

**NFRC 102-2004 THERMAL PERFORMANCE
TEST REPORT**

Rendered to:

UNITED STATES ALUMINUM

SERIES/MODEL: 4250 Curtain Wall

TYPE: Glazed Wall Systems (Site-built)

Summary of Results	
Standardized Thermal Transmittance (U-Factor)	
0.46	
Unit Size	78-7/8" x 78-3/4" (2003 mm x 2000 mm)
Layer 1	1/4" AGC Comfort TiAC 36 (e=0.034*, #2) Tempered
Gap 1	0.50" Gap, Aluminum Spacer (A1-D), Air-Filled*
Layer 2	1/4" Clear Tempered

Reference must be made to Report No. 94234.01-116-46, dated 11/24/09 for complete test specimen description and data.



NFRC 102-2004 THERMAL PERFORMANCE TEST REPORT

Rendered to:

UNITED STATES ALUMINUM
200 Singleton Drive
Waxahachie, Texas 75165

Report Number: 94234.01-116-46
Test Date: 10/28/09
Report Date: 11/24/09
Expiration Date: 10/28/13

Test Sample Identification:

Series/Model: 4250 Curtain Wall

Type: Glazed Wall Systems (Site-built)

Overall Size: 78-7/8" x 78-3/4" (2003 mm x 2000 mm) (Model Size)

NFRC Standard Size: 78.7" x 78.7" (2000 mm wide x 2000 mm high)

Test Sample Submitted by: Client

Test Sample Submitted for: Validation for Initial Certification (Production Line Unit)
& Plant Qualification

Test Procedure: U-factor tests were performed in a Guarded Hot Box in accordance with NFRC 102-2004, *Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems*.

Test Results Summary:

Standardized U-factor (U_{st}): 0.46 Btu/hr·ft²·F CTS Method

Test Sample Description:

CONSTRUCTION	Frame
Size (in.)	78-7/8" x 78-3/4"
Daylight Opening (in.)	35-1/2" x 73-5/8" (x2)
CORNERS	Butted
Fasteners	Screws
Sealant	No
MATERIAL	AU (0.15") Skipped and Debridged*
Color Exterior	Gray
Finish Exterior	Anodized
Color Interior	Gray
Finish Interior	Anodized
GLAZING METHOD	Interior

* Measurements for the skipped and debridged were: 1-1/2" Skip and 18" on-center .

Glazing Information:

Layer 1	1/4" AGC Comfort TiAC 36 (e=0.034*, #2) Tempered
Gap 1	0.50" Gap, Aluminum Spacer (A1-D), Air-Filled*
Layer 2	1/4" Clear 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			
	EPDM wedge gasket	1 row	Interior glazing perimeter
	Foam compression gasket	1 row	Exterior glazing perimeter
HARDWARE			
	Horizontal face cap	4	Exterior horizontals
	Vertical face cap	1	Exterior verticals
	(1.00" x 0.75") Wood blocks	6	Four horizontals, two verticals
DRAINAGE			
	No visible weeps		

Thermal Transmittance (U-factor)

Measured Test Data

Heat Flows

1. Total Measured Input into Metering Box (Q_{total})	1585.11 Btu/hr
2. Surround Panel Heat Flow (Q_{sp})	47.19 Btu/hr
3. Surround Panel Thickness	8.00 inches
4. Surround Panel Conductance	0.0261 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Q_{mb})	46.01 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0196*EMF + 0.020
7. Flanking Loss Heat Flow (Q_{fl})	17.90 Btu/hr
8. Net Specimen Heat Loss (Q_s)	1474.01 Btu/hr

Areas

1. Test Specimen Projected Area (A_s)	43.13 ft ²
2. Test Specimen Interior Total (3-D) Surface Area (A_h)	62.50 ft ²
3. Test Specimen Exterior Total (3-D) Surface Area (A_c)	50.84 ft ²
4. Metering Box Opening Area (A_{mb})	69.44 ft ²
5. Metering Box Baffle Area (A_{b1})	60.74 ft ²
6. Surround Panel Interior Exposed Area (A_{sp})	26.31 ft ²

Test Conditions

1. Average Metering Room Air Temperature (t_h)	69.80 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	10.32 %
5. Measured Cold Side Wind Velocity (Perpendicular Flow)	17.07 mph
6. Measured Static Pressure Difference Across Test Specimen	0.00" \pm 0.04"H ₂ O

Results

1. Thermal Transmittance of Test Specimen (U_s)	0.49 Btu/hr·ft ² ·F
2. Standardized Thermal Transmittance of Test Specimen (U_{st})	0.46 Btu/hr·ft ² ·F

Thermal Transmittance (U-factor)

Calculated Test Data

CTS Method

1. Emittance of Glass (e_i)	0.84
2. Warm Side Baffle Emittance (e_{bi})	0.92
3. Equivalent Warm Side Surface Temperature	45.24 F
4. Equivalent Cold Side Surface Temperature	5.93 F
5. Warm Side Baffle Surface Temperature	68.90 F
6. Measured Warm Side Surface Conductance (h_h)	1.39 Btu/hr·ft ² ·F
7. Measured Cold Side Surface Conductance (h_c)	5.40 Btu/hr·ft ² ·F
8. Test Specimen Thermal Conductance (C_s)	0.87 Btu/hr·ft ² ·F
9. Convection Coefficient (K_c)	0.31 Btu/(hr·ft ² ·F ^{1.25})
10. Radiative Test Specimen Heat Flow (Q_{ri})	755.58 Btu/hr
11. Conductive Test Specimen Heat Flow (Q_{ci})	718.43 Btu/hr
12. Radiative Heat Flux of Test Specimen (q_{ri})	17.52 Btu/hr·ft ² ·F
13. Convective Heat Flux of Test Specimen (q_{ci})	16.66 Btu/hr·ft ² ·F
14. Standardized Warm Side Surface Conductance (h_{sth})	1.21 Btu/hr·ft ² ·F
15. Standardized Cold Side Surface Conductance (h_{stc})	5.28 Btu/hr·ft ² ·F
16. Standardized Thermal Transmittance (U_{st})	0.46 Btu/hr·ft ² ·F

Test Duration

1. The environmental systems were started at 07:00 hours, 10/27/09.
2. The test parameters were considered stable for two consecutive four hour test periods from 09:04 hours, 10/28/09 to 17:04 hours, 10/28/09.
3. The thermal performance test results were derived from 13:04 hours, 10/28/09 to 17:04 hours, 10/28/09.

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

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)	0.38	0.38
Center gap width at laboratory ambient conditions on day of testing	0.38	0.38
Center gap width at test conditions	0.38	0.38

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 April 2009 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 1.57%.

Detailed drawings, data sheets, representative samples of the test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. until 10/28/2013. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing, Inc. 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:kmm
94234.01-116-46

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

Appendix-A: Description Table Abbreviations (1)

Appendix-B: Submittal Form and Drawings (12)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
.01R0	11/24/09	All	Original Report Issue. Work requested by Terry Hopgood of United States Aluminum

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 $\geq 1"$

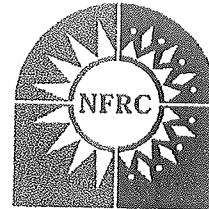
CODE	Thermal Breaks
F	Foam
U	Urethane
V	Vinyl
FB	Fiberglass
O	Other
AB	ABS
NE	Neoprene
AI	Air
N	Not Applicable
P	Polyamide

Appendix B: Submittal Form and Drawings

NFRC PRODUCT CERTIFICATION PROGRAM

Submittal Form for Test Samples

For use by manufacturers, lineal suppliers and fabricators



National Fenestration
Rating Council®

1. Information on Production of the Test Sample (complete ALL fields):

Manufacturer: USAC Date of sample manufacture: _____
Plant Address where manufactured: 200 Singleton Dr.
City: Waxahachie State: Texas Zip Code: 75165
Name of IA: ALI Phone: 800-627-6440 Fax: _____

2. Product Information (complete ALL fields):

Product Line ID (CPD) No.: _____ Product/Operator Type
(Table 4-3 of NFRC 100): GWCW
Series/Model: 42-50 Column Wall

3. Test sample is being submitted for (select ONE):

- a. ☐ Validation for Initial Certification (prototype only) no plant qualification
- b. ☒ Validation for Initial Certification (production line unit) & plant qualification
- c. ☐ Validation for Recertification (production line unit) & plant qualification
- d. ☐ Plant Qualification Only (production line unit)

I, Terry Hopgood, as the designated agent for USAC
do hereby attest that the foregoing information is true to the best of my information, knowledge, and belief.
Further, if the unit is identified in Section 3 as a production line unit, I hereby authorize the NFRC-accredited
testing laboratory to send a copy of the test report to the IA identified above for plant qualification purposes
pursuant to the NFRC Product Certification Program..
Signature: _____ Date: _____

FOR LABORATORY USE ONLY


1. Laboratory: Architectural Testing
2. Date Sample Received: 10/00/09 File number ID: 94334
3. Date Sample Tested: 10/08/09 By: RPM
4. Modifications made: _____
5. Reason for non-testing of sample unit: _____

[Note: If the sample submitted can not be tested due to damage prior to testing, a new sample and new form shall be submitted to the testing laboratory. Both forms shall be submitted to the IA when the testing is completed.]

SUBSIDIARY OF INTERNATIONAL ALUMINUM CORPORATION

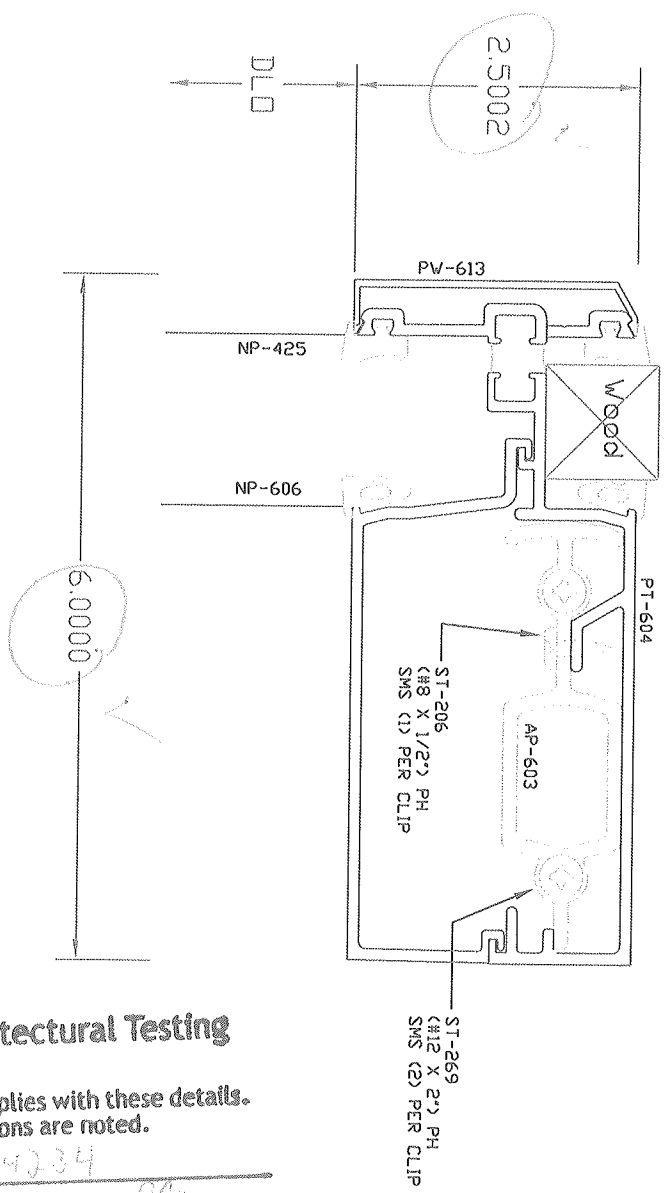
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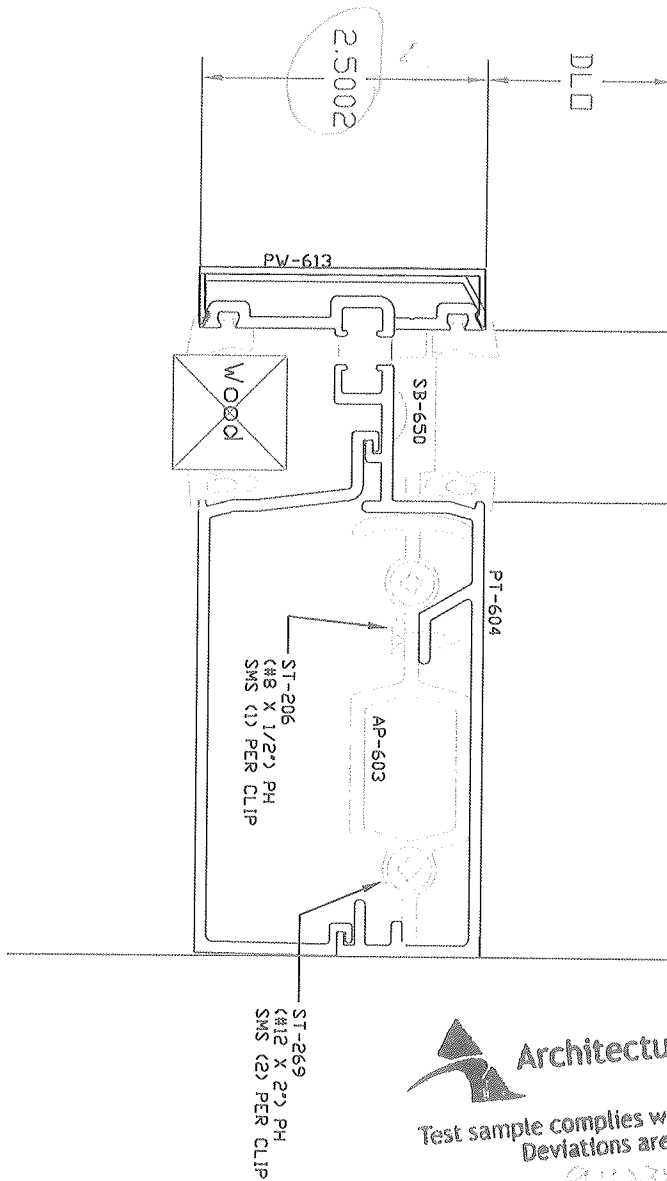
THIS SPACE RESERVED FOR STRUCTURAL ENGINEER	
THIS SPACE RESERVED FOR METHOD-DATE USE ONLY	
United States Aluminum 720 California Street 200 Singleton Drive Washington, TX 75165	
DRAWN BY DCV	SYSTEM
DATE 03.12.09	SERIES A250
APPROVED BY	DESCRIPTION Curtain Wall
SCALE FULL	DETAILS
DRAWING NO. USA-3116	SHEET 2 OF 6

 **Architectural Testing**
Test sample complies with these details.
Deviations are noted.

Report# 94234
Date 11/16/07 Tech ppm

2





Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 94034
Date 4/16/09 Tech RLM

REV	REVISION	DATE	BY

THIS SPACE RESERVED FOR STRUCTURAL ENGINEER

THIS SPACE RESERVED FOR METRO-DADE USE ONLY

United States Aluminum			
720 Cal-Saver Road			
Rock Hill, SC 29730			
Voice: 803.731.6500			
Fax: 803.731.6501			
Website: www.usa-alum.com			
DRAWN BY	DATE	SERIES	DESCRIPTION
DCV	03.12.09	4250	Curtain Wall
APPROVED BY	DATE		
SCALE	DRAWING NO.	SHEET	
FULL	USA-3116	3 OF 6	

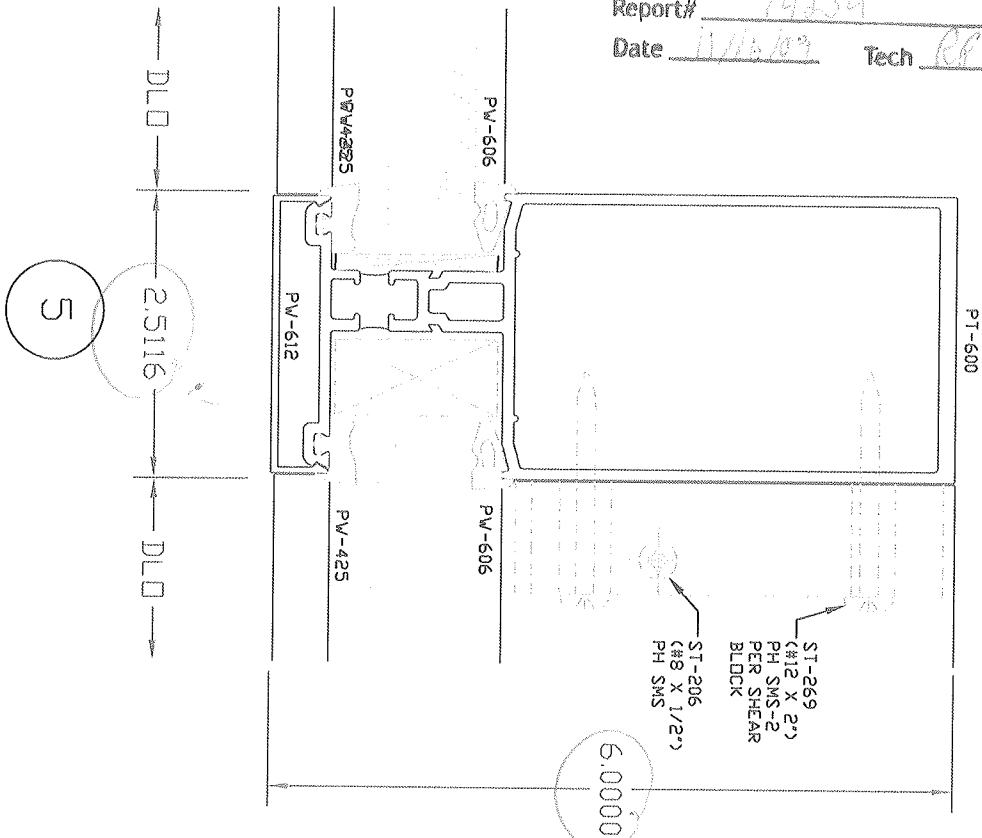
SUBSIDIARY OF INTERNATIONAL ALUMINUM CORPORATION



Architectural Testing

Test sample complies with these details.
Deviations are noted.

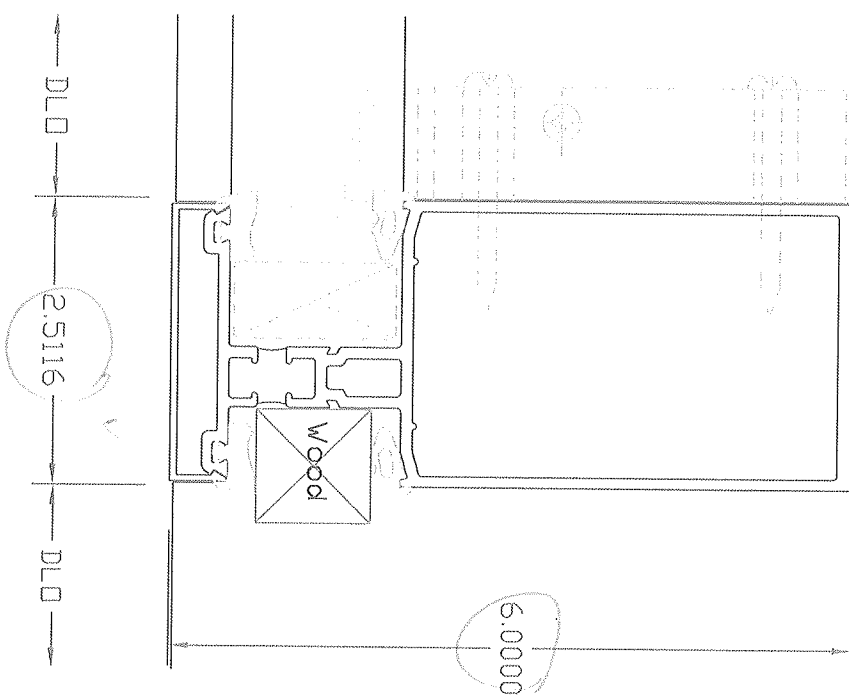
Report# 94234
Date 11/16/09 Tech RPM



SUBSIDIARY OF INTERNATIONAL ALUMINUM CORPORATION

SIM	REVISION	DATE	BY

THIS SPACE RESERVED FOR STRUCTURAL ENGINEER	
THIS SPACE RESERVED FOR METRO-DAC USE ONLY	
United States Aluminum 720 Cedarburg Road 200 Singleton Drive Waukegan, IL 75165	
DRAWN BY DCW	SYSTEM
DATE 03.12.09	SERIES 4250
APPROV BY	DESCRIPTION Curtain Wall
SCALE FULL	DRAWING NO. USA-3116
	SHEET 5 OF 6



6



Architectural Testing

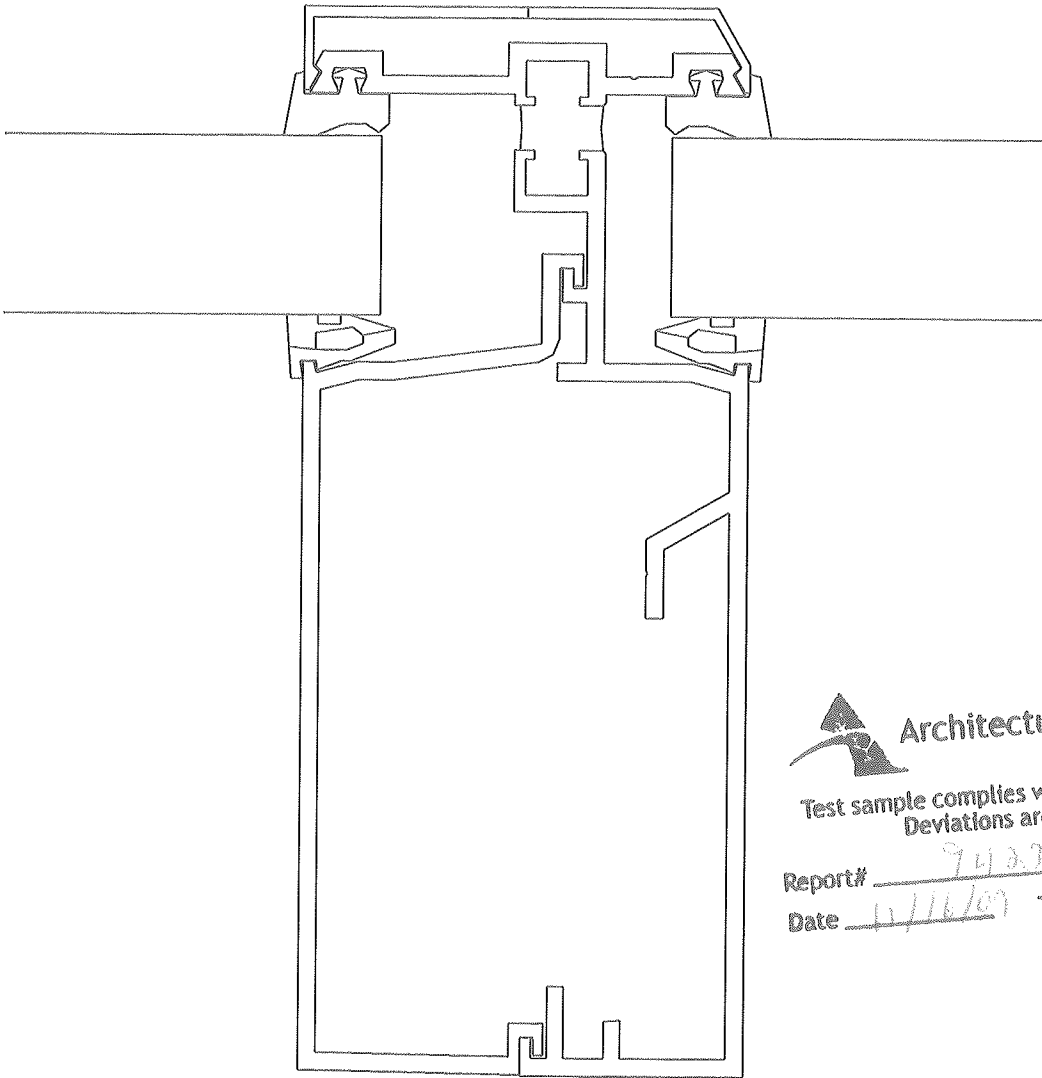
Test sample complies with these details.
Deviations are noted.

Report# 94234
Date 11/16/09 Tech EPH

SUBSIDIARY OF INTERNATIONAL ALUMINUM CORPORATION

SYM	REVISION	DATE	BY

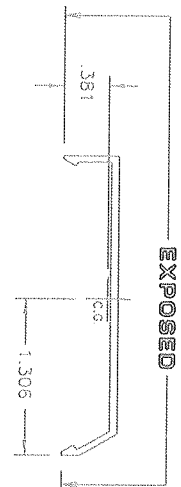
THIS SPACE RESERVED FOR STRUCTURAL ENGINEER	
THIS SPACE RESERVED FOR METRO-DARE USE ONLY	
<p>United States Aluminum</p> <p>720, Col-Singer Road</p> <p>800, Valley St. #9730</p> <p>Woodbridge, VA 22195</p>	
DRAWN BY	SYSTEM
DATE	SERIES
0312.09	4250
APPROVED BY	DESCRIPTION
	Curtain Wall
SCALE	DETAILS
FULL	USA-3116
SHEET	6 OF 6



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 943.34
Date 11/16/09 Tech CPM



ACTUAL SIZE



Architectural Testing

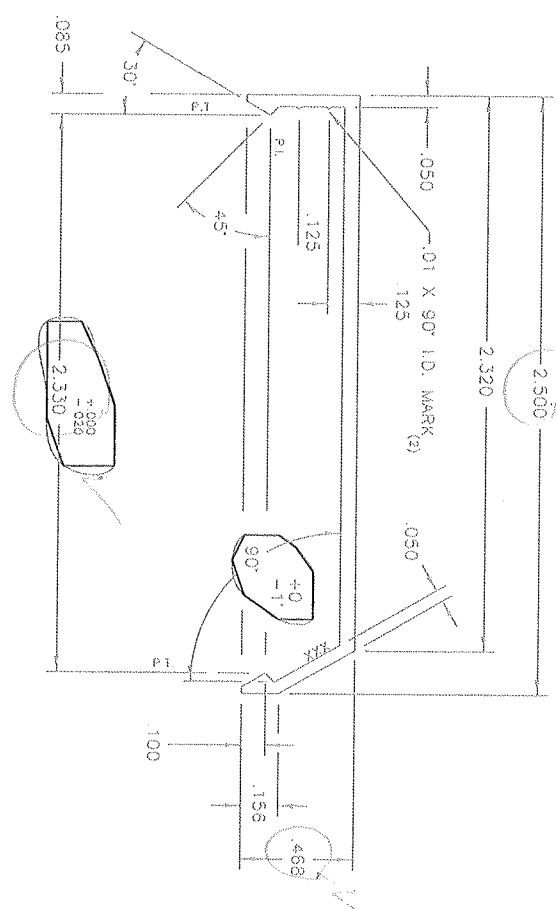
Test sample complies with these details.
Deviations are noted.

Report# 94234
Date 11/16/09 Tech RFM

A	INITIAL RELEASE	DMU 7/20	(1) S. ALUMINUM CORP.	T-60433 A1
ECN 99130	W/T WAS 223	99		
A1	ECN 2000-038	GAH 2/16	4250 HONIG FACE CAP	D.W.J.
		DD	PW613	2 X SIZE

NOTES:

- 6063-T5 ALLOY AND TEMPER
- SNAP FITS WITH PW603: DIE # 31874
PW604: DIE # 31875
PW605: DIE # 31892
PW606: DIE # 31876
PW611: DIE # 31880
- PAINT PERIMETER = 3.503
- XXX INDICATES I. D. MARK FOR IEC-IX.



X	.190	100134		.062
	.228	(A1) 2.543		
	6.536	SOLID		
28				
				T-60433 A1

4250 CW



Test sample complies with these details.
Deviations are noted.

9930

11

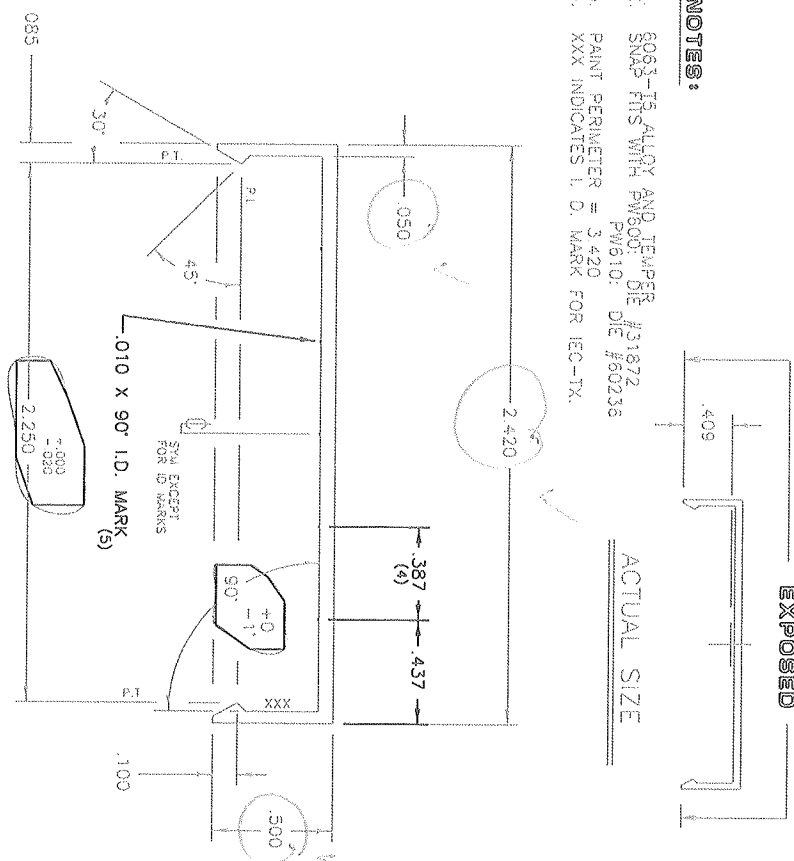
Techn

INITIAL RELEASE A ECN 99130	7/20 DMW 99	11. S. ALUMINUM CORP.	T-60432	B
W/71 WAS .230 A1 ECN 2000-038	GAH RD	.4250 VERT FACE C.A.P.	7/20/99	
ADD ID. MARKS TO DIFFERENTIATE B FROM CWS01. ECN 2001-036	GAH 01	PW612 2 X SIZE		

NOTES

1. 6063-T5 ALLOY AND TEMPER #31872
2. SNAPS FITS WITH PW610: DIE #60236
3. PAINT PERMETER = 3420
4. XXX INDICATES I. O. MARK FOR IEC-TX.

ACTUAL SIZE



			.062
	.196	100133	
	.235	2471	
	6.747	SOLID	
	28		T-60432 E

US ALUMINUM CORP.

T-31875

INT. HORIZ.

BRIAN

12/18/96

NOTES

- 6063-T5 ALLOY & TEMPER
- ASSEMBLES W/P-27818 (PW607) DIE # 31877
SNAPS-FITS W/(CW901) DIE #31465
- THERMO DETAIL AREA: .269; "DD"
- DEBRIDGE WITH A .218 x .015 MAX PENETRATION INTO THERMO MATERIAL.
- PAINT PERIMETER: 5.450"
- XXX INDICATES I.D. MARK FOR IEC-TX

SECTION PROPERTIES

$I_{xx} = 5.30 \text{ in}^4$
 $S_{xx} = 1.60 \text{ in}^3$
 $I_{yy} = 0.47 \text{ in}^4$
 $S_{yy} = 0.26 \text{ in}^3$

Architectural Test

Test sample complies with these details.
Deviations are noted.

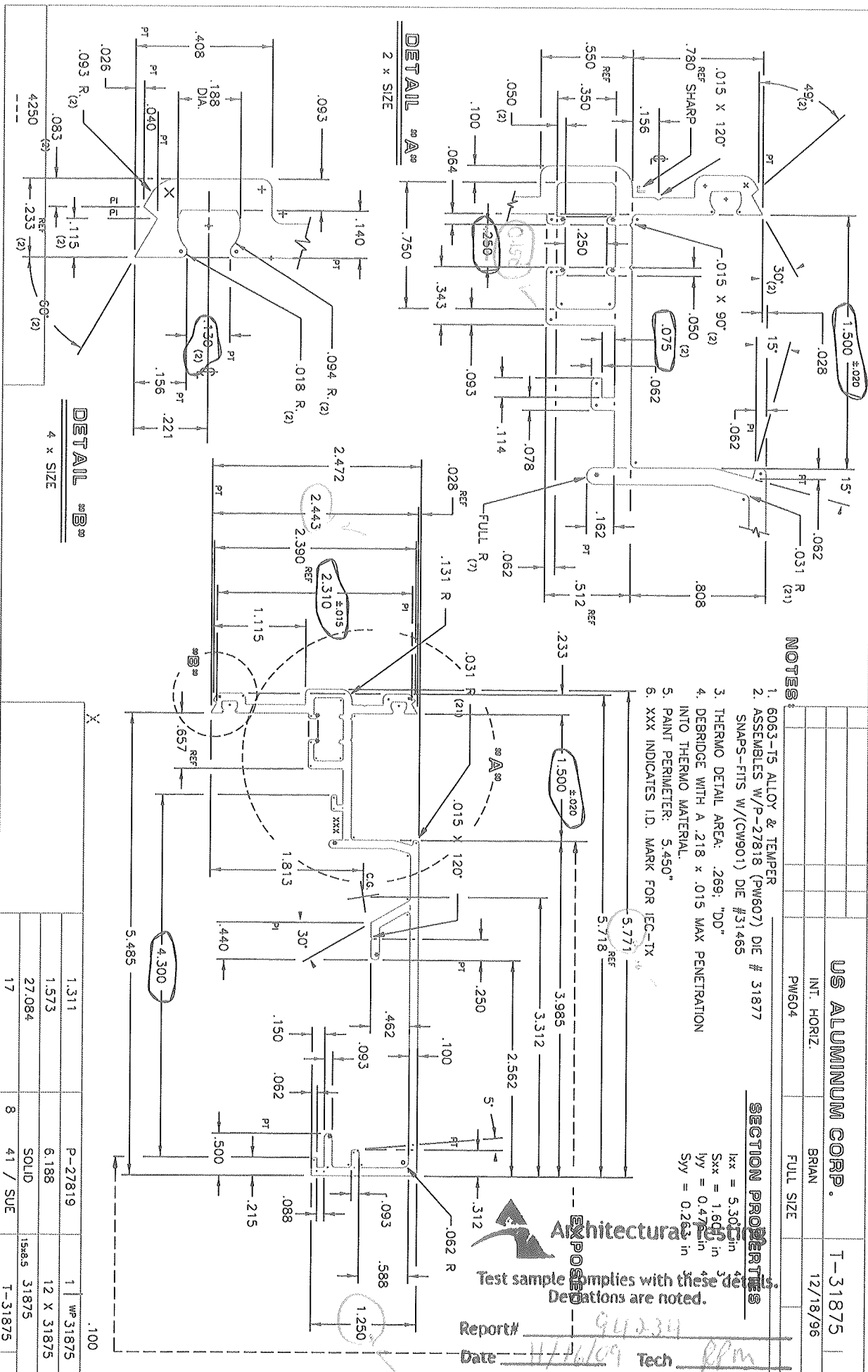
Report#

Date

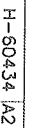
4/16/99

Tech

RPM



1.311	P-27819	1	WP 31875
1.573	6.188	12	X 31875
27.084	SOLID	15.65	31875
17	8	41 / SUE	T-31875

ECN 99130/ECN 99170

ALLMETAL

INC
SINCE 1916

LPD (Low Profile Delta) Air Spacer LASER WELDED

TOLERANCES:

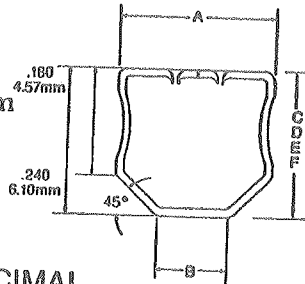
A, $\pm .005$.127mm

B, $\pm .005$.127mm

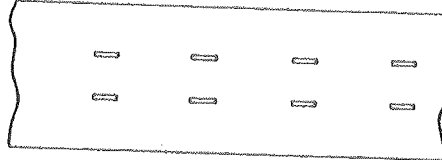
C, D, E, F $\pm .005$.127mm

All LPD Spacer is serrated at dimension B.

If spacer is to be bent, we must be notified at time of order to eliminate serrations.



DECIMAL
IN INCHES



"C" —.0135" Clear Anodized Aluminum Height—.235 5.97mm
"D" —.0165" Clear Anodized Aluminum Height—.240 6.10mm
"E" —.0170" Mill Finish Aluminum Height—.242 6.15mm
"F" —.0150" Electro-Galvanized & Black Steel Height—.245 6.22mm

FRACTIONAL DECIMAL IN INCHES

Size	A	B
7/32	.219	.099
1/4	.250	.130
17/64	.266	.146
9/32	.281	.161
5/16	.313	.193
11/32	.344	.224
23/64	.359	.239
3/8	.375	.255
13/32	.406	.286
7/16	.438	.318
15/32	.468	.348
1/2	.500	.380
17/32	.531	.411
9/16	.563	.443
19/32	.594	.474
5/8	.625	.505
21/32	.656	.536
11/16	.688	.568
23/32	.719	.599
3/4	.750	.630
25/32	.781	.661
13/16	.812	.692

MILLIMETERS DECIMAL IN INCHES

Size	A	B
5.5	.216	.116
6	.236	.136
7	.276	.176
7.5	.296	.196
8	.315	.215
9	.354	.254
9.5	.374	.274
10	.394	.294
11	.433	.333
11.5	.453	.353
12	.472	.372
13	.512	.412
13.5	.531	.431
14	.551	.451
14.5	.571	.471
15	.591	.491
15.5	.610	.510
16	.630	.530
17.5	.689	.589
19	.748	.648
19.5	.768	.668
20	.787	.687

GLPD (Grooved Low Profile Delta) Air Spacer LASER WELDED

TOLERANCES:

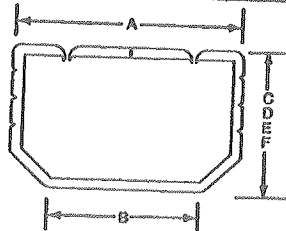
A, $\pm .005$.127mm

B, $\pm .005$.127mm

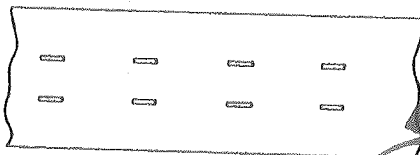
C, D, E, F $\pm .005$.127mm

All GLPD Spacer is serrated at dimension B.

If spacer is to be bent, we must be notified at time of order to eliminate serrations.



DECIMAL
IN INCHES



MILLIMETERS DECIMAL IN INCHES

Size	A	B
5.5	.216	.116
6	.236	.136
7	.276	.176
7.5	.296	.196
8	.315	.215
9	.354	.254
9.5	.374	.274
10	.394	.294
11	.433	.333
11.5	.453	.353
12	.472	.372
13	.512	.412
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14	.551	.451
14.5	.571	.471
15	.591	.491
15.5	.610	.510
16	.630	.530
17.5	.689	.589
19	.748	.648
19.5	.768	.668
20	.787	.687

Architectural Testing

Test sample complies with these details.
Deviations are noted.

"C" —.0135" Clear Anodized Aluminum Height—.235 5.97mm
"D" —.0165" Clear Anodized Aluminum Height—.240 6.10mm
"E" —.0170" Mill Finish Aluminum Height—.242 6.15mm
"F" —.0150" Electro-Galvanized & Black Steel Height—.245 6.22mm

94234

Date 11/16/09 Tech Rpm



NOTE: All LPD Keys following, are compatible with the GLPD Air Spacer.