9235.02-116-46  
Test Date: 05/17/12  
Report Date: 06/19/12  
Test Record Retention Date: 05/17/16

**Test Sample Identification:**

**Series/Model:** 400CW with Fiberglass Pressure Plates - Curtain Wall

**Type:** Glazed Wall Systems (Site-built)

**Test Sample Submitted by:** Client

**Test Procedure:** The condensation resistance factor (CRF) and thermal transmittance (U) were determined in accordance with AAMA 1503-09, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

- |   |         |
|---|---------|
| 1. Average warm side ambient temperature                  | 69.80 F |
| 2. Average cold side ambient temperature                  | -0.40 F |
| 3. 15 mph dynamic wind applied to test specimen exterior. |         |
| 4. 0.0" $\pm$ 0.04" static pressure drop across specimen. |         |

**Test Results Summary:**

- |   |      |
|---|------|
| 1. Condensation resistance factor - Frame (CRF <sub>f</sub> ) | 76   |
| Condensation resistance factor - Glass (CRF <sub>g</sub> )    | 69   |
| 2. Thermal transmittance due to conduction (U)                | 0.42 |
| (U-factors expressed in Btu/hr·ft <sup>2</sup> ·F)            |      |

**Test Sample Description:**

<b>CONSTRUCTION</b>	<b>Frame</b>
Size (in.) Non-Standard	79-3/4" x 79-3/4"
Daylight Opening (in.)	36-1/4" x 74-3/4" (x2)
<b>CORNERS</b>	Butted
Fasteners	Screws
Sealant	Yes
<b>MATERIAL</b>	AU (0.14")
Color Exterior	White
Finish Exterior	Paint
Color Interior	White
Finish Interior	Paint
<b>GLAZING METHOD</b>	Exterior Fiberglass Pressure Plate (Screwed 4" O.C.)

Unit had a 83-3/4" x 83-3/4" white painted 2" x 10" wood frame. Unit was caulked and bolted to wood wrap.

**Glazing Information:**

<b>Layer 1</b>	1/4" Clear Heat-Strengthened
<b>Gap 1</b>	0.50" Gap, Stainless Steel Spacer (SS-D), Air-Filled*
<b>Layer 2</b>	1/4" Viracon VE1-2M (e=0.040*, #3) Heat-Strengthened
<b>Gas Fill Method</b>	N/A*
<b>Desiccant</b>	Yes

*\*Stated per Client/Manufacturer*

*NA Non-Applicable*

*See Description Table Abbreviations*

**Test Sample Description:** (Continued)

<b>COMPONENTS</b>		
<b>Type</b>	<b>Quantity</b>	<b>Location</b>
<b>WEATHERSTRIP</b>		
PTB28 EPDM gasket	1 row	Interior and exterior glazing perimeter
PTB94 EPDM isolator gasket	1 row	Frame at pressure plate
<b>HARDWARE</b>		
Fiberglass pressure plates	7	Four per exterior horizontal, three per exterior vertical
Aluminum snap cover	7	Four per exterior horizontal, three per exterior vertical
(1.25" x 0.75") Wood block	6	Two per exterior horizontal, One per exterior jamb
<b>DRAINAGE</b>		
(0.50" x 0.25") weepslot	4	Two per exterior sill snap cover
(0.25") diameter weephole	6	Three per exterior sill pressure plate

**Test Duration:**

1. The environmental systems were started at 16:46 hours, 05/16/12.
2. The thermal performance test results were derived from 03:51 hours, 05/17/12 to 07:51 hours, 05/17/12.

**Condensation Resistance Factor (CRF):**

The following information, condensed from the test data, was used to determine the condensation resistance factor:

$T_h$	=	Warm side ambient air temperature	69.80 F
$T_c$	=	Cold side ambient air temperature	-0.40 F
$FT_p$	=	Average of pre-specified frame temperatures (14)	53.23 F
$FT_r$	=	Average of roving thermocouples (4)	48.03 F
$W$	=	$[(FT_p - FT_r) / (FT_p - (T_c + 10))]$ x 0.40	0.048
$FT$	=	$FT_p(1-W) + W (FT_r)$ = Frame Temperature	52.98 F
$GT$	=	Glass Temperature	48.04 F
$CRF_g$	=	Condensation resistance factor – Glass	69
		$CRF_g = (GT - T_c) / (T_h - T_c)$ x 100	
$CRF_f$	=	Condensation resistance factor – Frame	76
		$CRF_f = (FT - T_c) / (T_h - T_c)$ x 100	

The CRF number was determined to be 69 (on the size as reported). When reviewing this test data, it should be noted that the glass temperature (GT) was colder than the frame temperature (FT) therefore controlling the CRF number. Refer to the 'CRF Report' page and the 'Thermocouple Location Diagram' page of this report.

**Thermal Transmittance ( $U_c$ ):**

$T_h$	= Average warm side ambient temperature	69.80 F
$T_c$	= Average cold side ambient temperature	-0.40 F
P	= Static pressure difference across test specimen 15 mph dynamic perpendicular wind at exterior	0.00 psf
	Nominal sample area	44.17 ft <sup>2</sup>
	Total measured input to calorimeter	1413.76 Btu/hr
	Calorimeter correction	105.83 Btu/hr
	Net specimen heat loss	1307.93 Btu/hr
U	= Thermal Transmittance	0.42 Btu/hr·ft <sup>2</sup> ·F

**Glazing Deflection (in.):**

	Left Glazing	Right Glazing
Edge Gap Width	0.50	0.50
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.50	0.50
Center gap width at laboratory ambient conditions on day of testing	0.50	0.50
Center gap width at test conditions	0.41	0.41

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.

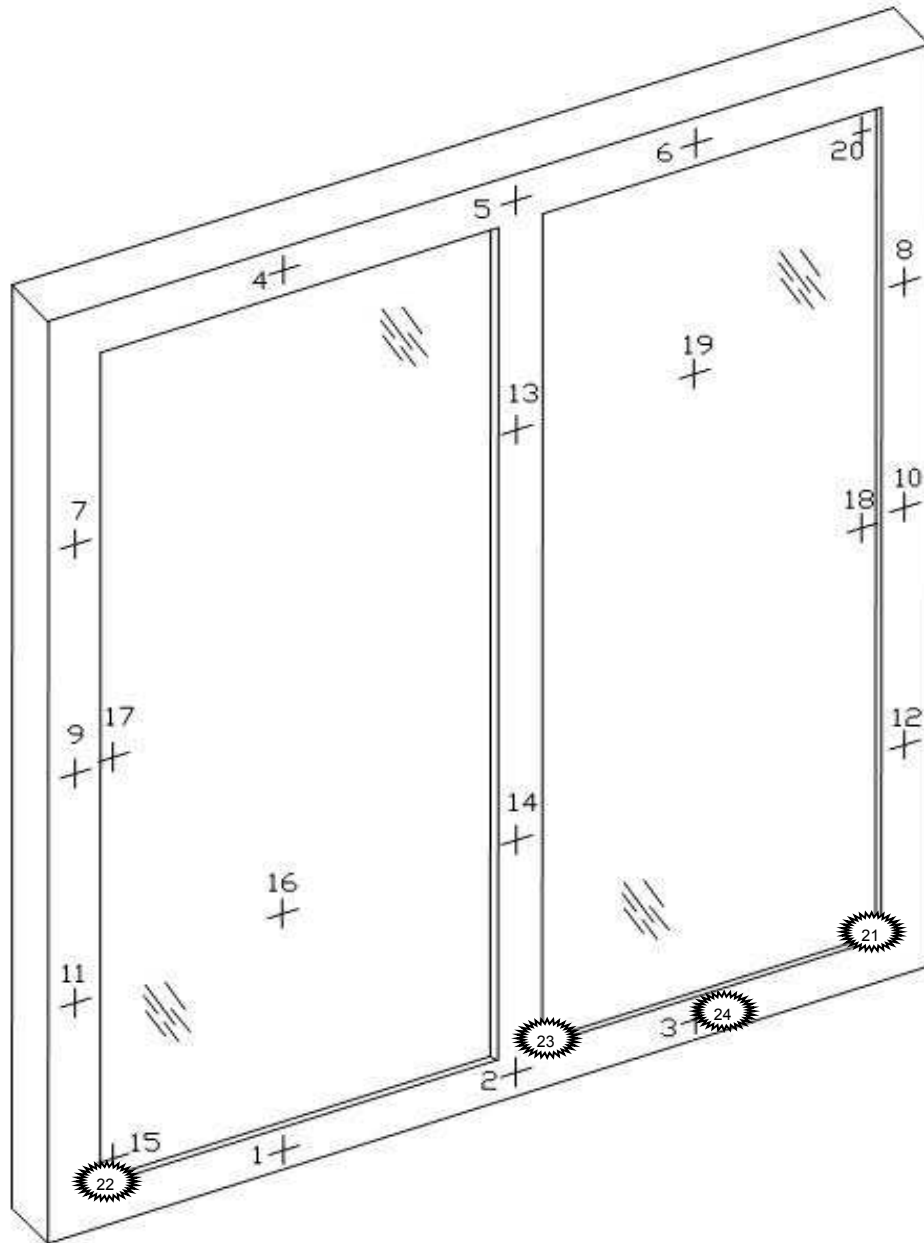
A calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 000001) in York, Pennsylvania was conducted in May 2011 in accordance with Architectural Testing Inc. calibration procedure.

Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.





## CRF Report

Time:	05:51	06:21	06:51	07:21	07:51	AVERAGE
<b>Pre-specified Thermocouples - Frame</b>						
1	49.28	49.27	49.32	49.24	49.24	49.27
2	50.41	50.44	50.43	50.37	50.37	50.41
3	48.86	48.91	48.91	48.84	48.78	48.86
4	56.92	56.97	56.98	56.98	56.99	56.97
5	56.17	56.20	56.20	56.15	56.12	56.17
6	56.93	56.97	56.97	56.98	57.00	56.97
7	56.08	56.11	56.11	55.94	55.95	56.04
8	55.47	55.49	55.52	55.44	55.42	55.47
9	53.27	53.27	53.29	53.25	53.21	53.26
10	52.14	52.15	52.18	52.15	52.09	52.14
11	50.73	50.70	50.73	50.70	50.72	50.72
12	49.50	49.48	49.50	49.48	49.46	49.48
13	57.19	57.22	57.24	57.07	57.00	57.14
14	52.26	52.26	52.28	52.25	52.23	52.26
FT <sub>p</sub>	53.23	53.25	53.26	53.20	53.18	53.23
<b>Pre-specified Thermocouples - Glass</b>						
15	39.58	39.58	39.59	39.60	39.57	39.58
16	53.68	53.73	53.78	53.70	53.71	53.72
17	47.82	47.76	47.77	47.75	47.77	47.77
18	45.41	45.42	45.44	45.43	45.39	45.42
19	55.44	55.50	55.56	55.18	55.09	55.35
20	46.33	46.36	46.47	46.33	46.35	46.37
GT	48.04	48.06	48.10	48.00	47.98	48.04
<b>Cold Point (Roving) Thermocouples</b>						
21	46.50	46.50	46.50	46.50	46.50	46.50
22	47.90	47.90	47.90	47.90	47.90	47.90
23	48.80	48.80	48.80	48.80	48.80	48.80
24	48.90	48.90	48.90	48.90	48.90	48.90
FT <sub>R</sub>	48.03	48.03	48.03	48.03	48.03	48.03
W	0.05	0.05	0.05	0.05	0.05	0.05
FT	52.98	53.00	53.01	52.96	52.94	52.98
<b>Warm Side - Room Ambient Air Temperature</b>						
	69.79	69.78	69.80	69.78	69.84	69.80
<b>Cold Side - Room Ambient Air Temperature</b>						
	-0.42	-0.42	-0.38	-0.42	-0.42	-0.41
CRF <sub>f</sub>	76	76	76	76	76	76
CRF <sub>g</sub>	69	69	69	69	69	69

### Thermocouple Location Diagram



#### Cold Point Locations

	21. 46.50
	22. 47.90
	23. 48.80
	24. 48.90



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. 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.



Digitally Signed by: Ryan P. Moser

---

Ryan P. Moser  
Technician



Digitally Signed by: Shon W. Einsig

---

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

RPM:amg  
B9235.02-116-46

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

Appendix-A: Description Table Abbreviations (1)

Appendix-B: Drawings (9)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.02R0	06/19/12	All	Original Report Issue. Work requested by Steve Wilkening of Tubelite, Inc.

## 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 (> 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

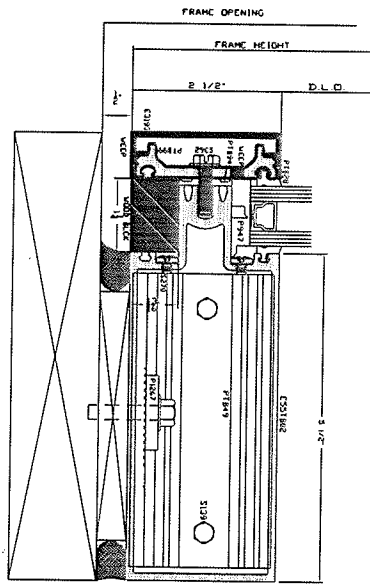
CODE	Spacer Sealant
D	Dual Seal Spacer System
S	Single Seal Spacer System

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

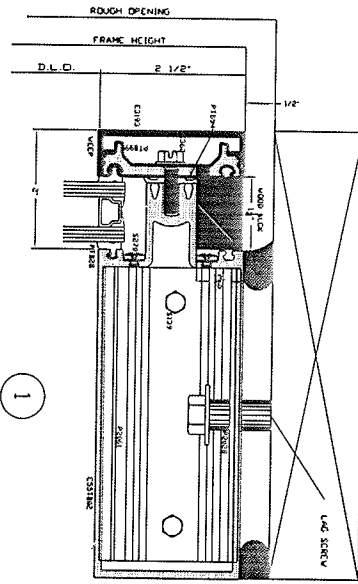
CODE	Grid Size Codes
	Blank for no grids
0.75	Grids < 1"
1.5	Grids >= 1"

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

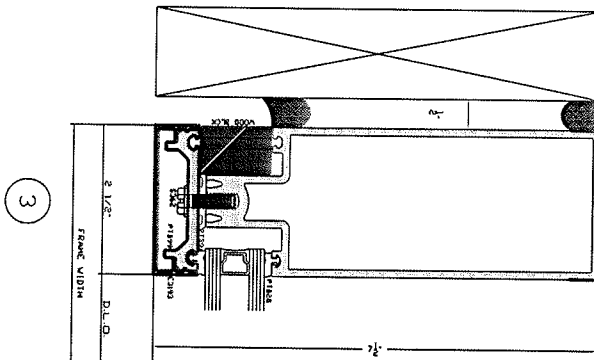
## Appendix B: Drawings



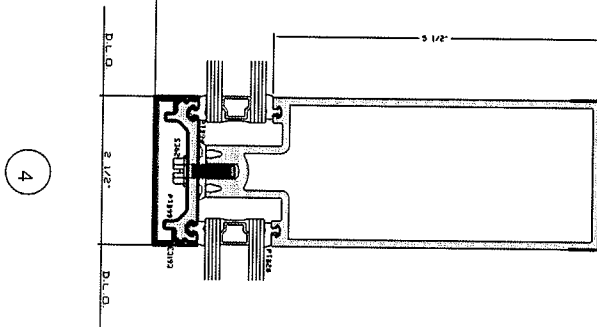
2



1



3



4



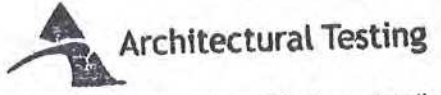
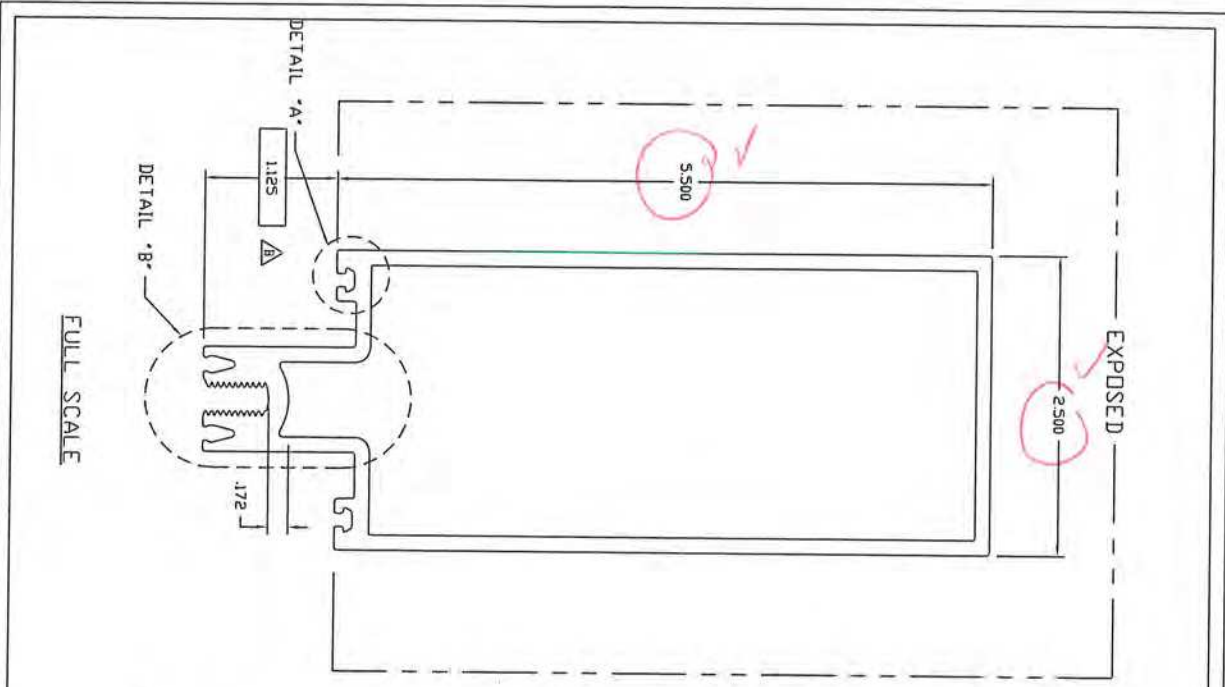
**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# B9035  
Date 5/17/10 Tech RLM

DATE	4/25/12	REV	2	2
<b>TUBELETE INC.</b>				
380 WASHINGTON, SUITE 600, SEASIDE, CA 94138				
TEL: 415-754-2211 FAX: 415-754-2212				
WWW.TUBELETE.COM				
PROJECT	DATE	DESCRIPTION	BY	CHECKED
4/25/12	4/25/12	4/25/12	RLM	RLM

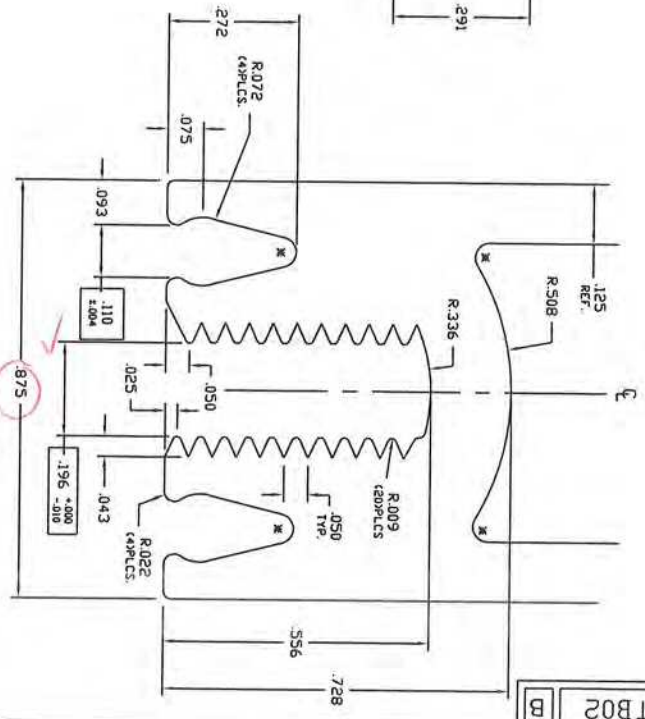
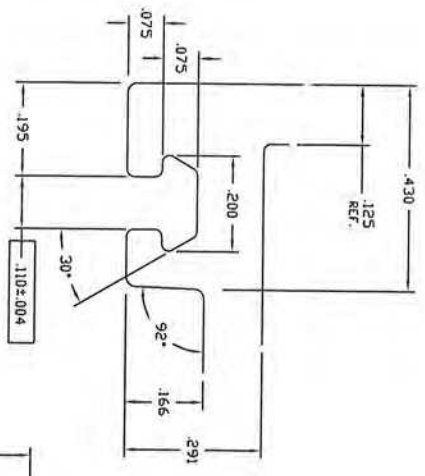
Cont. Code: 400C# 2012 CMAST Fiber



**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# B9835  
Date 5/12/12 Tech PPM



NOTE: SCREW GROOVE MUST BE SNUG FIT FOR 1/4-20 M.S.  
INDICATES CRITICAL DIMENSION

REV	DATE	DESCRIPTION	BY	CHK
A	10/22/09	ISSUED FOR CONSTRUCTION		
B	11/22/09	REVISED DRAWING		

<p>©2006 TUBE-LITE, INC. ALL RIGHTS RESERVED ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED ALL UNSPECIFIED RADII .015 M INDICATES .031 RADII R DENOTES CRITICAL DIMENSION ALL DIMS PROPRIETARY OF TUBE-LITE</p>	
<p><b>TUBE-LITE</b> 400 SERIES CURTAIN/WALL</p>	
<p>VAL 1.25 DOT FORM 22.637(38.709) F ACTOR 13</p>	<p>SECTION H PART 6063-T5 RATIO 2:1 AREA 2.484 WG/FT 2.921 CIRCULAR SIZE 6.888 VOL/WT N/A</p>
<p>RXX 2.220 RYT 9.58</p>	<p>SXX 3.523 SYT 1.825 SXX 12.237 SYT 2.282 CRK 3.474 CYT 1.250</p>
<p>DRAWN DLH DATE 10/30/04 BY P.J. DATE 10/30/04 CHECKED 290 ESSTB02 B</p>	





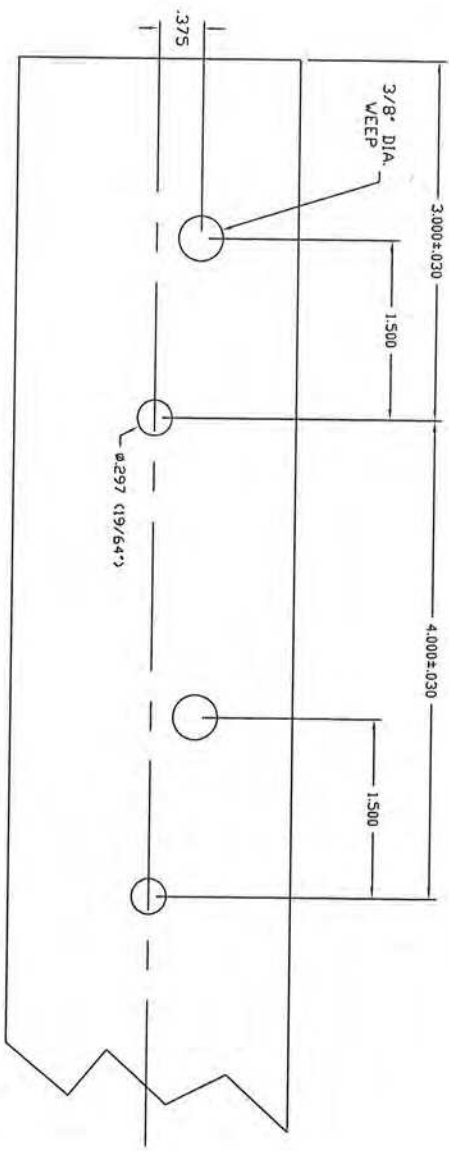
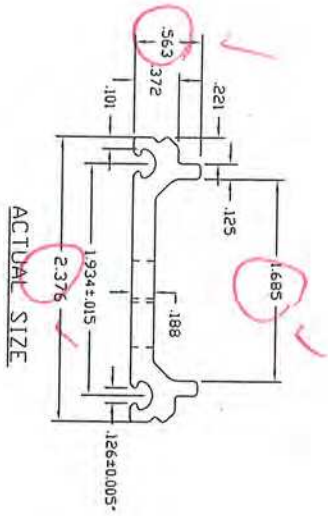
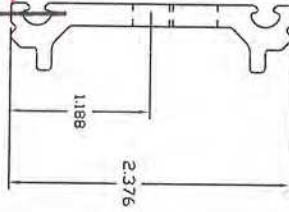


# Architectural Testing

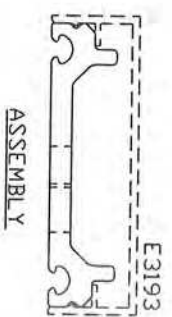
Test sample complies with these details.  
Deviations are noted.

Report# B9235

Date 5/17/12 Tech RPM



REPEAT PATTERN @ 4" O.C. FOR LENGTH OF PART.



NOTE: TOTAL PART LENGTH = 290" (24'-2")  
SUPPLIER PART NUMBER: 866-290

©2008 TUBE-LITE INC. ALL RIGHTS RESERVED  
ALL UNSPECIFIED RADIUS .015  
\* INDICATES DON RADIUS  
□ DENOTES CRITICAL DIMENSION

**TUBE-LITE**  
FIBERGLASS PRESSURE PLATE 2 1/2"  
400 SERIES CURTAINWALL  
304L WALKER RIBLOC™ NW, SUITE G  
WALKER, INDIANAPOLIS 46244

REV	DATE	DESCRIPTION	INTL
02/20/12		RELEASED FOR PRODUCTION PER 866-2905	JEM

DESIGNED BY	JEM	DATE	02/15/12	SCALE	AS SHOWN
PRODUCT	290	PTB99			

PTB99





# Architectural Testing

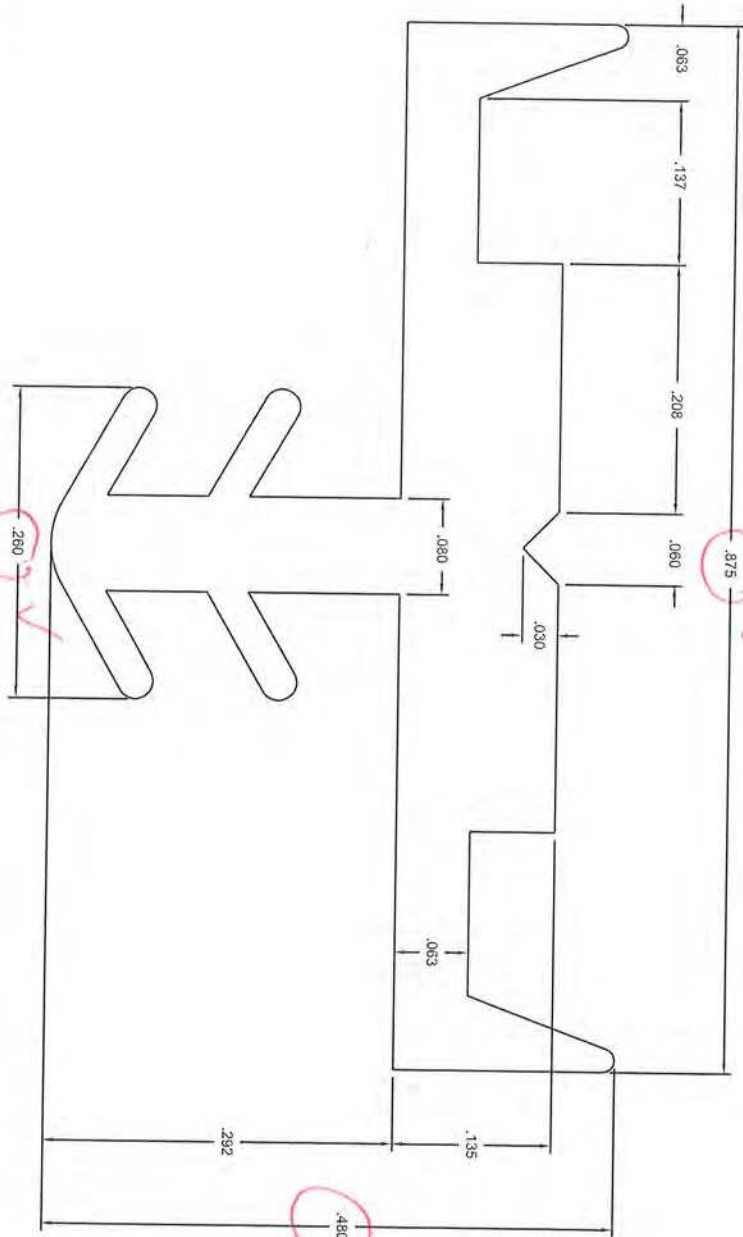
Test sample complies with these details.  
Deviations are noted.

Report# B9235

Date 5/17/02 Tech RPM



TEN TIMES SIZE



SUPPLIER - EPG  
PART# - 6396-02-00  
MATERIAL - EPDM, 70 DUROMETER

© 2001 Tubelite Inc. All rights reserved.  
ALL UNSPECIFIED SIZES .015  
INDICATES 90° RADIUS  
□ DENOTES CRITICAL DIMENSION

REV	DATE	REASON FOR PROVISION	DESCRIPTION	WFL

**TUBELETTE**  
 3040 WALKER RIDGE LANE, SUITE G  
 WALKERS, MISSISSAUGA, ONTARIO L4W 4K4

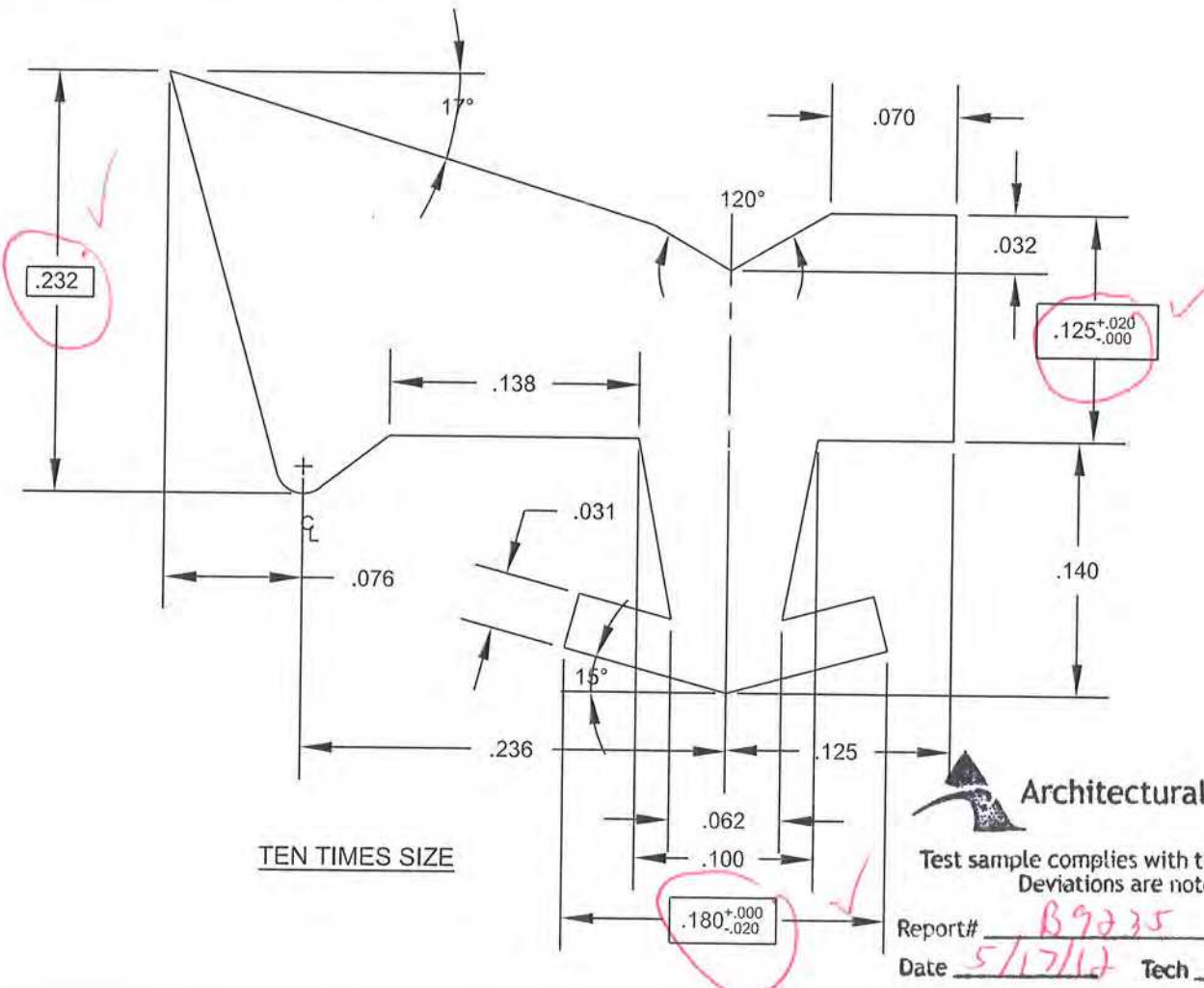
400 CW ISOLATOR GASKET

DESIGN BY LDO DATE 08/22/06  
 QUANTITY 290  
 SCALE NOTED

PTB94

PTB94

PTB28



**Architectural Testing**  
 Test sample complies with these details.  
 Deviations are noted.  
 Report# B9235  
 Date 5/17/12 Tech RBM

**\*NOTE\***  
 EPDM MATERIAL DOES NOT MEET  
 ASTM C-509 FIRE RESISTANCE RATING.  
 USE P-1742 TO MEET ASTM C-509

SPECIFICATIONS

MATERIAL: EPDM  
 50 ±5 DURO SHORE A  
 PER ASTM D 2000  
 LINE CALL OUT  
 (2BA 510 A13 B13 C12 F17 P2)

RMA CLASS 1 TOLERANCE

DART IS SYMMETRICAL ABOUT CENTERLINE

GASKET IS DESIGNED FOR 1/8" FACE CLEARANCE  
 (TB WALL) - USED EACH SIDE OF GLASS  
 EPG PART NO. - 5443-04-01

ACTUAL SIZE

© 2006 TUBELITE INC. ALL RIGHTS RESERVED  
 ALL UNSPECIFIED RADII .015  
 \* INDICATES .031 RADIUS  
 DENOTES CRITICAL DIMENSION

**TUBELITE**  
 Dependable  
 LEADERS IN ECO-EFFICIENT STOREFRONT,  
 CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G  
 WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	11/27/91	Revise Shape & Material per ED 1306	DDL
	01/08/92	Release to Production	DDL

GASKET - TB WALL FOR  
 1/4", 1/2", 3/4", AND 1" GLASS

DRAWN BY DDL	DRWG DATE 11/27/91	APPV.D BY	DATE APPV.D
DRWG SCALE Noted	PRODUCT CODE 280/290	PTB28	
			REV



# Architectural Testing

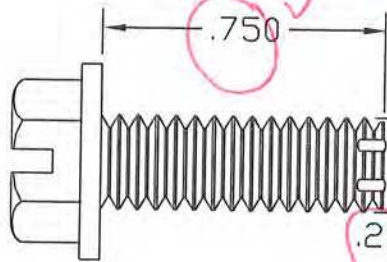
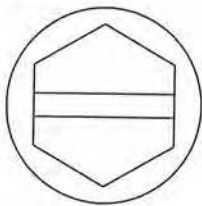
Test sample complies with these details.  
Deviations are noted.

Report# B9235  
Date 5/17/12 Tech RCM

S362

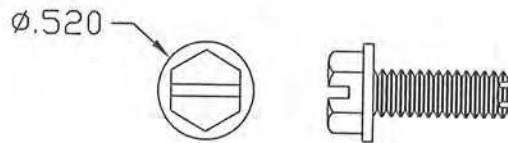
B

1/4-20 X 3/4" HWH TYPE "F" MODIFIED  
SELF THREADING



(5) CHIP CAVITIES  
EQUALLY SPACED  
AROUND DIAMETER  
NOT TO EXTEND  
BEYOND FIRST FULL  
THREAD

TWO TIMES SIZE



FULL SIZE

SUPPLIER: WARMINGTON IND.  
MATERIAL: ZINC DIPPED STEEL (500 HRS SALT SPRAY) <sup>△</sup>  
FINISH: OR

© 2006 TUBELITE INC. ALL RIGHTS RESERVED

ALL UNSPECIFIED RADII .015

\* INDICATES .031 RADIUS

□ DENOTES CRITICAL DIMENSION

**TUBELITE**  
STOREFRONT, CURTAINWALL & ENTRANCES  
DEPENDABLE

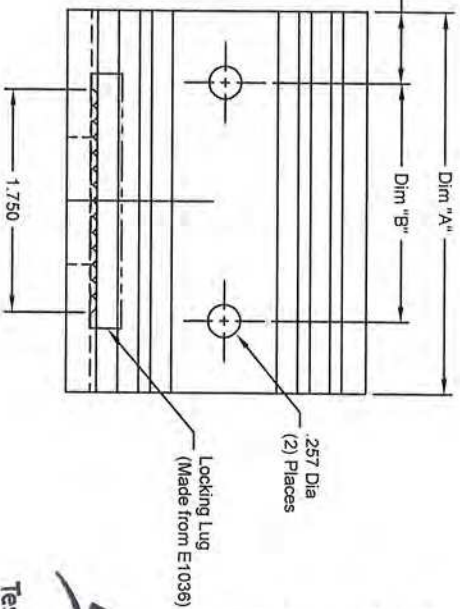
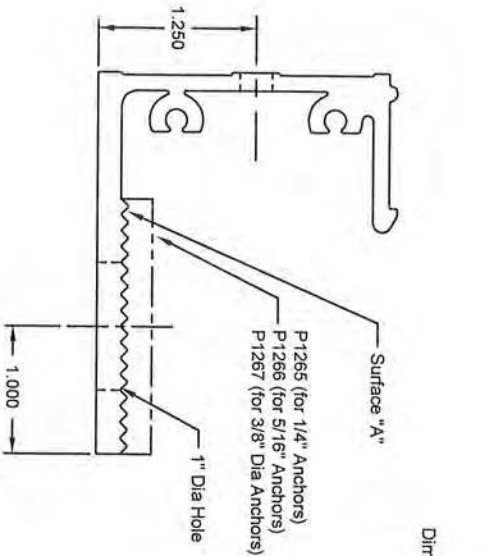
4878 MACKINAW TRAIL  
REED CITY, MICHIGAN 49677

REV	DATE	DESCRIPTION	INTL
A	11/09/09	ADDED "500 HRS SALT SPRAY" NOTE	CRH
B	03/21/11	REVISED TO SHOW THREAD CUTTING MODIFICATION	CRH

400 CW PRESSURE PLATE SCREW

DRAWN BY LDO	DRWG DATE 06/22/06	APPV'D BY	DATE APPV'D
DRWG SCALE NOTED	PRODUCT CODE 290	S362	REV B





PART NUMBER	DIM 'A'	DIM 'B'	DIM 'C'	USE WITH
PTB46	3.044	2.250	.397	E4TB81
PTB47	3.418	2.250	.584	E4TB
PTB47A	3.918	2.750	.584	E45TB
PTB48	4.418	3.250	.584	E5TB
PTB49	4.918	3.750	.584	E55TB02, 121
PTB50	5.418	4.250	.584	E6TB
PTB51	4.168	3.250	.459	E4TB108
PTB51A	6.418	5.250	.584	E7TB
PTB51B	7.418	6.250	.584	E8TB
PTB51C	2.044	1.250	.397	E2680
PTB51D	2.418	1.625	.397	E4TB206

### Architectural Testing

Test sample complies with these details. Deviations are noted.

Report# B9235  
 Date 5/17/12 Tech ELM

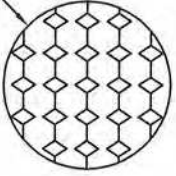
Use (2) S270 & (2) S328 with each clip

### Operations

1. Cut to Length from E4TB110
2. Drill 2 Holes with "F" Drill (.257)

Note: Emboss Interlocking to Surface "A"

1 3/4" x 2" x .031+/- .010 Deep 90° Diamond Pattern as shown



© 2006 TUBELITE INC. ALL RIGHTS RESERVED.  
 ALL UNSPECIFIED RADII .015  
 \* INDICATES (R) RADIUS  
 DENOTES CRITICAL DIMENSION

REV	DATE	DESCRIPTION	INT.
A	05/25/07	Adopt PTB46	11
B	11/14/06	Adopt PTB47	50
C	01/11/00	Revision by Alcock	580
D	05/23/01	Adopt PTB48	580
E	08/15/01	Adopt PTB49	580
F	02/24/03	REVISIONS: 1. LOCATION FOR PTB48	580

## TUBELITE®

DESIGNING AND MANUFACTURING CURTAINWALL AND ANCHORS SYSTEMS

3006 WALKER RIDGE NW, SUITE G  
 WALKER, MICHIGAN 49094

### HEAD AND SILL ANCHORS FOR

400 CURTAINWALL

Part Numbers PTB46-PTB51D

DATE	BY	DATE	BY	DATE	BY
05/25/07	PTB46	11/28/06	PTB46	11/28/06	PTB46

PTB46

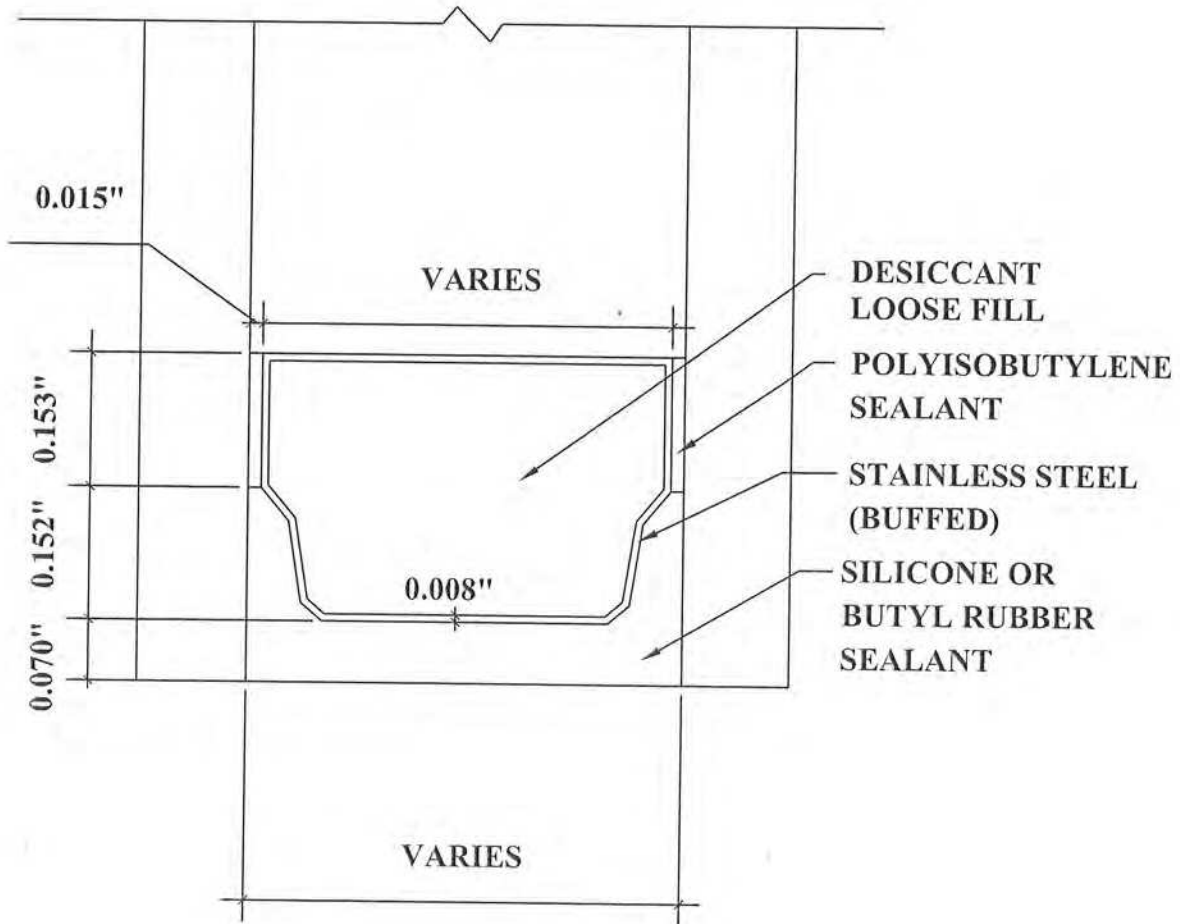
T



# Architectural Testing

Test sample complies with these details.  
Deviations are noted.

Report# B 9235  
Date 5/17/12 Tech PPM



DETAIL FOR THERMAL MODELING OF  
VIRACON STAINLESS STEEL SPACER (SS-D)