Architectural Testing

TEST REPORT

Report No.: E2306.01-901-44

Rendered to:

COEUR D'ALENE WINDOW
Spokane Valley, Washington

PRODUCT TYPE: Single Hung Window
SERIES/MODEL: 3221

SPECIFICATIONS:
AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*
and
AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*
and
CSA A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results
AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11	Class LC PG40 1100 x 1900 (44 x 75) Type H
Design Pressure	±1920 Pa (40.10 psf)
Air Infiltration	0.46 L/s/m^2 (0.09 cfm/ft^2)
Air Exfiltration	0.39 L/s/m^2 (0.08 cfm/ft^2)
Canadian Air Infiltration/Exfiltration Level	A3
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)

Test Completion Date: 12/31/14

Reference must be made to Report No. E2306.01-901-44, dated 02/02/15 for complete test specimen description and detailed test results.

1.0 Report Issued To: Coeur d'Alene Window
3808 N. Sullivan Road
Spokane Valley, WA 99216

2.0 Test Laboratory: Architectural Testing, Inc.
22155 68th Avenue South
Kent, WA 98032
253-395-5656

3.0 Project Summary:

3.1 Product Type: Single Hung Window

3.2 Series/Model: 3221

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimens tested successfully met the performance requirements for **Class LC PG40 1100 x 1900 (44 x 75) Type H** rating.

3.4 Test Dates: 12/22/14 - 12/31/14

3.5 Test Record Retention End Date: All test records for this report will be retained until 12/31/18.

3.6 Test Location: Architectural Testing test facility in Kent, Washington.

3.7 Test Specimen Source: The test specimens were provided by the client. Representative samples of the test specimens will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in the appropriate Appendix. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

Name	Company
Guillermo Silva	Architectural Testing, Inc.
Jeffrey Dideon	Architectural Testing, Inc.

4.0 Test Specifications:

AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*
and
AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*
and
CSA A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 2.09 m^2 (22.50 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1100	43-5/16	1900	74-13/16
Sash	1042	41	963	37-15/16

5.2 Frame Construction:

Member	**Material**	**Description**
All	PVC	White

	Joinery Type	**Detail**
All corners	Mitered	Mitered and thermally welded
Meeting rail/interlock	Mechanical	Each end was coped, butt joined, and secured with two #8 x 2" gasketed screws.

5.3 Sash Construction:

Member	**Material**	**Description**
All	PVC	White

	Joinery Type	**Detail**
All corners	Mitered	Mitered and thermally welded

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
5.6 mm (0.220") high pile with single center fin	1 row	Sash, full perimeter
5.6 mm (0.220") high pile with single center fin	1 row	Fixed meeting rail/interlock

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type Nominal	Spacer Type	Interior Lite Nominal	Exterior Lite Nominal	Glazing Method
19 mm (3/4") IG	Aluminum	3 mm (1/8") annealed	3 mm (1/8") annealed	Glazed with 3/8" foam glazing tape and PVC glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash	1	965 x 878	38 x 34-1/2	12.5 mm (1/2") nominal
Fixed lite	1	1026 x 843	40-3/8 x 33-3/16	12.5 mm (1/2") nominal

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Method	Size	Qty.	Location
Weep	15.9 mm x 4.6 mm (5/8" x 3/16")	2	Sill, sash pocket, approx. 51 mm (2") from the corner, through one wall, (draining into hollow)
Weep	12.2 mm x 6.4 mm (1/2" x 5/32")	2	Sill, screen pocket, approx. 20 mm (3/4") from the corner, through one wall, (draining into hollow)
Weep	23.6 mm x 6.4 mm (15/16" x 5/32")	2	Sill, internal web, at the corner, through one wall, (draining between hollows)
Weep	12.2 mm x 3.2 mm (1/2" x 1/8")	2	Sill, exterior face, approx. 40 mm (1-5/8") from the corner, through one wall, (draining hollows)
Weep	12.2 mm x 6.4 mm (9/32" x 5/32")	2	Sash, bottom rail, glazing pocket, approx. 15 mm (9/16") from the corner, through two walls, (draining glazing pocket)

5.7 Hardware:

Description	Quantity	Location
Metal cam lock	2	Sash, approx. 178 mm (7") from the ends and secured with two #6 x 7/8" screws
Metal keeper	2	Fixed meeting stiles/interlocks, aligned with lock and secured with two #6 x 7/8" screws
Block and tackle balance system	2	Jamb/sash stile

5.8 Reinforcement:

Drawing Number	Location	Material
U2800	Sash, meeting rail/interlock	Steel
U3650	Fixed meeting rail/interlock	Steel

6.0 Installation:

The specimen was installed into a Doug-Fir wood buck. The rough opening allowed for shim space. The exterior perimeter of the window was set with sealant.

Location	Anchor Description	Anchor Location
Full perimeter	#8 by 1" screws	Approx. 152 mm (6") apart through pre-punched slots

7.0 Test Results: The temperature during testing was 18°C (64°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 147 N (33.0 lbf) max. Maintain motion: 156 N (35.0 lbf) max. Locks: 20 N (4.5 lbf) max.	Report only 180 N (40.47 lbf) 100 N (22.48 lbf)	
Canadian Operating Force, per ASTM E 2068 For Cleaning and Maintenance	Initiate motion: 147 N (33.0 lbf) max. Maintain motion: 156 N (35.0 lbf) max.	230 N (51.71 lbf) 200 N (44.96 lbf)	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.46 L/s/m² (0.09 cfm/ft²)	1.5 L/s/m² (0.3 cfm/ft²)	1
Air Leakage, Exfiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.39 L/s/m² (0.08 cfm/ft²)	1.5 L/s/m² (0.3 cfm/ft²)	
Canadian Air Infiltration/Exfiltration Level	A3	0.5 L/s/m² (0.1 cfm/ft²)	
Water Penetration	N/A	N/A	2
Uniform Load Deflection	N/A	N/A	2
Uniform Load Structural	N/A	N/A	2
Forced Entry Resistance, per ASTM F 588, Grade: 20	Pass	No entry	
Forced Entry Resistance, per CAWM 301	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	

7.0 Test Results: (Continued)

Title of Test	Results	Allowed	Note
Deglazing, per ASTM E 987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf)	Pass Pass	Meets as stated Meets as stated	
Optional Performance			
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting rail/interlock +1920 Pa (40.10 psf) -1920 Pa (40.10 psf)	 5.5 mm (0.22") 5.3 mm (0.21")	 Report Only Report Only	 4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting rail/interlock +2880 Pa (60.15 psf) -2880 Pa (60.15 psf)	 <0.25 mm (<0.01") <0.25 mm (<0.01")	 4.24 mm (0.17") max. 4.24 mm (0.17") max.	 5, 6

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 3: Without insect screen.

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 5: Loads were held for 10 seconds.

Note 6: Tape and film were not used to seal against air leakage during structural testing.

Architectural Testing will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Architectural Testing, Inc. for the entire test record retention period.

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 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: Guillermo Silva

Guillermo Silva
Technician

Digitally Signed by: Jeffrey L. Dideon

Jeffrey L. Dideon
Director – Regional Operations

JLD:pac

Attachments (pages): This report is complete only when all attachments listed are included.
- Appendix-A: Alteration Addendum (1)
- Appendix-B: Location of Air Seal (1)
- Appendix-C: Drawings (9)

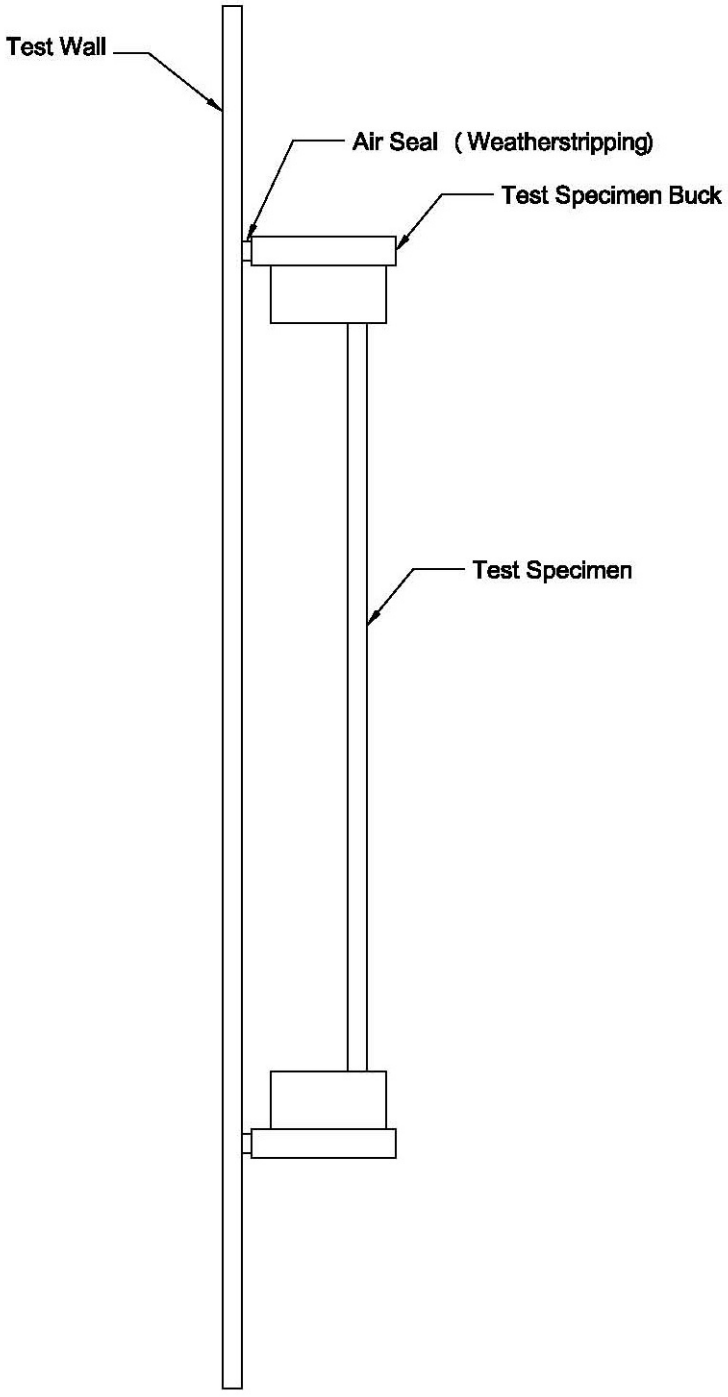
Appendix A

Alteration Addendum

***Note**: No alterations were required.*

Appendix B

Location of Air Seal: The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.



Appendix C

Drawings

3221 Single Hung Series

Part	Part # (39 3/8 x 63)	Part # (43 5/16 x 74 13/16)
Main Frame ✓	R1270-W801	R1270-W801
Mullion ✓	R1279-W801	R1279-W801
Mullion Metal	U365044 ✓	U365046
Sash Interlock ✓	R1278-W801	R1278-W801
Sash Interlock Metal	U280094 ✓	U280096
Sash Common Rail	R1277-W801	R1277-W801
Lock	A30700404.42	A30700404.42
Keeper	41988.42	41988.42
Lock Screw	085D06P6FSZWHT	085D06P6FSZWHT
Keeper Screw	065D06PPSZ	065D06PPSZ
Vent Stop	R1289-W801	R1289-W801
Vent Stile Vinyl ✓	R1276WS-W801	R1276WS-W801
Balancers	29-4	35-4
Take Out Clips	15P19	15P19
Slider Track	R1280-W801	R1280-W801
Setting Block	6554(2)	6555 (2)
Setting Block Glue	IPS-56-1021	IPS-56-1021
Glazing Tape	VG1216W-FC515	VG1216W-FC515
Glazing Bead ✓	1994-W801	1994-W801
Wheels	4236-100-2	4236-100-2
Mullion Screw	08A14PT4HVHLDNEO	08A14PT4HVHLDNEO

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2306

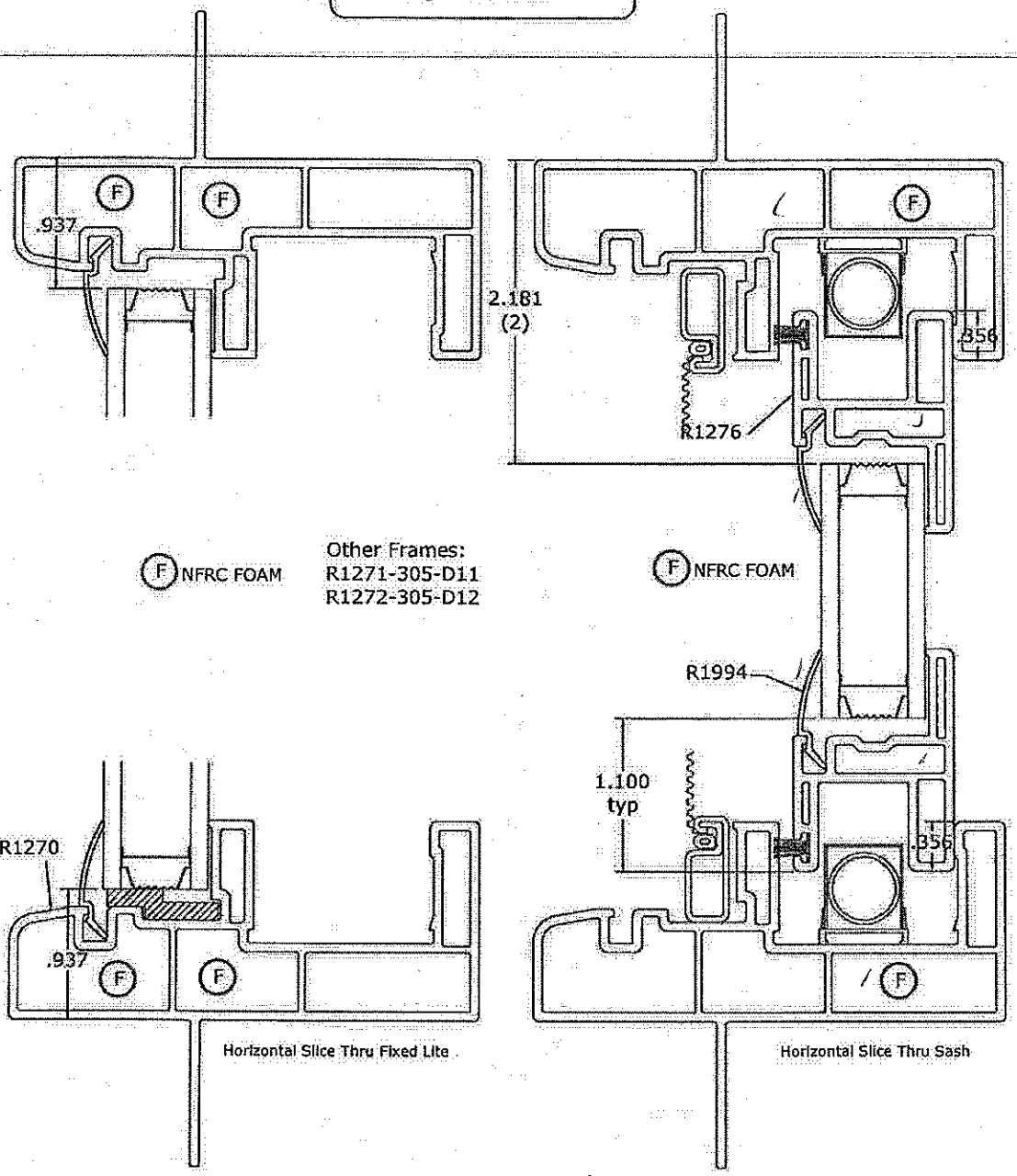
Date 1/28/15 Tech GS

Rev 1

Customer Approval

By: [signature]

Date: 6-30-14



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2306

Date 1/28/15 Tech GS

ROYAL Building Products

111 Royal Group Crescent
Woodbridge, Ontario
Canada L4H 1X9

Die#

Sys No. 305-L1270-SH_H

CUSTOMER Coeur d'Alene Windows

TITLE SH Horizontal Slices

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PROJECT: 305_CdA

DATE: May 1, 2014

Layout Name: SH_HOR

Drawn by: gmc

SCALE 0.875:1

ACAD#: 305_CdA_Sections_all

Ref xxx

PADS:

AREA .000

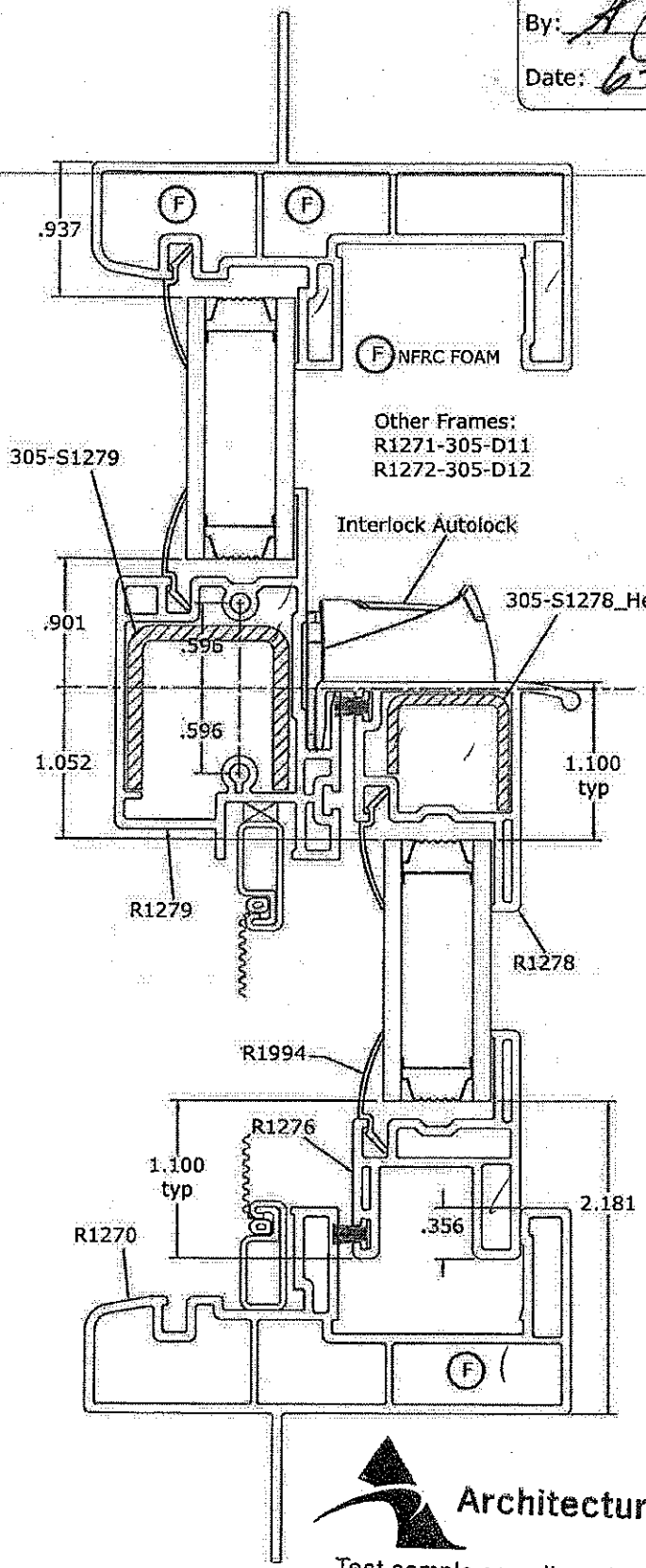
WT/FT .000

WALL TOLERANCES:	ANGULAR TOLERANCES:
0.000–0.099 ±0.006	X,X ±1/2°

WALL THICKNESS:	SYMBOL		
Exterior .000	SHARP		a UNMARKED 0.015
Interior .000	FLEX		b
.xxx	CRITICAL		c
.xxx	EXPOSED		f FULL
.xxx			s SHARP

LINEAR TOLERANCES:
0.000–0.999 ±0.010
1.000–1.999 ±0.015
2.000–3.999 ±0.020

Customer Approval
By:
Date: 6-30-14



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2306

Date 1/28/15 Tech GS

ROYAL Building Products

Die#

Sys No. 305-L1270-SH_V

CUSTOMER Coeur d'Alene Windows

TITLE SH Vertical Slice

111 Royal Group Crescent
Woodbridge, Ontario
Canada L4H 1X9

PROJECT: 305_CdA

DATE: May 1, 2014

Layout Name: SH_VERT

Drawn by: gmc

SCALE 0.875:1

AREA .000

WT/FT .000

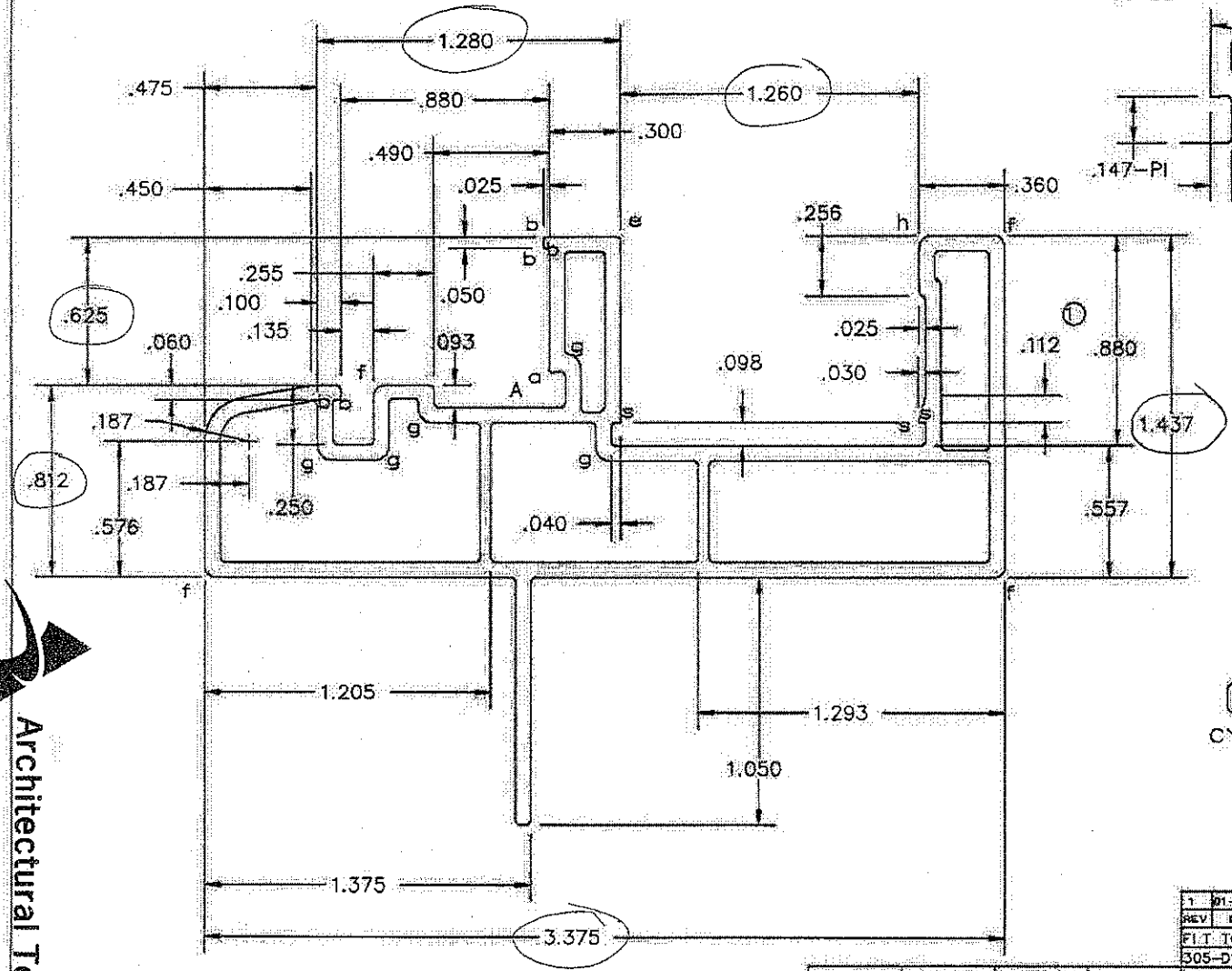
ACADE: 305_CdA_Sections.all

Ref xxx

WALL TOLERANCES		ANGULAR TOLERANCES:		MATL	
0.000–0.099	±0.006	XX	±1/2°	UNMARKED	0.015
WALL THICKNESS		SYMBOL:		a	
Exterior	.000	SHARP	X	b	
Interior	.000	FLEX		c	
■	.xxx	CRITICAL		f	FULL
▲	.xxx	EXPOSED	—	s	SHARP

LINEAR TOLERANCES	
0.000–0.999	±0.010
1.000–1.999	±0.015
2.000–3.999	±0.020

SCALE : 1 . 5: 1



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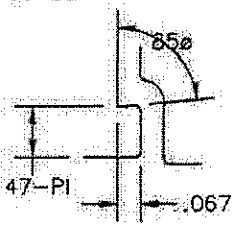

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e=0. 030R
f =0. 045R
g=0. 060R
h=0. 050R
s=SHARP

APPROVED
23–DEC–97
CYCLOI D DESI GNS

REV	DATE	REMARKS		
1	01–18–98	DI MENSI ON ADDED		
FI T TO	305–D28	305–D34	291–03	
305–D18	305–D35	305–D27	291–07	
305–D33	305–D45			
305–D49				

FAB REF	305–F90		
305–F5E			

CYCLOI D DESI GNS

DWG: 305–D4

DATE: 31–DEC–97

TI TLE: FI XED FRAME W/FI N

RS1 270

EXTERNAL WALL: 0. 065
I NTERNAL WALL: 0. 045
CORNER TYP: 0. 020R
WEI GHT: 0. 565 LB/FT

Architectural Testing

Test sample complies with these details.
Deviations are noted.
Report# E2306
Date 1/28/15 Tech GG

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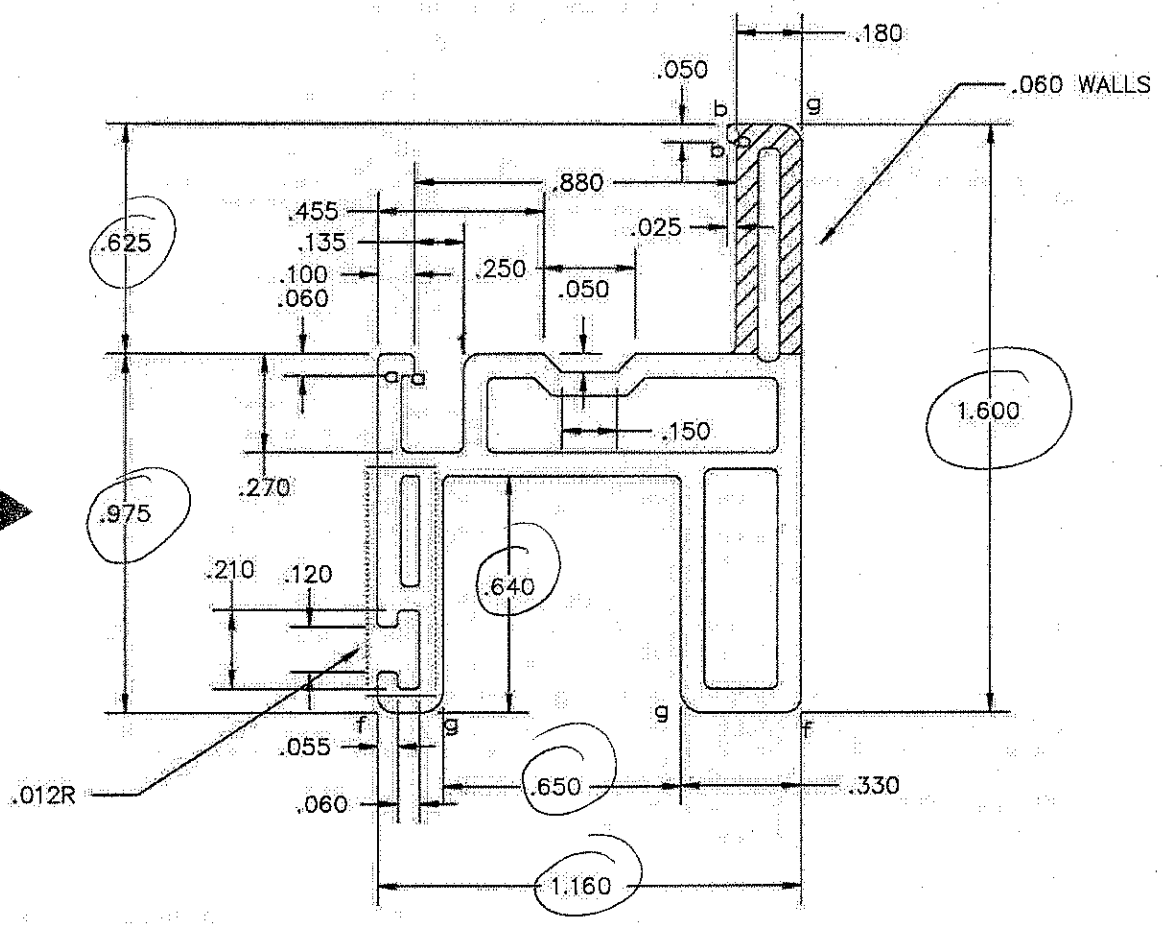
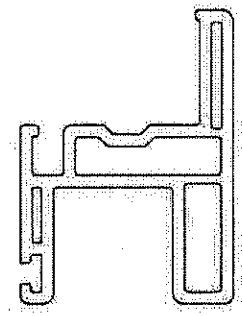
g=0. 060R

APPROVED

23-DEC-97

CYCLOI D DESI GNS





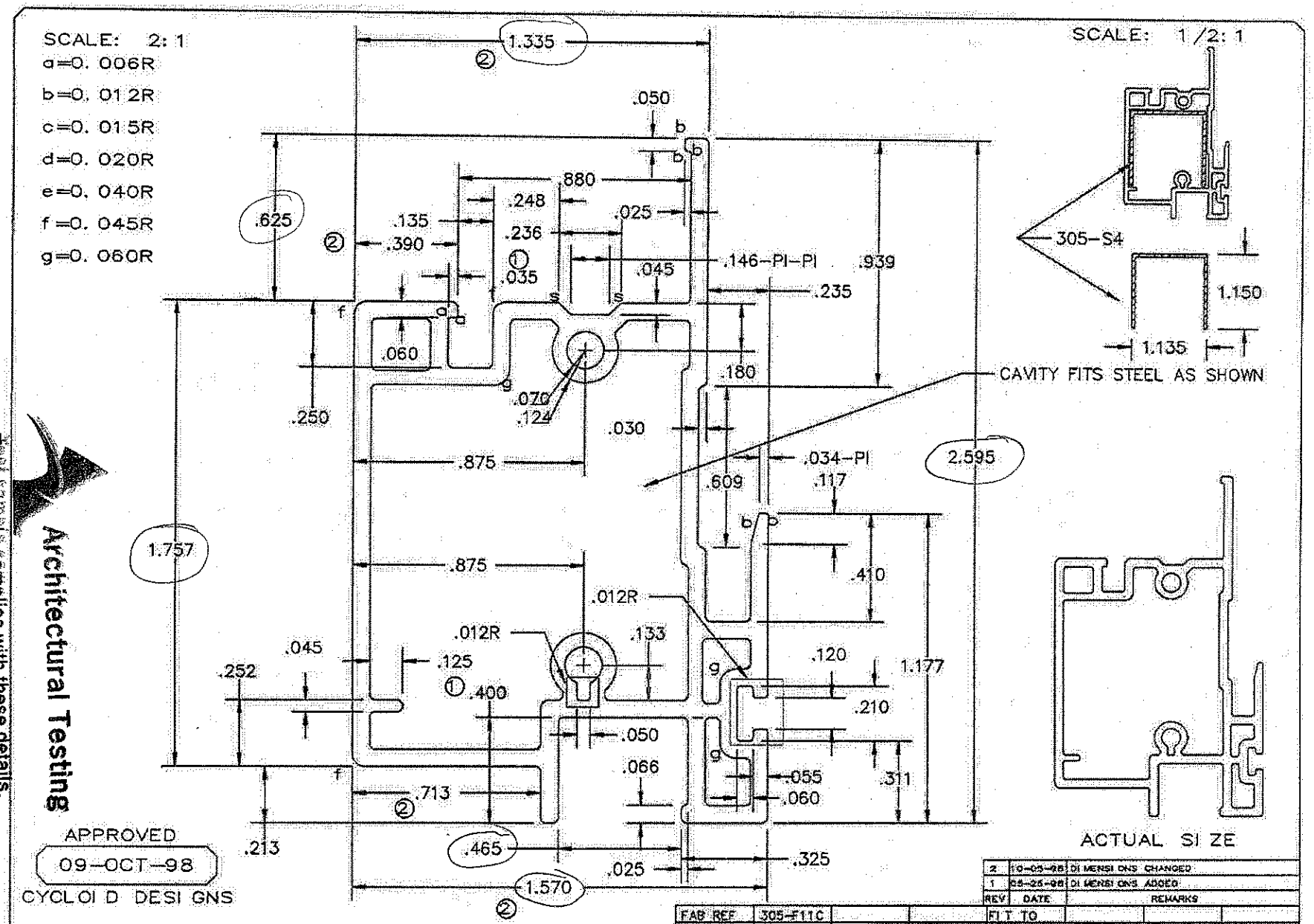
ACTUAL SI ZE

Architectural Testing

Test sample complies with these details.
Deviations are noted.
Report# E2306
Date 1/28/15 Tech GS

FAB REF 305-F7				FI T TO 305-D35	291-D7			

CYCLOI D DESI GNS	DWG: 305-D13	DATE: 17-DEC-97	
TI TLE: SI NGLE HUNG SASH RAI L		RS1 276	EXTERNAL WALL: 0. 065 I NTERNAL WALL: 0. 054 CORNER TYP: 0. 020R WEI GHT: 0. 271 LB/FT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.390
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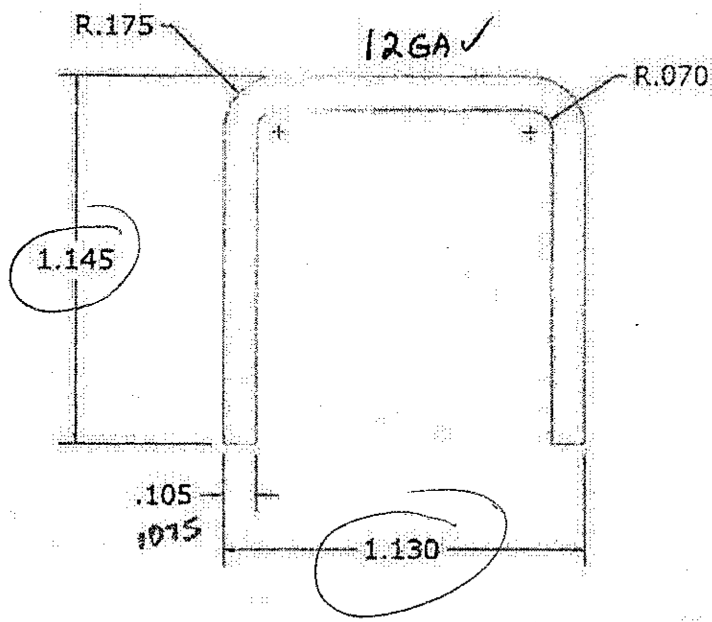
.035
.045
.146-PI-PI
.939
.235
.060
.180
.070
.124
.030
.250
.875
.034-PI
2.595
.609
.117
1.757
.875
.410
.012R
.012R
.133
.045
.125
.400
.252
.120
1.177
.210
.050
.066
.055
.060
.311
.713
.213
.465
.025
.325
1.570
SCALE: 1/2:1
305-S4
1.150
1.135
CAVITY FITS STEEL AS SHOWN
ACTUAL SIZE
Architectural Testing
Test sample complies with these details.
Deviations are noted.
Report# F2306
Date 1/28/15 Tech GS
APPROVED
09-OCT-98
CYCLOID DESIGNS
FAB REF 305-F11C
305-F1A 305-F8A
FIT TO
XXX-XXX
2 10-05-98 DIMENSIONS CHANGED
1 05-25-98 DIMENSIONS ADDED
REV DATE REMARKS
CYCLOID DESIGNS
DWG: 305-D17R
DATE: 21-MAY-98
TITLE: FIXED MEETING RAIL
RS1279
© 1998 COPYRIGHT
ROYAL SIERRA EXTRUSIONS INC.
RENO, NEVADA
ALL RIGHTS RESERVED
EXTERNAL WALL: 0.065
INTERNAL WALL: 0.054
CORNER TYP: 0.020R
WEIGHT: 0.439 LB/FT

Customer Approval

By: ____________

Date: ____________

(2)



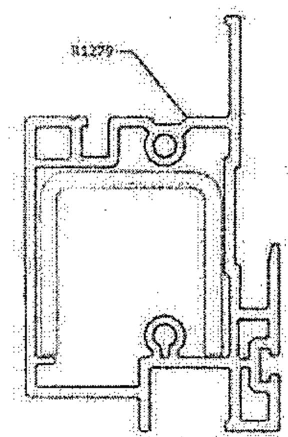
Iyy = .067 In^4

Cx = .565

HELTON U-3650

12GA x 1.145" x 1.12" x 1.145"

OK ✓



Actual Size

50,000 PSI

ROYAL Building Products	Material: Steel => 35,000 psi Yield	Copyright © 2014 Royal Group, Inc. All Rights Reserved	Layout Name: 305-S1279	ACAD#: 305-CdA-Steel Master
	Sys No. 305-S1279		Drawn by: gmc / SCALE 2:1	
	CUSTOMER: CdA Windows	PROJECT: 305	AREA .326	
TITLE: Fixed Interlock Stiffener For R1279		DATE: March 19, 2014	WT/FT 1.090	

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2306

Date 1/28/15 Tech GS

SCALE: 2: 1

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b=0. 012R
c=0. 015R
d=0. 020R
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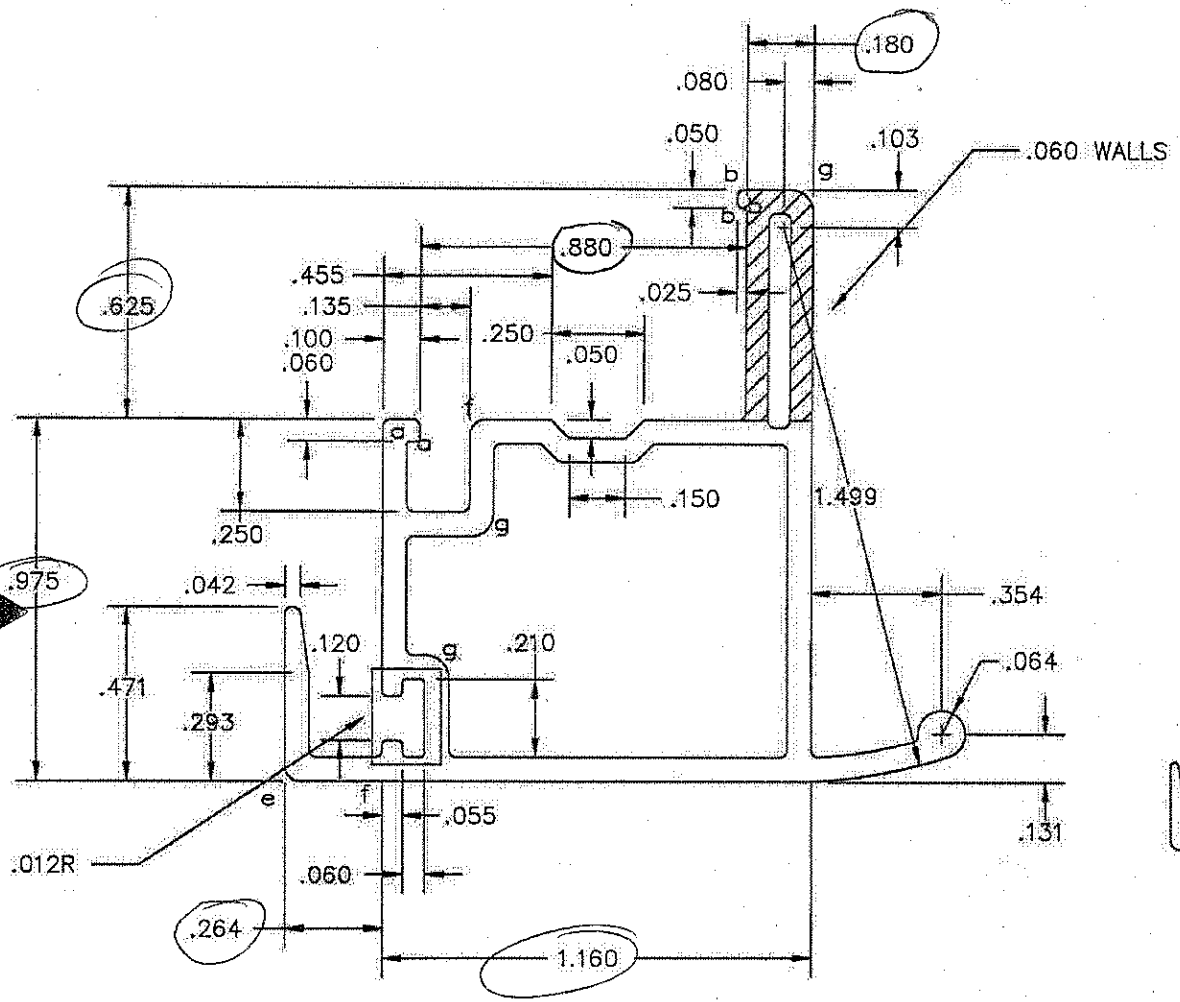
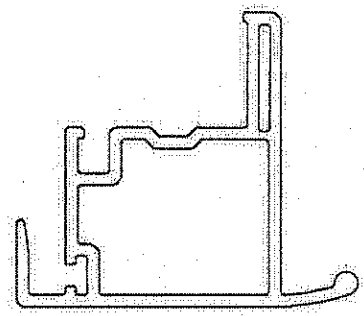
f=0. 045R
g=0. 060R

APPROVED
23-DEC-97
CYCLOI D DESI GNS





ACTUAL SI ZE

Architectural Testing
Test sample complies with these details.
Deviations are noted.
Report# E2306
Date 4/28/15 Tech GS

FAB REF 305-F8				FI T TO 305-D35	291-D7		

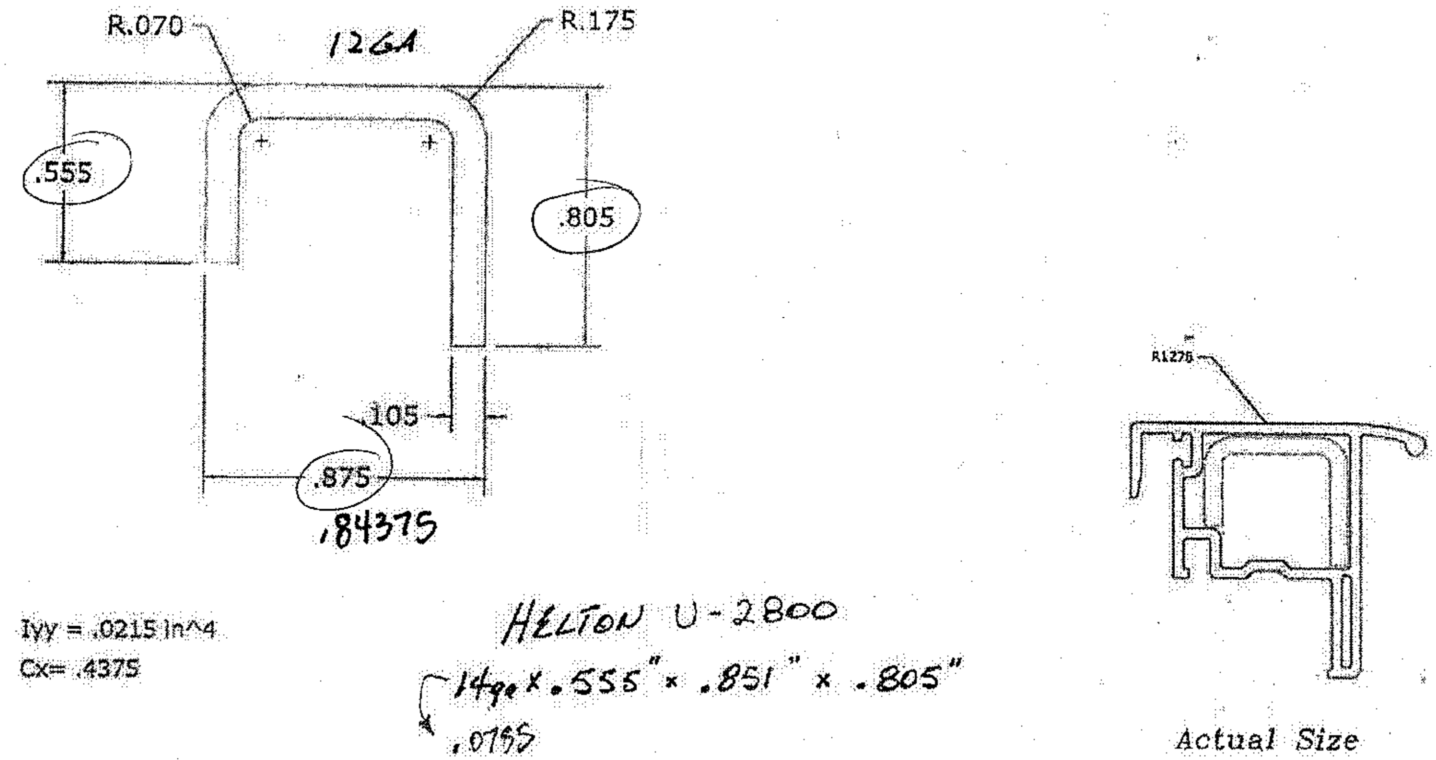
CYCLOI D DESI GNS	DWG: 305-D15	DATE: 17-DEC-97	© 1997 COPYRI GHT ROYAL SI ERRA I NC SPARKS, NEVADA ALL RI GHTS RESERVED
TI TLE: MEETI NG RAI L	RS1 278		EXTERNAL WALL: 0. 065 I NTERNAL WALL: 0. 054 CORNER TYP: 0. 020R WEI GHT: 0. 279 LB/FT

Customer Approval

By: ____________

Date: ____________

(1)



ROYAL Building Products	Material: Steel => 35,000 psi Yield		Copyright © 2014 Royal Group, Inc. All Rights Reserved	Layout Name: 305-S1278	ACAD #: 305-CdA-Steel Master
	Sys No. 305-S1278			Drawn by: gmc / SCALE 2:1	
	CUSTOMER: CdA Windows		PROJECT: 305	AREA .202	
TITLE	Sash Interlock Stiffener For R1278		DATE: March 19, 2014	WT/FT .674	

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2306

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