

**MIAMI-DADE COUNTY
TEST REPORT**

Rendered to:

BARRETTE OUTDOOR LIVING

PRODUCT: 6 ft by 6 ft *Cameron* and *Halifax* Fence Systems

This report contains in its entirety:

Cover Page: 1 page
Table of Contents: 1 page
Report Body: 8 pages
Drawings: 2 pages
Photographs: 3 pages

Report No.: A4014.01-119-18
Test Dates: 03/18/09
And: 11/02/09
Report Date: 09/21/10
Expiration Date: 03/18/19
Miami-Dade County Notification Nos.: ATI09044, ATI09012
Revision 1: 09/23/10



Architectural Testing

**MIAMI-DADE COUNTY
TEST REPORT**

A4014.01-119-18

Original Issue: September 21, 2010

Revision 1: September 23, 2010

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MIAMI-DADE COUNTY TEST REPORT

Rendered to:

BARRETTE OUTDOOR LIVING
740 North Main Street
Bulls Gap, Tennessee 37711

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1.0 General Information

1.1 Product

6 ft by 6 ft *Cameron* and *Halifax* Fence Systems

1.2 Project Description

Architectural Testing was contracted by Barrette Outdoor Living to perform tests on their 6 ft by 6 ft fence systems. Testing was conducted at the Architectural Testing laboratory in York, Pennsylvania. This report includes comprehensive written and photographic documentation of testing performed.

This report is a combination of two previously issued Miami-Dade County test reports. Specifically, the *Cameron* product was previously reported as the *Kenwood* product in Architectural Testing report 90075.01-119-18 (Miami-Dade Notification Number ATI09012). And, the *Halifax* product was previously reported as the *Lattice Top Panel with 6 inch Board* in Architectural Testing report 95137.01-119-18 (Miami-Dade Notification Number ATI09044).

1.3 Summary of Testing Performed

- Only dynamic wind load tests were performed and are reported herein.

2.0 Reference Standards

2007 *Florida Building Code, Building*

3.0 Dynamic Wind Load Testing

3.1 Test Specimen

One configuration of the 6 ft by 6 ft *Cameron* fence section and one configuration of the 6 ft by 6 ft *Halifax* fence section were tested. A detailed description of each tested specimen is provided in Section 3.6 *Dynamic Wind Load Test Results*.

3.2 Equipment

The wind generator consists of an engine driven vane axial fan. The fan blades were fixed into a 5-1/2° pitch as marked on the fan. The plenum has an outlet that is 8 ft wide by 4 ft high with eight 2 ft by 2 ft baffled outlets. Deflections of the test specimen are measured with electronic linear transducers accurate to 0.01 in.

3.3 Test Setup

A steel test fixture was designed and fabricated to simulate a rigid post embedment. The bottom of the bottom rail was fixed at two inches above the top of the test fixture base. The wind generator outlet was located 4 ft from the face of the specimen (see Appendix A). Linear transducers were fixed at the center of the top rail, at the middle of the in-fill area, and at the center of the bottom rail for deflection measurements.

3.4 Test Procedure

Per Section 1612.2.1 of the 2007 *Florida Building Code, Building*, wind load testing began at 75 mph and increased until failure or a maximum wind speed of 110 mph. Wind loads were performed with a relaxation period between 75 mph and 110 mph to record permanent set measurements. The duration of the applied wind load at each wind speed was determined by using the following equation:

$$t = 3600 / V_{fm} \quad \text{(Equation 1)}$$

where:

t = duration, seconds

V_{fm} = "fastest mile" wind speed, mph.

Wind speeds used in testing correlate with "fastest mile" wind speeds (V_{fm}) for reference to codes and design standards. Maximum deflections were recorded at each load level.

3.5 Limitations of Test

The test setup and procedure provide information for evaluation of the fence assembly to resist sustained wind speeds indicated in the test results. This evaluation includes the fence panels and rails, including the transfer of wind loads to the supports (posts). Posts support only a single section of fence in this simulation and are, therefore, not fully evaluated for actual field conditions.

3.6 Dynamic Wind Load Test Results

Test Series No. 1

Series / Model: *Cameron*

Description: 6 ft high by 6 ft wide PVC privacy fence

Rails: Two 1-3/4 in by 2-1/4 in by 68 in PVC slotted rails one at the top of the fence planks (panels) and one at the bottom of the fence planks (panels)
Two 2-3/4 in by 1/2 in by 68 in ribbed PVC rails sandwiched the fence planks (panels), at the middle

Panels: Eleven 3/4 in by 6 in by 64 in ribbed PVC planks (panels)

Post: Two 5 in by 5 in by 108 in PVC posts (0.125 in wall)

Rail Attachment: Six brackets - one heavy duty aluminum bracket fastened with four #10 x 3/4 in aluminum screws into the rail ends four #10 x 3/4 in aluminum screws fastened each bracket to post

Test No. 1 of 3 - Test Date: 03/18/09

Wind Speed	Duration	Maximum Deflection (in)		
		Top	Mid	Bottom
75 mph	50 sec	3.76	3.80	0.85
0 mph	Permanent Set	0.41	0.18	0.34
110 mph	35 sec	9.38	7.29	2.54
0 mph	Permanent Set	0.75	0.78	<0.01

Observation: *No visible damage at the completion of the test.*

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 126$ mph)

3.6 Dynamic Wind Load Test Results (Continued)

Test Series No. 1 (Continued)

Test No. 2 of 3 - Test Date: 03/18/09

Wind Speed	Duration	Maximum Deflection (in)		
		Top	Mid	Bottom
75 mph	50 sec	4.34	3.91	0.91
0 mph	Permanent Set	0.54	0.47	0.00
110 mph	35 sec	10.41	8.11	3.13
0 mph	Permanent Set	1.00	1.15	0.00

Observation: No visible damage at the completion of the test.

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 126$ mph)

Test No. 3 of 3 - Test Date: 03/18/09

Wind Speed	Duration	Maximum Deflection (in)		
		Top	Mid	Bottom
75 mph	50 sec	3.82	3.73	2.14
0 mph	Permanent Set	0.50	0.54	0.57
110 mph	35 sec	9.78	7.72	N/A ¹
0 mph	Permanent Set	0.77	1.03	N/A ¹

Observation: No visible damage at the completion of the test.

¹ Transducer disengaged during testing

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 126$ mph)

3.7 Dynamic Wind Load Test Results (Continued)

Test Series No. 2

Series / Model: *Halifax*

Description: 6 ft high by 6 ft wide PVC privacy fence with lattice top

Rails: Two 1.75 in by 2.75 in by 67.75 in PVC "multi-fit" extrusions

Mid Rail: Two 0.5 in by 2.75 in by 67.75 in PVC extrusions

Panels: Two 1 in by 4 in by 66.1 in slotted PVC extrusion

Panels: Ten 1 in by 6 in by 49.88 in PVC extrusions (boards)

Post: Two 5 in square by 96 in PVC posts (0.125 in wall)

Rail Attachment: A vinyl rail hanger was used with four #10 x 3/4 in aluminum, self-drilling, pan-head screws to attach the rail to the post

Lattice: 16.33 in by 60.42 in lattice panel

Foam Block: Two 0.75 in by 0.75 in by 1.5 in foam blocking

Test No. 1 of 4 - Test Date: 11/02/09

Wind Speed	Duration	Maximum Deflection (inches)		
		Top	Middle	Bottom
75 mph	50 sec	4.36	6.54	3.61
0 mph	Permanent Set	0.68	0.70	0.25
110 mph	35 sec	-*	-*	-*
0 mph	Permanent Set	-*	-*	-*

**Observation: Post snapped at ground level.*

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 130$ mph)

Test No. 2 of 4 - Test Date: 11/02/09

Wind Speed	Duration	Maximum Deflection (inches)		
		Top	Middle	Bottom
75 mph	50 sec	4.82	6.65	3.59
0 mph	Permanent Set	0.84	0.77	0.29
110 mph	35 sec	13.57	13.78	6.64
0 mph	Permanent Set	1.07	1.53	0.53

Observation: No visible damage at the completion of the test.

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 130$ mph)

3.6 Dynamic Wind Load Test Results: (Continued)

Test Series No. 2 (Continued)

Test No. 3 of 4 - Test Date: 11/02/09

Wind Speed	Duration	Maximum Deflection (inches)		
		Top	Middle	Bottom
75 mph	50 sec	5.24	6.67	3.65
0 mph	Permanent Set	1.18	0.71	0.28
110 mph	35 sec	13.80	13.97	7.00
0 mph	Permanent Set	1.44	1.37	0.37

Observation: No visible damage at the completion of the test.

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 130$ mph)

Test No. 4 of 4 - Test Date: 11/02/09

Wind Speed	Duration	Maximum Deflection (inches)		
		Top	Middle	Bottom
75 mph	50 sec	4.49	6.57	3.44
0 mph	Permanent Set	0.70	0.81	0.29
110 mph	35 sec	13.90	13.99	6.90
0 mph	Permanent Set	0.99	1.32	0.56

Observation: No visible damage at the completion of the test.

Maximum Sustained Wind, $V_{fm} = 110$ mph (equivalent $V_{3s} = 130$ mph)

4.0 Closing Statement

Detailed drawings, data sheets, representative samples of test specimens, a copy of this test report will be retained by Architectural Testing for a period of ten years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured using the designated test methods. 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 specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING:

Justin M. Mann
Laboratory Supervisor
Structural Systems Testing

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Director - Engineering and Product Testing

JMM:jmm/nlb

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Drawings (2)

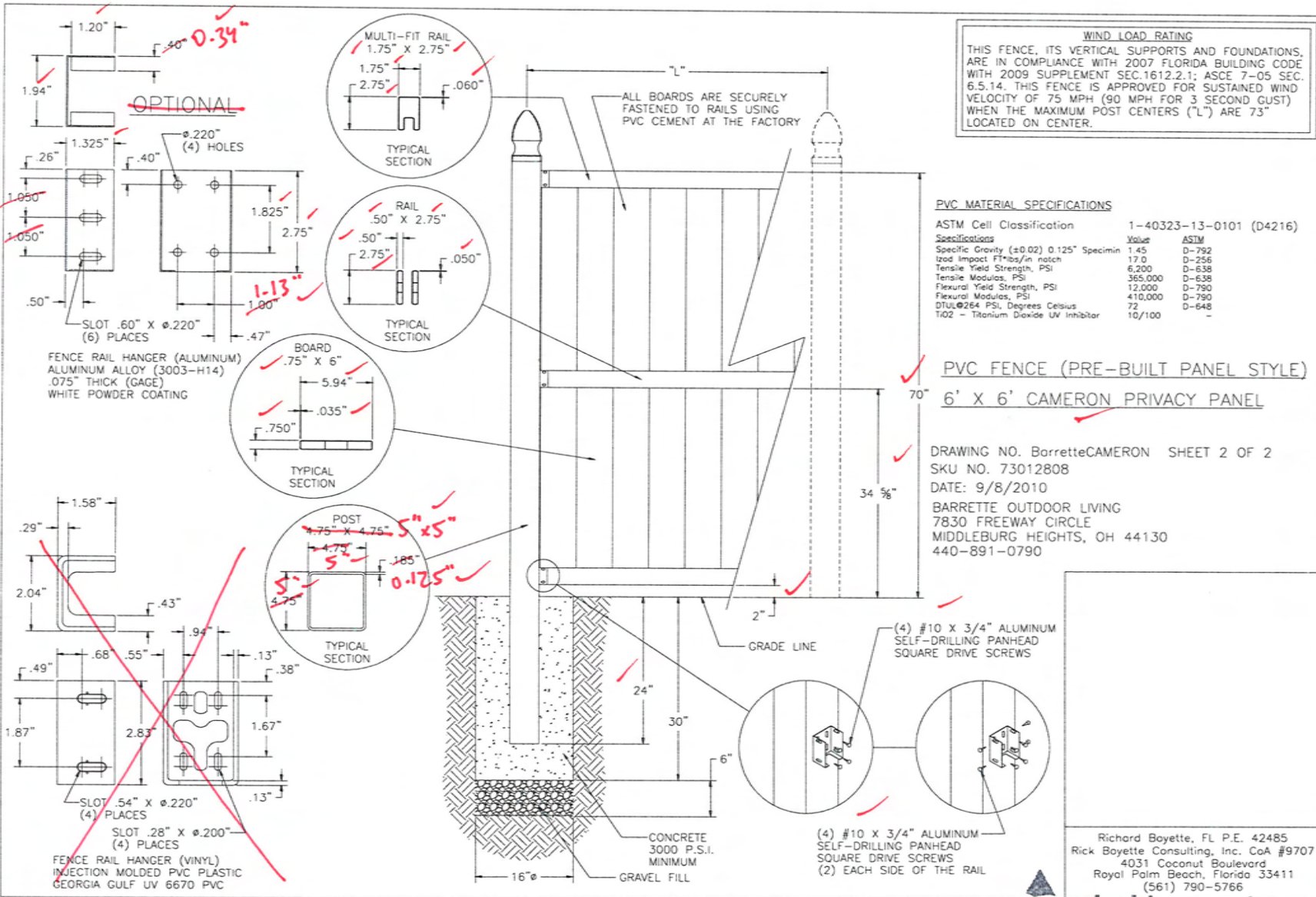
Appendix B: Photographs (3)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	09/21/10	N/A	Original report issue
1	09/23/10	Appendix A	Revised <i>Halifax</i> assembly drawing
			Removed five redundant stand-alone profile drawings
		Appendix B	Added photo of <i>Cameron</i> fence panel under wind load

APPENDIX A

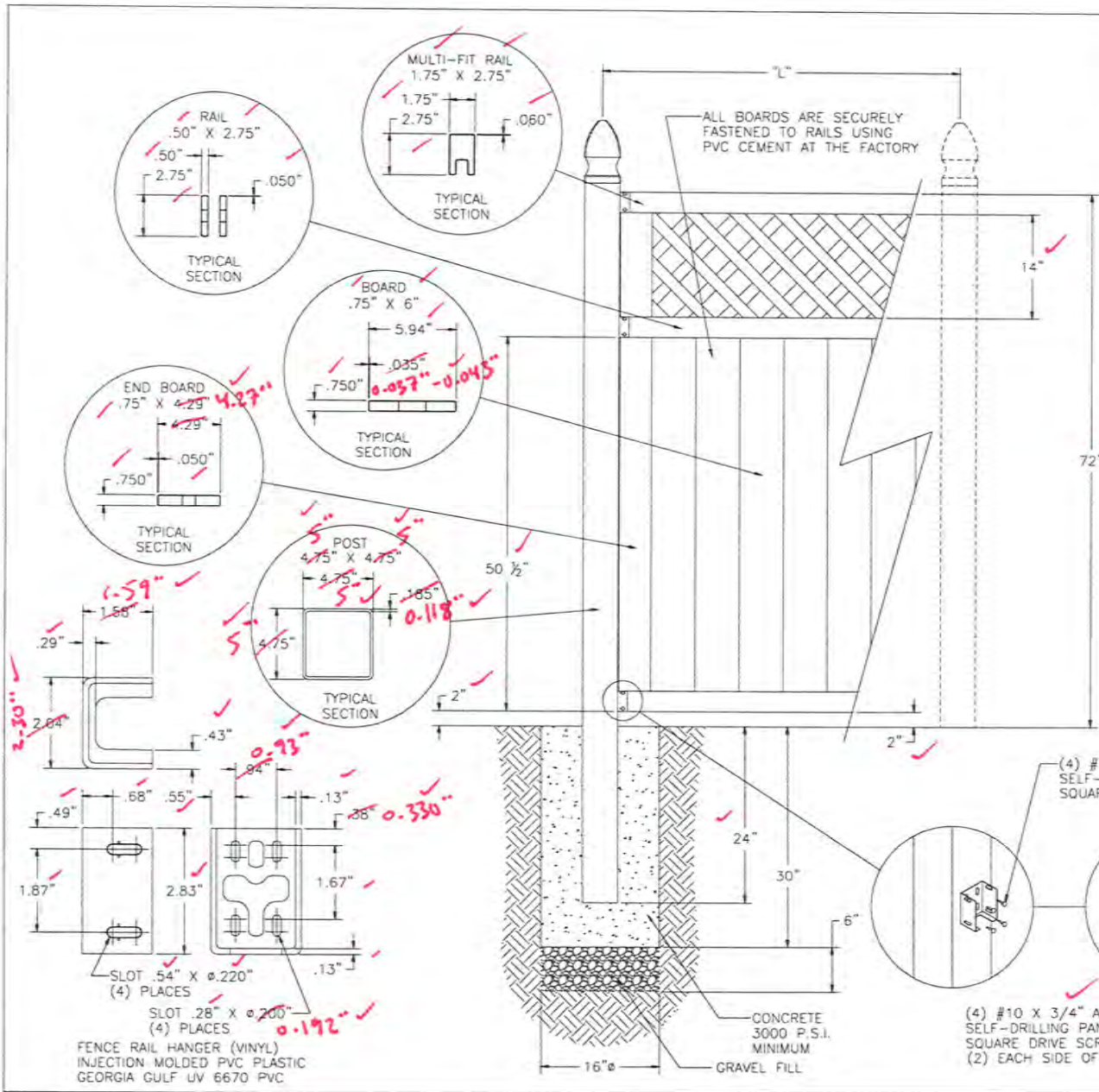
Drawings



Test sample complies with these details.
 Deviations are noted.

Report # A4014-01-119-18

Date 12/9/09 Tech JDM/bmm
9/20/10



WIND LOAD RATING

THIS FENCE, ITS VERTICAL SUPPORTS AND FOUNDATIONS, ARE IN COMPLIANCE WITH 2004 FLORIDA BUILDING CODE WITH 2007 SUPPLEMENT SEC.1612.2.1; ASCE 7-02 SEC. 6.5.13. THIS FENCE IS APPROVED FOR SUSTAINED WIND VELOCITY OF 75 MPH (90 MPH FOR 3 SECOND GUST) WHEN THE MAXIMUM POST CENTERS ("L") ARE 72.94" LOCATED ON CENTER.

PVC MATERIAL SPECIFICATIONS

ASTM Cell Classification	1-40323-13-0101 (D4216)
Specifications	Value ASTM
Specific Gravity (± 0.02) 0.125" Specimen	1.45 D-792
Izod Impact FT/lbs/in notch	17.0 D-256
Tensile Yield Strength, PSI	6,200 D-638
Tensile Modulus, PSI	365,000 D-638
Flexural Yield Strength, PSI	12,000 D-790
Flexural Modulus, PSI	410,000 D-790
DTUL ϕ 24 PSI, Degrees Celsius	72 D-648
TiO2 - Titanium Dioxide UV Inhibitor	10/100 -

HALIFAX (PRE-BUILT PANEL)
6' X 6' LATTICE TOP PANEL

DRAWING NO. HALIFAX SHEET 1 OF 2
SKU NO. 73012810
DATE: 9/8/2010
BARRETTE OUTDOOR LIVING
7830 FREEWAY CIRCLE
MIDDLEBURG HEIGHTS, OH 44130
440-891-0790

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # *A4014-01-119-18/AS137-01-119-19*

Date *7/20/10 + 4/27/10* Tech *SM/M*

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APPENDIX B

Photographs



Photo No. 1
Dynamic Wind Test Setup - *Cameron* Fence Panel



Photo No. 2
Dynamic Wind Test Setup - *Halifax* Fence Panel



Photo No. 3
Halifax Fence Panel During Dynamic Wind Test



Photo No. 4
Cameron Fence Panel During Dynamic Wind Test



Photo No. 5
Wind Generator