CANADA:
2825 MURRAY STREET
PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

UNITED STATES:
8385 WHITE OAK AVENUE
RANCHO CUCAMONGA
CALIFORNIA
91730
T: 909.483.0250
F: 905.483.0336
www.qai.org • info@qai.org

TEST REPORT

REPORT NUMBER T636-1

Edition 1: April 6, 2009
Contents: Pages 1-37

Oasis Windows Ltd.

400 Series Picture Window
400 Series Awning Window
400 Series Casement Window
300 Series Vertical Slider Window
300 Series Horizontal Slider Window
307 Series Horizontal Slider Window
5200 Series Patio Sliding Door

Test Method:	**CSA A440.2-04 "Energy Performance of Windows and Other Fenestration Products" – Computer Simulation Method**
Manufacturer /Client:	Oasis Windows Ltd.
Manufacturer /Client Address:	Oasis Windows Ltd. 109 – 12889 84th Street Surrey, BC, Canada V3W 0K5
Model Number:	400 Series Picture Window 400 Series Awning Window 400 Series Casement Window 300 Series Vertical Slider Window 300 Series Horizontal Slider Window 307 Series Horizontal Slider Window 5200 Series Patio Sliding Door
Report Number:	T636-1
Description:	Refer to Simulation Summary for simulation window sizes See Appendix A for CAD Drawings and Part Numbers
Test Lab:	Quality Auditing Institute Ltd. 2825 Murray Street, Port Moody BC, V3H 1X3

Test Conditions:

Quality Auditing Institute Ltd. (QAI) was retained by Oasis Windows Ltd. to perform testing in accordance with the computer simulation method requirements of CSA A440.2-04 on the following window and door models:

- 400 Series Picture Window
- 400 Series Awning Window
- 400 Series Casement Window
- 300 Series Vertical Slider Window
- 300 Series Horizontal Slider Window
- 307 Series Horizontal Slider Window
- 5200 Series Patio Sliding Door

The overall coefficient of heat transfer and solar-optical properties were determined by computer simulation using THERM5 and WINDOW5 software. The WINDOW software program models the one-dimensional heat flow through the center-of-glass portion of the window or door. The THERM software program models the two-dimensional heat flow through the frame, edge-of-glass, divider, and divider-edge portions of the window or door. Input data for both programs is based on manufacturer's specifications.

The energy rating (ER) is obtained by combination of the u-value, solar heat gain coefficient (SHGC), and air leakage rate using the formula specified in CSA A440.2-04.

Air leakage values were determined from QAI (Port Moody). The test report number, date, crack length and average air leakage have been reported in the below table:

Window Type	CSA A440-00				CSA A440.2-04	
	Test Report Number	Date	Crack Length (m)	Air Leakage (m^3/h/m)	Test Specimen Size W x H (mm)	CAN-BEST Test Report Number
400 Series Picture	W410-1	08/28/06	7.52	0.00	1200 x 1500	464-1792g-sim
400 Series Awning	W410-2	08/28/06	3.59	0.09	1500 x 600	464-1792f-sim
400 Series Casement	W410-3	08/28/06	4.21	0.30	600 x 1500	464-1792e-sim
300 Series Single Hung	W410-4	08/28/06	6.70	0.33	1200 x 1500	4641792-sim
300 Series Single Slider	W410-5	08/28/06	6.48	0.32	1500 x 1200	464-1792b-sim
307 Series Single Slider	W410-6	08/28/06	6.65	0.23	1500 x 1200	464-1838-sim
5200 Series Patio Door	W410-7	08/28/06	10.93	0.23	2000 x 2000	464-1792d-sim

Product drawings and specifications were supplied by Oasis Windows Ltd. and are shown in Appendix A. The most currently approved spectral data files were used. Defaults for material thermal and optical properties are given in the computer programs. When values other than defaults are used, they are documented in this report. Original Therm and Window files were generated based on testing completed at CAN-BEST (SCC Accredited Laboratory No. 447). The reports for the simulations have been referenced above.

Ratings are determined for a fixed set of environmental conditions and a specific product size. Actual product performance may be affected by variations in the product dimensions, assembly details, installation method, and environmental conditions.

Quality Auditing Institute Ltd. and its employees do not recommend or warrant any product for any specific use.

Summary of Results:

400 Series Picture Window – 1200mm x 1500mm
400 Series Awning Window – 1500mm x 600mm
400 Series Casement Window – 600mm x 1500mm
300 Series Vertical Slider Window – 120mm x 1500mm
300 Series Horizontal Slider Window – 1500mm x 1200mm
307 Series Horizontal Slider Window – 1500mm x 1200mm
5200 Series Patio Sliding Door – 2000mm x 2000mm

Simulation Summary

Window	Product Code	Glass Option	Number Of Layers	Exterior Layer	Interior Layer	Emissivity Surface 2	Emissivity Surface 3	Cavity 1	Spacer Bar Type	Air Leakage (m3/hr/m)	Visual Transmittance Total Window	Window U-Value (W/m2K)	Window SHGC	Energy Rating (ER)
400 Picture	400FX - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.00	0.59	1.56	0.30	23
	400FX - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.00	0.67	1.69	0.56	36
	400FX - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.00	0.55	1.53	0.22	19
400 Awning	400AW - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.09	0.44	1.57	0.23	19
	400AW - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.09	0.49	1.67	0.43	28
	400AW - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.09	0.40	1.55	0.17	16
400 Casement	400CA - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.30	0.44	1.58	0.23	19
	400CA - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.30	0.49	1.67	0.43	28
	400CA - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.30	0.40	1.56	0.17	16

Window	Product Code	Glass Option	Number Of Layers	Exterior Layer	Interior Layer	Emissivity Surface 2	Emissivity Surface 3	Cavity 1	Spacer Bar Type	Air Leakage (m3/hr/m)	Visual Transmittance Total Window	Window U-Value (W/m2K)	Window SHGC	Energy Rating (ER)
300 Vertical Slider	300SH - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.33	0.55	1.65	0.29	20
	300SH - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.33	0.62	1.77	0.53	31
	300SH - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.33	0.50	1.62	0.21	16
300 Horizontal Slider	300SS - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.32	0.55	1.65	0.29	20
	300SS - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.32	0.62	1.77	0.53	31
	300SS - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.32	0.50	1.63	0.21	16
307 Horizontal Slider	307SS - 3mm LowE (0.04) - 13.3 Argon - 3mm Cl	1	2	3mm Cardinal LowE 270	3mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.55	1.67	0.29	19
	307SS - 3mm Cl - 13.3 Argon - 3mm LowE (0.11)	2	2	3mm Clear	3mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.62	1.79	0.53	31
	307SS - 3mm LowE (0.02) - 13.3 Argon - 3mm Cl	3	2	3mm Cardinal LowE 366	3mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.50	1.64	0.21	16
5200 Sliding Door	5200SD - 4mm LowE (0.04) - 13.3 Argon - 4mm Cl	1	2	4mm Cardinal LowE 270	4mm Clear	0.04	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.57	1.65	0.30	21
	5200SD - 4mm Cl - 13.3 Argon - 4mm LowE (0.11)	2	2	4mm Clear	4mm Cardinal LowE 179	-	0.11	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.65	1.78	0.56	33
	5200SD - 4mm LowE (0.02) - 13.3 Argon - 4mm Cl	3	2	4mm Cardinal LowE 366	4mm Clear	0.02	-	13.3mm 90% Argon	Cardinal XL Edge (SS)	0.23	0.53	1.62	0.22	17

Notes:
ER = 57.76(SHGCw) – 21.90(Uw) – 0.54(L75/Aw) + 40
All glazing surface emissivities are assumed to be 0.84 unless otherwise stated.
Spacer bar was a 58-130 Cardinal XL Edge (SS) as shown in Appendix B

Comments/Conclusion:

Quality Auditing Institute Ltd., with lab facilities located in Port Moody, British Columbia, performed testing in accordance with the computer simulation method specified in CSA A440.2-04 for Oasis Windows Ltd. for the following windows and doors:

- 400 Series Picture Window
- 400 Series Awning Window
- 400 Series Casement Window
- 300 Series Vertical Slider Window
- 300 Series Horizontal Slider Window
- 307 Series Horizontal Slider Window
- 5200 Series Patio Sliding Door

Results are based on product specifications provided by Oasis Windows Ltd. found in Appendix A of this report.

The report relates only to the items tested. Test results in this report may not be reproducible in the field.

Person(s) Authorizing Report:

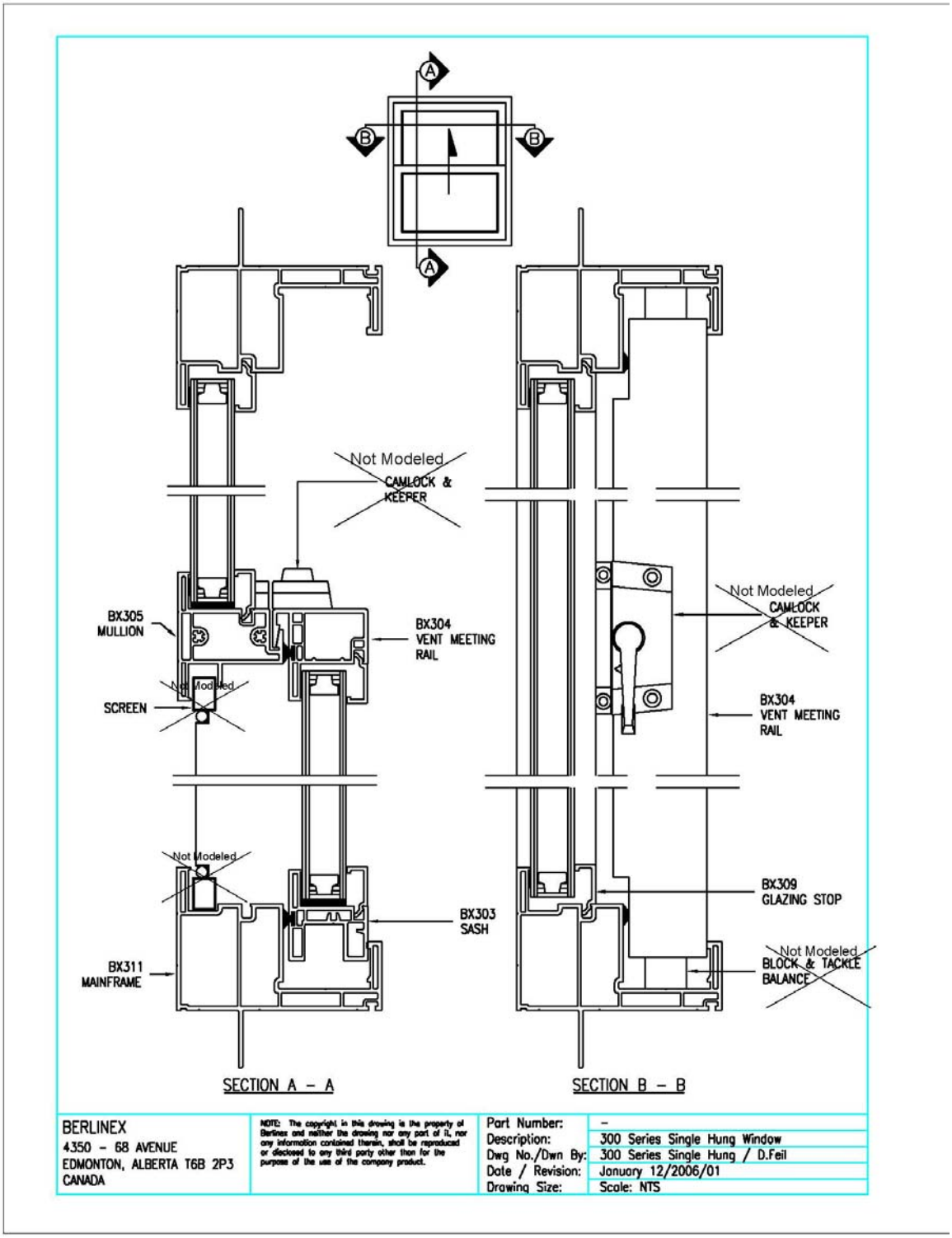
Name (Signature)	Kevin Saito Name (Printed)	Division Manager Title	16/04/09 (dd/mm/yy)

Reviewed by:

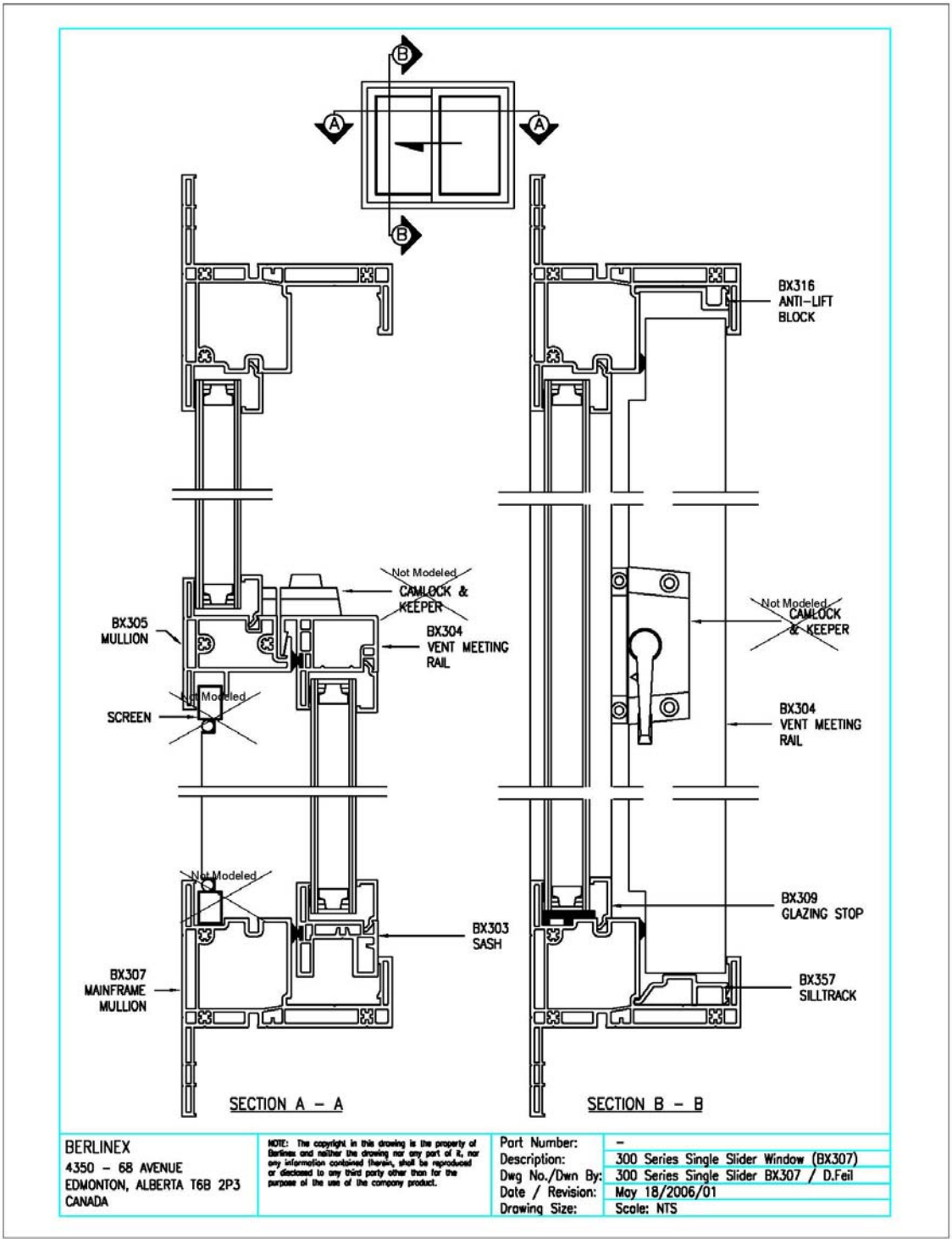
Name (Signature)	BEN BARKER Name (Printed)	DIRECTOR OF ENGINEERING Title	APRIL 16/09 (dd/mm/yy)

APPENDIX A

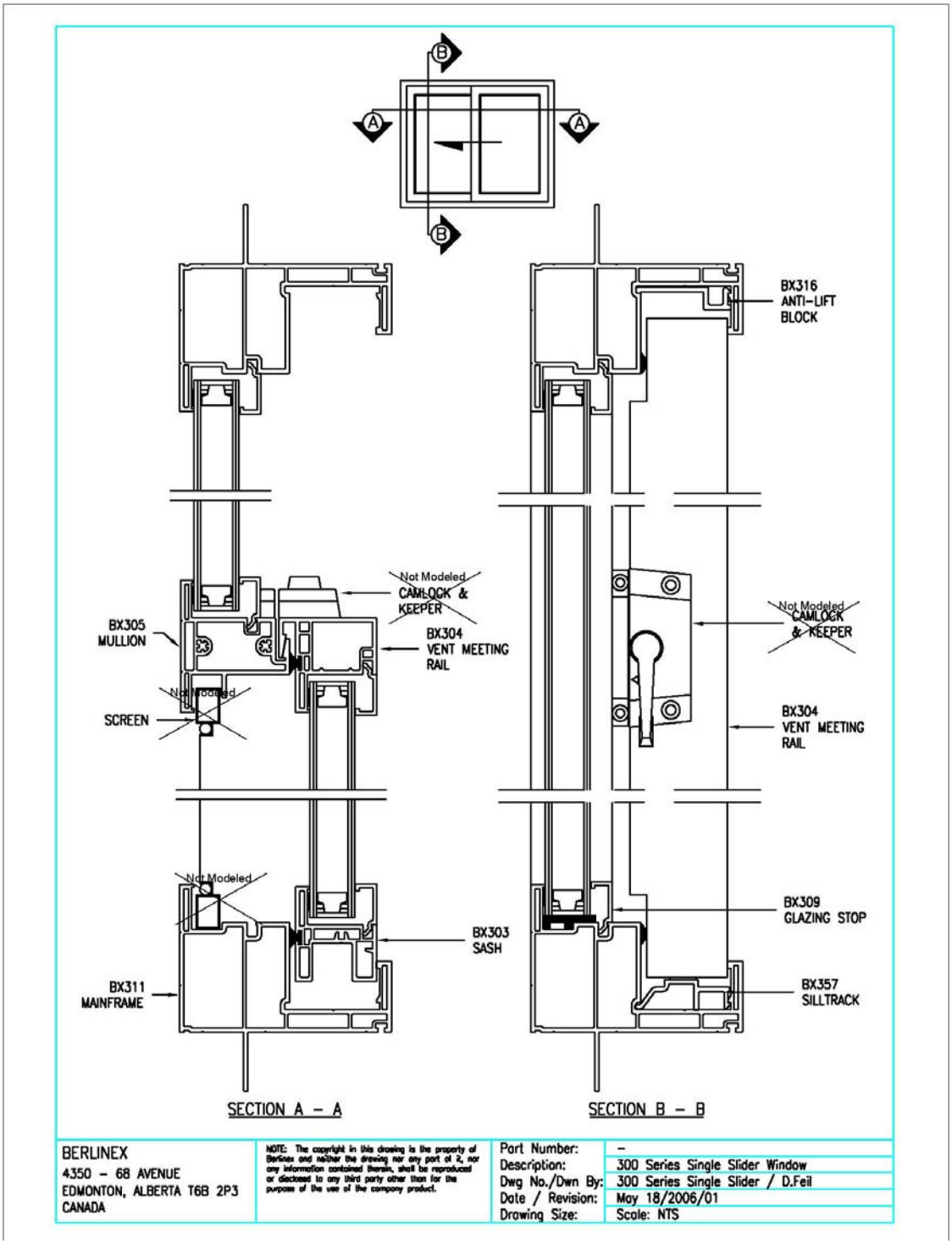
Appendix A: AutoCAD Drawings



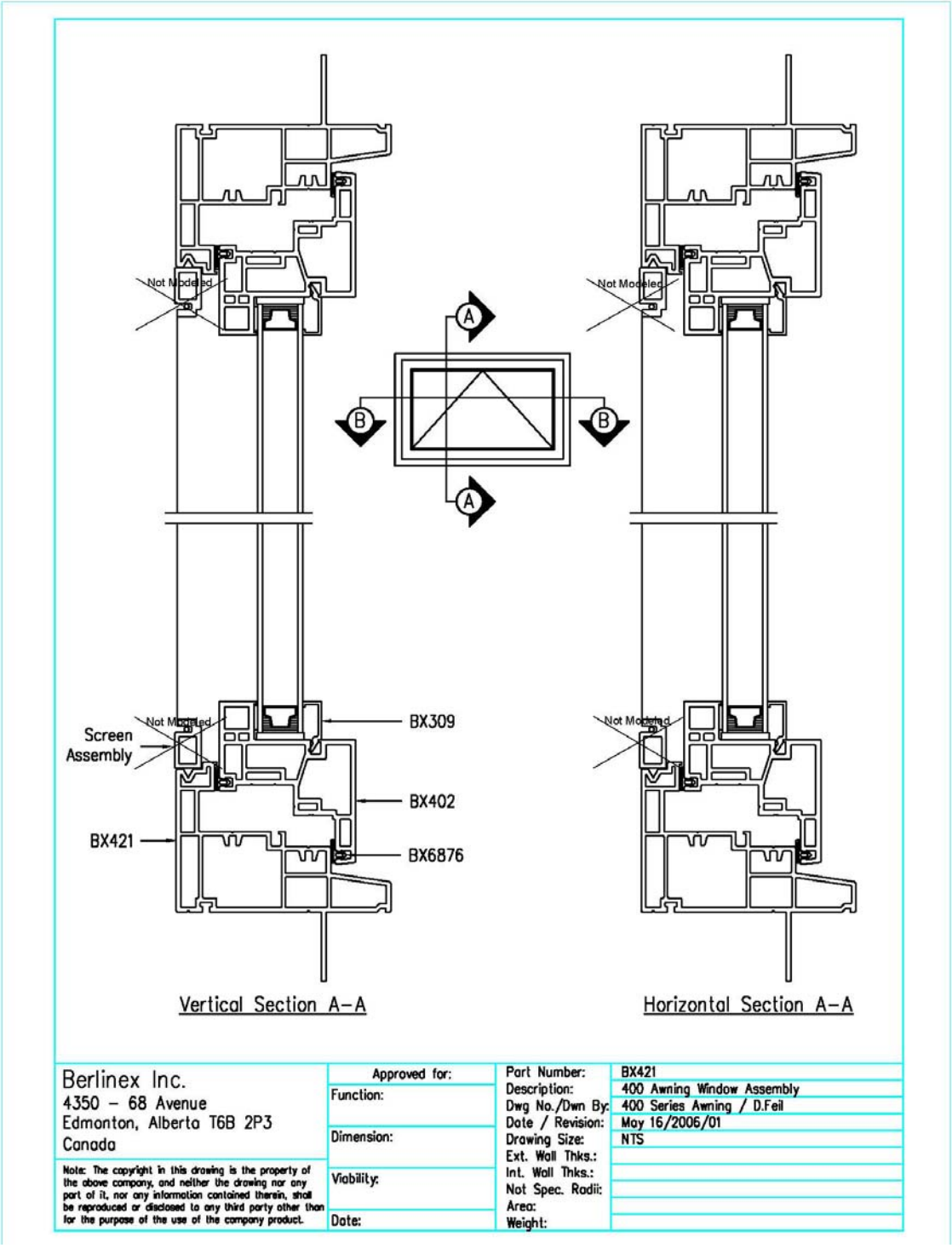
Appendix A: AutoCAD Drawings



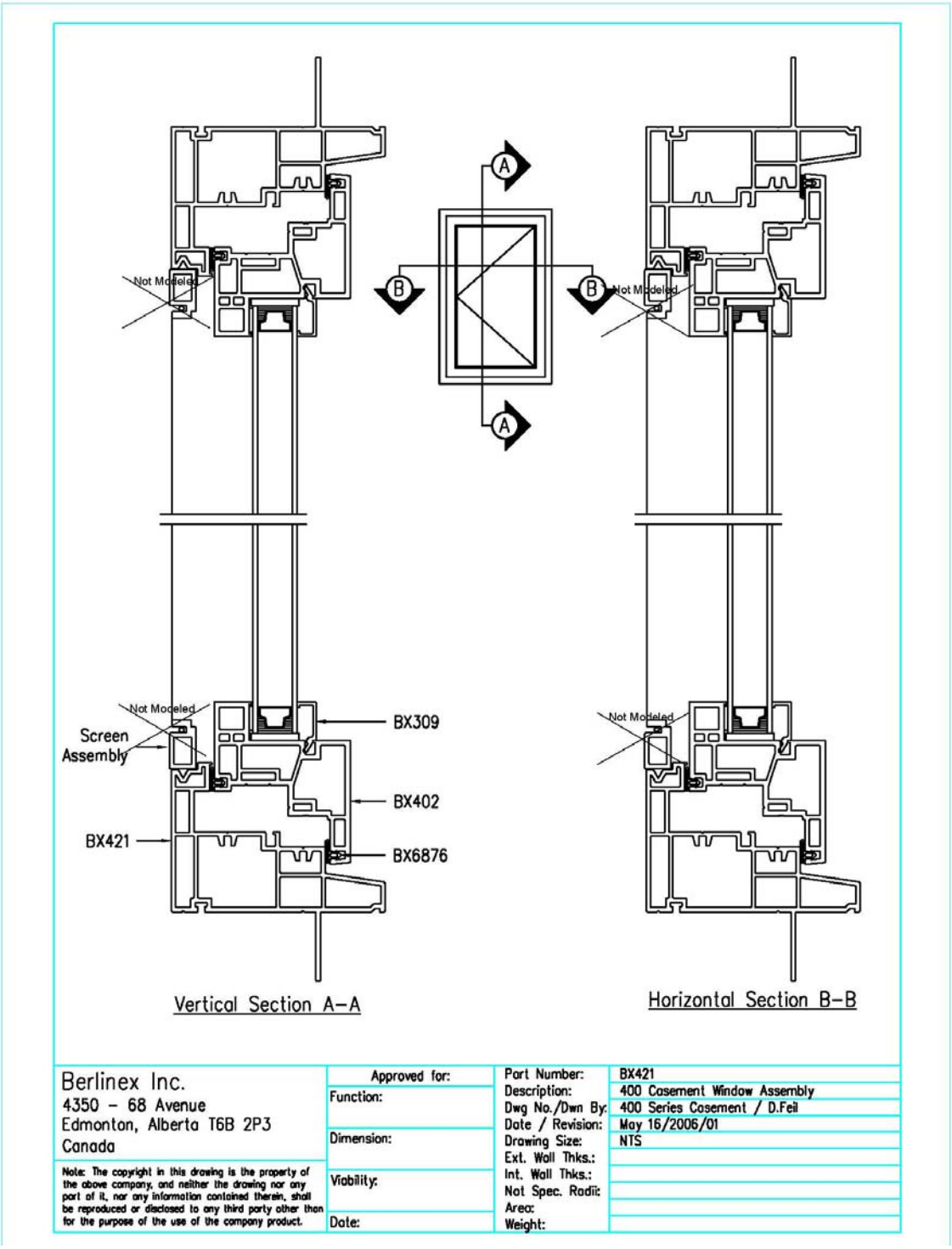
Appendix A: AutoCAD Drawings



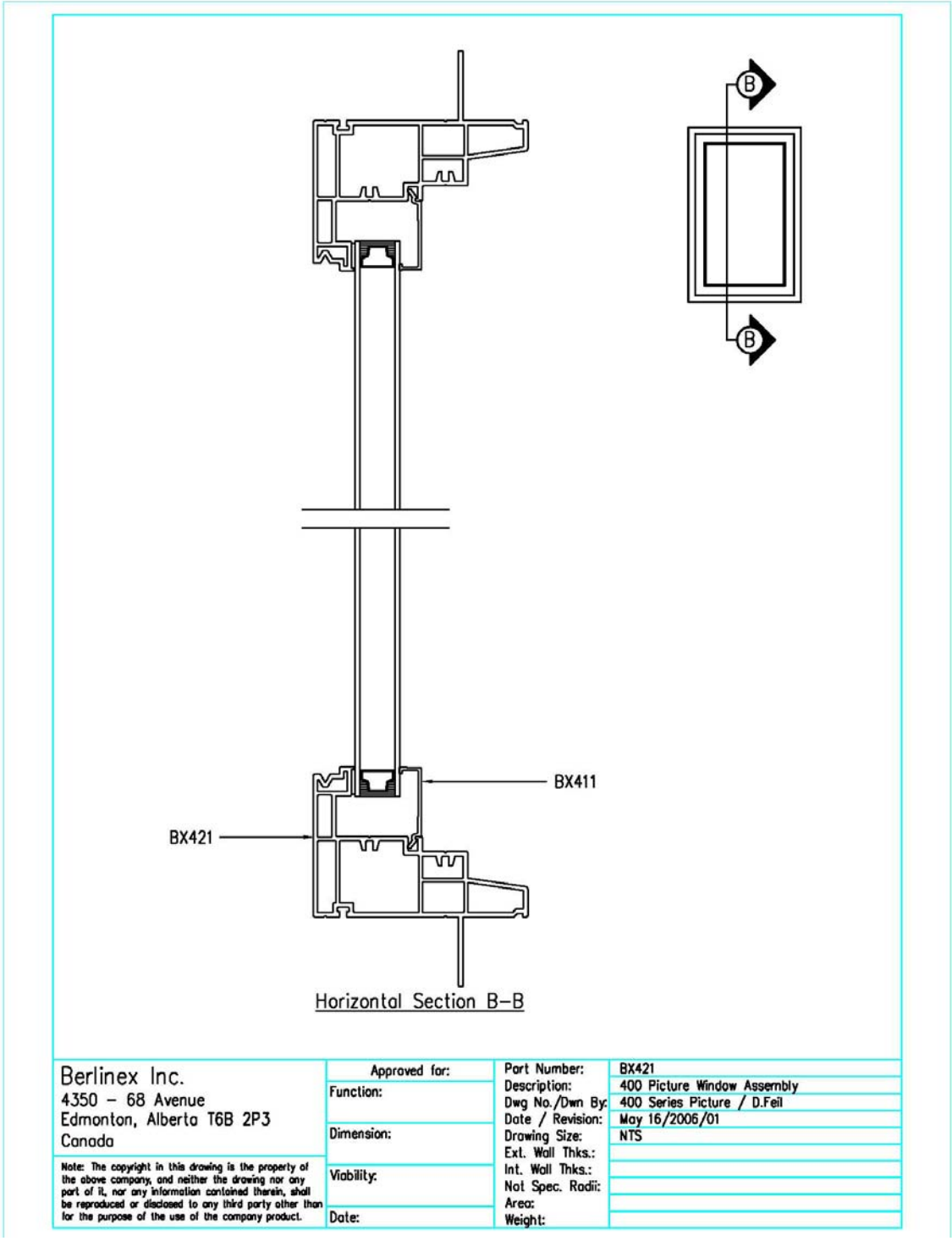
Appendix A: AutoCAD Drawings



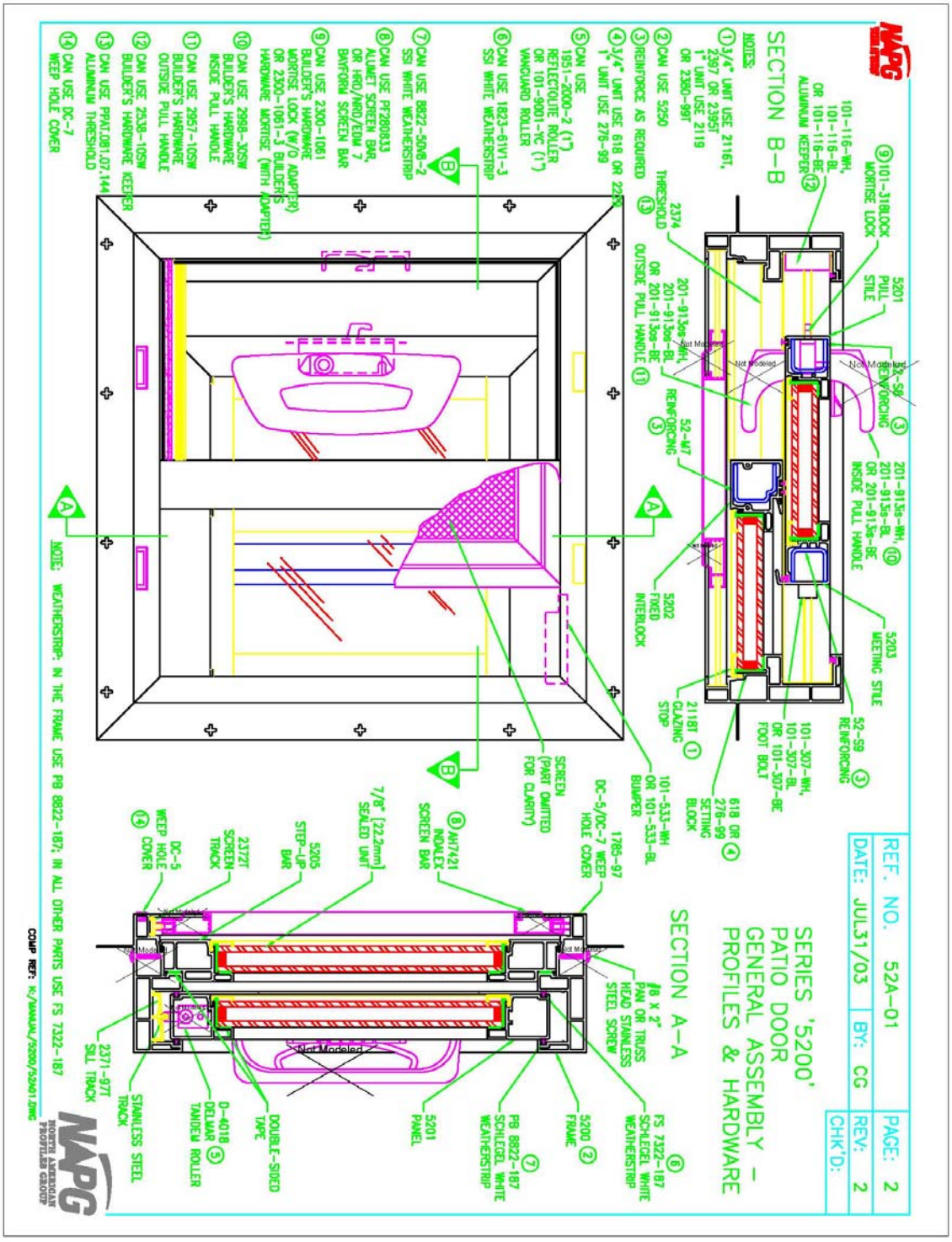
Appendix A: AutoCAD Drawings



Appendix A: AutoCAD Drawings



Appendix A: AutoCAD Drawings

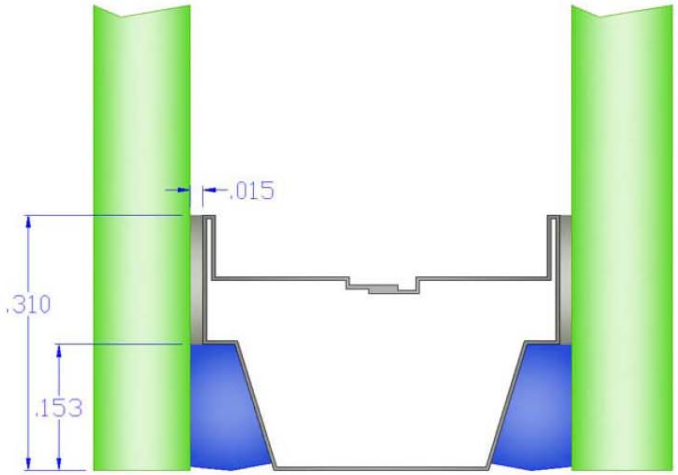


Appendix B: Spacer Bar Drawing

Cardinal IG
XL Edge Simulation Model

The purpose of this guide is to help properly model the XL Edge seal system when performing Therm window simulations.

XL Edge geometry.
Shown here is the proper XL Edge geometry that should be used for thermal models. This geometry is also included within the attached XL Edge.dxf CAD file.
Some important items are:
- PIB thickness is 0.015".
- Spacer back even with glass edge.
- Stainless steel thickness is 0.0045" for most airspaces.

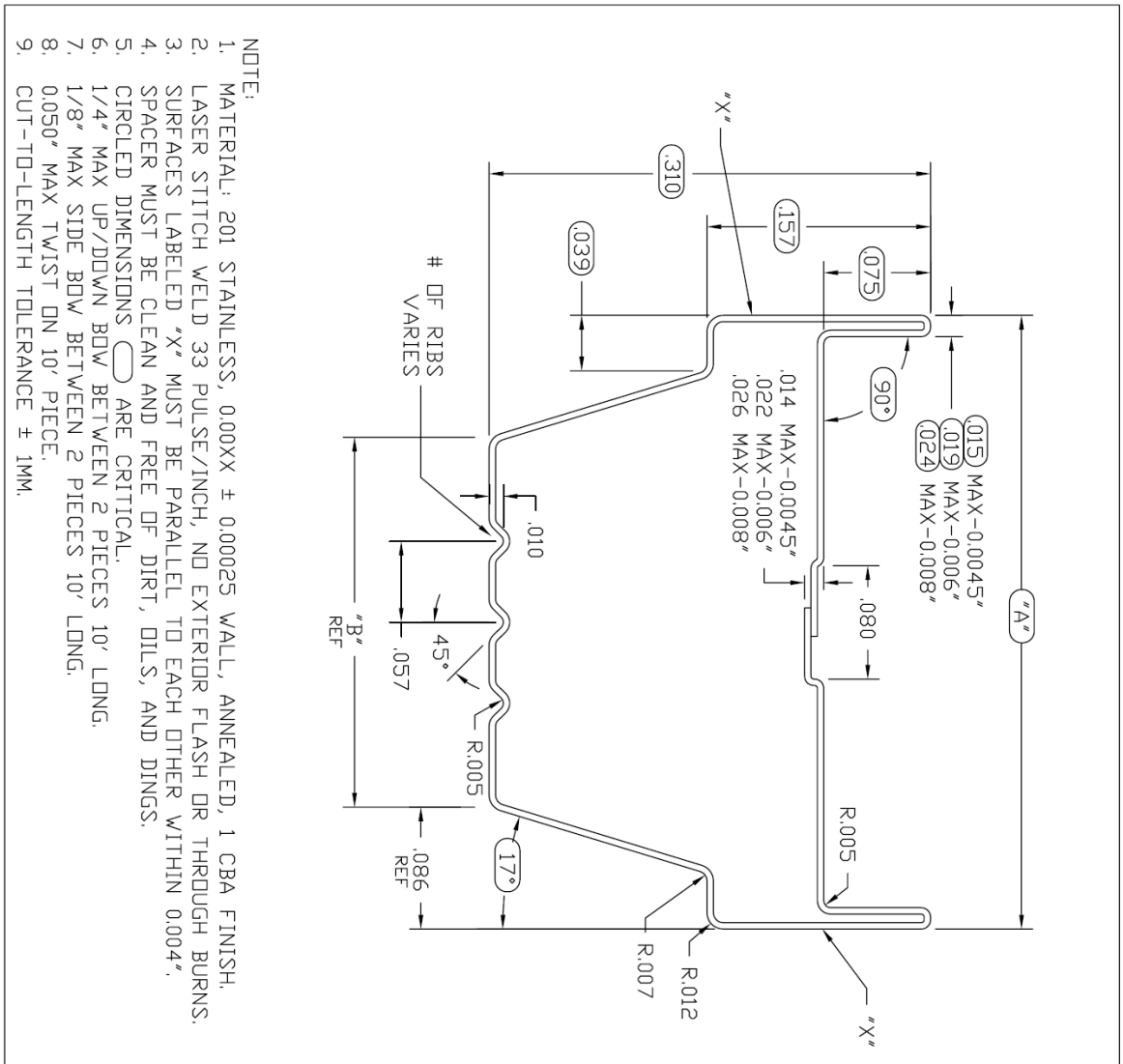


Thermal conductivity
The following thermal conductivity values should be used when modeling XL Edge.
- Silicone: 0.202 BTU/hr-ft-F
- PIB: 0.116 BTU/hr-ft-F
- Desiccant: 0.017 BTU/hr-ft-F
- Stainless Steel: 9.822 BTU/hr-ft-F

In reality, Cardinal's stainless steel alloy has a slightly lower thermal conductivity than the default "buffed stainless" value listed above. However, this lower more accurate value is not yet approved for NFRC modeling.

K_{eff}
The effective thermal conductivity of the edge seal system (K_{eff}) is recently being referenced more often within the industry. For a ½" XL Edge airspace, the overall edge seal K_{eff} is 0.37 W/mK. K_{eff} is dependant on air space width, but generally ½" airspaces are used for this calculation.

Appendix B: Spacer Bar Drawing



P/N	NAME	A	B	WALL	# RIBS
58-065	6.5	.236	.064	.0045	1
58-075	7.5	.276	.104	.0045	1
58-080	8.0	.295	.123	.0045	2
58-098	9.8	.366	.194	.0045	3
58-105	10.5	.394	.222	.0045	3
58-112	11.2	.422	.250	.0045	3
58-115	11.5	.432	.260	.0045	3
58-122	12.2	.460	.288	.0045	3
58-130	13.0	.492	.320	.0045	5
57-130	13.0	.492	.320	.006	5
57-145	14.5	.550	.378	.006	5
57-158	15.8	.602	.430	.006	5
57-160	16.0	.610	.438	.006	7
57-165	16.5	.630	.458	.006	7
57-175	17.5	.669	.497	.006	7
57-195	19.5	.748	.576	.006	9
61-098	9.8	.366	.194	.008	3
61-115	11.5	.432	.260	.008	3
61-130	13.0	.492	.320	.008	5
61-145	14.5	.550	.378	.008	5
61-160	16.0	.610	.438	.008	7

NOTE:
1. MATERIAL: 201 STAINLESS, 0.00XX ± 0.00025 WALL, ANNEALED, 1 CBA FINISH.
2. LASER STITCH WELD 33 PULSE/INCH, NO EXTERIOR FLASH OR THROUGH BURNS.
3. SURFACES LABELED "X" MUST BE PARALLEL TO EACH OTHER WITHIN 0.004".
4. SPACER MUST BE CLEAN AND FREE OF DIRT, OILS, AND DINGS.
5. CIRCLED DIMENSIONS (.039) ARE CRITICAL.
6. 1/4" MAX UP/DOWN BOW BETWEEN 2 PIECES 10' LONG.
7. 1/8" MAX SIDE BOW BETWEEN 2 PIECES 10' LONG.
8. 0.050" MAX TWIST ON 10' PIECE.
9. CUT-TO-LENGTH TOLERANCE ± 1MM.

REV	DATE	DESCRIPTION	BY
H	6/14/07	ADDED 61-098, 61-115, 61-145 PROFILES	BZ
G	12/14/06	ADDED 16.5 FBR 0.006" WALL SPACER	BZ
F	8/25/06	DIMENSIONAL TOLERANCE WAS +/- .005	BZ
E	6/5/06	ELIMINATED INDIVIDUAL SPACER PRINTS	BZ
D	3/17/06	ADDED 58-130, 57-130 & 57-175	BZ
C	4/19/04	ADDED 58-112 CRITICAL DIMS. & TOLS	BZ
B	2/26/03	ADDED 58-105, 58-122, 57-158	BZ
B	2/26/03	DELETED 58-145 "NAME" FIELD WAS "WIDTH"	BZ
A	10/17/01	RELEASED	BZ

CARDINAL IG

TITLE: FBR SPACERS

SCALE	DATE	DRAWN BY	APPRDV
10X	10/17/01	BZ	

TOLERANCES: XXX=±.003 ANGULAR=±1°

PARTS 58-XXX 57-XXX 61-XXX

Appendix C: Test Data Sheets

Quality Auditing Institute Ltd

2825 MURRAY STREET
PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date:	4/14/2009
Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1
Client:	Oasis Windows Ltd
Product:	300 Series Vertical Slider Window
Glazing Option:	Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#365)

Height		Width		Area	
1500	mm	1200	mm	1.8	m²
1.5	m	1.2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.41	0.71
	Right Side	0.50		0.71
Frame	Header Left	0.07	1.93	0.14
	Jamb Left	0.05	1.89	0.09
	Header Right	0.05	1.89	0.09
	Mullion	0.06	3.74	0.24
	Jamb Right	0.05	1.97	0.09
	Sill Left	0.05	1.97	0.09
	Sill Right	0.07	1.82	0.13
Edge	Header Left	0.06	1.75	0.11
	Jamb Left	0.04	1.69	0.07
	Header Right	0.04	1.69	0.07
	Mullion	0.12	1.71	0.21
	Jamb Right	0.04	1.75	0.07
	Sill Left	0.04	1.75	0.07
	Sill Right	0.06	1.70	0.11
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.65	2.97

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.35	m3/hr/m
air leakage of actual tested window (L'75)	0.33	m3/hr/m
crack length of simulated window (lc)	7.13	m
crack length of actual tested window (l'c)	6.70	m

SHGCg	0.36
SHGCfv	0.01
SHGCfh	0.01
SHGCd	0.00
SHGCw	0.29
air leakage	2.51
Aw	1.80
ER =	**20**
EL =	**3**

Size of physical test window		
width	1.0	m
height	1.6	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 — ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 — Revision 1

Page 1 of 21

Appendix C: Test Data Sheets

Quality Auditing Institute Ltd

2825 MURRAY STREET
PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	300 Series Vertical Slider Window		
Glazing Option:	Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#366)		

Height		Width		Area	
1500	mm	1200	mm	1.8	m²
1.5	m	1.2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.57	0.78
	Right Side	0.50		0.79
Frame	Header Left	0.07	1.94	0.14
	Jamb Left	0.05	1.90	0.09
	Header Right	0.05	1.90	0.09
	Mullion	0.06	3.75	0.24
	Jamb Right	0.05	1.98	0.09
	Sill Left	0.05	1.98	0.09
	Sill Right	0.07	1.83	0.13
Edge	Header Left	0.06	1.88	0.12
	Jamb Left	0.04	1.83	0.07
	Header Right	0.04	1.83	0.07
	Mullion	0.12	1.84	0.22
	Jamb Right	0.04	1.88	0.08
	Sill Left	0.04	1.88	0.08
	Sill Right	0.06	1.83	0.12
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.77	3.19

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.35	m3/hr/m
air leakage of actual tested window (L'75)	0.33	m3/hr/m
crack length of simulated window (lc)	7.13	m
crack length of actual tested window (l'c)	6.70	m

SHGCg	0.68
SHGCfv	0.01
SHGCfh	0.01
SHGCd	0.00
SHGCw	0.53
air leakage	2.51
Aw	1.80
ER =	**31**
EL =	**6**

Size of physical test window		
width	1.0	m
height	1.6	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 — ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 — Revision 1

Page 2 of 21

Appendix C: Test Data Sheets

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2825 MURRAY STREET
PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	300 Series Vertical Slider Window		
Glazing Option:	Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#367)		

Height		Width		Area	
1500	mm	1200	mm	1.8	m²
1.5	m	1.2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.37	0.69
	Right Side	0.50		0.69
Frame	Header Left	0.07	1.93	0.14
	Jamb Left	0.05	1.88	0.09
	Header Right	0.05	1.88	0.09
	Mullion	0.06	3.73	0.24
	Jamb Right	0.05	1.97	0.09
	Sill Left	0.05	1.97	0.09
	Sill Right	0.07	1.82	0.13
Edge	Header Left	0.06	1.72	0.11
	Jamb Left	0.04	1.67	0.07
	Header Right	0.04	1.67	0.07
	Mullion	0.12	1.69	0.20
	Jamb Right	0.04	1.72	0.07
	Sill Left	0.04	1.72	0.07
	Sill Right	0.06	1.67	0.11
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.62	2.93

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.35 m3/hr/m
air leakage of actual tested window (L'75)	0.33 m3/hr/m
crack length of simulated window (lc)	7.13 m
crack length of actual tested window (l'c)	6.70 m

SHGCg	0.27
SHGCfv	0.01
SHGCfh	0.01
SHGCd	0.00
SHGCw	0.21
air leakage	2.51
Aw	1.80
ER =	**16**
EL =	**3**

Size of physical test window		
width	1.0	m
height	1.6	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 — ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 — Revision 1

Page 3 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 300 Series Horizontal Slider Window
Glazing Option: Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#368)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.41	0.71
	Right Side	0.50		0.71
Frame	Header Left	0.05	1.89	0.09
	Jamb Left	0.07	1.93	0.14
	Header Right	0.05	1.82	0.08
	Mullion	0.06	3.91	0.25
	Jamb Right	0.07	1.97	0.14
	Sill Left	0.05	1.88	0.09
	Sill Right	0.05	1.69	0.08
Edge	Header Left	0.04	1.75	0.07
	Jamb Left	0.06	1.75	0.11
	Header Right	0.04	1.70	0.07
	Mullion	0.12	1.71	0.21
	Jamb Right	0.06	1.70	0.11
	Sill Left	0.04	1.75	0.07
	Sill Right	0.04	1.70	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.65	2.98

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

SHGCg	0.36
SHGCfv	0.013
SHGCfh	0.005
SHGCd	0.00
SHGCw	0.29
air leakage	2.35
Aw	1.80
ER =	**20**
EL =	**3**

air leakage of simulated window (L75)	0.34	m3/hr/m
air leakage of actual tested window (L'75)	0.32	m3/hr/m
crack length of simulated window (lc)	6.90	m
crack length of actual tested window (l'c)	6.48	m

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 4 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 300 Series Horizontal Slider Window
Glazing Option: Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#369)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.57	0.79
	Right Side	0.50		0.79
Frame	Header Left	0.05	1.89	0.09
	Jamb Left	0.07	1.94	0.14
	Header Right	0.05	1.83	0.08
	Mullion	0.06	3.92	0.25
	Jamb Right	0.07	1.98	0.14
	Sill Left	0.05	1.89	0.09
	Sill Right	0.05	1.70	0.08
Edge	Header Left	0.04	1.88	0.08
	Jamb Left	0.06	1.88	0.12
	Header Right	0.04	1.83	0.07
	Mullion	0.12	1.84	0.22
	Jamb Right	0.06	1.83	0.12
	Sill Left	0.04	1.88	0.08
	Sill Right	0.04	1.83	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.77	3.20

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.34	m3/hr/m
air leakage of actual tested window (L'75)	0.32	m3/hr/m
crack length of simulated window (lc)	6.90	m
crack length of actual tested window (l'c)	6.48	m

SHGCg	0.68	
SHGCfv	0.013	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.53	
air leakage	2.35	
Aw	1.80	
ER =	**31**	
EL =	**6**	

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 5 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date:	4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1 Client: Oasis Windows Ltd
Product:	300 Series Horizontal Slider Window
Glazing Option:	Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#370)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.38	0.69
	Right Side	0.50		0.69
Frame	Header Left	0.05	1.88	0.09
	Jamb Left	0.07	1.93	0.14
	Header Right	0.05	1.82	0.08
	Mullion	0.06	3.90	0.25
	Jamb Right	0.07	1.96	0.14
	Sill Left	0.05	1.88	0.09
	Sill Right	0.05	1.69	0.08
Edge	Header Left	0.04	1.72	0.07
	Jamb Left	0.06	1.73	0.11
	Header Right	0.04	1.67	0.07
	Mullion	0.12	1.68	0.20
	Jamb Right	0.06	1.67	0.11
	Sill Left	0.04	1.72	0.07
	Sill Right	0.04	1.67	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.63	2.93

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

SHGCg	0.27
SHGCfv	0.013
SHGCfh	0.005
SHGCd	0.00
SHGCw	0.21
air leakage	2.35
Aw	1.80
ER =	**16**
EL =	**3**

air leakage of simulated window (L75)	0.34	m3/hr/m
air leakage of actual tested window (L'75)	0.32	m3/hr/m
crack length of simulated window (lc)	6.90	m
crack length of actual tested window (l'c)	6.48	m

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 6 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
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T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Awning Window		
Glass Option:	Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#371)		

Height		Width		Area	
600	mm	1500	mm	0.90	m²
0.6	m	1.5	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		0.36	1.43	0.51		
Frame	Head	0.12	1.60	0.20	min	
	Jamb Left	0.05	1.68	0.08	42	10
	Jamb Right	0.05	1.68	0.08	39	9
	Sill	0.12	1.60	0.20	36	8
Edge	Head	0.08	1.74	0.14	33	7
	Jamb Left	0.02	1.74	0.04	29	6
	Jamb Right	0.02	1.74	0.04	25	5
	Sill	0.08	1.74	0.14	21	4
Divider				0.00	16	3
Divider Edge				0.00	10	2
	Total	0.90	1.57	1.42	0	1

air leakage of simulated window (L75)	0.09	m3/hr/m	
air leakage of actual tested window (L'75)	0.09	m3/hr/m	
crack length of simulated window (lc)	3.8	m	
crack length of actual tested window (l'c)	3.6	m	

SHGCg	0.36	
SHGCfv	0.009	
SHGCfh	0.008	
SHGCd	0.00	
SHGCw	0.23	
air leakage	0.36	
Aw	0.90	
ER =	**19**	
EL =	**3**	

Size of physical test window		
width	1.0	m
height	1.0	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1
Page 7 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Awning Window		
Glass Option:	Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#372)		

Height		Width		Area	
600	mm	1500	mm	0.90	m²
0.6	m	1.5	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		0.36	1.60	0.57		
Frame	Head	0.12	1.61	0.20	min	
	Jamb Left	0.05	1.68	0.08	42	10
	Jamb Right	0.05	1.68	0.08	39	9
	Sill	0.12	1.61	0.20	36	8
Edge	Head	0.08	1.87	0.15	33	7
	Jamb Left	0.02	1.87	0.04	29	6
	Jamb Right	0.02	1.87	0.04	25	5
	Sill	0.08	1.87	0.15	21	4
Divider				0.00	16	3
Divider Edge				0.00	10	2
	Total	0.90	1.67	1.50	0	1

air leakage of simulated window (L75)	0.09	m3/hr/m	
air leakage of actual tested window (L'75)	0.09	m3/hr/m	
crack length of simulated window (lc)	3.8	m	
crack length of actual tested window (l'c)	3.6	m	

SHGCg	0.68	
SHGCfv	0.009	
SHGCfh	0.008	
SHGCd	0.00	
SHGCw	0.43	
air leakage	0.36	
Aw	0.90	
ER =	**28**	
EL =	**5**	

Size of physical test window		
width	1.0	m
height	1.0	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1
Page 8 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
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F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date:	4/14/2009
Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1
Client:	Oasis Windows Ltd
Product:	400 Series Awning Window
Glass Option:	Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#373)

Height		Width		Area	
600	mm	1500	mm	0.90	m²
0.6	m	1.5	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		0.36	1.40	0.50		
Frame	Head	0.12	1.60	0.20	min	
	Jamb Left	0.05	1.68	0.08	42	10
	Jamb Right	0.05	1.68	0.08	39	9
	Sill	0.12	1.60	0.20	36	8
Edge	Head	0.08	1.71	0.14	33	7
	Jamb Left	0.02	1.71	0.04	29	6
	Jamb Right	0.02	1.71	0.04	25	5
	Sill	0.08	1.71	0.14	21	4
Divider				0.00	16	3
Divider Edge				0.00	10	2
	Total	0.90	1.55	1.40	0	1

air leakage of simulated window (L75)	0.09	m3/hr/m
air leakage of actual tested window (L'75)	0.09	m3/hr/m
crack length of simulated window (lc)	3.8	m
crack length of actual tested window (l'c)	3.6	m

SHGCg	0.27	
SHGCfv	0.009	
SHGCfh	0.008	
SHGCd	0.00	
SHGCw	0.17	
air leakage	0.36	
Aw	0.90	
ER =	**16**	
EL =	**3**	

Size of physical test window		
width	1.0	m
height	1.0	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1

Page 9 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Casement Window		
Glass Option:	Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#374)		

Height		Width		Area	
1.5	mm	0.6	mm	0.00	m²
0.0015	m	0.0006	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value
Centre of Glass		0.36	1.41	0.50
Frame	Head	0.05	1.60	0.07
	Jamb Left	0.12	1.68	0.21
	Jamb Right	0.12	1.68	0.21
	Sill	0.05	1.60	0.07
Edge	Head	0.02	1.74	0.04
	Jamb Left	0.08	1.74	0.14
	Jamb Right	0.08	1.74	0.14
	Sill	0.02	1.74	0.04
Divider				0.00
Divider Edge				0.00
	Total	0.90	1.58	1.42

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.30	m3/hr/m
crack length of simulated window (lc)	0.0	m
crack length of actual tested window (l'c)	4.2	m

SHGCg	0.36
SHGCfv	0.009
SHGCfh	0.008
SHGCd	0.00
SHGCw	0.23
air leakage	0.00
Aw	0.90
ER =	**19**
EL =	**3**

Size of physical test window		
width	0.7	m
height	1.6	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1
Page 10 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Casement Window		
Glass Option:	Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#375)		

Height		Width		Area	
1.5	mm	0.6	mm	0.00	m²
0.0015	m	0.0006	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		0.36	1.57	0.56		
Frame	Head	0.05	1.61	0.07	min	
	Jamb Left	0.12	1.68	0.21	42	10
	Jamb Right	0.12	1.68	0.21	39	9
	Sill	0.05	1.61	0.07	36	8
Edge	Head	0.02	1.87	0.04	33	7
	Jamb Left	0.08	1.87	0.15	29	6
	Jamb Right	0.08	1.87	0.15	25	5
	Sill	0.02	1.87	0.04	21	4
Divider				0.00	16	3
Divider Edge				0.00	10	2
	Total	0.90	1.67	1.50	0	1

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.30	m3/hr/m
crack length of simulated window (lc)	0.0	m
crack length of actual tested window (l'c)	4.2	m

SHGCg	0.68
SHGCfv	0.009
SHGCfh	0.008
SHGCd	0.00
SHGCw	0.43
air leakage	0.00
Aw	0.90
ER =	**28**
EL =	**5**

Size of physical test window		
width	0.7	m
height	1.6	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1

Page 11 of 21

Appendix C: Test Data Sheets

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F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date:	4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1 Client: Oasis Windows Ltd
Product:	400 Series Casement Window
Glass Option:	Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#376)

Height		Width		Area	
1.5	mm	0.6	mm	0.00	m²
0.0015	m	0.0006	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value
Centre of Glass		0.36	1.37	0.49
Frame	Head	0.05	1.60	0.07
	Jamb Left	0.12	1.68	0.21
	Jamb Right	0.12	1.68	0.21
	Sill	0.05	1.60	0.07
Edge	Head	0.02	1.71	0.04
	Jamb Left	0.08	1.71	0.14
	Jamb Right	0.08	1.71	0.14
	Sill	0.02	1.71	0.04
Divider				0.00
Divider Edge				0.00
	Total	0.90	1.56	1.40

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.30	m3/hr/m
crack length of simulated window (lc)	0.0	m
crack length of actual tested window (l'c)	4.2	m

SHGCg	0.27
SHGCfv	0.009
SHGCfh	0.008
SHGCd	0.00
SHGCw	0.17
air leakage	0.00
Aw	0.90
ER =	**16**
EL =	**3**

Size of physical test window		
width	0.7	m
height	1.6	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1

Page 12 of 21

Appendix C: Test Data Sheets

Quality Auditing Institute Ltd
2825 MURRAY STREET
PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Fixed Window		
Glass Option:	Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#377.)		

Height		Width		Area	
1500	mm	1200	mm	1.80	m²
1.5	m	1.2	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		1.23	1.41	1.73	min	
Frame	Head	0.07	1.91	0.14	42	10
	Jamb Left	0.09	1.97	0.18	39	9
	Jamb Right	0.09	1.97	0.18	36	8
	Sill	0.07	1.91	0.14	33	7
Edge	Head	0.06	1.78	0.11	29	6
	Jamb Left	0.08	1.78	0.15	25	5
	Jamb Right	0.08	1.78	0.15	21	4
	Sill	0.06	1.78	0.11	16	3
Divider				0.00	10	2
Divider Edge				0.00	0	1
	Total	1.85	1.56	2.88		

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.00	m3/hr/m
crack length of simulated window (lc)	5.1	m
crack length of actual tested window (l'c)	7.5	m

SHGCg	0.36
SHGCfv	0.010
SHGCfh	0.010
SHGCd	0.00
SHGCw	0.30
air leakage	0.00
Aw	1.85
ER =	**23**
EL =	**4**

Size of physical test window		
width	2.0	m
height	2.0	m

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1

Page 13 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Fixed Window		
Glass Option:	Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#378)		

Height		Width		Area	
1500	mm	1200	mm	1.80	m²
1.5	m	1.2	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		1.23	1.57	1.93	min	
Frame	Head	0.07	1.91	0.14	42	10
	Jamb Left	0.09	1.98	0.18	39	9
	Jamb Right	0.09	1.98	0.18	36	8
	Sill	0.07	1.91	0.14	33	7
Edge	Head	0.06	1.91	0.12	29	6
	Jamb Left	0.08	1.91	0.16	25	5
	Jamb Right	0.08	1.91	0.16	21	4
	Sill	0.06	1.91	0.12	16	3
Divider				0.00	10	2
Divider Edge				0.00	0	1
	Total	1.84	1.69	3.11		

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.00	m3/hr/m
crack length of simulated window (lc)	5.1	m
crack length of actual tested window (l'c)	7.5	m

Size of physical test window		
width	2.0	m
height	2.0	m

SHGCg	0.68
SHGCfv	0.010
SHGCfh	0.010
SHGCd	0.00
SHGCw	0.56
air leakage	0.00
Aw	1.84
ER =	**36**
EL =	**8**

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1
Page 14 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	400 Series Fixed Window		
Glass Option:	Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#379)		

Height		Width		Area	
1500	mm	1200	mm	1.80	m²
1.5	m	1.2	m		

		Area (m²)	U-Value (w/m²)	Area*U-Value	ER rating	EL rating
Centre of Glass		1.23	1.37	1.69	min	
Frame	Head	0.07	1.91	0.14	42	10
	Jamb Left	0.09	1.97	0.18	39	9
	Jamb Right	0.09	1.97	0.18	36	8
	Sill	0.07	1.91	0.14	33	7
Edge	Head	0.06	1.75	0.11	29	6
	Jamb Left	0.08	1.75	0.15	25	5
	Jamb Right	0.08	1.75	0.15	21	4
	Sill	0.06	1.75	0.11	16	3
Divider				0.00	10	2
Divider Edge				0.00	0	1
	Total	1.84	1.53	2.83		

air leakage of simulated window (L75)	0.00	m3/hr/m
air leakage of actual tested window (L'75)	0.00	m3/hr/m
crack length of simulated window (lc)	5.1	m
crack length of actual tested window (l'c)	7.5	m

Size of physical test window		
width	2.0	m
height	2.0	m

SHGCg	0.27
SHGCfv	0.010
SHGCfh	0.010
SHGCd	0.00
SHGCw	0.22
air leakage	0.00
Aw	1.84
ER =	**19**
EL =	**3**

Simulated by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009
Revision Date: March 9, 2009
ER Calculation Template - 1 Glazing
Revision 1
Page 15 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 307 Series Horizontal Slider Window
Glazing Option: Cardinal LowE 270 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#380)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.41	0.71
	Right Side	0.50		0.71
Frame	Header Left	0.05	2.05	0.09
	Jamb Left	0.07	2.15	0.15
	Header Right	0.05	1.76	0.08
	Mullion	0.06	3.91	0.25
	Jamb Right	0.07	1.95	0.14
	Sill Left	0.05	2.05	0.09
	Sill Right	0.05	1.72	0.08
Edge	Header Left	0.04	1.73	0.07
	Jamb Left	0.06	1.72	0.11
	Header Right	0.04	1.70	0.07
	Mullion	0.12	1.71	0.21
	Jamb Right	0.06	1.70	0.11
	Sill Left	0.04	1.73	0.07
	Sill Right	0.04	1.70	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.67	3.00

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	7.08	m
crack length of actual tested window (l'c)	6.65	m

SHGCg	0.36	
SHGCfv	0.013	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.29	
air leakage	1.73	
Aw	1.80	
ER =	**19**	
EL =	**3**	

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 16 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 307 Series Horizontal Slider Window
Glazing Option: Clear (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (3mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#381)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.57	0.79
	Right Side	0.50		0.79
Frame	Header Left	0.05	2.06	0.09
	Jamb Left	0.07	2.16	0.16
	Header Right	0.05	1.78	0.08
	Mullion	0.06	3.92	0.25
	Jamb Right	0.07	1.96	0.14
	Sill Left	0.05	2.05	0.09
	Sill Right	0.05	1.73	0.08
Edge	Header Left	0.04	1.86	0.07
	Jamb Left	0.06	1.85	0.12
	Header Right	0.04	1.83	0.07
	Mullion	0.12	1.84	0.22
	Jamb Right	0.06	1.83	0.12
	Sill Left	0.04	1.86	0.07
	Sill Right	0.04	1.83	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.79	3.22

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	7.08	m
crack length of actual tested window (l'c)	6.65	m

SHGCg	0.68	
SHGCfv	0.013	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.53	
air leakage	1.73	
Aw	1.80	
ER =	**31**	
EL =	**6**	

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 17 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 307 Series Horizontal Slider Window
Glazing Option: Cardinal LowE 366 (3mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (3mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#382)

Height		Width		Area	
1200	mm	1500	mm	1.8	m²
1.2	m	1.5	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	0.50	1.38	0.69
	Right Side	0.50		0.69
Frame	Header Left	0.05	2.05	0.09
	Jamb Left	0.07	2.15	0.15
	Header Right	0.05	1.76	0.08
	Mullion	0.06	3.90	0.25
	Jamb Right	0.07	1.95	0.14
	Sill Left	0.05	2.04	0.09
	Sill Right	0.05	1.72	0.08
Edge	Header Left	0.04	1.70	0.07
	Jamb Left	0.06	1.70	0.11
	Header Right	0.04	1.67	0.07
	Mullion	0.12	1.68	0.20
	Jamb Right	0.06	1.67	0.11
	Sill Left	0.04	1.70	0.07
	Sill Right	0.04	1.67	0.07
Divider				0.00
Divider Edge				0.00
	Total	1.80	1.64	2.96

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	7.08	m
crack length of actual tested window (l'c)	6.65	m

SHGCg	0.27	
SHGCfv	0.013	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.21	
air leakage	1.73	
Aw	1.80	
ER =	**16**	
EL =	**3**	

Size of physical test window		
width	1.6	m
height	1.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 18 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test:	**Energy Simulation**		
Test Methods:	CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*		
Date:	4/14/2009	Programs:	ProgeCAD 2008, Therm 5.2, Window 5.2
Project No:	T636-1	Client:	Oasis Windows Ltd
Product:	5200 Series Sliding Door		
Glazing Option:	Cardinal LowE 270 (4mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (4mm)		
Window File:	W5 Oasis Remodeling April 14-09.mdb (Window ID#383)		

Height		Width		Area	
2000	mm	2000	mm	4	m²
2	m	2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	1.36	1.40	1.90
	Right Side	1.29		1.79
Frame	Header Left	0.08	1.95	0.16
	Jamb Left	0.08	2.16	0.17
	Header Right	0.08	2.21	0.18
	Mullion	0.12	3.63	0.44
	Jamb Right	0.16	2.72	0.44
	Sill Left	0.08	1.89	0.16
	Sill Right	0.08	2.16	0.18
Edge	Header Left	0.06	1.80	0.10
	Jamb Left	0.11	1.78	0.20
	Header Right	0.05	1.82	0.10
	Mullion	0.22	1.77	0.38
	Jamb Right	0.11	1.83	0.21
	Sill Left	0.06	1.80	0.10
	Sill Right	0.05	1.82	0.10
Divider				0.00
Divider Edge				0.00
	Total	4.00	1.65	6.61

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	11.27	m
crack length of actual tested window (l'c)	10.93	m

SHGCg	0.36	
SHGCfv	0.015	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.30	
air leakage	2.67	
Aw	4.00	
ER =	**21**	
EL =	**4**	

Size of physical test window		
width	1.8	m
height	2.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 — ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 — Revision 1

Page 19 of 21

Appendix C: Test Data Sheets

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PORT MOODY
BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 5200 Series Sliding Door
Glazing Option: Clear (4mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Cardinal LowE 179 (4mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#384)

Height		Width		Area	
2000	mm	2000	mm	4	m²
2	m	2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	1.36	1.55	2.11
	Right Side	1.29		1.99
Frame	Header Left	0.08	1.96	0.16
	Jamb Left	0.08	2.17	0.17
	Header Right	0.08	2.22	0.18
	Mullion	0.12	3.63	0.44
	Jamb Right	0.16	2.73	0.44
	Sill Left	0.08	1.90	0.16
	Sill Right	0.08	2.17	0.18
Edge	Header Left	0.06	1.92	0.11
	Jamb Left	0.11	1.90	0.21
	Header Right	0.05	1.94	0.10
	Mullion	0.22	1.90	0.41
	Jamb Right	0.11	1.96	0.22
	Sill Left	0.06	1.92	0.11
	Sill Right	0.05	1.94	0.10
Divider				0.00
Divider Edge				0.00
	Total	4.00	1.78	7.10

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	11.27	m
crack length of actual tested window (l'c)	10.93	m

SHGCg	0.67	
SHGCfv	0.015	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.56	
air leakage	2.67	
Aw	4.00	
ER =	**33**	
EL =	**7**	

Size of physical test window		
width	1.8	m
height	2.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 20 of 21

Appendix C: Test Data Sheets

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BRITISH COLUMBIA
V3H 1X3
T: 604.461.8378
F: 604.461.8377
www.qai.org • info@qai.org

Test: **Energy Simulation**
Test Methods: CSA A440.2-04 *"Energy Performance of Windows & Other Fenestration Systems"*
Date: 4/14/2009 Programs: ProgeCAD 2008, Therm 5.2, Window 5.2
Project No: T636-1 Client: Oasis Windows Ltd

Product: 5200 Series Sliding Door
Glazing Option: Cardinal LowE 366 (4mm) - Argon Fill with Cardinal XL 58-130 Edge Spacer - Clear (4mm)
Window File: W5 Oasis Remodeling April 14-09.mdb (Window ID#385)

Height		Width		Area	
2000	mm	2000	mm	4	m²
2	m	2	m		

		Area (m²)	U-value (w/m²)	Area*U-value
Centre of Glass	Left Side	1.36	1.36	1.85
	Right Side	1.29		1.75
Frame	Header Left	0.08	1.95	0.16
	Jamb Left	0.08	2.16	0.17
	Header Right	0.08	2.21	0.18
	Mullion	0.12	3.61	0.44
	Jamb Right	0.16	2.72	0.44
	Sill Left	0.08	1.89	0.15
	Sill Right	0.08	2.16	0.17
Edge	Header Left	0.06	1.77	0.10
	Jamb Left	0.11	1.76	0.20
	Header Right	0.05	1.79	0.10
	Mullion	0.22	1.75	0.38
	Jamb Right	0.11	1.81	0.20
	Sill Left	0.06	1.77	0.10
	Sill Right	0.05	1.79	0.10
Divider				0.00
Divider Edge				0.00
	Total	4.00	1.62	6.50

ER rating	EL rating
min	
42	10
39	9
36	8
33	7
29	6
25	5
21	4
16	3
10	2
0	1

air leakage of simulated window (L75)	0.24	m3/hr/m
air leakage of actual tested window (L'75)	0.23	m3/hr/m
crack length of simulated window (lc)	11.27	m
crack length of actual tested window (l'c)	10.93	m

SHGCg	0.27	
SHGCfv	0.015	
SHGCfh	0.005	
SHGCd	0.00	
SHGCw	0.22	
air leakage	2.67	
Aw	4.00	
ER =	**17**	
EL =	**3**	

Size of physical test window		
width	1.8	m
height	2.0	m

Prepared by: Kevin Saito
Kevin Saito

Test Form
Effective Date: March 9, 2009 ER Calculation Template - 2 Glazing Horizontal Slider
Revision Date: March 9, 2009 Revision 1

Page 21 of 21