

## **TEST REPORT**

# **Report No.**: C1940.01-109-44

#### **Rendered to**:

# SOLAR CLAM-P Philadelphia, Pennsylvania

#### **PRODUCT TYPE**: Solar Panel Mounting System

Title	Summary of Results
Design Pressure	-5027 Pa (-105.00 psf)
Uniform Load Structural Test Pressure	-7900 Pa (-165.00 psf)

# This report contains in its entirety:

Cover Page:1 pageReport Body:4 pagesSketch:1 pagePhotograph:1 pageDrawings:3 pages



<b>1.0 Report Issued To</b> :	Solar Clam-p 516 Lindhurst Street Philadelphia, Pennsylvania 19116
2.0 Test Laboratory:	Architectural Testing, Inc. 130 Derry Court York, Pennsylvania 17406-8405 717-764-7700

#### **3.0 Project Summary**:

- 3.1 Product Type: Solar Panel Mounting System
- **3.2 Compliance Statement**: Results obtained are tested values and were secured by using the designated test method(s). Test specimen description and results are reported herein.
- **3.3 Test Date**: 08/29/2012
- **3.4 Test Record Retention End Date**: All test records for this report will be retained until October 3, 2016.
- **3.5 Test Location**: Architectural Testing, Inc. test facility in York, Pennsylvania.
- **3.6 Test Sample Source**: The test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the report completion date.
- **3.7 Drawing Reference**: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

#### 3.8 List of Official Observers:

<u>Name</u>

**Company** 

Samuel ParkSolar Clam-pMichael D. Stremmel, P.E.Architectural Testing, Inc.Emily C. RileyArchitectural Testing, Inc.

### 4.0 Test Method(s):

ASTM E 330-02, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.



#### 5.0 Test Specimen Description:

#### 5.1 Product Sizes:

Overall Area:	Wi	dth	Height		
1.6 m <sup>2</sup> (17.6 ft <sup>2</sup> )	millimeters	inches	millimeters	inches	
Overall size	1653	65-1/16	992	39-1/16	

#### 5.2 Solar Panel Construction:

Panel Member	Material	Description		
Stiles and rails	Aluminum	Extruded		

	Joinery Type	Detail
All corners	Mitered	Keyed and staked

**5.3 Glazing**: No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.

Glass Type Glazing		Glazing Method		
Monolithic	1/8" thick clear	Channel glazed and secured with a		
	tempered glass	bead of silicone		

Location	Quantity	Dayligl	Glass	
Location	Quantity	millimeters	inches	Bite
Daylight opening	1	1632 x 992	64-1/4 x 39-1/16	1/4"

#### 6.0 Installation:

**6.1 Test Buck Construction**: The solar panel was installed onto a Spruce-Pine-Fir wood buck. The test buck measured 8' wide 4' high and was constructed of #2 Spruce-Pine-Fir nominal 2x6 lumber. Two studs were spaced 16" on center (3 spans) and were attached to the top and bottom plates with 3" long drywall screws. A sheet of nominal 1/2" thick plywood, with three 4" diameter holes to allow pressure to the specimen, was secured to the studs with #8 x 1-5/8" long drywall screws. A plastic film was loosely secured over the plywood on the interior side of the specimen to enable attainment of negative pressure.



### **6.0 Installation**: (Continued)

#### 6.2 Solar Panel Installation:

Location	Anchor Description	Anchor Location		
Danal rails	Two-piece extruded aluminum	Solar panel rails, 16" from each		
Pallel Talls	panel clamp	end		
Danal rails	Extruded aluminum mounting	Located at each panel clamp,		
Pallel Talls	bracket	secured to clamp and wood buck		
Mounting	#5/16 x 6" long hanger bolt with	One bolt through each bracket		
bracket	flange locknut and washer	into wood buck		
Danal damn	#1/4-20 x 2-1/2" long through	Two bolts per clamp, securing		
Panel clamp	bolt and lock washer	two-pieces around panel		
Panel clamp	#1/4-20 x 4-1/4" long through	One bolt through each clamp into		
	bolt and lock washer	mounting bracket		

**7.0 Test Results**: The temperature during testing was 28°C (82°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Uniform Load Deflection,			
per ASTM E 330			
taken at the panel rail between			
mounting locations			
-5506 Pa (-105.00 psf)	2.8 mm (0.11")	Report Only	1, 2, 4
Uniform Load Structural,			
per ASTM E 330			
taken at the panel rail between			
mounting locations			
-7900 Pa (-165.00 psf)	<0.3 mm (<0.01")	Report Only	1, 2, 3, 4

*General Note*: All testing was performed in accordance with the referenced standard(s).

Note 1: Loads were held for 10 seconds.

*Note 2: Tape and film were to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.* 

Note 3: At -170 psf, the panel deglazed, glazing broke, and bottom left panel clamp released.

*Note 4: Reference Sketch #1 for indicator locations.* 



Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Emily C. Riley Technician Tyler Westerling, P.E. Senior Project Engineer

ECR:vlm

Attachments (pages): This report is complete only when all attachments listed are included. Appendix-A: Sketch (1) Appendix-B: Photograph (1) Appendix-C: Drawings (3)

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Appendix A

Sketch

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PROJECT NO.	PROJECT NAME: Solo	ar Panel Claming System	DRAW	VING	DWG. BY: SHEET
109-44	CLIENT: Solar Clam	-р	Architectural Testing	Sketch #1 — Indicator Loc	ations Date: 10/2/12 1



# Appendix B

Photograph



Solar Clam-p Solar Panel Mounting System



Appendix C

Drawings



1. Location and number of clamps to be established after project-specific design

<u>Contents</u>

er /	Layout		Sheet	1/3
tions	and	Details	Sheet	2/3
poner	nts		Sheet	3/3

		Solar Cla	m-p				
5 Lindenhu	urst St.	Philadelphia, PA 19	>116	215-8	892.	-5600	2
		Solar Clam Cover / Lay	-p vout				
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tem	Material	Quantity				
x 3″ Bolt	304 SS	1				
2-1/4″ Bolt	304 SS	2				
Hanger Bolt	304 SS	1				
lse	6061-T6	1				
Clamp	6061-T6	1				
m Clamp	6061-T6	1				
k Washer	304 SS	3				
Hex Nuts	304 SS	2				
ing Washer	304 SS / Rubber	1				
Solar Clam-p 6 Lindenhurst St. Philadelphia, PA 19116 215-892-5600						
Sc	olar Clam-p components					

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