

CRL **C.R. LAURENCE CO. INC.**

Building Glass Railing Systems Safer, Strong, with
Brilliant Transparency

OFFICIAL TEST REPORT

For CRL's Laminated Glass Rail System

For CRL's 1" (25.52) Laminated Glass Railing System
Specifications: ASTM-E330, ASTM-E1996 (Impacts Only)
and ANSI Z-97.1

crlaurence.com

Phone (800) 421-6144 Ext 7730 • Fax (800) 587-7501 • E-Mail railings@crlaurence.com



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/22/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

MATERIAL CHARACTERISTICS			
Members	Material**	Part Number**	Joint Type
Cap Hand Rail:	stainless steel	** Part Number CRL LR20	none
Glass Shoe Base:	6063-T52	** Part Number L25S10D	none

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites of glass	*25.5 mm nominal laminated glass composed of *(2) 1/2" Temp Glass	None	None
Interlaying Film: 0.060" **DuPont SentryGlas Plus		Laminator: Oldcastle	
Glazing Method: Sample is pocket glazed system using a vinyl wedge between glass and shoe base. Glazed at bottom with CRL taper lock clamping system which consists of a " L " shaped setting block and taper locking clamps between glass and aluminum, each located 6" from each end and remaining on 12" centers.			
Daylight Opening	60" by 36" high		

Product Markings
None

Additional Information		
Quantity and Type	Location	Method of Attachment
One part number **CRL LR21PV vinyl gasket	between glass and hand rail	none
One part number ** CRL LTLSSB setting block	between shoe base and glass	none
One part number ** CRL LTLGSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLGSC taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSC taper locking clamp	between shoe base and glass	none



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

JAC
 6/22/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

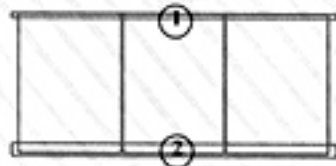
Sample Installation

The shoe base was fastened to the steel weld block part number **BSWB5 with a single row of number 1/2-13 by 3/4" long stainless steel socket head cap screws located 6 1/2" from each end and remaining on 12" center, the weld block was welded to a steel test fixture.

Sample: A-3	Temperature: 102°F	Barometric Reading: 30.36 inches Hg	
Title of Test		Pressure	Notes
1/2 Structural Load Test Positive Load		60.0 psf	
		Results	Passed

Sample: A-3	Temperature: 102°F	Barometric Reading: 30.36 inches Hg	
Title of Test		Pressure	Notes
1/2 Structural Load Test Negative Load		60.0 psf	
		Results	Passed

Sample: A-3	Temperature: 102°F	Barometric Reading: 30.36 inches Hg	
Title of Test		Pressure	Notes
Design Load Test Positive Load		60.0 psf	



Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.561"	N/A	Passed	
2	0.012"	0.005"	Passed	
Actual Movement		Actual Set	Recovery	Add. Info
1) 2.561"		none	100%	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: A-3		Temperature: 102°F		Barometric Reading: 30.36 inches Hg	
Title of Test			Pressure		Notes
Design Load Test Negative Load			60.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	2.664"	N/A	Passed		
2	0.019"	0.006"	Passed		
Movement		Set	Recovery	Add. Info	
1) 2.664"		none	100%		

Sample: A-3		Temperature: 102°F		Barometric Reading: 30.36 inches Hg	
Title of Test			Pressure		Notes
Uniform Structural Test Positive Load			120.0 psf		
Recovery: 100%					
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	3.215"	N/A	Passed		
2	0.029"	0.007"	Passed		



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

J. Causo 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: A-3	Temperature: 102°F	Barometric Reading: 30.36 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		120.0 psf		
Recovery: 100%				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	3.437"	N/A	Passed	
2	0.023"	0.010"	Passed	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/22/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: A-3		Temperature: 75.2°F	Barometric Reading: 30.24 inches Hg	
Title of Test		Notes		
Large Missile Impact Test		Large missile cannon #105		
Missile Weight		Missile		
9.0 pounds		2" by 4" by 92" long		
Impact	Speed	Results	Add. Info	
1	50.3 ft/sec	Passed		
2	50.9 ft/sec	Passed		
3	51.0 ft/sec	Passed		
4	50.8 ft/sec	Passed		
5	50.4 ft/sec	Passed		
6	50.6 ft/sec	Passed		

Sample: A-3		Temperature: 75.2°F	Barometric Reading: 30.24 inches Hg	
Title of Test		Results		
ANSIZ97.1		Passed		
1) Center of left lite				
2) Center of center lite				
3) Center of right lite				

DESCRIPTION OF SAMPLE	
Model Designation:	Dry Glazed Concrete Mount Aluminum Glass Glazed Railing System
Overall Size:	15' - 1" (181") by 4' - 0" (48") high
Sample B-1	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/22/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

MATERIAL CHARACTERISTICS			
Members	Material**	Part Number**	Joint Type
Cap Hand Rail:	stainless steel	** Part Number CRL LR20	none
Glass Shoe Base:	6063-T52	** Part Number L25S10D	none

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites of glass	*25.5 mm nominal laminated glass composed of *(2) 1/2" Temp Glass	None	None
Interlaying Film: 0.060" **DuPont SentryGlas Plus		Laminator: Oldcastle	
Glazing Method: Sample is pocket glazed system using a vinyl wedge between glass and shoe base. Glazed at bottom with CRL taper lock clamping system which consists of a " L " shaped setting block and taper locking clamps between glass and aluminum, each located 6" from each end and remaining on 12" centers.			
Daylight Opening	60" by 36" high		

Product Markings
None

Additional Information		
Quantity and Type	Location	Method of Attachment
One part number **CRL LR21PV vinyl gasket	between glass and hand rail	none
One part number **CRL LTLSEB setting block	between shoe base and glass	none
One part number ** CRL LTLGSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLGSC taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSC taper locking clamp	between shoe base and glass	none



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

J. Causo
 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

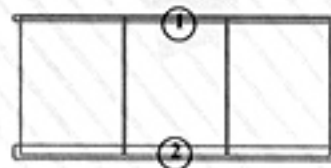
Sample Installation

The shoe base was fastened to concrete test slab with a single row of No. 1/2 by 3 3/4" Hilti expansion bolt located 6" from each end and remainder on 6" centers.

Sample: B-3	Temperature: 76.2°F	Barometric Reading: 30.31 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Positive Load	60.0 psf	
	Results	Passed

Sample: B-3	Temperature: 76.2°F	Barometric Reading: 30.31 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Negative Load	60.0 psf	
	Results	Passed

Sample: B-3	Temperature: 76.4°F	Barometric Reading: 30.32 inches Hg
Title of Test	Pressure	Notes
Design Load Test Positive Load	60.0 psf	



Reading#	Deflection	Permanent Set	Results	Add. Info
1	4.250"	N/A	Passed	
2	0.337"	none	Passed	
Actual Movement		Actual Set	Recovery	Add. Info
1) 4.250"		none	100%	



J. A. Causo
 June 22, 2010

Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: B-3		Temperature: 76.4°F		Barometric Reading: 30.32 inches Hg	
Title of Test			Pressure		Notes
Design Load Test Negative Load			60.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	4.355"	N/A	Passed		
2	0.365"	0.002"	Passed		
Movement		Set	Recovery	Add. Info	
1) 4.355"		none	100%		

Sample: B-3		Temperature: 76.4°F		Barometric Reading: 30.32 inches Hg	
Title of Test			Pressure		Notes
Uniform Structural Test Positive Load			120.0 psf		
Recovery: 100%					
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	4.365"	N/A	Passed		
2	0.377"	none	Passed		



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: B-3	Temperature: 76.4°F	Barometric Reading: 30.32 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		120.0 psf		
Recovery: 100%				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	4.442"	N/A	Passed	
2	0.401"	0.003"	Passed	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/22/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: B-3		Temperature: 76.8°F	Barometric Reading: 30.25 inches Hg	
Title of Test		Notes		
Large Missile Impact Test				
Missile Weight		Missile		
9.0 pounds		2" by 4" by 92" long		
Impact	Speed	Results	Add. Info	
1	50.6 ft/sec	Passed		
2	50.4 ft/sec	Passed		
3	50.4 ft/sec	Passed		
4	51.0 ft/sec	Passed		
5	50.7 ft/sec	Passed		
6	50.2 ft/sec	Passed		

Sample: B-3		Temperature: 76.8°F	Barometric Reading: 30.25 inches Hg	
Title of Test		Results		
ANSIZ97.1		Passed		
1) Center of left lite				
2) Center of center lite				
3) Center of right lite				

DESCRIPTION OF SAMPLE	
Model Designation:	Dry Glazed Fascia Mount To Steel Aluminum Glass Glazed Railing System
Overall Size:	15' - 1" (181") by 3" - 6" (42") high
Sample C-1	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

MATERIAL CHARACTERISTICS			
Members	Material**	Part Number**	Joint Type
Cap Hand Rail:	stainless steel	** Part Number CRL LR20	none
Glass Shoe Base:	6063-T52	** Part Number L25S10D	none

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites of glass	*25.5 mm nominal laminated glass composed of *(2) 1/2" Temp Glass	None	None
Interlaying Film: 0.060" **DuPont SentryGlas Plus		Laminator: Oldcastle	
Glazing Method: Sample is pocket glazed system using a vinyl wedge between glass and shoe base. Glazed at bottom with CRL taper lock clamping system which consists of a " L " shaped setting block and taper locking clamps between glass and aluminum, each located 6" from each end and remaining on 12" centers.			
Daylight Opening	60" by 41 3/16" high		

Product Markings
None

Additional Information		
Quantity and Type	Location	Method of Attachment
One part number **CRL LR21PV vinyl gasket	between glass and hand rail	none
One part number **CRL LTL5B setting block	between shoe base and glass	none
One part number ** CRL LTLGSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLGSC taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSC taper locking clamp	between shoe base and glass	none



Jorge A. Causo
 Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

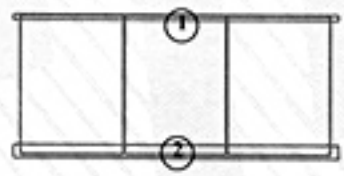
OFFICIAL TEST REPORT

Sample Installation

The shoe base was fastened to the steel tube with a single row of number 1/2-13 by 3/4" long stainless steel socket head cap screws located 6 1/2" from each end and remaining on 12" center, the steel tube was welded to a steel test fixture.

Sample: C-3	Temperature: 69.0°F	Barometric Reading: 30.25 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Positive Load	60.0 psf	
	Results	Passed

Sample: C-3	Temperature: 69.0°F	Barometric Reading: 30.25 inches Hg
Title of Test	Pressure	Notes
Design Load Test Positive Load	60.0 psf	



Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.719"	N/A	Passed	
2	0.094"	0.005"	Passed	
Actual Movement		Actual Set	Recovery	Add. Info
1) 1.719"		none	100%	



Jorge A. Causo
 2008/6/2/10

Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: C-3		Temperature: 74.1°F		Barometric Reading: 30.30 inches Hg	
Title of Test			Pressure		Notes
Design Load Test Negative Load			60.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	1.885"	N/A			
2	0.087"	0.004"			
Movement		Set	Recovery	Add. Info	
1) 1.885"		none	100%		

Sample: C-3		Temperature: 76.4°F		Barometric Reading: 30.32 inches Hg	
Title of Test			Pressure		Notes
Uniform Structural Test Positive Load			120.0 psf		
Recovery: 100%					
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	2.125"	N/A	Passed		
2	0.105"	0.005"	Passed		



Jorge A. Causo
 Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: C-3	Temperature: 74.1°F	Barometric Reading: 30.30 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		120.0 psf		
Recovery: 100%				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.105"	N/A	Passed	
2	0.099"	0.004	Passed	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Jorge A Causo
 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: C-3		Temperature: 79.7°F	Barometric Reading: 30.24 inches Hg	
Title of Test		Notes		
Large Missile Impact Test				
Missile Weight		Missile		
9.25 pounds		2" by 4" by 92" long		
Impact	Speed	Results	Add. Info	
1	50.6 ft/sec	Passed		
2	49.7 ft/sec	Passed		
3	50.2 ft/sec	Passed		
4	50.6 ft/sec	Passed		
5	50.0 ft/sec	Passed		
6	50.3 ft/sec	Passed		

Sample: C-3		Temperature: 75.2°F	Barometric Reading: 30.18 inches Hg	
Title of Test		Results		
ANSI Z97.1		Passed		
1) Center of left lite 2) Center of center lite 3) Center of right lite				

DESCRIPTION OF SAMPLE	
Model Designation:	Dry Glazed Concrete Fascia Mount Aluminum Glass Glazed Railing System
Overall Size:	15' - 1" (181") by 3' - 6" (42") high
Sample D-1	



Jorge A. Causo
6/28/10

Engineer: Mr. Jorge A Causo, P.E.
FL License Number: 54898

Cert. No: TST1657
Report Date: 6/22/2010
Completion Date: 5/19/2010
Expiration Date: 5/19/2020
File Number: 09-634

Lab. Number: 6143
Project Number: 09-1892

OFFICIAL TEST REPORT

MATERIAL CHARACTERISTICS			
Members	Material**	Part Number**	Joint Type
Cap Hand Rail:	stainless steel	** Part Number CRL LR20	none
Glass Shoe Base:	6063-T52	** Part Number L56S10D	none

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites of glass	*25.5 mm nominal laminated glass composed of *(2) 1/2" Temp Glass	None	None
Interlaying Film: 0.060" **DuPont SentryGlas Plus		Laminator: Oldcastle	
Glazing Method: Sample is pocket glazed system using a vinyl wedge between glass and shoe base. Glazed at bottom with CRL taper lock clamping system which consists of a " L " shaped setting block and taper locking clamps between glass and aluminum, each located 6" from each end and remaining on 12" centers.			
Daylight Opening	60" by 42" high		

Product Markings
None

Additional Information		
Quantity and Type	Location	Method of Attachment
One part number **CRL LR21PV vinyl gasket	between glass and hand rail	none
One part number **CRL LTLSSB setting block	between shoe base and glass	none
One part number ** CRL LTLGSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSO taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLGSC taper locking clamp	between shoe base and glass	none
One part number ** CRL LTLSSC taper locking clamp	between shoe base and glass	none



Jorge A. Causo
 Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

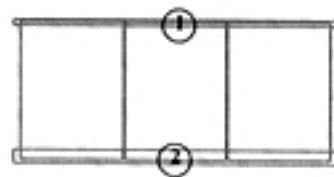
Sample Installation

The shoe base was fastened to concrete test slab with a single row of No. 1/2 by 3 3/4" Hilti expansion bolt located 6 1/2" from each end and remainder on 6" centers.

Sample: D-3	Temperature: 71.6°F	Barometric Reading: 30.30 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Positive Load	60.0 psf	
	Results	Passed

Sample: D-3	Temperature: 79.9°F	Barometric Reading: 30.30 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Negative Load	60.0 psf	
	Results	Passed

Sample: D-3	Temperature: 71.6°F	Barometric Reading: 30.30 inches Hg
Title of Test	Pressure	Notes
Design Load Test Positive Load	60.0 psf	



Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.627"	N/A	Passed	
2	0.009"	none	Passed	
Actual Movement		Actual Set	Recovery	Add. Info
1) 1.627"		none	100 %	



Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

J. Causo
 6/28/10

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: D-3		Temperature: 79.9°F		Barometric Reading: 30.30 inches Hg	
Title of Test			Pressure		Notes
Design Load Test Negative Load			60.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	1.545"	0.023"	Passed		
2	0.051"	none	Passed		
Movement		Set	Recovery	Add. Info	
1) 1.545"		none	100 %		

Sample: D-3		Temperature: 71.6°F		Barometric Reading: 30.30 inches Hg	
Title of Test			Pressure		Notes
Uniform Structural Test Positive Load			120.0 psf		
Recovery: 100%					
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	3.160"	N/A	Passed		
2	0.026"	0.001"	Passed		



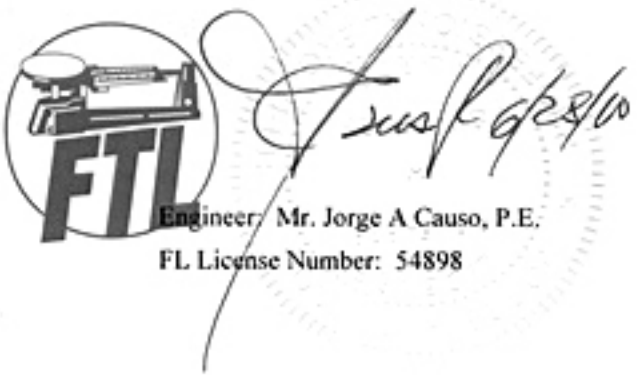
Jorge A. Causo
 Engineer: Mr. Jorge A Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: D-3	Temperature: 79.9°F	Barometric Reading: 30.30 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		120.0 psf		
Recovery: 100%				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	3.161"	N/A	Passed	
2	0.082"	none	Passed	



Engineer: Mr. Jorge A. Causo, P.E.
 FL License Number: 54898

Cert. No: TST1657
 Report Date: 6/22/2010
 Completion Date: 5/19/2010
 Expiration Date: 5/19/2020
 File Number: 09-634

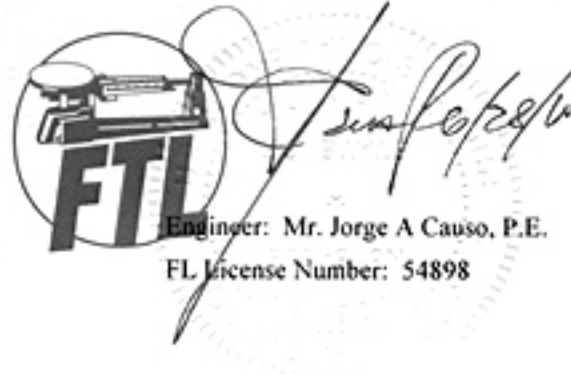
Lab. Number: 6143
 Project Number: 09-1892

OFFICIAL TEST REPORT

Sample: D-3		Temperature: 95.0°F	Barometric Reading: 30.21 inches Hg
Title of Test		Notes	
Large Missile Impact Test			
Missile Weight		Missile	
9.25 pounds		2" by 4" by 92" long	
Impact	Speed	Results	Add. Info
1	50.4 ft/sec	Passed	
2	50.6 ft/sec	Passed	
3	50.3 ft/sec	Passed	
4	50.3 ft/sec	Passed	
5	50.7 ft/sec	Passed	
6	49.8 ft/sec	Passed	

Sample: D-3		Temperature: 83.7°F	Barometric Reading: 30.39 inches Hg
Title of Test		Results	
ANSIZ97.1		Passed	
1) Center of left lite 2) Center of center lite 3) Center of right lite			

Revision	Description	Author	Effective Date
0	Initial Release	Mr. Manny Sanchez	6/22/2010



Engineer: Mr. Jorge A Causo, P.E.
FL License Number: 54898

Cert. No: TST1657
Report Date: 6/22/2010
Completion Date: 5/19/2010
Expiration Date: 5/19/2020
File Number: 09-634

Lab. Number: 6143
Project Number: 09-1892

OFFICIAL TEST REPORT

Notes

* designates measurements by laboratory
** as per manufacturer
At conclusion of ASTM E330 test and ANSI Z-97 drop test, there was no apparent damage to concrete test slab, glass and fasteners. At the conclusion of ASTM E1996 large missile test, the glass did break but remained intact and no shear or opening which a 3" diameter solid sphere could pass freely through.

The test specimens were covered with a 6 mil plastic sheeting to seal from air leakage when load test were conducted, however this had no effect on the above test results.

Remarks

Representative samples of the test specimens and detailed drawings will be retained by Fenestration Testing Laboratory for a period of five years from the original test date, and test report for a period of ten years. Due to the code cycle change of four years, it is recommended that this report be evaluated during the lifespan of this document.

This product was tested and meets the requirement set forth by the Florida Building Code (2007) TAS 201 large missile and ASTM E330. Sample A-1, B-1, C-1 and D-1 don't meets Section 1620.2 of this code. This product was tested in accordance with ANSI Z-97.1 section 1618.4.6.3.

Testing was conducted as per instructions received from your company representative.

Witnessed by:
Mr. Jorge A. Causo, P.E.
Mr. Abe Armenteros, C.R. Laurence

FENESTRATION TESTING LABORATORY, INC.

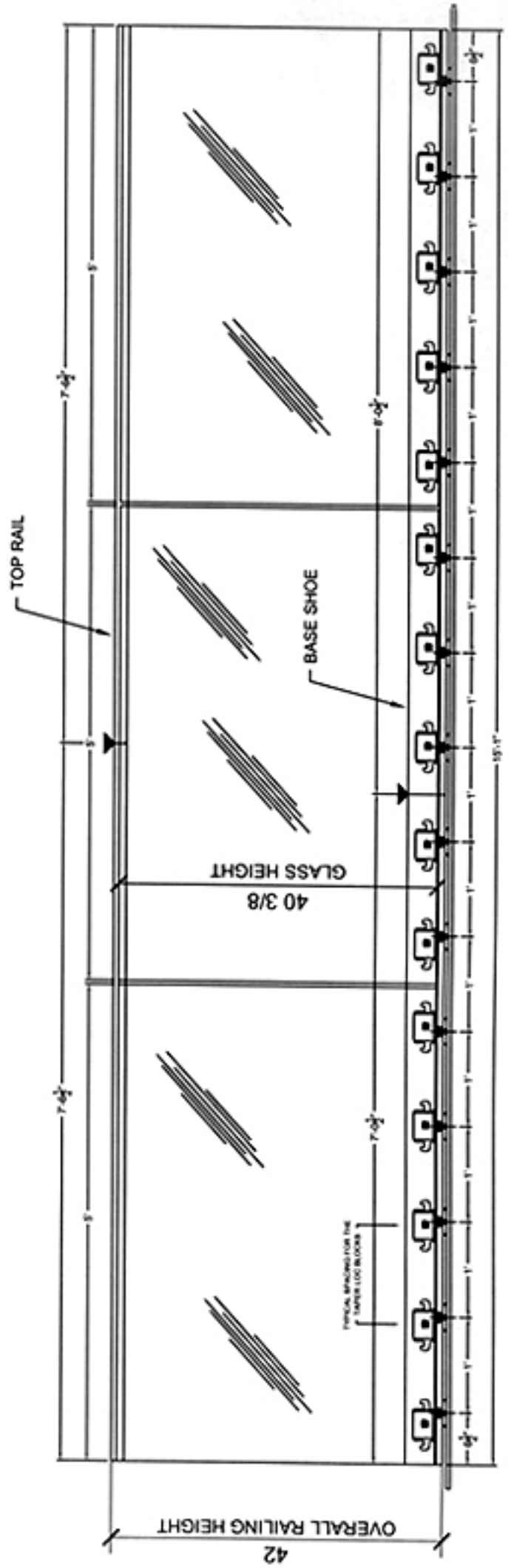
Mr. Manny Sanchez
Chief Executive Officer

TEST (A3) MATERIAL LIST 1-1/16" (25.52MM) GLASS	
CAT #	DISCRIPTION
L25S	1-1/16" (25.52MM) ALUMINUM BASE SHOE
LTL10	CRL TAPERLOC LAMINATED TAPER SET
SHCSM14X34	M14 HEX HEAD ANCHOR BOLT
LSWB21	1/2" TALL STEEL WELD BLOCK
LR20	2" DIA CAP RAIL FOR 3/4" GLASS
LR22PV	PROTECTIVE CAP RAIL VINYL INSERT
95CBL	SILICONE SEALANT (BLACK)

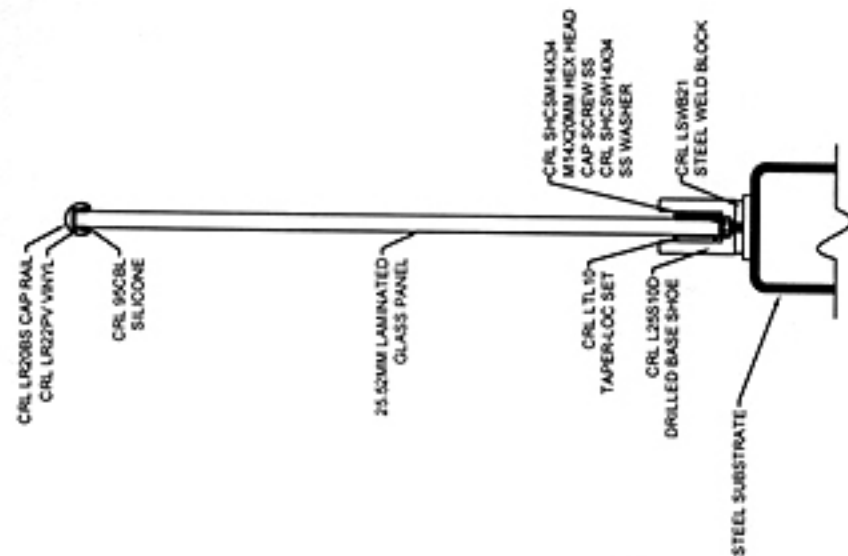
TEST (C3) MATERIAL LIST 1-1/16" (25.52MM) GLASS	
CAT #	DISCRIPTION
L25SF	1-1/16" (25.52MM) ALUMINUM BASE SHOE
LTL10	CRL TAPERLOC LAMINATED TAPER SET
SHCSM14X34	M14 HEX HEAD ANCHOR BOLT
LR20	2" DIA CAP RAIL FOR 3/4" GLASS
LR22PV	PROTECTIVE CAP RAIL VINYL INSERT
95CBL	SILICONE SEALANT (BLACK)

TEST (B3) MATERIAL LIST 1-1/16" (25.52MM) GLASS	
CAT #	DISCRIPTION
L25S	1-1/16" (25.52MM) ALUMINUM BASE SHOE
LTL10	CRL TAPERLOC LAMINATED TAPER SET
EBA335	M14 HILTI CONCRETE EXPANSION ANCHOR
LR20	2" DIA CAP RAIL FOR 3/4" GLASS
LR22PV	PROTECTIVE CAP RAIL VINYL INSERT
95CBL	SILICONE SEALANT (BLACK)

TEST (D3) MATERIAL LIST 1-1/16" (25.52MM) GLASS	
CAT #	DISCRIPTION
L25SF	1-1/16" (25.52MM) FASCIA ALUM BASE SHOE
LTL10	CRL TAPERLOC LAMINATED TAPER SET
EBA335	M14 HILTI CONCRETE EXPANSION ANCHOR
LR20	2" DIA CAP RAIL FOR 3/4" GLASS
LR22PV	PROTECTIVE CAP RAIL VINYL INSERT
95CBL	SILICONE SEALANT (BLACK)

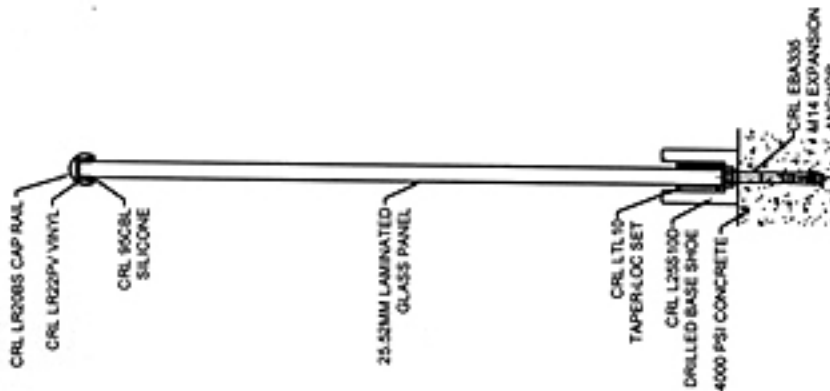


TYPICAL ELEVATION AT TEST A-3, B-3, C-3, & D-3



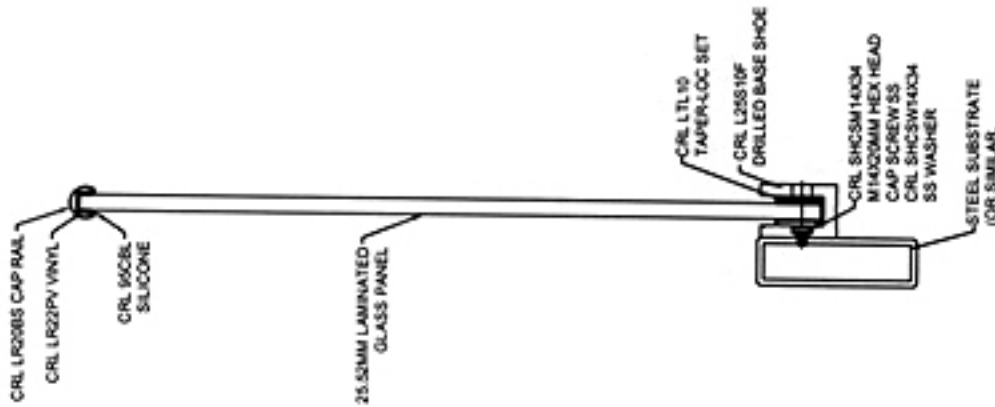
TEST A-3

CRL 25.52mm LAMINATED GLASS RAIL SYSTEM
#L25S100 SURFACE MNT BASE SHOE
ATTACHED TO STEEL WELD BLOCK



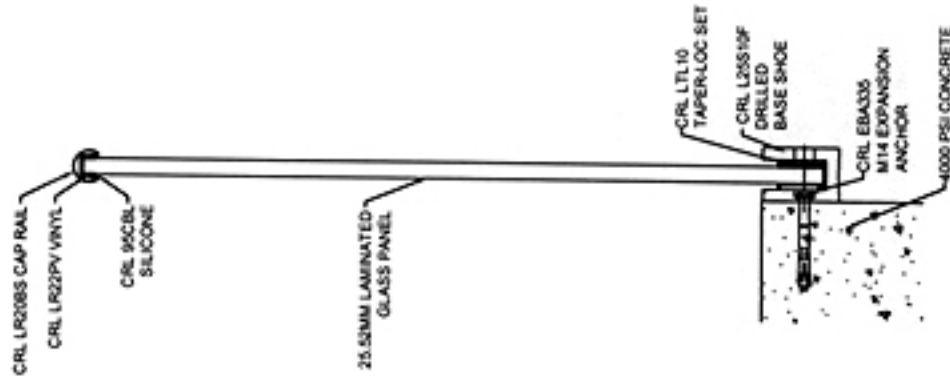
TEST B-3

CRL 25.52mm LAMINATED GLASS RAIL SYSTEM
#L25S100 SURFACE MNT BASE SHOE
ATTACHED TO CONCRETE



TEST C-3

CRL 25.52mm LAMINATED GLASS RAIL SYSTEM
#L25S10F FASCIA MNT BASE SHOE
ATTACHED TO STEEL



TEST D-3

CRL 25.52mm LAMINATED GLASS RAIL SYSTEM
#L25S10F FASCIA MNT BASE SHOE
ATTACHED TO CONCRETE



BUILDING CODE COMPLIANCE OFFICE (BCCO)
PRODUCT CONTROL DIVISION

MIAMI-DADE COUNTY, FLORIDA
METRO-DADB FLAGLER BUILDING
140 WEST FLAGLER STREET, SUITE 1603
MIAMI, FLORIDA 33130-1563
(305) 375-2901 FAX (305) 372-6339

www.miamidade.gov/buildingcode

NOTICE OF ACCEPTANCE (NOA)

E.I. DuPont de Nemours & Co., Inc.
8480 DuPont Road
Washington, WV 26181

SCOPE: This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code, including the High Velocity Hurricane Zone.

DESCRIPTION: DuPont SentryGlas® Plus

APPROVAL DOCUMENT: Drawing No.319.58, sheet 1 of 1, titled "DuPont Sentryglass® Plus Interlayer" dated 10/01/07, prepared by E.I. DuPont DeNemours & Co., Inc., signed and sealed by Allan A. Kozich, P.E., bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Division.

MISSILE IMPACT RATING: None. This approval does not include an evaluation of structural performance of this component. Test reports and other required documents shall be submitted to Dade County Product Control; showing that the systems using this interlayer sheet will resist the loads according to Chapter 16 of the F.B.C., in order to issue a specific product approval for the system.

LABELING: Laminated lites under this Product Approval shall be permanently marked in a corner of the glass with: "DCA-SGP", standing for "Miami-Dade County Approved - SentryGlas Plus", and the laminator's identification mark. These marks shall be applied by the individual laminator producing the finished laminated glass product containing the SentryGlas® Plus Ionoplast Interlayer.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA renews and revises NOA # 06-1205.10 and consists of this page, evidence page E-1, as well as approval document mentioned above.

The submitted documentation was reviewed by Carlos M. Utrera, P.E.



[Signature]
12/7/07

NOA No: 07-1116.04
Expiration Date: January 14, 2012
Approval Date: January 3, 2008

NOTICE OF ACCEPTANCE: EVIDENCE PAGE

A. DRAWING

1. Drawing No. 319.58 , sheet 1 of 1, titled "DuPont Sentryglass® Plus", dated 10/01/07, prepared by E.I. DuPont DeNemours & Co., Inc., signed and sealed by Allan A. Kozich, P.E.

B. TEST REPORTS

	<u>Laboratory Report</u>	<u>Test</u>	<u>Date</u>	<u>Signature</u>
1.	3136116SAT-001	ASTM D 635	10/25/07	Chris Bowness, P.E.
2.	3111755SAT-002	ASTM D1929	01/02/07	Chris Bowness, P.E.
3.	3111755SAT-001	ASTM E 84	12/19/06	Chris Bowness, P.E.
4.	PR106246	ASTM G 26	06/26/07	Duc T. Nguyen, P.E.
5.	PR106246	ASTM D 790	06/26/07	Duc T. Nguyen, P.E.

C. CALCULATIONS

1. None

D. MATERIAL CERTIFICATIONS

1. None

E. QUALITY ASSURANCE


1. Miami Dade Building Code Compliance Office (BCCO)

F. STATEMENTS

1. Letter of No Financial Interest by R. E. Fisher & Associates, Inc., issued on 12/12/98, signed and sealed by W. M. Meyers, PE.
2. Letter of Code Compliance by R. E. Fisher & Associates, Inc., issued on 12/12/98, signed and sealed by W. M. Meyers, PE.
3. Letter of No Financial Interest by C. A. Smith of E. I. DuPont DeNemours & Co., Inc., issued on 12/18/98, signed and notarized by C. A. Smith.
4. Approved listing of SentryGlas® Plus laminators dated November 30, 2005, signed by Jeffrey D. Granato.
(Evidence Submitted under NOA # 06-1205.10)

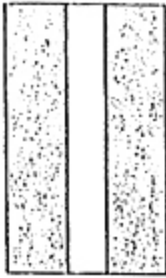
G. OTHERS

1. No change letter issued by E.I. DuPont de Nemours & Co., Inc., dated 11/01/07, signed by C. Anthony Smith, Ph.D.



Carlos M. Utrera, P.E.
Product Control Examiner
NOA No 07-1116.04
Expiration Date: January 14, 2012
Approval Date: January 3, 2008

DUPONT SENTRYGLAS®PLUS INTERLAYER



A B C
SECTION

PRODUCT DESCRIPTION

MANUFACTURED BY: E.I. DUPONT DE NEMOURS & CO., INC.
DESCRIPTION: A PLASTIC INTERLAYER MATERIAL WHICH IS FACTORY LAMINATED TO A MINIMUM OF TWO PIECES OF GLASS.

A TYPICAL GLAZING IS MADE OF THE FOLLOWING COMPONENTS: (MINIMUM THICKNESS INDICATED. MULTIPLE PLYS OF INTERLAYER TO BE USED AS NECESSARY).

A	- 1/8" (3.0 mm) Annealed Glass
B	- 0.030" (0.76 mm) DuPont SentryGlas®Plus Interlayer
C	- 1/8" (3.0 mm) Annealed Glass

MATERIAL CHARACTERISTICS SentryGlas®Plus Interlayer

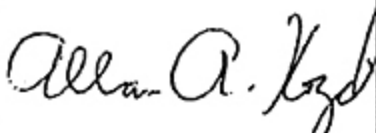
Designation	Test	Properties
Flame Spread Index	ASTM E84	35
Smoke Developed Index	ASTM E84	250
Flash Ignition Temperature	ASTM D1929	788 F
Self Ignition Temperature	ASTM D1929	806 F
Average Extent of Burning [1]	ASTM D635	0 cm/min.; Class C1
Average Extent of Burning [2]	ASTM D635	0 cm/min.; Class C1
Average Modulus of Rupture	ASTM D790	Weathering*
*WEATHERING PER SECTION 2612.2 OF THE FLORIDA BUILDING CODE		Before
		After
		5,415 psi
		5,366 psi

NOTES:

- [1] 30 mil (0.76mm) thickness DuPont SentryGlas®Plus Interlayer Sample
- [2] 120 mil (3.3mm) thickness DuPont SentryGlas®Plus Interlayer Sample
- [3] DuPont SentryGlas®Plus Interlayer By Itself Does Not Comply With The Florida Building Code

THIS IS A COMPONENT APPROVAL AND DOES NOT INCLUDE AN EVALUATION OF STRUCTURAL PERFORMANCE OF THIS COMPONENT. SYSTEMS INCORPORATING THIS COMPONENT SHALL APPLY FOR A PRODUCT APPROVAL TO THIS OFFICE AND SHALL SUBMIT REPORTS AND OTHER REQUIRED DOCUMENTS SHOWING THAT THE SYSTEM USING THIS COMPONENT WILL RESIST THE LOADS ACCORDING TO CHAPTER 16 OF THE FLORIDA BUILDING CODE.

07-1116-04
01/13/2012

 NOV 0 5 2007	DuPont SentryGlas® Plus Interlayer
	E.I. DuPont de Nemours & Co., Inc. 8480 DuPont Road Washington, West Virginia 26181 Phone: 304-863-2182 Dwg. # 319.58 Sheet 1 of 1 Drawing Date: 10/1/07 Allan A. Kozich, PE Registration # 16864



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: 305/885/3328 Fax: 305/885/3329
e-mail: ftdade@aol.com www.ftl-inc.com

6/28/10

RE: Letter Certifying Independence
Client: C.R. Laurence C.O. Inc.
Address: 2503 E. Vemon Avenue Los Angeles, California 90058-1897
Model Designation: Weld Block Dry Glazed Concrete Mount Aluminum Glass
Glazed Railing System
Laboratory Number: 6143

To whom it may concern:

Fenestration Testing Laboratory certifies the following:

- Fenestration Testing Laboratory, nor it's company representatives, have any financial interest in the above referenced company
- Fenestration Testing Laboratory, nor it's company representatives, have any controlling interest in the above referenced company
- The above referenced company is not affiliated to Fenestration Testing Laboratory, nor it's company representatives

If you have any questions, please do not hesitate to contact us at (305) 885-3328.

Sincerely,

Fenestration Testing Laboratory, Inc.

Manny Sanchez
Chief Executive Officer