University of Queensland 2012 Architecture 3rd year presentation

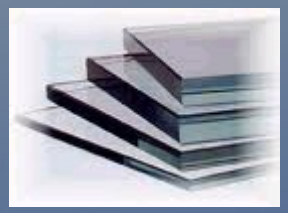
G.James glass & aluminium

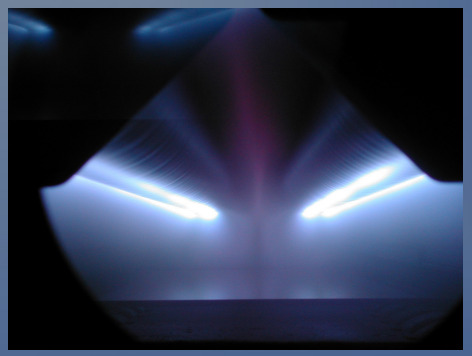
When Experience Matters

Presenters: Gary Aspden (Glass Marketing Manager)
Jim Stringfellow (Commercial Facade Engineer)

Why choose G.James?

- Wealth of experience with in-house scientists driving an extensive R&D division
- Fully integrated design, manufacture and installation from raw aluminium billets & float glass to finished facades of monumental skyscrapers.
- Manufactured locally





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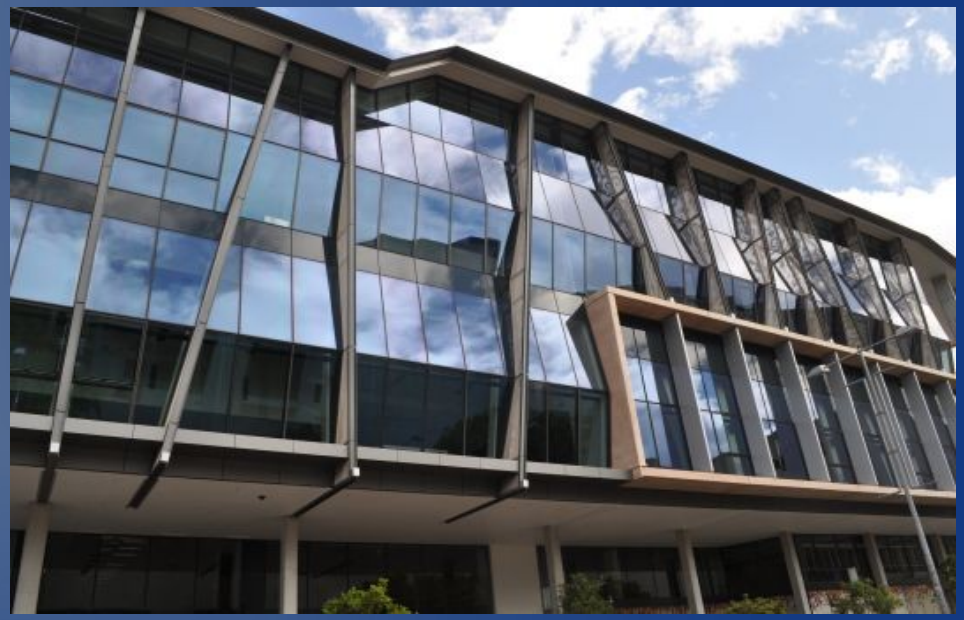
G James transforms Architect's dreams into reality.....

- A monumental building is an enduring work of art on a grand scale, viewed by a captive audience of masses, functioning as a habitable structure.



BCEC
Southbank Brisbane

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… but compromise is needed for optimum results.

- Facades have budgets
- Practicalities of performance MUST NOT be compromised
- Flexibility of Architectural detailing can achieve the intent cost effectively

ABC Accommodation – Southbank Brisbane

- Withstand the actions of:
  - Wind
  - Rain
  - Sunlight
  - Heat & Cold
- Control the passage of:
  - Heat
  - Air
  - Light
  - Sound
- Consider practicalities of:
  - Materials
  - Longevity
  - Manufacture
  - Transport
  - Installation

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Consider the options...

Riverside Centre vs Riparian

“Good design doesn't date” - Harry Siedler

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Factors that influence Window & Glass Selection

- Building location & use
- Esthetics
- Energy
  - NCC (BCA) Section J
  - Green Star / NABERS
- Engineering requirements
- Window Sizes
- Australian Standards
  - Wind loading
  - Safety

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NCC (BCA) Section J

Report from sample.pdf.xlsx *printed 8/03/2012*

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.4, BCA VOLUME ONE (METHOD 2)

Building name/description: 1 Sample

Climate zone: 2

Storey: level 2

Facade areas	N	NE	E	SE	S	SW	W	NW
Option A	75.6m²		33.2m²		173m²		35.3m²	
Option B								
Glazing area (A)	*44.3m²*		*17.9m²*		*106m²*		*19.2m²*	

Number of rows preferred in table below: 15 *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES - OK (if inputs are valid)					
Glazing element		Sector faced		Size			Performance		P&H or device	Shading		Multipliers		Size	
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total U-Value (NFRC)	SHGC (NFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
2		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
3		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
4		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
5		E		1.95	9.17		5.3	0.44	0.750	2.015	0.37	0.07	1.00	0.73	17.88	100% of 92%
6		N		1.95	4.55		5.3	0.44				0.00	1.00	1.00	8.87	31% of 83%
7		N		1.95	6.05		5.3	0.44	1.200	1.950	0.62	0.00	1.00	0.40	11.80	14% of 83%
8		N		1.95	6.05		5.3	0.44	1.200	1.950	0.62	0.00	1.00	0.40	11.80	14% of 83%
9		N		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	41% of 83%
10		W		1.95	9.87		5.3	0.44	0.750	2.015	0.37	0.07	1.00	0.74	19.25	100% of 72%
11		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
12		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
13		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
14		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%
15		S		1.95	6.05		5.3	0.44				0.00	1.00	1.00	11.80	11% of 60%

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters. While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all. Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

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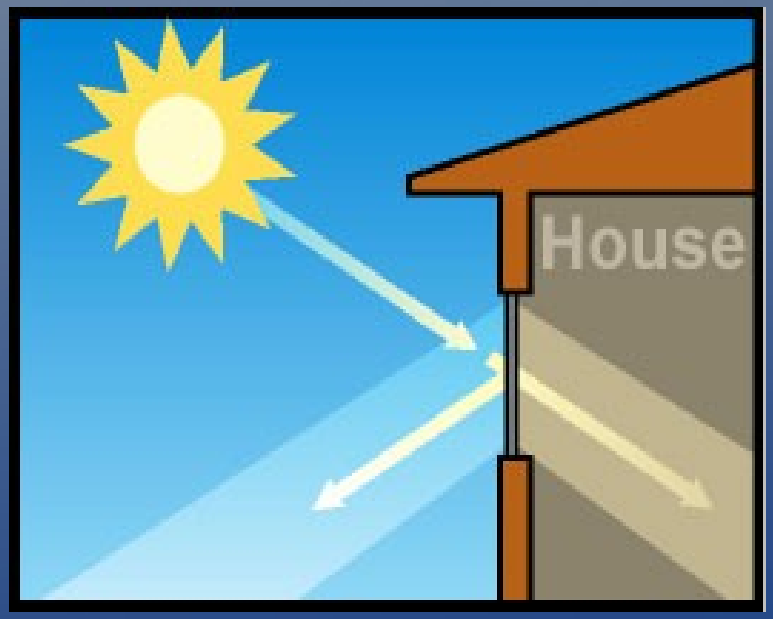
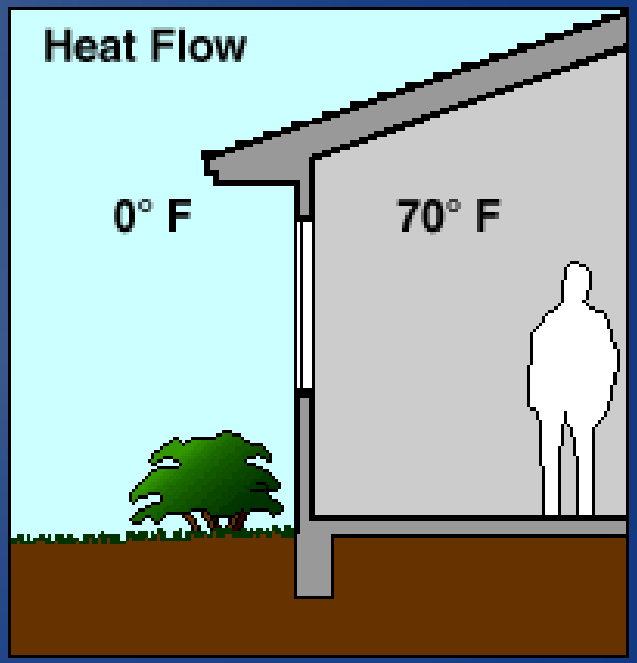
Performance Terms

- SHGC – Solar Heat Gain Coefficient
- U-Value





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Performance Data

Environmental Conditions- NFRC 100-2010

	SHGC	U-value
Solar Radiation	783W/m2.K	0 W/m2.K
Outside Temp °C	32	-18
Inside Temp °C	24	21
Ext. Wind Speed	5.5m/s	2.8m/s

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Performance Data

	Glass Only		Window 450/1		Window 650/1 (Structural Glazed)	
	SHGC	U Value	SHGCw	Uw Value	SHGCw	Uw Value
10.38mm Clear Lam	0.72	5.6	0.66	6.2	0.7	6.3
10.38mm HL119	0.68	3.6	0.55	4.5	0.59	4.5
6/12/6 clear IGU	0.7	2.7	0.61	3.7	0.69	3.4
DLE70 Grey IGU	0.23	1.7	0.21	3	0.25	2.6

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Design Considerations

Consider where we are in the world

Consider:

- How the building is to be used
- Building orientation
- Amount of visible light trans.
  - Glare
- Size of windows
- How the glass looks internally
- How to replace damaged glass

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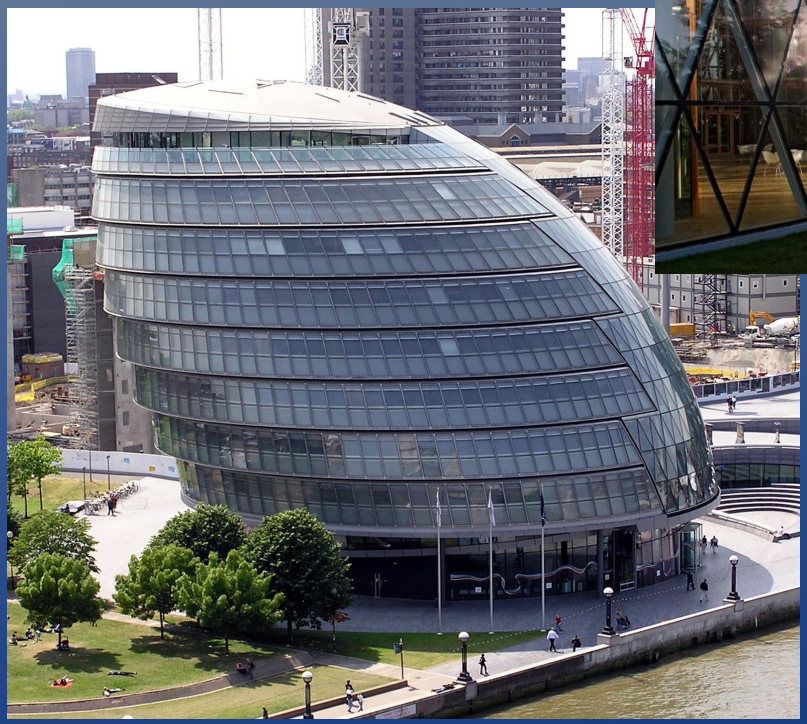
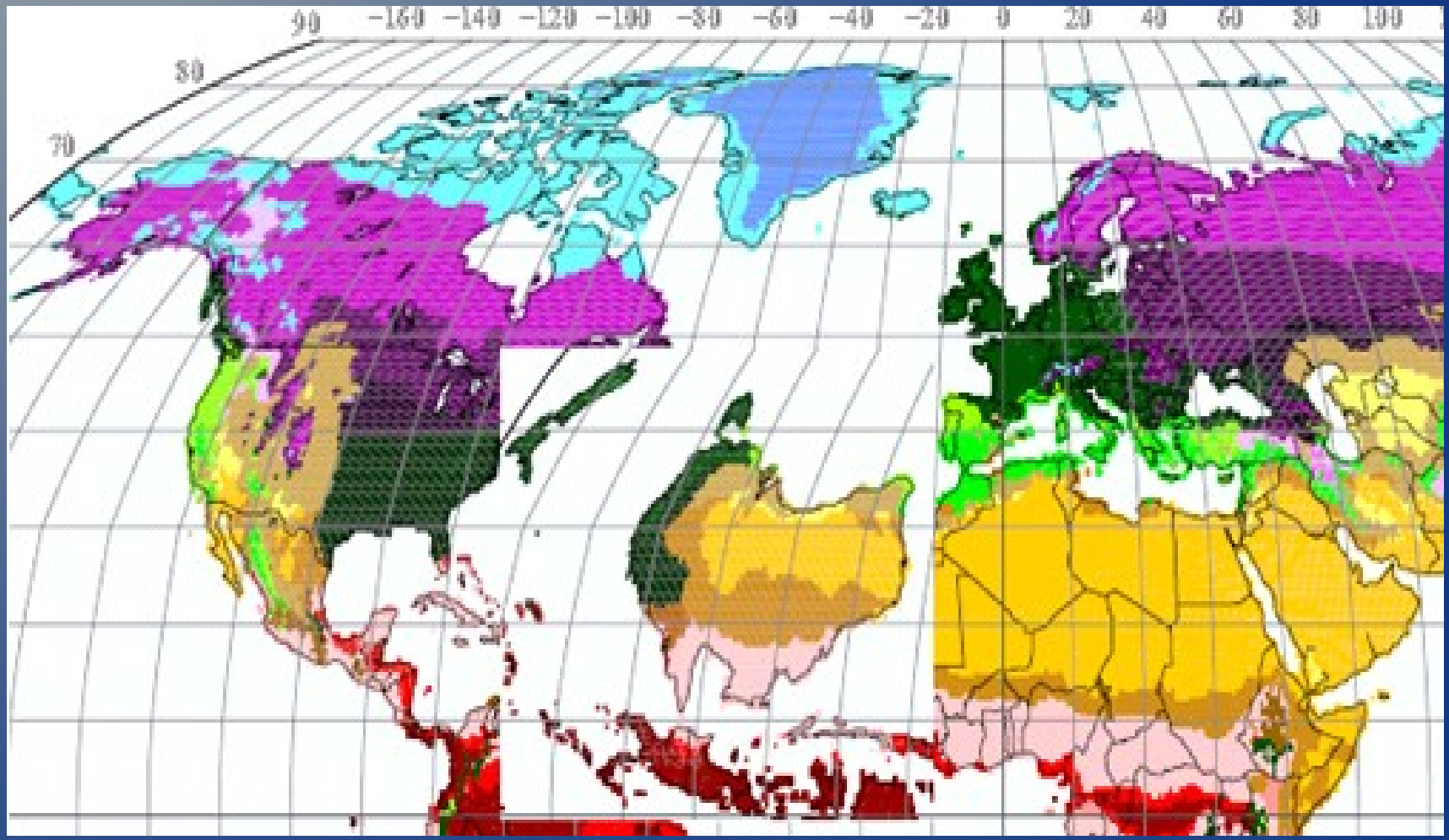


Considerations...



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Design Considerations

Consider the occupants ….

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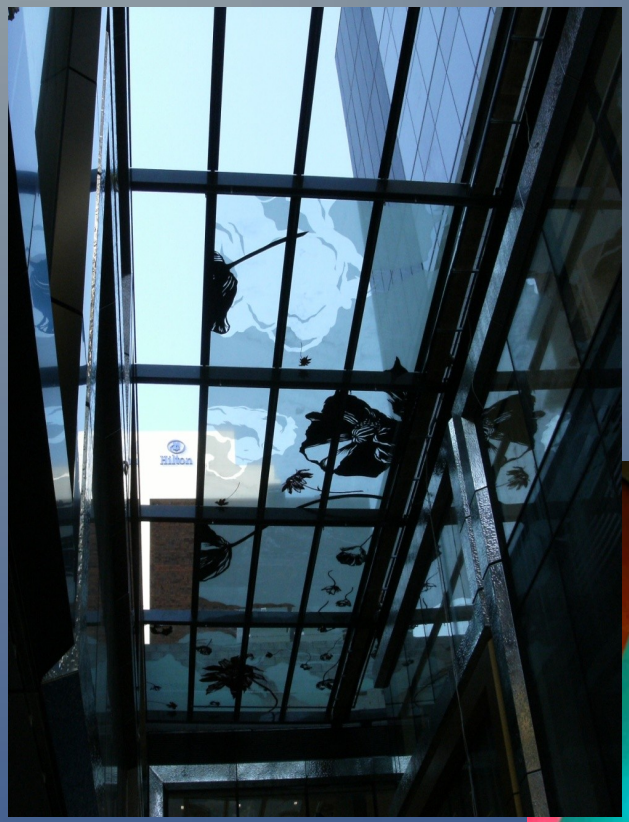
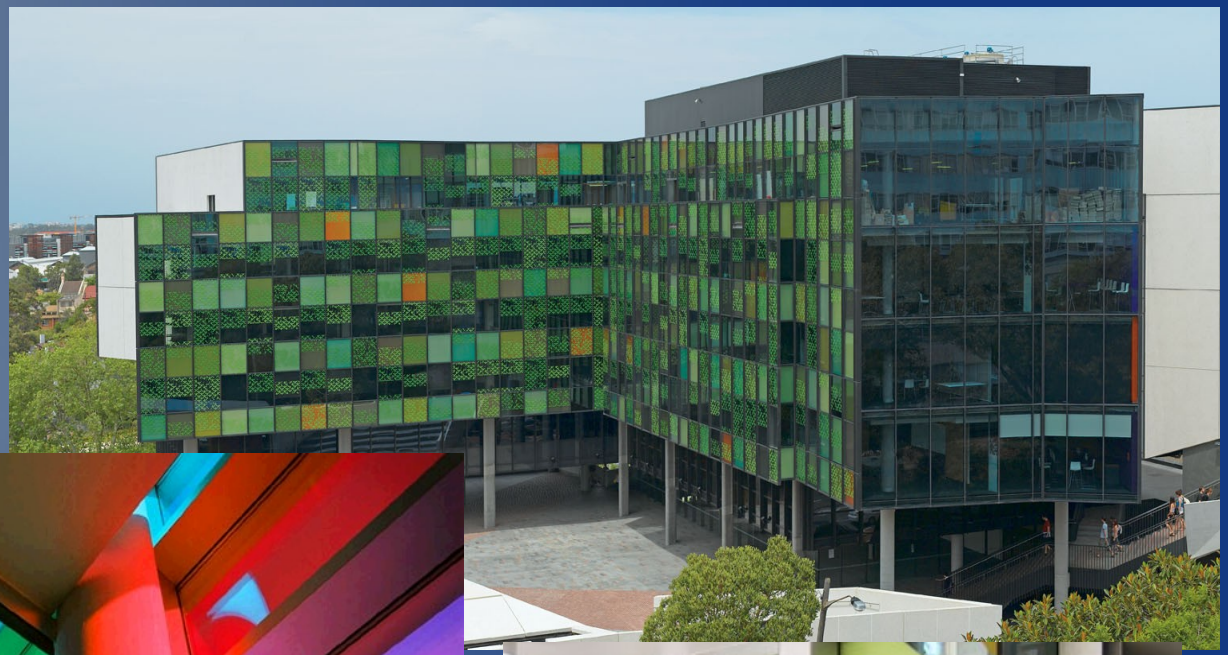
Use Glass to create the LOOK





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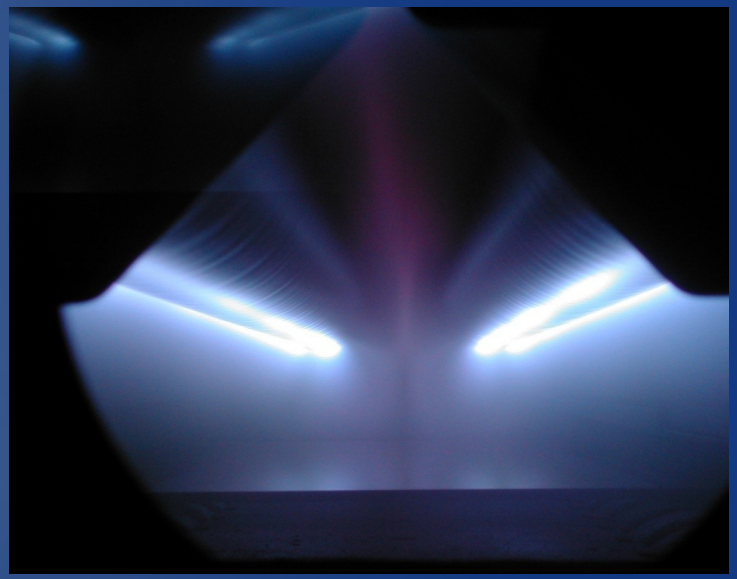
Low E Coatings

- Thin metallic coating applied to the glass surface
  - Online -Float manufacturing process
  - Offline – Magnetron sputtering process



- Solect & Optilight Low E Laminates
- Solarplus Low E

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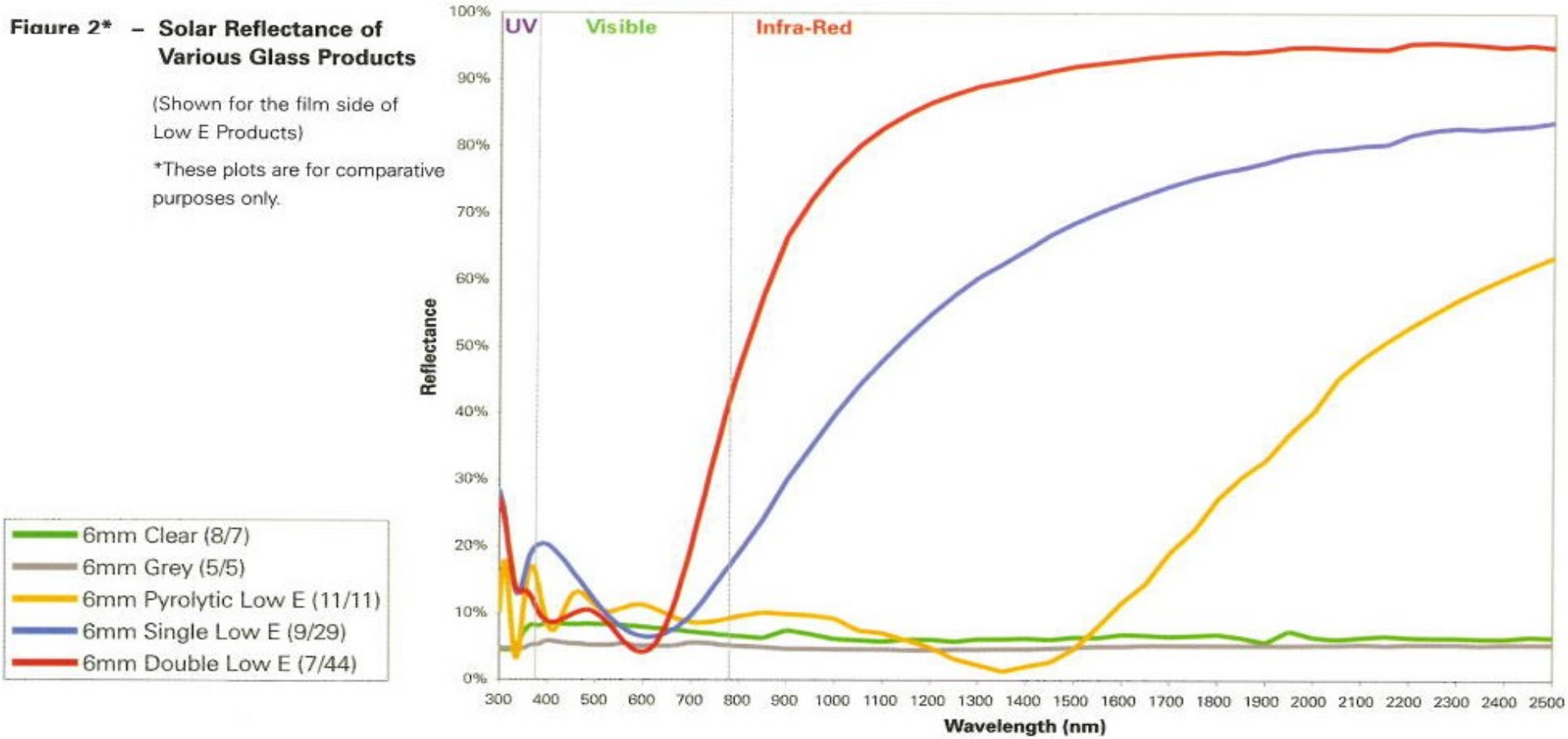
Low E Glass Reflective Plot

Figure 2* – Solar Reflectance of Various Glass Products

(Shown for the film side of Low E Products)

*These plots are for comparative purposes only.



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How do we test glass ??

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We even test full scale facades!

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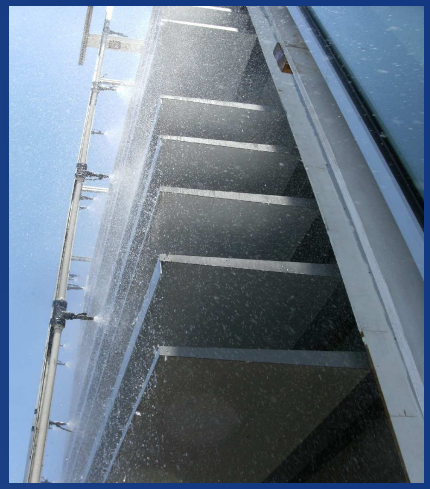
Facade Fenestration Testing

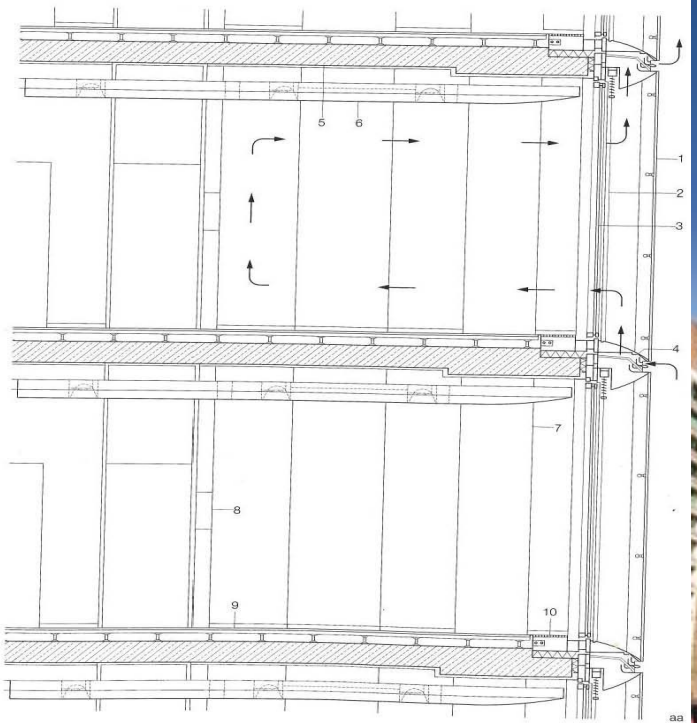
- Water Penetration
- Air Infiltration
- Deflection (1 in 20yr wind load)
- Proof Load (typically 1 in 1000yr wind load)
- Abseiler loads on sunblades



Double Skin Facades

- Ventilated outer facade + sealed internal facade

Southern Cross
Melbourne

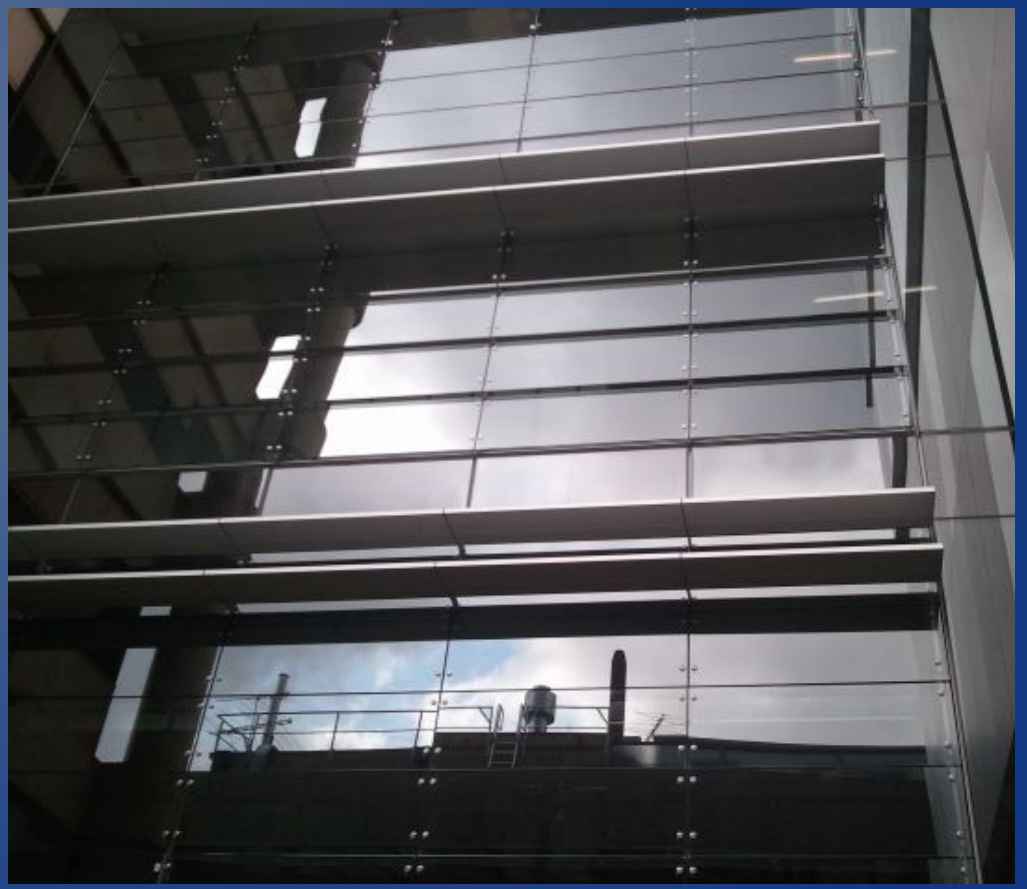


1 Bligh St
Sydney

Operable Facades

Motorised Louvres

1 Bligh St
Sydney



WEHI
Melbourne

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Sunshade Devices

Horizontal Sunblades

Latitude
Sydney

Parramatta Justice Bld
Sydney

ANZAC Park West
Canberra

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Sunshade Devices

Vertical Fins

Green Square
Brisbane

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Sunshade Devices

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Vertical Fins

Brisbane Central

Sunshade Devices

WEHI
Melbourne

Combined Horizontal Sunblades & Vertical Fins

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Sunshade Devices

Perforated Aluminium Sheet Sunshades

WEHI
Melbourne

UTS
Sydney

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Sunshade Considerations

Mitigate penetrations through facade

Panelised in size

Factory fabrication

Site assembly onto panels prior to panel install

Light weight

Minimize projection

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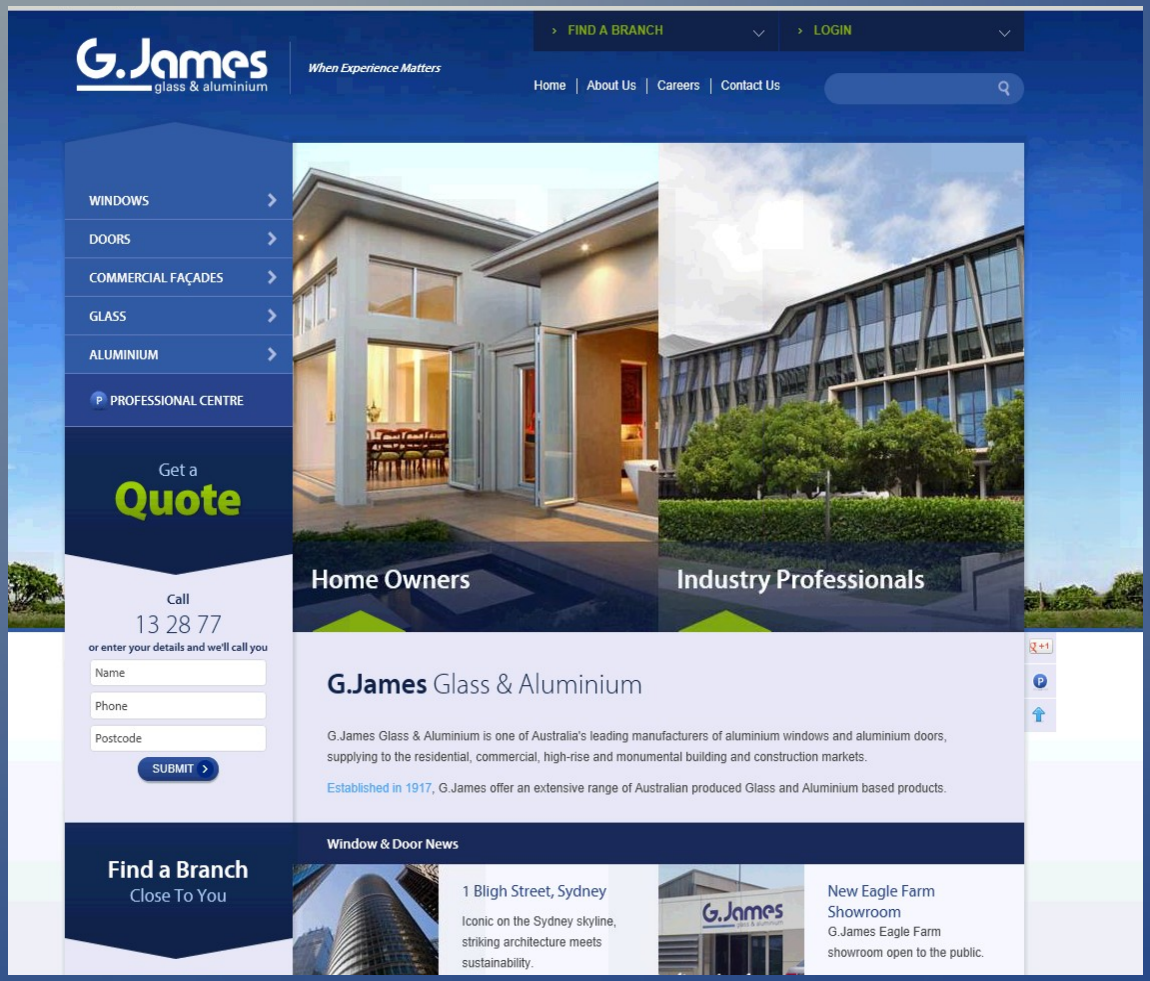
G.James Website & Social Media



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- https://plus.google.com/115651397353147925469/posts #115651397353147925469/posts

WWW.GJAMES.COM

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Factory Visits

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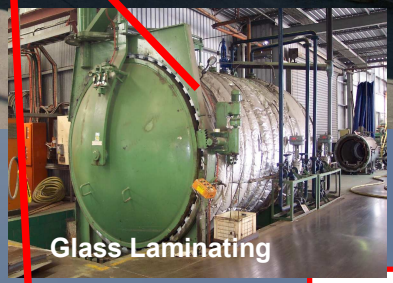
Schneider Road Glass Operations
Shed 23

Tour Guide: Scott Bartlett
(Glass Admin Manager)

Glass Cutting & Processing

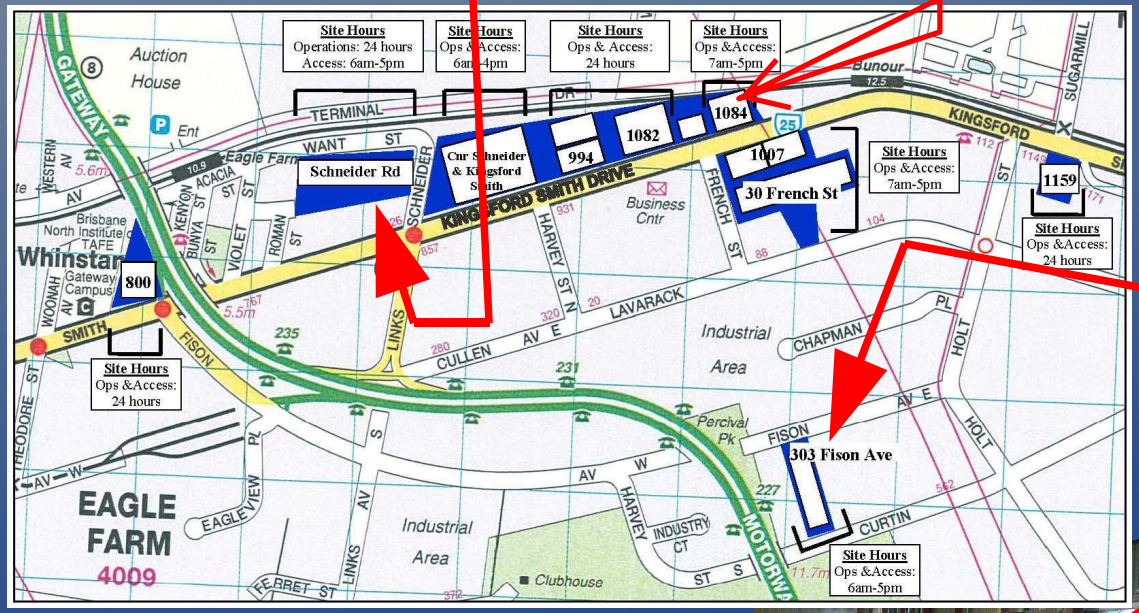
Glass Toughening

IGU Assembly



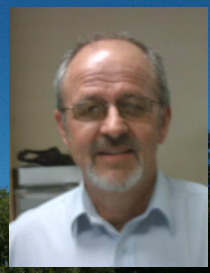
Glass Laminating

YOU ARE HERE

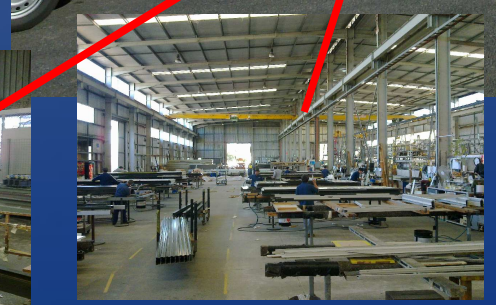


Street Map

Curtain Wall Factory,
303 Fison Ave. E



Tour Guide: Bernie Merrylees,
(Commercial Contracting
Operations Manager)



Aluminium extrusion handling, cutting and processing

Assembly of extrusions into curtain wall panels, glazing of panels with structural silicone and packaging of panels for transport.

Testing of full scale facades for: water penetration, air infiltration, deflection and strength.

THANK YOU

Please divide into groups for the factory visits

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