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Testing. Advising. Assuring.

PERFORMANCE EVALUATION OF THE “WINDSPEC 5500 HTP SERIES TRIPLE GLAZED FIXED” IN ACCORDANCE WITH CSA A440.2-14, SECTION 11 FOR CONDENSATION RESISTANCE

Report to:	Windspec Inc. 1310 Creditstone Road Concord, Ontario L4K 5T7
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Report No.:	14-06-M0446-3 4 Pages, 1 Appendix (4 Pages)
Proposal No.:	14-006-327230
Date:	December 19, 2014

1.0 INTRODUCTION

At the request of Windspec Inc., Exova Canada Inc. was retained to conduct a condensation resistance evaluation of a fixed aluminum window unit identified as the "Windspec 5500 HTP Series Triple Glazed Fixed" in accordance with CSA A440.2-14, Section 11 (Condensation Resistance) as outlined in Proposal Number: 14-006-327230.

Exova Specimen No.:	14-06-M0446-3
Test Date:	December 9, 2014
Type:	Aluminium Fixed Window
Model:	Windspec 5500 Series Triple Glazed Fixed
Overall Window Size:	1,205 mm (wide) x 1,499 mm (high)
Glazing Details:	6 mm Clear Tempered, Solarban 60 on No. 2 Surface / 13 mm Argon / 6 mm Clear Annealed / 13 mm Argon / 6 mm Clear Tempered, Solarban 60 on No. 5 Surface
Glazing Size:	1,105 mm (wide) x 1,397 mm (high)
Spacer Type:	Warm Edge Spacer, 13 mm Overall Spacer Width
Glazing Stop Method:	Aluminium Pressure Plate
Weather-stripping:	EPDM Seals
Frame Material:	AT - (Extruded Aluminium (5 ¼" x 2 ½") with Thermal Break)
Thermal Break:	Flexible PVC Thermal Break
Reinforcement:	None
Drainage:	None

Weather-stripping Configuration:

<u>Type:</u>	<u>Quantity Installed & Size:</u>	<u>Location:</u>
EPDM	1 Row	Frame to Glass
EPDM	1 Row	Pressure Plate to Glass

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 evaluated the above window in accordance with the procedures outlined in CSA A440.2-14, Section 11, Fenestration Energy Performance, Condensation Resistance test standard.

3.0 RESULTS

Table 1- Summarized Testing Results in Accordance with CSA-A440.2-14, Section 11, Condensation Resistance Exova Specimen No.: 14-06-M0446-3	
Temperature Locations	Test Results
Coldest Glazing Temperature (Tg)	10.1 °C
Coldest Frame Temperature (Tf)	13.0 °C
Weather-side Temperature (Tc)	-18.3 °C
Room-side Temperature (Th)	21.3 °C
Room-side Humidity	6.1 %RH
I-Value (Glazing)	71.7
I-Value (Frame)	79.0
Calculated Total I-Value	72

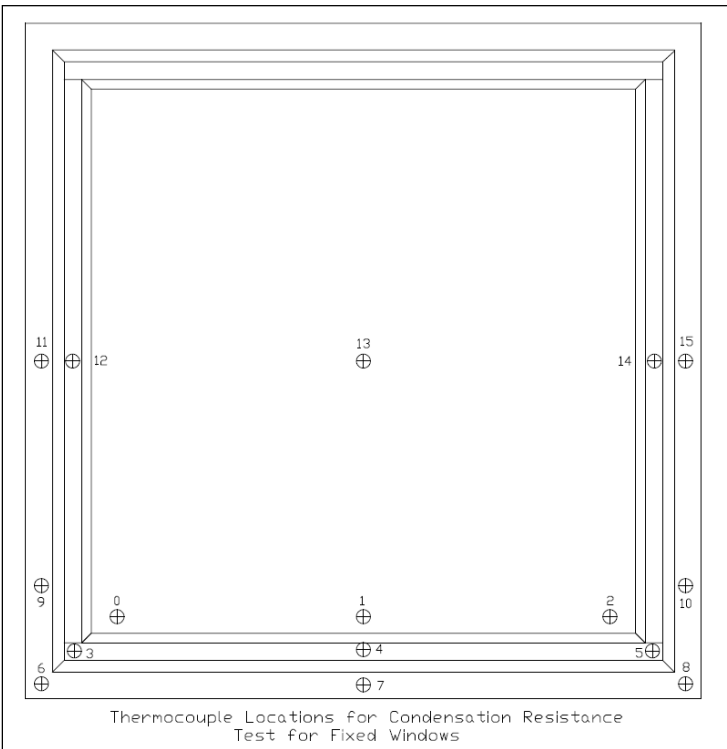


Figure 1 – Thermocouple Layout for Fixed Windows (CSA A440.2-14, Figure A.3)

Table 2 – Average Measured Temperatures at Various Thermocouple Locations CSA-A440.02-09, Section 11, Condensation Resistance Exova Specimen No.: 14-06-0446-3			
Thermocouple Location	Temperature (°C)	Thermocouple Location	Temperature (°C)
0	10.5	8	13.9
1	11.5	9	14.2
2	10.1	10	13.9
3	13.7	11	14.8
4	13.7	12	14.1
5	13.0	13	16.7
6	13.8	14	13.9
7	14.2	15	14.7

4.0 MODIFICATIONS

No modifications were made to Exova Specimen No.: 14-06-M0446-3 prior or during testing.

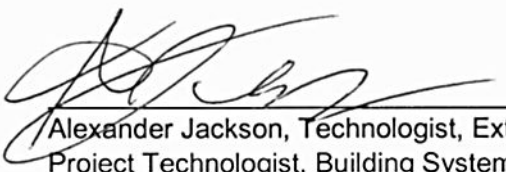
5.0 CONCLUSIONS

Based on the results of the testing summarized in Table 1, the Windspec “Windspec 5500 Series Triple Glazed Fixed” (Exova Specimen No.: 14-06-M0446-3) achieved the following condensation resistance performance criteria as outlined in CSA A440.2-14, Section 11:

<u>Performance Criteria</u>	<u>Rating</u>
-----------------------------	---------------

- | | |
|-----------|----|
| • I-Value | 72 |
|-----------|----|

Reported by:


Alexander Jackson, Technologist, Ext. 11413
Project Technologist, Building Systems
Products Testing Division

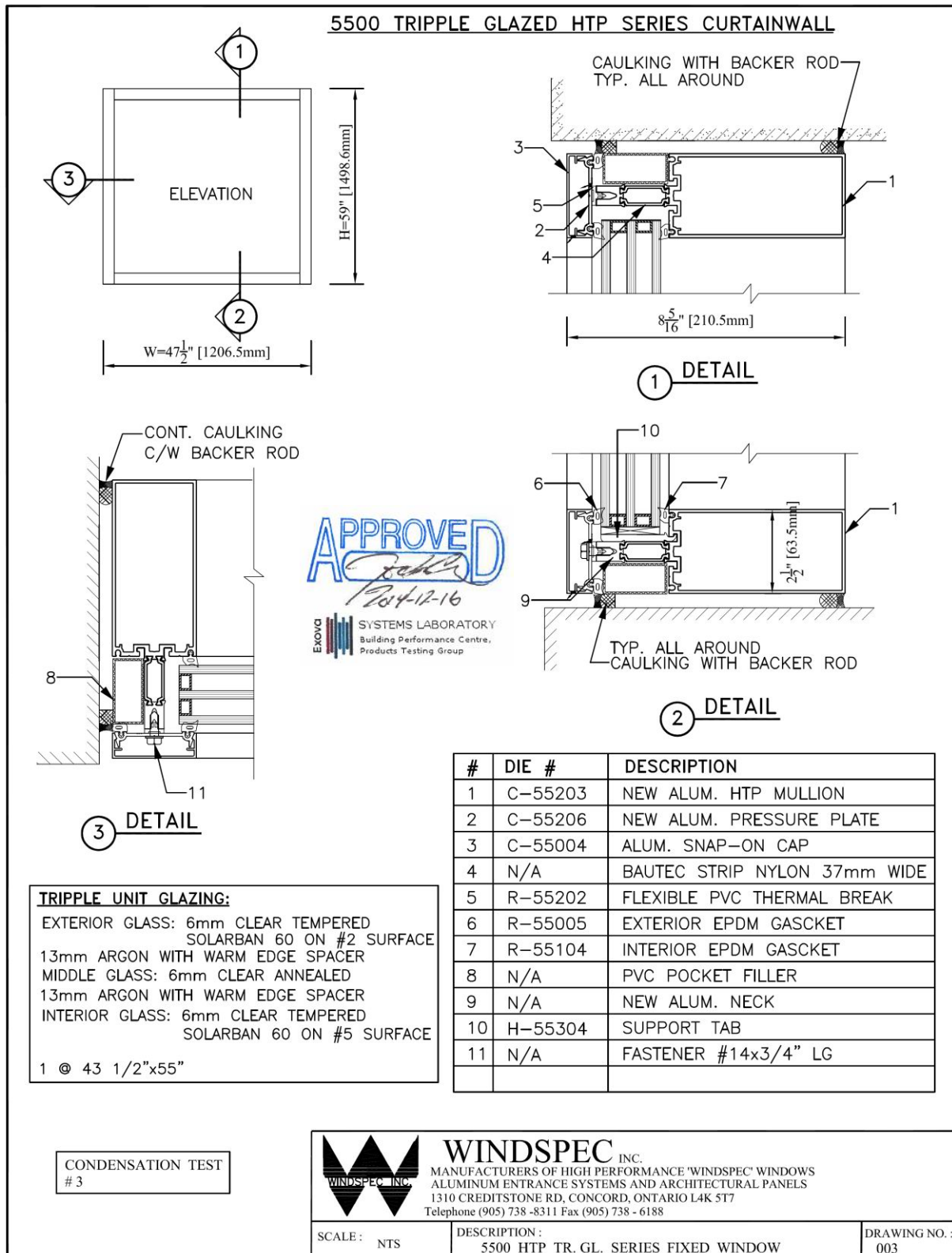
Reviewed by:


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

APPENDIX A

Specimen Detail Drawings
(As Provided by Windspec Inc.)

(5 Pages)



CUSTOMER		DIE No. DIENO	REV. No. REV
DESCRIPTION	DESCRIPTION	CUSTOMER PART No. CUSTOMER#	QUOTE No. QUOTE#
		PROPOSAL No. DWGNAME	

PLS. INDICATE
EXPOSED SURFACES
I.D. MARK

ACTUAL SIZE

APPROVED

2012-12-16

EXOVO
SYSTEMS LABORATORY
Building Performance Centre,
Products Testing Group

DETAIL: 1.5=1

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	
CKD BY	FACTORY	SCALE	DWN BY	CADMAN	DATE

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ALUMINUM EXTRUSION INC.

85 PARKSHORE DRIVE
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SIGNED: _____ DATE: _____

CUSTOMER		PART NO. PART		DIE NO. DIE		DASH 1	
DESCRIPTION: DESC		TARRIF# TARRIF		PROPOSAL# PROPOSAL			
SAPA 5675 Kennedy Road Mississauga, Ontario L4Z 2H9		DATE		SYM		REVISION	

DIE 1
DIE 1

SECTION TO SNAP-FIT WITH DIE # AS-27295

IX	IX	in ⁴	IY	IY	in ⁴
SX	SX	in ³	SY	SY	in ³
CGX	CGX	in	CGY	CGY	in

NO SURFACES
EXPOSED.

CUSTOMER'S SUPPLIED CAD FILE

UNMARKED RADII = RADIUS TO SUIT
 BREAK CORNERS = 0.015 (0.38) R.
 (z) = 0.008 (0.20) R. (4)
 (y) = 0.050 (1.27) R. (2)
 (x) = 0.020 (0.51) R. (4)
 (⊙) = FULL R. (2)

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

UNSPECIFIED WALL THICKNESS
WALL

EXOVA SYSTEMS LABORATORY
 Building Performance Centre,
 Products Testing Group

EST. AREA	AREA_IM ²	AREA_MM ²	OUT PER.	OUT_IM ²	OUT_MM ²
EST. WT.	WT_IM ³ /FT.	WT_MM ³ /M	FACTOR	FACTOR	
EST. PER.	PER_IM ²	PER_MM ²	C.C.D.	CCD_IM ²	CCD_MM ²
DWN BY	ALLOY	ALLOY	SCALE	SCALE	DATE

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
CUSTOMER	PART	DIE	1
DESCRIPTION:	TARRIF#	PROPOSAL#	PROPOSAL
INDALEX LIMITED 5675 Kennedy Road Mississauga, Ontario L4Z 2H9	DATE	SYM	REVISION
REDRAWN			

USE PRIME BILLET ONLY

ANODIZED QUALITY

SURFACE FINISH CRITICAL

NOTE:
TO SNAP-FIT WITH DIE AS27294

(°) = 0.015(0.38) R. (2)
 (x) = 0.031(0.79) R. (6)
 UNMARKED RADII = RADIUS TO SUIT

EXPOSED SURFACE

ACTUAL SIZE

				UNSPECIFIED WALL THICKNESS	
				WALL	
EST. AREA	AREA_IM ²	AREA_MM ²	OUT PER.	OUT_IM ²	OUT_MM ²
EST. WT.	WT_IM ² /FT.	WT_MM ² /M	FACTOR	FACTOR	
EST. PER.	PER_IM ²	PER_MM ²	C.C.D.	CCD_IM ²	CCD_MM ²
DWN BY	G.S.	ALLOY	SCALE	SCALE	DATE
BREAK ALL CORNERS .010"R (0.25R) UNLESS OTHERWISE NOTED.				STANDARD ALUMINUM ASSOCIATION TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED	

APPROVED

2014-12-16

EXOVO SYSTEMS LABORATORY
Building Performance Centre,
Products Testing Group