



NATIONAL CERTIFIED TESTING LABORATORIES

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ASTM E283-04(12)

ASTM E330-14

ASTM E331-00(09)

ASTM E547-00(09)

STRUCTURAL PERFORMANCE TEST REPORT SUMMARY

Rendered to:

NEON ENERGY
230 Park Avenue 10th Floor
New York, NY 10169

PRODUCT TYPE: Five Lite Fixed Curtain Wall

SERIES/ MODEL: Curtain Wall

TITLE	SUMMARY OF RESULTS
Air Infiltration 75 Pa (1.6 psf)	0.05 L/s/m ² (0.01 cfm/ft ² measured)
Air Infiltration 300 Pa (6.2 psf)	0.05 L/s/m ² (0.01 cfm/ft ² measured)
Water Penetration Resistance	575 Pa (12.0 psf)
Design Pressure	±4070 Pa (85.0 psf)
Uniform Load Structural Test	± 6105 Pa (127.5 psf)

Test Completion Date: 07/18/16

Reference must be made to Report Number NCTL-110-19251-5 dated 08/30/16 for complete test sample description and data.

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DIGITAL SIGNATURE

Justin L. Bupp
Laboratory Manager



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STRUCTURAL PERFORMANCE TEST REPORT

Report Number NCTL-110-19251-5

Report Date 08/30/16

Report To Neon Energy
230 Park Avenue 10th Floor
New York, NY 10169

Starting Test Date 07/15/16
Ending Test Date 07/18/16

Specification ASTM E283-04(12), "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen."

ASTM E331-00(09), "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference."

ASTM E547-00(09), "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Cyclic Static Air Pressure Difference."

ASTM E330-14, "Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference."

Description of Sample Tested

Note: All dimensions are in the order (Width x Height x Thickness) unless otherwise noted.

Model/ Series Curtain Wall

Configuration Five Lite Fixed Curtain Wall

Frame Size Overall
1499 mm x 4001 mm (59" x 157.5")

Viewing Area (5) 1384 mm x 724 mm (54.5" x 28.5")

Frame Type Extruded aluminum

Joint Construction Frame
All corners were fastened together with an internal aluminum extrusion. The extrusion was fastened to the jambs with (2) screws and to the horizontals with (2) screws at each end. A rubber gasket was employed between the members.

Glazing Components
Overall 25.91 mm (1.020") nominal
Glass Thickness (1) Lite of 6 mm (0.229") nominal annealed glass to the interior and (1) lite of 6 mm (0.230") tempered glass to the exterior
Spacer Type/ Size 14.25 mm (0.561") Desiccant-filled aluminum spacer (Type A1-D)

Glazing System Exterior glazed with a gasket back-bedding and a screwed-in-place aluminum pressure plate. The plate employed (2) strips of multi-fin gasket. The glass was back-filled with expanded foam and silicone.

Weatherstrip	No weatherseals employed
Operating Hardware	No operating hardware employed
Auxiliary	
Type	Extruded aluminum cover/ beauty cap
Location	Snap-fitted at the pressure plates
Type	Extruded aluminum filler
Location	Exterior frame perimeter
Reinforcement	No reinforcement employed
Weep Description	
Size	25.4 mm (1") Notch
Location	51 mm (2"), 229 mm (9"), 419 mm (16.5") and midspan of the lower pressure plate gasket at each horizontal
Interior & Exterior Surface Finish	White painted aluminum
Sealant	No apparent sealant applied
Screens	No screen employed
Installation Method	The window was installed in a 50.8 mm 203.2 mm (2" x 8") spruce-pine-fir lumber test buck was fastened through the frame with (1) #12 x 102 mm (4") pan head screw located 102 mm (4") from each end and 254 mm (10") on center thereafter at the frame perimeter. The exterior perimeter was sealed with silicone sealant.

Test Results

<u>Test Method</u>	<u>Test</u>
ASTM E283-04(12)	Air Leakage Resistance
	<u>Information at 75 Pa (1.6 psf)</u>
	Total Air Flow = 0.27 L/s (0.58 cfm)
	Extraneous Air Leakage _{Tare} = <0.01 L/s (<0.01 cfm)
	Infiltration Rate/ Area = 0.05 L/s/m ² (0.01 cfm/ft ²)

<u>Test Method</u>	<u>Test</u>
ASTM E283-04(12)	Air Leakage Resistance
	<u>Information at 300 Pa (6.2 psf)</u>
	Total Air Flow = 0.42 L/s (0.88 cfm)
	Extraneous Air Leakage _{Tare} = <0.01 L/s (<0.01 cfm)
	Infiltration Rate/ Area = 0.05 L/s/m ² (0.01 cfm/ft ²)

<u>Test Method</u>	<u>Test</u>
ASTM E547-00(09)	Water Resistance Test
ASTM E331-00(09)	
	<u>3.4 L/ (min• m²) (5.0 gph/ft²)</u>
	No Leakage after 4 cycles of 5 minutes at 575 Pa (12.0 psf)
	No Leakage after 1 cycle of 15 minutes at 575 Pa (12.0 psf)

NOTE: Tested without insect screen

Test Method
ASTM E330-14Test
Uniform Load Deflection at Design Pressure

No damage after positive	4070 Pa (85.0 psf) held for 10 seconds
No damage after negative	4070 Pa (85.0 psf) held for 10 seconds
Measured Deflection Positive	= 1.47 mm (0.058 inches)
Measured Deflection Negative	= 1.78 mm (0.070 inches)

Test Method
ASTM E330-14Test
Uniform Load Structural Test

No damage after positive	6105 Pa (127.5 psf) held for 10 seconds
No damage after negative	6105 Pa (127.5 psf) held for 10 seconds

Meeting Rail

Measured Permanent Set Positive	= 0.05 mm (0.002 inches)
Measured Permanent Set Negative	= 0.05 mm (0.002 inches)

NOTE: Deflection and Permanent Set measurements taken on the second horizontal fin from the bottom over a 1372 mm (54") span.

This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client and it does not constitute certification of this product. The results are for the particular specimen tested and do not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. The test specimen was supplied to NCTL by the above named client. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the ASTM E330 test. Foam tape is mounted to the perimeter of the test buck prior to clamping to the test wall. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. Component drawings were reviewed for product verification. The bill of materials contains details with any deviations noted. Ambient conditions during the referenced testing are available upon request. A copy of this report along with representative sections of the test specimen will be retained by NCTL. This report does not constitute certification or approval of the product, which may only be granted by a certification program validator or recognized approval entity. All tests were conducted in full compliance with the referenced specifications and/or test methods. This report may not be reproduced, except in full, without the written consent of NCTL.

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Justin L. Bupp
Laboratory Manager



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Robert H. Zeiders, P.E.
Vice-President Engineering & Quality

JLB/ dro
Attachments
Appendix A – Drawing & Revision Summary

APPENDIX A

Section 1:

Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were reviewed
(as submitted) for Product Verification
(Reference: NCTL-110-19251-5)

See Attached Documentation;
any deviations noted.

Note: The above referenced component drawings along with representative sections of the test specimen will be retained per procedure by NCTL. This testing facility assumes that all information provided by the client is accurate.

Section 2:

<u>Identification</u>	<u>Date</u>	<u>Page & Revision</u>
Original Issue	08/30/16	Not Applicable

Description of test specimen Curtain Wall:

Product	Curtain wall
Manufacturer	Alco Hellas S.A.
Date of manufacture	3/6/2016
System	Alousystem Curtain Wall Standard
Type of opening / Opening directions	No opening
Frame material	Aluminum profiles with thermal break
Overall frame dimensions (WxH)	4' 11 1/16" x 13' 1 31/64"
Mullion member	Profile No Y-502
Transom member	Profile No Y-502
Holding plate of glass panes	Profile No Y-506
Decorative cover	Profile No Y-511
Infill panel	Glass Unit
Configuration	from inside to outside: 15/64" glass, 35/64" airspace, 15/64" glass
Incorporation of infill panel	
Glazing gasket	
<u>Internal:</u>	
Material	Sealing material – EPDM
Item No	Y 103
Corner design	mitred and bonded
<u>External:</u>	
Material	Sealing material – EPDM
Item No	Y 105
Corner design	mitred and bonded

TEST SPECIMEN COMPLIES
WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

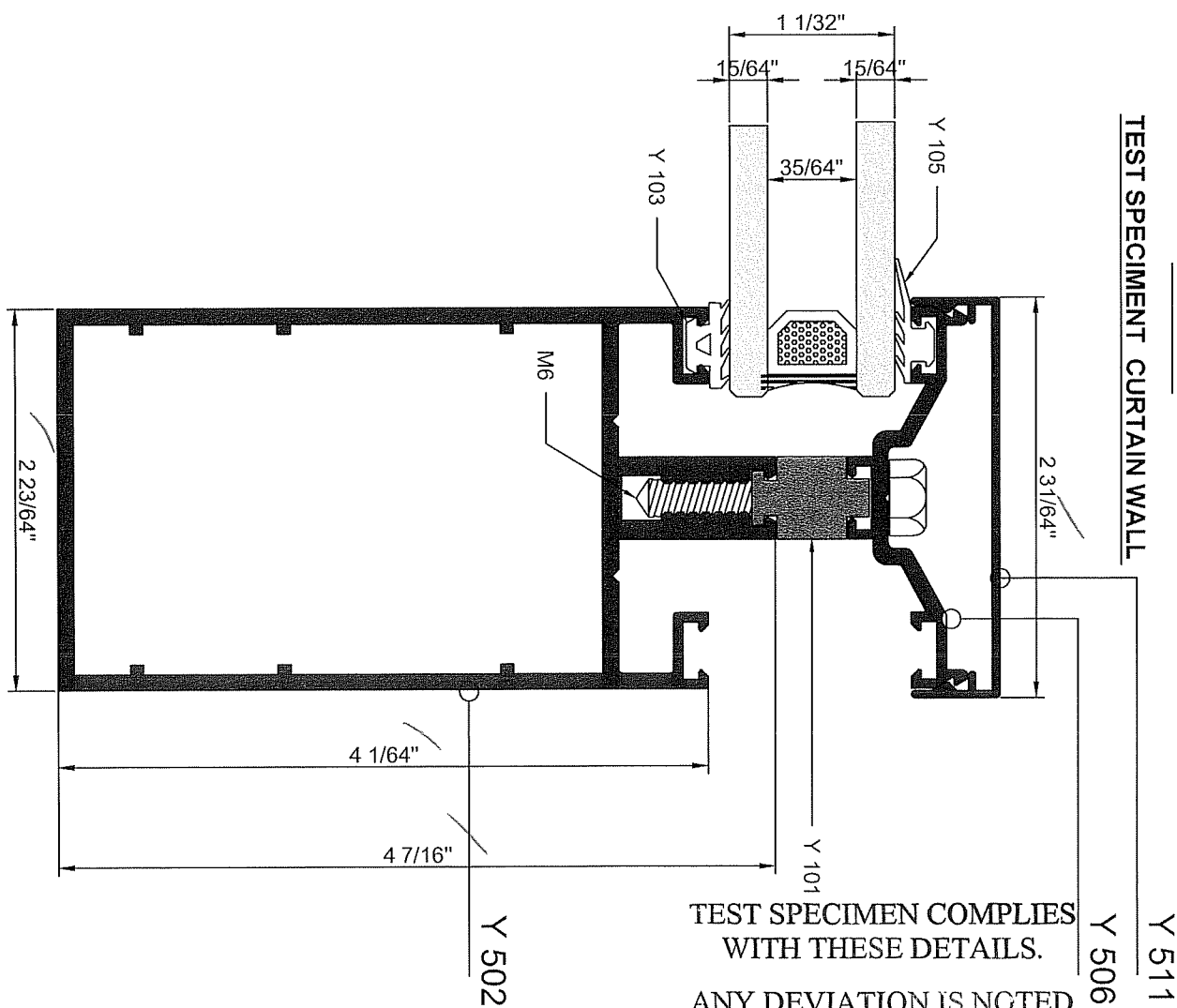
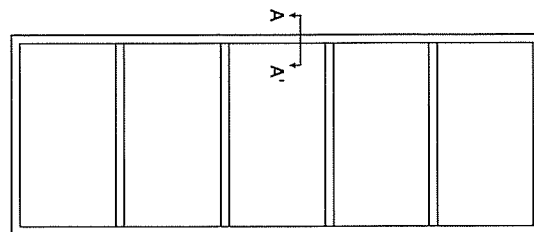
REPORT NO. NCTL-110- 19251-5

TEST DATE: 7-18-16

HORIZONTAL SECTION A-A'

KA. 1:1

TEST SPECIMENT CURTAIN WALL



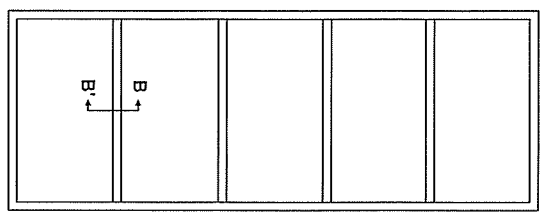
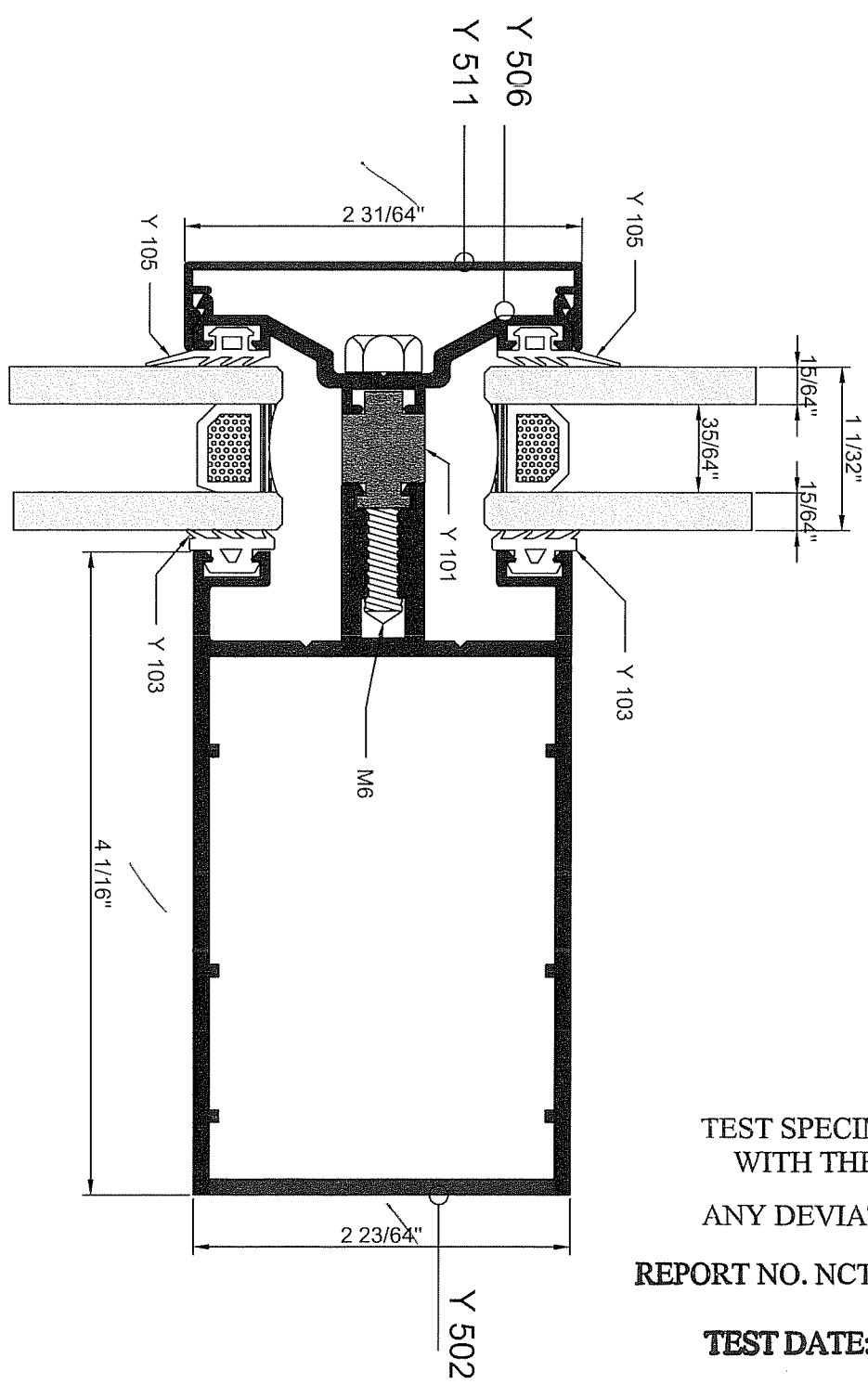
REPORT NO. NCTL-110- 18251-5

TEST DATE: 7-18-16

VERTICAL L SECTION B-B'

KA. 1:1

TEST SPECIMEN CURTAIN WALL



TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

REPORT NO. NCTL-110- 19257-5

TEST DATE: 7-18-16