

## Cladding Technology Division

Sunday, 02 November 2008

To	<b>Smart Architectural Systems</b>	Tel. / Fax	06 557 1065 / 557 1064
Attention	<b>Dr. Ibrahim Nassar</b>	Fax ref.	CLF7504
From	Vinod Nair	AFB tel	04 885 0221 / 885 1001
Email	cladding.technology@bodycote.com	AFB fax	04 885 1892 / 885 4004
Project	<b>System Development</b>		
Subject	<b>Laboratory Testing of a Sample of Curtain Walling – Preliminary Results</b>		
Total no. of pages	2	Job no.	WQ 08 13365

Dear Sir,

As requested please find following the preliminary results of laboratory main tests performed to date on the above mentioned sample.

The tests were carried out in accordance with AFBT method statement DMC0703/MSrev2, which was in accordance with the project specifications and the following standards.

- ▶ Air infiltration                    ASTM E283-04.
- ▶ Water penetration                ASTM E331-00 (Static pressure)

The following tables summarises in chronological order all the main tests performed to date.

DATE	TESTS	RESULT	SEQUENCE
30 Nov. '08	Air infiltration	Pass	Main test 1
30 Nov. '08	Static air pressure water penetration	Pass	Main test 2

These preliminary results are supplied at the request of Smart Architectural Systems. AFBT can accept no responsibility for these preliminary results, nor for the way in which they may be used.

Please do not hesitate to contact us directly if you require any further information.

Yours faithfully,  
Al Futtaim Bodycote Testing (AFBT)



**Vinod Nair**  
Project Engineer – Cladding Technology Division







## Cladding Technology Division

11 March 2009

To	<b>Smart Architectural Systems</b>	Tel. / Fax	06 557 1065 / 557 1064
Attention	<b>Dr. Ibrahim Nassar</b>	Fax ref.	CLF7946
From	Vinod Nair	AFB tel	04 885 0221 / 885 1001
Email	cladding.technology@bodycote.com	AFB fax	04 885 1892 / 885 4004
Project	<b>System Development</b>		
Subject	<b>Laboratory Testing of Sliding Window Sample – Preliminary Results</b>		
Total no. of pages	2	Job no.	WQ 09 01484

Dear Sir,

As requested please find following the preliminary results of laboratory tests performed on the above mentioned sample on 31 Dec. '08 and 05 Jan. '09.

The tests were carried out in accordance with AFBT method statement DMC0759/MSrev1, which was in accordance with the project specifications and the following standards:

- ▶ Air infiltration                    ASTM E283-04
- ▶ Water penetration                ASTM E547-00 (Cyclic pressure)
- ▶ Wind resistance                    ASTM E330-02

The following tables summarises in chronological order all the tests performed.

DATE	TESTS	RESULT	SEQUENCE
31 Dec. '08	Air infiltration	Pass	Main test 1
31 Dec. '08	Cyclic air pressure water penetration	Pass	Main test 2
05 Jan. '09	Wind resistance - serviceability	Pass	Main test 3
05 Jan. '09	Repeat cyclic air pressure water penetration	Pass	Main test 4
05 Jan. '09	Wind resistance - safety	Pass	Main test 5

These are only preliminary results which are supplied at the request of Smart Architectural Systems. AFBT can accept no responsibility for the way in which these may be used or interpreted.

Please do not hesitate to contact us directly if you require any further information. Yours faithfully,  
Al Futtaim Bodycote Testing (AFBT),

  
**Vinod Nair**

Project Engineer– Cladding Technology Division





Larson Engineering, Inc.

### CASEMENT WINDOWS ASHRAE CONDITIONS MODEL SUMMARY

COMPONENT	THERMO- COUPLE NUMBER	DESCRIPTION	THERMAL MODEL (ASHRAE)			SURFACE TEMP degF	LOCAL "U" VALUE Btu/hr/sqft/degF
			AMBIENT T (out) degF	COND. u (out) mph	T (in) degF		
Frame	1	LEFT FRAME SILL	0.0	12.3	70.0	42.1	0.59
	2	LEFT FRAME SILL	0.0	12.3	70.0	39.7	0.64
	3	LEFT FRAME HEAD	0.0	12.3	70.0	41.0	0.61
	4	LEFT FRAME HEAD	0.0	12.3	70.0	39.5	0.64
	5	RIGHT FRAME SILL	0.0	12.3	70.0	42.1	0.59
	6	RIGHT FRAME SILL	0.0	12.3	70.0	39.7	0.64
	7	RIGHT FRAME HEAD	0.0	12.3	70.0	41.0	0.61
	8	RIGHT FRAME HEAD	0.0	12.3	70.0	39.5	0.64
	9	LEFT FRAME JAMB	0.0	12.3	70.0	39.6	0.64
	10	LEFT FRAME JAMB	0.0	12.3	70.0	38.3	0.67
	11	MEETING RAIL	0.0	12.3	70.0	34.6	0.74
	12	MEETING RAIL	0.0	12.3	70.0	34.6	0.74
	13	RIGHT FRAME JAMB	0.0	12.3	70.0	39.6	0.64
	14	RIGHT FRAME JAMB	0.0	12.3	70.0	38.3	0.67
Glass	15	GLASS EDGE	0.0	12.3	70.0	36.8	0.70
	16	GLASS CENTER	0.0	12.3	70.0	43.9	0.55
	17	GLASS EDGE	0.0	12.3	70.0	37.7	0.68
	18	GLASS EDGE	0.0	12.3	70.0	36.8	0.70
	19	GLASS CENTER	0.0	12.3	70.0	43.9	0.55
	20	GLASS EDGE	0.0	12.3	70.0	37.7	0.68

#### AAMA CONDENSATION RESISTANCE FACTOR SUMMARY

FOR CRF CALCULATION:

FT (p)	Average of Prespecified Locations (degF)	39.3
FT (r)	Average of Roving Cold Points (degF)	34.6
GT	Average Glass Temperature (degF)	39.5
W	Weighting Factor	0.064
FT	Adjusted Frame Temperature (degF)	39.0
<b>CRF (g)</b>	<b>Glass Condensation Resistance Factor</b>	<b>56</b>
<b>CRF (f)</b>	<b>Frame Condensation Resistance Factor</b>	<b>56</b>

NOTES: Refer to AAMA 1503.98 (Figure 4.) for Location of 20 Pre-specified Thermocouples  
(Glazed Wall)

*Disclaimer: Field condensation on interior surfaces is affected by many variables, including component thermal performance, thermal mass of surrounding materials, interior trim coverage and air flow conditions, weather and mechanical system design. Since many of these variables are outside of our control, we can make no representations or warranties against the formation of condensation, except on pre-defined configurations under controlled and steady-state laboratory conditions.*