PROJECT: WASHINGTON NATIONAL AIRPORT
ARLINGTON, VA

DATE: AUGUST 08, 1995

Air infiltration test per ASTM E283

Static water penetration test per ASTM E331

Structural performance test at design pressure per ASTM E330

SMITH-EMERY COMPANY
The Full Service Independent Testing Laboratory, Established 1904

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REVSED REPORT
File No.: 63724
Laboratory No.: 95-E-63

August 22, 1995

CLIENT: METCO SPECIALTIES INC.
1715 West 135th St.
Gardena, Ca 90249

PROJECT: Washington National Airport

SUBJECT: ASTM E283, E331,E330

REPORT OF TESTS

Date of Tests: 8/9,10,14/95

Tests Performed by: Dana Nelson Rob Benjamin

Observers: Morris Saraie, Chris W. Olsen

Description of Mock-up Skylight

NOTE : The units must be installed in the field in the identical condition as the mockup unit which was tested. Otherwise, the tests will not be valid.

AIR INFILTRATION TEST (Ref: ASTM E 283)

Test Procedure
The window system was covered with polyethylene sheeting. A positive pressure of 6.24 psf was developed. The air flow, required to maintain this pressure was recorded. This number represents the air flow through the chamber. The sheeting was removed and the positive pressure of 6.24 psf was reestablished. The air flow was recorded.

NOTE: The difference between the air flow with and without the sheeting represents the air flow through the window system.

Acceptance Criteria
The maximum amount of air infiltration is 0.06 per sq. ft of window area. Maximum flow = 6 cfm

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Initial Reading = 35 cfm
Gross Reading = 44 cfm
Net = 9 cfm

Remedial caulking was performed to all uncaulked metal to metal joints at rafter ends. A second air infiltration test was performed.

Test Results Passed
Initial Reading = 30 cfm
Gross Reading = 32 cfm
Net = 2 cfm

STATIC WATER PENETRATION TEST (Ref. ASTM E 331)

Test Procedure
A positive test pressure of 6.24 psf was established. Water was applied to the exterior of the skylight at a rate of 5 gph per sq. ft for a period of fifteen minutes. During this period, the interior of the mock-up was inspected for water penetration.

Acceptance Criteria
No water infiltration is allowed.
NOTE: AAMA 501-94 "For these specifications water leakage is defined as any uncontrolled water that appears on any normally exposed interior surfaces that is not contained or drained back to the exterior, or that can cause damage to adjacent materials or finishes. Water contained within drained flashings, gutters and sills is not considered water leakage. The collection of up to one half ounce of water (15 ml) in a 15 minute test period on top of an interior stop or stool integral with the wall system shall not be considered water leakage."

Test Results Failure
Water penetration was observed entering at glass to rafter to #115 extr alum sill intersection. Remedial caulking was performed (At lower end of Alum # 41 cap and at the top
intersection between Alum # 41 cap and .040 comp ring cap.)
A second water test was performed.

Test Results Failure
Water penetration was observed entering at glass to rafter to #115 extr alum sill intersection. Remedial caulking was performed (Caulking was applied between glass and Alum # 41 cap approximately 6" from top down, and 6" up from bottom).

A third water test was performed.
Test Results Failure

Water penetration was observed entering at glass to rafter to #115 extr alum sill intersection. Remedial work was performed, (caulking was removed from condensation track on each side of rafter (interior) to allow water that entered the system to drain out, and the exterior caulking on the bottom side of rafter to radius ring was cut with a razor knife to allow water to drain from rafter).

A fourth water test was performed.
Test Results Failure

Water penetration was observed entering at glass to rafter to #115 extr alum sill intersection. Remedial caulking was performed (Caulking was applied between glass and Alum # 41 cap approximately from top down to bottom typical at each Alum # 41 cap).

A fifth water test was performed.
Test Results Passed no visible water penetration was observed.

STRUCTURAL PERFORMANCE TEST AT DESIGN PRESSURE
(Ref. ASTM E 330)

Test Procedure POSITIVE LOADING
A positive pressure of 10 psf preload was applied and maintained for 10 seconds, then released. A positive pressure of 20 psf wind load was applied and maintained for 10 seconds The deflections were measured and the pressure was released. After a recovery period of not more than 5 min. zero load readings were taken to determine permanent deformation.

Test Procedure NEGATIVE LOADING
A negative pressure of 10 psf preload was applied and maintained for 10 seconds then released. A negative pressure of 20 psf wind load was applied and maintained for 10 seconds. The deflections were measured and the pressure was released. After a recovery period of not more than 5 min. zero load readings were taken to determine permanent deformation.

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Test Procedure POSITIVE LOADING
A positive pressure of 15 psf preload was applied and maintained for 10 seconds then released. A positive pressure of 30 psf snow and live was applied and maintained for 10 seconds The deflections were measured and the pressure was released. After a recovery period of not more than 5 min. a zero load readings were taken to determine permanent deformation.

Test Results

Load	Deflection at load	Permanent set	Max. Allow. 0.776"
Pos. 20 psf.	+0.183"	+0.025"	Pass
Neg. 20 psf.	-0.397"	-0.063"	Pass
Pos. 30 psf.	+0.366"	+0.073"	Pass

Respectfully submitted,
SMITH-EMERY COMPANY

James E. Parker
Registered Civil Engineer #41507
Registration Expires 12/31/95

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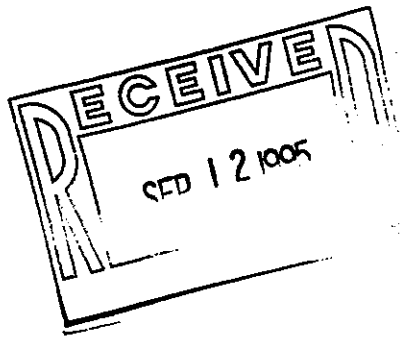
REVISED REPORT

File No.: 63724
Laboratory No.: 95-E-71

September 5, 1995



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1715 West 135th St.
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PROJECT: Washington National Airport

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REPORT OF TESTS

Date of Tests: 8/28/95

Tests Performed by: Dana Nelson Rob Benjamin

Observers: Morris Saraie, Andre Saraie

Description of Mock-up Skylight

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The following changes were made to the skylight and then retested for water penetration.

(1) The caulking between the # 41 extruded aluminum cap and glass was removed.
(2) Remedial caulking was performed under # 41 extruded aluminum cap fold down tabs see detail #5 sheet 2 for location.
(3) Weep tubes with baffles were installed in # 115 extruded aluminum compression ring at low point between each rafter typical 8 locations total of 16 weep tubes.

Test Results No visible water penetration observed.

Respectfully submitted,
SMITH-EMERY COMPANY

James E. Parker
Registered Civil Engineer #41507
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