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PERFORMANCE EVALUATION OF THE WINDSPEC INC., "WINDSPEC 925 RAIN SCREEN FIXED WINDOW" UNIT IN ACCORDANCE NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 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-M0110 5 Pages, 1 Appendix
Proposal No.:	15-006-355532
Date:	June 27, 2015

Product Manufacturer:	Windspec Inc.
Product Type:	Fixed Window
Product series/model:	Windspec 925 Rain Screen Fixed Window
Primary product designator:	Class AW-PG70-FW - 1,520 x 2,510 mm (59.84 x 98.82") – Type FW
Optional Secondary designator:	Canadian Air Infiltration/Exfiltration = Fixed Level Canadian Water Penetration Resistance = 730Pa (15.0 PSF) Negative Design Pressure (DP) = - 3,360 Pa (-70.0 PSF) Positive Design Pressure (DP) = + 3,360 Pa (+70.0 PSF) Test Completion Date: May 14, 2015

1.0 INTRODUCTION

At the request of Windspec Inc., Exova was retained to conduct the performance evaluation of a fixed aluminum window identified as the "Windspec 925 Rain Screen Fixed Window" unit, in accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440 S1-09 Supplement, Section 5 Fenestration Standard as outlined in proposal number 15-006-355532.

Exova Specimen No.:	15-06-M0110
Type:	Aluminium Fixed Window
Model:	Windspec Rain Screen Fixed Window
Overall Window Size:	1,520 mm (wide) x 2,510 mm (high) – *59.84 x 98.82 inches*
Glazing Size:	1,450 mm (wide) x 2,440 mm (high) – *57.09 x 96.06 inches*
Glazing:	6 mm Clear / 13 mm Argon / 6 mm Clear (Tempered) – 1" Overall with Warm Edge Spacer, 13 mm Overall Spacer Width
Glazing Type:	Double Sided Glazing Tape with Silicone at corners.
Glazing Stop Method:	Interior Aluminium Compression Glazing Stop
Weatherstripping:	EPDM Seals
Frame Material:	AT (Aluminium with Thermal Breaks) Extruded Aluminium (6" depth by 1" height) with Thermal Break
Thermal Break:	Glass Reinfroced Nylon Thermal Break
Reinforcement:	None
Drainage:	Bottom of window unit, 1.25" wide by 0.25" high weep gates located Approximately 50 mm O/C from edge of frame.

Installation Guide:

Shimming: N/A

Fasteners: Fastened with Alumimum angle "L" bracket, 3"x1" x 3/16".
Bucking Material: SPF (2" x 10")
Sealant Locations: Full strutural silcone bead applied around the perimeter of rough opening (test buck) to window frame on interior and exterior side. Backer rod was found behind silicone bead.

Pressure Plate: Fastened approximately every 12" around perimeter.

Weatherstripping Configuration:

Type:	Quantity Installed & Size:	Location:
EPDM	1 Row	Frame to IGU
EPDM	1 Row	Glazing Stop to IGU

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

2.0 PROCEDURE

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

- Air Leakage Resistance — Section 5.3.2 & CSA A440 S1-09 CAN Supplement, Section 5.3
- Water Penetration Resistance — Section 5.3.3 & CSA A440 S1-09 CAN Supplement, Section 5.4
- Uniform Load Tests — Section 5.3.4
- 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 and CSA A440 S1-09 Supplement, Section 5 Exova Specimen No.: 15-06-M0110

Test	Requirements	Test Results	Rating
Air Leakage Resistance* (Clause: 5.3.2) **Test Date:** May 14, 2015	**Maximum Allowable Air Leakage:** 0.2 L/s m^2 @ 300 Pa (6.2 PSF) (For Fixed Products) Canadian Air Infiltration / Exfiltration Levels (AW-Class): A2 Level: < 0.5 L/s m^2 A3 Level: < 0.5 L/s m^2 Fixed Level: < 0.2 L/s m^2	Infiltration Q = 0.17 L/s m^2 Exfiltration Q = 0.16 L/s m^2 Average Q = 0.16 L/s m^2 @ 300 Pa (6.2 PSF) Unit Area = 3.815 m^2	**Meets Gateway:** FW-AW **Canadian Level:** Fixed
Water Penetration Resistance (Clause 5.3.3) **Test Date:** May 14, 2015	**Gateway Performance Requirements for FW-AW40:** Pressure: 390 Pa **Optional Performance Requirements for FW-AW70-100 (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 FW-AW40 Class for Water Penetration Resistance No water penetration occurred at pressure differential of 730 Pa. Meets FW-AW100 Class for Water Penetration Resistance	**Meets Gateway:** FW-AW40 **Highest Class Achieved:** FW-AW100 (US / CAN)
Water Penetration Resistance (Clause 5.3.3) **Test Date:** May 14, 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 311 @ 730Pa No water penetration occurred at pressure differential of 730 Pa	**Meets:** **ASTM E 331**

Table 2 - Summarized Testing Results in Accordance with NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440 S1-09 Supplement, Section 5 Exova Specimen No.: 15-06-M0110

Test	Requirements	Test Results	Rating
Uniform Load Deflection Test at Design Pressure (Clause 5.3.4.2) **Test Date:** May 14, 2015	**Gateway Performance Design Pressure for FW-AW40:** +/- 1,920 Pa **Requirements:** - No permanent damage - Report *L/175* Net Deflection Results - Report and Residual Deflection **Optional Performance Requirements for FW-AW70 (US / CAN):** +/- 3,360 Pa	Frame Length (*L)* = 2,510 mm Allowable (*L/175)* = 14.3 mm Net Deflection at Design Pressure: + 3,360 Pa = 9.3 mm - 3,360 Pa = -1.4 mm Residual Deflection: + 3,360 Pa = 4.8 mm -3,360 Pa = -1.0 mm - No Permanent Damage Observed - Window Meets *L/175* deflection requirement	**Meets Gateway:** FW-AW40 **Highest Class Achieved:** FW-AW70 (US / CAN)
Uniform Load Structural Test at 150% Design Pressure (Clause 5.3.4.2) **Test Date:** May 14, 2015	**Gateway Performance Structural Pressure for FW-AW40:** +/- 2,880 Pa **Requirements:** - No permanent damage - Report Residual Sash Deflection - Frame Length = 2,510 mm - Allowable residual = 0.3% of Frame Length **Optional Performance Requirements for FW-AW70 (US / CAN):** +/- 5,040 Pa	Allowable residual = 7.5 mm Residual Deflection: + 5,040 Pa = 3.2 mm (0.127%) - 5,040 Pa = 2.4 mm (0.095%) - No Permanent Damage Observed	**Meets Gateway:** FW-AW40 **Highest Class Achieved:** FW-AW70 (US / CAN)
Forced Entry Resistance **Type D Window** (Clause 5.3.5) **Test Date:** May 14, 2015	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	No Removable Exterior Fixtures	Grade 20

4.0 MODIFICATIONS

No modification was made to the Windspec Inc., "Windspec 925 Rain Screen Fixed Window" unit, Exova Specimen No.: 15-06-M0110, 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, "Windspec 925 Rain Screen Fixed Window" Unit, Exova Specimen No.: 15-06-M0110 met the following requirements as outlined in the NAFS - AAMA/WDMA/CSA 101/I.S.2/A440-08 & CSA A440 S1-09 Supplement, Section 5 Window Standard:

Performance Rating

• Air Leakage Resistance	FW-AW: 300Pa (6.2PSF) (Fixed Level Canadian)
• Water Penetration Resistance	FW-AW70-100: 730Pa (15.0 PSF)
• Water Penetration Resistance	15 minutes @ 730Pa. (ASTM E331)
• Uniform Load Tests	FW-AW70
• Forced Entry Resistance Test	Grade 20

Product Designation

- Class AW-PG70-FW 1,520 x 2,510mm (59.84 x 98.82") – Type FW

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6.0 REPORT REVISION SUMMARY

Revision No:	**Date:**	**Description of Revisions:**
Original	2014-June 27	Original Document

Reported by:

Sunny Ling, C.E.T, MET Ext. 11412
Project Technologist, Building Systems
Products Testing Division

Reviewed by:

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

APPENDIX A

Manufacturer's Detail Drawings

(6 Pages)

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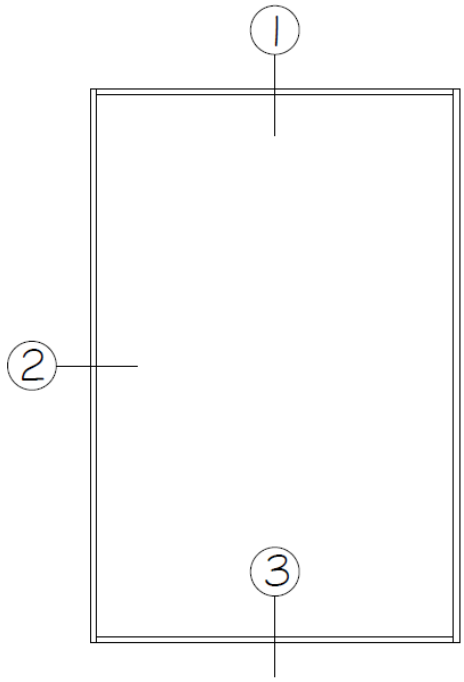
925 RAIN SCREEN
PHYSICAL TESTING
DOUBLE GLAZED



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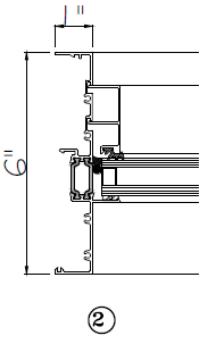

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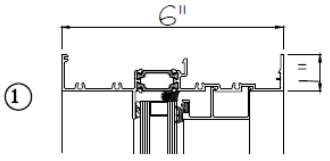

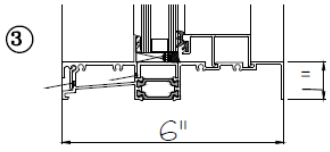

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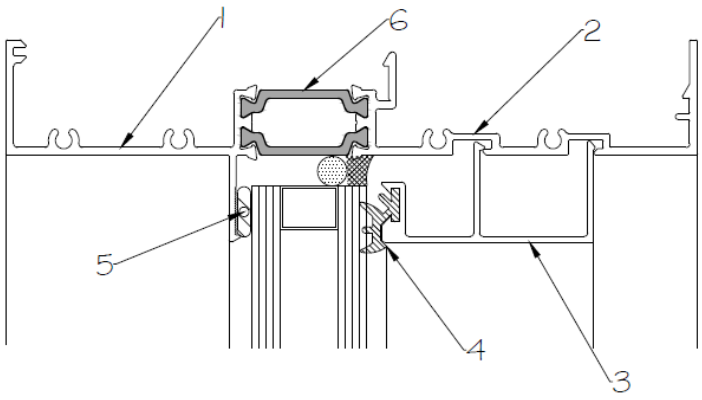

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1	EXTERIOR PERIMETER
2	INTERIOR PERIMETER
3	GLASS STOP
4	GLAZING SPLINE
5	1/8" POLYSHIM
6	GLASS REINFORCED NYLON
7	
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10	
11	

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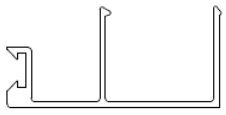

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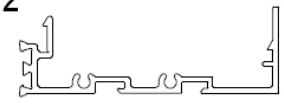

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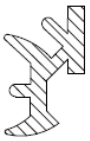

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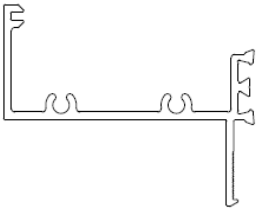

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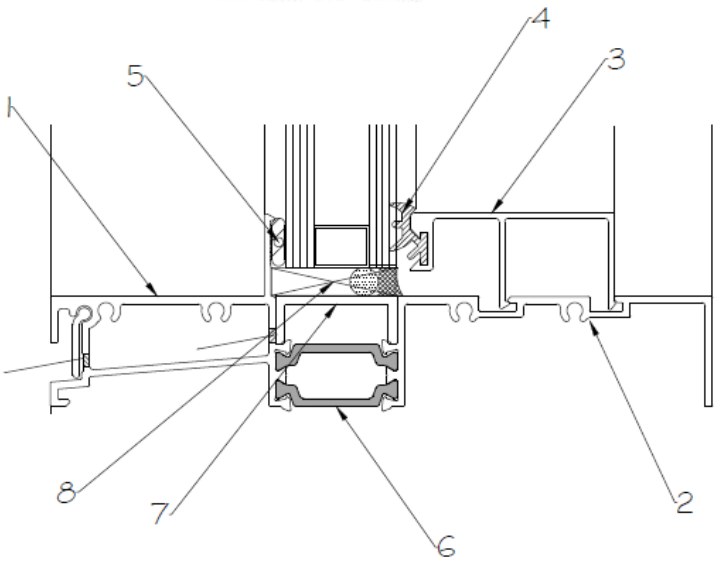
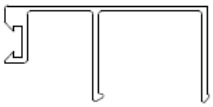


1	RAIN SCREEN SILL EXTERIOR
2	RAIN SCREEN SILL INTERIOR
3	GLASS STOP
4	GLAZING SPLINE
5	1/8" POLYSHIM
6	GLASS REINFORCED NYLON
7	GLAZING BLOCK SUPPORT (PVC)
8	SETTING BLOCK
9	
10	
11	

10

3



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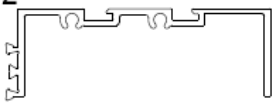

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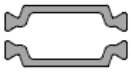

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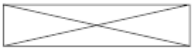

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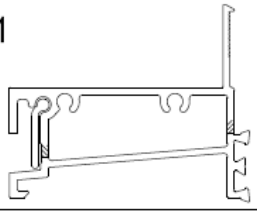

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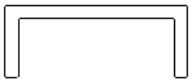

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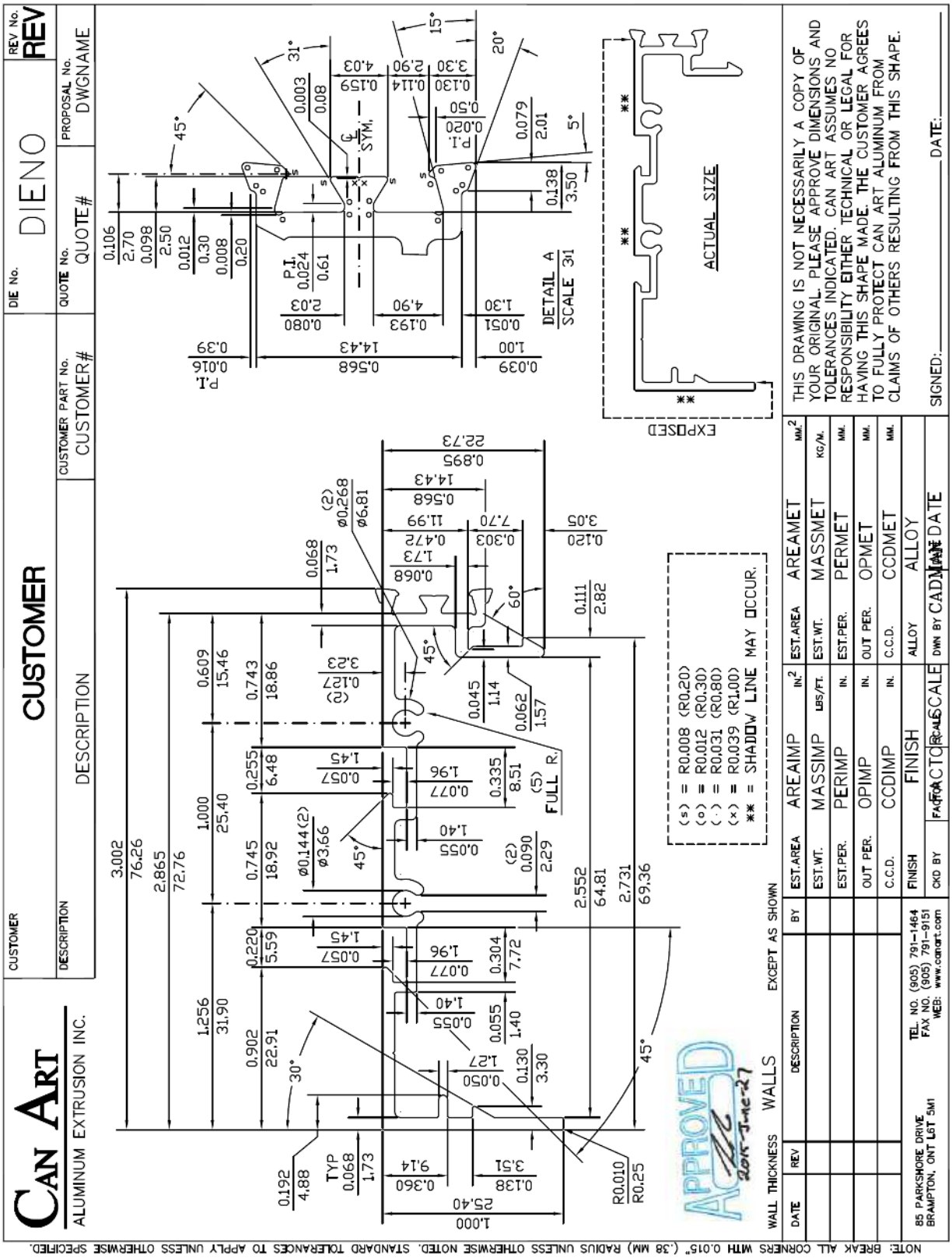
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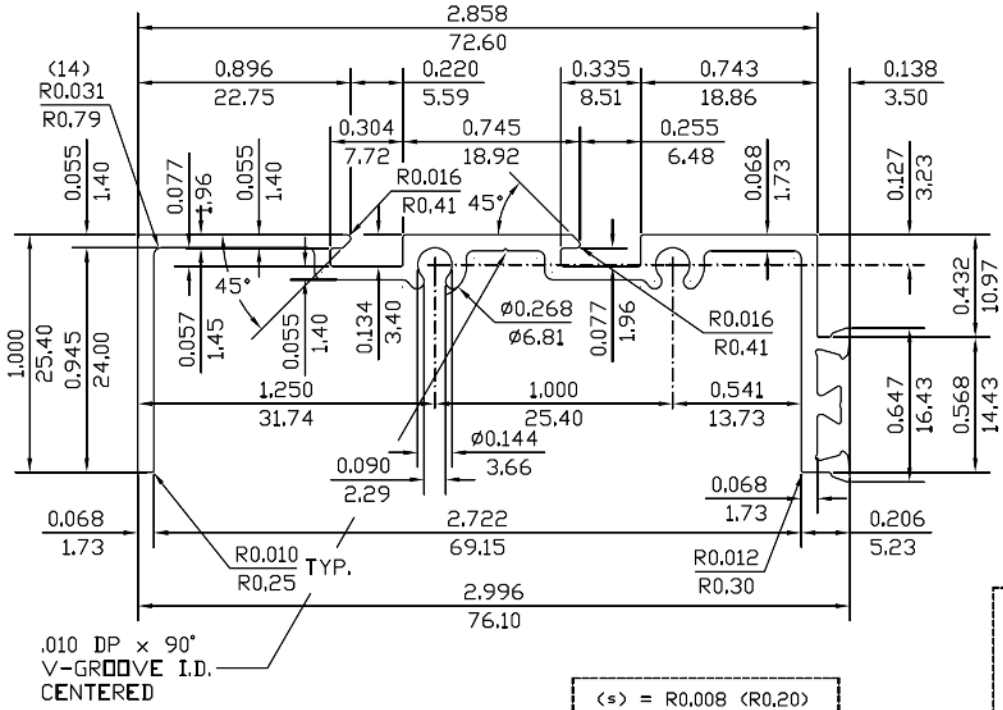

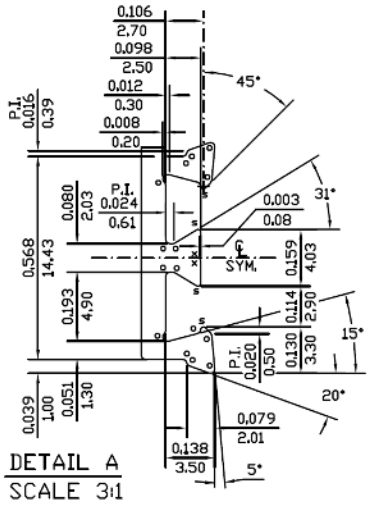

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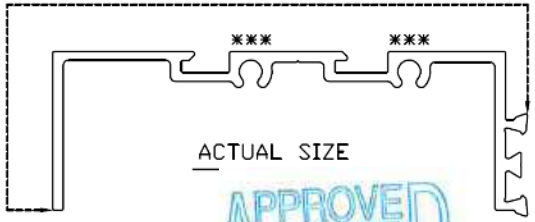
EXPOSED



ACTUAL SIZE

*** = SHADOW LINE EXPECTED.

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(o) = R0.012 (R0.30)
( ) = R0.031 (R0.80)
(x) = R0.039 (R1.00)

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WALL THICKNESS WALLS EXCEPT AS SHOWN

DATE	REV	DESCRIPTION	BY

EST.AREA	AREAIMP	IN.²	EST.AREA	AREAMET	MM.²
EST.WT.	MASSIMP	LBS/FT.	EST.WT.	MASSMET	KG/M.
EST.PER.	PERIMP	IN.	EST.PER.	PERMET	MM.
OUT PER.	OPIMP	IN.	OUT PER.	OPMET	MM.
C.C.D.	CCDIMP	IN.	C.C.D.	CCDMET	MM.
FINISH	FINISH		ALLOY	ALLOY	
CKD BY	FACTOR	SCALE	DWN BY CADMAN		DATE

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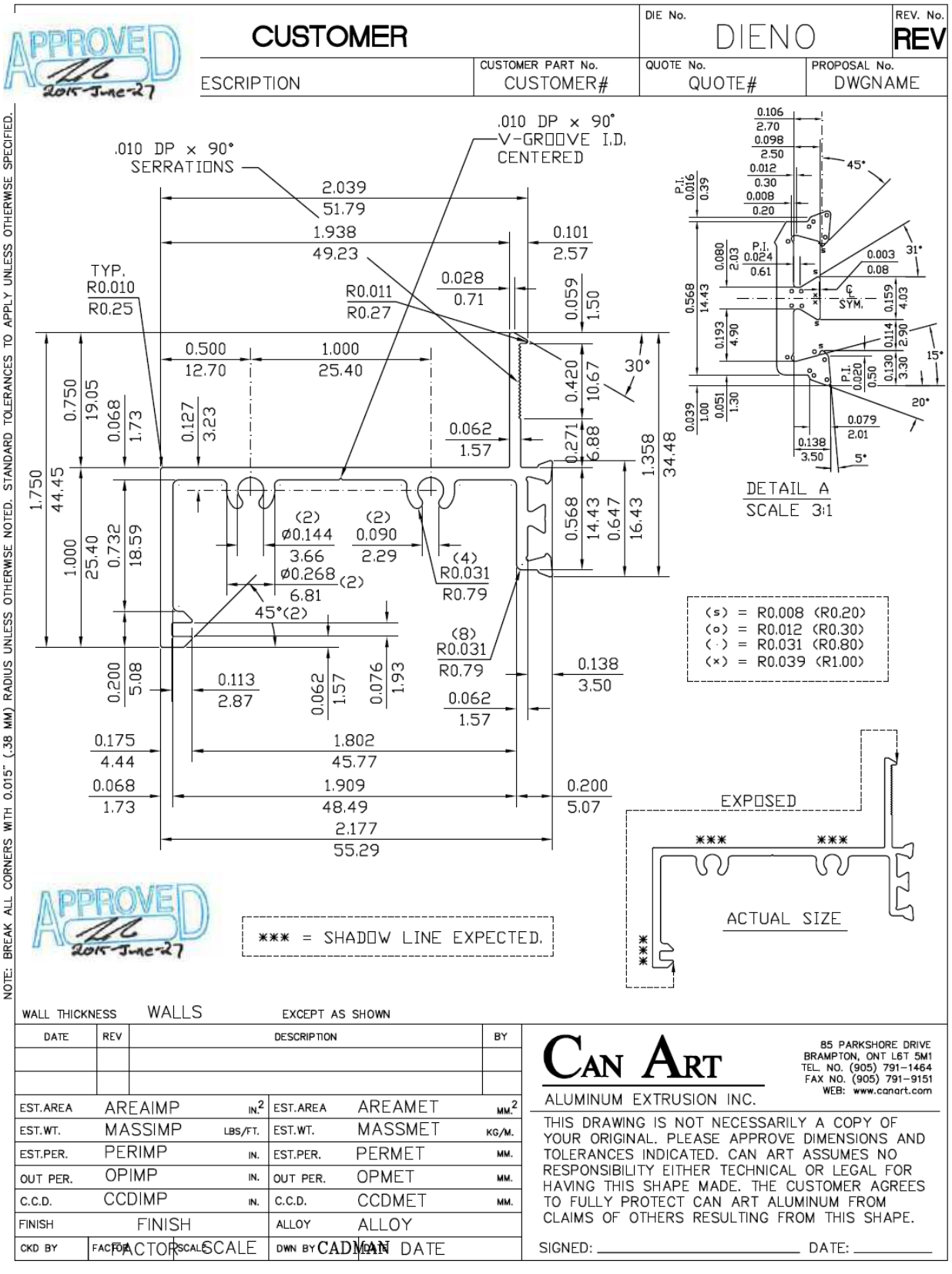
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0.420 10.67
30°
0.750 19.05
0.068 1.73
0.127 3.23
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(o) = R0.012 (R0.30)
(·) = R0.031 (R0.80)
(×) = R0.039 (R1.00)
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ACTUAL SIZE
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WALL THICKNESS WALLS EXCEPT AS SHOWN
DATE REV DESCRIPTION BY
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OUT PER. OPIMP IN. OUT PER. OPMET MM.
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