NATIONAL CERTIFIED TESTING LABORATORIES

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17406 • TELEPHONE (717) 846-1200
FAX (717) 767-4100
www.nctlinc.com

AAMA/WDMA/CSA 101/I.S.2/A440-11
AAMA/WDMA/CSA 101/I.S.2/A440-08

TEST REPORT SUMMARY

Rendered to:

GLASS FLOORING SYSTEMS INC.
10 Leslie Court
Whippany, NJ 07981

PRODUCT TYPE: SkyFloor™ Walkable Skylight

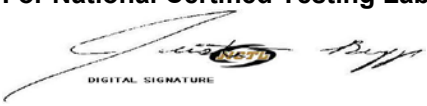
SERIES/ MODEL: FA-TB 4x4

Title	Summary of Results
Primary Product Designator AAMA/WDMA/CSA 101/I.S.2/A440-11 AAMA/WDMA/CSA 101/I.S.2/A440-08 AAMA/WDMA/CSA 101/I.S.2/A440-05	SKG-PG120: Size tested 1216 x 1216 mm (~48 x 48 in) Class CW-PG120: Size tested 1216 x 1216 mm (48 x 48 in)- SKG
Positive Design Pressure	+5750 Pa (+120.09 psf)
Negative Design Pressure	-6710 Pa (-140.14 psf) (11) -5750 Pa (-120.09 psf) (08)
Air Infiltration	0.1 L/s/m^2 (<0.01 cfm/ft^2)
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)
Uniform Load Structural Test Pressure	±11510 Pa (±240.39 psf)

Test Completed: 08/02/16

Reference must be made to Report No. NCTL-110-19383-1 dated 08/19/16 for complete test specimen description and data.

For National Certified Testing Laboratories



Justin L. Bupp
Laboratory Manager

NATIONAL CERTIFIED TESTING LABORATORIES

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AAMA/WDMA/CSA 101/I.S.2/A440-08

STRUCTURAL TEST REPORT

NCTL-110-19383-1

REPORT TO:
GLASS FLOORING SYSTEMS INC.
10 LESLIE COURT
WHIPPANY, NJ 07981

REPORT NUMBER: NCTL-110-19383-1
REPORT DATE: 08/19/16

PRODUCT:
SKYFLOOR™ WALKABLE SKYLIGHT

SERIES/ MODEL:
FA-TB 4X4

Report Number	NCTL-110-19383-1
Report Date	08/19/16
Report To	Glass Flooring Systems, Inc. 10 Leslie Court Whippany, NJ 07981
Date Testing Started **Date Testing Completed**	07/28/16 08/02/16
Specification	AAMA/WDMA/CSA 101/I.S.2/A440-11 NAFS 2011 - North American Fenestration Standard/Specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-08 NAFS North American Fenestration Standard/Specification for windows, doors, and skylights
Performance Results	AAMA/WDMA/CSA 101/I.S.2/A440-11 SKG-PG120: Size tested 1216 x 1216 mm (~48 x 48 in) AAMA/WDMA/CSA 101/I.S.2/A440-08 Class CW-PG120: Size tested 1216 x 1216 mm (48 x 48 in)-SKG

Description of Specimen Tested

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

Model/ Series	SkyFloor™ Walkable Skylight FA-TB 4x4
Configuration	Fixed Skylight
Flange Size	1365 mm x 1365 mm (53.75” x 53.75”)
Frame Size	1216 mm x 1216 mm (47.875” x 47.875”)
Viewing Area	1054 mm x 1054 mm (41.5” x 41.5”)
Frame Type	Extruded aluminum with poured urethane thermal breaks
Joint Construction	Frame Mitered, welded
Glazing Components	
Overall	50.67 mm (1.995”) nominal
Glass Thickness	(1) Lite of 31.62 mm (1.245”) nominal laminated glass to the exterior and (1) lite of 7.87 mm (0.310”) laminated glass to the interior
Laminated Glass	Interior (3) Lites of 9.53 mm (0.375”) nominal tempered glass and each lite was separated by (1) 1.52 mm (0.060”) PVB interlayer
Laminated Glass (cont’d.)	Exterior (2) Lites of 3 mm (0.125”) nominal tempered glass separated by a 0.76 mm (0.030”) PVB interlayer
Spacer Type/Size	12.7 mm (0.50”) Desiccant-filled aluminum spacer (Type A1-D)
Glazing System	Exterior glazed with a structural silicone back-fill

Weatherstrip	No weatherseals employed
Operating Hardware	No operating hardware employed
Auxiliary	
Type	Extruded aluminum adjustable cap
Location	Exterior frame perimeter
Type	Aluminum block
Location	Glazing channel perimeter
Reinforcement	No reinforcement employed
Weep Description	No apparent weeps employed
Interior/ Exterior Surface Finish	Painted aluminum
Sealant	No apparent sealant applied
Insect Screen	No screen employed
Installation Method	The skylight was installed on the test chamber constructed of 19.05 mm (0.75") plywood and standard 51 mm x 152 mm (2" x 6") spruce-pine-fir studs and plates. The skylight was fastened to the top plate with (1) 9.53 mm (0.375") x 51 mm (2") lag bolt with washer at each pre-punched flange hole. The exterior perimeter was sealed with silicone sealant.

Test Results - AAMA/WDMA/CSA 101/I.S.2/A440-2011 & 2008

Paragraph	Test
5.3.2.1/ 9.3.2	Air Leakage Resistance ASTM E283-04(12)

The tested specimen meets or exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-2011 and 2008 for air infiltration at 75 Pa (1.6 psf).

Maximum Allowable	= 1.5 L/s/m^2 (0.3 cfm/ft^2)
Extraneous Air Leakage	= 0.5 L/s (1.1 cfm)
Total Air Leakage	= 0.5 L/s (1.1 cfm)
Air Infiltration Rate	= 0.1 L/s/m^2 (<0.01 cfm/ft^2)

Paragraph	Test
5.3.3/ 9.3.3	Water Penetration Resistance ASTM E547-00(09)

3.4 L/ (min• m²) (5.0 gph/ft²)

No Leakage after 4 cycles of 5 minutes at 580 Pa (12.11 psf)

NOTE: Tested without insect screen

Paragraph	Test
5.3.4.2/ 9.3.4.2	Uniform Load Deflection at Design Pressure ASTM E330-14

No damage after positive	5750 Pa (120.09 psf) held for 60 seconds (08)
No damage after negative	5750 Pa (120.09 psf) held for 60 seconds (08)
No damage after negative	6710 Pa (140.14 psf) held for 10 seconds (11)
Measured Deflection Positive	= 0.33 mm (0.012 inches) (08)
Measured Deflection Negative	= 0.03 mm (0.001 inches) (08)
Measured Deflection Negative	= 0.08 mm (0.003 inches) (11)
Maximum Allowed (L/175)	= 6.96 mm (0.274 inches)

NOTE: Deflection measurements held for 10 seconds per NAFS 2011 and 60 seconds per NAFS 2008

Paragraph	Test
5.3.4.3/ 9.3.4.3	Uniform Load Structural Test ASTM E330-14

No damage after positive	11510 Pa (240.09 psf) held for 60 seconds
No damage after negative	11510 Pa (240.09 psf) held for 10 or 60 seconds
Measured Permanent Set Positive	= 0.05 mm (0.002 inches)
Measured Permanent Set Negative	= 0.10 mm (0.004 inches)
Maximum Allowed (0.3%)	= 2.90 mm (0.114 inches)

NOTE: Deflection and Permanent Set measurements taken on the side over a 1216 mm (47.875") span.

NOTE: Permanent set measurements held for 10 seconds per NAFS 2011 and 60 seconds per NAFS 2008

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. It is the assertion of this laboratory that any film employed during testing does not affect measurement values. 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. The results in this report are actual tested values and are applicable to the specimen tested only, using the components and construction methods described herein.

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 per applicable requirements 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. Tests were performed in the order set forth by the applicable standard or specification. This report is the joint property of National Certified Testing Laboratories Inc. and the Client to whom it is issued. Permission to reproduce this report by anyone other than National Certified Testing Laboratories Inc and the Client must be granted in writing by both of the above parties. This report may not be reproduced, except its entirety, without the written consent of NCTL.

National Certified Testing Laboratories

Justin L. Bupp
Laboratory Manager

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

JLB/ dro
Attachments
Appendix A – Revision Summary
Appendix B – Drawings

Appendix A

Revision Log

Identification	Date	Page & Revision
Original Issue	08/19/16	Not Applicable

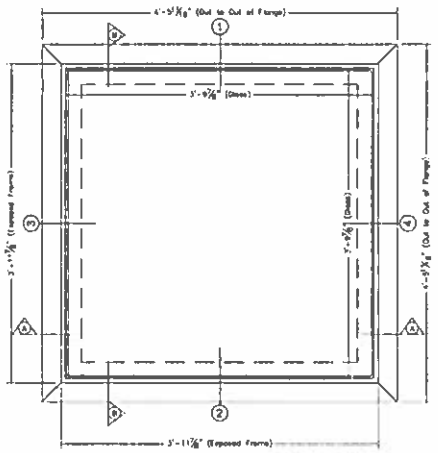
Appendix B

Drawings

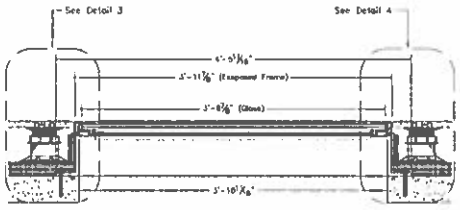
Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were reviewed (as submitted) for Product Verification. Detailed assembly drawings showing wall thicknesses of all members, corner construction and hardware application are on file and have been compared to the test sample submitted.
(Reference: NCTL-110-19383-1)

See Attached Documentation;
any deviations noted.

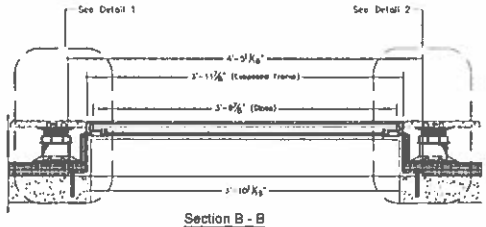
Note: The above referenced component drawings (if applicable) along with representative sections of the test specimen will be retained by NCTL per applicable retention requirements. This testing facility assumes that all information provided by the client is accurate.



Elevation



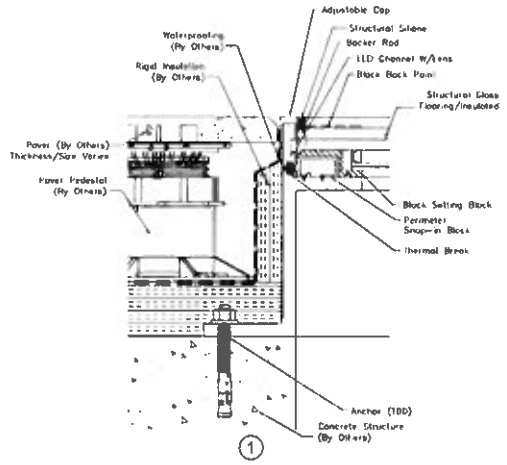
Section A - A

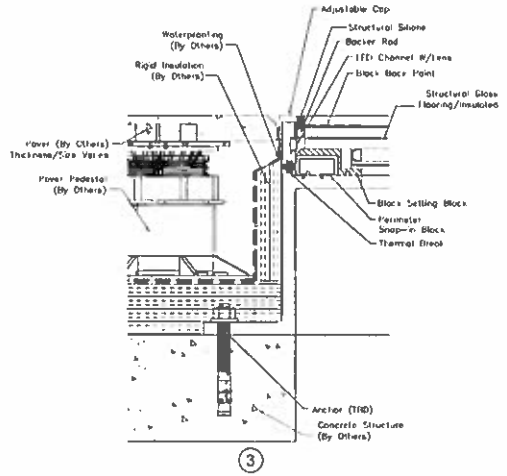


Section B - B

GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING



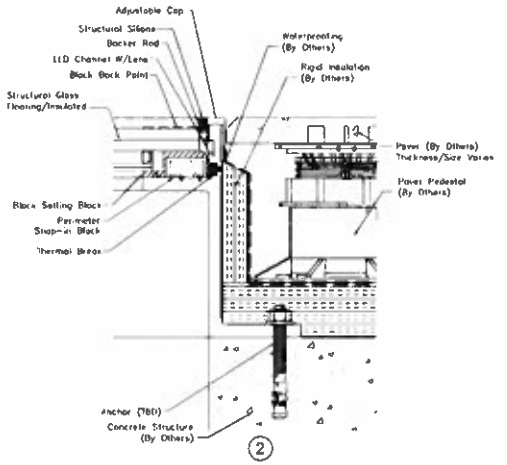


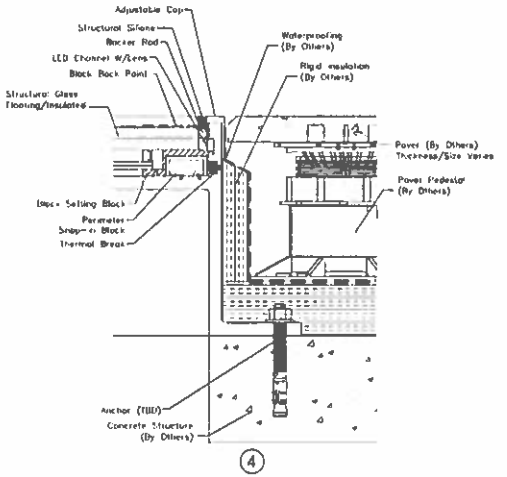
TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

REPORT NO. NCTL-110- 15383-1

TEST DATE: 8-2-16





ARCHITECT

CONTRACTOR

Specifications

Frame: Painted Aluminum 6063-T6

Glazing 3/8" Top Layer - Clear Tempered
0.060 PVB Interlayer
3/8" Middle layer - Clear Tempered
0.060 PVB Interlayer
3/8" Bottom layer - Clear Tempered with
1/8" Clear Tempered with
0.030 PVB Interlayer
1/8" Clear Tempered

MANUFACTURER: Glass Flooring Systems, Inc.
10 Leslie Court
Whippany, NJ 07981

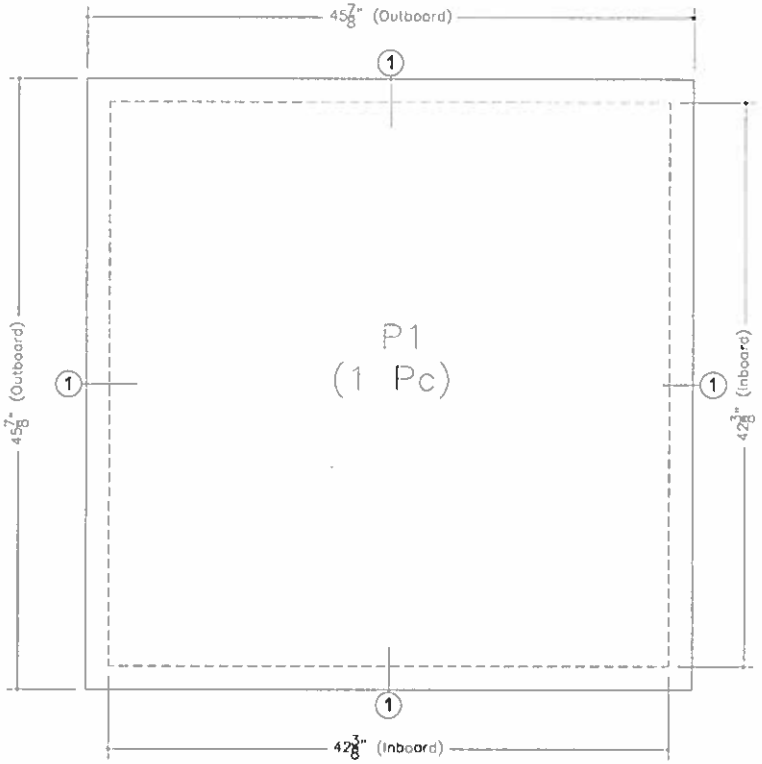
PROJECT
NCTL Testing of the Glass Flooring System's
(Skyfloor) 48" x 48" Unit
Air & Water Infiltration Test

SCALE: 1 : 1
ALL DIMENSIONS ARE VIEWED FROM EXTERIOR

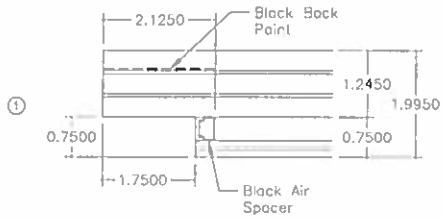
DRAWN	DATE	CHK'D
JDM	8/19/16	

SHEET 9 OF 12

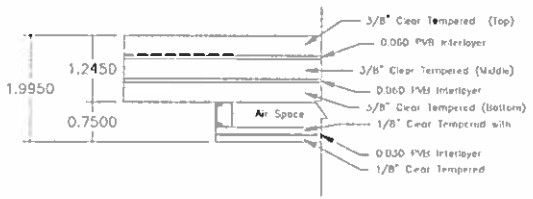
Glass Size (Outside View)

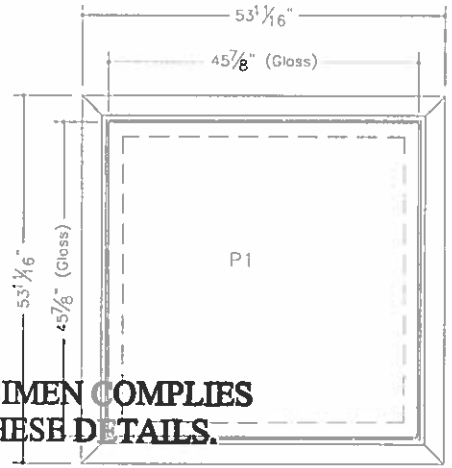


Glass Assembly Details



Glass Make-up Detail





* Outboard Glass Sizes
  P1 = 45 7/8" x 45 7/8"

* Inboard Glass Sizes
  P1 = 42 3/8" x 42 3/8"

TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

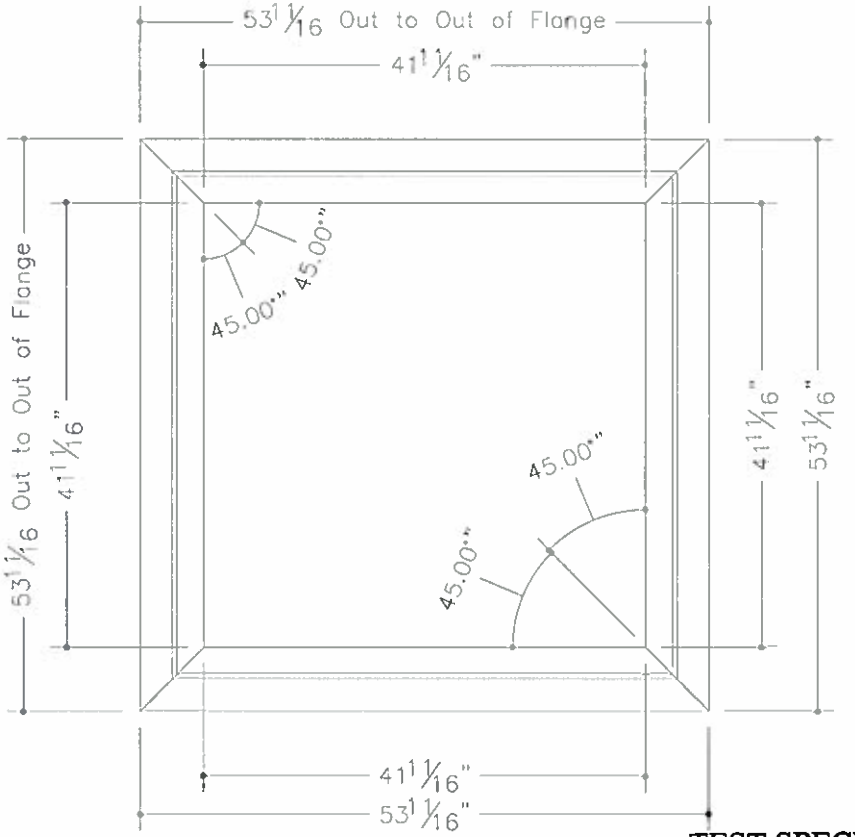
GLASS FLOORING SYSTEMS INC

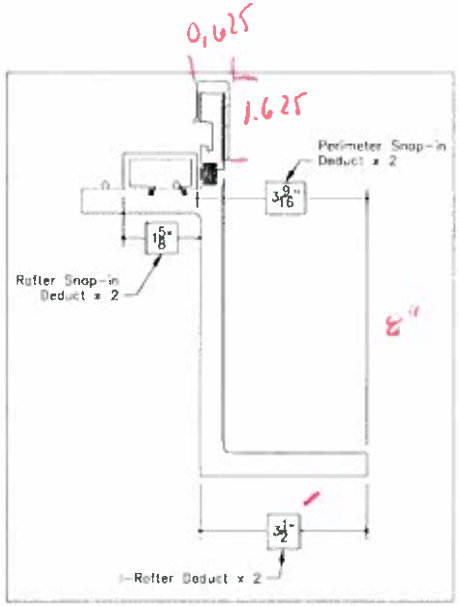
MULTIPLE PATENTS PENDING

Specifications		ARCHITECT	
Frame: Painted Aluminum 6063-T6		CONTRACTOR	
Glazing: 3/8" Top Layer - Clear Tempered 0.060 PVB Interlayer 3/8" Middle layer - Clear Tempered 0.060 PVB Interlayer 3/8" Bottom layer - Clear Tempered 1/8" Clear Tempered with 0.030 PVB Interlayer 1/8" Clear Tempered		MANUFACTURER: Glass Flooring Systems, Inc. 10 Leslie Court Whippany, NJ 07981	
		PROJECT: NCTL Testing of the Glass Flooring System's (Skyfloor) 48" x 48" Unit Air & Water Infiltration Test	
		SCALE: 1/8 ALL ELEVATIONS ARE VIEWED FROM EXTERIOR	
		DRWN: JMF; DATE: 6/29/16; JOB NO.: NCTL 48X48 Test Unit	SHEET: 1

REPORT NO. NCTL-110-16787-1

TEST DATE: 8-2-16





TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

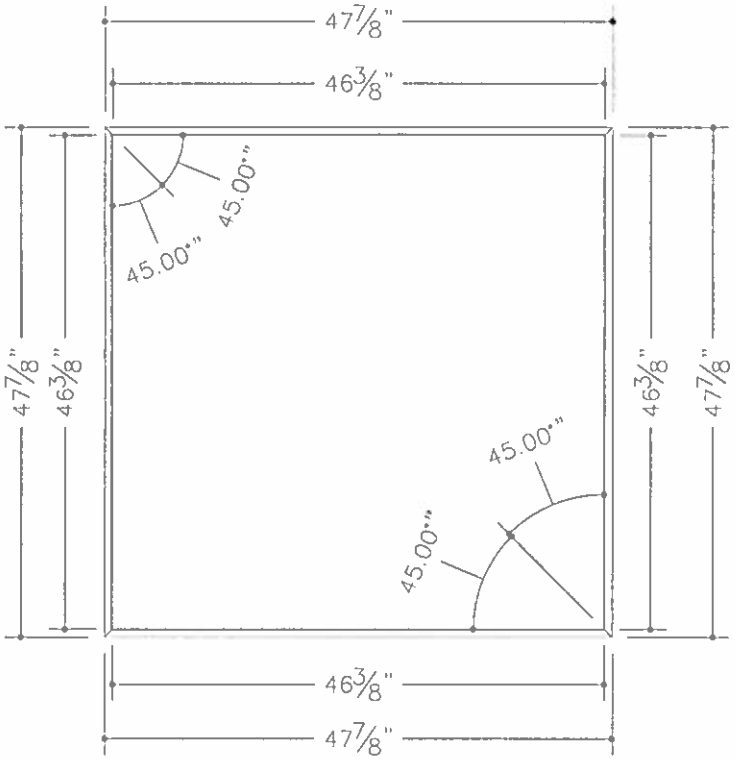
REPORT NO. NCTL-110- 193E-1

TEST DATE: 8-2-16

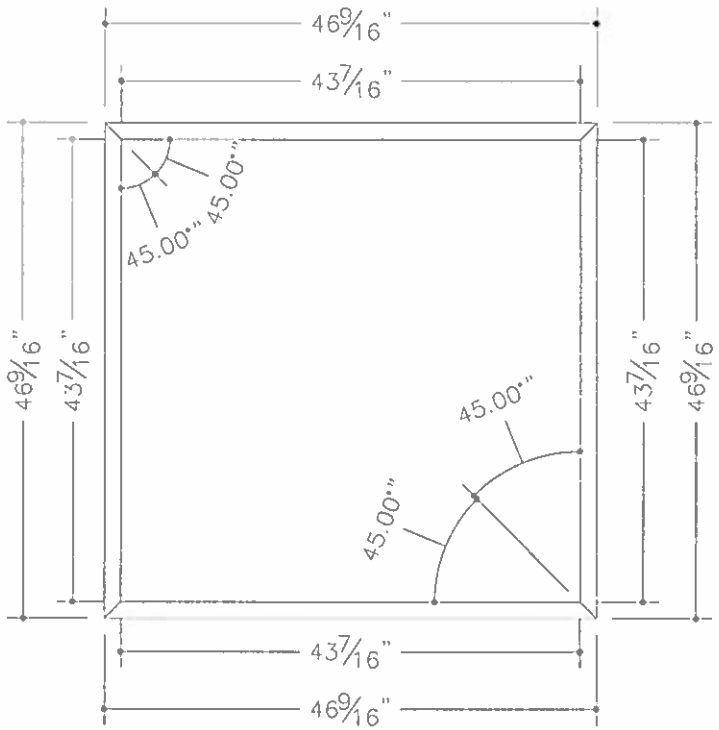
GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING

Specifications	
Frame: Painted Aluminum 6063-T6	
Glazing: 3/8" Top Layer - Clear Tempered 0.060 PVB Interlayer 3/8" Middle layer - Clear Tempered 0.060 PVB Interlayer 3/8" Bottom layer - Clear Tempered 1/8" Clear Tempered with 0.030 PVB Interlayer 1/8" Clear Tempered	ARCHITECT CONTRACTOR MANUFACTURER: Glass Flooring Systems, Inc. 10 Leslie Court Whippany, NJ 07981 PROJECT: NCTL Testing of the Glass Flooring System's (Skyfloor) 48" x 48" Unit Air & Water Infiltration Test SCALE: NTS ALL DIMENSIONS ARE GIVEN FROM EXTERIOR



Adjustable Cap



Perimeter Snap--in

Proof Of Size:
(Perimeter O.A. Flange to Flange-3.5625-3.5625=Perimeter Snap-In)
(4) Long — 53.6875-3.5625-3.5625 = 46 9/16" (3'-10 9/16")

TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED.

REPORT NO. NCTL-110- 14383-1

TEST DATE: 8-2-16

GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING

Specifications

Frame Painted Aluminum 6063-T6

Glazing 3/8" Top Layer - Clear Tempered
0.060 PVB Interlayer
3/8" Middle layer - Clear Tempered
0.060 PVB Interlayer
3/8" Bottom layer - Clear Tempered
1/8" Clear Tempered with
0.030 PVB Interlayer
1/8" Clear Tempered

ARCHITECT

CONTRACTOR

MANUFACTURER Glass Flooring Systems, Inc.
10 Leake Court
Whippany, NJ 07981

PROJECT
NCTL Testing of the Glass Flooring System's
(Skyfloor) 46" x 46" Unit
Air & Water Infiltration Test

SCALE NTS
ALL DIMENSIONS ARE VIEWED FROM EXTERIOR

DRAWN | DATE 8/29/16 | ENG. NO. | SHEET M2