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PERFORMANCE EVALUATION OF WINDSPEC INC., "535 T.H.O.O" WINDOW UNIT IN ACCORDANCE WITH NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-11 AND CSA A440 S1-09 CAN SUPPLEMENT SECTION 5

Report to:	Windspec Inc. 1310 Creditstone Road Concord, Ontario L4K 5T7
Attention:	Mr. Oren Anava
Telephone: Fax: Email:	(905) 738-8311 (905) 738-6188 oren@windspec.com
Report No.:	15-06-M0109-1 5 Pages, 1 Appendix
Proposal No.:	15-006-346053
Date:	October 24, 2015

Product Manufacturer:	Windspec Inc.
Product Type:	Aluminum Awning Window
Product series/model:	535 T.H.O.O
Primary product designator:	Class AW—PG60-AP 915 mm x 1,523 mm (36" x 60") – Type C
Optional Secondary designator:	Canadian Air Infiltration /Exfiltration = A3 Level Canadian Water Penetration Resistance = 730 Pa (15.0 PSF) Negative Design Pressure (DP) = - 2,880 Pa (-60.0 PSF) Positive Design Pressure (DP) = + 2,880 Pa (+60.0 PSF) Test Completion Date: April 18, 2015

1.0 INTRODUCTION

At the request Windspec Inc., Exova was retained to conduct the performance evaluation of an aluminum awning window identified as the "535 T.H.O.O" in accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement Windows Standard as outlined in proposal number 15-006-346053.

Exova Specimen No.:	15-06-M0109-1
Type:	Aluminium Awning Window (Top Hung Open Out)
Model:	535 T.H.O.O
Overall Window Size:	1,523 mm (wide) x 915 mm (high)
Sash Size:	1,478 mm (wide) x 765 mm (high)
IGU Size:	1,365 mm (wide) x 760 mm (high)
Glazing:	5 mm / ½" spacer / 5 mm Tempered (1" Overall)
Glazing Type:	Polyshim Tape Spacer and EDPM
Frame & Sash material:	Al (Aluminium with Thermal Break), 45 Degrees Mitred Joints.
Reinforcement:	No
Foam Insulation:	No
Thermal Break:	Yes

Approximated Location of Operator, Locks, Drainages, etc:

Operator: Mid-Point at bottom of frame/sash.
Locks and Hinges: 160 mm O/C from the edge of sash. Hinged type locks. Total of two (2) locks.
Drainage: Two on each frame and sash member.

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

Weatherstripping Configuration:

Type:	Quantity Installed & Size:	Location:
Flexible PVC Bulb	1 Row	Interior Frame to Sash
Flexible PVC Bulb	1 Row	Sash to Frame
EPDM	1 Row	Glazing Stop to IGU
Polyshim Tape	1 Row	Sash to IGU

Installation Guide:

Test Buck material: Manufacturer supplied 2x10" SPF wood buck with knots and joints caulked. Fastened to test buck with three (3) fastener on Head and sill, two (2) on each jamb.
Shimming: None

2.0 PROCEDURE

The Building Performance Centre at Exova Mississauga evaluated the above window unit in accordance with the procedures of the NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement, Section 5 window test standard. The following specific test program was conducted for Architectural Window (AW):

• Operating Force	Section 5.3.1.1.1
• Initial Air Leakage Resistance	Section 5.3.2 (AAMA 910-10, Section 3.1.2)
• Initial Water Penetration Resistance	Section 5.3.3 (ASTM E547) (AAMA 910-10, Section 3.1.3)
• Initial Water Penetration Resistance	Section 5.3.3 (ASTM E331)
• Sash Cycling Test (First Half)	AAMA 910-10, Section 3.1.4
• Locking Hardware Cycling Test (First Half)	AAMA 910-10, Section 3.1.5
• Misuse testing	AAMA 910-10, Section 3.1.7
• Sash Cycling Test (Second Half)	AAMA 910-10, Section 3.1.4
• Locking Hardware Cycling Test (Second Half)	AAMA 910-10, Section 3.1.5
• Post Cycling Air Leakage Resistance	Section 5.3.2 (AAMA 910-10, Section 3.1.2)
• Post Cycling Water Penetration Resistance	Section 5.3.3 (ASTM E547) (AAMA 910-10, Section 3.1.3)
• Post Cycling Water Penetration Resistance	Section 5.3.3 (ASTM E331)
• Uniform Load Tests (Design Pressure)	Section 5.3.4 (AAMA 910-10, Section 3.1.15)
• Post D.P Air Leakage Resistance	Section 5.3.2 (AAMA 910-10, Section 3.1.2)
• Post D.P Water Penetration Resistance	Section 5.3.3 (ASTM E547) (AAMA 910-10, Section 3.1.3)
• Post D.P Water Penetration Resistance	Section 5.3.3 (ASTM E331)
• Uniform Load Tests (150% Design Pressure)	Section 5.3.4 (AAMA 910-10, Section 3.1.17)
• Life Cycling Test (See Above Stages)	Section 5.3.6.9
• Projected Hardware Load Test	Section 5.3.6.6.6
• Forced Entry Resistance Test	Section 5.3.5

3.0 RESULTS

Table 1 - Summarized Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1

Test	Requirements	Test Results	Rating
Operating Force (Clause 5.3.1.1.1) **Test Date:** April 18, 2015	**Performance Requirements to Latch AW Products (CAN/US):** Open / Close shall be less than 100 N **Operation Force Requirements for Rotary Operators (CAN):** Force on the mid-point(s) of operating handle to initiate motion. (Fic) from fully closed < 60 N (Fio) from fully open < 60 N Force on the mid-point of operating handle to maintain motion. (Fmc) from fully closed < 30 N (Fmo) from fully open < 30 N **Operation Force Requirements for Rotary Operators (US):** Force on the mid-point(s) of operating handle to initiate motion. (Fic) from fully closed & (Fio) from fully open : Report Only Force on the mid-point of operating handle to maintain motion. (Fmc) from fully closed < 45 N (Fmo) from fully open < 45 N	**Measured Force to Initiate Operation :** (Fic) = 22.1 N (Fio) = 15.7 N (Fmc) = 19.7 N (Fmo) = 13.9 N **Inside Location** Left: Latch (Open) = 14.4 N Latch (Close) =13.9 N Right: Latch (Open) = 13.2 N Latch (Close) =12.8 N	Meets the Requirements for Canadian and US Operating Force Specification

Table 2 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement, Section 5 Exova Specimen No.: 15-06-M0109-1			
Test	**Requirements**	**Test Results**	**Rating**
Initial Air Leakage Resistance (Clause: 5.3.2) (AAMA 910-10, Section 3.1.2) **Test Date:** April 18, 2015	**Maximum Allowable Air Leakage:** 0.5 L/s m^2 @ 300 Pa Canadian Air Infiltration / Exfiltration Levels (AW-Class): A3 Level: < 0.5 L/s m^2 Fixed Level: < 0.2 L/s m^2	Infiltration Q = 0.02 L/s m^2 Exfiltration Q = 0.03 L/s m^2 Average Q = 0.03 L/s m^2 @ 75 Pa Unit Area = 1.394 m^2	**Meets Gateway:** AP-AW **Canadian Level:** A3
Initial Water Penetration Resistance (Clause 5.3.3) ASTM E 547 (AAMA 910-10, Section 3.1.3) **Test Date:** April 18, 2015	**Gateway Performance Requirements for AP-AW40:** Pressure: 390 Pa **Optional Performance Requirements for AP-AW100 (US / CAN):** Pressure: 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	No water penetration occurred at pressure differential of 390 Pa. Meets AP-AW40 Class for Water Penetration Resistance No water penetration occurred at pressure differential of 730 Pa. Meets AP-AW100 Class for Water Penetration Resistance	**Meets Gateway:** AP-AW40 **Highest Class Achieved:** AP-AW100 (US / CAN)
Initial Water Penetration Resistance (Clause 5.3.3) ASTM E 331 (AAMA 910-10, Section 3.1.3) **Test Date:** April 18, 2015	AW Specimen shall be tested for water penetration resistance in accordance with ASTM E331. Test load shall be applied for 15 minutes **Client Specified Test Pressure:** 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	Meets ASTM E 331 No water penetration occurred at pressure differential of 730 Pa	**Meets:** ASTM E 331

Table 3 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1			
Test	**Requirements**	**Test Results**	**Rating**
Sash Cycling Test (First Half) ASTM 910-10, Section 3.1.4 **Test Date:** April 20, 2015	The sash from shall be fully open and 90% closed position for the initial 2000 cycles with the locks/latch disengaged (unlocked). No damage should occur to the hardware or window unit.	No damage was observed to the hardware or window unit.	**Pass**
Locking Hardware Test (First Half) ASTM 910-10, Section 3.1.5 **Test Date:** April 27, 2015	Locking hardware shall endure the initial 2000 cycles with the sash in the closed position during the entire test period. No damage should occur to the hardware or window unit	No damage was observed to the hardware or window unit.	**Pass**
Misuse Testing ASTM 910-10, Section 3.1.7 **Test Date:** May 4, 2015	Load of 330N (75lbf) shall be applied for 10 seconds to the sash referencing AAMA910-10, Section 3.6.5.4, Figure 11. A total of three loads shall be Applied, minimum loading of atleast once on the Left side and Right side of the sash. No damage should occur to the hardware or window unit	No damage was observed to the hardware or window unit.	**Pass**
Sash Cycling Test (Second Half) ASTM 910-10, Section 3.1.4 **Test Date:** May 7, 2015	The sash from shall be fully open and 90% closed position for the final 2000 cycles with the locks/latch disengaged (unlocked). No damage should occur to the hardware or window unit.	No damage was observed to the hardware or window unit.	**Pass**
Locking Hardware Test (Second Half) ASTM 910-10, Section 3.1.5 **Test Date:** May 15, 2015	Locking hardware shall endure the final 2000 cycles with the sash in the closed position during the entire test period. No damage should occur to the hardware or window unit	No damage was observed to the hardware or window unit.	**Pass**

Table 4 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement, Section 5 Exova Specimen No.: 15-06-M0109-1			
Test	**Requirements**	**Test Results**	**Rating**
Post Cycling Air Leakage Resistance (Clause: 5.3.2) (AAMA 910-10, Section 3.1.2) **Test Date:** May 25, 2015	**Maximum Allowable Air Leakage:** 0.5 L/s m^2 @ 300 Pa Canadian Air Infiltration / Exfiltration Levels (AW-Class): A3 Level: < 0.5 L/s m^2 Fixed Level: < 0.2 L/s m^2	Infiltration Q = 0.14 L/s m^2 Exfiltration Q = 0.30 L/s m^2 Average Q = 0.22 L/s m^2 @ 75 Pa Unit Area = 1.394 m^2	**Meets Gateway:** AP-AW **Canadian Level:** A3
Post Cycling Water Penetration Resistance (Clause 5.3.3) ASTM E 547 (AAMA 910-10, Section 3.1.3) **Test Date:** May 25, 2015	**Gateway Performance Requirements for AP-AW40:** Pressure: 390 Pa **Optional Performance Requirements for AP-AW100 (US / CAN):** Pressure: 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	No water penetration occurred at pressure differential of 390 Pa. Meets AP-AW40 Class for Water Penetration Resistance No water penetration occurred at pressure differential of 730 Pa. Meets AP-AW100 Class for Water Penetration Resistance	**Meets Gateway:** AP-AW40 **Highest Class Achieved:** AP-AW100 (US / CAN)
Post Cycling Water Penetration Resistance (Clause 5.3.3) ASTM E 331 (AAMA 910-10, Section 3.1.3) **Test Date:** May 25, 2015	AW Specimen shall be tested for water penetration resistance in accordance with ASTM E311. Test load shall be applied for 15 minutes **Client Specified Test Pressure:** 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	Meets ASTM E 311 No water penetration occurred at pressure differential of 730 Pa	**Meets:** ASTM E 331

Table 5 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1

Test	Requirements	Test Results	Rating
Uniform Load Deflection Test at Design Pressure (Clause 5.3.4.2) **Test Date:** May 25, 2015	**Gateway Performance Design Pressure for AP-AW40:** +/- 1,920 Pa **Requirements:** - No permanent damage - Report L/175 and Residual Sash Deflection - Report Net Deflection Results **Optional Performance Requirements for** **AP-AW60 (US / CAN):** +/- 2,880 Pa	Sash Length (*L)* = 1,523 mm Allowable (*L/175)* = 8.7 mm Net Deflection at Design Pressure: + 2,880 Pa = 2.1 mm - 2,880 Pa = -2.7 mm Residual Deflection: + 2,880 Pa = 0.5 mm - 2,880 Pa = -0.7 mm - No Permanent Damage Observed - Window Meets *L/175* deflection requirement	**Meets Gateway:** AP-AW40 **Highest Class Achieved:** AP-AW60 (US / CAN)

Table 6 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement, Section 5 Exova Specimen No.: 15-06-M0109-1

Test	Requirements	Test Results	Rating
Post Design Pressure Structural Air Leakage Resistance (Clause: 5.3.2) (AAMA 910-10, Section 3.1.2) **Test Date:** May 25, 2015	**Maximum Allowable Air Leakage:** 0.5 L/s m^2 @ 300 Pa Canadian Air Infiltration / Exfiltration Levels (AW-Class): A3 Level: < 0.5 L/s m^2 Fixed Level: < 0.2 L/s m^2	Infiltration Q = 0.12 L/s m^2 Exfiltration Q = 0.28 L/s m^2 Average Q = 0.20 L/s m^2 @ 75 Pa Unit Area = 1.394 m^2	**Meets Gateway:** AP-AW **Canadian Level:** A3
Post Design Pressure Structural Water Penetration Resistance (Clause 5.3.3) ASTM E 547 (AAMA 910-10, Section 3.1.3) **Test Date:** May 25, 2015	**Gateway Performance Requirements for AP-AW40:** Pressure: 390 Pa **Optional Performance Requirements for AP-AW100 (US / CAN):** Pressure: 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	No water penetration occurred at pressure differential of 390 Pa. Meets C-AW40 Class for Water Penetration Resistance No water penetration occurred at pressure differential of 730 Pa. Meets AP-AW100 Class for Water Penetration Resistance	**Meets Gateway:** AP-AW40 **Highest Class Achieved:** AP-AW100 (US / CAN)
Post Design Pressure Structural Water Penetration Resistance (Clause 5.3.3) ASTM E 331 (AAMA 910-10, Section 3.1.3) **Test Date:** May 25, 2015	AW Specimen shall be tested for water penetration resistance in accordance with ASTM E311. Test load shall be applied for 15 minutes **Client Specified Test Pressure:** 730 Pa **Requirement:** No water leakage or penetration at specified pressure differential	Meets ASTM E 311 No water penetration occurred at pressure differential of 730 Pa	**Meets:** ASTM E 331

Table 7 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1

Test	Requirements	Test Results	Rating
Uniform Load Structural Test at 150% Design Pressure (Clause 5.3.4.3) **Test Date:** May 25, 2015	**Gateway Performance Structural Pressure for AP-AW40:** +/- 2,880 Pa **Requirements:** - No permanent damage - Report Residual Sash Deflection - Frame Length = 1,525 mm - Allowable residual = 0.2% of Frame Length **Optional Performance Requirements for AP-AW60 (US / CAN):** +/- 4,320 Pa	Allowable residual = 3.0 mm Residual Deflection: + 4,320 Pa = 1.7 mm (0.111%) - 4,320 Pa = -1.9 mm (0.124%) - No Permanent Damage Observed - Window Operates	**Meets Gateway:** AP-AW40 **Highest Class Achieved:** AP-AW60 (US / CAN)

Table 8 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1			
Test	**Requirements**	**Test Results**	**Rating**
Projected Hardware Load Test Pressure (Clause 5.3.6.6.6 **Test Date:** April 18, 2015	Sash opened to 45°, or to limit of its travel, whichever is less. Apply concentrated load of 15 N to unrestricted edge, zero deflection measuring device, increase load to 70 N for 60+/- 5 sec. Measure vertical deflection = d Maximum allowable d = Deflection limit for CW = 38.3 * A, where "A" is Area in Square meters. Sash = 1.13 Sq*m Allowable = 43.3mm No signs of failure, permanent deformation or breakage.	**Measured Deflection:** d = 0.6 mm Lite closed properly with no signs of failure, permanent deformation or breakage.	**Pass**

Table 9 - Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 Exova Specimen No.: 15-06-M0109-1

Test	Requirements	Test Results	Rating
Forced Entry Resistance Clause 5.3.5 (ASTM F 588) **Test Date:** April 18, 2015 Type B Window	Initial Preparation : Remove all exterior screws, glazing retainers or other fasteners which can be removed using common tools , within a period of five (5) minutes Op # 1 Hand Manipulation Op # 2 Tool Manipulation Static Loading L1 = 890 N (200 lbf) L2 = 445 N (100 lbf) L3 = 155 N (35 lbf) Test B1 Applied Load L2 & L2 Test B2 Applied Load L1, L2 & L2 Test B3 Applied Load L1, L2 & L2 Repeat Op # 1 Hand Manipulation Op # 2 Tool Manipulation Window assembly capable of restraining, delaying, or frustrating forced entry	No Removable Exterior Fixtures No entry gained No entry gained Resisted Applied Load L2 & L2 Resisted Applied Load L1, L2 & L2 Resisted Applied Load L1, L2 & L2 Repeat No entry gained No entry gained Window assembly capable of restraining, delaying, or frustrating forced entry	**Pass, Grade 20**

4.0 MODIFICATIONS

No modification was made to Windspec Inc., "*535 T.H.O.O*" window unit, Exova Specimen No.: 15-06-M0109-1 during testing to achieve the results stated in this report.

5.0 CONCLUSIONS

Based on the results of the testing summarised in Table 1, Windspec Inc, "*535 T.H.O.O*" Window Unit, Exova Specimen No.: 15-06-M0109-1 met the following requirements as outlined in the NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 CAN Supplement, Section 5 Window Standard:

Class Performance Rating

• Air Leakage Resistance	AP-AW: 300 Pa (6.2 PSF)
• Water Penetration Resistance	AP-AW100: 730 Pa (15.0 PSF)
• Water Penetration Resistance (ASTM E311)	15 minutes @ 730Pa.
• Uniform Load Tests	AP-AW60
• Life Cycling Test	Pass, AAMA 910-10
• Operating Force	Pass
• Sash Vertical Deflection Test	Pass
• Forced Entry Resistance Test	Pass, Grade 20

Class Product Designation

- Class AW—PG60-AP 915 mm x 1,523 mm (36" x 60") – Type AP

Product Manufacturer:	Windspec Inc.
Product Type:	Aluminum Awning Window
Product series/model:	535 T.H.O.O
Primary product designator:	Class AW—PG60-AP 915 mm x 1,523 mm (36" x 60") – Type C
Optional Secondary designator:	Canadian Air Infiltration /Exfiltration = A3 Level Canadian Water Penetration Resistance = 730 Pa (15.0 PSF) Negative Design Pressure (DP) = - 2,880 Pa (-60.0 PSF) Positive Design Pressure (DP) = + 2,880 Pa (+60.0 PSF) Test Completion Date: April 18, 2015

6.0 REPORT REVISION SUMMARY

Revision No:	**Date:**	**Description of Revisions:**
Original	2015-October-24	Original Document

Reported by:

Sunny Ling, C.E.T, MET Ext. 11412
Supervisor, Building & Energy Systems
Products Testing Division

Reviewed by:

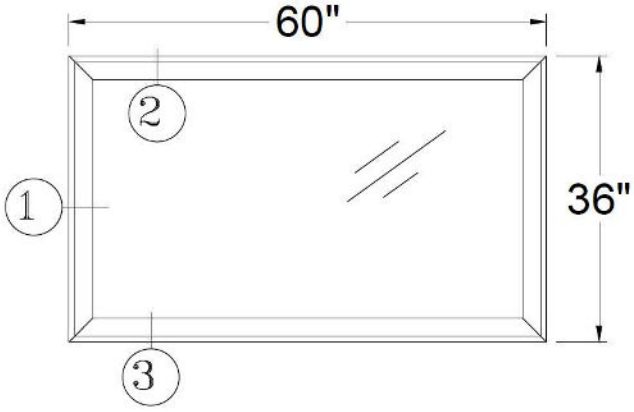
Jordan M. Church, B.Tech, MET, Ext. 11546
Operations/Technical Manager, Building & Energy Systems
Product Testing Division

APPENDIX A

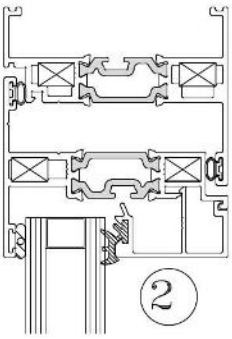
Manufacturer's Detail Drawings

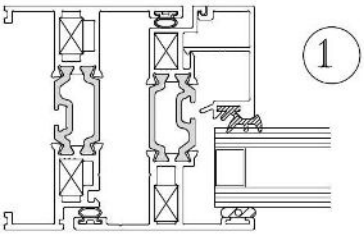
(7 Pages)

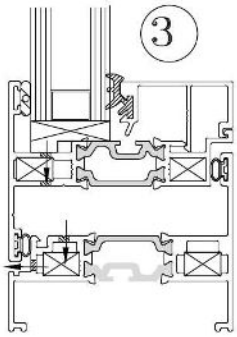
535 OPEN OUT
PHYSICAL TESTING
DOUBLE GLAZED



APPROVED
2015-OCT-10

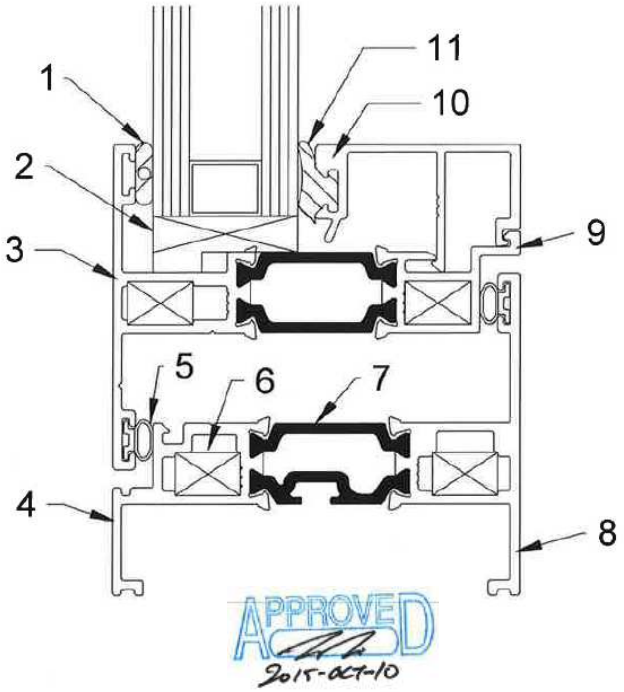




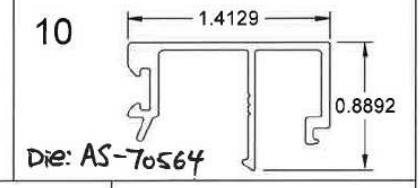


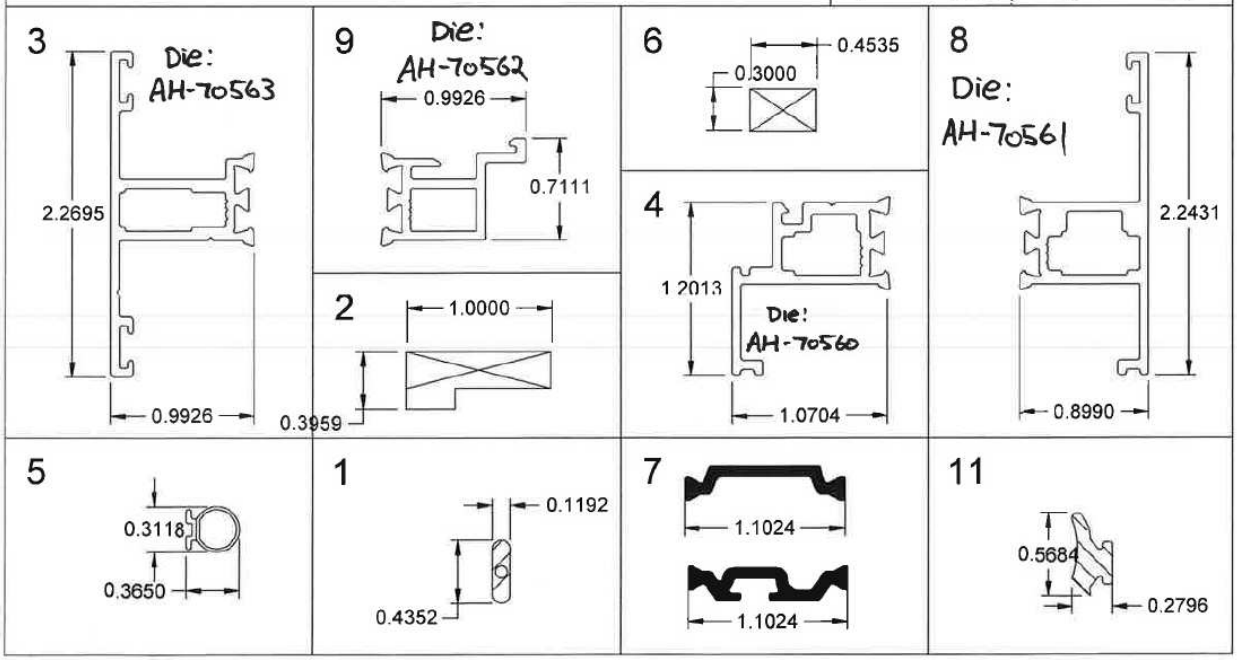
MANUFACTURERS OF HIGH PERFORMANCE 'WINDSPEC' WINDOWS
ALUMINUM ENTRANCE SYSTEMS AND ARCHITECTURAL PANELS
1310 CREDITSTONE RD, CONCORD, ONTARIO L4K 5T7
Telephone (905) 738 -8311 Fax (905) 738 - 6188

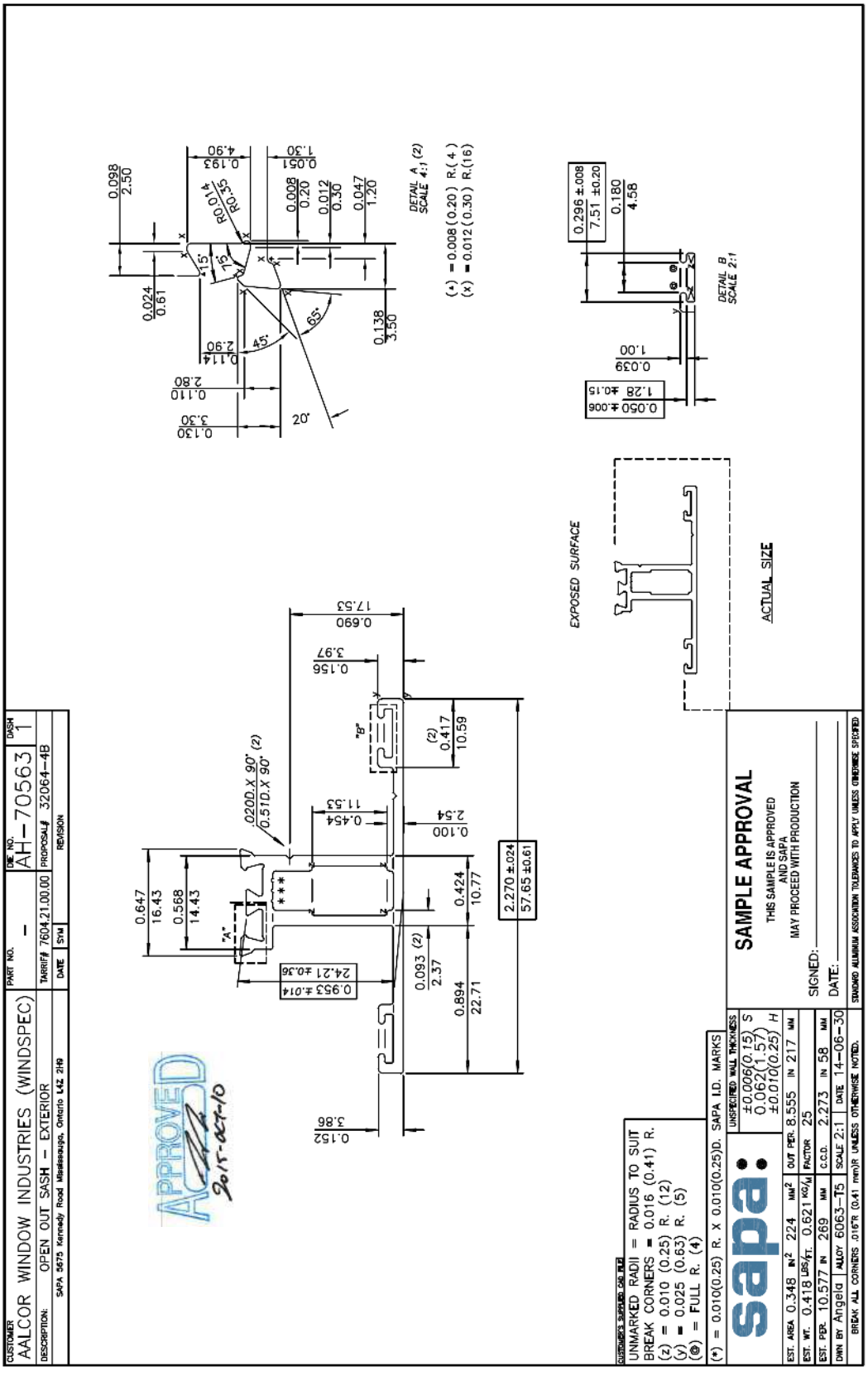
OPEN OUT WET GLAZE

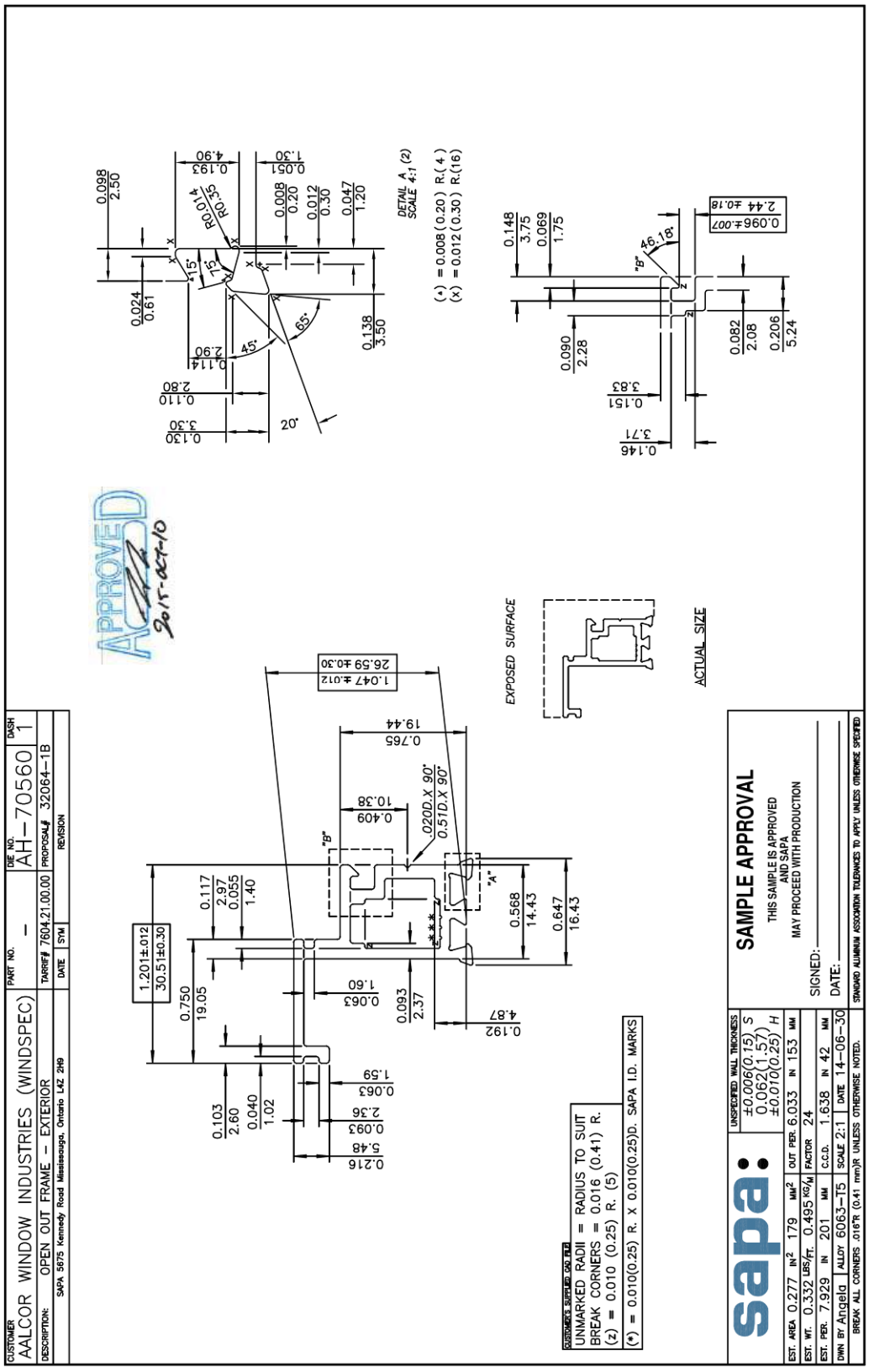


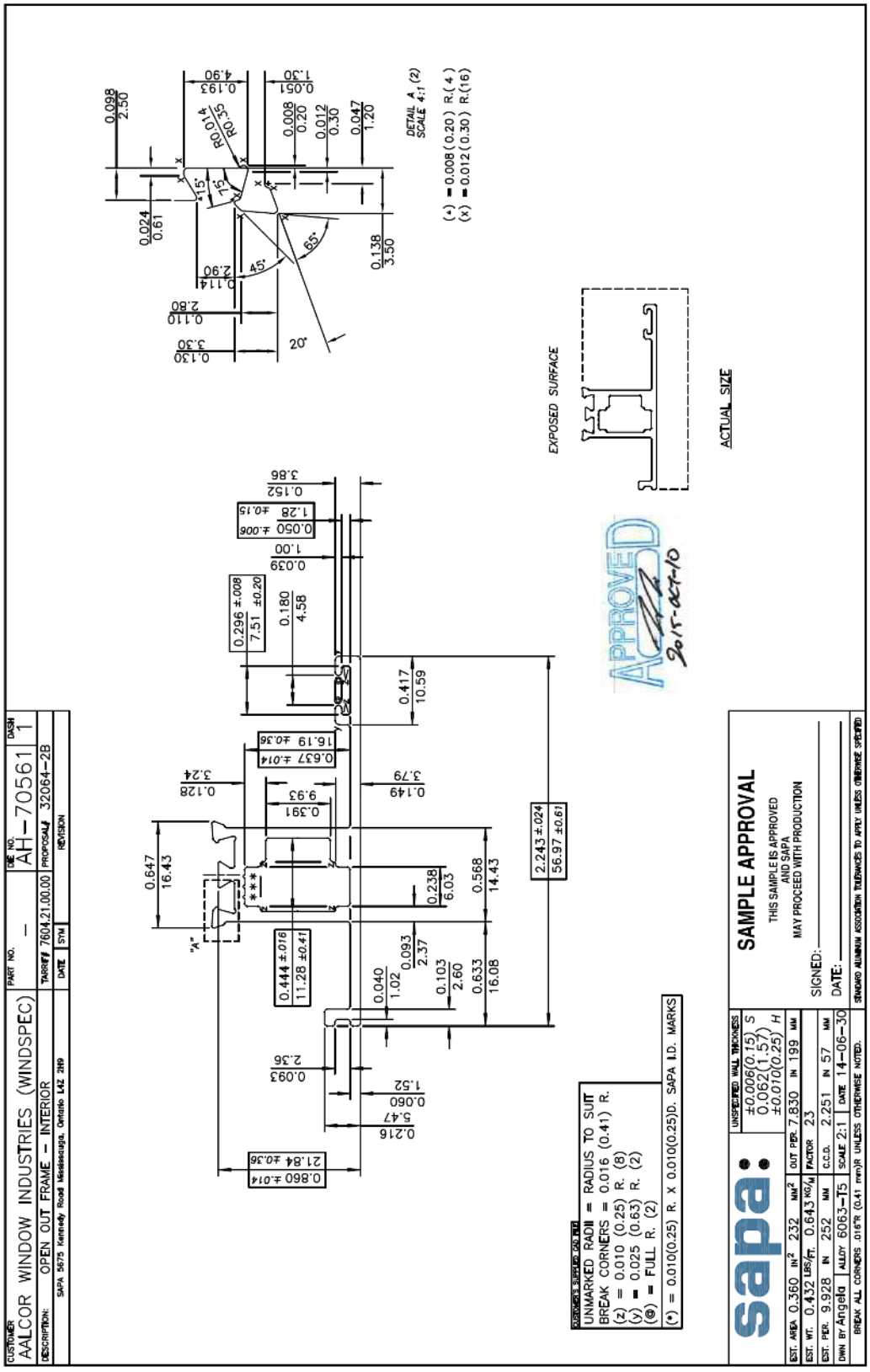
1	1/8" POLYSHIM TAPE
2	EPDM SETTING BLOCK
3	ALUMINIUM - EXTERIOR SASH
4	ALUMINIUM - EXTERIOR FRAME
5	SANTOPRENE GASKET
6	ALUMN. CORNER KEY
7	GLASS REINF. NYLON THERMAL BREAK
8	ALUMINIUM - INTERIOR FRAME
9	ALUMINIUM - INTERIOR SASH
10	ALUMINIUM GLASS STOP
11	EPDM GASKET

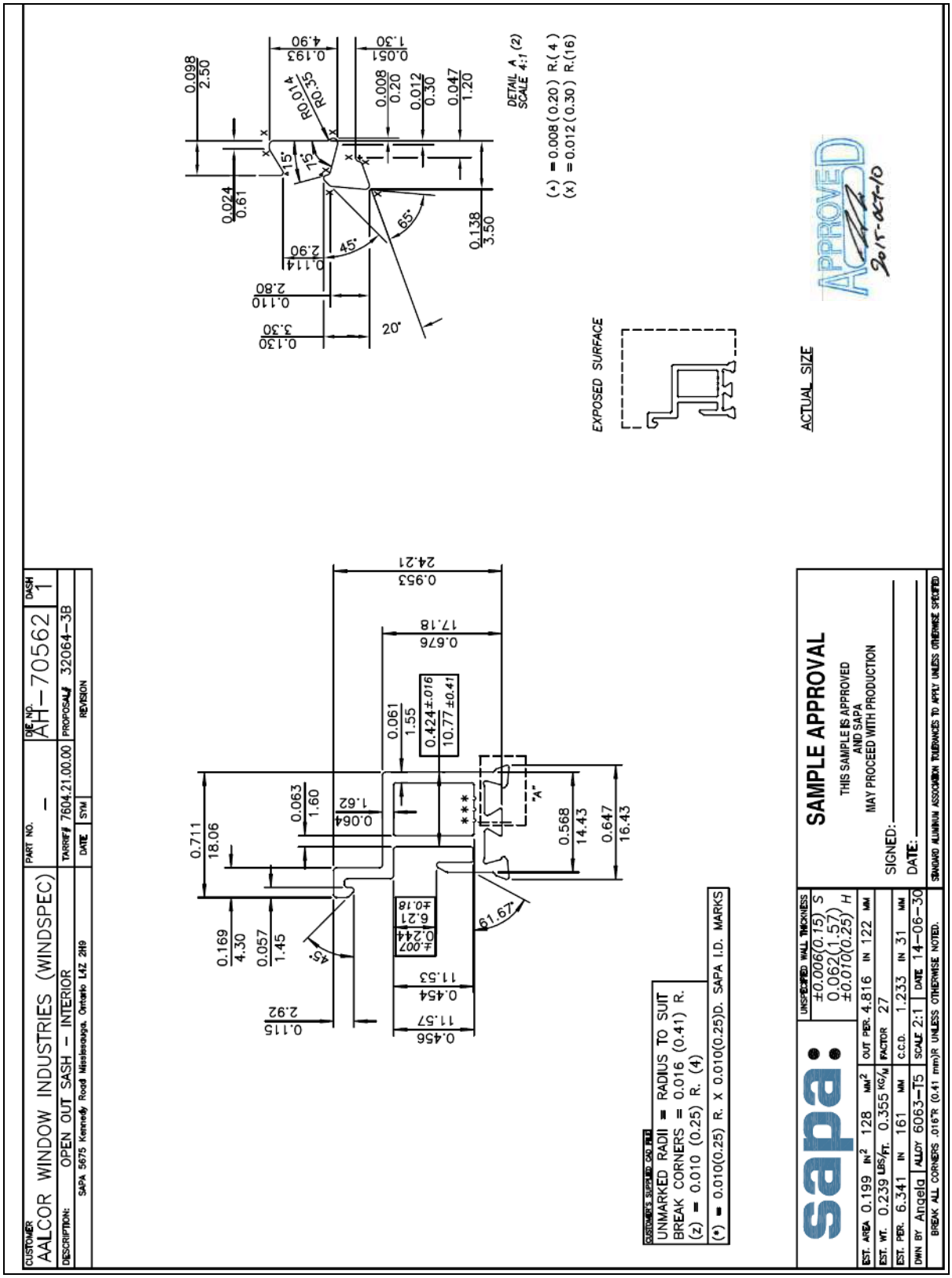





CUSTOMER
AALCOR WINDOW INDUSTRIES (WINDSPEC)
PART NO. -
DIE NO. AH-70563
DASH 1
DESCRIPTION: OPEN OUT SASH - EXTERIOR
TARRIF# 7604.21.00.00
PROPOSAL# 32064-4B
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
SYM
REVISION
APPROVED
2015-OCT-10
UNMARKED RADII = RADIUS TO SUIT
BREAK CORNERS = 0.016 (0.41) R.
(z) = 0.010 (0.25) R. (12)
(y) = 0.025 (0.63) R. (5)
(@) = FULL R. (4)
(*) = 0.010(0.25) R. X 0.010(0.25)D. SAPA I.D. MARKS
UNSPECIFIED WALL THICKNESS
±0.006(0.15) S
0.062(1.57)
±0.010(0.25) H
sapa
SAMPLE APPROVAL
THIS SAMPLE IS APPROVED AND SAPA MAY PROCEED WITH PRODUCTION
SIGNED:
DATE:
EST. AREA 0.348 in² 224 mm² OUT PER. 8.555 IN 217 MM
EST. WT. 0.418 LBS/FT. 0.621 KG/M FACTOR 25
EST. PER. 10.577 IN 269 MM C.C.D. 2.273 IN 58 MM
DWN BY Angeld ALLOY 6063-T5 SCALE 2:1 DATE 14-06-30
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED
EXPOSED SURFACE
ACTUAL SIZE
DETAIL A (2)
SCALE 4:1
(*) = 0.008 (0.20) R.(4)
(x) = 0.012 (0.30) R.(16)
DETAIL B
SCALE 2:1
0.647 16.43
0.568 14.43
0.953 ±.014 24.21 ±0.36
.020 X 90° (2)
0.510 X 90°
0.454 11.53
0.690 17.53
0.156 3.97
0.417 10.59
0.100 2.54
0.424 10.77
0.894 22.71
0.093 (2) 2.37
2.270 ±.024 57.65 ±0.61
0.152 3.86
0.098 2.50
0.024 0.61
R0.014 R0.35
0.193 4.90
0.051 1.30
0.008 0.20
0.012 0.30
0.047 1.20
0.138 3.50
0.114 2.90
0.110 2.80
0.130 3.30
45°
65°
20°
15°
15°
0.296 ±.008 7.51 ±0.20
0.180 4.58
0.039 1.00
0.050 ±.006 1.28 ±0.15

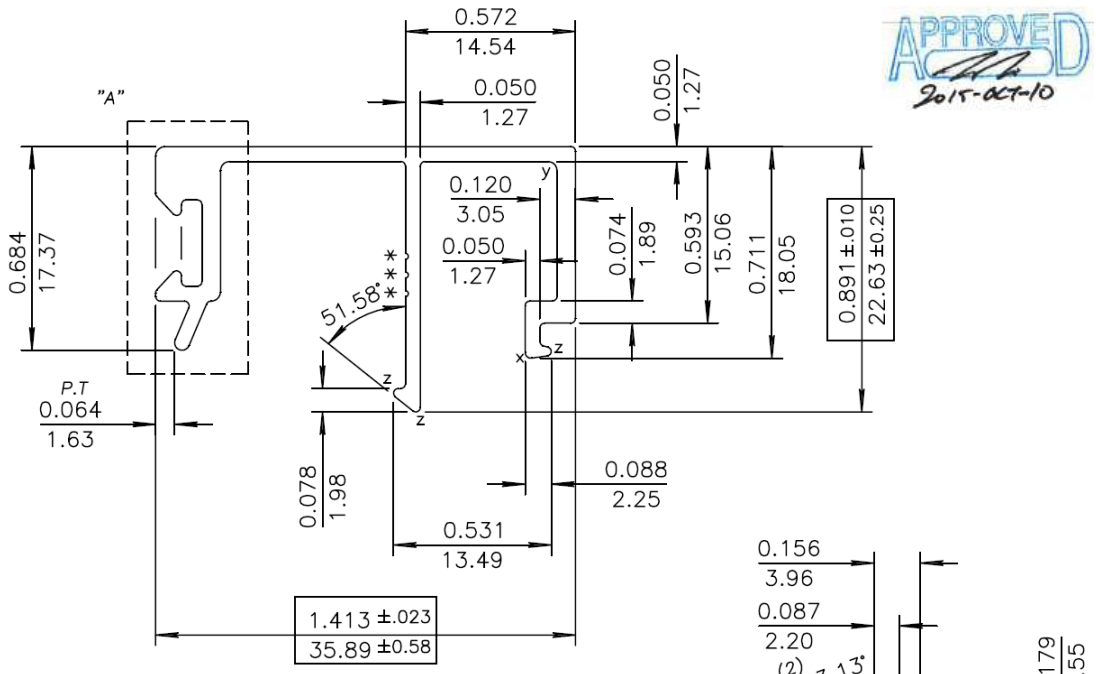

CUSTOMER
AALCOR WINDOW INDUSTRIES (WINDSPEC)
PART NO. –
DIE NO. AH–70560
DASH 1
DESCRIPTION: OPEN OUT FRAME – EXTERIOR
TARIFF# 7604.21.00.00
PROPOSAL# 32064–1B
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
SYM
REVISION
APPROVED
20/5-OCT-10
DETAIL A (2)
SCALE 4:1
(*) = 0.008 (0.20) R.(4)
(x) = 0.012 (0.30) R.(16)
EXPOSED SURFACE
ACTUAL SIZE
1.201±.012
30.51±0.30
1.047 ±.012
26.59 ±0.30
0.765
19.44
0.409
10.38
.020D.X 90°
0.51D.X 90°
"A"
"B"
0.568
14.43
0.647
16.43
0.750
19.05
0.117
2.97
0.055
1.40
0.103
2.60
0.040
1.02
0.063
1.60
0.093
2.37
0.192
4.87
0.063
1.59
0.093
2.36
0.216
5.48
CUSTOMERS SUPPLIED CAD FILE
UNMARKED RADII = RADIUS TO SUIT
BREAK CORNERS = 0.016 (0.41) R.
(z) = 0.010 (0.25) R. (5)
(*) = 0.010(0.25) R. X 0.010(0.25)D. SAPA I.D. MARKS
sapa:
UNSPECIFIED WALL THICKNESS
±0.006(0.15) S
0.062(1.57)
±0.010(0.25) H
SAMPLE APPROVAL
THIS SAMPLE IS APPROVED AND SAPA MAY PROCEED WITH PRODUCTION
SIGNED:
DATE:
EST. AREA 0.277 IN2 179 MM2 OUT PER. 6.033 IN 153 MM
EST. WT. 0.332 LBS/FT. 0.495 KG/M FACTOR 24
EST. PER. 7.929 IN 201 MM C.C.D. 1.638 IN 42 MM
DWN BY Angela ALLOY 6063–T5 SCALE 2:1 DATE 14–06–30
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

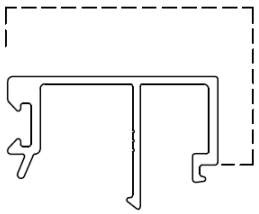

CUSTOMER
AALCOR WINDOW INDUSTRIES (WINDSPEC)
PART NO. –
DIE NO. AH–70561
DASH 1
DESCRIPTION: OPEN OUT FRAME – INTERIOR
TARRIF 7604.21.00.00
PROPOSAL# 32064–2B
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
STM
REVISION
DETAIL A (2)
SCALE 4:1
(•) = 0.008 (0.20) R.(4)
(x) = 0.012 (0.30) R.(16)
EXPOSED SURFACE
ACTUAL SIZE
APPROVED
2015-oct-10
UNMARKED RADII = RADIUS TO SUIT
BREAK CORNERS = 0.016 (0.41) R.
(z) = 0.010 (0.25) R. (8)
(y) = 0.025 (0.63) R. (2)
(@) = FULL R. (2)
(•) = 0.010(0.25) R. X 0.010(0.25)D. SAPA I.D. MARKS
sapa
UNSPECIFIED WALL THICKNESS
±0.006(0.15) S
0.062(1.57)
±0.010(0.25) H
SAMPLE APPROVAL
THIS SAMPLE IS APPROVED AND SAPA MAY PROCEED WITH PRODUCTION
SIGNED:
DATE:
EST. AREA 0.360 IN² 232 MM² OUT PER. 7.830 IN 199 MM
EST. WT. 0.432 LBS/FT. 0.643 KG/M FACTOR 2.3
EST. PER. 9.928 IN 252 MM C.C.D. 2.251 IN 57 MM
DWN BY Angela ALLOY 6063–T5 SCALE 2:1 DATE 14–06–30
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

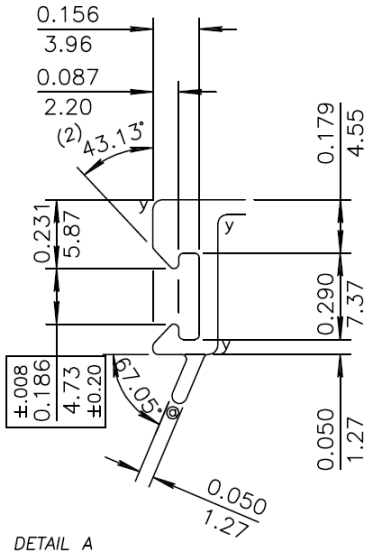

CUSTOMER: AALCOR WINDOW INDUSTRIES (WINDSPEC)
PART NO. –
DIE NO. AH–70562
DASH 1
DESCRIPTION: OPEN OUT SASH – INTERIOR
TARRIF# 7604.21.00.00
PROPOSAL# 32064–3B
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9
DATE
SYM
REVISION
DETAIL A (2) SCALE 4:1
(•) = 0.008 (0.20) R.(4)
(x) = 0.012 (0.30) R.(16)
EXPOSED SURFACE
ACTUAL SIZE
APPROVED
2015-oct-10
CUSTOMER'S SUPPLIED CAD FILE
UNMARKED RADII = RADIUS TO SUIT
BREAK CORNERS = 0.016 (0.41) R.
(z) = 0.010 (0.25) R. (4)
(*) = 0.010(0.25) R. X 0.010(0.25)D. SAPA I.D. MARKS
sapa
UNSPECIFIED WALL THICKNESS
±0.006(0.15) S
0.062(1.57)
±0.010(0.25) H
SAMPLE APPROVAL
THIS SAMPLE IS APPROVED AND SAPA MAY PROCEED WITH PRODUCTION
SIGNED:
DATE:
EST. AREA 0.199 IN² 128 MM²
OUT PER. 4.816 IN 122 MM
EST. WT. 0.239 LBS/FT. 0.355 KG/M
FACTOR 27
EST. PER. 6.341 IN 161 MM
C.C.D. 1.233 IN 31 MM
DWN BY Angela
ALLOY 6063–T5
SCALE 2:1
DATE 14–06–30
BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.
STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

EXOVA

CUSTOMER	PART NO.	DIE NO.	DASH
AALCOR WINDOW INDUSTRIES (WINDSPEC)	–	AS–70564	1
DESCRIPTION: SASH STOP	TARRIF# 7604.29.10.00	PROPOSAL# 32064–5B	
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9	DATE / SYM / REVISION		







DETAIL A
SCALE 2:1

CUSTOMER'S SUPPLIED CAD FILE

UNMARKED RADII = RADIUS TO SUIT
BREAK CORNERS = 0.016 (0.41) R.
(z) = 0.015 (0.39) R. (3)
(y) = 0.031 (0.79) R. (4)
(x) = 0.020 (0.51) R. (1)
(@) = FULL R. (1)

(*) = 0.010(0.25) R. X 0.010(0.25)D. SAPA I.D. MARKS

sapa:

UNSPECIFIED WALL THICKNESS
0.062(1.57)
±0.006(0.15)

EST. AREA 0.233 IN² 150 MM²		OUT PER. – IN – MM	
EST. WT. 0.280 LBS/FT. 0.416 KG/M		FACTOR 28	
EST. PER. 7.778 IN 198 MM		C.C.D. 1.519 IN 39 MM	
DWN BY Angela	ALLOY 6063–T5	SCALE 2:1	DATE 14–06–30

BREAK ALL CORNERS .016"R (0.41 mm)R UNLESS OTHERWISE NOTED.

SAMPLE APPROVAL

THIS SAMPLE IS APPROVED
AND SAPA
MAY PROCEED WITH PRODUCTION

SIGNED: _____

DATE: _____

STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED