



AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

US ALUMINUM INC., DIVISION OF CR LAURANCE CO., INC.

SERIES/MODEL: FT451 Storefront (Interior Set)

TYPE: Glazed Wall System

Report No: C2658.02-201-45
Report Date: 01/22/13



AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

US ALUMINUM INC., DIVISION OF CR LAURANCE CO., INC.
200 Singleton Drive
Waxahachie, Texas 75165

Report No: C2658.02-201-45
Report Date: 01/22/13
Simulation Date: 01/22/13

Project Summary:

Architectural Testing, Inc. was contracted by US Aluminum Inc., Division of CR Laurance Co., Inc. to provide U-Factor and Solar Heat Gain Coefficient thermal performance ratings on the FT451 Storefront (Interior Set) Glazed Wall System. The thermal performance ratings were determined in accordance with AAMA 507-07, Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Building.

Reference Documents:

AAMA 507-07, Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Buildings

NFRC 100-2010, Procedure for Determining Fenestration Product U-Factors

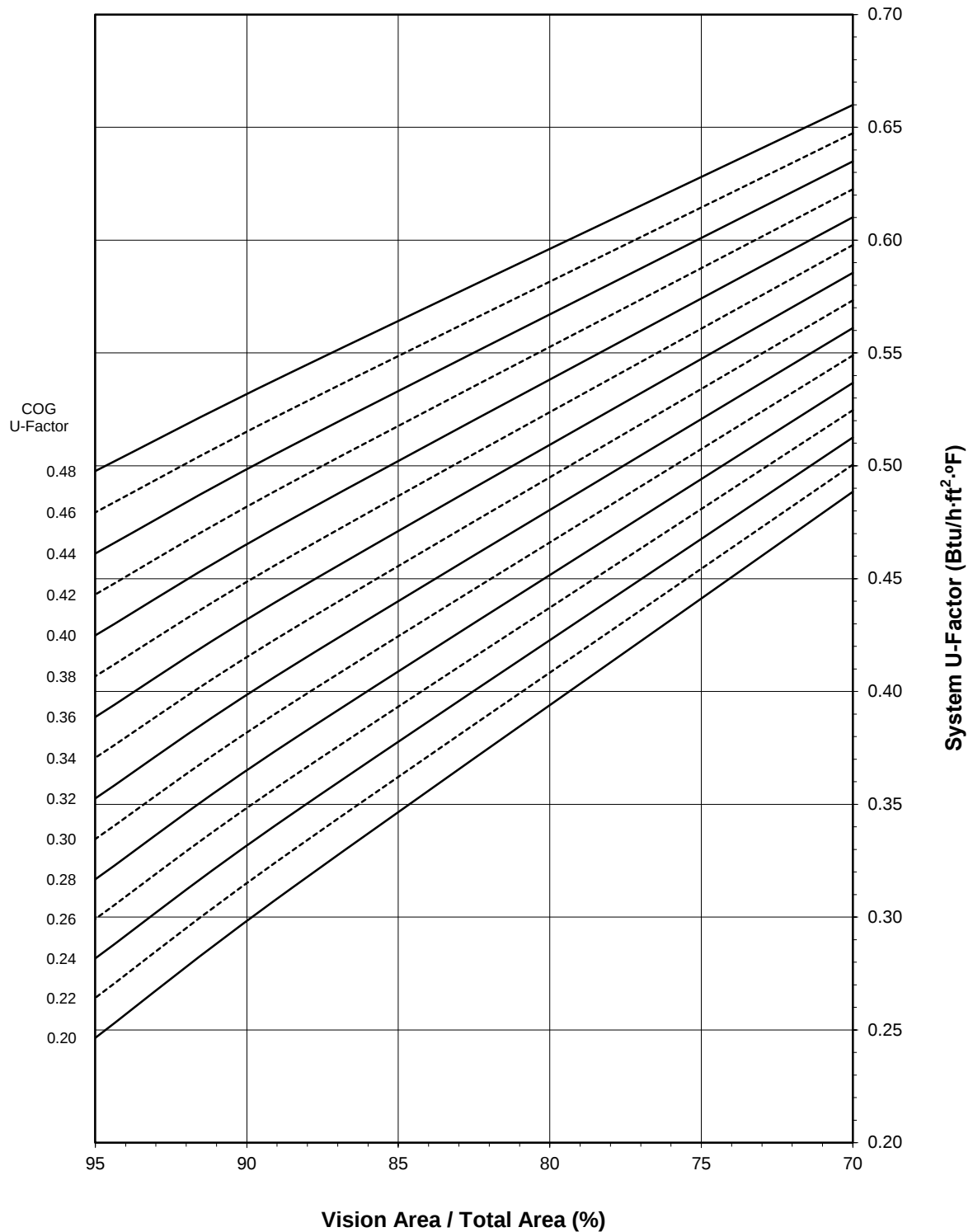
NFRC 200-2010, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

Simulation Specimen Description:

Series/Model:	FT451 Storefront (Interior Set)
Type:	Glazed Wall System
Frame Material:	Aluminum Thermally Improved Framing System
Material Finish:	Painted Aluminum
Specimen Size:	2000mm wide by 2000mm high (78-3/4" by 78-3/4")
Configuration:	Two vision lites separated by one intermediate vertical

US Aluminum Inc., Division of CR Lurance Co., Inc.
FT451 Storefront (Interior Set) - Glazed Wall System

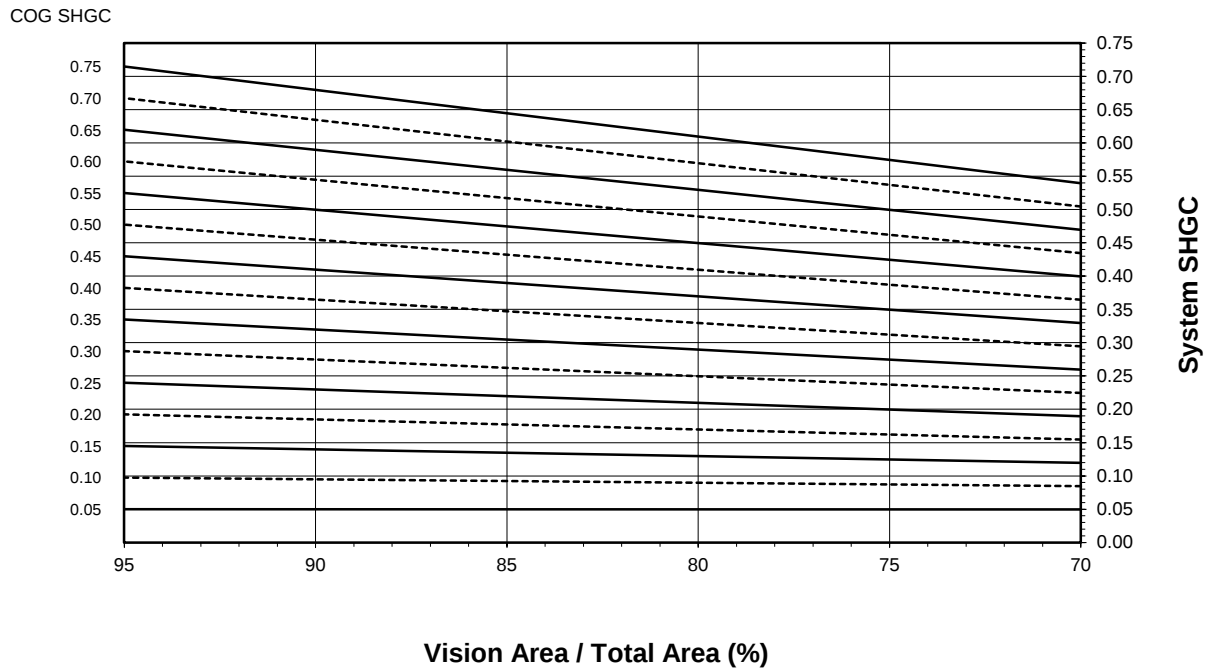
System U-Factor vs. Percentage of Vision Area



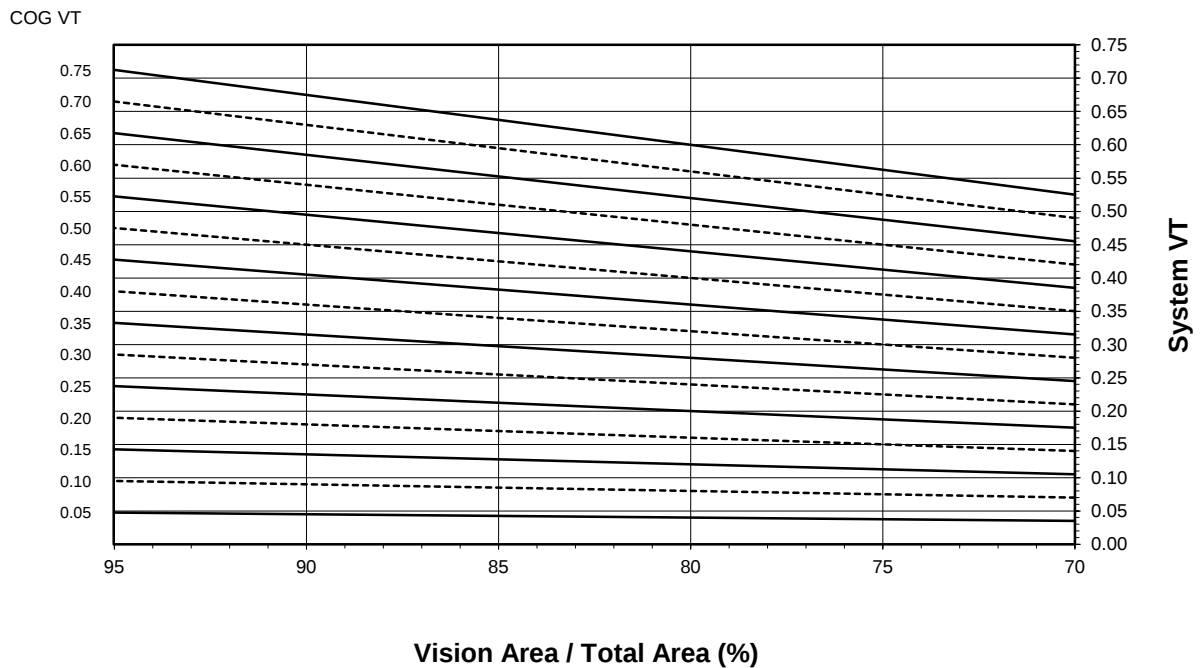
Note: 1 inch Overall - Dual Glazed Glass (0.48-0.20 COG) with Aluminum Spacer

US Aluminum Inc., Division of CR Lurance Co., Inc.
FT451 Storefront (Interior Set) - Glazed Wall System

System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



**US Aluminum Inc., Division of CR Laurance Co., Inc.
FT451 Storefront (Interior Set) - Glazed Wall System**

Size Specific U-Factor Matrix*

Glazing Option	Center of Glass U-Factor	Overall U-Factor
1	0.48	0.54
2	0.46	0.53
3	0.44	0.51
4	0.42	0.49
5	0.40	0.48
6	0.38	0.46
7	0.36	0.44
8	0.34	0.43
9	0.32	0.41
10	0.30	0.40
11	0.28	0.38
12	0.26	0.36
13	0.24	0.35
14	0.22	0.33
15	0.20	0.31

Note: 1 inch Overall - Dual Glazed Glass (0.48-0.20 COG) with Aluminum Spacer

Size Specific SHGC Matrix*

Center of Glass SHGC	Overall SHGC
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

Size Specific VT Matrix*

Center of Glass VT	Overall VT
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

*Size Specific U-Factor, SHGC, and VT Matrices are based on the standard Glazed Wall System specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4"). This represents 88.5% Vision Area / Total Area.

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							70% Vision Area	NFRC 100-2010	95% Vision Area
							28.61" by 28.61"	78.74" by 78.74"	184.50" by 184.50"
1	0.48	43.7	Head	2.2748	0.7855	0.5300	0.6599	0.5417	0.4977
			L. Jamb	1.2748	1.1308	0.5300			
			R. Jamb	1.2751	1.1506	0.5300			
			Mullion	2.5499	1.1407	0.5300			
			Sill	1.9627	0.8952	0.5300			
2	0.46	44.8	Head	2.2748	0.7842	0.5152	0.6474	0.5254	0.4793
			L. Jamb	1.2748	1.1294	0.5152			
			R. Jamb	1.2751	1.1492	0.5152			
			Mullion	2.5499	1.1393	0.5152			
			Sill	1.9627	0.8940	0.5152			
3	0.44	45.8	Head	2.2748	0.7829	0.5003	0.6349	0.5091	0.4611
			L. Jamb	1.2748	1.1281	0.5003			
			R. Jamb	1.2751	1.1479	0.5003			
			Mullion	2.5499	1.1380	0.5003			
			Sill	1.9627	0.8927	0.5003			
4	0.42	46.8	Head	2.2748	0.7836	0.4850	0.6225	0.4929	0.4430
			L. Jamb	1.2748	1.1268	0.4850			
			R. Jamb	1.2751	1.1467	0.4850			
			Mullion	2.5499	1.1367	0.4850			
			Sill	1.9627	0.8915	0.4850			
5	0.40	47.9	Head	2.2748	0.7823	0.4703	0.6101	0.4766	0.4248
			L. Jamb	1.2748	1.1255	0.4703			
			R. Jamb	1.2751	1.1455	0.4703			
			Mullion	2.5499	1.1355	0.4703			
			Sill	1.9627	0.8903	0.4703			
6	0.38	48.9	Head	2.2748	0.7811	0.4559	0.5978	0.4603	0.4067
			L. Jamb	1.2748	1.1242	0.4559			
			R. Jamb	1.2751	1.1443	0.4559			
			Mullion	2.5499	1.1343	0.4559			
			Sill	1.9627	0.8892	0.4559			
7	0.36	50.0	Head	2.2748	0.7799	0.4414	0.5855	0.4440	0.3887
			L. Jamb	1.2748	1.1230	0.4414			
			R. Jamb	1.2751	1.1431	0.4414			
			Mullion	2.5499	1.1330	0.4414			
			Sill	1.9627	0.8880	0.4414			
8	0.34	51.0	Head	2.2748	0.7787	0.4272	0.5733	0.4277	0.3706
			L. Jamb	1.2748	1.1218	0.4272			
			R. Jamb	1.2751	1.1419	0.4272			
			Mullion	2.5499	1.1319	0.4272			
			Sill	1.9627	0.8869	0.4272			
9	0.32	52.0	Head	2.2748	0.7776	0.4128	0.5610	0.4114	0.3526
			L. Jamb	1.2748	1.1206	0.4128			
			R. Jamb	1.2751	1.1408	0.4128			
			Mullion	2.5499	1.1307	0.4128			
			Sill	1.9627	0.8858	0.4128			

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							70% Vision Area	NFRC 100-2010	95% Vision Area
							28.61" by 28.61"	78.74" by 78.74"	184.50" by 184.50"
10	0.30	53.1	Head	2.2748	0.7765	0.3987	0.5489	0.3950	0.3346
			L. Jamb	1.2748	1.1194	0.3987			
			R. Jamb	1.2751	1.1397	0.3987			
			Mullion	2.5499	1.1296	0.3987			
			Sill	1.9627	0.8848	0.3987			
11	0.28	54.2	Head	2.2748	0.7754	0.3845	0.5367	0.3786	0.3167
			L. Jamb	1.2748	1.1183	0.3845			
			R. Jamb	1.2751	1.1386	0.3845			
			Mullion	2.5499	1.1285	0.3845			
			Sill	1.9627	0.8837	0.3845			
12	0.26	55.2	Head	2.2748	0.7743	0.3704	0.5246	0.3622	0.2992
			L. Jamb	1.2748	1.1172	0.3704			
			R. Jamb	1.2751	1.1375	0.3704			
			Mullion	2.5499	1.1274	0.3704			
			Sill	1.9627	0.8827	0.3704			
13	0.24	56.3	Head	2.2748	0.7732	0.3564	0.5125	0.3459	0.2817
			L. Jamb	1.2748	1.1161	0.3564			
			R. Jamb	1.2751	1.1365	0.3564			
			Mullion	2.5499	1.1263	0.3564			
			Sill	1.9627	0.8817	0.3564			
14	0.22	57.3	Head	2.2748	0.7721	0.3426	0.5005	0.3296	0.2642
			L. Jamb	1.2748	1.1150	0.3426			
			R. Jamb	1.2751	1.1354	0.3426			
			Mullion	2.5499	1.1252	0.3426			
			Sill	1.9627	0.8806	0.3426			
15	0.20	58.4	Head	2.2748	0.7711	0.3286	0.4885	0.3131	0.2465
			L. Jamb	1.2748	1.1140	0.3286			
			R. Jamb	1.2751	1.1345	0.3286			
			Mullion	2.5499	1.1242	0.3286			
			Sill	1.9627	0.8797	0.3286			

Detailed drawings, datasheets, 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 simulated 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 named herein and relates only to the specimen(s) simulated. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

REVIEWED BY:

Heather M. Duneman
Senior Simulation Technician

Michael P. Resech
Manager - Simulations and Thermal Testing

HMD:hmd
C2658.02-201-45

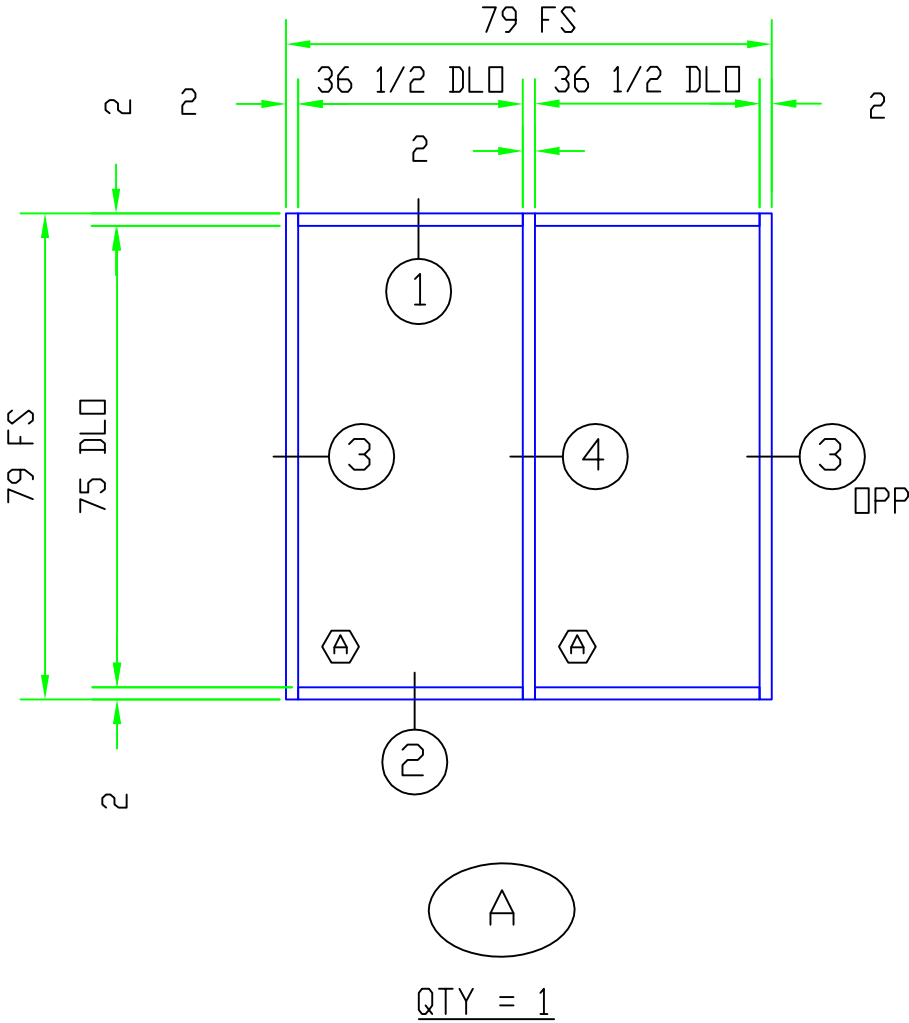
Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Drawings and Bills of Material (11)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
02-R0	1/22/2013	All	Original Report Issue

All drawings and Bills of Material used in simulating this product are enclosed in this Appendix.



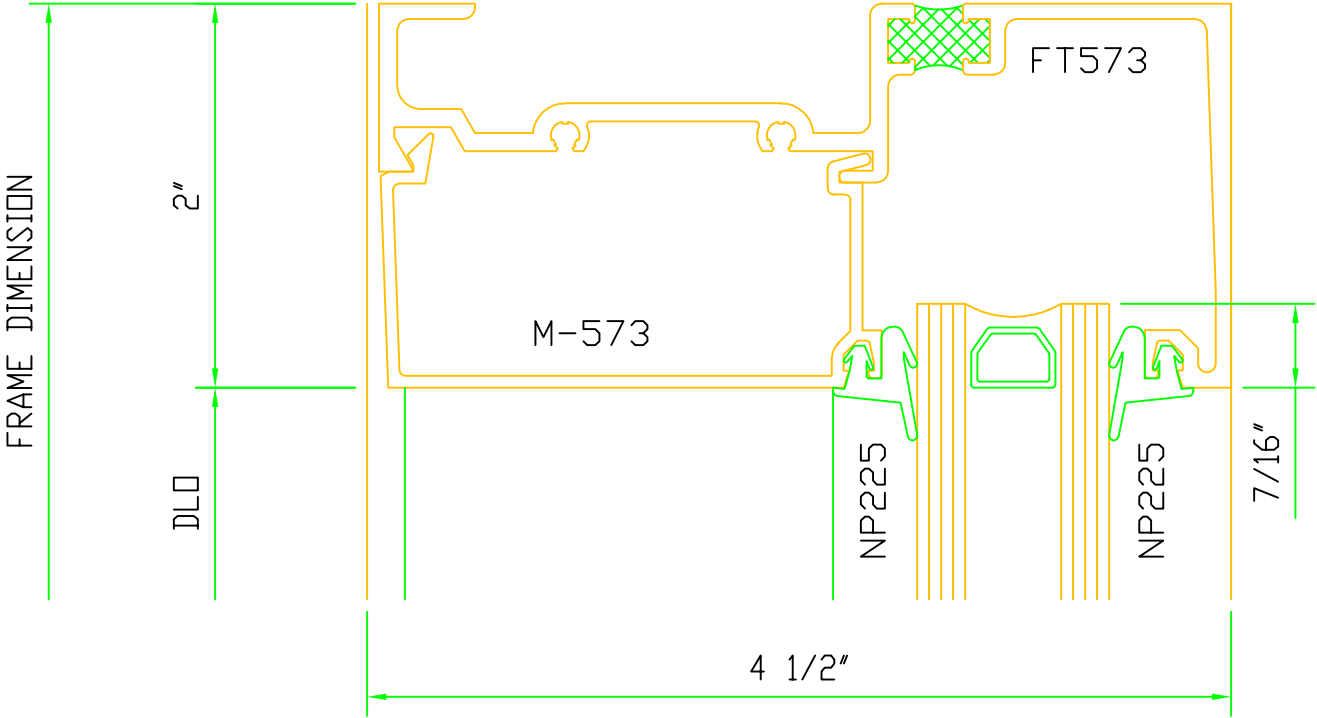


Report #: C2658.01-201-45
Date: 1/23/13
Verified by: *Shelley Simman*

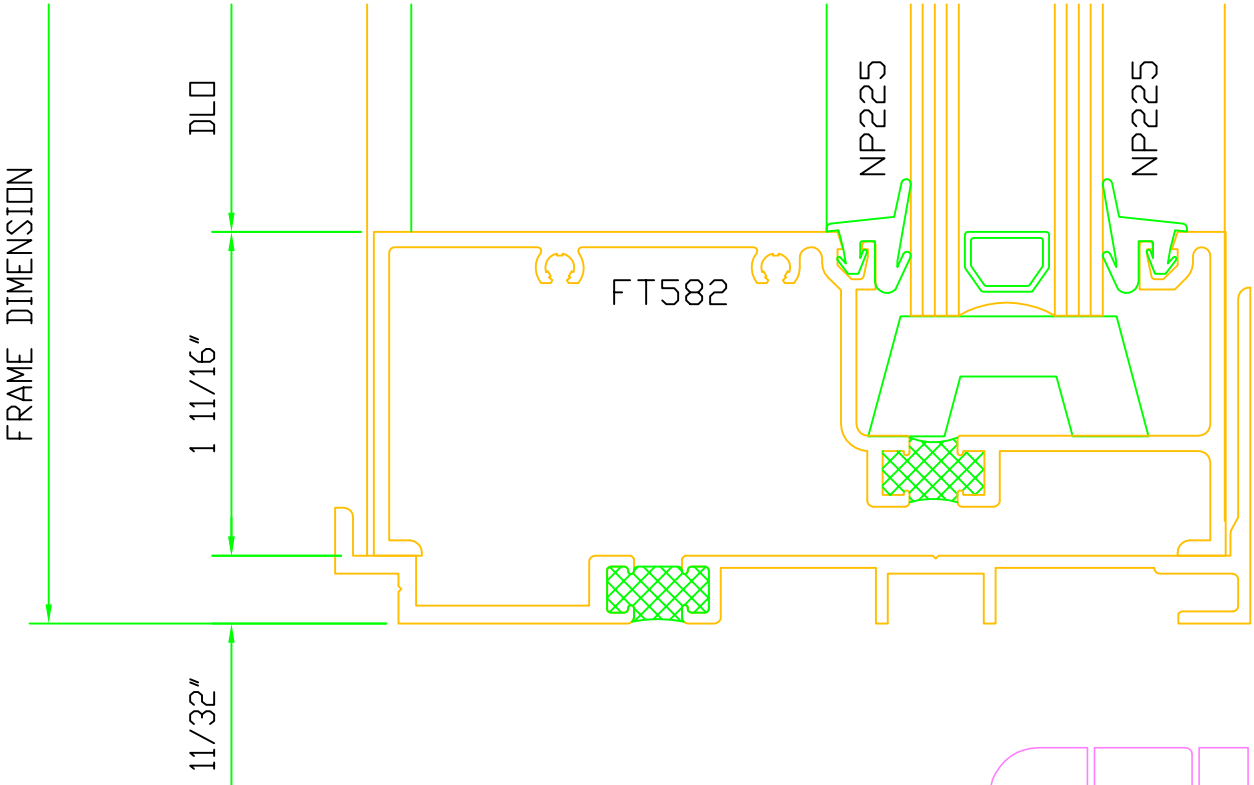
SYMBOL KEY			
SYMBOL	DESCRIPTION	QTY	COMMENTS
(A)	37.375 X 75.875	2	1 INS = INSULATED GLASS

				 2100 E. 38TH STREET PHONE: (323) 588-1281 VERNON, CA 90058 FAX: (323) 232-2523			
				DIVISION UNITED STATES ALUMINUM			
				DRWN BY: DCW	THERMAL_TEST_NFRC_AAMA_1503 SERIES_FT451-INSIDE_SET		DWG NO.
REV	REV_DESCRIPTION	DATE	XXX	DATE: 08.17.12			MU2012-013-01
SYM	REVISION	DATE	BY	SCALE: 3/8"=1"			

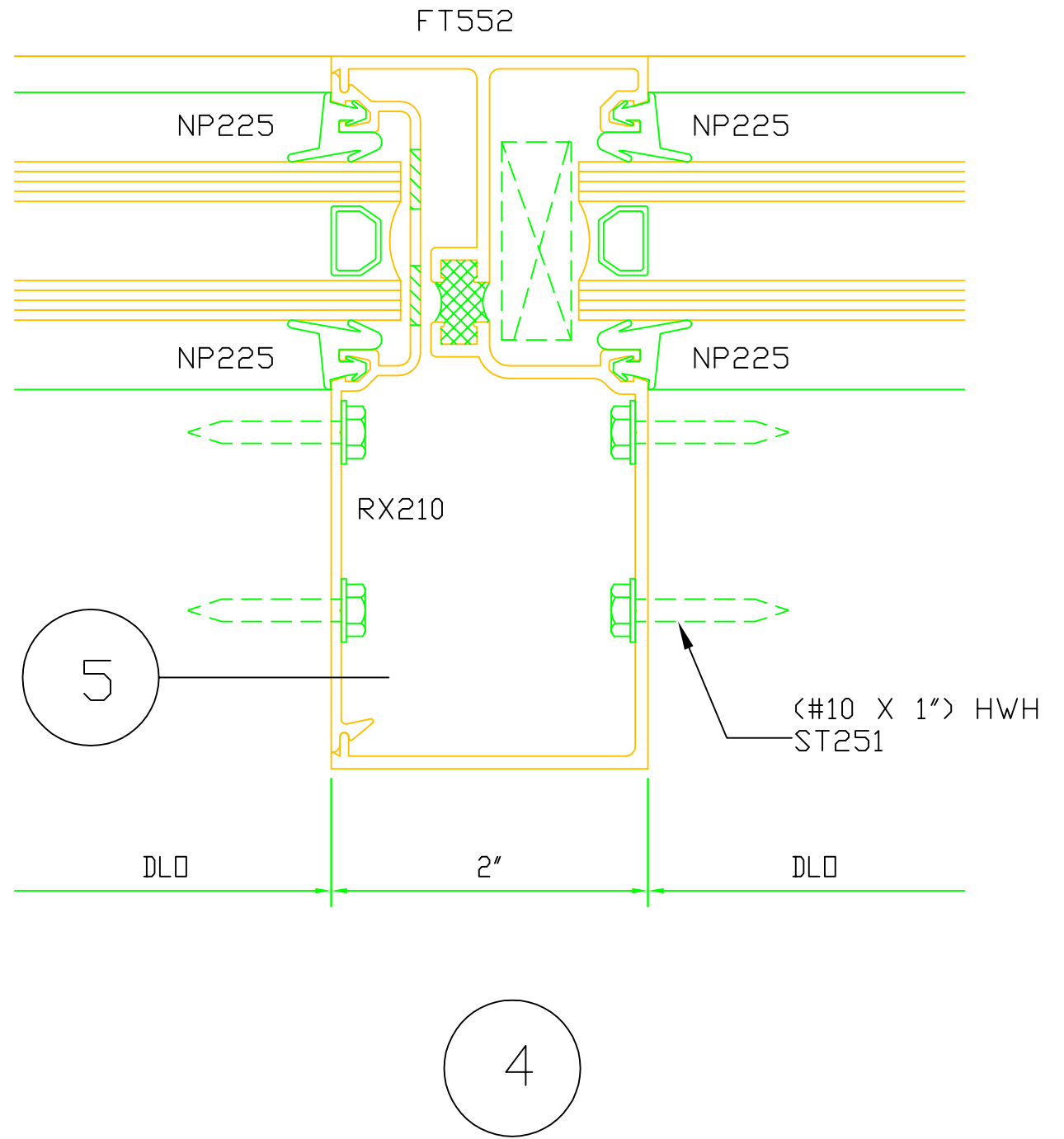
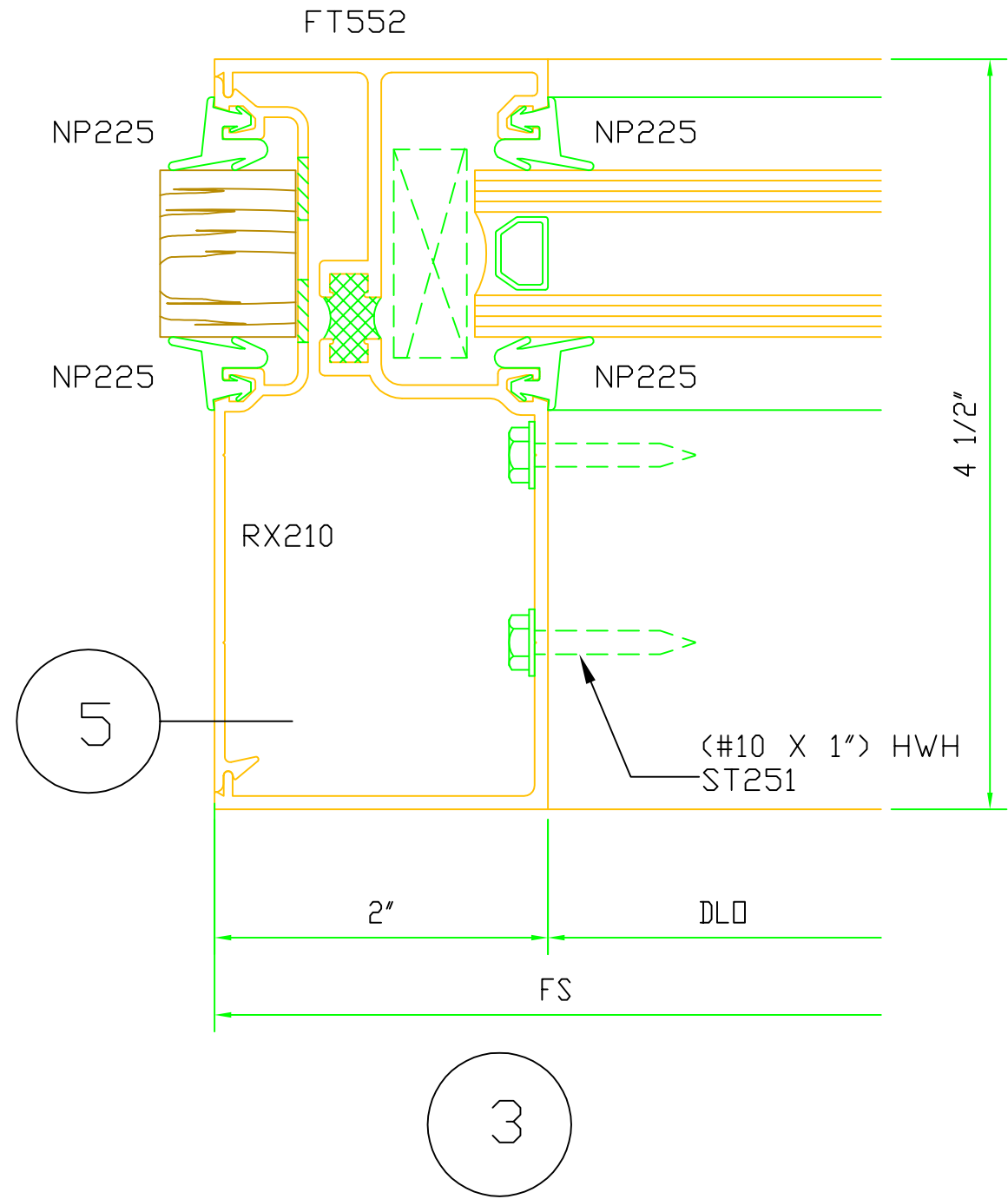
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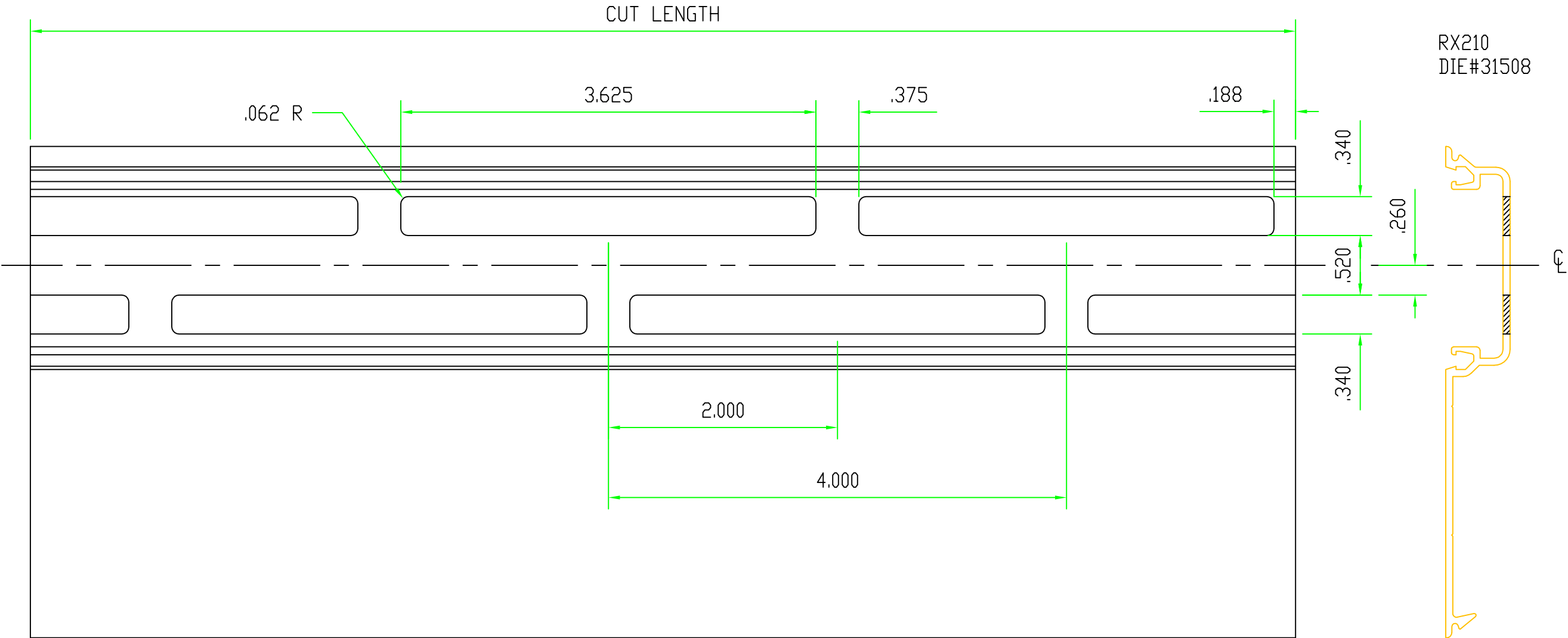


2



				2100 E. 38TH STREET PHONE: (323) 588-1281 VERNON, CA 90058 FAX: (323) 232-2523		
				DIVISION UNITED STATES ALUMINUM		
				DRWN BY: DCW	THERMAL_TEST_NFRC_AAMA_1503 SERIES_FT451-INSIDE_SET	DWG NO.
REV	REV_DESCRIPTION	DATE	XXX	DATE: 08.17.12		MU2012-013-02
SYM	REVISION	DATE	BY	SCALE: FULL		

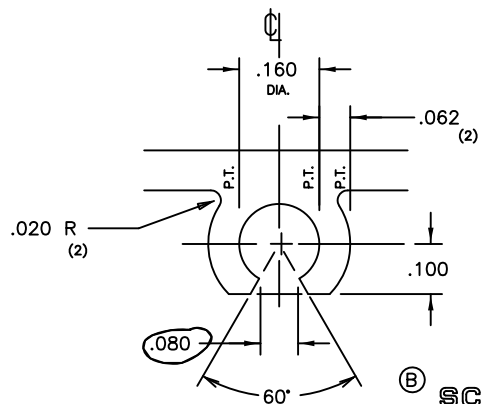
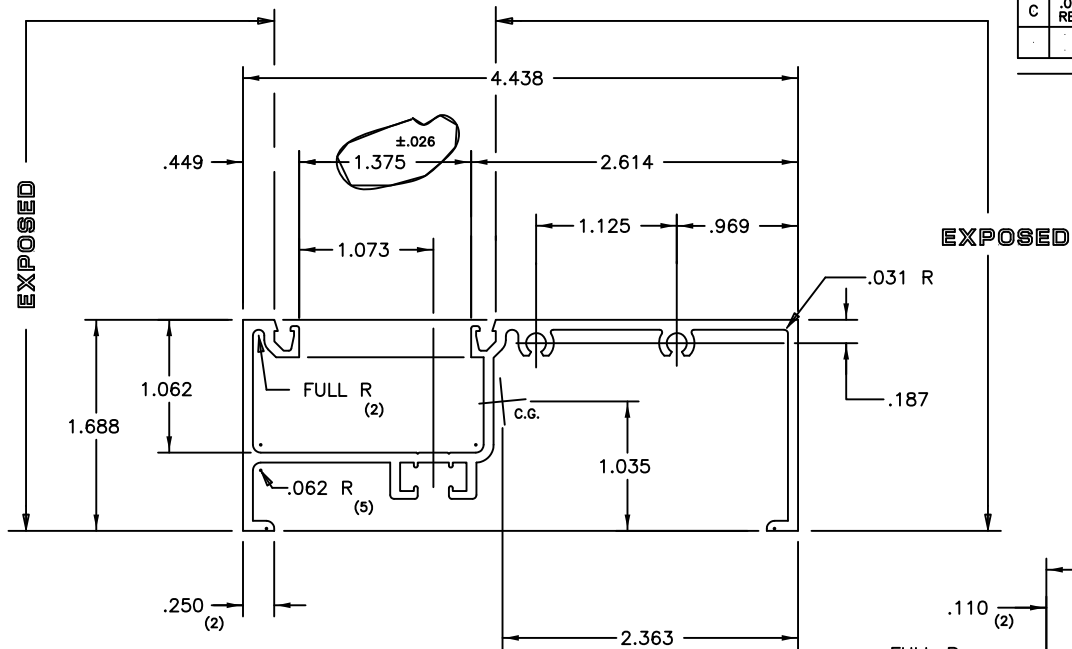




5

TYPICAL FILLER THERMAL SLOTS

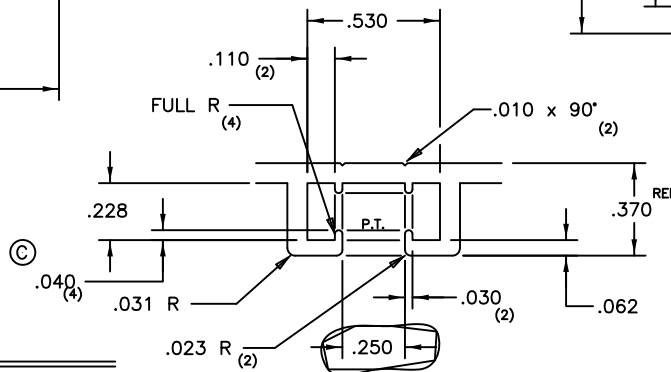
B	SCREWRACE DETAIL REVISED	MM	0/27 93	U.S. ALUMINUM CORP.		T-31362	C
C	.040 WAS .023, RECALC'D	RT GH	0/28 97	SILL - INSIDE GLAZE	MAMO	6/21/93	
				FF582	FULL SIZE		



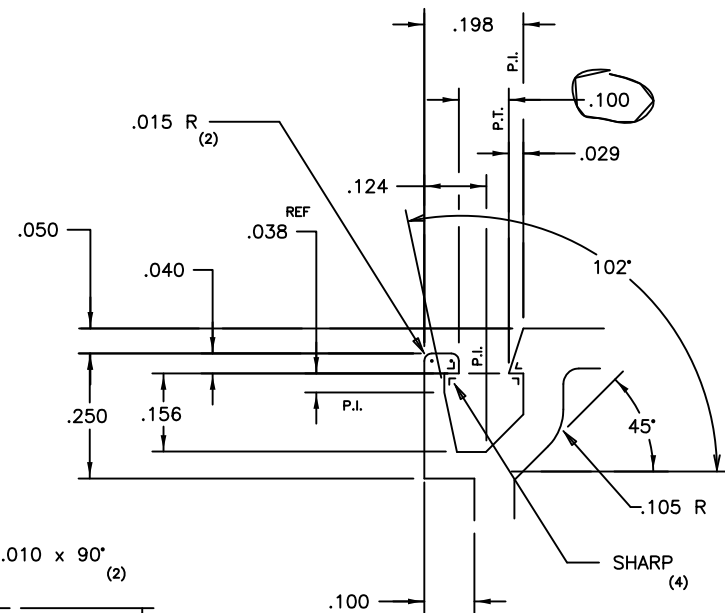
SCREW RACE DETAIL
SCALE: 4X SIZE (2 PLACES)

NOTES:

1. MATES W/FF400, DIE #31332
2. PAINT PERIMETER: 6.043"
3. THERMO DETAIL AREA: .132; "AA"
4. DEBRIDGE WITH A .218 x .015 MAX PENETRATION INTO THERMO MATERIAL.
5. F & D PART NO. IS FT582



DETAIL "A"
SCALE: 2X SIZE



GASKET POCKET DETAIL
SCALE: 4X SIZE (2 PLACES)

SECTION PROPERTIES:

lxx = 2.195 in⁴
Sxx = 0.929 in³
lly = 0.270 in⁴
Syy = 0.261 in³

10x1 1/2 W/P 10x1 1/4 DIE NO STEP

CA
TX

	.918 (C)	P-21774	1 / W/P 31362
	1.102 (C)	4.800	10x31362
	23.515 (C)	SOLID	12x7 1/2 31362
	21	8" = 59	T-31362 C

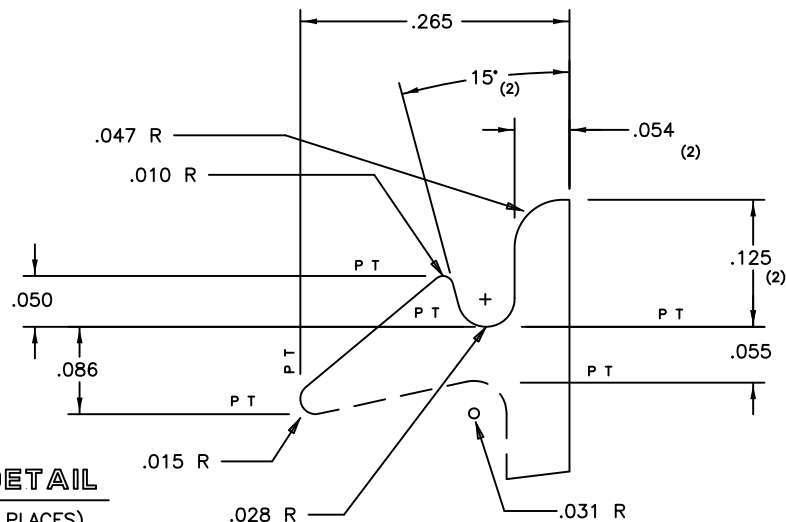
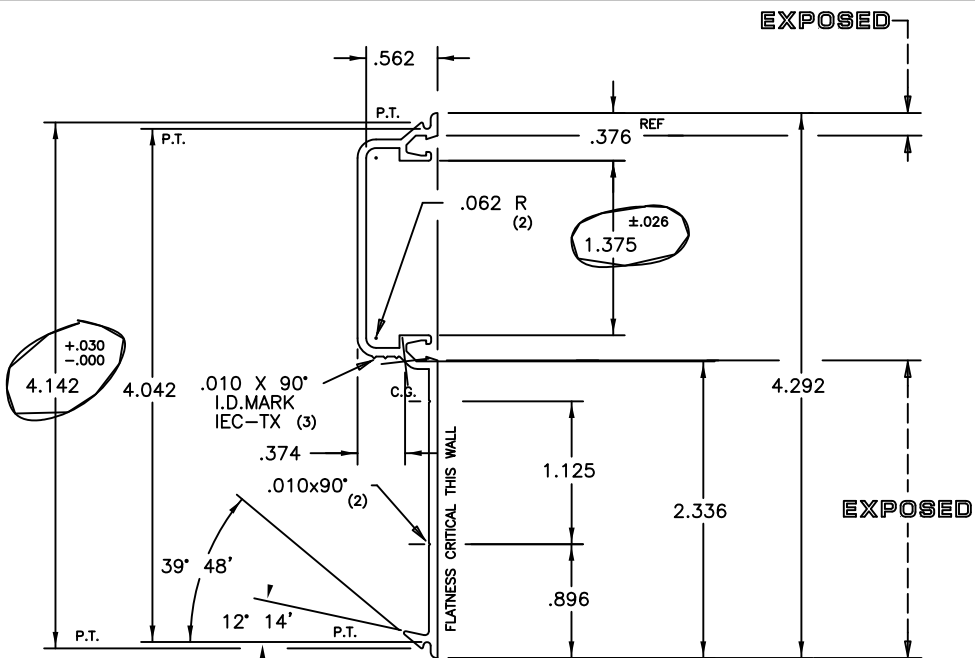
Report #: C2658.01-201-45

Date: 1/23/13

Verified by: *Kathleen Beneman*

FULL SIZE





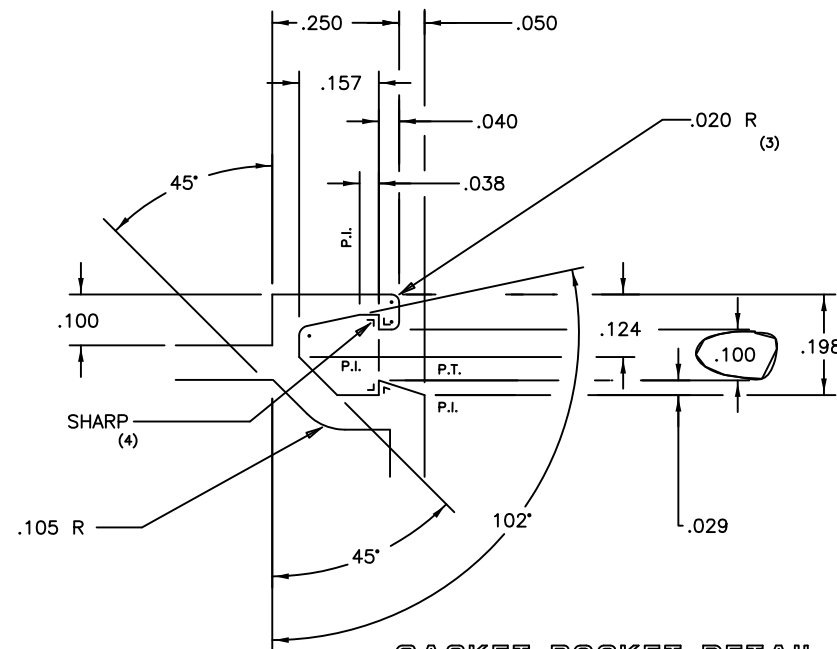
SNAP DETAIL

SCALE: 8X (2 PLACES)

PRODUCT:
PROJECT:

SYM	REVISION	BY	DATE	CUSTOMER	U.S. ALUMINUM CORP.	DIE NO.	31508
				INSERT	MAMO	DATE	11/18/94
				PART NAME	RF210	SCALE	FULL SIZE
				PART NO.		CHKD.	APP.

STANDARD TOLERANCES FOR EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE



GASKET POCKET DETAIL

SCALE: 4X SIZE (2 PLACES)

NOTES:

- 1.SNAP-FITS W/FF552; DIE # 31507
W/FF551; DIE # 31512
- 2.PAINT PERIMETER: 2.522"

SECTION PROPERTIES:

lxx = 0.643 in 4
Sxx = 0.275 in 3
lyy = 0.023 in 4
Syy = 0.061 in 3

☐ CA
☐ TX



International Extrusion Corporation

202 SINGLETON DRIVE WAXAHACHIE TEXAS 75165
(972) 937-7032

UNLESS OTHERWISE NOTED,
ALL CORNERS ARE .015 R, AND TYPICAL WALL THICKNESS IS .068

EST. AREA:	.397	US-NO.	P-24052	PORTS	
EST. WT/FT:	.476	CIRCLE SIZE	4.292 IN.	BACKER	
EST. PERI:	12.268	CLASS.	SOLID	BOLSTER.	
FACTOR :	26	ER-		DIE NO.	T-31508

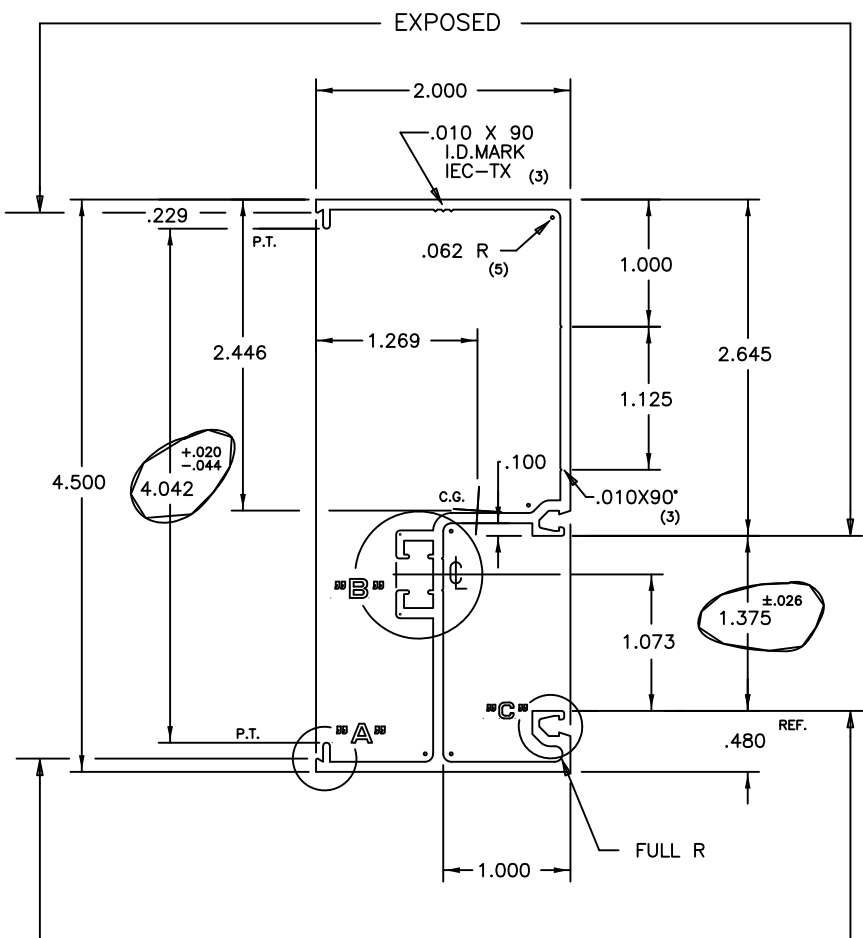


Report #: C2658.01-201-45

Date: 1/23/13

Verified by: *Debbie Dunman*

Architectural Testing



NOTES:

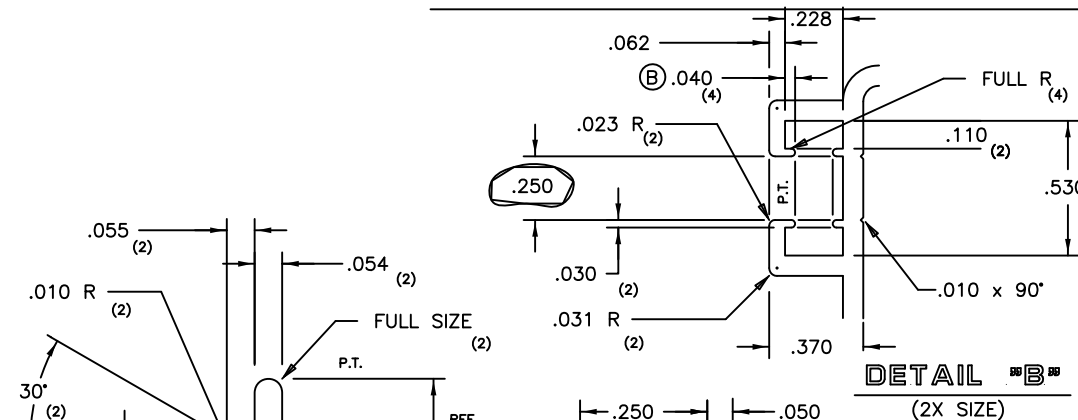
- 1.SNAP-FITS W/RF210; DIE #31508
W/RF110; DIE #31509
W/PF100; DIE #31510
- 2.PAINT PERIMETER: 6.758"
- ③ 3.THERMO POCKET AREA: .132; "AA"
4. F & D PART NO. IS FT552

SECTION PROPERTIES:

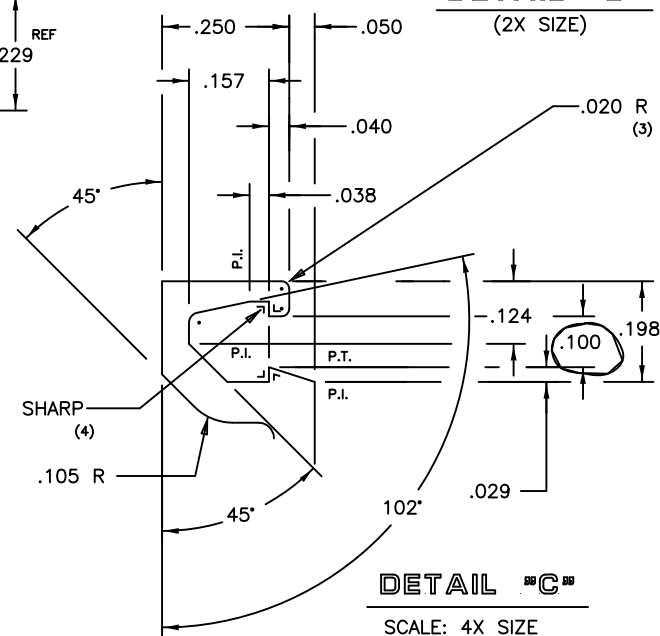
$$\begin{aligned}
 I_{xx} &= 2.408 \text{ in}^4 \\
 S_{xx} &= 0.984 \text{ in}^3 \\
 I_{yy} &= 0.311 \text{ in}^4 \\
 S_{yy} &= 0.245 \text{ in}^3
 \end{aligned}$$

FF451

B	.040 WAS .023, RECALC'D	RT	10/30/97	U.S. ALUMINUM CORP.		T-31507	B
		GH		VERT MULL	MAMO	11/18/94	
				FF552	FULL SIZE		



DETAIL "A"
(4x SIZE)



DETAIL "C"
SCALE: 4X SIZE

	.897 ③	P-24046	1	WP31507
	1.076 ③	4.915	10	X 31507
	23.378 ③	SOLID	31355	
	22	8 60	T-31507	B

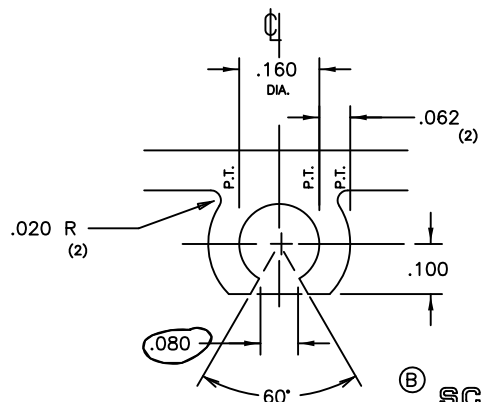
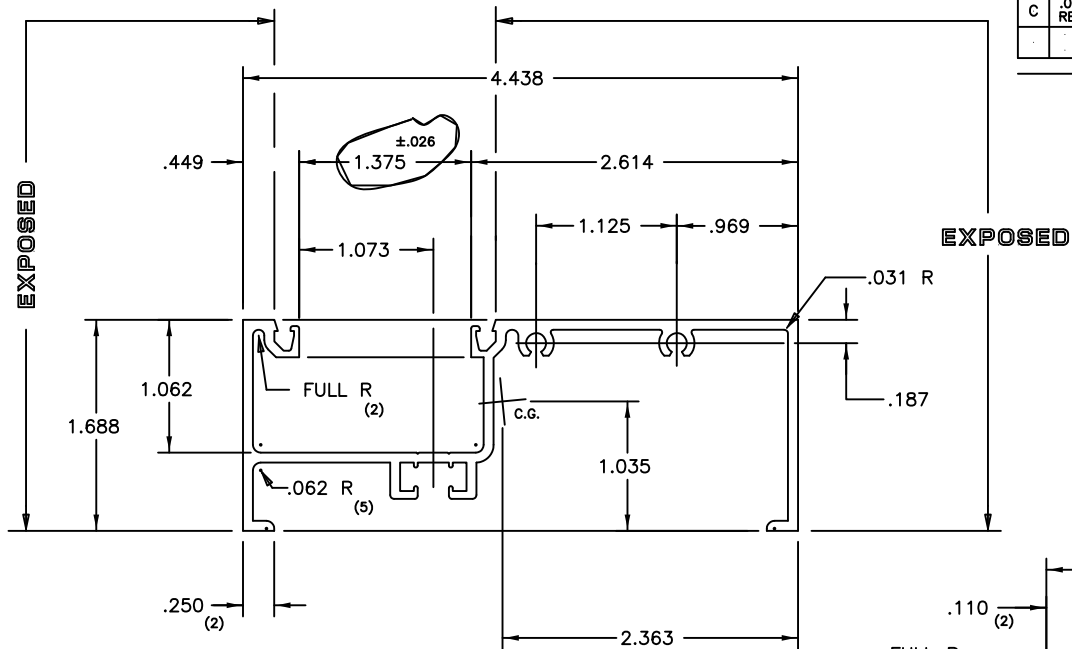


Report #: C2658.01-201-45

Date: 1/23/13

Verified by: *Kathleen Beneman*

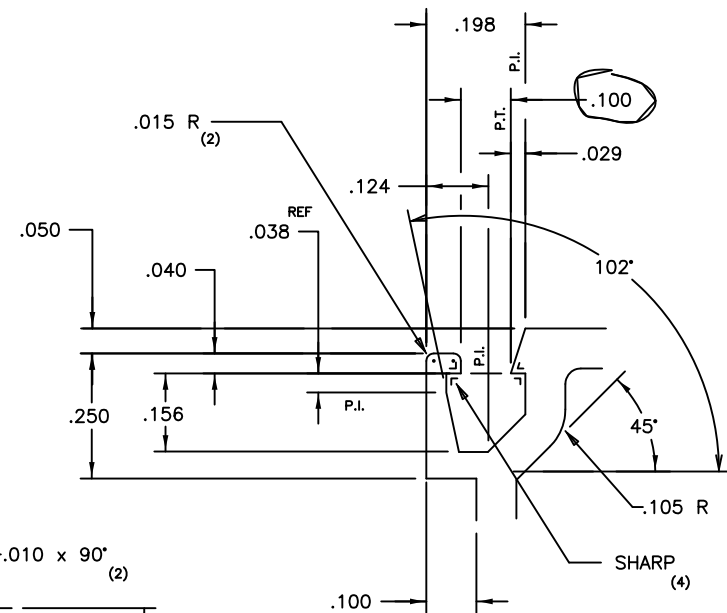
B	SCREWRACE DETAIL REVISED	MM	0/27 93	U.S. ALUMINUM CORP.		T-31362	C
C	.040 WAS .023, RECALC'D	RT GH	0/28 97	SILL - INSIDE GLAZE	MAMO	6/21/93	
				FF582	FULL SIZE		



SCREW RACE DETAIL
SCALE: 4X SIZE (2 PLACES)

NOTES:

1. MATES W/FF400, DIE #31332
2. PAINT PERIMETER: 6.043"
3. THERMO DETAIL AREA: .132; "AA"
4. DEBRIDGE WITH A .218 x .015 MAX PENETRATION INTO THERMO MATERIAL.
5. F & D PART NO. IS FT582



GASKET POCKET DETAIL
SCALE: 4X SIZE (2 PLACES)

SECTION PROPERTIES:

lxx = 2.195 in⁴
Sxx = 0.929 in³
lly = 0.270 in⁴
Syy = 0.261 in³

10x1 1/2 W/P 10x1 1/4 DIE NO STEP

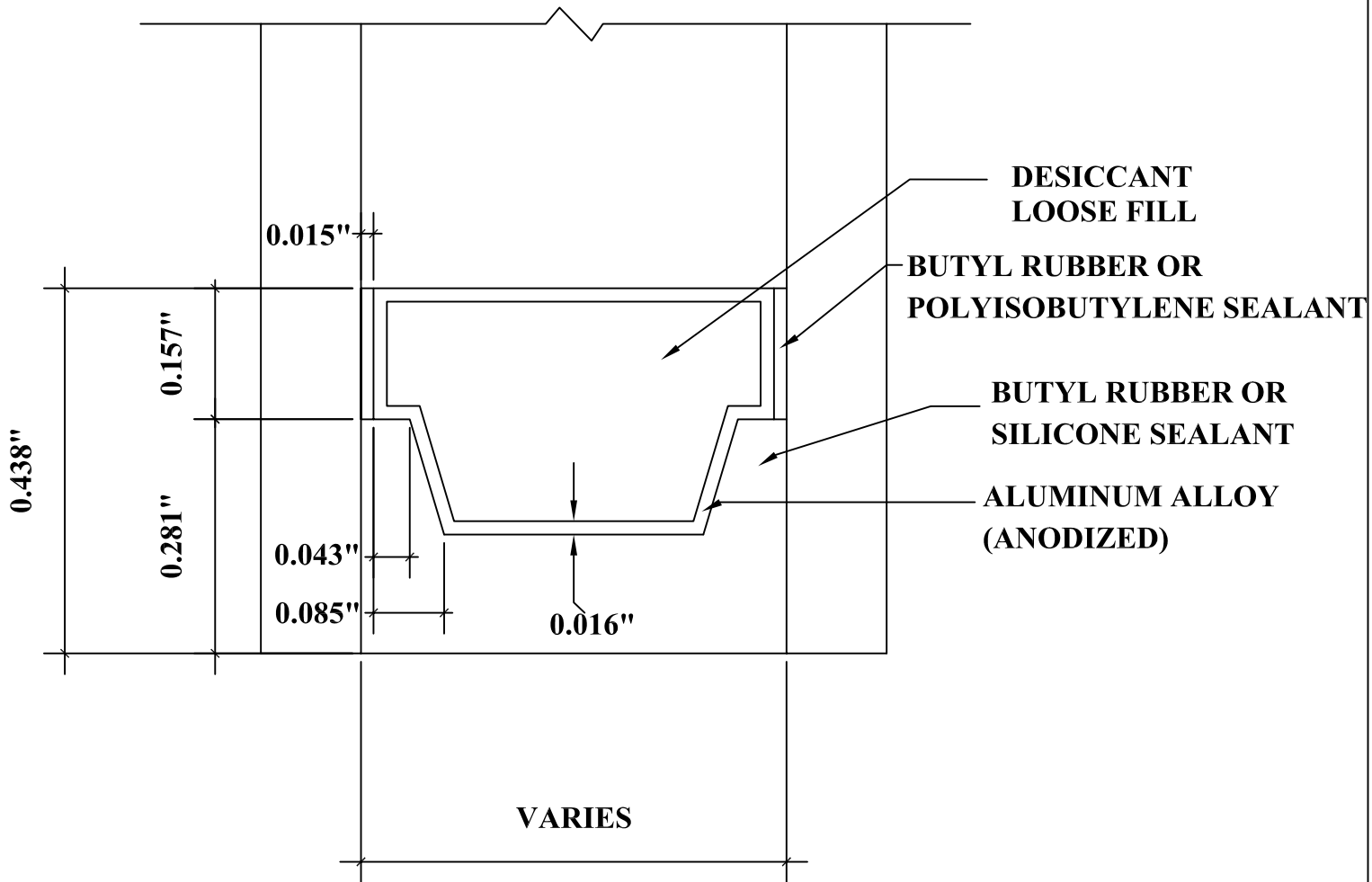
CA
TX

	.918 (C)	P-21774	1 / W/P 31362
	1.102 (C)	4.800	10x31362
	23.515 (C)	SOLID	12x7 1/2 31362
	21	8" = 59	T-31362 C

Report #: C2658.01-201-45

Date: 1/23/13

Verified by: *Patricia Duman*



DETAIL FOR THERMAL MODELING OF
ALUMINUM SPACER (A1-D)



Report #: C2658.01-201-45

Date: 1/23/13

Architectural Testing Verified by: *Heather Dunman*