

RAM INDUSTRIES TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON SERIES S840 INSIDE TAPED GLAZED TRUE DIVIDED LITE WINDOW

REPORT NUMBER

J4521.01-801-44-R0

TEST DATE(S)

03/19/19

ISSUE DATE

09/30/19

RECORD RETENTION END DATE

03/19/23

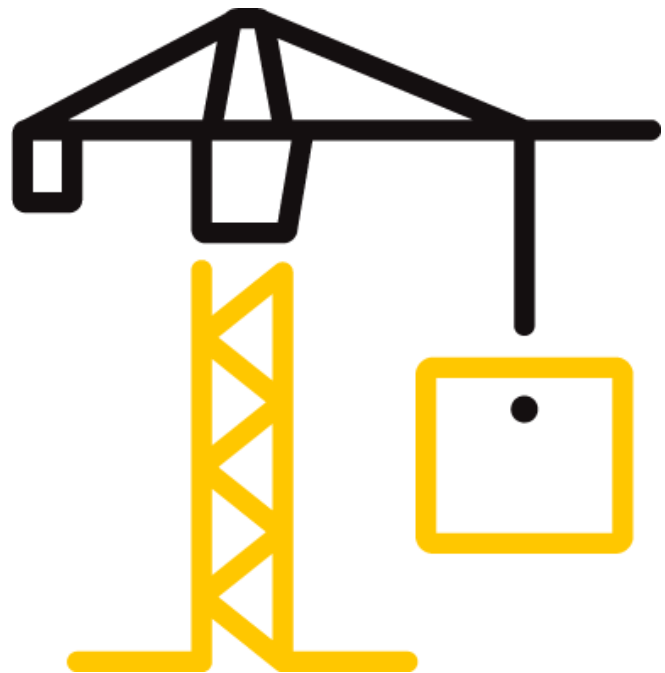
PAGES

17

DOCUMENT CONTROL NUMBER

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TEST REPORT FOR RAM INDUSTRIES

Report No.: J4521.01-801-44-r0

Date: 09/30/19

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 S840 Inside Tape Glazed True Divided Lite. 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	LC-PG50-FW
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	<0.10 L/s/m ² (<0.01 cfm/ft ²)
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)

Reference must be made to Intertek B&C Report No. J4521.01-801-44, dated 09/19/19 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:	09/30/19	DATE:	09/30/19

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 E283-04(2012), *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

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

ASTM E547-00(2016), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference*

ASTM F588-17, *Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact*

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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	Snap in 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.

SECTION 6

LIST OF OFFICIAL OBSERVERS

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

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SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Inside Tape Glazed True Divided Lite Window

Series/Model: S840 Picture Window

Product Size(s):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
3.8 m ² (41 ft ²)				
Overall size	1524	60	2489	98
Daylight Opening	700	27-9/16	572	22-1/2

Frame Construction:

MEMBER	MATERIAL	DESCRIPTION
Head, sill, jambs and hollow muntin	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. Frame horizontal intermediate muntins are notched and slipped over notched vertical intermediate muntins. Muntins are attached to frame members with one (1) #8 x 1" HX WSHR SMS Type A and one (1) #8 x 1-1/2" HX WSHR SMS Type A, each.

Reinforcement: *No reinforcement was utilized.*

Weatherstripping: *No weatherstripping was utilized.*

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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
1" IG	Aluminum	1/8" annealed	1/8" annealed	Interior glazed with #3500 3/8" x 1/8" glazing tape at the exterior face of glass and aluminum glazing bead with rubber stop at the interior face of glass.

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Head sill and jambs	2	700 x 572	27-9/16 x 22-1/2	9/16

Drainage: *Weeps were not utilized*

Hardware: *No hardware was utilized.*

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SECTION 8

TEST RESULTS

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

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.10 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	0.15 L/s/m ² (0.03 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Water Penetration, per ASTM E547 at 580 Pa (12.11 psf)	Pass	No leakage	
Uniform Load Structural, per ASTM E330 Deflections taken at Vertical Muntin +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	37 mm (1.30") 39 mm (.81")	Report Only Report Only	
TITLE OF TEST	RESULTS	ALLOWED	NOTE
Uniform Load Structural, per ASTM E330 Permanent Set taken at Vertical Muntin +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	6.1 mm (.24") 4.8 mm (.19")	7.4 mm (0.29") max. 7.4 mm (0.29") max.	3
Forced Entry Resistance, per ASTM F588, Type: D - Grade: 10	Pass	No entry	

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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 07/23/19 / 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

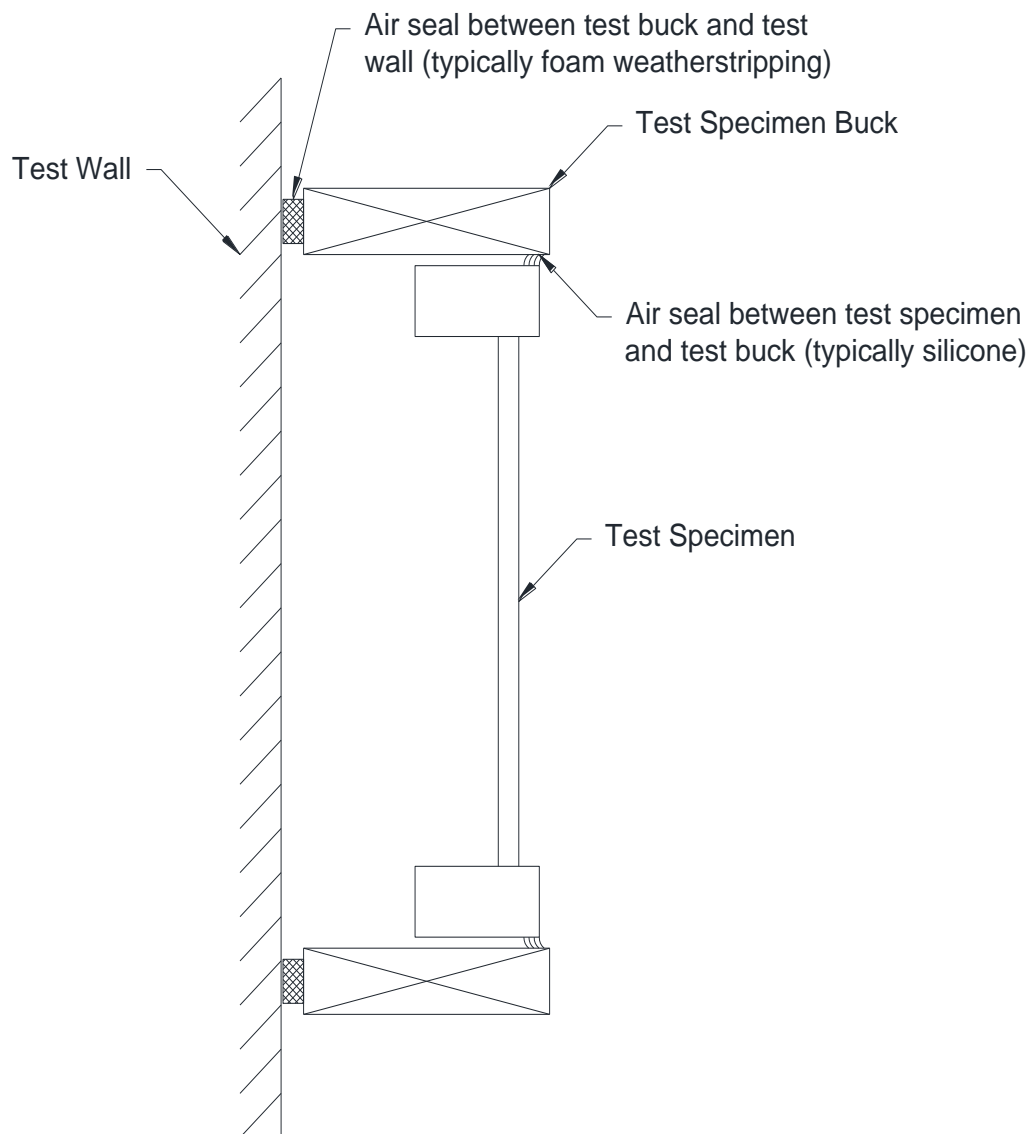
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SECTION 9

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 10

CONCLUSION

The specimen tested successfully met the performance requirements for a **LC-PG50-FW** rating.

Reference Intertek B&C Report No. J4521.01-801-44, dated 09/20/19 for complete *Gateway* test specimen description and test results.

SECTION 11

DRAWINGS

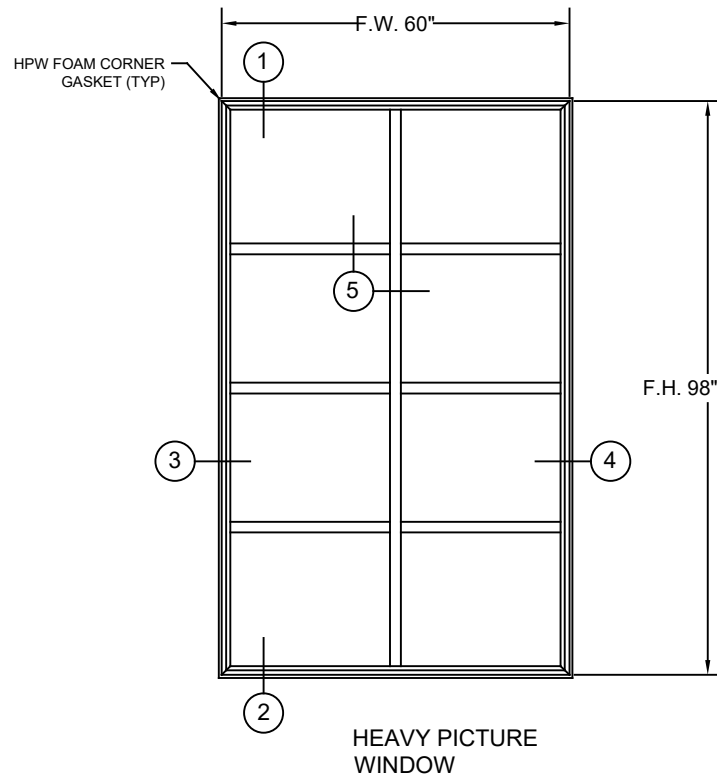
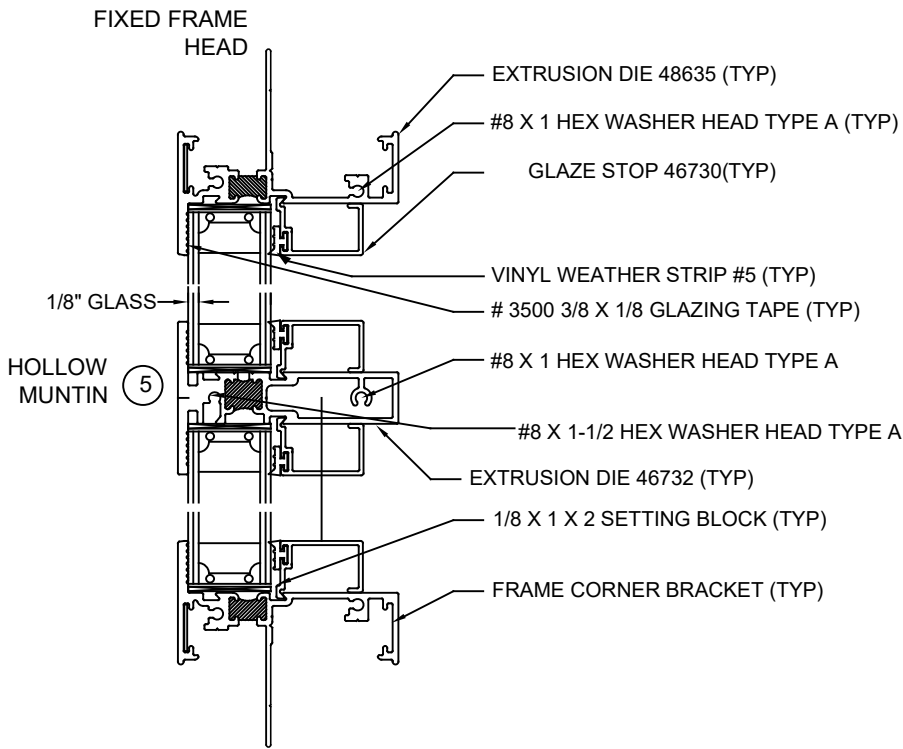
The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

DRAWING APPROVAL

- APPROVED
- APPROVED AS NOTED
- REVISE AND RESUBMIT

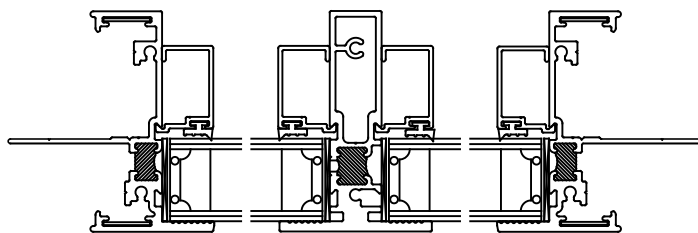
SIGN _____ DATE _____

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



FIXED FRAME SILL (2)

HOLLOW MUNTIN (5)



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Report #:	J4521.01-801-44
Date:	09/26/19
Verified by:	J.Crump

REV	DESCRIPTION	BY	DATE

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DESCRIPTION	LEAD TIME	10-12	WEEKS	CUSTOMER	Intertek
GLASS WARRANTY	2	YEARS	PROJECT	Foam Corner, Wrapping Gasket	
FRAME WARRANTY	2	YEARS	CITY	Dallas	
FINISH WARRANTY	2	YEARS	STATE	Texas	
U-FACTOR			OUTER GLASS		
SHGC			AIR SPACE		
DA GLASS THICKNESS			INNER GLASS		

UNLESS OTHERWISE SPECIFIED	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	GKW
TOLERANCES:		5/13/2019
FRACTIONAL ± 1/16	MARK	---
ANGULAR: MACH/BEND ± .5	QTY.	---
TWO PLACE DECIMAL ± .01	FINISH	---
THREE PLACE DECIMAL ± .004	DP	
MATERIAL	COMMENTS:	
6063-T5 ALUMINUM		
DD NOT SCALE DRAWING		

RAM INDUSTRIES	
TITLE: 26309 AAMA TESTING	
SIZE/DWG. NO. A S840 CHM TESTING	REV
SCALE:	SHEET 1 OF 1

NOTE:

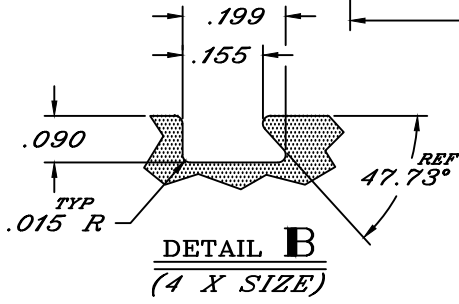
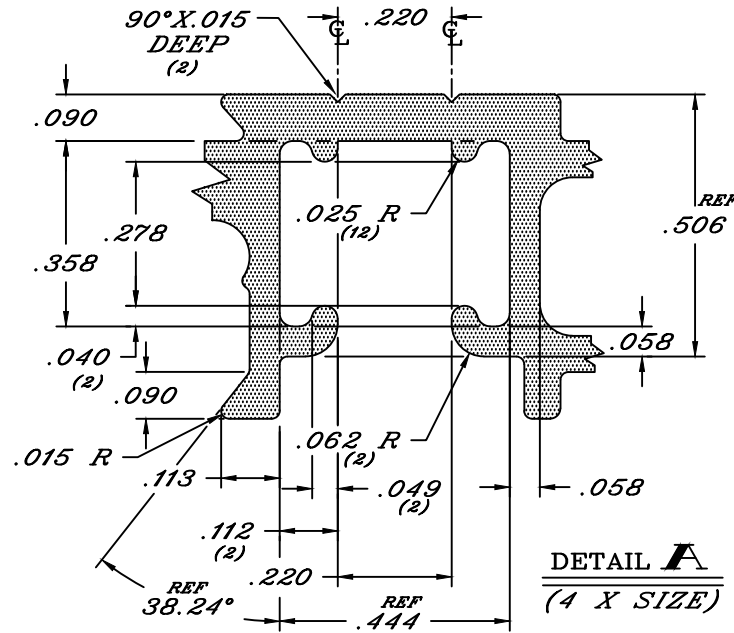
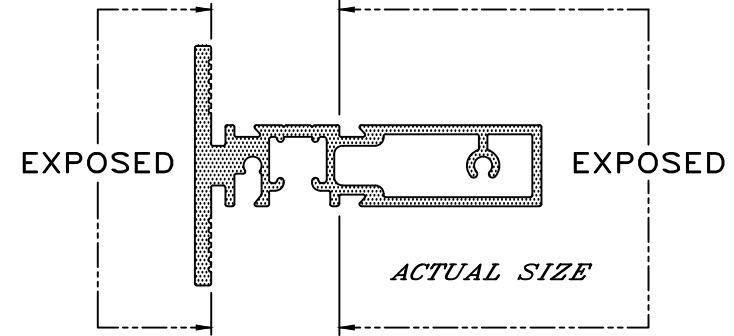
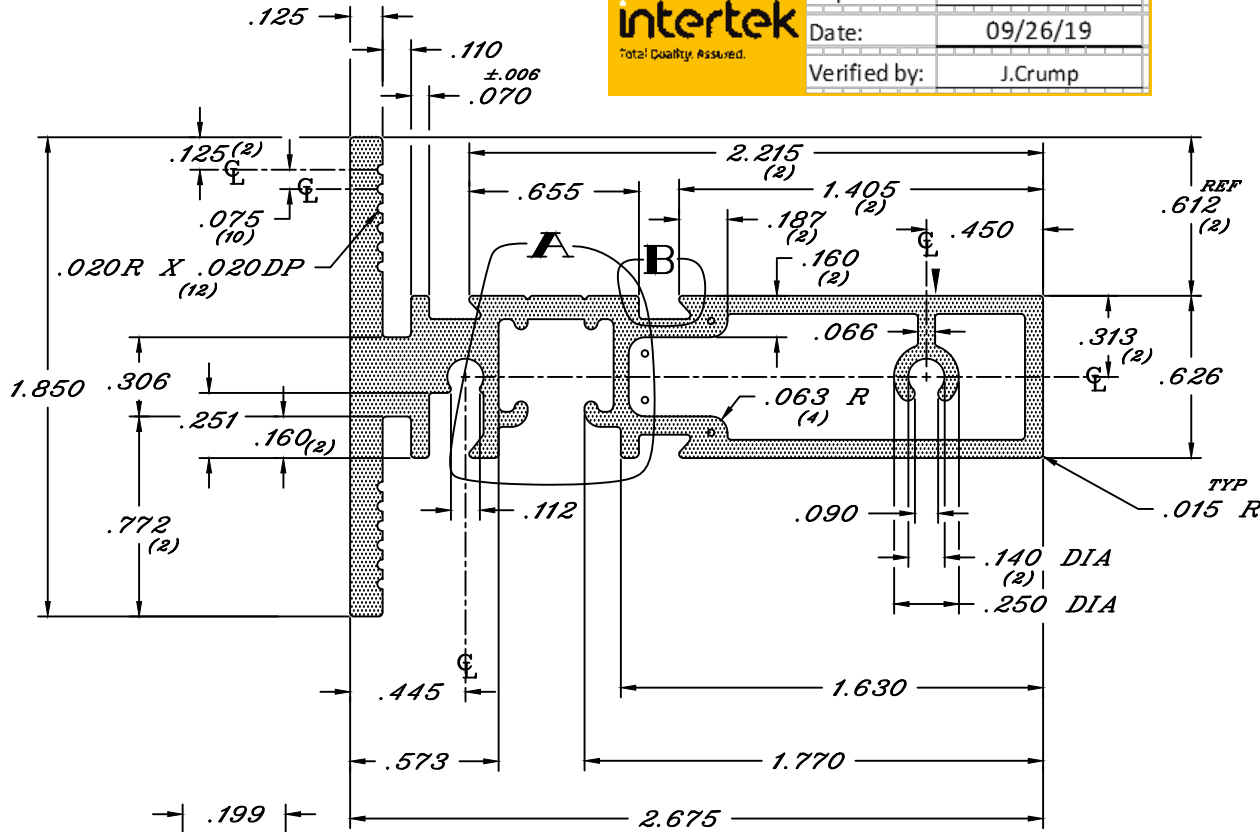
1. 6063-T5 ALLOY & TEMPER
2. FITS WITH CUST P/N 44195
3. POUR AND DEBRIDGE AREA=.150
4. ↓ STRUCTURAL STREAKING ANTICIPATED
5. OUTSIDE PERIMETER IS 12.923

SYM	REVISION	BY	DATE	CUSTOMER	DIE NO.
				RAM INDUSTRIES	46732
				PART NAME: MUNTIN-THERMAL	DRAWN: LRL
				PART NO. T-44194	SCALE: 2 X SIZE
					DATE: 8-26-11
					CHKD. APPR.

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Date:	09/26/19
Verified by:	J.Crump

ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE

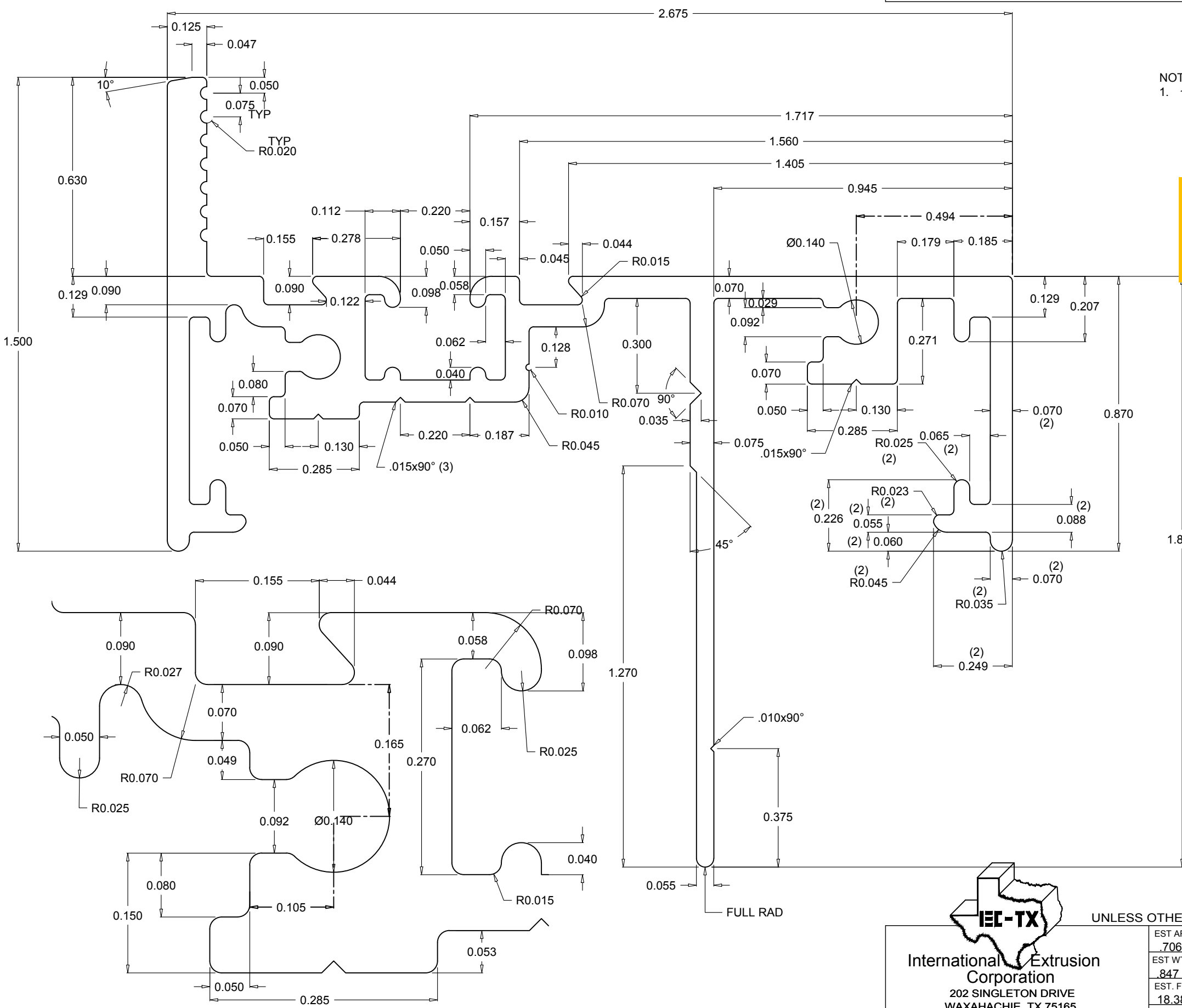


UNLESS OTHERWISE NOTED. ALL CORNERS ARE .015 R. AND TYPICAL WALL THICKNESS IS .070 ±.010

<p>International Extrusion Corporation 202 SINGLETON DRIVE WAXAHACHIE, TX 75165 TEL: 972-937-7032, FAX: 972-938-3271</p>	EST AREA:	.809	UT-NO.	UT-1021	PORTS	1
	EST WT/FT:	.971	CIRCLE SIZE:	3.0	BACKER	9X5.5
	EST PER:	17.985	CLASS	HOLLOW	BOLSTER	1-4
	FACTOR:	19	RATIO	7" = 50	DIE NO	46732

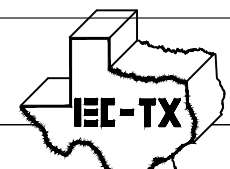
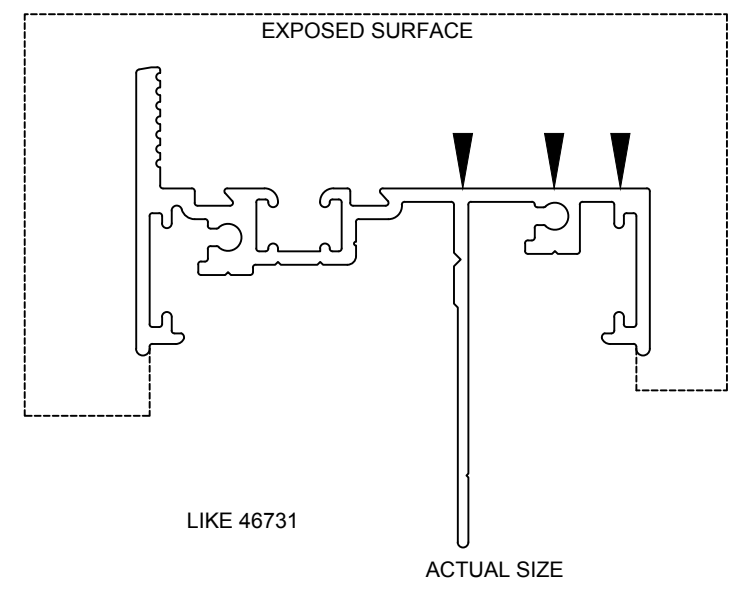
SYM	REVISION	BY	DATE	CUSTOMER	DIE NO.	QUOTE NO.
				RAM	48635	1822
				PART NAME HPW WITH NAIL FIN 1" SET BACK	DRAWN SD	DATE 12/12/2016
				PART NO.	SCALE 3x	APP.

ALUMINUM ASSOCIATION TOLERANCES FOR EXTRUSION SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE



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

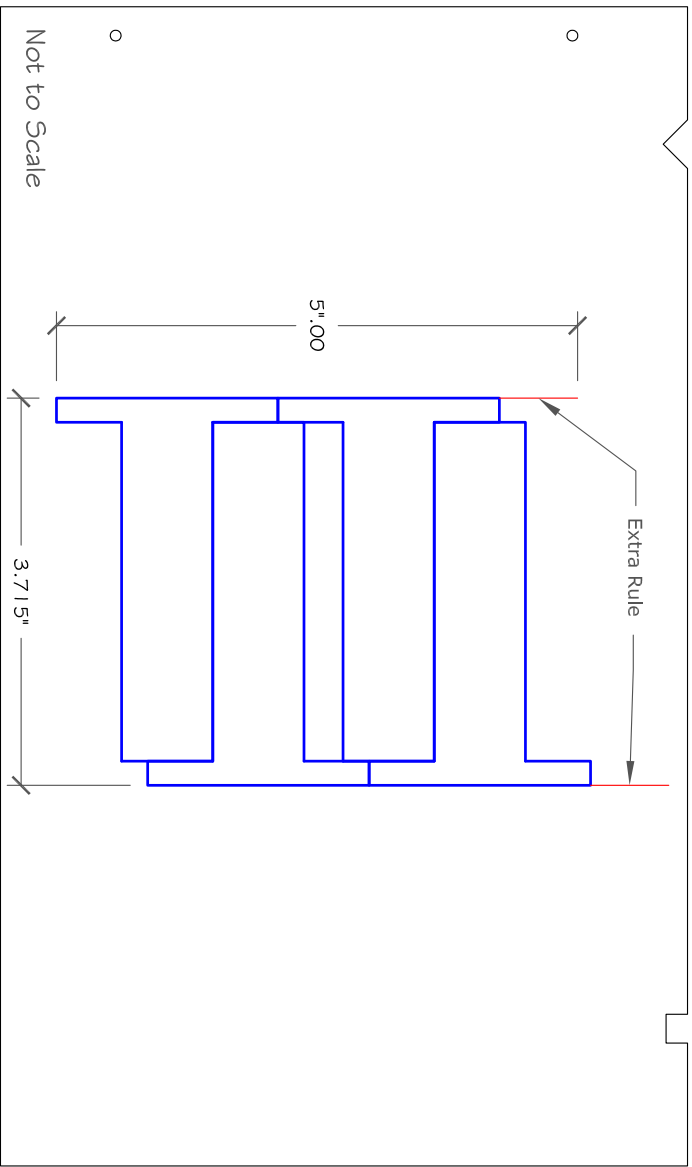
 Total Quality Assured.	Report #:	J4521.01-801-44
	Date:	09/26/19
	Verified by:	J.Crump



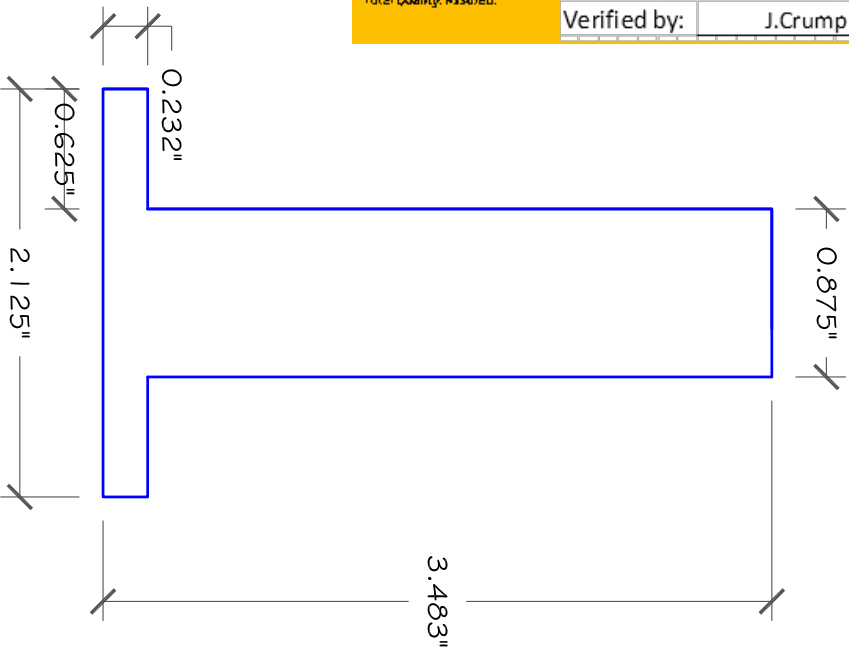
International Extrusion Corporation
202 SINGLETON DRIVE
WAXAHACHIE, TX 75165
TEL: 972-937-7032, FAX: 972-938-0860

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

EST AREA: .706	P-NO: 7	PORTS: 1	SIZE: 9X2
EST WT/FT: .847	CIRCLE SIZE: 4	BACKER: 48635	10X3 1/2
EST. FIN. PERI: 18.389	EST. FULL PERI: 18.389	CLASS: SOLID	BOLSTER: 1-2
FACTOR: 22	T-DWG # T-70127325SD	FEEDER:	



	Report #:	J4521.01-801-44
	Date:	09/26/19
	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:	Feed-through
/Roll:	
/Box:	
Box type:	

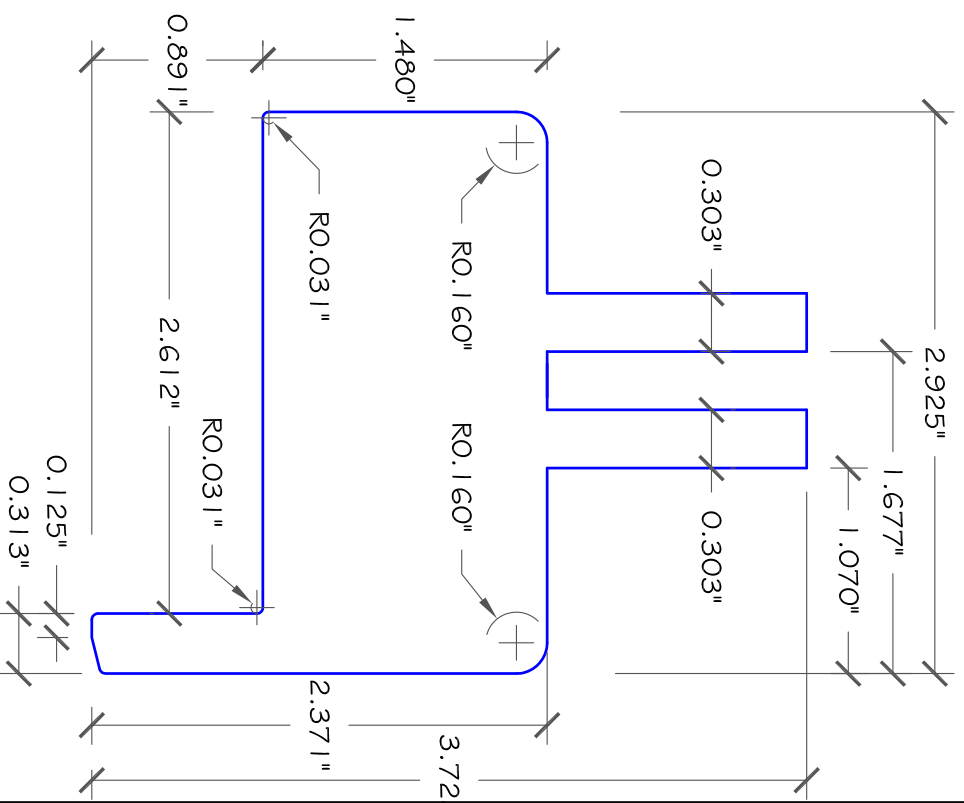
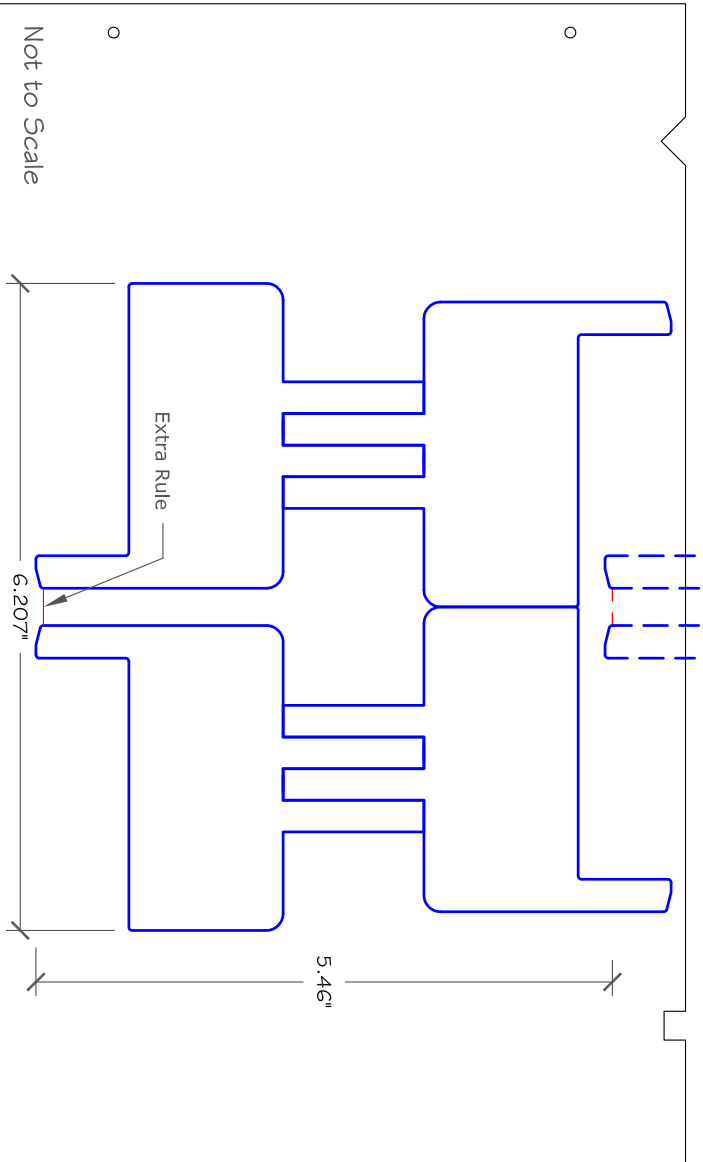
NOTES	
4 cavity Preco die, Wood: 5/8" thick, 12" x 20" Preco wood with cutouts, Rule: 0.937" high, 2pt. long double center bevel.	
MATERIAL	
1/8" thick 2# XLP w/PSA	

TOLERANCES UNLESS OTHERWISE SPECIFIED	
APPROVALS	DATE
DRAWN BY: A.V.	9-28-2018
CHECKED BY:	
FEED LENGTH / SPF / PPF: 4.75" / 10.10 PPF	SPLIT WIDTH: 4.5"
SCALE: 1:1	SHEET: 1 of 1
CHM Frame Gskt Rev. A	



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Report #:	J4521.01-801-44
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Verified by:	J.Crump



Micrometer:	3.598	PRECO DIE #749	
Progression:	5.350	Board:	5/8" thick wood
Batch / Amount:		Typ/Size:	12" x 20" Preco
Rate / Acceleration:	10 / 5	Rule:	2 pt 0.937" high long dbl cntr bevel
Tons:	16	Punches:	Feed-through
Upstroke:	3.20	/Roll:	
RF2/3 / RF3:	10 / 10	/Box:	
Feed: Before/After:		Box type:	

NOTES

1 SET = 1 Left Hand Gasket
+ 1 Right Hand Gasket
Supplied kiss cut on rolls with
web scrap removed

MATERIAL

1/8" thick 2# XLP w/PSA

TOLERANCES UNLESS OTHERWISE SPECIFIED		SCALE	
APPROVALS	DATE	SCALE	O-RA1002-HPWCNRGSKT/125
DRAWN BY: A.V.	9-28-2018	SCALE	HPW Corner Gskt Rev. B
CHECKED BY:	SPLIT WIDTH:		1 of 1
FEED LENGTH / SPF / PPF:			
4.40 SPF	7"		



Ram Industries



Total Quality. Assured.

TEST REPORT FOR RAM INDUSTRIES

Report No.: J4521.01-801-44-r0

Date: 09/30/19

1909 10th Street, Suite 100
Plano, Texas 75074

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

SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	09/30/19	N/A	Original Report Issue