



NATIONAL CERTIFIED TESTING LABORATORIES

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AAMA 506-06 / ASTM E1996 / ASTM E1886 HURRICANE IMPACT AND PRESSURE CYCLE TEST REPORT

310-1788

REPORT TO:
PROWLER PROOF
122 BUCHANAN ROAD
BANYO, QLD. AUSTRALIA 4014

ORIGINAL REPORT NUMBER: 310-1788
ORIGINAL REPORT DATE: 06/23/2011

PRODUCT:
FORCEFIELD FACE FIXED
867 mm x 2445 mm (34 1/8" x 96 1/4")
EXTERIOR SCREEN

REPORT TO: Prowler Proof
122 Buchanan Road
Banyo, QLD. Australia 4014

STARTING TEST DATE: 06/08/2011
ENDING TEST DATE: 06/09/2011

STANDARDS/SPECIFICATIONS: AAMA 506-06
Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products.

ASTM E1996-05
Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

ASTM E1886-05
Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

DESCRIPTION OF SAMPLE TESTED

MODEL/TYPE: Forcefield Face Fixed Screen.

CONFIGURATION: O

FRAME SIZE: 867 mm (34 1/8") x 2445 mm (96 1/4")

FRAME TYPE: Extruded aluminum of alloy 6060 perimeter frame with a temper of T5.

JOINT CONSTRUCTION: All corners were mitered and welded.

SCREEN SYSTEM: The mesh infill is made from 0.8 mm diameter wire of 316 marine grade stainless steel with 11/10.5 strands per 25 mm (1"). The mesh infill was fixed to the extruded aluminum frame using a synthetic compound with an edge cover of 10 mm (3/8") along all four edges and retained with a black FF retainer. See drawings for details.

INSTALLATION METHOD: The screen frame was attached to the face of a 51 mm x 152 mm (2 x 6) wood test buck and screw-connected through the face of the screen frame at 51 mm (2") from each corner and 305 mm (12") on center around the perimeter. 9 screws total per long dimension and 4 screws total per short dimension. 26 screws total.

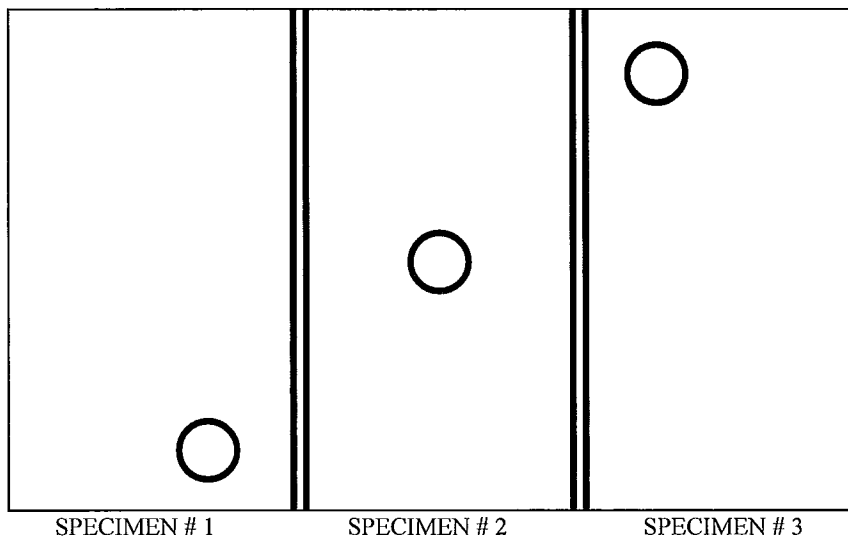
LARGE MISSILE IMPACT AND CYCLING TEST
AAMA 506-06/ASTM E 1996-05/ASTM E 1886-05

The appropriate missile to be used for impact tests was selected in accordance with section 6 of ASTM E1996 based on the following criteria:

Level of Protection: Basic Protection
Wind Zone: Wind Zone 3 – $58 \text{ m/s (130 mph)} \leq \text{basic wind speed} \leq 63 \text{ m/s (140 mph)}$, or $54 \text{ m/s (120 mph)} \leq \text{basic wind speed} \leq 63 \text{ m/s (140 mph)}$ and within 1.6 km (one mile) of the coastline. The coastline shall be measured from the mean high water mark.
Assembly Height Above Ground: Less than or equal to 9.1 m (30 ft). Missile Level D

IMPACT AND CYCLING TEST RESULTS

- 4.1 Test Specimens:
Three (3) test specimens were submitted for impact testing. All specimens used identical materials, details, and methods of construction.
- 4.3 Location of Impact:
Missile impact locations were in accordance with section 5.3 of ASTM E 1996.
- Specimen #1: Impact Location – Bottom right corner of Screen System.
- Specimen #2: Impact Location – Center Point of Screen System.
- Specimen #3: Impact Location – Upper left corner of Screen System.



5.4

Air Pressure Cycling.

After completion of the impact tests, the specimens were pressure cycled in accordance with Table 1 of ASTM E1996-05.

All Specimens

Design Load: ± 2880 Pa (60.0 psf)

Loading Sequence	Loading Direction	Actual Load Cycle Pa (psf)		Number of Air Pressure Cycles	Cycle Time (Seconds)
1	Positive .2 - .5	580 pa (12.0 psf)	1440 pa (30.0 psf)	3500	< 5
2	Positive .0 - .6	0 pa (0 psf)	1720 pa (36.0 psf)	300	< 5
3	Positive .5 - .8	1440 pa (30.0 psf)	2300 pa (48.0 psf)	600	< 5
4	Positive .3 - 1.0	860 pa (18.0 psf)	2880 pa (60.0 psf)	100	< 5
5	Negative .3 - 1.0	860 pa (18.0 psf)	2880 pa (60.0 psf)	50	< 5
6	Negative .5 - .8	1440 pa (30.0 psf)	2300 pa (48.0 psf)	1050	< 5
7	Negative .0 - .6	0 pa (0 psf)	1720 pa (36.0 psf)	50	< 5
8	Negative .2 - .5	580 pa (12.0 psf)	1440 pa (30.0 psf)	3350	< 5

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6.2.1 Missile Description.

Large missile impacts were conducted using a #2 common 51 mm x 102 mm (2" x 4") timber with a circular sabot attached to the trailing end. The large missile measured 2375 mm (96") and weighed 4100 g (9.0 lbs).

Missile Level D

6.2 Pass/Fail Criteria.

For pass/fail criteria, no penetration is defined as no tear longer than 127 mm (5") in length and 1.59 mm (.063") wide through which air can pass, or no opening through which a 76 mm (3") diameter solid sphere can freely pass when evaluated upon completion of the missile impacts and cycling test.

TEST RESULTS

LARGE MISSILE TEST	
Specimen	Results after Impact Test
1	Impact rejected missile without penetration.
2	Impact rejected missile without penetration.
3	Impact rejected missile without penetration.

AIR PRESSURE CYCLING TEST	
Specimen	Results after Impact and Cycle Testing
1	Specimen showed no resultant failure or duress after cycle testing. No failure of fasteners or separation of screen from the frame.
2	Specimen showed no resultant failure or duress after cycle testing. No failure of fasteners or separation of screen from the frame.
3	Specimen showed no resultant failure or duress after cycle testing. No failure of fasteners or separation of screen from the frame.

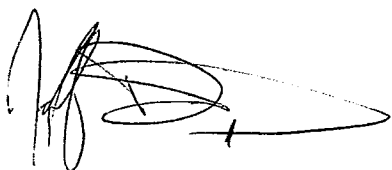
- Notes:
- 1) Missile speed at impact complied with section 11.2.1 of ASTM E 1886-05 and Table 2 of ASTM E 1996-05, missile level D.
 - 2) Missile orientation at impact complied with section 11.2.2 of ASTM E 1886-05.
 - 3) The specimens were conditioned to 21.2°C (70°F) prior to testing.
 - 4) A 2 mil Polyethylene film was used during the cycle test and it is the opinion of the undersigned that it had no influence on the results of these tests.

The listed results were obtained using the ASTM E 1886-05 test method and indicate compliance with the performance requirements of ASTM E 1996-05 for the listed test parameters at ± 2880 Pa, (60.0 psf).

Detailed assembly drawings showing wall thickness of all members, corner construction and hardware application have been compared to the sample submitted and are attached to this report.

The results were secured by using the designated test methods and they indicate compliance with the performance requirements of the referenced specification. A copy of this report has been forwarded to the Administrator of the Certification Program. This report does not constitute certification of this product, which may only be granted by the Administrator.

This report is the joint property of National Certified Testing Laboratories and the Client to whom it is issued. Permission to reproduce this report by anyone other than National Certified Testing Laboratories and the Client must be granted in writing by both of the above parties. This report may not be reproduced except in its entirety. The results in this report are actual tested values and are applicable to the sample tested only, using the components and construction methods described herein.

A handwritten signature in black ink, appearing to read 'Jeffrey M. Douglas', with a long horizontal stroke extending to the right.

Jeffrey M. Douglas
Laboratory Manager

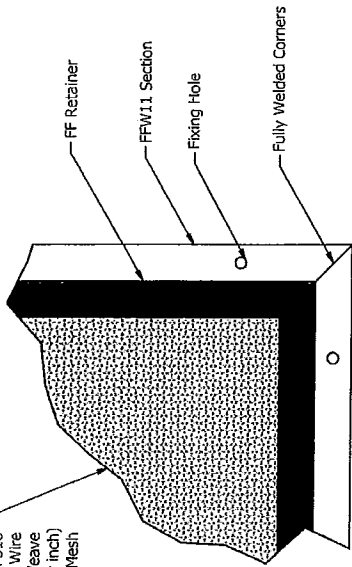
A handwritten signature in black ink, appearing to read 'Jim Clarke', with a long horizontal stroke extending to the right.

Jim Clarke
Test Technician

APPENDIX A DRAWINGS

IF IN DOUBT, ASK 1

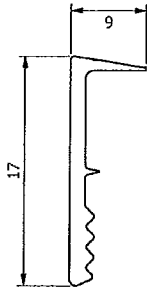
0.8mm 316
Stainless Steel Wire
Plain Weave
(11/10.5 per inch)
Woven Mesh



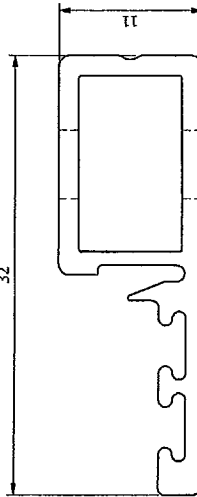
DETAIL (0.5 : 1)

VERIFIED DRAWING

FILE 310-1788
DATE 6-23-11
TECH JRL



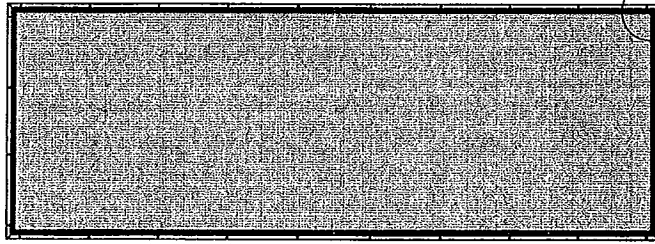
FF Retainer



FFW11 Section

ITEM	QTY	BILL OF MATERIALS	PART NUMBER
1	4	FFW11	
2	4	FF Retainer	
3	1	0.8mm 316SS 11/10.5 per inch Woven Mesh	

Top View

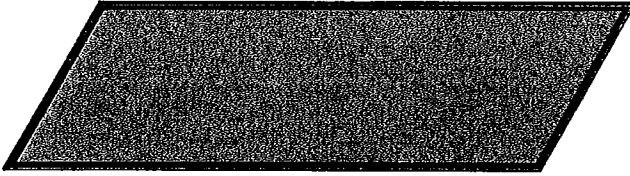


DETAIL

Back View

Side View

Isometric View



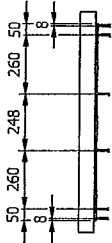
DRAWN Himal Hary		DATE 30/05/2011	TITLE North America Hurricane Test		PROCESS CODE
CHECKED	DATE	DATE	ForceField Window Screen 2446x868mm		SHEET 2 OF 2
APPR.	DATE	DATE	PART NUMBER:		SCALE NTS
RAW MATERIAL	STOCK NUMBER / DESCRIPTION		STOCK NUMBER / DESCRIPTION		REV.
UNLESS OTHERWISE SPECIFIED XX = ±1mm MACHINE FINISHES = 33/ XX = ±0.5mm XX.XX = ±0.25mm			ALL DIMENSIONS IN MILLIMETERS ALL THREADS TO BE METRIC COARSE ALL WELDS TO AS1854 ALL BORDS AND SHARP EDGES TO BE BEVELLED = ± 1°		PROJECTION 3RD ANGLE
© THE DRAWING AND ITS CONTENTS ARE CONFIDENTIAL AND ARE SUBJECT TO RETURN ON DEMAND AND MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY DIRECT OR INDIRECTLY FOR ANY OTHER PURPOSE THAN AS EXPRESSLY DETERMINED IN WRITING BY Gershin Pty. Ltd.			DO NOT SCALE DRAWING		WEIGHT: N/A SHEET SIZE: A3 INV.

Prowler Proof

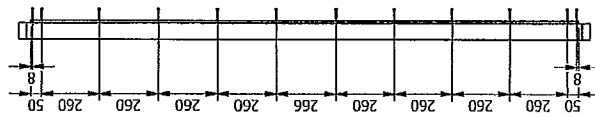
GERSHWIN PTY LTD
122 BUCHANAN RD
BANYO, QLD. 4014
PH: +61 7 3363 0566
FAX: +61 7 3267 5411

IF IN DOUBT ASK 1

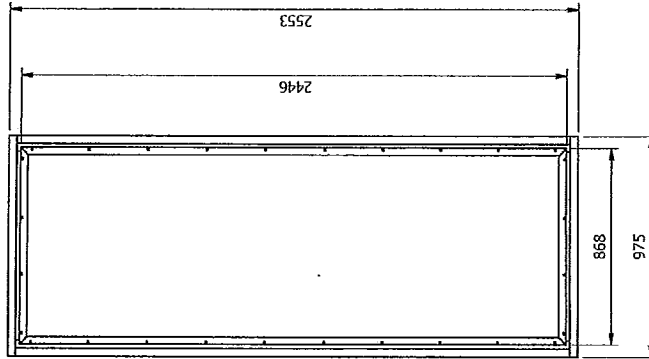
BILL OF MATERIALS	
QTY	PART NUMBER
1	
2	Stud Frame 70x35 @ 835mm
2	Stud Frame 70x35 @ 975mm
4	Stud Frame 70x35 @ 2488mm
28	ASSY-Pan Head AW20 4.5x60mm



VIEW3



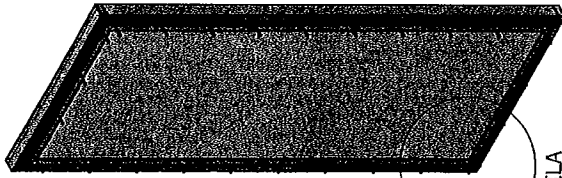
VIEW2



VIEW1



DETAILA (1 : 10)



VIEW4

DETAILA



FILE 310-1788
DATE 6-23-11
TECH JRG

Prowler Proof GERSHWIN PTY LTD 122 BUCHANAN RD BANYO, QLD. 4014 PH: +61 7 3363 0666 FAX: +61 7 3267 5411		DRAWN Michael Henry CHECKED DATE 30/05/2011	DATE 30/05/2011 TITLE: North America Hurricane Test Forcefield Face Fix to Timber Frame	PROCESS CODE: SHEET 1 OF 2
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETRES ALL THREADS TO BE METRIC COARSE MACHINING FINISHES = 32/ XX = ± 0.1mm XX.X = ± 0.5mm XX.XX = ± 0.25mm		APPR. DATE 5/06/2011 PART NUMBER: STOCK NUMBER / DESCRIPTION NTS	SCALE NTS REV.	PROJECTION 3RD ANGLE SHEET SIZE: A3 INV.
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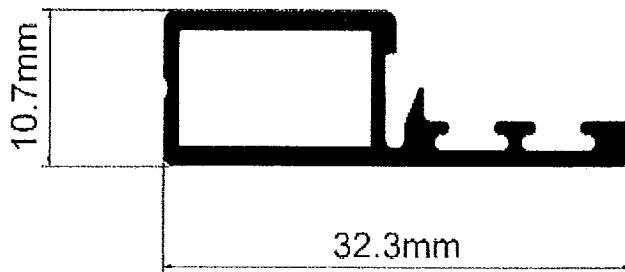
ForceField®

Prowler Proof welded aluminium security doors and window screens have been designed to set new standards in Quality, Strength, Reliability, Finish and Value.

Prowler Proof welded aluminium security products all share the following characteristics:

- Robotically welded frames from corner to corner
- Heavy-duty aluminium frames
- High quality powder coat finish
- 7 year comprehensive factory backed warranty

Frame Dimensions



Window 11mm



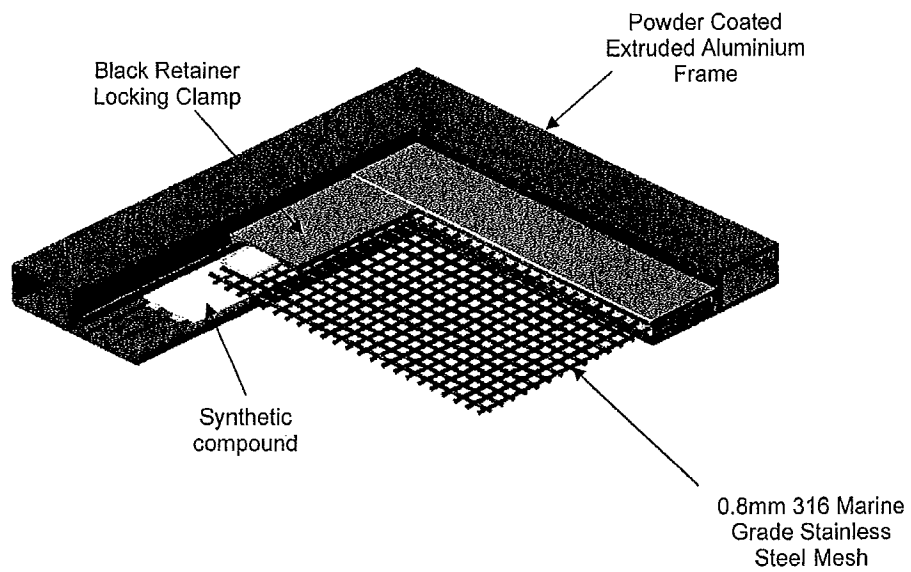
VERIFIED DRAWING

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TECH JPL



ForceField®

ForceField® – Assembly Detail



 VERIFIED DRAWING

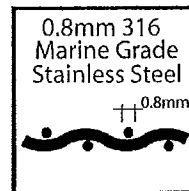
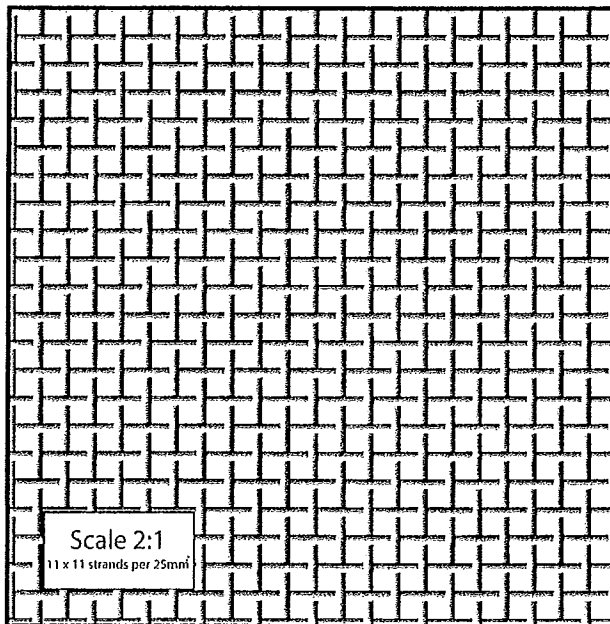
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TECH JBL



ForceField®

ForceField® – PATENTED woven stainless steel security

ForceField® uses a 0.8mm thick wire of 316 marine grade woven stainless steel mesh that is mechanically and chemically linked using a synthetic compound into a heavy-duty high tensile extruded aluminium frame that is robotically welded from corner to corner.



VERIFIED DRAWING

FILE 310-1788

DATE 6-23-11

TECH JPK

ForceField® utilises a PATENTED linking mechanism that completely insulates the 316 stainless steel mesh from its fully welded aluminium frame. This linking process is a seamless connection that ensures the ultimate in reliability and strength.