TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

TEST REPORT SUMMARY

AIR - WATER – STRUCTURAL – THERMAL CYCLING

24650 Series Storefront

PRODUCT **24650 Series Storefront**

2” x 6-1/2” (non-thermal, single thermal barrier, dual thermal barrier)

TEST RESULTS

Air Infiltration	*ASTM E283*	**0.06 cfm/ft^2 @ 6.24 psf**
Static Pressure Water Resistance	*ASTM E331*	**12 psf**
Dynamic Pressure Water Resistance	*AAMA 501.1*	**12 psf**
Structural – Design Load	*AAMA E330*	**30 psf**
Interstory Horizontal Displacement	*AAMA 501.4*	**+/- 1.68”**
Thermal Cycling	*AAMA 501.5*	**-20 ^{O}F to 180 ^{O}F**
Structural – Overload	*AAMA E330*	**45 psf**
Seismic Movement	*AAMA 501.4*	**+/- 2.4”**

TEST LAB

INTERTEK – ATI

West Palm Beach, FL 33407

Report Number	F2003.03-450-32
Test Date	01/14/16
Report Date	02/10/16

Reference ATI report #F2003.03-450-32, dated 02/10/2016, for complete test specimen description and data.

Tubelite Representative: _____ (sign) 10/26/2016 (date)

Tim Fookes - Director of Engineering (title)

TEST METHODS

Air Infiltration: *ASTM E283-04, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*. Testing was conducted at 6.24 psf positive static air pressure difference.

Static Pressure Water Resistance: ASTM E331-00, *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, Curtain Walls by Uniform Static Air Pressure Difference.* Testing was conducted at 12 psf positive static air pressure difference for 15 minute duration. Water applied at a minimum rate of 5 gal/ft^2/hr.

Dynamic Pressure Water Resistance: AAMA 501.1-05, *Standard Test Method for Water Penetration of Windows, Curtain Walls, and Doors Using Dynamic Pressure.* Testing was conducted with a dynamic pressure equivalent of 12 psf for a 15 minute duration. Water applied at a minimum rate of 5 gal/ft^2/hr.

Structural Performance: ASTM E330-14, *Standard Test Method for Structural Performance of Exterior Windows, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.* Testing was conducted at +/- 30 psf design loads and +/- 45 psf overloads. Allowable Criteria: Design - L/175 deflection normal to wall plane for clear spans up to 13'-6". Overload – net permanent set shall not exceed 0.2% of the clear span.

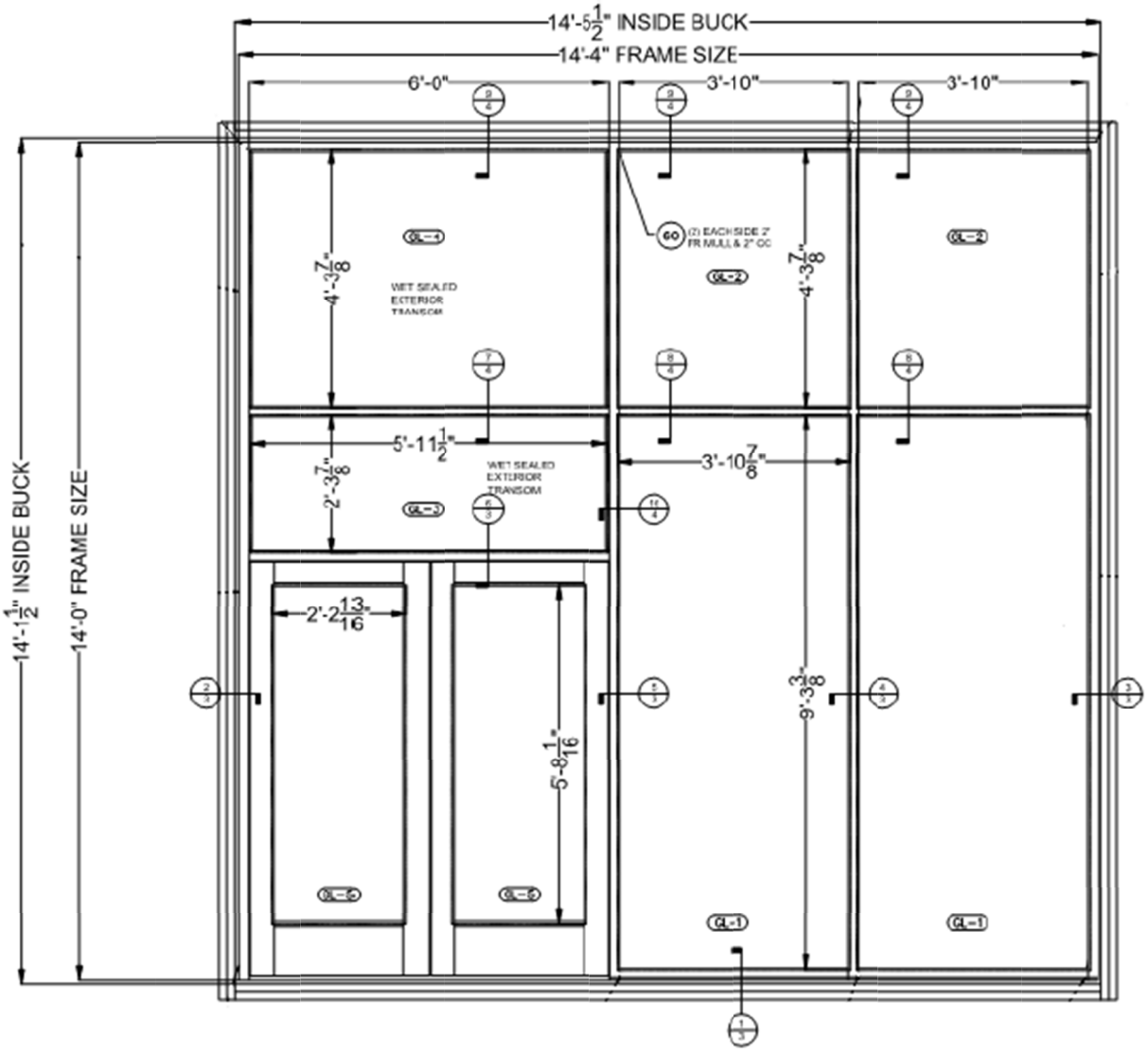
Thermal Cycling: AAMA 501.5**,** *Standard Test Method for Thermal Cycling of Exterior Walls.* Testing was conducted with three thermal cycles. Each cycle maintained for two hours after establishing the following temperatures and consist of:

a. Low exterior temperature of -20 ^{o}F.
b. High exterior temperature of 180 ^{o}F.
c. Interior temperature maintained between 70 ^{o}F and 80 ^{o}F.
d. System components shall withstand thermal movements without buckling, distortion, cracking, failure or glass, and failure of joint seals or undue stress on the finished surfaces, materials, or fixing assemblies.

Interstory Horizontal Displacement: AAMA 501.4-09, *Recommended Static Test Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drifts*. Testing was conducted with three complete cycles in the horizontal direction at floor simulation. Horizontal movement is 1.68" to the left, then back to zero, 1.68" to the right then back to zero. Allowable criteria: There shall be no failure or gross permanent distortion of anchors, frame, glass, or panels. Structural silicone shall not experience adhesive or cohesive failure along any glass, frame, or panel edge. Glazing gaskets may not disengage and weather seals may not fail.

Seismic Movement: AAMA 501.4-09. *Recommended Static Test Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Inducted Interstory Drifts.* Testing conducted with three complete cycles in the horizontal direction parallel to the plane of the wall. Parallel horizontal movement will be 2.4" left, back to zero, 2.4" right and back to zero (one cycle). Allowable criteria: There shall be no glass breakage, permanent damage to frame members, or anchors.

TEST SPECIMEN



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