Test Report

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REPORT OF

PRODUCT EVALUATION

CONDUCTED ON A

WOODEN FIXED LITE WINDOW

FOR

LATKO ENTERPRISES LTD.

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PREFACE

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INTRODUCTION

Intertek Testing Services NA Ltd./Warnock Hersey has conducted performance tests on a Wooden Fixed Lite Window system. Testing was conducted between November 3, 2000 and November 17, 2000. All tests were performed in accordance with the CAN/CSA-A440-98 test standard "Windows".

PRODUCT DESCRIPTION

Designation:	R 2001 Series Fixed Window System
Type (general):	Double Glazed Wooden Framed, Fixed Lite Window
Frame:	The frame was made of Kiln Dried Douglas Fir Lumber. The corners were rabbet jointed, sealed with caulking (Schnee-Morehead Acrylic-R 8200 Acrylic Latex Sealant) and stapled. Each corner was secured using six 38 mm (1-1/2" x 0.048") staples through the jambs. A D-Fir brickmould was attached to the mainframe head and jambs and was fastened using a steel brad every 300 mm (12") with the head mitres fastened to the jamb mitres using a single #8 x 50 mm (2") plated flathead woodscrew. Thermoplastic sealant (Mulco Flex 9000) was applied as a fillet bead between the backside of the brickmould to the mainframe. The mainframe was pre-finished using Dryvac 1010 wood preservative. A D-Fir glass stop was attached to the interior perimeter of the mainframe and was secured from the exterior perimeter of the mainframe using #8 x 31.8 mm (1-1/4") plated flathead woodscrews spaced 300 mm (12") apart. The window system was attached to the test chamber through the head; jambs and sill using four equally spaced #12 x 3-1/2" wood screws.
Overall Size:	2000 mm wide x 2000 mm high.
Drainage:	No drainage was provided.
Glazing Thickness:	The glazing unit consisted of two 4.65 mm glass panels (one being AFG Low-e glass) separated by a 12.7 mm aluminum spacer bar set upon two 3 mm thick vinyl setting blocks placed at quarter points. The spacer bar had a polyisobutylene primary airseal and a polysulphide secondary airseal. The glazing unit was filled with argon gas.
Glazing Method:	The mainframe utilized laid-in glazing attached using Dow Corning 1199 Silicone sealant and Douglas Fir exterior glazing stops secured with brads every 200 mm. The glazing stops were sealed to both the main frame and the glass.
Drawings:	A full set of drawings stamped "WH" are included in Appendix II of this report.

TEST RESULTS

1a. Air Tightness (Infiltration) Test

An air infiltration test was performed in accordance with ASTM E283-91 "*Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Wall, and Doors under Specified Pressure Differences across the Specimen*" using a test pressure of 75 Pa (equivalent to a wind velocity of 40 km/h). A Meriam Instrument Co. Laminar Flow Element Model No. 50MW20-2F, Serial No. 748930-2F and an 8" WC calibrated inclined manometer was used to measure the volume of air infiltration through the window.

Based on a corrected infiltration rate of 0.18 m^3/h and a crack length of 7.77 m, the air tightness rate was calculated to be 0.02 m^3/h-m.

1b. Air Tightness (Exfiltration) Test

An air exfiltration test was performed in accordance with ASTM E283-91 "*Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Wall, and Doors under Specified Pressure Differences across the Specimen*" using a test pressure of 75 Pa (equivalent to a wind velocity of 40 km/h). A Meriam Instrument Co. Laminar Flow ElementModel No. 50MW20-2F, Serial No. 748930-2F and an 8" WC calibrated inclined manometer was used to measure the volume of air exfiltration through the window.

Based on a corrected exfiltration rate of 0.18 m^3/h and a crack length of 7.77 m, the air tightness rate was calculated to be 0.02 m^3/h-m.

The average measured air tightness was 0.02 m^3/h-m. The maximum specified average air tightness (infiltration + exfiltration/2) rate is 0.25 m^3/h-m for a Fixed rating.

Table 1

AIR TIGHTNESS

Maximum Air Tightness	
Window rating	**Rate $(m^3/h)m^{-1}$**
Storm	8.35 (max)
	5.00 (min)
A1	2.79
A2	1.65
A3	0.55
Fixed	0.25

2. Water Tightness Test

A water resistance test was performed on the sample in accordance with ASTM E547-96 "*Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential*". An Air Flow Developments Type SJ-12 O"-12" vertical manometer was used to measure the test pressures. A calibrated water spray assembly was used to deliver the water on the test sample.

The test was performed using a pressure differential of 700 Pa (14.6 psf) and a water spray rate of at least 204 L/m² per hour. The period consisted of four cycles of five minutes with the pressure applied and one minute with the pressure released.

During the 24 minute test period, no water leakage was observed. The window unit therefore meets a level B-7 performance rating.

Table 2

WATER TIGHTNESS

Window Rating		
For Use in Small Buildings	**For Use in Other Building**	**Test Pressure Differential (Pa)**
Storm	--	0
B1	B1	150
B2	B2	200
B3	B3	250 (300Pa for M98)
--	B4	400
--	B5	500
--	B6	600
--	B7	700

TEST RESULTS - *continued*

3. Wind Load Resistance

The window unit was subjected to a Blow-out test using both positive and negative pressures at the C-3 test pressure of 3000 Pa (62.4 psf).

There was no breakage or permanent deformation, which would impair the operation of the window.

This window unit meets a level C-3 Wind Load Rating.

Table 3

WIND LOAD RESISTANCE

Window rating		Test pressure, Pa	
For Use in Small Buildings	**For Use in Other Building**	**Sash Deflection (L/125)**	**Blowout**
Storm	--	--	750
C1	C1	500	1500
C2	C2	750	2000
C3	C3	1200	3000
--	C4	1600	4000
--	C5	2000	5000

TESTING HISTORY

See Appendix I.

CONCLUSION

The window unit described herein met the Fixed Air Tightness (Fixed Air Infiltration, Fixed Air Exfiltration), B-7 Water Tightness and C-3 Wind Load Resistance requirements of CSA A440-98.

INTERTEK TESTING SERVICES NA LTD.
Warnock Hersey

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APPENDIX I

Testing History

Date	Test	Event	Modification
	No retests required.		