

RAM INDUSTRIES TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON SERIES S990 AWNING WINDOW

REPORT NUMBER

J4518.01-801-44-R0

TEST DATE(S)

05/23/19

ISSUE DATE

06/03/20

RECORD RETENTION END DATE

05/23/23

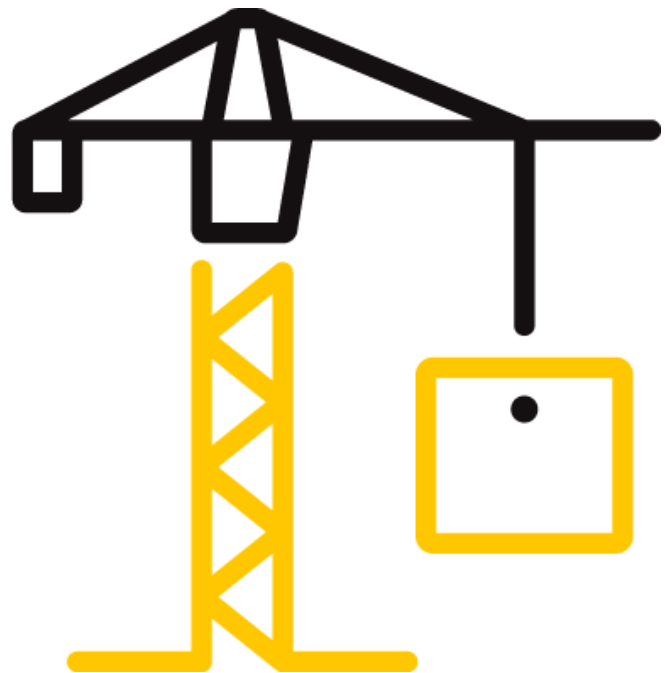
PAGES

18

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2804 (04/17/18)

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TEST REPORT FOR RAM INDUSTRIES

Report No.: J4518.01-801-44-r0

Date: 06/03/20

REPORT ISSUED TO

RAM INDUSTRIES

8600 Commerce Park Dr.
Houston, TX 77036

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Ram Industries to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 on their Series S990 Awning Window. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek test facility in Plano, TX. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
AAMA/WDMA/CSA 101/I.S.2/A440-17	CW-PG50-AP
Design Pressure	±2400 Pa (±50.13 psf)

Reference must be made to Intertek B&C Report No. J4518.01-801-44, dated 03/30/20 for complete test specimen description and detailed test results.

For INTERTEK B&C:

COMPLETED BY:	Jeffrey Crump
TITLE:	Sr. Project Manager – AWS
SIGNATURE:	
DATE:	06/03/20

REVIEWED BY:	Andy Cost
TITLE:	Laboratory Manager
SIGNATURE:	
DATE:	06/03/20

JC:cm

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SECTION 3

TEST SPECIFICATION(S)/METHODS

The specimens were evaluated in accordance with the following:

AAMA/WDMA/CSA 101/I.S.2/A440-17- North American Fenestration Standard/Specification for Windows, Doors, and Skylights

The following test methods were used during testing:

AAMA 205-15, In-Plant Testing Guidelines for Manufacturers and Independent Laboratories

ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a SPF wood buck. The rough opening allowed for a 1/8" shim space and the exterior perimeter of the specimen was sealed to the test buck. Installation of the tested product was performed by the client.

LOCATION	ANCHOR DESCRIPTION	ANCHOR SPACING
Interior perimeter of frame nail fin	Nail fin frame is installed in a (2" x 6") test buck with #6 x 1-5/8" screws which is attached to outer (2" x 10") SPF wood wrap.	Screws attached 2" from each frame end and 12" on center at frame head, sill and jambs.

SECTION 5

EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with AAMA 205-15.

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jeff Ashcraft	Ram Industries
Jeffrey Crump	Intertek B&C
Jason Gossage	Intertek B&C

SECTION 7

GATEWAY

*Reference Intertek B&C Report No. J4518.01-801-44, dated 4/28/20 for complete *Gateway* test specimen description and test results.

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SECTION 8

TEST SPECIMEN DESCRIPTION

Product Type: utswing Casement Window

Series/Model: S990

Product Size(s):

OVERALL AREA: 1.7 m ² (18 ft ²)	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
Overall size	1829	72	914	36
Vent Size	1802	70-15/16	886	34-7/8
Daylight Opening	1664	65-1/2	756	29-3/4

Frame Construction:

MEMBER	MATERIAL	DESCRIPTION
Head, sill and jambs	Aluminum	Extruded aluminum thermally broken with polyurethane.

	JOINERY TYPE	DETAIL
All corners	Mechanical	Frame corners are attached with two (2) #8 x 1" HX WSHR Type A SMA, each. Aluminum frame corner bracket (2" x .062" thick) located at frame interior pocket. All corners sealed with silicone.

Vent Construction:

MEMBER	MATERIAL	DESCRIPTION
Rails and stiles	Aluminum	Extruded aluminum thermally broken with polyurethane.

	JOINERY TYPE	DETAIL
All corners	Mechanical	Vent corners are attached with two (2) #8 x 1" HX WSHR Type A SMA, each. Aluminum vent corner bracket (2" x .062" thick) located at frame interior pocket. All corners sash foam corner gasket.

Reinforcement: *No reinforcement was utilized.*

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Weatherstripping:

DESCRIPTION	QUANTITY	LOCATION
Ultrafab Vinyl bulb weather-strip	4	Exterior perimeter face of frame interior leg.
HPW Rubber Stop	4	Interior face of exterior leg of vent top rail, bottom rail and stiles.
Truth Gasket	1	At roto-operator to frame connection.

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	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
7/8" IG	Aluminum	1/8" annealed	1/8" annealed	Exterior glazed with 1/16" x 3/8" glazing tape at the interior face of glass and aluminum glazing bead with rubber stop at the exterior face of glass.

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Rails and stiles	2	1664 x 756	65-1/2 x 29-3/4	9/16

Drainage:

METHOD	SIZE	QUANTITY	LOCATION
Weep slot	3/8" x 1/8"	2	Each end of vent glazing bead.

Hardware:

DESCRIPTION	QUANTITY	LOCATION
Roto-operator	1	Located at frame sill, attached with six (6), #8 x 3/4" phil flat type A SMS.
Lever Lock with support plate with guide bar and tie bar and lock buttons	2	Lever lock attached to frame jamb with #10-24 x 5/8" phil pan type F.
Truth keepers	2	Located appx. 4" from each end and 26" from top, attached with #8 x 3/8" Phil Pan SMS.
Three bar friction hinge	2	Hinge attached to frame and vent with #10 x 1/2" Phil Pan Type A SMS 410SS.

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SECTION 9

TEST RESULTS

The temperature during testing was 23°C (73°F). The results are tabulated as follows:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Operating Force, per ASTM E 2068	Initiate motion: 53 N (12 lbf) Maintain motion: 45 N (9 lbf)	Report Only	
Air Leakage, Infiltration per ASTM E283 at 300 Pa (6.24 psf)	0.20 L/s/m ² (0.07 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Exfiltration per ASTM E283 at 300 Pa (6.24 psf)	0.50 L/s/m ² (0.10 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Water Penetration, per ASTM E547 at 220 Pa (4.59 psf)	Pass	No leakage	
Uniform Load Structural, per ASTM E330 Deflections taken at top rail +1440 Pa (+30.08 psf) -14400 Pa (-30.08 psf)	6.1 mm (0.24") 7.6 mm (0.02")	10 mm (0.41") max. 10 mm (0.41") max.	
Forced Entry Resistance, per ASTM F588, Type: B - Grade: 10	Pass	No entry	
Awning Hardware Load Test 140 N (31.47 lbf)	1.52 mm (0.06")	38.3 mm (0.14") max.	

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TITLE OF TEST	RESULTS	ALLOWED	NOTE
OPTIONAL PERFORMANCE			
Water Penetration, per ASTM E547 at 580 Pa (12.11 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E330 Deflections taken at top rail +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	10 mm (0.40") .51 mm (0.02")	10.4 mm (0.41") max. 10.4 mm (0.41") max.	3
Uniform Load Structural, per ASTM E330 Permanent Set taken at top rail +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	<0.10 mm (<0.01") .51 mm (0.02")	5.3 mm (0.21") max. 5.3 mm (0.21") max.	3

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: Test Date 05/23/19 / Time: 10:00 AM(Air Note Only)

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

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. In our opinion, the tape and film did not influence the results of the test.

TEST REPORT FOR RAM INDUSTRIES

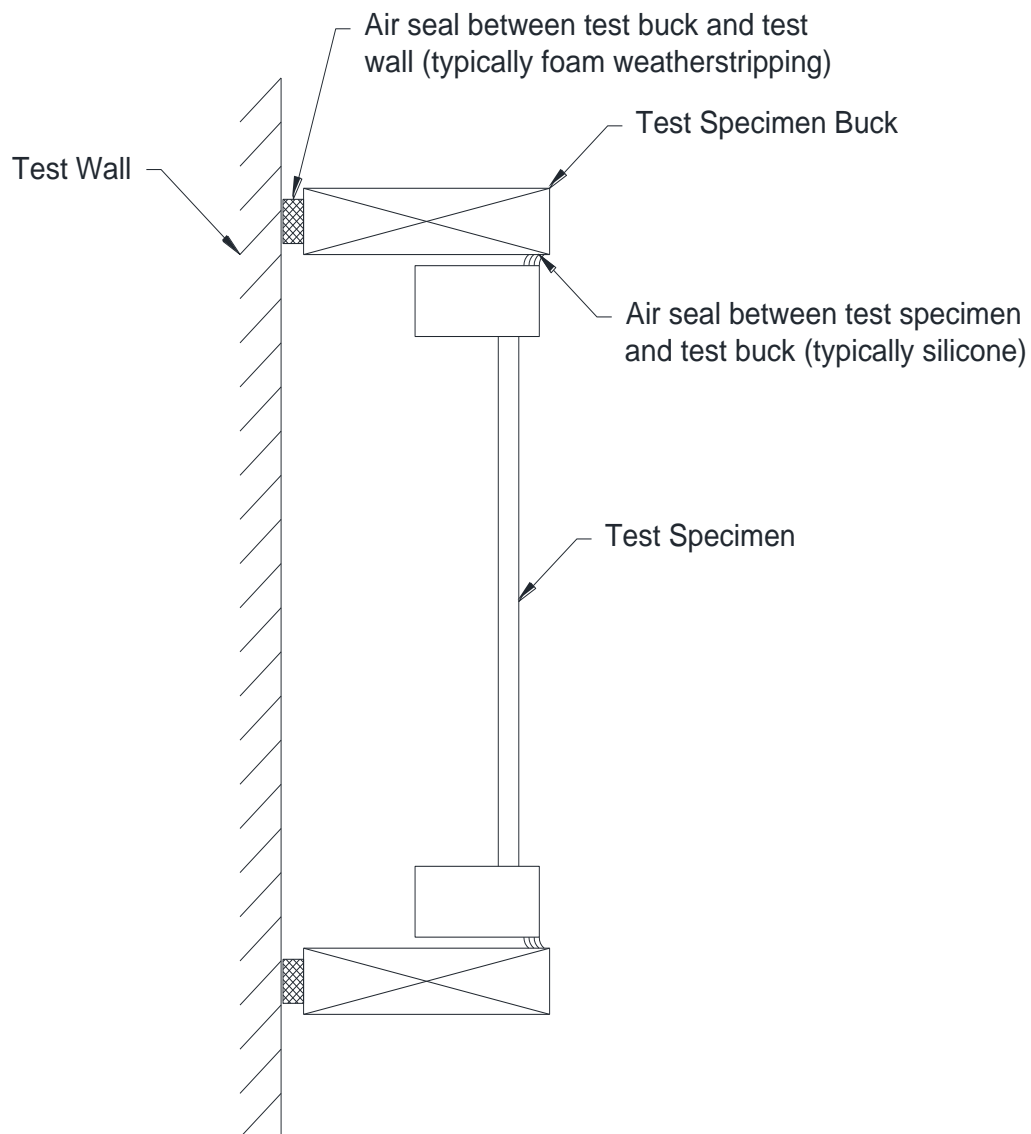
Report No.: J4518.01-801-44-r0

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SECTION 10

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.



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SECTION 11

CONCLUSION

The specimen tested successfully met the performance requirements for a **CW-PG50-AP** rating.

Reference Intertek B&C Report No. J4518.01-801-44, dated 04/28/20 for complete *Gateway* test specimen description and test results.

SECTION 12

DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

DRAWING APPROVAL

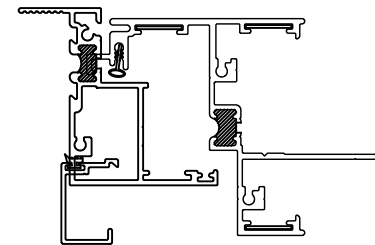
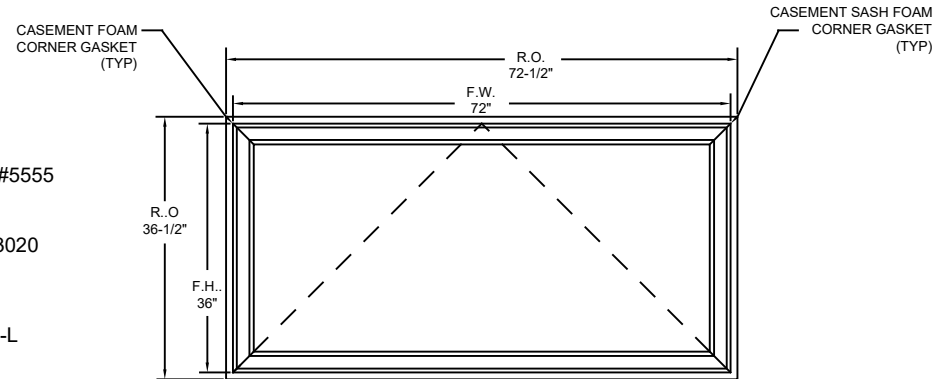
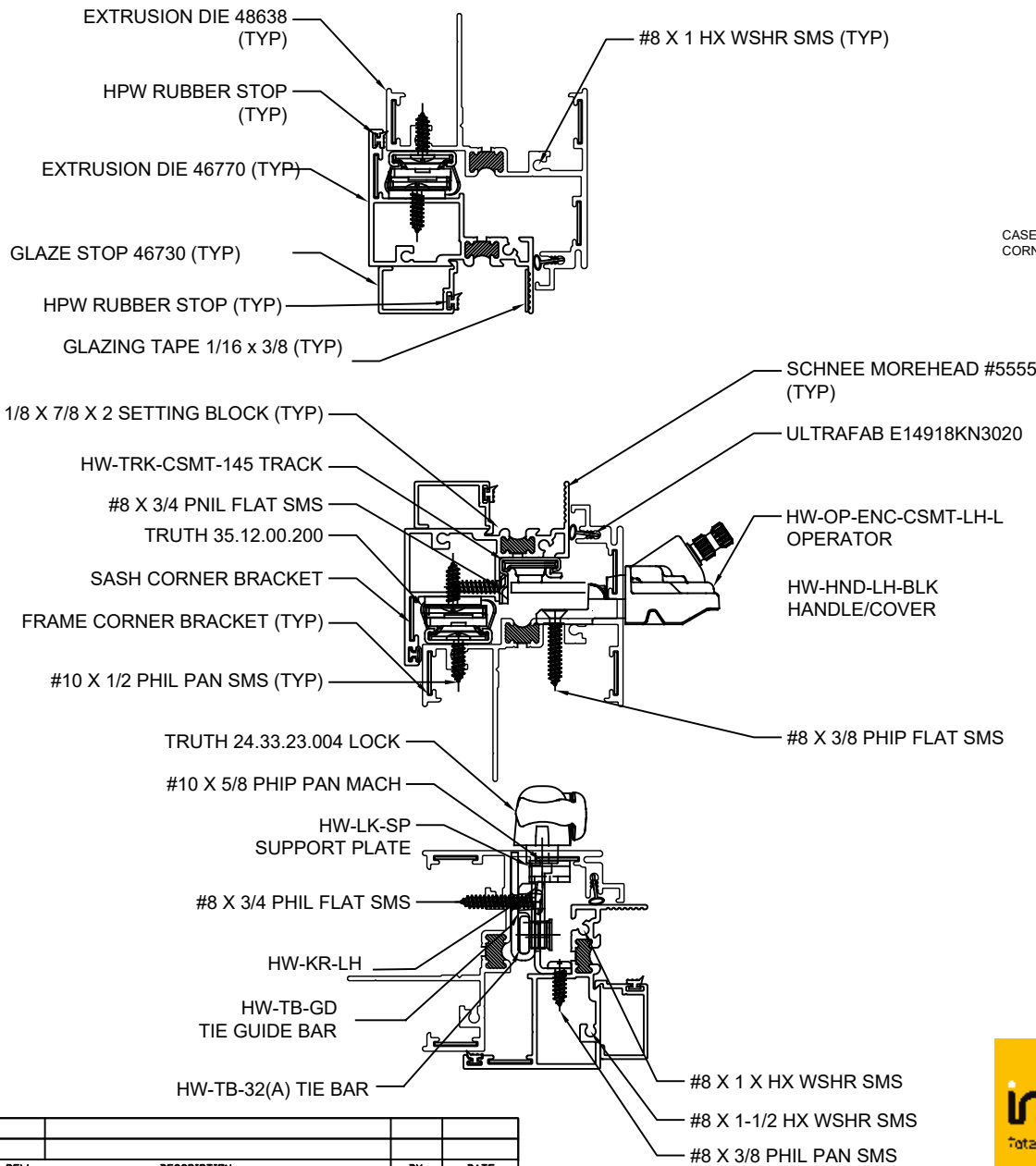
APPROVED

APPROVED AS NOTED

REVISE AND RESUBMIT

SIGN _____ DATE _____

Please return one print set marked with your signature, any comments, and notation of approval for fabrication.



intertek
Total Quality Assured.

Report #: J4518.01-801-44

Date: 05/22/20

Verified by: J. Crump

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RAM INDUSTRIES. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RAM INDUSTRIES IS PROHIBITED.

REV	DESCRIPTION	BY	DATE

LEAD TIME	WEEKS	CUSTOMER
---	---	---
GLASS WARRANTY	---	PROJECT
FRAME WARRANTY	---	CITY
FINISH WARRANTY	---	STATE
U-FACTOR		OUTER GLASS
SHGC		AIR SPACE
QA GLASS THICKNESS		INNER GLASS

DESCRIPTION	NAME	DATE
DRAWN	JSA	11/26/2018
MARK	A	
QTY.	2	
FINISH	---	
DP		
COMMENTS:		

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL ± 1/16

ANGULAR: MACH/BEND ± .5

TWO PLACE DECIMAL ± .01

THREE PLACE DECIMAL ± .004

MATERIAL

6063-T5 ALUMINUM


DO NOT SCALE DRAWING

RAM INDUSTRIES	
TITLE:	
26309 AAMA TESTING	
SIZE DWG. NO.	REV
A S990 TESTING	
SCALE:	SHEET 1 OF 1

RAM INDUSTRIES

SERIES 990 AWNING (1-LITE)

EXTRUSION		
CASEMENT FRAME	INTERNATIONAL EXT.	DIE 48638
CASEMENT METAL STOP	INTERNATIONAL EXT.	DIE 46730
CASEMENT SASH	INTERNATIONAL EXT.	DIE 46670
COMPONENTS		
METAL STOP VINYL WTHST	ORZEN EXTRUDED POLYMERS	1109-02-00
SETTING BLOCK	FRANK LOWE RUBBER	1/8 X 1 X 2
FOAM CORNER GASKET	FRANK LOWE	HPW CORNER GSKT
GLAZING TAPE	TBP CONVERTING	1/8" X 3/8"
FRAME CORNER BRACKET	KELCO TOOL & DESIGN	ALUM .062 X 2"
CORNER SEALANT	TBP CONVERTING	DOW 1199
FRAME FASTENER	ALLOY FASTNER	#8 X 1 HX WSHR SMS TYPE A
GLASS	CARDINAL IG	7/8" OA ANNEALED

 <small>Total Quality Assured.</small>	Report #:	J4518.01-801-44
	Date:	05/22/20
	Verified by:	J. Crump

NOTE:

1. 6063-T5 ALLOY AND TEMPER
2. POUR AND DEBRIDGE AREA = .115
3. → STRUCTURAL STREAKS EXPECTED
4. MIN. .210 DEBRIDGE
5. OUTSIDE PERIMETER 12.988

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Verified by:	J. Crump

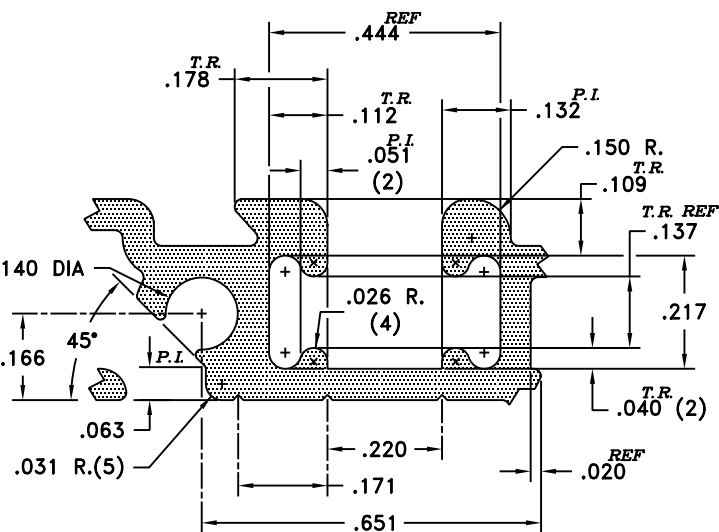


SYM	REVISION	BY	DATE	CUSTOMER	DIE NO.
				RAM INDUSTRIES, INC.	46770
				PART NAME: NEW CASEMENT SASH	DATE: 11-25-11
				PART NO. -----	CHKD. APPR.
				DRAWN: LRL	
				SCALE: 2:1	

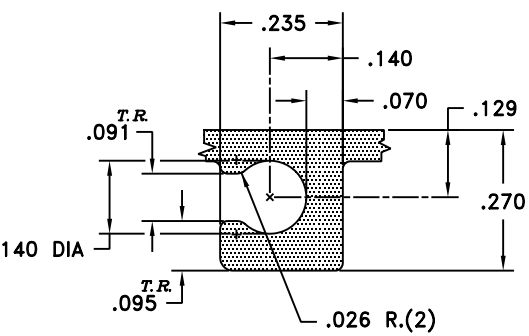
ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

ALL SURFACES EXPOSED

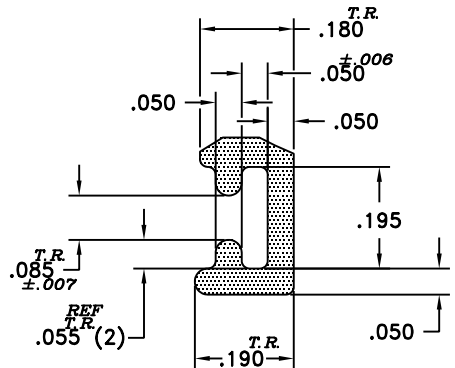
ACTUAL SIZE



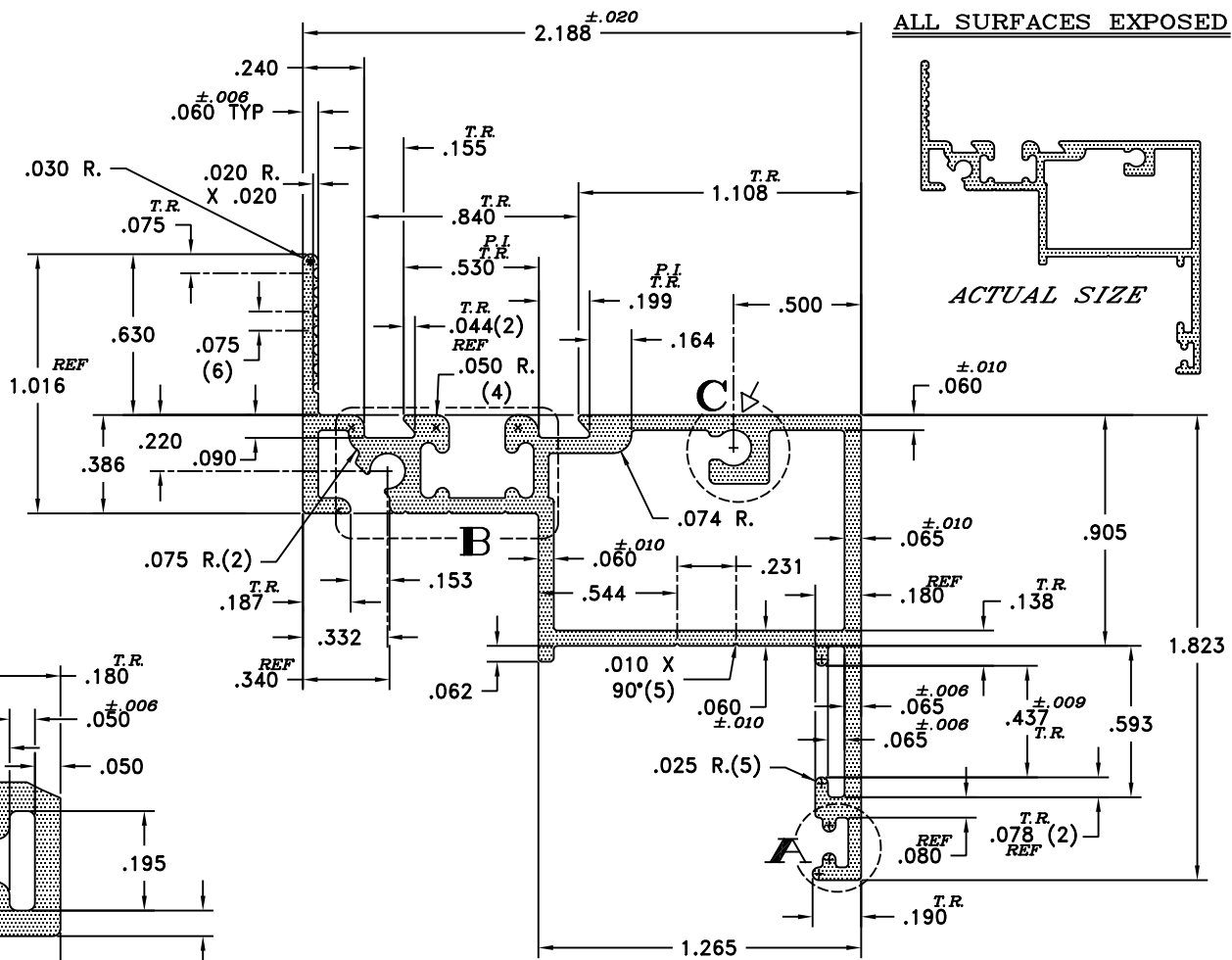
DETAIL B
4:1



DETAIL C
4:1



DETAIL A
4:1



UNLESS OTHERWISE NOTED.
ALL CORNERS ARE .015 R. AND TYPICAL WALL THICKNESS IS .060 ±.006

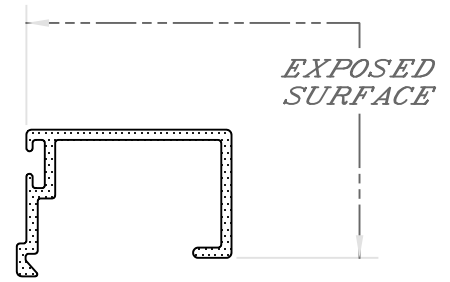
<p>International Extrusion Corporation 202 SINGLETON DRIVE WAXAHACHIE, TX 75165 TEL: 972-937-7032, FAX: 972-938-3271</p>	EST AREA:	.562	UT-NO.	1026A	PORTS	1	WP	----
	EST WT/FT:	.674	CIRCLE SIZE:	3.3	BACKER	----		
	EST PERI:	17.517	CLASS	HOLLOW	BOLSTER	18186		
	FACTOR:	26	ER	7" = 73	DIE NO.	46770		

SYM	REVISION	BY	DATE	CUSTOMER	DIE NO.
				RAM INDUSTRIES	46730
				PART NAME: GLAZING STOP	DRAWN: LRL
				PART NO. 44195	SCALE: 4 X SIZE
					DATE: 8-22-11
					CHKD. APPR.

ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

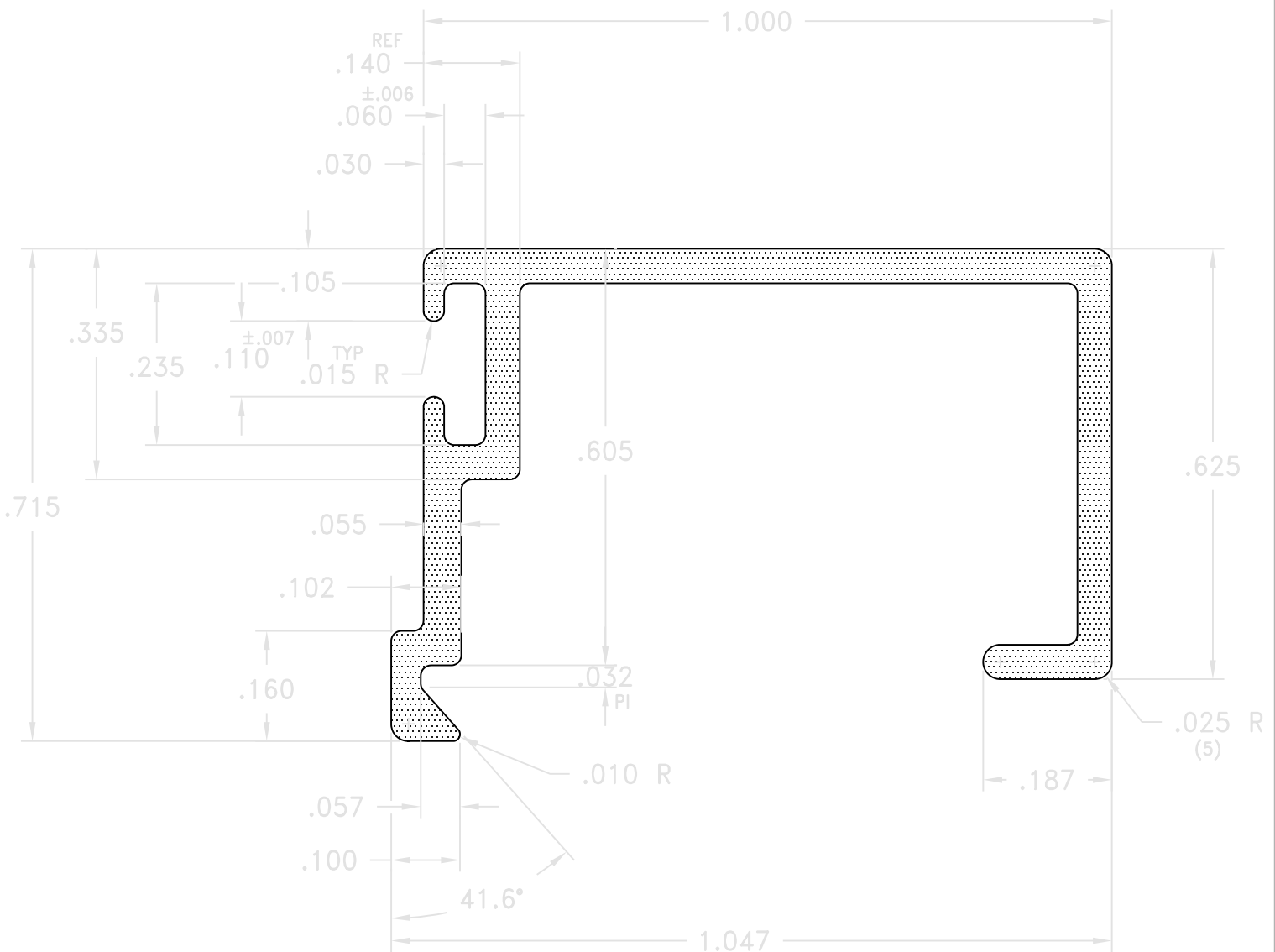
NOTE:

1. 6063-T5 ALLOY & TEMPER
2. MATES WITH PART NO. 44192, 44193, 44194, Q-18694-3 AND Q-18694-8



ACTUAL SIZE

	Report #:	J4518.01-801-44
	Date:	05/22/20
	Verified by:	J. Crump



UNLESS OTHERWISE NOTED, ALL CORNERS ARE .015 R. AND TYPICAL WALL THICKNESS IS $\pm .006$.050

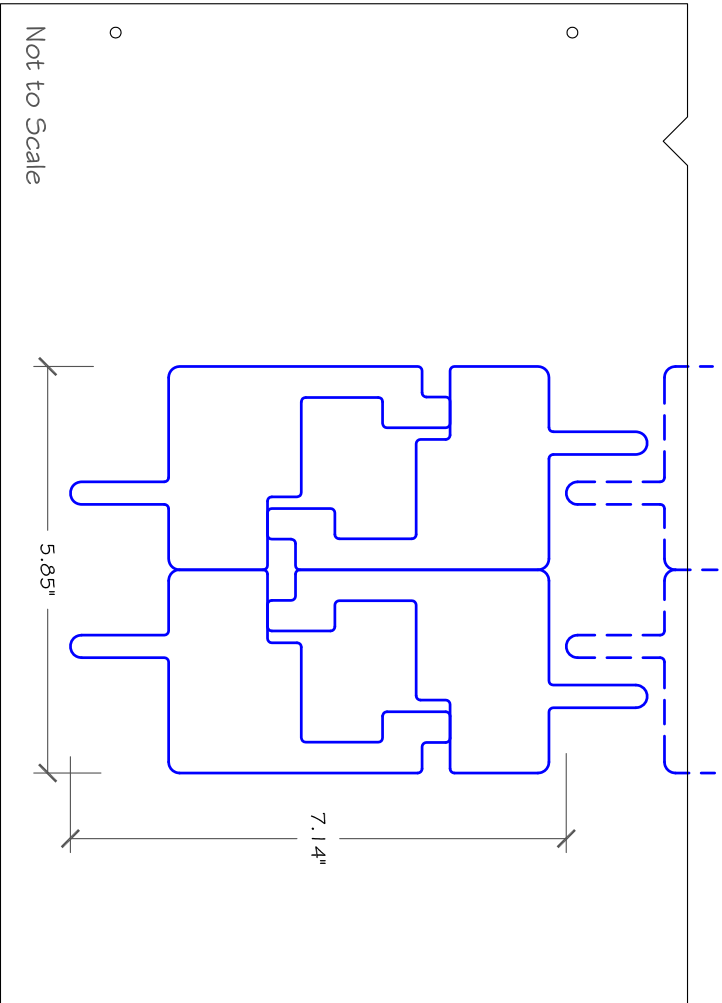


International Extrusion Corporation

202 SINGLETON DRIVE
WAXAHACHIE, TX 75165

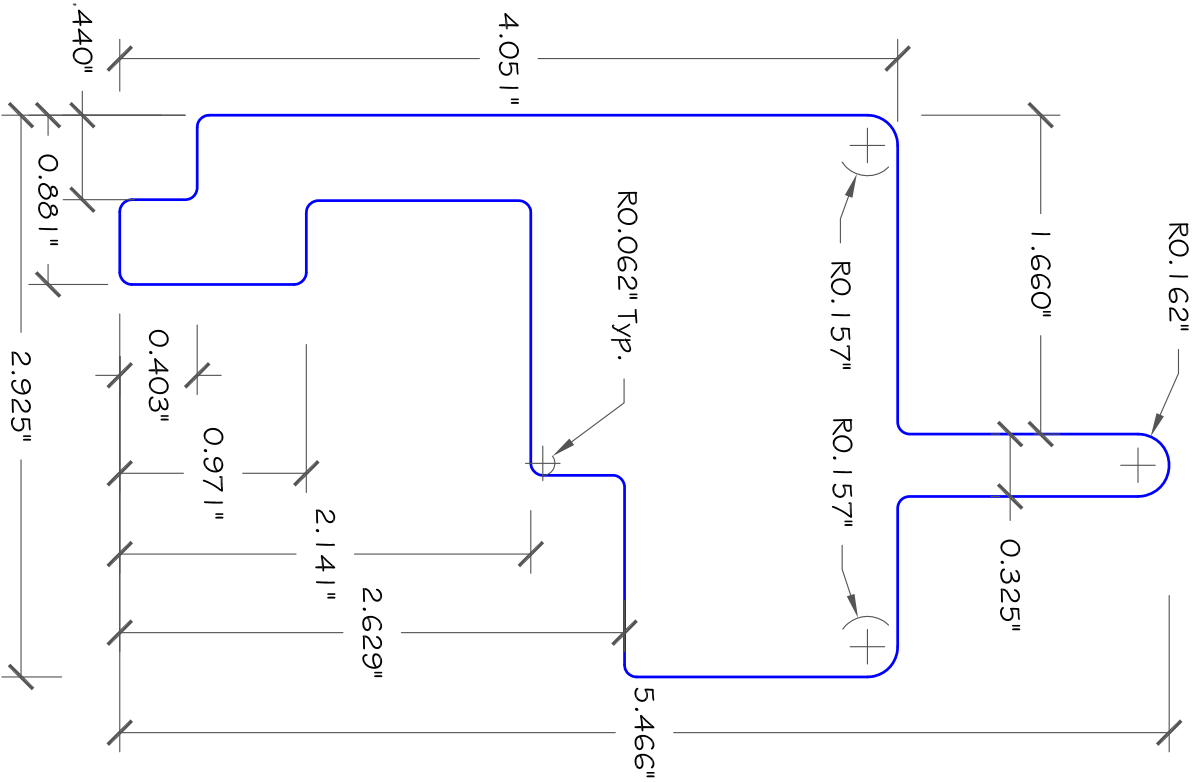
TEL: 972-937-7032, FAX: 972-938-3271

EST AREA:	.132	UT-NO.	1019	PORTS	5	WP	----
EST WT/FT:	.158	CIRCLE SIZE:	1.2	BACKER	9 x 30897		
EST PERI:	5.277	CLASS	SOLID	BOLSTER	5-7		
FACTOR:	33	ER	7" = 62	DIE NO.	46730		



Not to Scale

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Verified by:	J. Crump

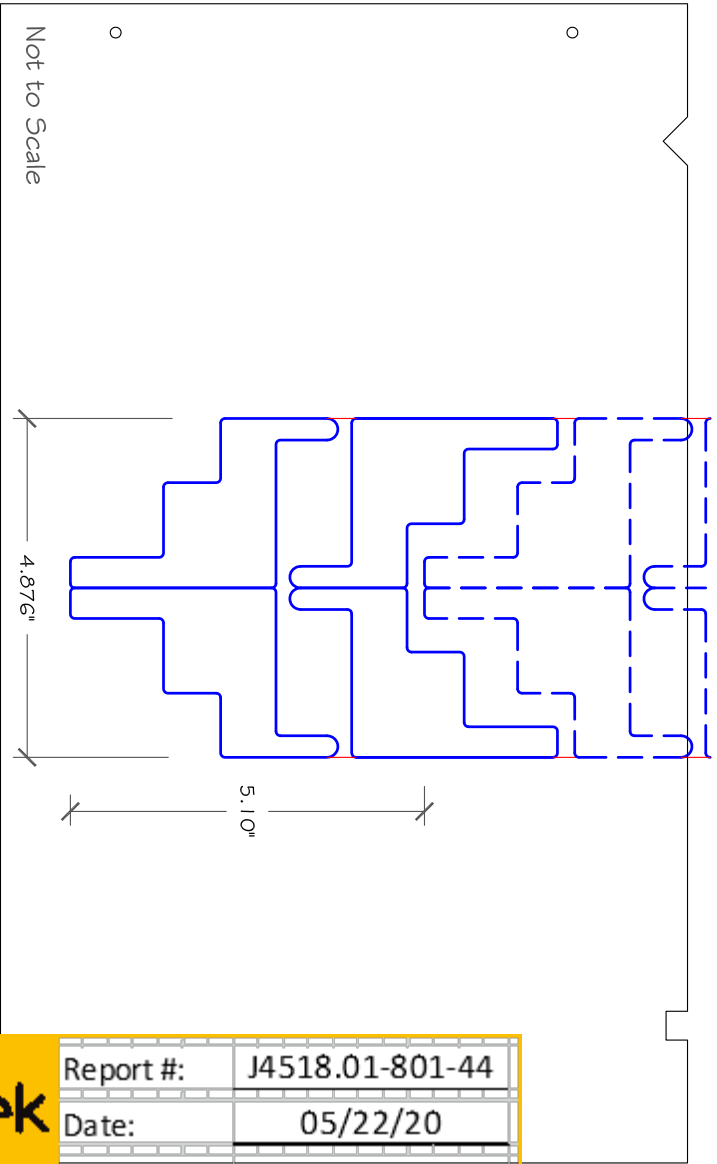


Micrometer:		PRECO DIE #
Progression:	Board:	5/8" thick wood
Batch / Amount:	Type/Size:	12" x 20" Preco
Rate / Acceleration:	Rule:	2 pt 0.937" high long dbl ctr bevel
Tons:	Punches:	Feed-through
Upstroke:	/Roll:	
RF2/3 / RF3:	/Box:	
Feed: Before/After:	Box type:	

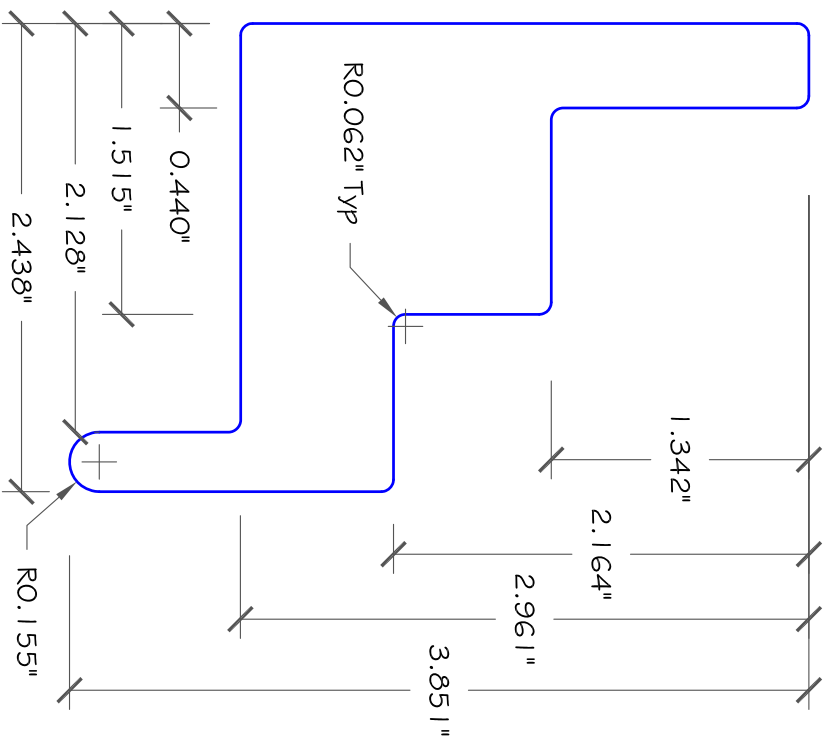
NOTES
 4 cavity (2 set) Preco die,
 Wood: 5/8" thick, 12" x 20"
 Preco wood with cutouts,
 Rule: 0.937" high,
 2pt. long double center bevel.
MATERIAL
 1/8" thick 2# XLP w/PSA

TOLERANCES UNLESS OTHERWISE SPECIFIED		
APPROVALS	DATE	SCALE
DRAWN BY: A.V.	9-28-2018	1:1
CHECKED BY:		5900-CSMT Frame
FEED LENGTH / SPF / PPF:		Gasket Rev. B
3.36 SPF		1 of 1





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	Date:	05/22/20
	Verified by:	J. Crump



Micrometer:		PRECO DIE #
Progression:	Board:	5/8" thick wood
Batch / Amount:	Type/Size:	12" x 20" Preco
Rate / Acceleration:	Rule:	2 pt 0.937" high long dbl ctr bevel
Tons:	Punches:	Feed-through
Upstroke:	/Roll:	
RF2/3 / RF3:	/Box:	
Feed: Before/After:	Box type:	

NOTES

4 cavity (2 set) Preco die,
Wood: 5/8" thick, 12" x 20"
Preco wood with cutouts,
Rule: 0.937" high,
2pt. long double center bevel.

MATERIAL

1/8" thick 2# XLP w/PSA

TOLERANCES UNLESS OTHERWISE SPECIFIED		
APPROVALS	DATE	SCALE
DRAWN BY: A.V.	9-28-2018	1:1
CHECKED BY:		
FEED LENGTH / SPF / PPF: 4.70 SPF	SPLIT WIDTH: 5.5	
 FRANK LOWE RUBBER & GASKET CO., INC. <small>44 Hanning Road • Spring, New York 11984-0104 837-777-2797 • 800-377-0202 • fax 837-774380</small>		S900-CSMT Sash Gasket Rev. A 1 of 1



Total Quality. Assured.

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Date: 06/03/20

1909 10th Street, Suite 100
Plano, Texas 75074

Telephone: 469-814-0687
www.intertek.com/building

SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	06/03/20	N/A	Original Report Issue