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Testing. Advising. Assuring.

PERFORMANCE EVALUATION OF
SINGLE SLIDING WINDOW "720 SIDE SLIDER"
For Windspec Inc.

IN ACCORDANCE WITH:
AAMA/WDMA/CSA 101/I.S.2/A440-08
AND CSA A440S1-09

Report to:	Windspec Inc. 1310 Creditstone Road Concord, Ontario Canada L4K5T7
Attention:	Mr. Oren Anava
Telephone: Fax: Email:	905-738-8311 905-738-6188 oren@windspec.com
Report No.:	16-06-M0220-1 8 Pages, 1 Appendix
Proposal No.:	16-006-449116
Date:	December 19, 2016

Product Manufacturer:	Windspec Inc.
Product Type:	Horizontal Slider Window
Product Series/Model:	720 Side Slider, 1800 mm x 1525 mm (70.87 in x 60.04 in)
Primary Product Designator:	**Class CW – PG2160 – Size tested 1800 x 1525 mm – Horizontal Slider** **Class CW – PG45 – Size tested 70.87 x 60.04 in – HS**
Secondary Product Designator:	
Air Infiltration/Exfiltration:	Canadian A2 Level
Water Penetration Resistance:	330 Pa (6.75 psf) (with and without screen)
Negative Design Pressure:	3360 Pa (70.00 psf)
Positive Design Pressure:	3360 Pa (70.00 psf)
Test Completion Date:	November 18, 2016

1.0 INTRODUCTION

At the request of Windspec Inc., Exova was retained to evaluate the physical performance of a single sliding window identified as "720 Side Slider", in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 Standard, "NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights" and CSA A440S1-09 Canadian Supplement, as outlined in proposal number 16-006-449116.

Exova Specimen No.:	16-06-M0220-1
Type:	Single Siding Window
Model:	720 Side Slider
Overall Window Size:	1800 mm x 1525 mm (70.87" x 60.04")

2.0 SAMPLE DESCRIPTION

The following sample description has verified by Exova. Details and drawings of the described test specimen, as provided by the manufacturer, have been included in Appendix A.

Product Type:	Extruded Aluminum, Single Sliding Window
Frame:	Extruded Aluminum, 1800 mm x 1525 mm x 101.6 mm (70.87" x 60.04" x 4.00")
Fixed:	Extruded Aluminum, 900 mm x 1525 mm x 101.6 mm (35.43" x 60.04" x 4.00"), fixed meeting stile, joined to frame with two corner keys per head and sill, each corner key mechanically fastened to each member with one #10x2" pan head screw, joints sealed 1.59 mm (0.06") butyl tape
Sash:	Lift out, Extruded Aluminum, 880 mm x 1450 mm x 45 mm (34.65" x 57.09" x 1.77")
Joinery:	
Frame:	Butt Join, each corner fastened with two corner keys and four #10x2" pan head screws per corner, sealed with butyl tape
Sash:	Mitred Corners, each corner crimped in place with one corner key, sealed with butyl tape
Installation:	
Test buck:	Wood buck
Fasteners	fastened to frame by 18 #12x2" flat head screws, four screws per jamb, at 400 mm (15.75") c/c, five screws per head and sill, at 630 mm (24.80") c/c
Sealant:	Interior and exterior frame perimeter sealed with flexible sealant

Glazing Type:	Two IG units, Dual glazed, annealed, overall thickness 25 mm (0.98"), glass thickness nominally 4 mm (0.16"), dual sealed aluminium spacer, air gap thickness 17.5 mm (0.67"), air filled
Glazing Method:	Laid in glazed, dried glazed
Glazing Stop:	Extruded Aluminum, interior perimeter
Glazing Fin	Rubber, interior perimeter, at glazing stop
Setting blocks:	Plastic, seven per IG unit, 15 mm x 30 mm x 50 mm (0.59" x 1.18" x 1.97"), two per stile, 170 mm (6.69") from the ends, one at top rail, center, two at bottom rail, 170 mm (9.69") from the ends
Glazing Tape:	Butyl with backer rod, exterior perimeter
Corner bead:	Flexible sealant, exterior corners
Heel bead	Flexible sealant, interior perimeter
Reinforcement:	None
Thermal Break	
Frame:	Pour and de-bridge, one row, 15.9 mm x 6.35 mm (0.625" x 0.25"), Jambs Pour and de-bridge, two rows 15.9 mm x 6.35 mm (0.625" x 0.25"), head Pour and de-bridge, three rows, 15.9 mm x 6.35 mm (0.625" x 0.25"), sill
Sash:	Pour and de-bridge, one row,15.9 mm x 6.35 mm (0.625" x 0.25"), full perimeter
Fixed Meeting Stile:	Pour and de-bridge, one row, 15.9 mm x 6.35 mm (0.625" x 0.25")
Operable Meeting Stile:	Pour and de-bridge, one row, 15.9 mm x 6.35 mm (0.625" x 0.25")
Drainage/Ventilation:	
Frame:	
Drain Slot with Eyelid Covers:	Two, 37 mm x 8 mm (1.46" x 0.31"), sill, exterior face, 12 mm (0.59") from the ends
Drain Hole with Eyelid Covers:	Three, under one weep gate, 3 mm (0.12") diameter, sill, exterior face, center
Drain Slot:	Three, 26 mm x 6 mm (1.02" x 0.25"), screen track, exterior face, 75 mm (2.96") from the ends and center
Drain Slot	Two pairs, 20 mm x 5 mm (0.79" x 0.20"), sill, interior channel, 75 mm (2.96") and 775 mm (30.51") from operable jamb
Drain Hole:	Two pairs, 16 mm (0.63") diameter, sill interior track, 50 mm (1.98") and 815 mm (32.09") from fixed jamb
Fixed Unit:	
Drain Hole:	Two, 6.35 mm (0.25"), glazing cavity, 25 mm (0.98") from the ends
Sash:	
Drain Slot:	Two, 6.35 mm (0.25"), glazing cavity, 25 mm (0.98") from the ends

Weather-stripping
- Frame:
  - Pile with high fin: One row, 10 mm (0.39") high, fixed meeting stile, interior face
  - Pile with high fin: One row, 6 mm (0.24") high, sill adaptor, interior face
- Sash:
  - Pile: Two rows, 5 mm (020") high, top and bottom rails and lock stile, interior and exterior face
  - Pile with high fin: One row, 6 mm (0.24") high, operable meeting stile, exterior face

Add-Ons:
- Frame:
  - Sill Adaptor: Extruded Aluminum, One, 845 mm (33.27") long, sill at sash, mechanically fastened to sill with three #6x5/8" pan head screws, sealed along the full length with flexible sealant.
- Sash:
  - Interlock: Extruded Aluminum, snap on/in, full length sealed with flexible sealant

Hardware:
- Lock: Spring latch, Extruded Aluminum, snap on/in, one, lock stile, center
- Rollers: Four, aluminum casing, plastic wheel, underside of bottom rail, 220 mm 8.66 c/c, each fastened with two #10x1/2" screws

Screen:
- Single Slider: 835 mm x 1400 x 8 mm (32.87" x 55.12" x 0.31") Extruded aluminium frame, external aluminum corner key, aluminum mesh, rounded spline, supported on all sides
- Leaf Spring: metal, four, two at operable jamb 75 mm (2.95") from the ends, two at sill, 75 mm (2.95") fr0m the ends

Note: Details and drawings as provided by the manufacturer for the above unit have been included in Appendix A

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3.0 TEST RESULTS

Table 1 - Summarized Testing Results in Accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440S1-09 Canadian Supplement

Test	Requirements		Results		Rating
Operating Force (Clause 5.3.1) *Per ASTM E2068* **Test Date:** October 31, 2016	**Operating:** The maximum force to initiate and maintain the sash shall be less than the following, N (lbf)		Sash Measured Force, N (lbf)		**PASS**
	US Application:				
	Force to Initiate	Report only	Initiate:	88.3 (19.85)	
	Force to Maintain	115 (25)	Maintain:	29.6 (6.65)	
	Canadian Application:				
	Force to Initiate:	90 (20)			
	Force to Maintain:	45 (10)			
	Latching Device: The maximum force required to open and close the latch shall be less than the following:		Latching Device Measured force, N (lbf)		
			Open:	7.3 (1.64)	
	Maximum Force:	100 (22.48)	Close:	Spring Loaded	
Air Leakage Resistance (Clause 5.3.2) *Per ASTM E283* **Test Date:** November 9, 2016	Allowable rate of air leakage shall be less than or equal to the following, L/s.m² (cfm/ft²), at the subsequent test pressure:		Test area, m² (ft²): 2.72 (29.22)		**PASS** Canadian A2 Level
			Measured Air Leakage Rate, L/s.m² (cfm/ft²):		
	Test Pressure, Pa (psf):	75 (1.6)			
	Gateway:	1.5 (0.3)	Infiltration:	0.03 (0.01)	
			Exfiltration:	0.64 (0.13)	
Water Penetration Resistance (Clause 5.3.3) *Per ASTM E547* **Test Date:** November 9, 2016	No water leakage shall be observed at the following specified pressure differential, Pa (psf):		No water leakage was observed at the following specified pressure differential, Pa (psf):		**PASS** Gateway **(CW30-HS)** Optional Performance **(CW45-HS)**
	Gateway Performance:		**Gateway Performance:**		
	Test Pressure:	220 (4.50)	Test Pressure:	220 (4.50)	
	Optional Performance: (US / CAN)		**Optional Performance: (US / CAN)**		
	Test Pressure:	330 (6.75)	Test Pressure: (with screen)	330 (6.75)	
			Test Pressure: (without screen)	330 (6.75)	

Table 1, Continued - Summarized Testing Results in Accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440S1-09 Canadian Supplement

Test	Requirements		Results		Rating
Uniform Load Deflection (Clause 5.3.4.2) *Per ASTM E330* **Test Date:** November 17, 2016	No member shall deflect more that L/175 of unsupported span at the following specified test pressures, Pa (psf):		Measured net deflection of Meeting Sile, mm (in):		**Report Only** Gateway **(CW30-HS)** Optional Performance **(CW70-HS)**
	Allowable Deflection, mm (in): 8.71 (0.34)		Meeting Stile span mm (in): 1525 (60.04)		
	Gateway Performance:		Positive:	6.66 (0.26)	
	Test Pressure:	±1440 (30.00)	Negative:	-7.75 (-0.30)	
	Optional Performance:				
	Test Pressure:	±3360 (70.00)			
Uniform Load Structural (Clause 5.3.4.3) *Per ASTM E330* **Test Date:** November 17, 2016	There shall be no permanent damage to the window components after the following specified test pressures, Pa (psf). No member shall have permanent deflect more that 0.3% of span.		Measured permanent deflection of Meeting Stile, mm (in):		**PASS** Gateway **(CW30-HS)** Optional Performance **(CW70-HS)**
	Allowable permanent deflection, mm (in): 4.58 (0.18)		Meeting Stile span, mm (in): 1525 (60.04)		
	Gateway Performance:		Positive:	0.29 (0.01)	
	Test pressure:	±2160 (45.00)	Negative:	0.26 (0.01)	
	Optional Performance:				
	Test pressure:	±5040 (105.00)			

Table 1, Continued - Summarized Testing Results in Accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440S1-09 Canadian Supplement

Test	Requirements					Results		Rating
Forced-Entry Resistance (Clause 5.3.5) *Per ASTM F588* **Test Date:** November 18, 2016	No entry shall be gained during the following test sequence:					For Type A Window no entry was gained during the following specified test sequence:		**PASS** Grade 20
	Load Identification	Grade Loads, N (lbf)						
		10	20	30	40			
	Disassembly T1:	5 min		10 min		Disassembly T1:	No Entry	
	Manipulation T1:	5 min		10 min		Manipulation T1:	No Entry	
	L1:	667 (150)	890 (200)	1112 (250)	1334 (300)	L1:	No Entry	
	L2:	333 (75)	445 (100)	556 (125)	667 (150)	L1+L2	No Entry	
	L3:	111 (25)	155 (35)	222 (50)	267 (60)	L1+L2+L3	No Entry	
						L1+L2+L3+Lift	No Entry	
Deglazing *(Clause 5.3.6.3)* *Per ASTM E987* **Test Date** November 18, 2016	The panel shall be operable and there shall be no glass breakage or disengagement of glazing materials from panel frame after the application following test loads , N(lbf)					Measured Panel deflection, mm (in):		**PASS**
						Member:	Deflection:	
						Top Rail:	0.33 (0.01)	
						Bottom Rail:	0.13 (0.01)	
	Stiles test load:	320 (70)				Pull Stile:	0.60 (0.02)	
	Rails test load:	230 (50)				Meeting Stile:	0.58 (0.02)	
Insect Screen Serviceability (Canadian Supplement Section 5.1) *Per ASTM E1748* **Test Date:** November 18, 2016	There shall be no disengagement or deformation of screen members after the application of the following test load, N (lbf):					No disengagement or deformation of screen members was observed after the application of test load		**PASS**
	Test Load:	60 (13.5)						

4.0 MODIFICATIONS

The following modification was made to the Windspec Inc., Single Sliding Window "720 Side Slider", Exova Specimen No.: 16-06-M0220-1, during testing to achieve the results stated in this report.

- Water Penetration Resistance:
  - Two Pairs of 16 mm (0.63") drain holes were added to the sill's interior track at 50 mm (1.98") and 815 mm (32.09") from fixed jamb

5.0 CONCLUSIONS

Based on the results of the testing summarised in Tables 1, Windspec Inc., Single Sliding Window "720 Side Slider" Exova Specimen No.: 16-06-M0220-1 met the following requirements as outlined in the AAMA/WDMA/CSA 101/I.S.2/A440-08 standard and CSA A440S1-09 Canadian Supplement.

Performance Rating

• Air Leakage Resistance	Pass (A2 Level Canadian)
• Water Penetration Resistance	330 Pa (6.75 psf) (without screen) 330 Pa (6.75 psf) (with screen)
• Uniform Load Deflection	±3360 Pa (70.00 psf)
• Uniform Load Structural	±5040 Pa (105.00 psf)
• Forced Entry Resistance	Grade 20
• Deglazing	Pass
• Insect Screen Serviceability	Pass

Product Designation for Class LC:

- Class CW – PG2160 – Size tested 1800 x 1525 mm – Horizontal Slider
- Class CW – PG45 – Size tested 70.87 x 60.04 in – HS

Product Manufacturer:	Windspec Inc.
Product Type:	Horizontal Sliding Window
Product Series/Model:	720 Side Slider, 1800 mm x 1525 mm (70.87 in x 60.04 in)
Primary Product Designator:	Class CW – PG2160 – Size tested 1800 x 1525 mm – Horizontal Slider Class CW – PG45 – Size tested 70.87 x 60.04 in – HS
Secondary Product Designator:	
Air Infiltration/Exfiltration:	Canadian A2 Level
Water Penetration Resistance:	330 Pa (6.75 psf) (with and without screen)
Negative Design Pressure:	3360 Pa (45.00 psf)
Positive Design Pressure:	3360 Pa (45.00 psf)
Test Completion Date:	November 18, 2016

6.0 REPORT REVISION SUMMARY

Revision No:	Date:	Description of Revisions:
Original	2016-December-19	Original Document

Reported by:

Scott Hallam, B.Eng. Ext. 11511
Building Systems Specialist, Building Systems
Products Testing Division

Reviewed by:

Haya Soghrati, B.Arch. Sc, (Building Science), Ext. 11227
Fenestration Services Project Manager, Building Systems
Product Testing Division

APPENDIX A

Manufacturer's Detail Drawings

(24 Pages)

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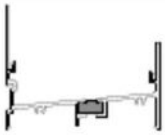
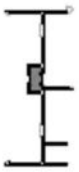
720 SLIDER

PARTS LIST

Profile	Description	Windspec #	Supplier #
	SIDE SLIDER HEADER	W-72001	ES-15295 by Can-Art
	SIDE SLIDER SASH	W-72009	EH-15293 by Can-Art
	GLASS STOP	W-72012	AS-38456 by SAPA
	SLIDER SCREEN	W-42010	ES-09318 by Can-Art
	SIDE SLIDER SILL	W-72022	AS-50279 by SAPA
	SIDE SLIDER SILL ADAPTOR	W-72023	AS-53583 by SAPA
	SIDE SLIDER LOCKING JAMB	[illegible]	AS-37681 by SAPA

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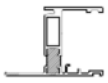
720 SLIDER

PARTS LIST

Profile	Description	Windspec #	Supplier #
	SLIDER PULL RAIL	W-72008	EH-15294 by Can-Art
	LOCK HANDLE	W-74011	AS-38626 by SAPA
	SIDE SLIDER MEET RAIL	W-72007	EH-15300 by Can-Art
	SIDE SLIDER INTERLOCKING MULLION	W-72006	AH-38410 by SAPA
	MEETING RAIL COVER	W-72010	AS-38417 by SAPA
	SEALED UNIT FIXED FRAME	W-72005	AS-38419 APA

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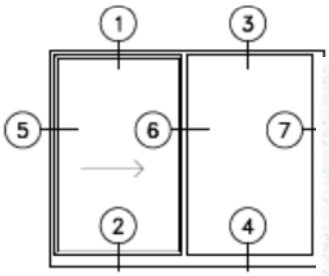
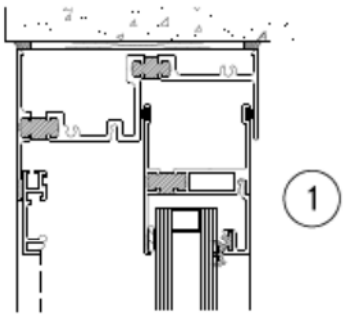
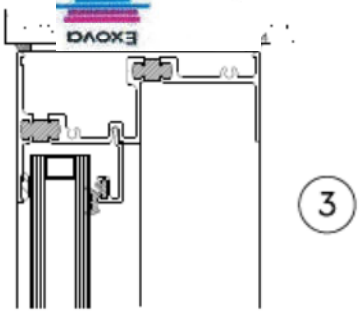
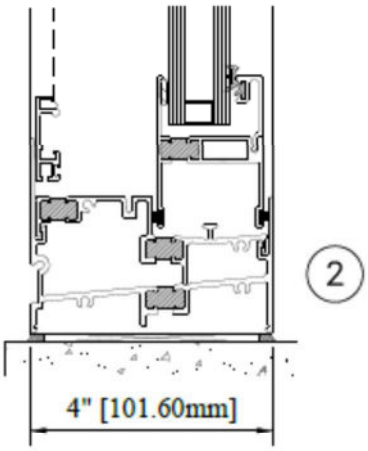
720 SERIES

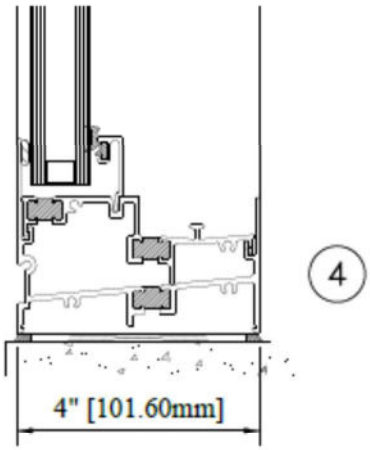
720 SIDE SLIDER











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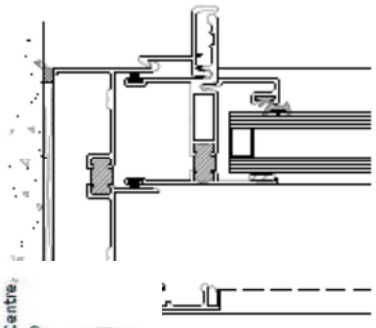
720 SERIES

720 SIDE SLIDER



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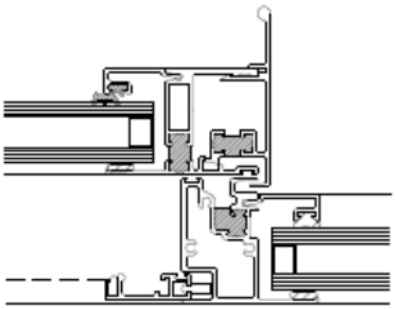

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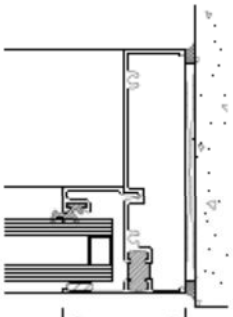

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720 SERIES
SLIDER HEAD DETAILS

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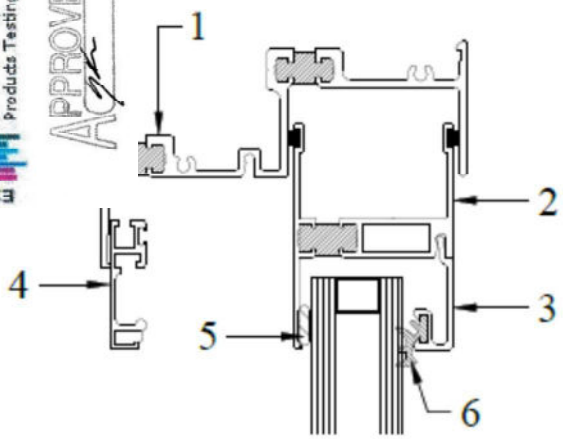
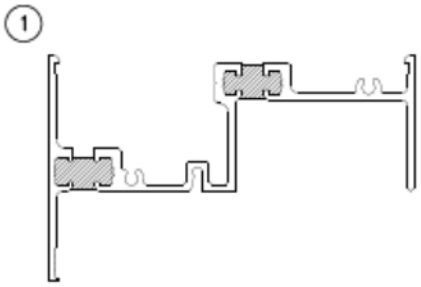
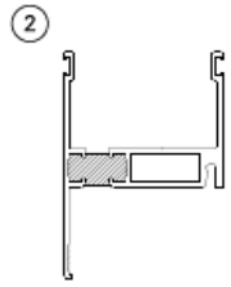
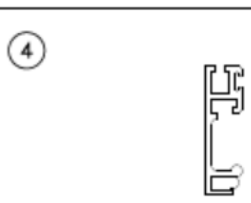


1. Side Slider Header
2. Side Slider Sash
3. Glass Stop
4. Slider Screen
5. $\frac{1}{8}$" Polyshim
6. Glazing Spline







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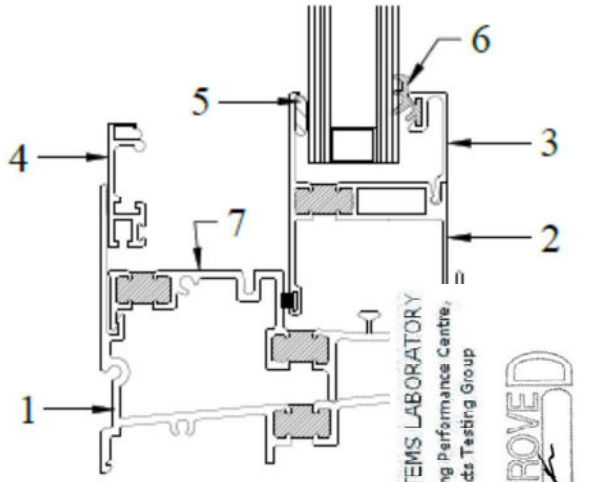
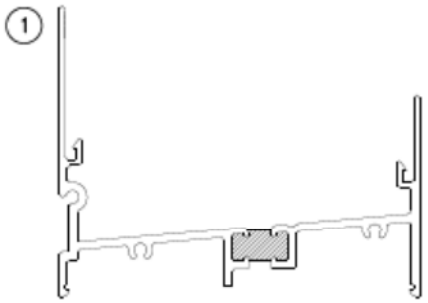
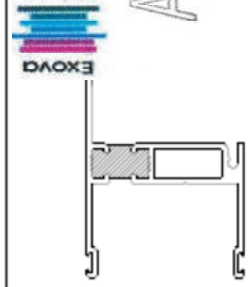
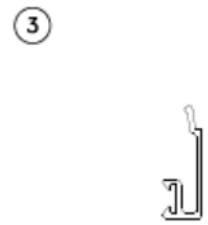
SLIDER SILL DETAILS

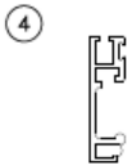


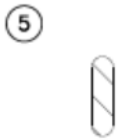
1. Side Slider Sill
2. Side Slider Sash
3. Glass Stop
4. Slider Screen
5. $\frac{1}{8}$" Polyshim
6. Glazing Spline
7. Side Slider Sill Adaptor

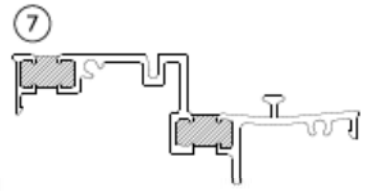












WINDSPEC INC.
MANUFACTURERS OF HIGH PERFORMANCE 'WINDSPEC' WINDOWS
ALUMINUM ENTRANCE SYSTEMS AND ARCHITECTURAL PANELS
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Telephone (905) 738 -8311 Fax (905) 738 - 6188

JULY 2016

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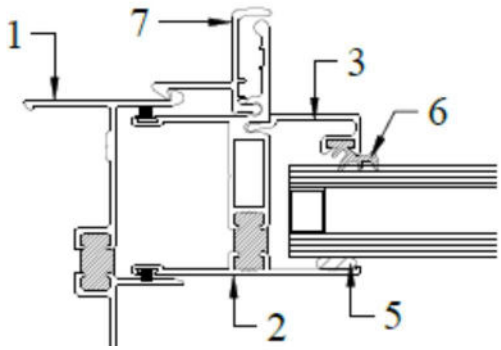
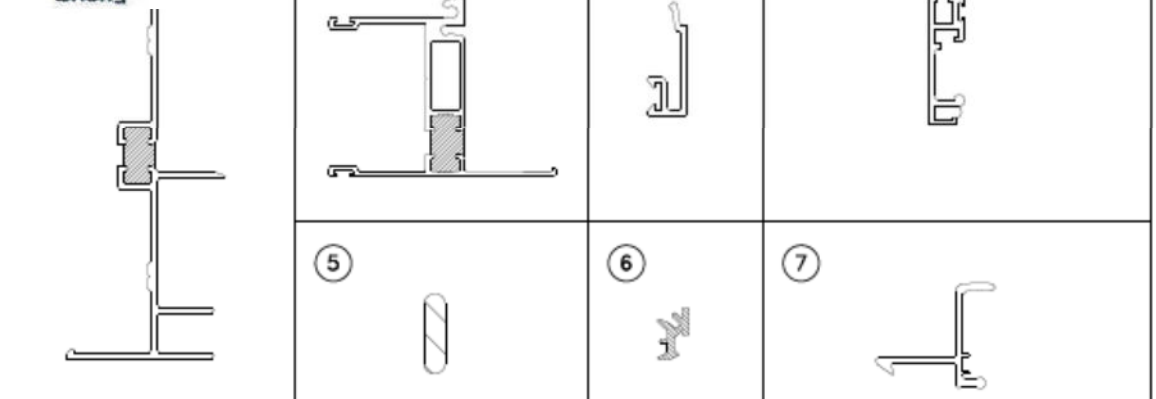
720 SERIES

SLIDER LOCKING JAMB DETAILS



1. Side Slider Locking Jamb
2. Slider Pull Rail
3. Glass Stop
4. Slider Screen
5. $\frac{1}{8}$" Polyshim
6. Glazing Spline
7. Lock Handle

SYSTEMS LABORATORY
Building Performance Centre,
Products Testing Group
EXOVA
APPROVED



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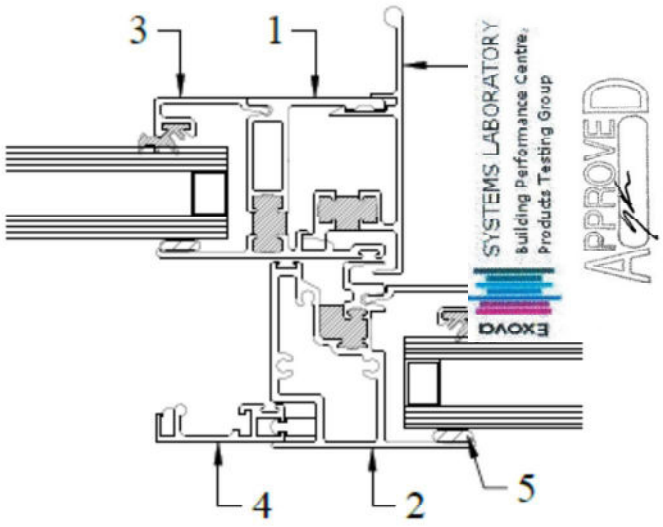
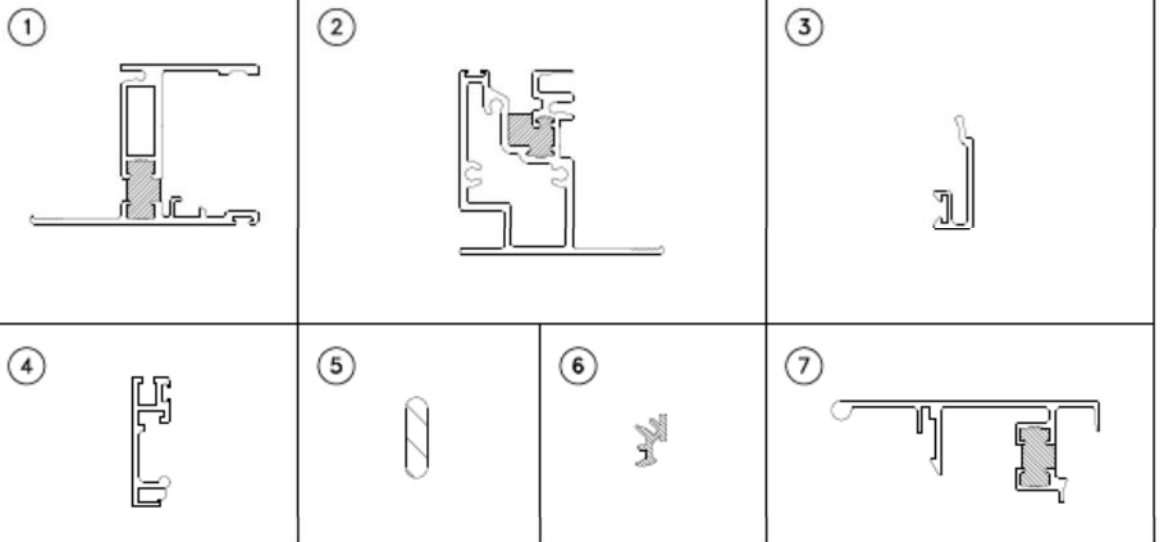
720 SERIES
SLIDER INTERLOCKING DETAILS



1. Side Slider Meet Rail
2. Side Slider Interlocking Fix Mullion
3. Glass Stop
4. Slider Screen
5. $\frac{1}{8}$" Polyshim
6. Glazing Spline
7. Meeting Rail Cover



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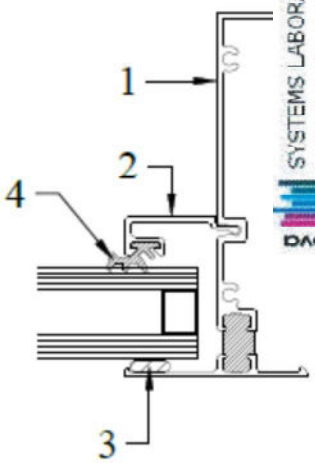
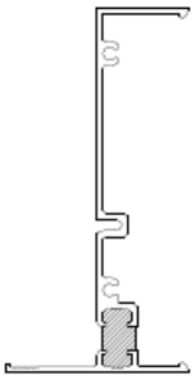
PAGE
720–007

720 SERIES
FIXED JAMB DETAILS



1. Sealed Unit Fixed Frame
2. Glass Stop
3. $\frac{1}{8}$" Polyshim
4. Glazing Spline

① 

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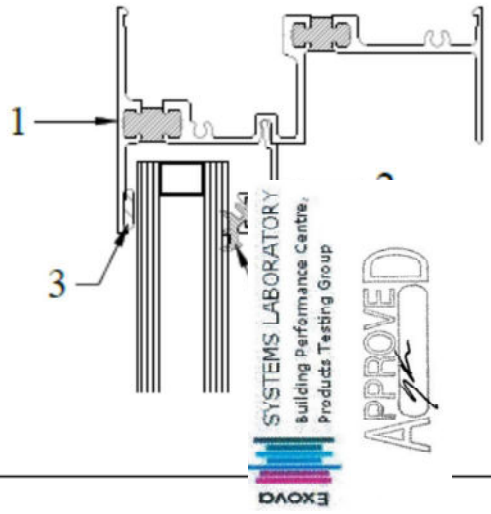
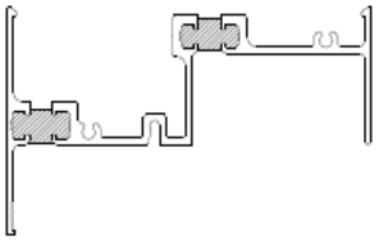
720 SERIES
FIXED HEADER DETAILS



1. Side Slider Header
2. Glass Stop
3. $\frac{1}{8}$" Polyshim
4. Glazing Spline

① 

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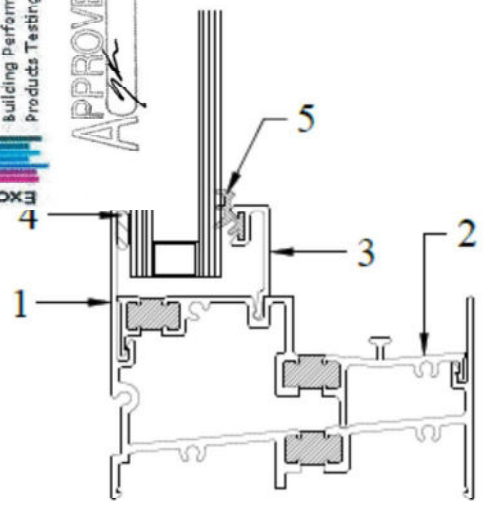
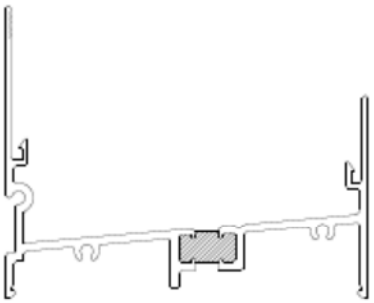
720 SERIES
FIXED SILL DETAILS

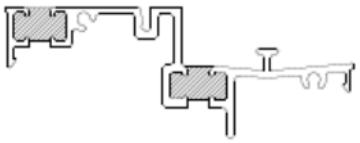
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
EXOVA

APPROVED



1. Side Slider Sill
2. Side Slider Sill Adaptor
3. Glass Stop
4. $\frac{1}{8}$" Polyshim
5. Glazing Spline

① 

② 

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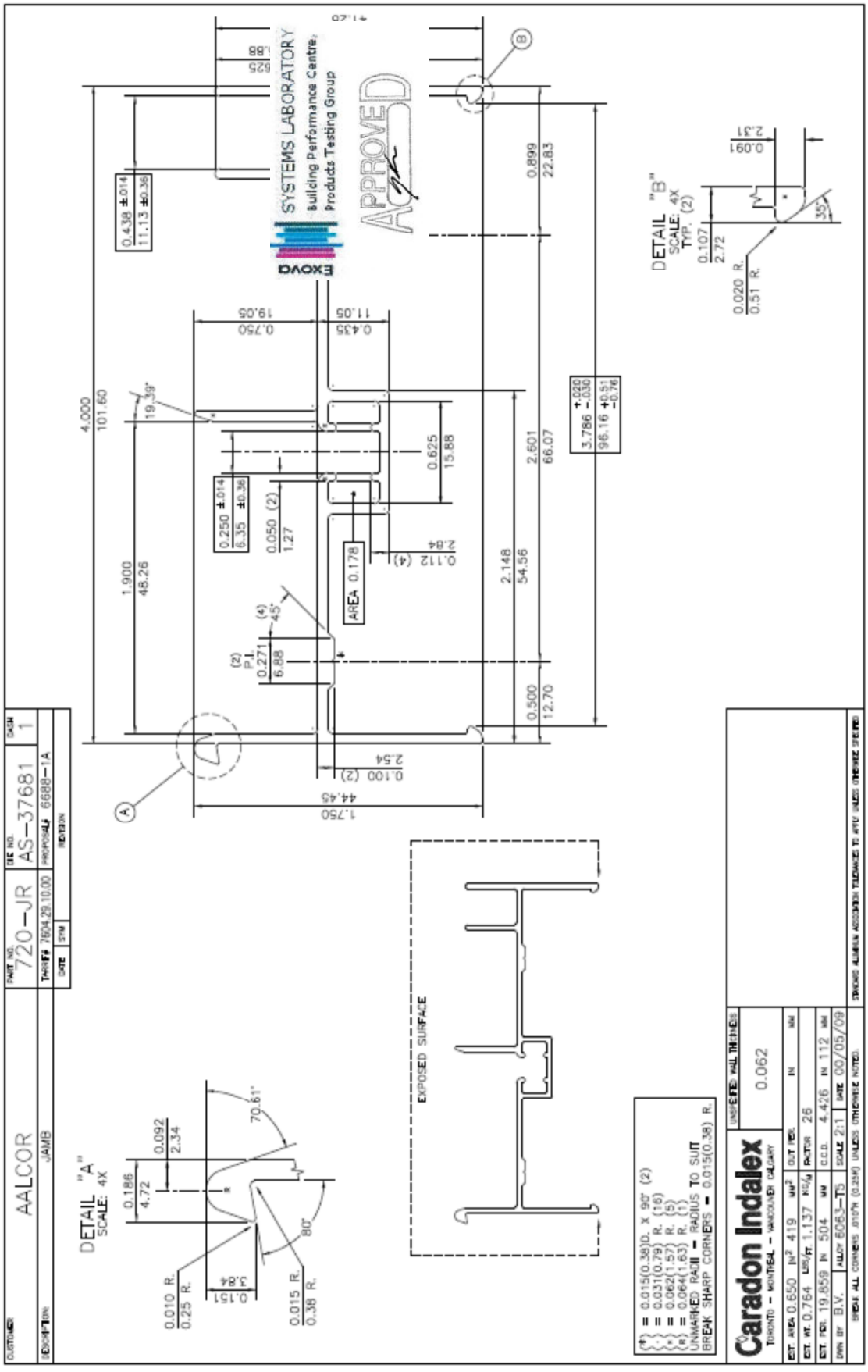
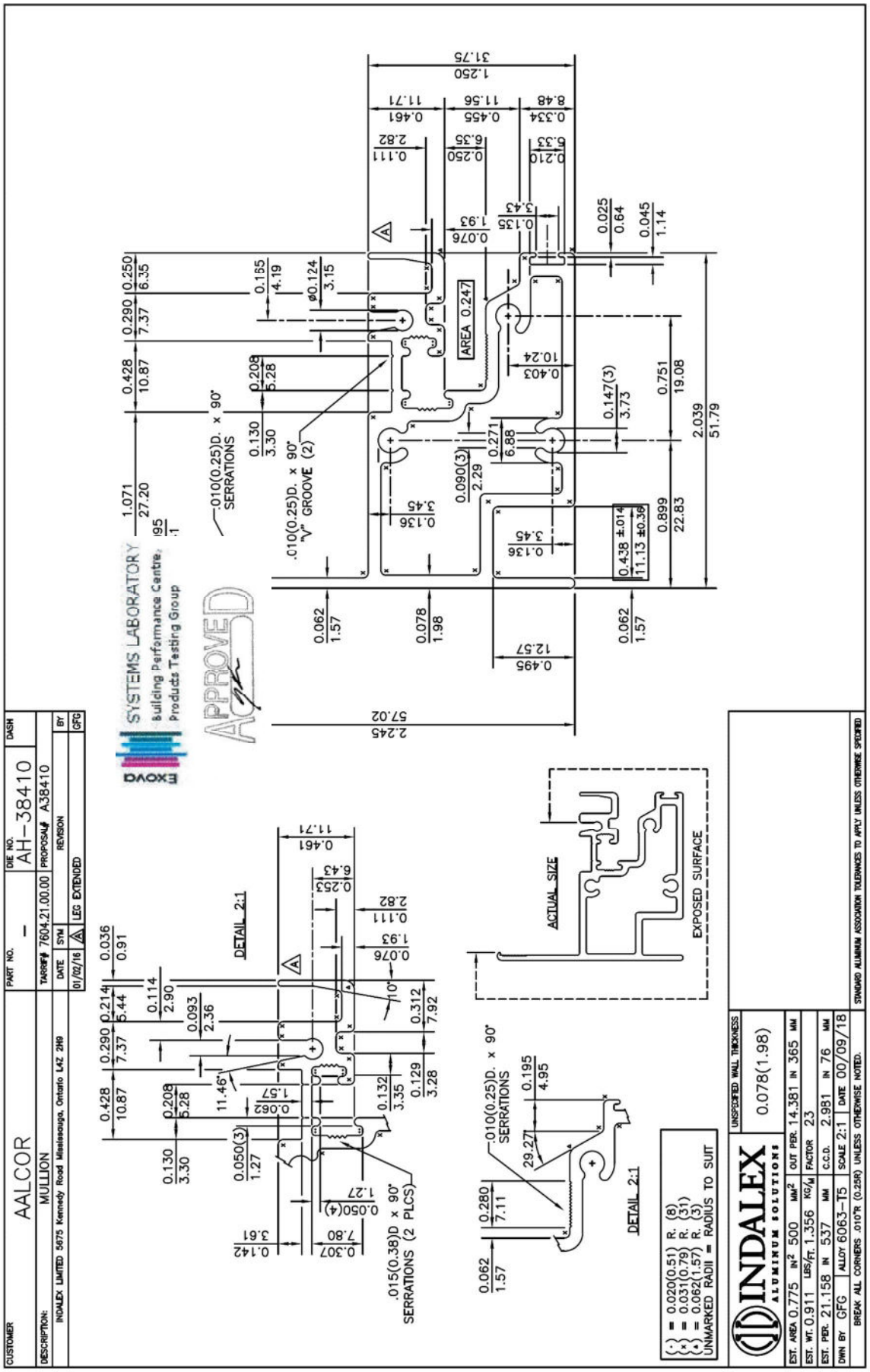
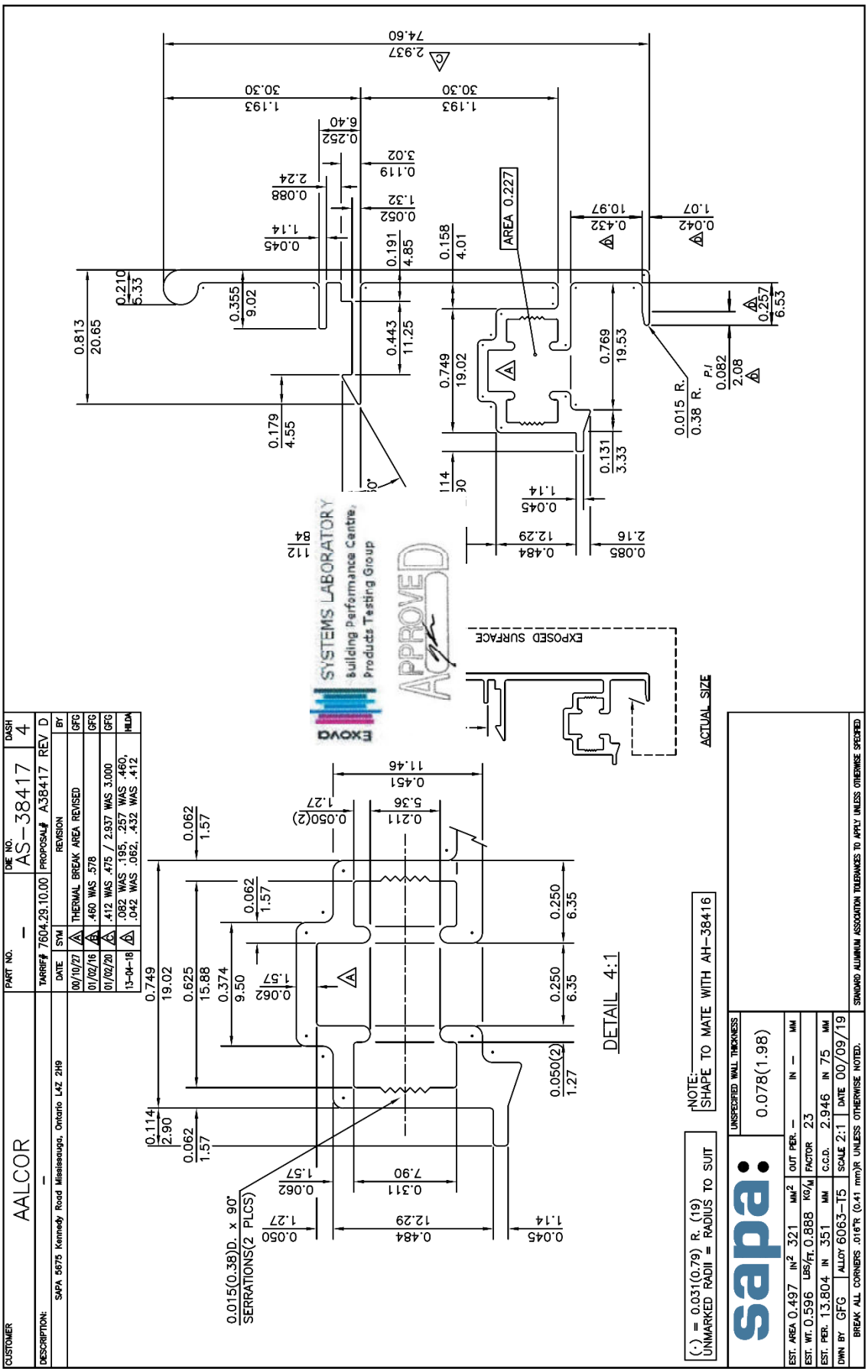
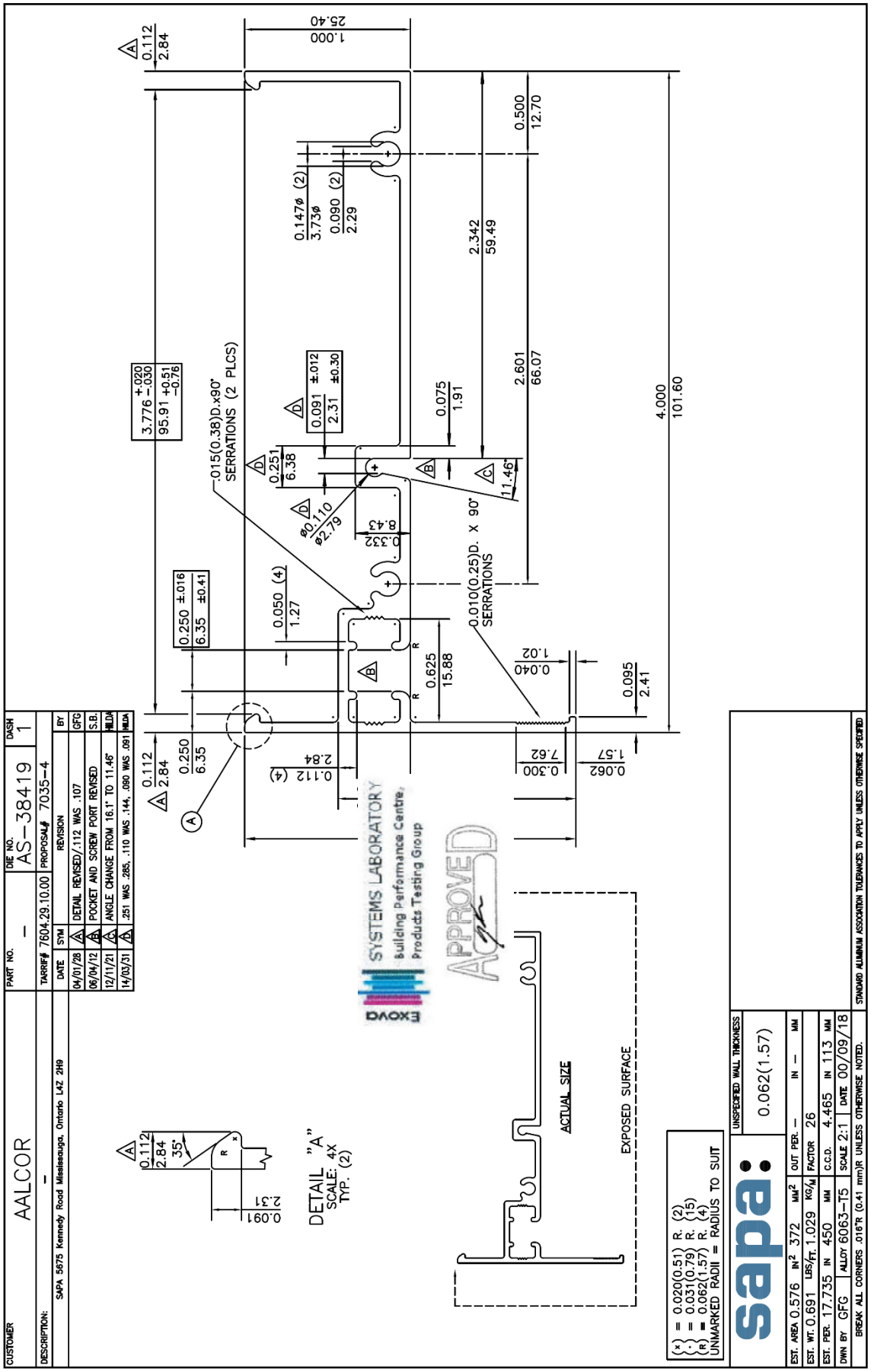
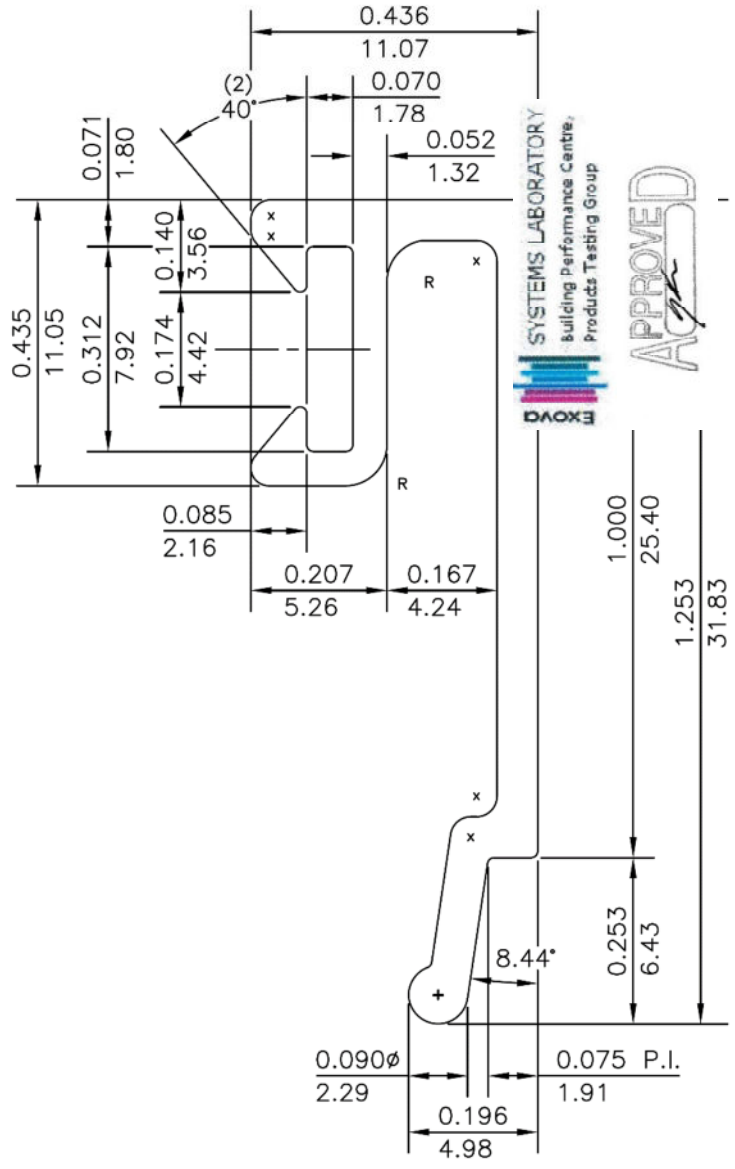

SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
AALCOR
720–JR
AS–37681
6688–1A
JAMB
DETAIL "A"
SCALE: 4X
DETAIL "B"
SCALE: 4X
TYP. (2)
EXPOSED SURFACE
AREA 0.178
Caradon Indalex
TORONTO – MONTREAL – VANCOUVER CALGARY
0.062
BREAK SHARP CORNERS – 0.015(0.38) R.
UNMARKED RADII – RADIUS TO SUIT
(*) = 0.015(0.38)D. X 90° (2)
(-) = 0.031(0.79) R. (16)
(•) = 0.062(1.57) R. (5)
(R) = 0.064(1.63) R. (1)

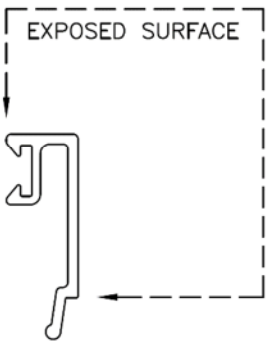

CUSTOMER
AALCOR
PART NO. –
DIE NO. AH–38410
DASH
DESCRIPTION:
MULLION
TARRIF# 7604.21.00.00
PROPOSAL# A38410
INDALEX LIMITED 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
SYM
REVISION
BY
01/02/16
LEG EXTENDED
GFG
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
DETAIL 2:1
ACTUAL SIZE
EXPOSED SURFACE
.010(0.25)D. x 90° SERRATIONS
.010(0.25)D. x 90° "V" GROOVE (2)
AREA 0.247
.015(0.38)D x 90° SERRATIONS (2 PLCS)
(.) = 0.020(0.51) R. (8)
(.) = 0.031(0.79) R. (31)
(.) = 0.062(1.57) R. (3)
UNMARKED RADII = RADIUS TO SUIT
UNSPECIFIED WALL THICKNESS
0.078(1.98)
INDALEX
ALUMINUM SOLUTIONS
EST. AREA 0.775 IN² 500 MM² | OUT PER. 14.381 IN 365 MM
EST. WT. 0.911 LBS/FT. 1.356 KG/M | FACTOR 23
EST. PER. 21.158 IN 537 MM | C.C.D. 2.981 IN 76 MM
DWN BY GFG | ALLOY 6063–T5 | SCALE 2:1 | DATE 00/09/18
BREAK ALL CORNERS .010"R (0.25R) UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED


CUSTOMER
AALCOR
PART NO.
–
DIE NO.
AS–38417
DASH
4
DESCRIPTION:
–
TARRIF# 7604.29.10.00
PROPOSAL# A38417
REV D
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
SYM
REVISION
BY
00/10/27
THERMAL BREAK AREA REVISED
GFG
01/02/16
.460 WAS .578
GFG
01/02/20
.412 WAS .475 / 2.937 WAS 3.000
GFG
13-04-18
.082 WAS .195, .257 WAS .460, .042 WAS .062, .432 WAS .412
HLDM
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
EXPOSED SURFACE
ACTUAL SIZE
DETAIL 4:1
NOTE:
SHAPE TO MATE WITH AH–38416
(·) = 0.031(0.79) R. (19)
UNMARKED RADII = RADIUS TO SUIT
0.015(0.38)D. x 90°
SERRATIONS(2 PLCS)
AREA 0.227
sapa
UNSPECIFIED WALL THICKNESS
0.078(1.98)
EST. AREA 0.497 IN² 321 MM² OUT PER. — IN — MM
EST. WT. 0.596 LBS/FT. 0.888 KG/M FACTOR 23
EST. PER. 13.804 IN 351 MM C.C.D. 2.946 IN 75 MM
DWN BY GFG ALLOY 6063–T5 SCALE 2:1 DATE 00/09/19
BREAK ALL CORNERS .016"R. (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED


CUSTOMER AALCOR
PART NO. –
DIE NO. AS–38419
DASH 1
DESCRIPTION: –
TARRIF# 7604.29.10.00
PROPOSAL# 7035–4
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE STM REVISION BY
04/01/28 DETAIL REVISED/.112 WAS .107 GFG
06/04/12 POCKET AND SCREW PORT REVISED S.B.
12/11/21 ANGLE CHANGE FROM 16.1° TO 11.46° HLDA
14/03/31 251 WAS .285, .110 WAS .144, .090 WAS .091 HLDA
0.112 2.84
0.250 6.35
0.250 ±.016 6.35 ±0.41
0.050 (4) 1.27
0.112 2.84
0.011 (4) 0.28
0.625 15.88
0.040 1.02
0.095 2.41
0.062 1.57
0.300 7.62
0.091 2.31
35°
DETAIL "A" SCALE: 4X TYP. (2)
3.776 +.020 −.030 95.91 +0.51 −0.76
.015(0.38)D.x90° SERRATIONS (2 PLCS)
0.251 6.38
0.091 ±.012 2.31 ±0.30
Ø0.110 Ø2.79
0.332 8.43
0.075 1.91
11.46°
.010(0.25)D. x 90° SERRATIONS
0.112 2.84
1.000 25.40
0.147Ø (2) 3.73Ø
0.090 (2) 2.29
2.342 59.49
2.601 66.07
0.500 12.70
4.000 101.60
SYSTEMS LABORATORY
Building Performance Centre, Products Testing Group
EXOVA
APPROVED
ACTUAL SIZE
EXPOSED SURFACE
(x) = 0.020(0.51) R. (2)
⟨ ⟩ = 0.031(0.79) R. ⟨15⟩
(R) = 0.062(1.57) R. (4)
UNMARKED RADII = RADIUS TO SUIT
UNSPECIFIED WALL THICKNESS
0.062(1.57)
sapa
EST. AREA 0.576 IN² 372 MM² OUT PER. — IN — MM
EST. WT. 0.691 LBS/FT. 1.029 KG/M FACTOR 26
EST. PER. 17.735 IN 450 MM C.C.D. 4.465 IN 113 MM
DWN BY GFG ALLOY 6063–T5 SCALE 2:1 DATE 00/09/18
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

CUSTOMER		PART NO.	DIE NO.	DASH
	AALCOR	–	AS–38456	1
DESCRIPTION:	1" GLASS STOP	TARRIF# 7604.29.10.00	PROPOSAL# 7063–1	
DATE	SYM	REVISION		





ACTUAL SIZE

(×) = 0.031(0.79) R. (6)
(R) = 0.063(1.60) R. (2)
UNMARKED RADII = RADIUS TO SUIT

INDALEX ALUMINUM SOLUTIONS

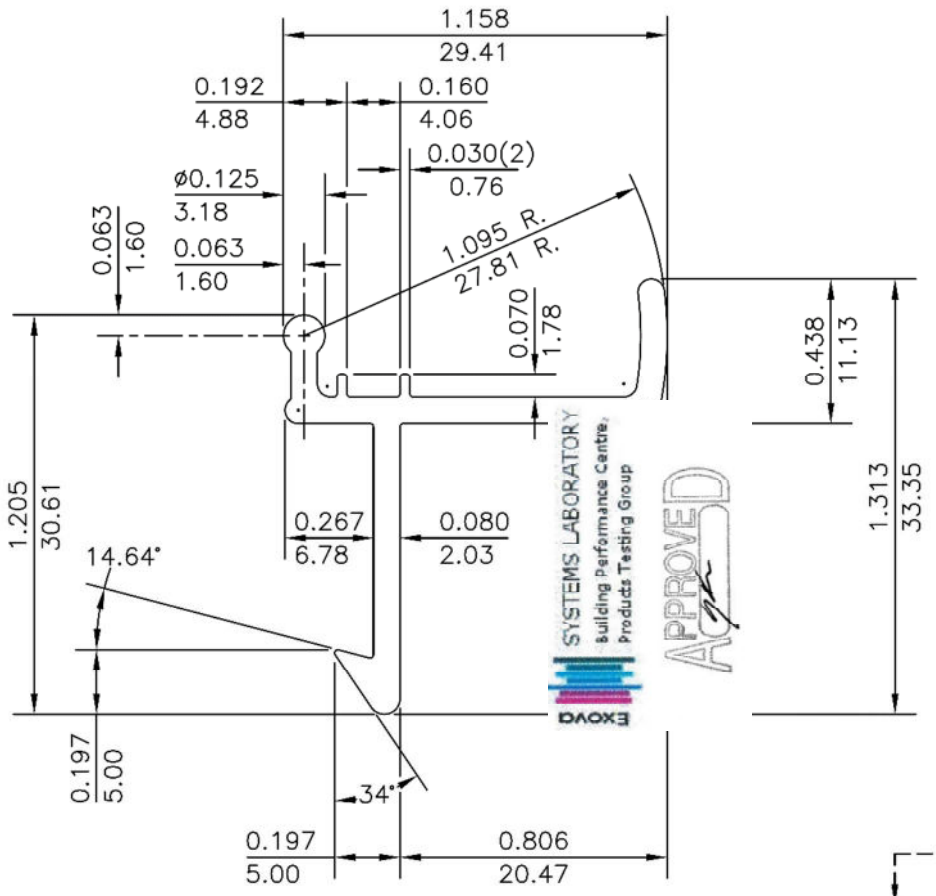
UNSPECIFIED WALL THICKNESS	
0.062(1.57)	

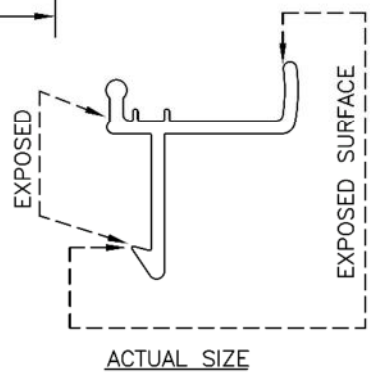
EST. AREA 0.141 IN² 91 MM²		OUT PER. – IN – MM	
EST. WT. 0.166 LBS/FT. 0.247 KG/M		FACTOR 28	
EST. PER. 4.608 IN 117 MM		C.C.D. 1.286 IN 33 MM	
DWN BY GFG	ALLOY 6063–T5	SCALE 4:1	DATE 00/09/28

BREAK ALL CORNERS .010"R (0.25R) UNLESS OTHERWISE NOTED.

STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

CUSTOMER	PART NO.	DIE NO.	DASH
AALCOR	–	AS–38626	1
DESCRIPTION: –	TARRIF# 7604.29.10.00	PROPOSAL# 7111–4A	
INDALEX LIMITED 5675 Kennedy Road Mississauga, Ontario L4Z 2H9	DATE / SYM / REVISION		





ACTUAL SIZE

(·) = 0.040(1.02) R. (3)
(×) = 0.080(2.03) R. (1)
UNMARKED RADII = RADIUS TO SUIT

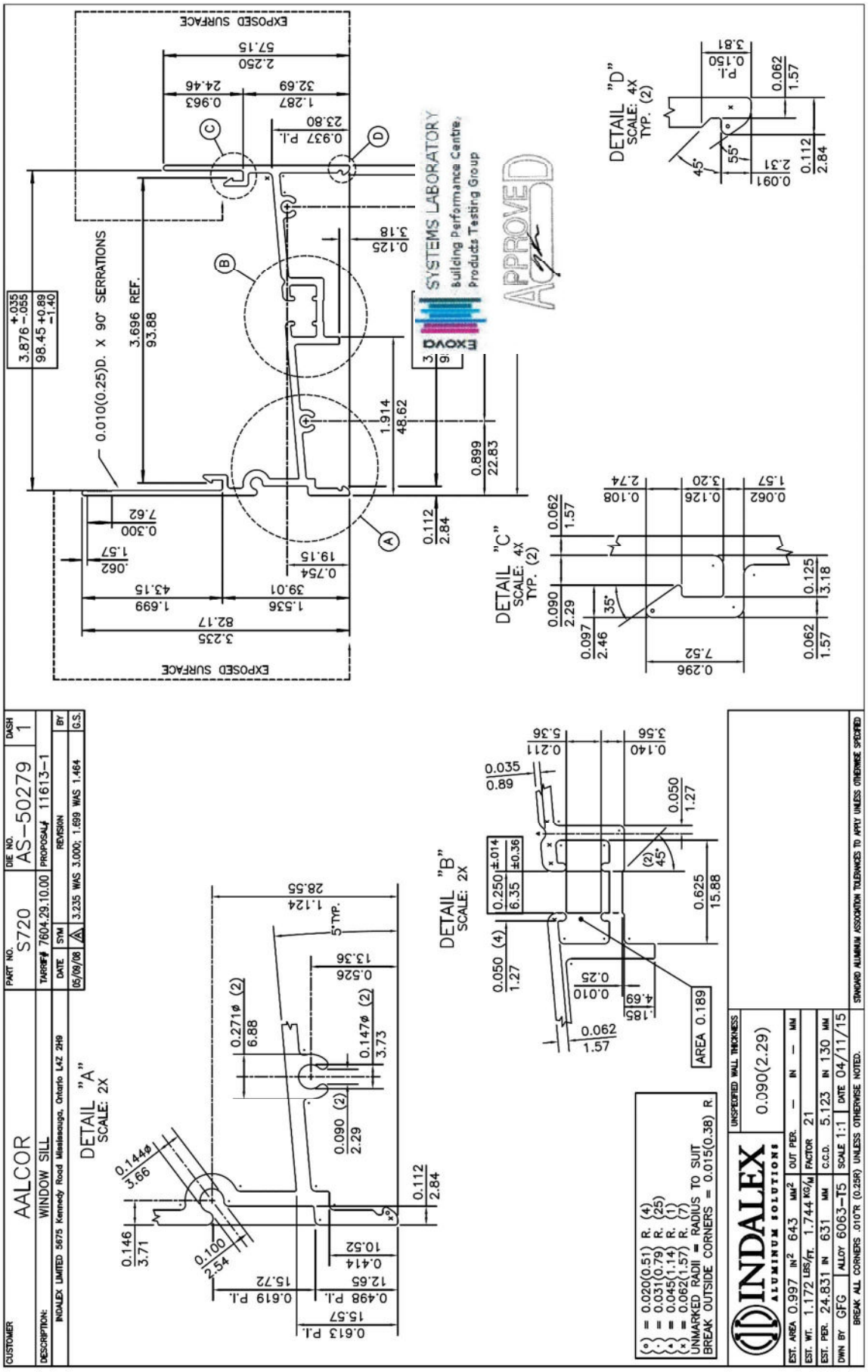
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA

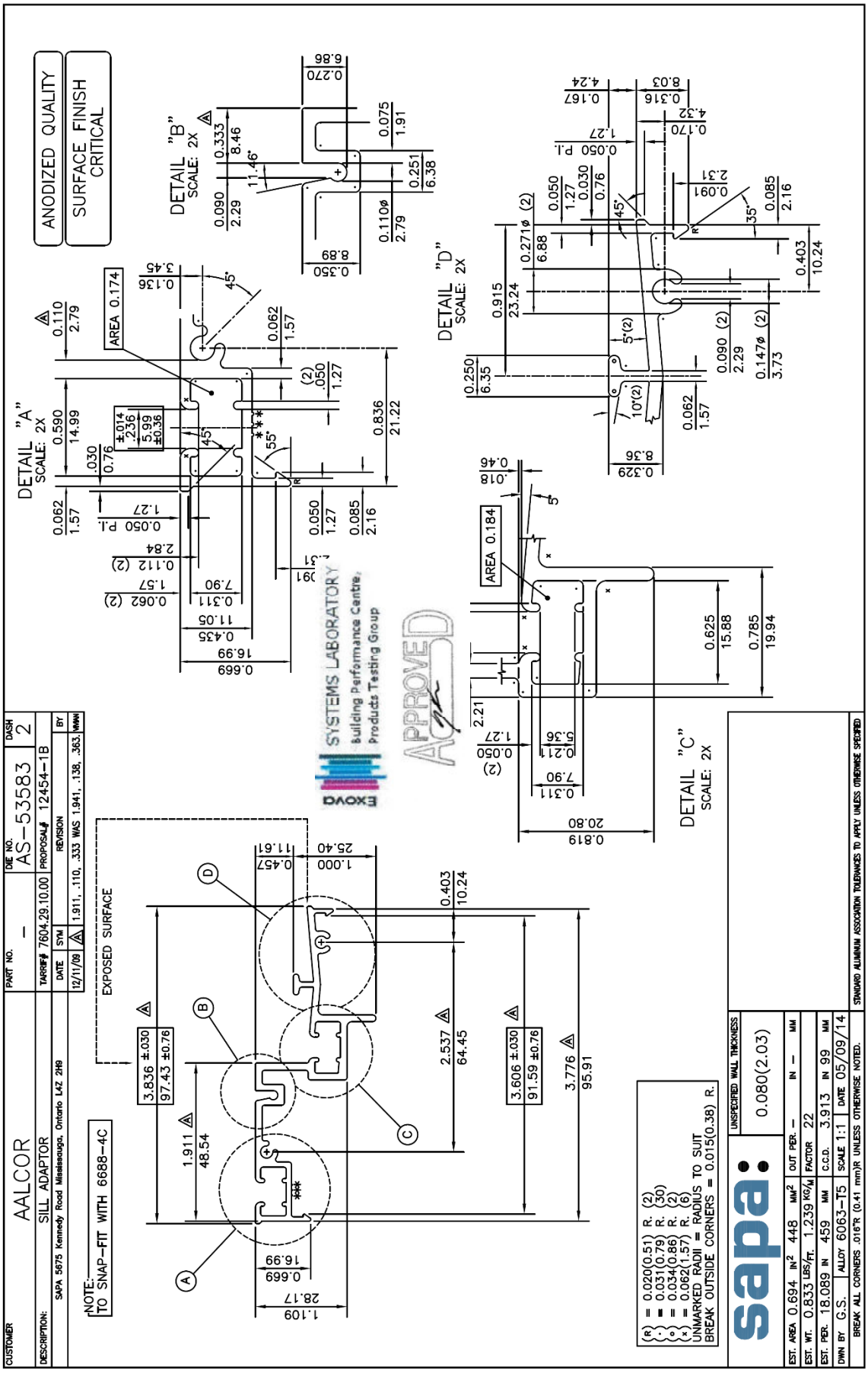
INDALEX ALUMINUM SOLUTIONS

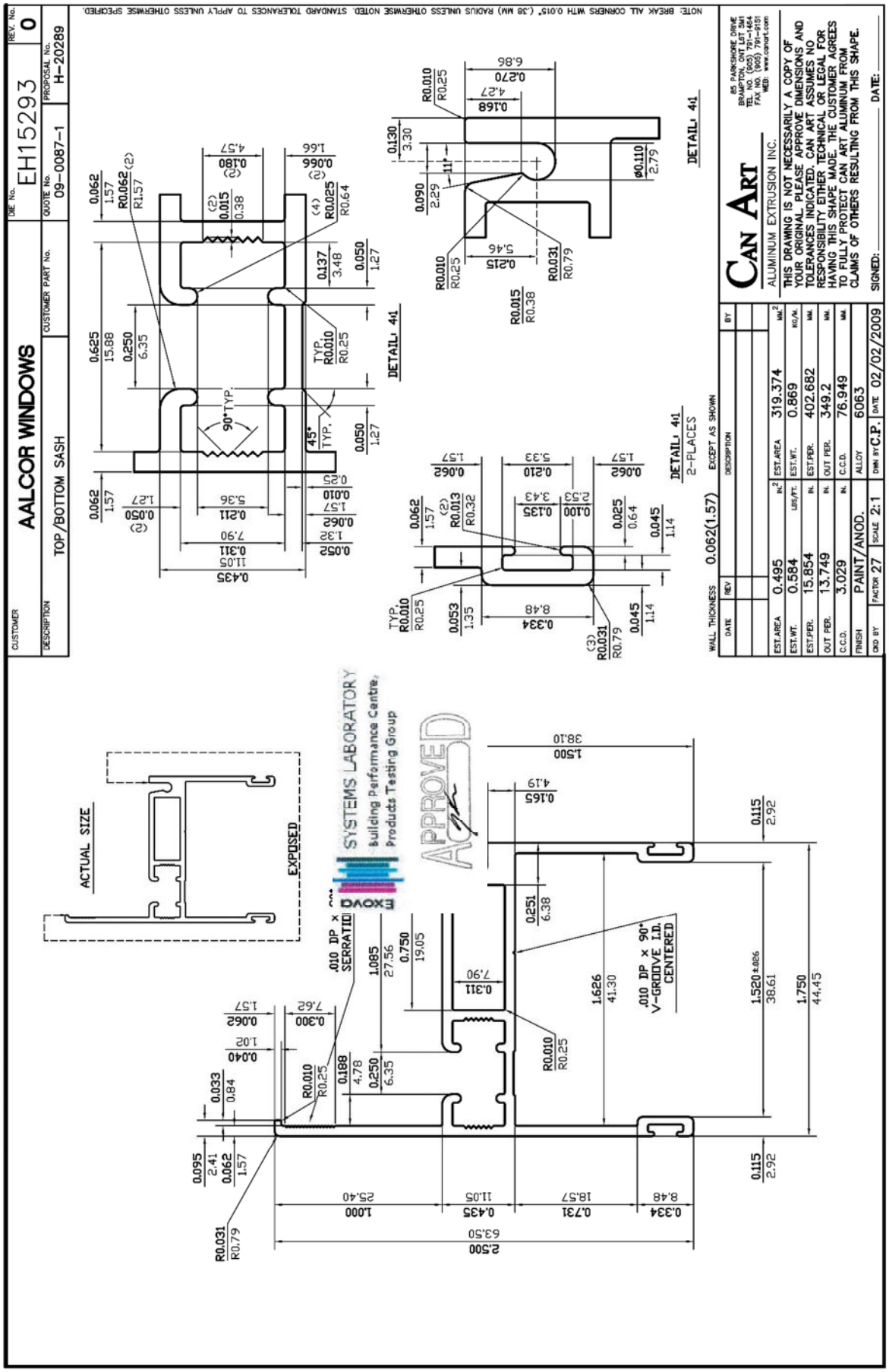
UNSPECIFIED WALL THICKNESS	
0.080(2.03)	
EST. AREA 0.224 IN² 144 MM²	OUT PER. – IN – MM
EST. WT. 0.263 LBS/FT. 0.392 KG/M	FACTOR 21
EST. PER. 5.656 IN 144 MM	C.C.D. 1.580 IN 40 MM
DWN BY GFG / ALLOY 6063–T5	SCALE 2:1 / DATE 00/10/23

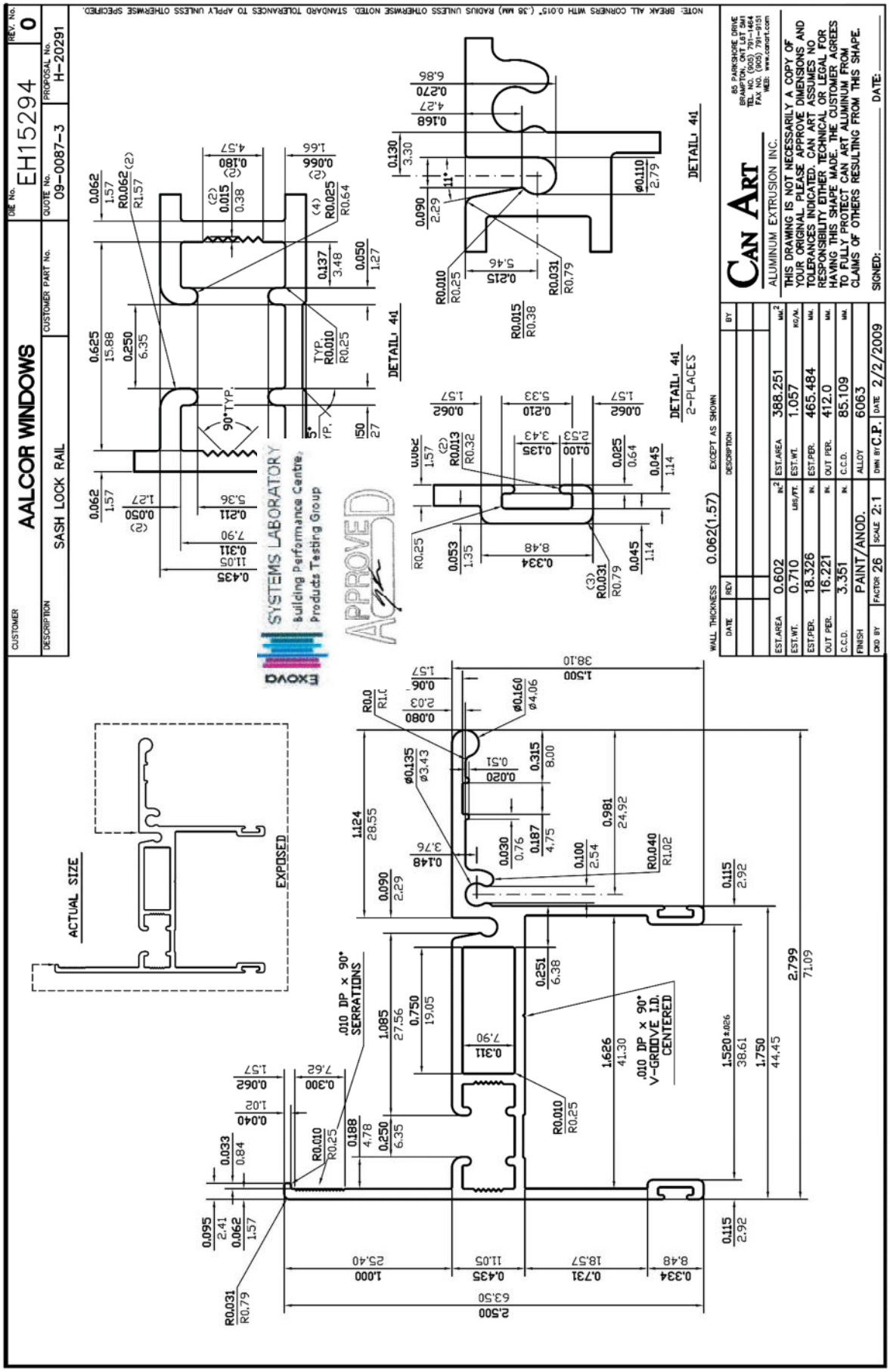
BREAK ALL CORNERS .010"R (0.25R) UNLESS OTHERWISE NOTED.

STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED


SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
EXOVA
APPROVED
EXPOSED SURFACE
0.010(0.25)D. X 90° SERRATIONS
3.876 +.035 −.055
98.45 +0.89 −1.40
3.696 REF.
93.88
3.235
82.17
1.699
43.15
1.536
39.01
.062
1.57
0.300
7.62
0.754
19.15
1.914
48.62
0.899
22.83
0.112
2.84
0.125
3.18
0.937 P.L.
23.80
2.250
57.15
1.287
32.69
0.963
24.46
DETAIL "A"
SCALE: 2X
DETAIL "B"
SCALE: 2X
DETAIL "C"
SCALE: 4X
TYP. (2)
DETAIL "D"
SCALE: 4X
TYP. (2)
0.271ø (2)
6.88
0.147ø (2)
3.73
0.144ø
3.66
0.090 (2)
2.29
0.526
13.36
1.124
28.55
5° TYP.
0.146
3.71
0.100
2.54
0.414
10.52
0.498 P.L.
12.65
0.619 P.L.
15.72
0.613 P.L.
15.57
0.250 ±.014
6.35 ±0.36
0.035
0.89
0.050
1.27
0.625
15.88
0.211
5.36
0.140
3.56
0.010
0.25
0.185
4.69
0.062
1.57
AREA 0.189
0.090
2.29
0.097
2.46
35°
0.296
7.52
0.108
2.74
0.126
3.20
0.062
1.57
45°
55°
0.150
3.81
0.091
2.31
(°) = 0.020(0.51) R. (4)
(·) = 0.031(0.79) R. (25)
(*) = 0.045(1.14) R. (1)
(×) = 0.062(1.57) R. (7)
UNMARKED RADII = RADIUS TO SUIT
BREAK OUTSIDE CORNERS = 0.015(0.38) R.
UNSPECIFIED WALL THICKNESS
0.090(2.29)
INDALEX
ALUMINUM SOLUTIONS
EST. AREA 0.997 IN² 643 MM² OUT PER. — IN — MM
EST. WT. 1.172 LBS/FT. 1.744 KG/M FACTOR 21
EST. PER. 24.831 IN 631 MM C.C.D. 5.123 IN 130 MM
DWN BY GFG ALLOY 6063-T5 SCALE 1:1 DATE 04/11/15
BREAK ALL CORNERS .010"R (0.25R) UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED
CUSTOMER AALCOR
PART NO. S720
DIE NO. AS-50279
DASH 1
DESCRIPTION: WINDOW SILL
TARRIF# 7604.29.10.00 PROPOSAL# 11613-1
INDALEX LIMITED 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE SYM REVISION BY
05/08/08 3.235 WAS 3.000; 1.699 WAS 1.464 G.S.


CUSTOMER: AALCOR
PART NO. –
DIE NO. AS–53583
DASH 2
DESCRIPTION: SILL ADAPTOR
TARIFF# 7604.29.10.00
PROPOSAL# 12454–1B
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE 12/11/09
SYM A
REVISION 1.911, .110, .333 WAS 1.941, .138, .363
BY MMM
NOTE: TO SNAP–FIT WITH 6688–4C
EXPOSED SURFACE
ANODIZED QUALITY
SURFACE FINISH CRITICAL
DETAIL "A" SCALE: 2X
DETAIL "B" SCALE: 2X
DETAIL "C" SCALE: 2X
DETAIL "D" SCALE: 2X
AREA 0.174
AREA 0.184
SYSTEMS LABORATORY
Building Performance Centre, Products Testing Group
APPROVED
(R) = 0.020(0.51) R. (2)
(:) = 0.031(0.79) R. (30)
(o) = 0.034(0.86) R. (2)
(x) = 0.062(1.57) R. (6)
UNMARKED RADII = RADIUS TO SUIT
BREAK OUTSIDE CORNERS = 0.015(0.38) R.
UNSPECIFIED WALL THICKNESS
0.080(2.03)
sapa:
EST. AREA 0.694 IN² 448 MM² OUT PER. – IN – MM
EST. WT. 0.833 LBS/FT. 1.239 KG/M FACTOR 22
EST. PER. 18.089 IN 459 MM C.C.D. 3.913 IN 99 MM
DWN BY G.S. ALLOY 6063–T5 SCALE 1:1 DATE 05/09/14
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED


CUSTOMER
AALCOR WINDOWS
DESCRIPTION
TOP/BOTTOM SASH
CUSTOMER PART No.
DIE No. EH15293
QUOTE No. 09-0087-1
PROPOSAL No. H-20289
REV. No. 0
NOTE: BREAK ALL CORNERS WITH 0.015" (.38 MM) RADIUS UNLESS OTHERWISE NOTED. STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED.
DETAIL: 4:1
DETAIL: 4:1
DETAIL: 4:1
2-PLACES
EXCEPT AS SHOWN
WALL THICKNESS 0.062(1.57)
DESCRIPTION
DATE
REV
BY
CAN ART
ALUMINUM EXTRUSION INC.
85 PARKSHORE DRIVE
BRAMPTON, ONT L6T 5M1
TEL. NO. (905) 791-1464
FAX NO. (905) 791-9151
WEB: www.canart.com
THIS DRAWING IS NOT NECESSARILY A COPY OF YOUR ORIGINAL. PLEASE APPROVE DIMENSIONS AND TOLERANCES INDICATED. CAN ART ASSUMES NO RESPONSIBILITY EITHER TECHNICAL OR LEGAL FOR HAVING THIS SHAPE MADE. THE CUSTOMER AGREES TO FULLY PROTECT CAN ART ALUMINUM FROM CLAIMS OF OTHERS RESULTING FROM THIS SHAPE.
SIGNED: _____ DATE: _____
EST.AREA 0.495 IN.² EST.AREA 319.374 MM.²
EST.WT. 0.584 LBS/FT. EST.WT. 0.869 KG/M.
EST.PER. 15.854 IN. EST.PER. 402.682 MM.
OUT PER. 13.749 IN. OUT PER. 349.2 MM.
C.C.D. 3.029 IN. C.C.D. 76.949 MM.
FINISH PAINT/ANOD. ALLOY 6063
ORD BY FACTOR 27 SCALE 2:1 DWN BY C.P. DATE 02/02/2009
ACTUAL SIZE
EXPOSED
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
.010 DP x SERRATED
.010 DP x 90° V-GROOVE I.D. CENTERED


CUSTOMER
AALCOR WINDOWS
DESCRIPTION
SASH LOCK RAIL
CUSTOMER PART No.
DIE No. EH15294
QUOTE No. 09-0087-3
PROPOSAL No. H-20291
REV. No. 0
NOTE: BREAK ALL CORNERS WITH 0.015" (.38 MM) RADIUS UNLESS OTHERWISE NOTED. STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED.
DETAIL 4:1
DETAIL 4:1
DETAIL 4:1
2-PLACES
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
ACTUAL SIZE
EXPOSED
.010 DP x 90° SERRATIONS
.010 DP x 90° V-GROOVE I.D. CENTERED
WALL THICKNESS 0.062(1.57) EXCEPT AS SHOWN
DATE REV DESCRIPTION BY
EST.AREA 0.602 IN² EST.AREA 388.251 MM²
EST.WT. 0.710 LBS/FT. EST.WT. 1.057 KG/M
EST.PER. 18.326 IN. EST.PER. 465.484 MM.
OUT PER. 16.221 IN. OUT PER. 412.0 MM.
C.C.D. 3.351 IN. C.C.D. 85.109 MM.
FINISH PAINT/ANOD. ALLOY 6063
ORD BY FACTOR 26 SCALE 2:1 DWN BY C.P. DATE 2/2/2009
CAN ART
ALUMINUM EXTRUSION INC.
85 PARKSHORE DRIVE BRAMPTON, ONT. L6T 4M1
TEL. NO. (905) 791-1461
FAX NO. (905) 791-9151
WEB: www.canart.com
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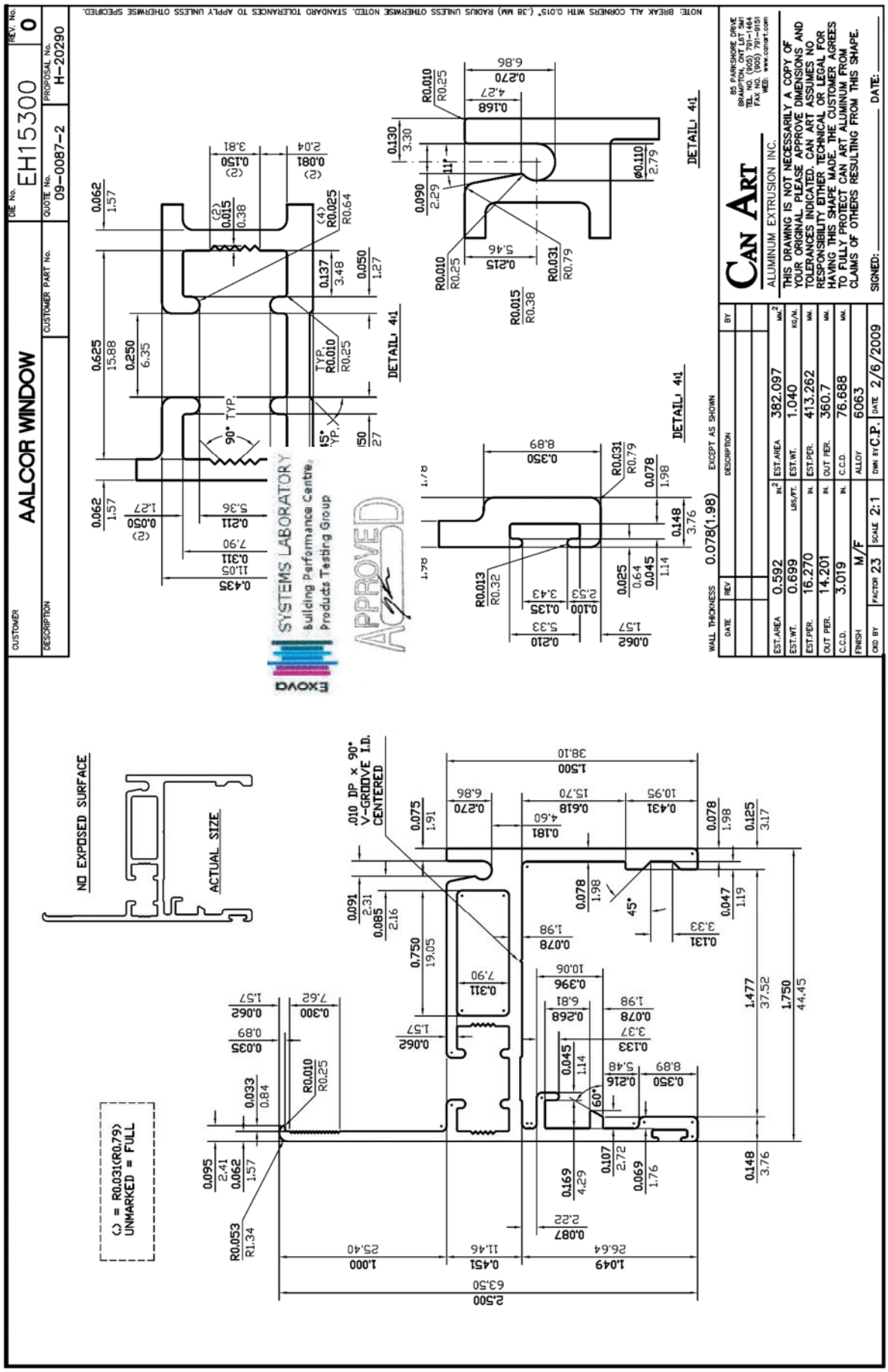
SIGNED: _____ DATE: _____


AALCOR WINDOW
DIE No. EH15300
QUOTE No. 09-0087-2
PROPOSAL No. H-20290
REV. No. 0
CUSTOMER PART No.
DESCRIPTION
CUSTOMER
NOTE: BREAK ALL CORNERS WITH 0.015" (.38 MM) RADIUS UNLESS OTHERWISE NOTED. STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED.
DETAIL 4:1
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
CAN ART
ALUMINUM EXTRUSION INC.
85 PARKSHORE DRIVE
BRAMPTON, ONT L6T 5M1
TEL. NO. (905) 791-1464
FAX NO. (905) 791-9151
WEB: www.canart.com
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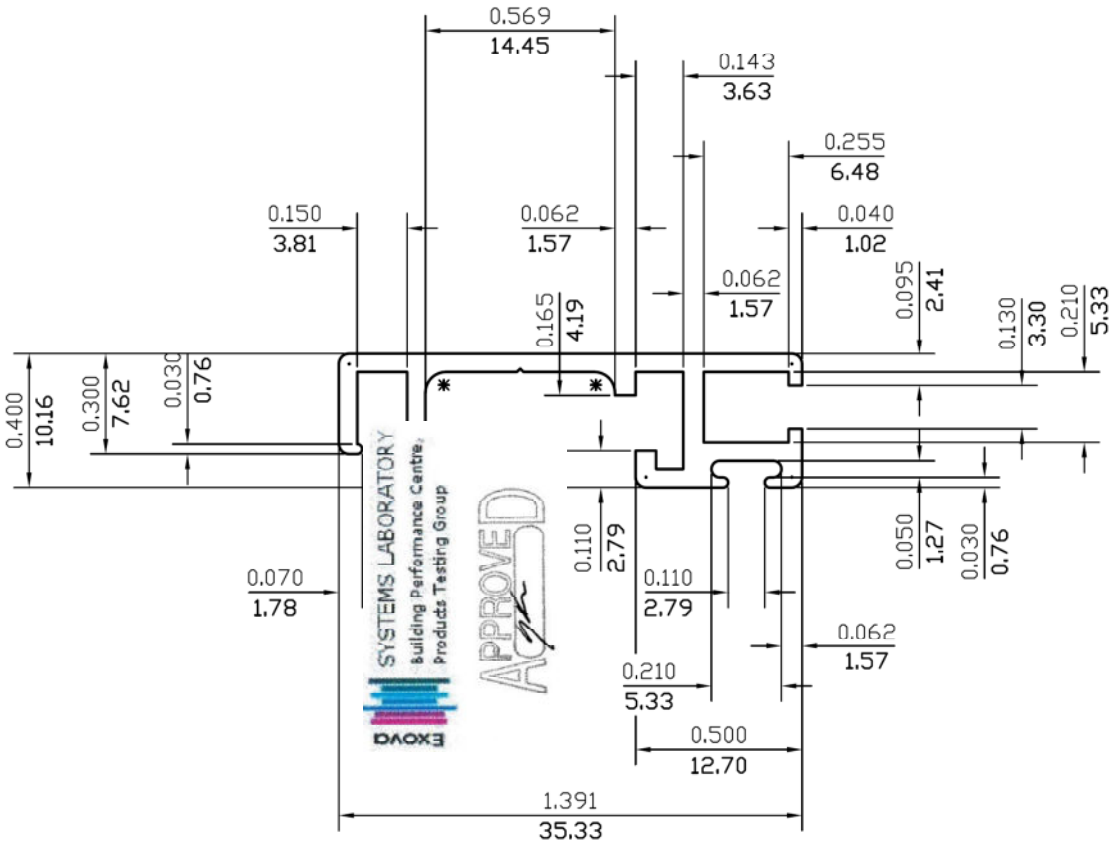
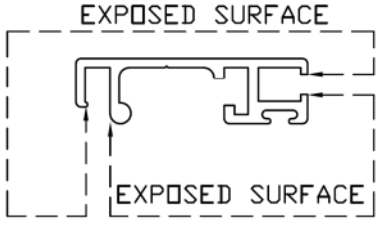
SIGNED: _____ DATE: _____
WALL THICKNESS 0.078(1.98) EXCEPT AS SHOWN
DATE REV DESCRIPTION BY
EST.AREA 0.592 IN² EST.AREA 382.097 MM²
EST.WT. 0.699 LBS/FT. EST.WT. 1.040 KG/M.
EST.PER. 16.270 IN. EST.PER. 413.262 MM.
OUT PER. 14.201 IN. OUT PER. 360.7 MM.
C.C.D. 3.019 IN. C.C.D. 76.688 MM.
FINISH M/F ALLOY 6063
ORD BY FACTOR 23 SCALE 2:1 DWN BY C.P. DATE 2/6/2009
NO EXPOSED SURFACE
ACTUAL SIZE
.010 DP x 90° V-GROOVE I.D. CENTERED
◇ = R0.031(R0.79) UNMARKED = FULL

CAN ART
ALUMINUM EXTRUSION INC.

CUSTOMER	AALCOR
DESCRIPTION	DH SCREEN RAIL
DIE No.	ES09318
PROPOSAL No.	S-6490
CUSTOMER No.	E1419





ACTUAL SIZE

(•) = .031R (0.79)
(✱) = .062R (1.57)

WALL THICKNESS EXCEPT AS SHOWN 0.055(1.40)

DATE	SYM	REVISION	BY

EST.AREA	0.183 IN.^{2}	EST.AREA	118 MM.^{2}
EST.WT.	0.216 LBS/FT.	EST.WT.	0.321 KG/M.
EST.PER.	6.305 IN.	EST.PER.	160.1 MM.
OUT PER.	IN.	OUT PER.	MM.
C.C.D.	1.431 IN.	C.C.D.	36 MM.
FACTOR 29	SCALE 2:1	DATE	06/18/97

NOTE: BREAK ALL CORNERS WITH 0.015" (.38 MM) RADIUS UNLESS OTHERWISE NOTED.

STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED.

DWN BY C.P.

CKD BY

EXT. RATIO	CONTAINER 7	FINISH ANODIZED	ALLOY & TEMP. 6063-T5

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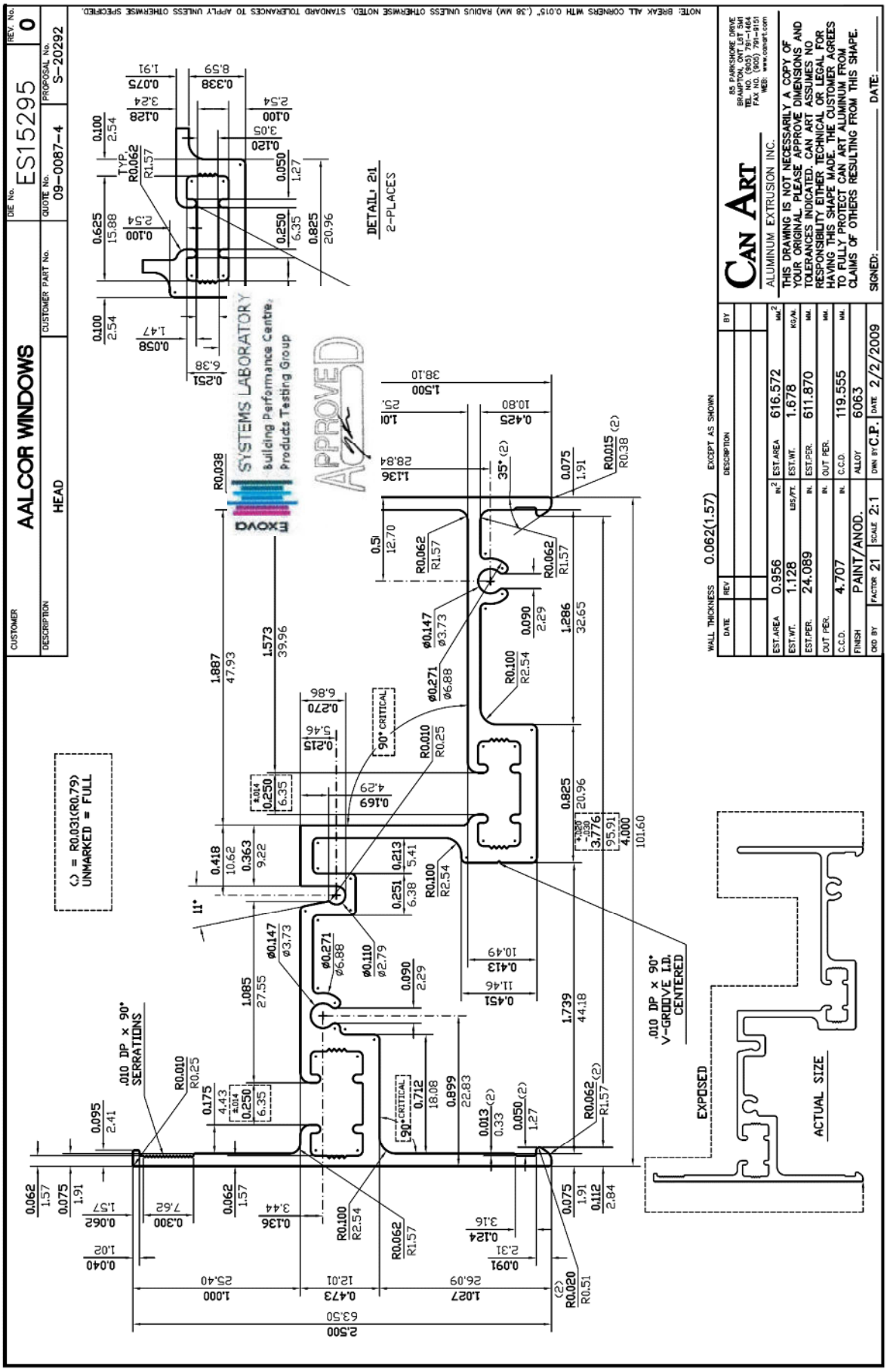
PLEASE SIGN:

DATE:


CUSTOMER
AALCOR WINDOWS
DESCRIPTION
HEAD
CUSTOMER PART No.
DIE No. ES15295
QUOTE No. 09-0087-4
PROPOSAL No. S-20292
REV. No. 0
NOTE: BREAK ALL CORNERS WITH 0.015" (.38 MM) RADIUS UNLESS OTHERWISE NOTED. STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED.
SYSTEMS LABORATORY
Building Performance Centre
Products Testing Group
APPROVED
EXOVA
DETAIL 2:1
2-PLACES
CAN ART
ALUMINUM EXTRUSION INC.
85 PARKSHORE DRIVE
BRAMPTON, ONT. L6T 5M1
TEL. NO. (905) 791-1464
FAX NO. (905) 791-9151
WEB: www.canart.com
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SIGNED: _____ DATE: _____
WALL THICKNESS 0.062(1.57) EXCEPT AS SHOWN
DATE | REV | DESCRIPTION | BY
EST. AREA 0.956 in² | 616.572 mm²
EST. WT. 1.128 LBS/FT. | 1.678 KG/M.
EST. PER. 24.089 IN. | 611.870 MM.
OUT PER. IN. | MM.
C.C.D. 4.707 IN. | 119.555 MM.
FINISH PAINT/ANOD. | ALLOY 6063
QKD BY | FACTOR 21 | SCALE 2:1 | DWN BY C.P. | DATE 2/2/2009
◇ = R0.031(R0.79) UNMARKED = FULL
.010 DP x 90° SERRATIONS
.010 DP x 90° V-GROOVE I.D. CENTERED
EXPOSED
ACTUAL SIZE
11°
90° CRITICAL
2,500
63.50
1.000
25.40
0.473
12.01
1.027
26.09
1.887
47.93
1.573
39.96
1.085
27.55
1.739
44.18
0.712
18.08
0.899
22.83
0.825
20.96
0.418
10.62
0.363
9.22
0.175
4.43
0.095
2.41
0.062
1.57
0.075
1.91
0.112
2.84
0.040
1.02
0.300
7.62
0.136
3.44
0.124
3.16
0.091
2.31
0.050
1.27
0.013
0.33
0.090
2.29
0.147
Ø3.73
0.271
Ø6.88
0.110
Ø2.79
0.213
5.41
0.251
6.38
0.169
4.29
0.270
6.86
0.215
5.46
0.451
11.46
0.413
10.49
0.425
10.80
1.500
38.10
1.136
28.84
0.500
12.70
0.286
32.65
0.075
1.91
0.062
1.57
0.100
2.54
0.128
3.24
0.120
3.05
0.338
8.59
0.075
1.91
0.058
1.47
0.251
6.38
0.625
15.88
0.250
6.35
0.825
20.96
0.050
1.27
R0.062 R1.57
R0.100 R2.54
R0.010 R0.25
R0.038
R0.015 (2) R0.38
R0.020 (2) R0.51
35° (2)
90° CRITICAL
TYP.