

RAM INDUSTRIES TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON SERIES S900 OUTSWING CASEMENT WINDOW

REPORT NUMBER

J8689.01-801-44-R0

TEST DATE(S)

03/18/19

ISSUE DATE

05/12/20

RECORD RETENTION END DATE

03/18/23

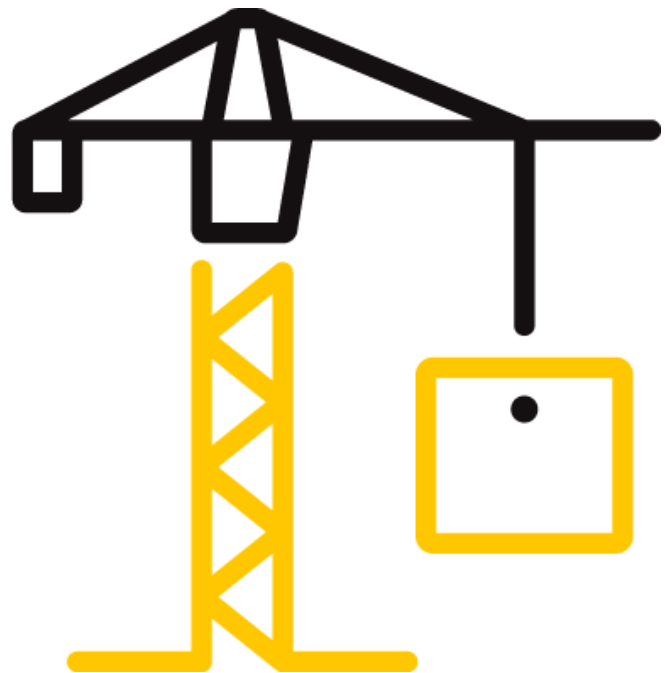
PAGES

17

DOCUMENT CONTROL NUMBER

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

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TEST REPORT FOR RAM INDUSTRIES

Report No.: J8689.01-801-44-r0

Date: 05/12/20

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 S900 Outswing Casement 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-PG80-C*
Design Pressure	±3840 Pa (±80.20 psf)

Reference must be made to Intertek B&C Report No. J4517.01-801-44, dated 09/24/19 for complete test specimen description and detailed test results.

For INTERTEK B&C:

COMPLETED BY:	Jeffrey Crump	REVIEWED BY:	Andy Cost
TITLE:	Sr. Project Manager – AWS	TITLE:	Laboratory Manager
SIGNATURE:		SIGNATURE:	
DATE:	05/12/20	DATE:	05/12/20

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. J4517.01-801-44, dated 10/22/19 for complete *Gateway* test specimen description and test results.

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SECTION 8

TEST SPECIMEN DESCRIPTION

Product Type: Outswing Casement Window

Series/Model: S900

Product Size(s):

OVERALL AREA: 1.7 m ² (18 ft ²)	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
Overall size	914	36	1829	72
Vent Size	886	34-7/8	1802	70-7/8
Daylight Opening	756	29-5/8	1664	65-3/4

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	752 x 1670	29-5/8 x 65-3/4	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	1	Lever lock attached to frame jamb with #10-24 x 5/8" phil pan type F.
Truth keepers	3	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.
Snubbers	3 pairs	One at center and 20" off center of vent rail and frame jamb

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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: 58 N (13 lbf) Maintain motion: 45 N (10 lbf) Pass	Report Only No leakage	
Uniform Load Structural, per ASTM E330 Deflections taken at lock rail +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	1.02 mm (0.04") 1.02 mm (0.04")	3.3 mm (0.13") max. 3.3 mm (0.13") max.	
TITLE OF TEST	RESULTS	ALLOWED	NOTE
OPTIONAL PERFORMANCE			
Uniform Load Deflection, per ASTM E330 Deflections taken at lock rail +3840 Pa (+80.2 psf) -3840 Pa (-80.2 psf)	1.52 mm (0.06") 2 mm (0.08")	3.3 mm (0.13") max. 3.3 mm (0.13") max.	1,2
Uniform Load Structural, per ASTM E330 Permanent Set taken at lock rail +5760 Pa (+120.3 psf) -5760 Pa (-120.3 psf)	1.3 mm (0.05") .51 mm (0.02")	1.8 mm (0.07") max. 1.8 mm (0.07") max.	1,2

Note 1: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 2: Loads were held for 10 seconds.

Note 3: 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

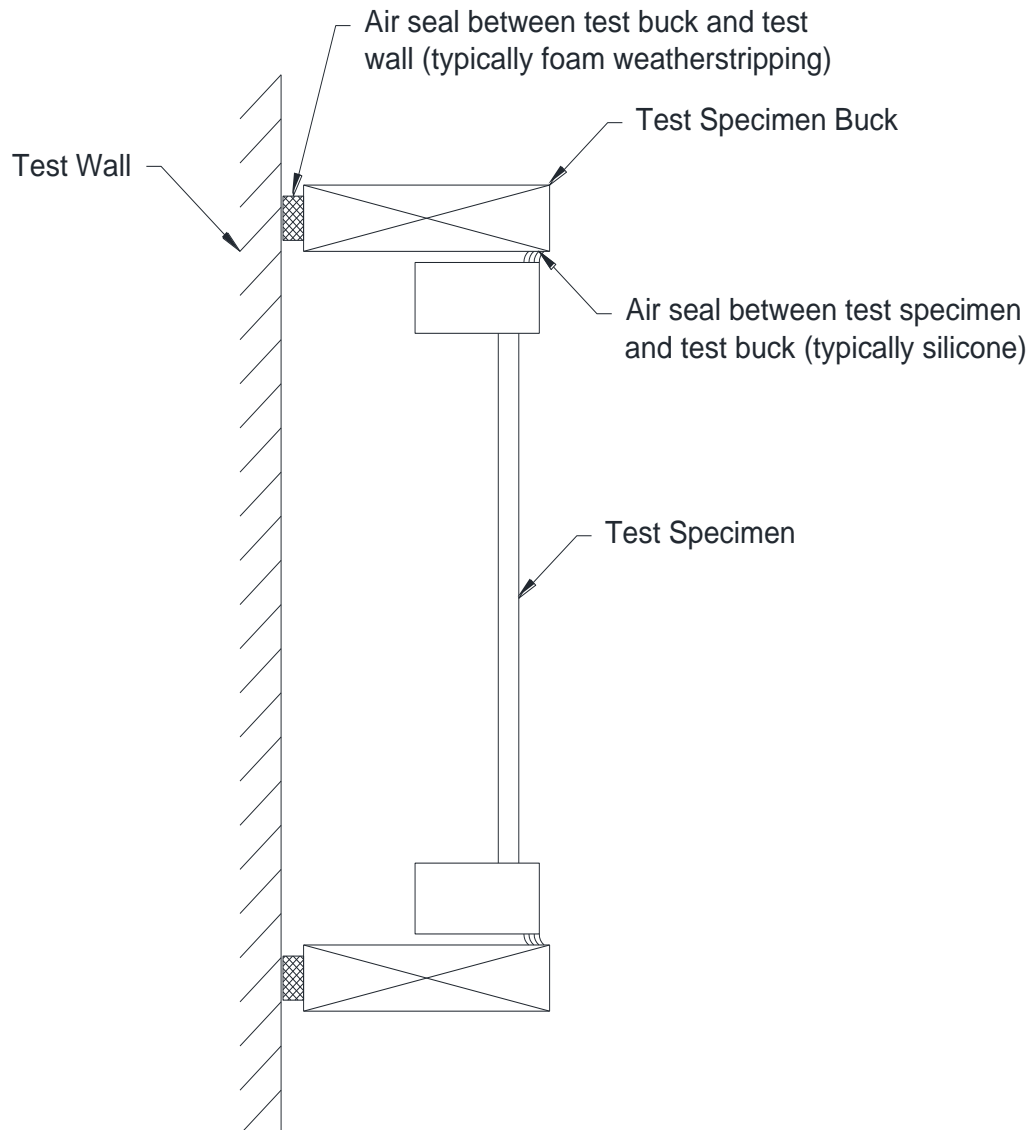
Report No.: J8689.01-801-44-r0

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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-PG80-C** rating.

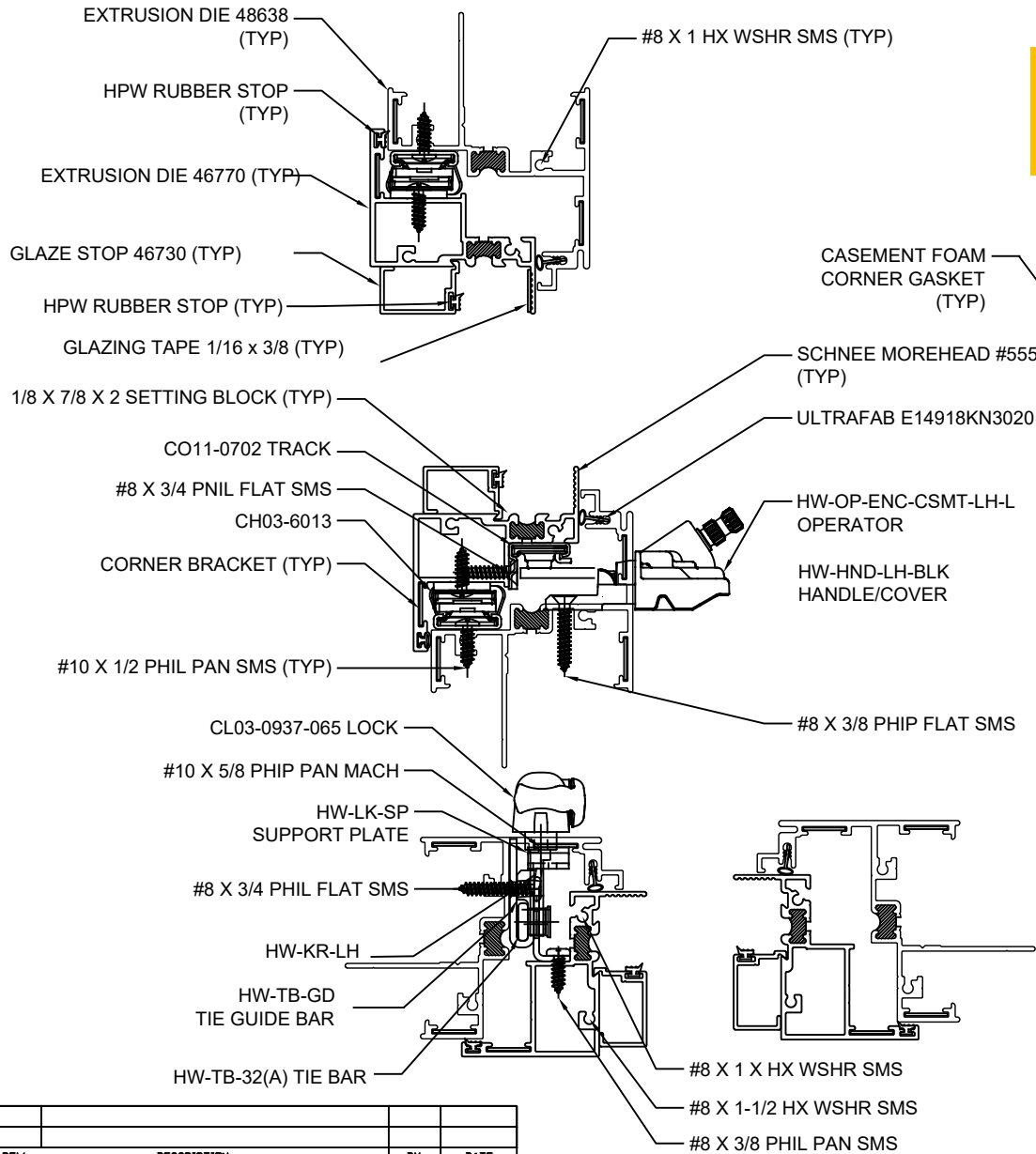
Reference Intertek B&C Report No. J4517.01-801-44, dated 10/22/19 for complete *Gateway* test specimen description and test results.

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.

Ram S900 Casement



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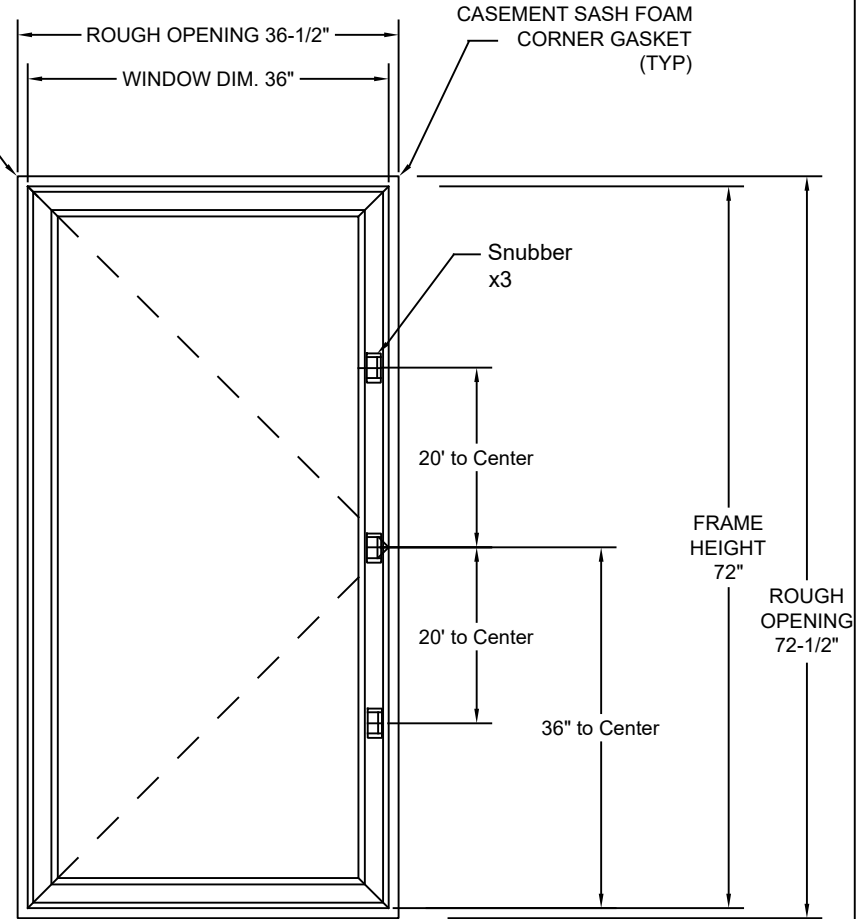
Report #:	J8689.01-801-44
Date:	05/12/20
Verified by:	J. Crump

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.



REV	DESCRIPTION	BY	DATE

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.



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


UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES	JSA	11/26/2018
TOLERANCES:		
FRACTIONAL ± 1/16		
ANGULAR: EACH/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 S900 TESTING	
SCALE:	SHEET 1 OF 1

RAM INDUSTRIES

SERIES 900 CASEMENT (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

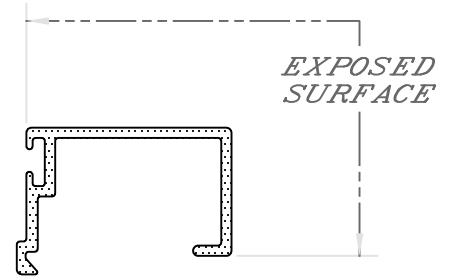
	Report #:	J8689.01-801-44
	Date:	05/12/20
	Verified by:	J. Crump

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

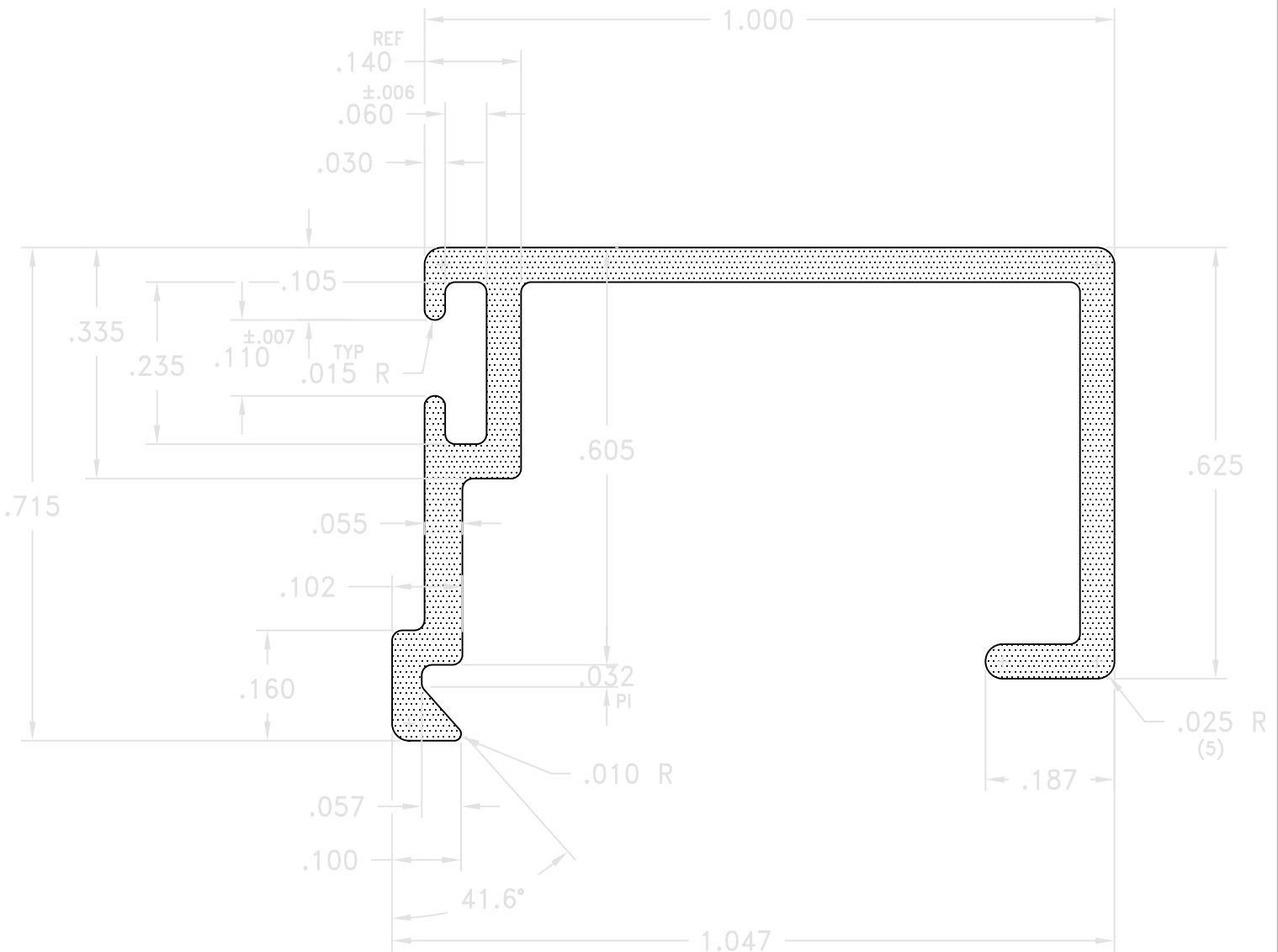
NOTE:

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



	Report #:	J8689.01-801-44
	Date:	05/12/20
	Verified by:	J. Crump

ACTUAL SIZE



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		

NOTE:

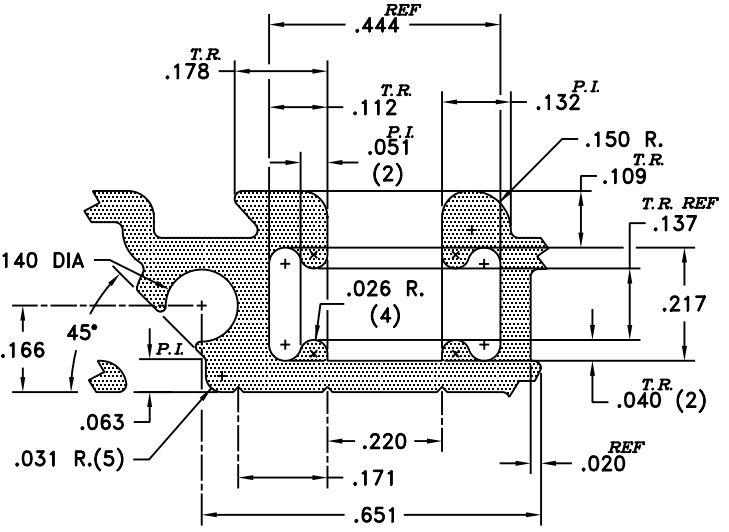
1. 6063-T5 ALLOY AND TEMPER
2. POUR AND DEBRIDGE AREA = .115
3. \rightarrow STRUCTURAL STREAKS EXPECTED
4. MIN. .210 DEBRIDGE
5. OUTSIDE PERIMETER 12.988

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	

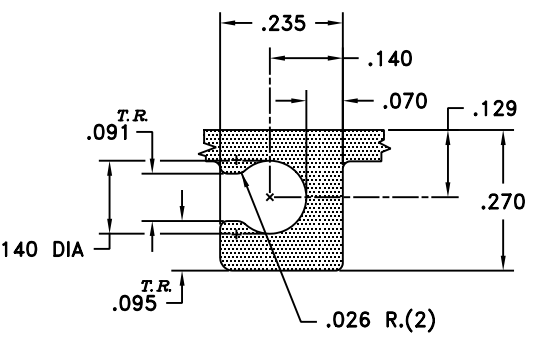
ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

ALL SURFACES EXPOSED

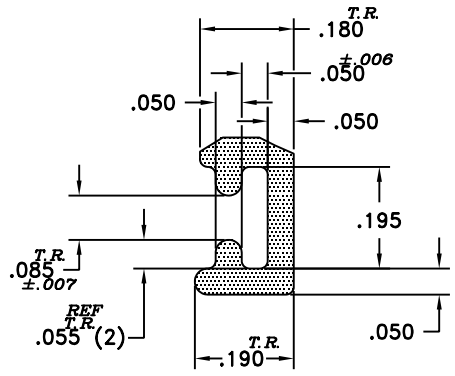
ACTUAL SIZE



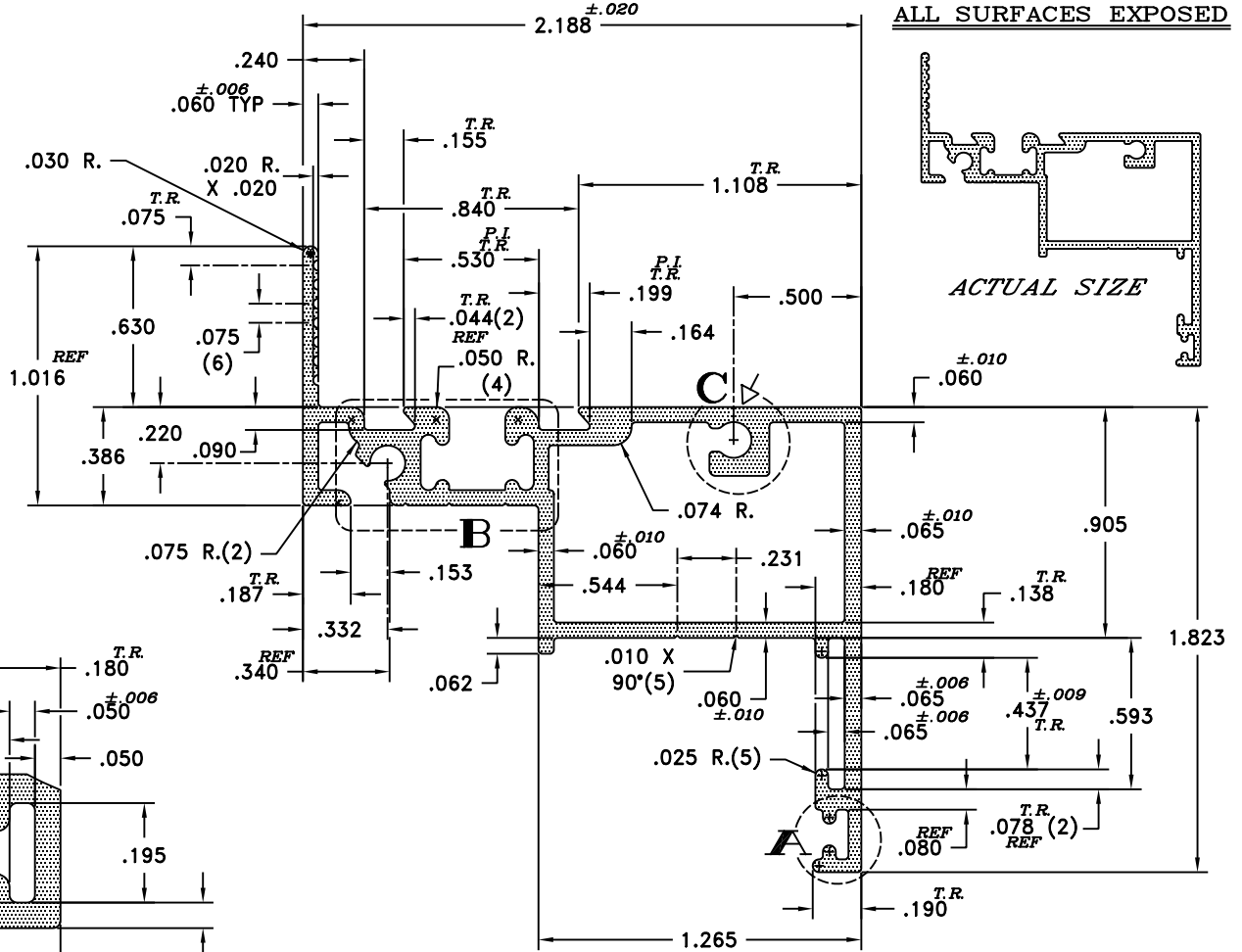
DETAIL B
4:1




DETAIL C
4:1



DETAIL A
4:1



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

 International Extrusion Corporation 202 SINGLETON DRIVE WAXAHACHIE, TX 75165 TEL: 972-937-7032, FAX: 972-938-3271	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		

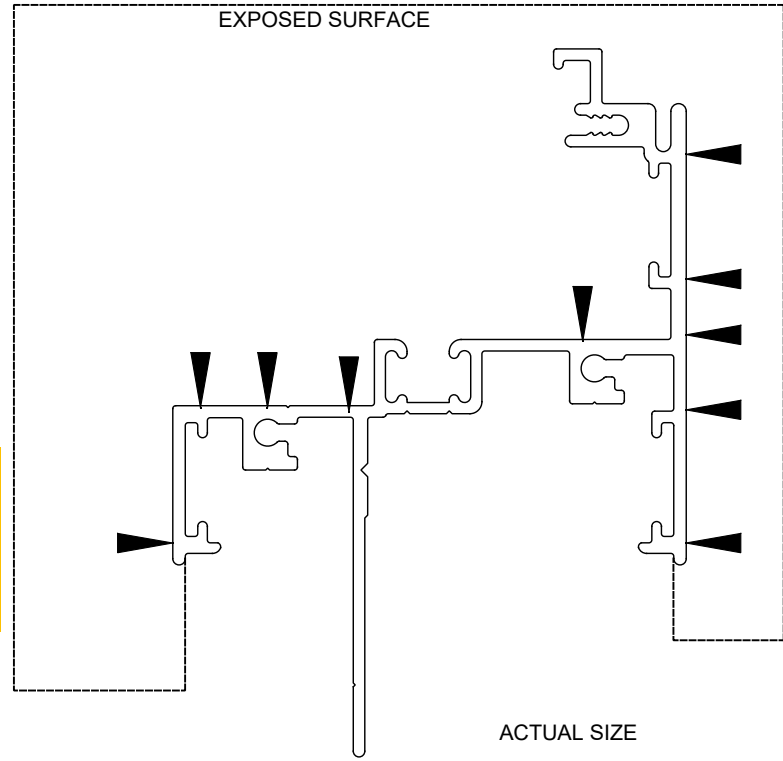
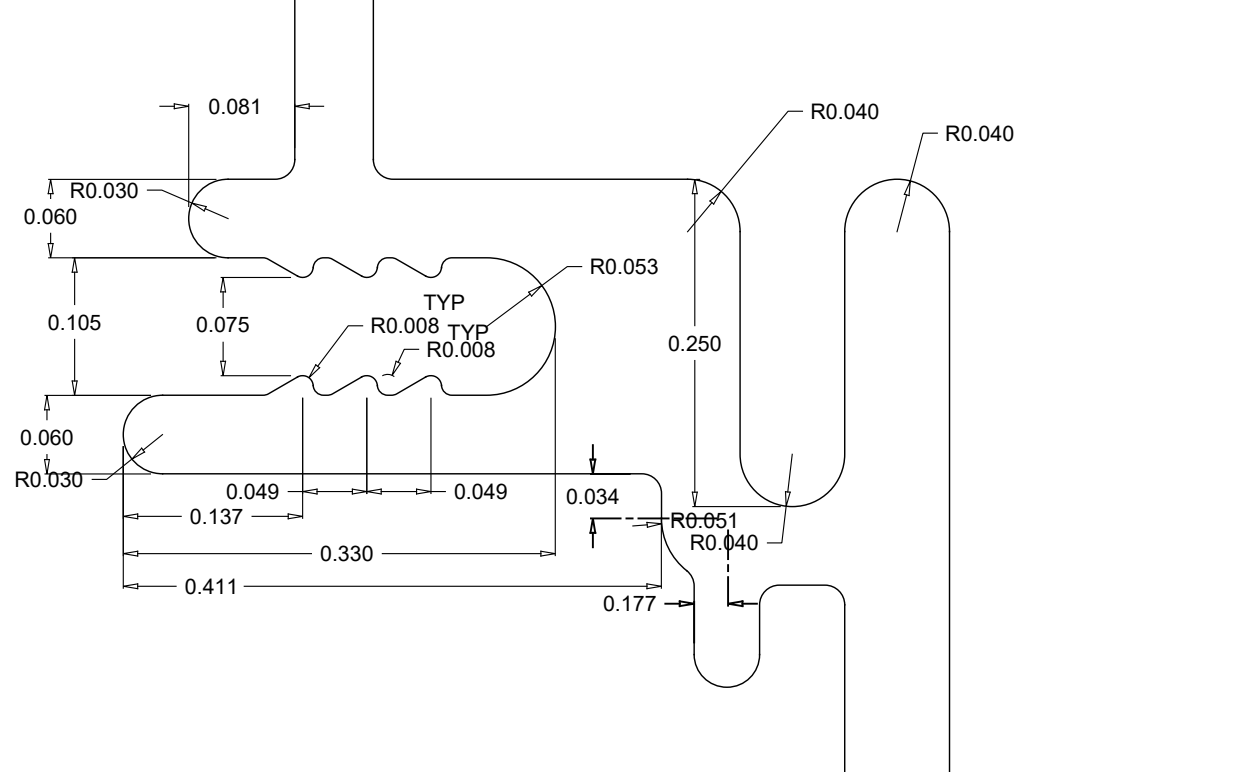
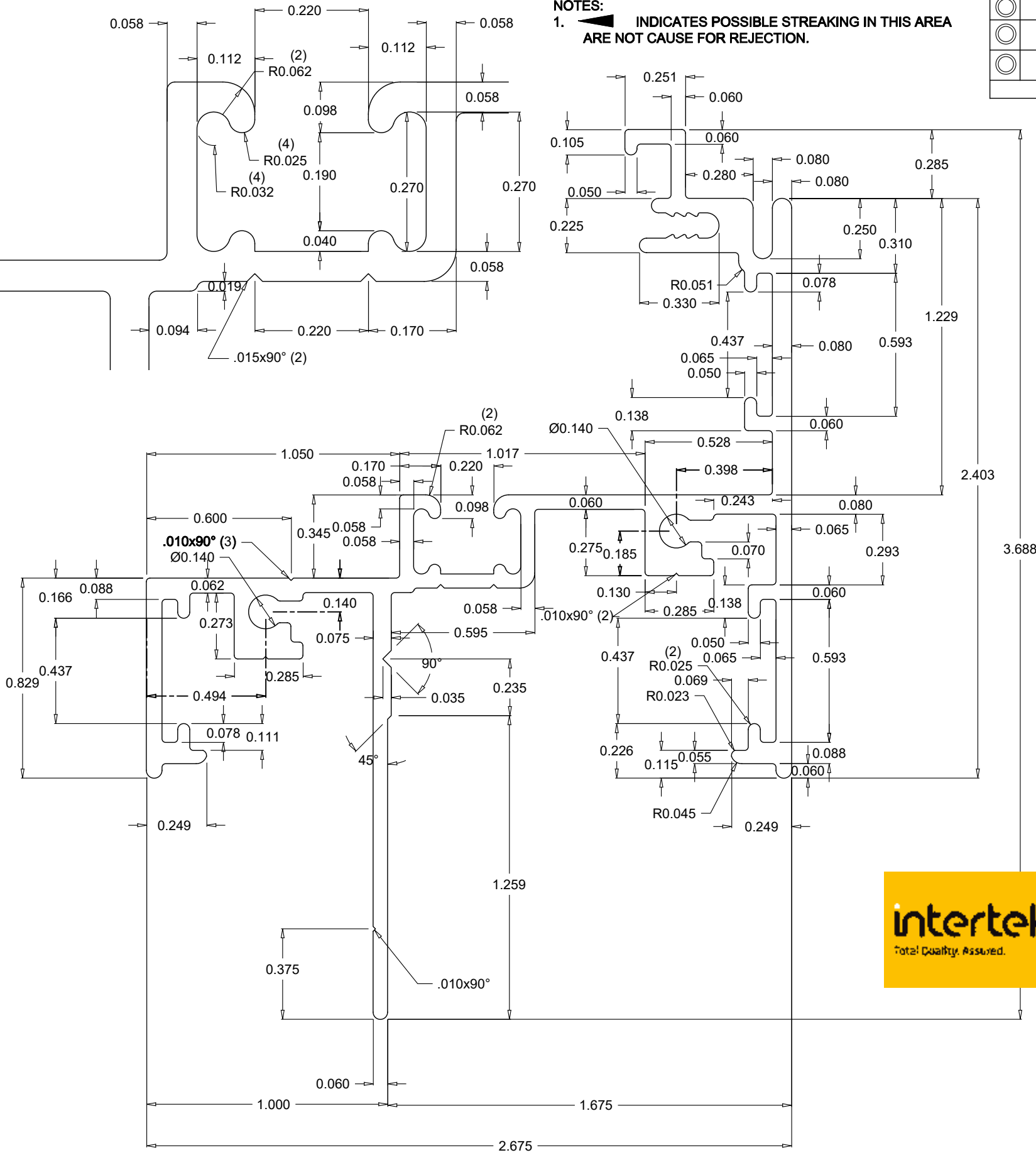



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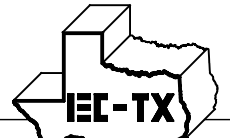
SYM	REVISION	BY	DATE	CUSTOMER	DIE NO.	QUOTE NO.
				RAM	48638	1825
	PART NAME			DRAWN	DATE	
CASEMENT FRAME WITH FIN NEW				12/12/2016		
PART NO.			SCALE	APP.		
			2x			

ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

NOTES:
1.  INDICATES POSSIBLE STREAKING IN THIS AREA ARE NOT CAUSE FOR REJECTION.



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	Date:	05/12/20
	Verified by:	J. Crump



International Extrusion Corporation
202 SINGLETON DRIVE
WAXAHACHIE, TX 75165
TEL: 972-937-7032, FAX: 972-938-0860

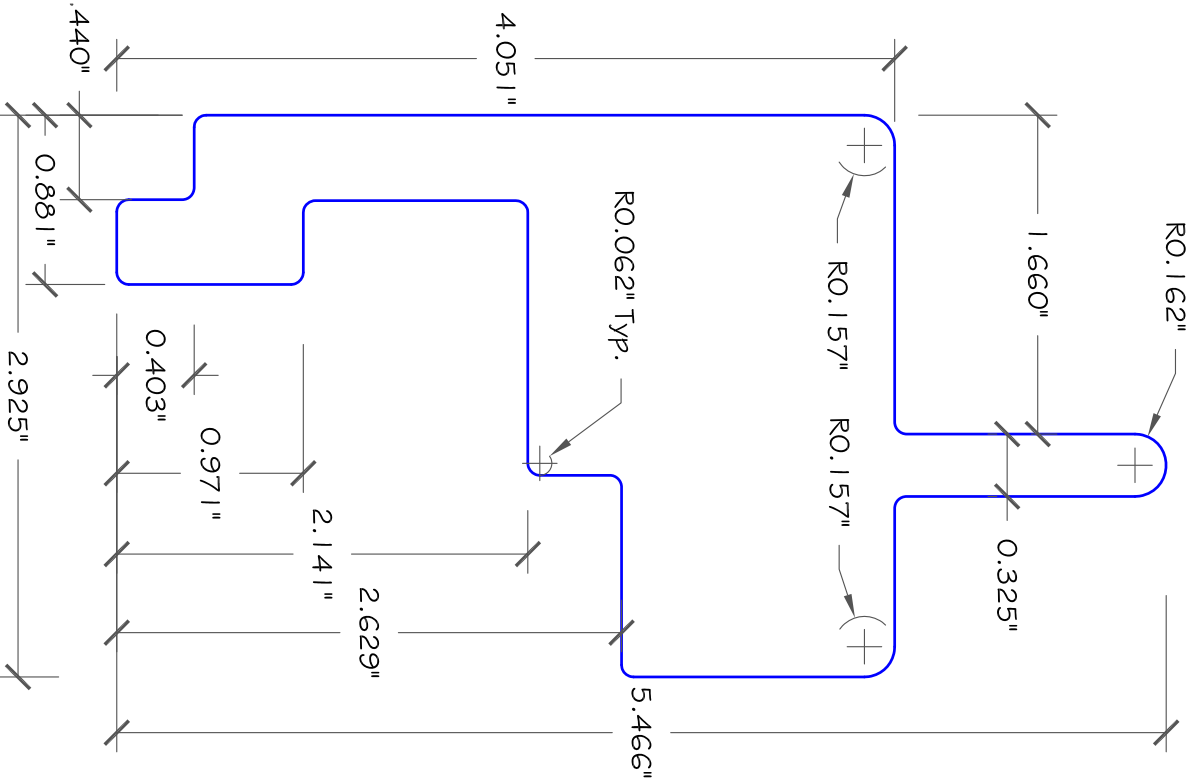
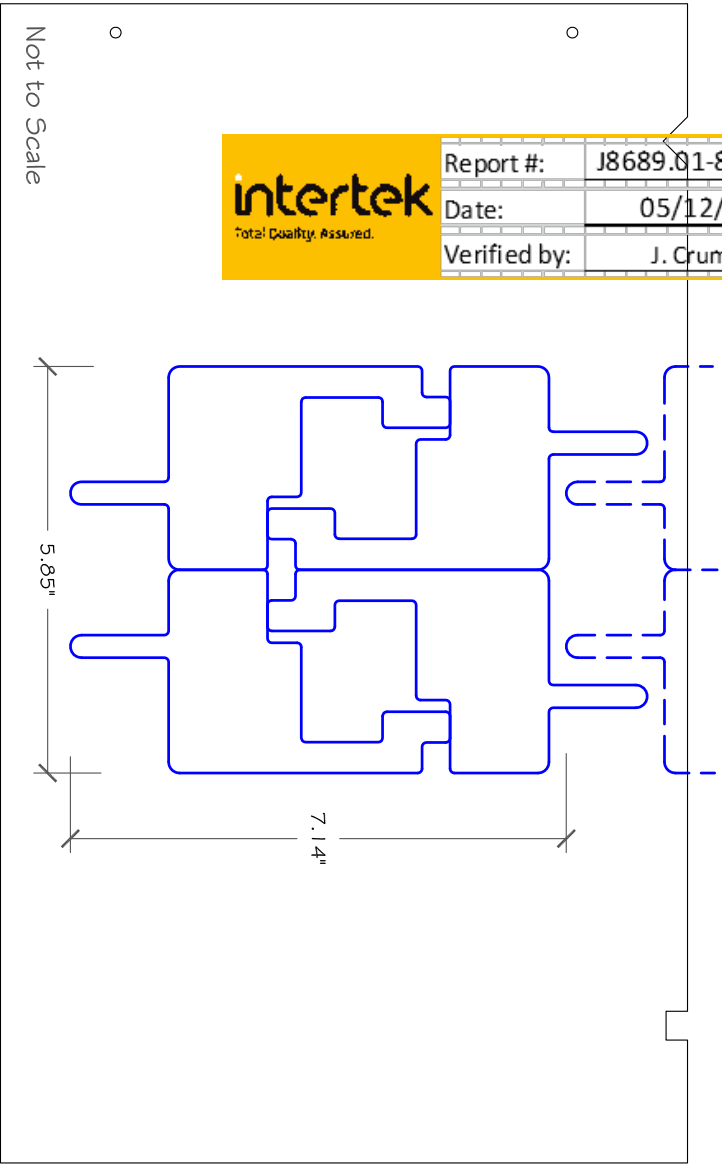
FOR QUOTING ONLY

UNLESS OTHERWISE NOTED ALL CORNERS ARE .015 RAD. AND TYPICAL WALL THICKNESS IS

EST AREA: 834	P-NO: 7	PORTS: 1	SIZE: 10X2
EST WT/FT: 1.001	CIRCLE SIZE: 4	BACKER: 48638	10X3 1/2
EST. FIN. PERI: 23.718	EST. FULL PERI: 23.718	BOLSTER: 36165	12X7 1/2
FACTOR: 24	T-DWG # T-70127328SD	FEEDER:	

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Report #:	J8689.01-801-44
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Verified by:	J. Crump



Micrometer:	
Progression:	
Batch / Amount:	
Rate / Acceleration:	
Tons:	
Upstroke:	
RF2/3 / RF3:	
Feed: Before/After:	

PRECO DIE #

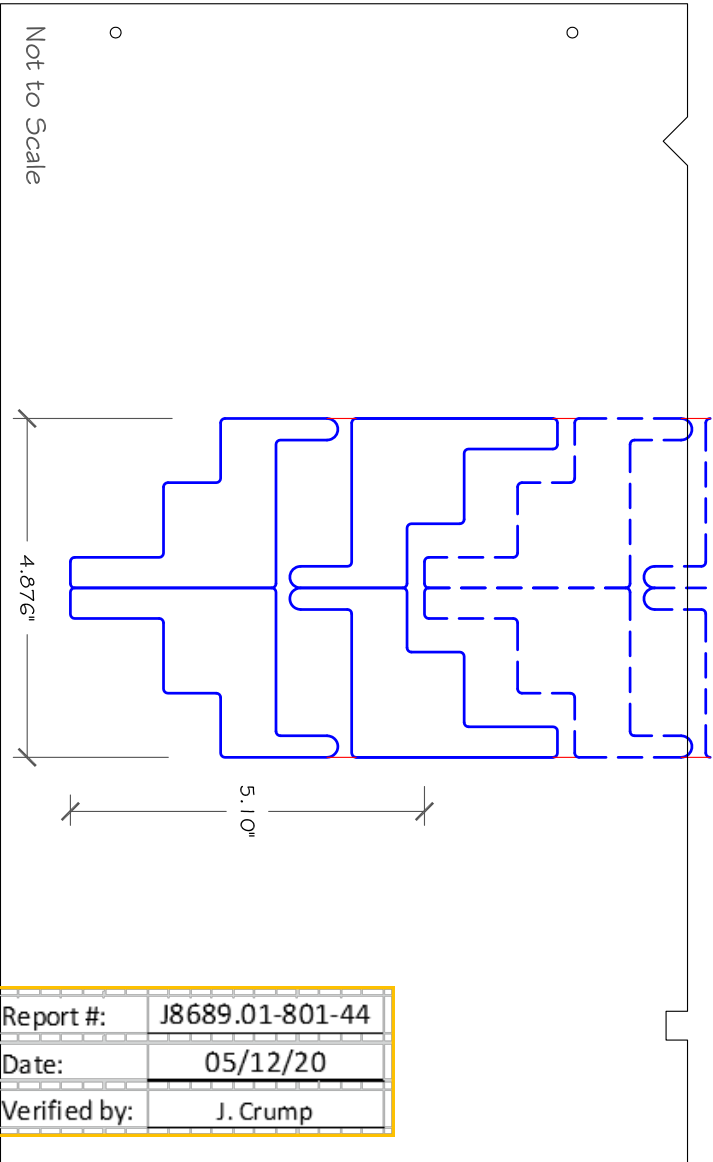
Board: 5/8" thick wood
 Typ/Size: 12" x 20" Preco
 Rule: 2 pt 0.937" high long dbl cntr bevel

Punches: /Roll:
 /Box:
 Box type:

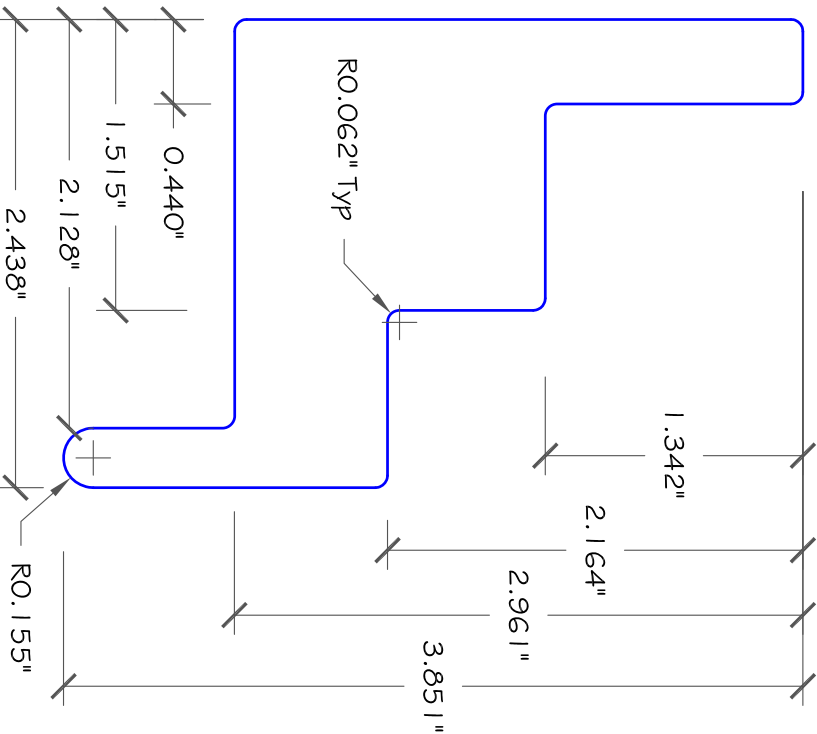
NOTES
 4 cavity (2 set) Preco die,
 Wood: 5/8" thick, 12" x 20"
 Preco wood with cutouts,
 Rule: 0.937" high,
 2pt. long double center bevel.
 MATERIAL
 1/8" thick 2# XLP w/PSA

TOLERANCES UNLESS OTHERWISE SPECIFIED			
APPROVALS	DATE	SCALE	SHEET
DRAWN BY: A.V.	9-28-2018	1:1	5900-CSMT Frame Gasket Rev. B
CHECKED BY:			1 of 1
FEED LENGTH / SPF / PPF: 7.14"	SPLIT WIDTH: 6.5"		
3.36 SPF			





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Verified by:	J. Crump



Micrometer:	
Progression:	
Batch / Amount:	
Rate / Acceleration:	
Tons:	
Upstroke:	
RF2/3 / RF3:	
Feed: Before/After:	

PRECO DIE #	
Board:	5/8" thick wood
Typ/Size:	12" x 20" Preco
Rule:	2 pt 0.937" high long dbl ctr bevel
Punches:	Feed-through
/Roll:	
/Box:	
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 834-777-0191 • 800-377-0202 • Fax 834-777-0480</small>		SHEET 5900-CSMT Sash Gasket Rev. A 1 of 1



Total Quality. Assured.

TEST REPORT FOR RAM INDUSTRIES

Report No.: J8689.01-801-44-r0

Date: 05/12/20

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	05/12/20	N/A	Original Report Issue