



NATIONAL CERTIFIED TESTING LABORATORIES

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

310-1790

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

**ORIGINAL REPORT NUMBER: 310-1790
ORIGINAL REPORT DATE: 06/23/2011**

**PRODUCT:
TWO FORCEFIELD FACE FIXED
867 mm x 2445 mm (34 1/8" x 96 1/4")
EXTERIOR SCREENS MOUNTED OVER A BREEZWAY
2 BAY IOS 1727 mm X 2445 mm (68" X 96 1/4") JALOUSIE WINDOW**

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

STARTING TEST DATE: 06/09/2011
ENDING TEST DATE: 06/13/2011

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

SCREEN DESCRIPTION

MODEL/TYPE: Forcefield Face Fixed Screen.

CONFIGURATION: OO

FRAME SIZE: Each frame measured 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 frames were screw-connected through the face of the screen frame to the face of the jalousie window assembly 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.

JALOUSIE ASSEMBLY DESCRIPTION

MODEL/TYPE:	IOS 152 mm (6") Outside Screen Jalousie Window.
FRAME SIZE:	1727 mm (68") wide by 2445 mm (96 1/4") high.
FRAME TYPE:	Extruded aluminum.
JOINT CONSTRUCTION:	All corners were butt cut, sealed with a gasket and screw-connected. The jamb liners were sealed with silicone sealant to the main frame sill extrusion. The intermediate vertical mullion was fitted and screw-connected to the head and sill extrusions.
GLAZING COMPONENTS:	Seventeen (17) 6 mm (1/4") thick laminated glass louvers per bay. 34 total.
GLAZING SYSTEM:	The louvers were compression fit into plastic clips which were attached to each aluminum jamb and intermediate vertical member liners.
FILLER BARS:	<ol style="list-style-type: none">1. An extruded aluminum filler bar was snap-fit onto the interior face of the center-most leg of the head.2. An extruded aluminum filler bar was snap-fit onto the exterior face of the interior-most sill leg.3. Formed aluminum jamb covers were press fit into the interior most jamb channel.
WEATHERSTRIP:	
TYPE:	Soft vinyl fin seal.
SIZE:	Approximately 10 mm (3/8") long fin.
LOCATION:	<ol style="list-style-type: none">1. Along the exterior face of the sill filler bar and contacted the interior bottom edge face of the bottom louver.2. Along the exterior face of the head filler bar and contacted the exterior top edge face of the top louver.
OPERATING HARDWARE:	
LATCHES:	
TYPE:	Multi-point swing handle assemblies.
LOCATION:	Inserted through milled slots in the interior face of the left jamb and intermediate vertical member at 559 mm (22") and 1689 mm (66 1/2") from the sill. The lower handle operated the lower nine (9) louvers and the upper handle operated the upper eight (8) louvers.
INSTALLATION METHOD:	The window was installed in a 51 x 152 mm (2 x 6) wood buck built tight around the perimeter and screw-connected through the nailing flange at 152 mm (6") on center around the perimeter.

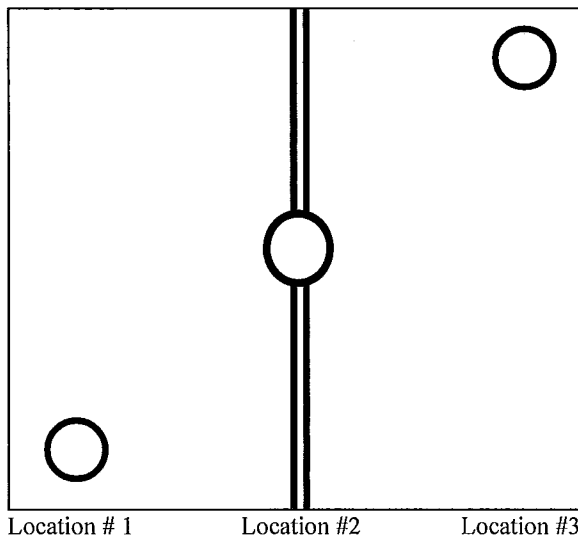
LARGE MISSILE IMPACT AND CYCLING TEST
AAMA 506-06/ASTM E 1996-05/ASTM E 1886-05

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 m/s (130 mph) \leq basic wind speed $\leq 63 \text{ m/s}$ (140 mph), or 54 m/s (120 mph) \leq 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 Left Screen System.
- Specimen #2: Impact Location – Center Point of Intermediate Vertical member..
- Specimen #3: Impact Location – Upper left corner of Right 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

- This space left intentionally blank -

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.

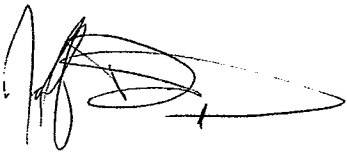
- Notes:
- 1) Missile speed at impact complied with section 11.2.1 of ASTM E 1886-05 and Table 2 of ASTM E 1996-05, missile level D.
 - 2) Missile orientation at impact complied with section 11.2.2 of ASTM E 1886-05.
 - 3) The specimens were conditioned to 21.2°C (70°F) prior to testing.
 - 4) A 2 mil 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.

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Jeffrey M. Douglas
Laboratory Manager



Jim Clarke
Test Technician

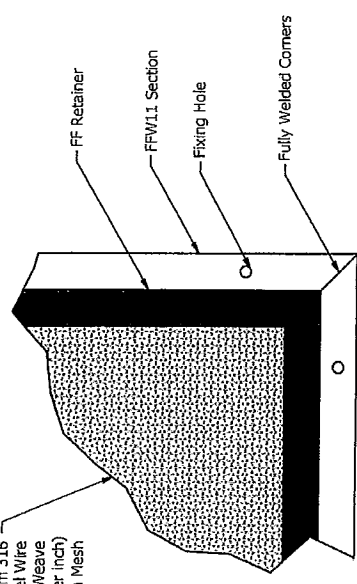
ERRATA/ADDENDUM SUMMARY

Revision No.	Date	Page No.	Description/Example
Released Original Report	06/23/2011		

APPENDIX A DRAWINGS

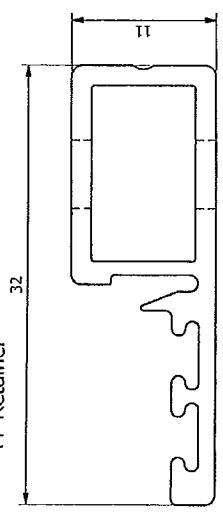
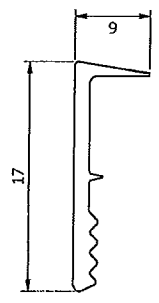
IF IN DOUBT ASK 1

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

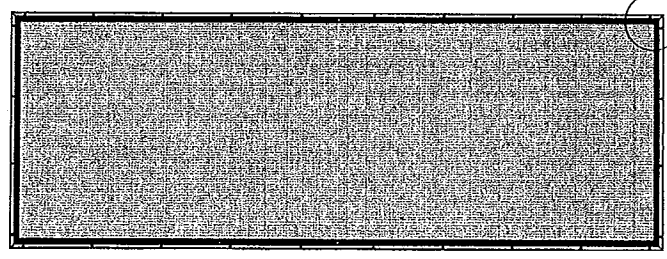


DETAILB (0.5 : 1)

NCTA VERIFIED DRAWING
FILE 310-1790
DATE 6-23-11
TECH JRR



Top View

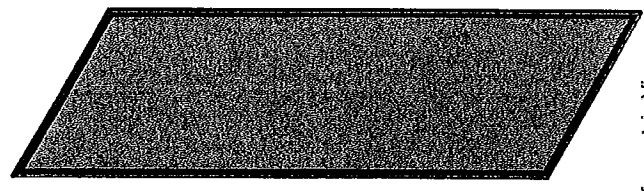


Side View

Back View

DETAIL

Isometric View



BILL OF MATERIALS	
ITEM	QTY
1	4
2	4
3	1

PART NUMBER
FFW11
FF Retainer
0.8mm 316SS 11/10.5 per inch Woven Mesh

Prowler Proof
GERSHWIN PTY LTD
122 BUCHANAN RD
BANYO, QLD. 4014
PH: +61 7 3363 0666
FAX: +61 7 3267 5411

UNLESS OTHERWISE SPECIFIED
XX = ± 0.1mm
XX.X = ± 0.5mm
XX.XX = ± 0.25mm
MACHINE FINISHES = ∇
ALL THREADS TO BE METRIC COARSE
ALL BUNDS AND SHANK ENDS TO BE BUNDLED
DO NOT SCALE DRAWING
WEIGHT: N/A
SHEET SIZE: A3

PROCESS CODE:
SHEET 2 OF 2
SCALE NTS
REV.

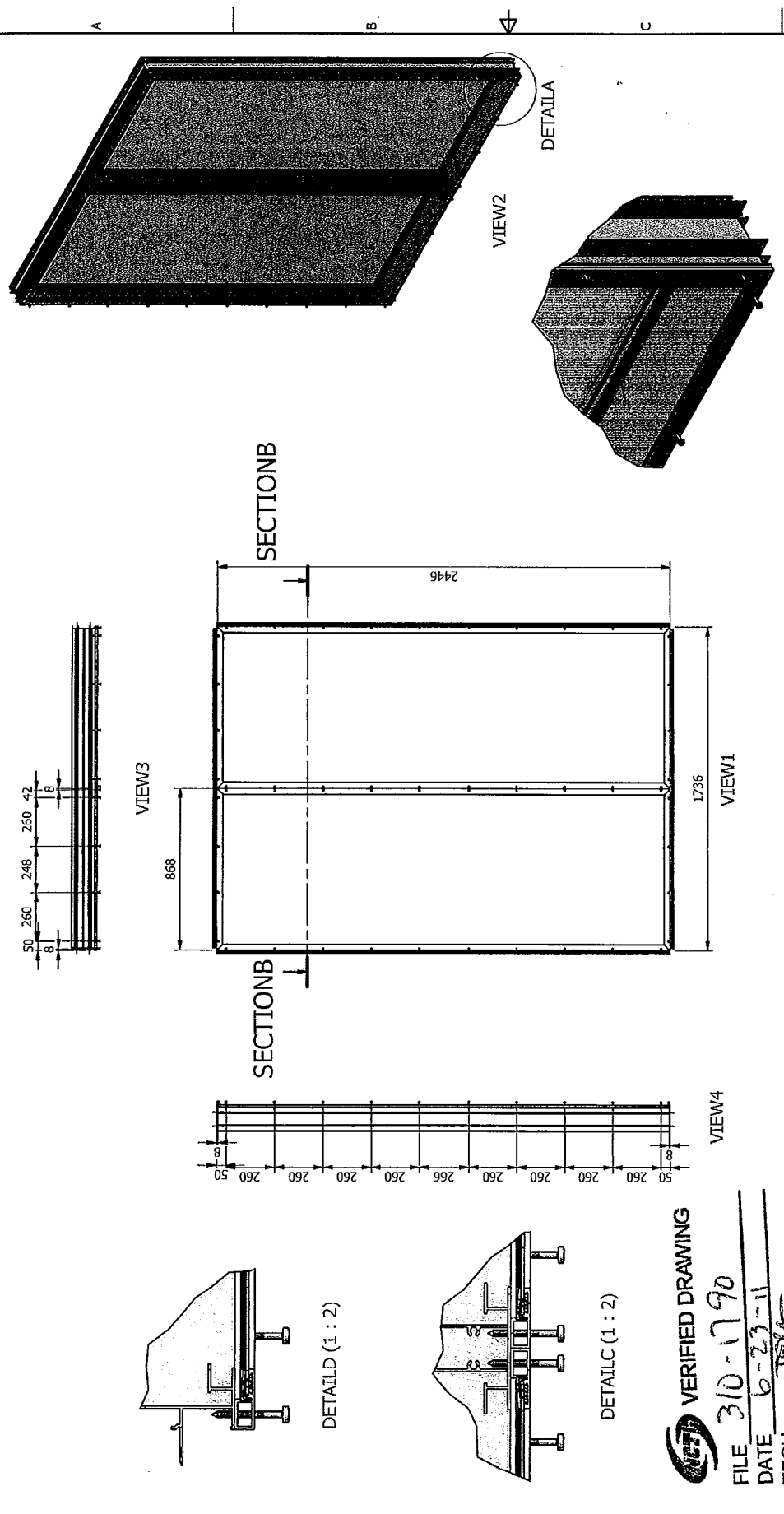
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PROJECTION 3RD ANGLE
SHEET SIZE: A3

IF IN DOUBT ASK 1

310-1790

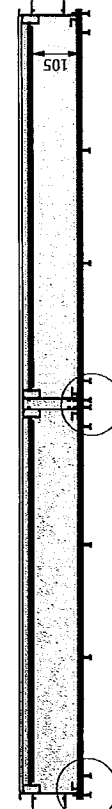
E0A0



DETAILA (1 : 5)

Prowler Proof GERSHWIN PTY LTD 122 BUCHANAN RD BANYO, QLD, 4014 PH: +61 7 3363 0666 FAX: +61 7 3267 5411		DRAWN Initial Henry CHECKED DATE 27/05/2011	DATE 27/05/2011	TITLE North America Hurricane Test Sample Breezway 2 Bay Ins Window System & Forcefield Screen Face Fix	PROCESS CODE: SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS IN MILLIMETERS ALL DIMENSIONS TO FACE UNLESS NOTED OTHERWISE MACHINE FINISHES = 32 XX = 40.5mm XX.X = ± 1° XX.XX = ± 0.25mm DO NOT SCALE DRAWING		APPR. DATE	PART NUMBER: Breezway 2 Bay Ins Window System & Forcefield Screen Face Fix Breezway 2 Bay Ins Window System & Forcefield Screen Face Fix	SCALE NTS	REV. NTS
© THIS 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 MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESSLY DETERMINED IN WRITING BY GERSHWIN PTY LTD.		RAW MATERIAL	STOCK NUMBER / DESCRIPTION	PROJECTION 3RD ANGLE	SHEET SIZE: A3
		WEIGHT: N/A		SHEET SIZE: A3	

SECTIONB-SECTIONB (1 : 10)



DETAILD

DETAILD

VERIFIED DRAWING

FILE 310-1790
 DATE 6-23-11
 TECH JPK



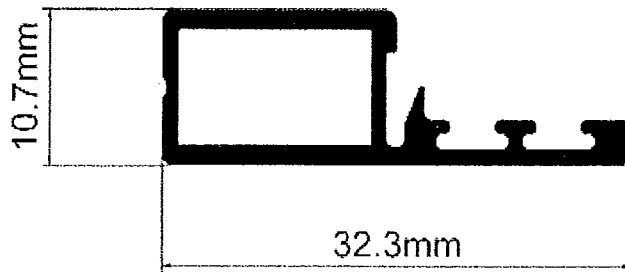
ForceField®

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



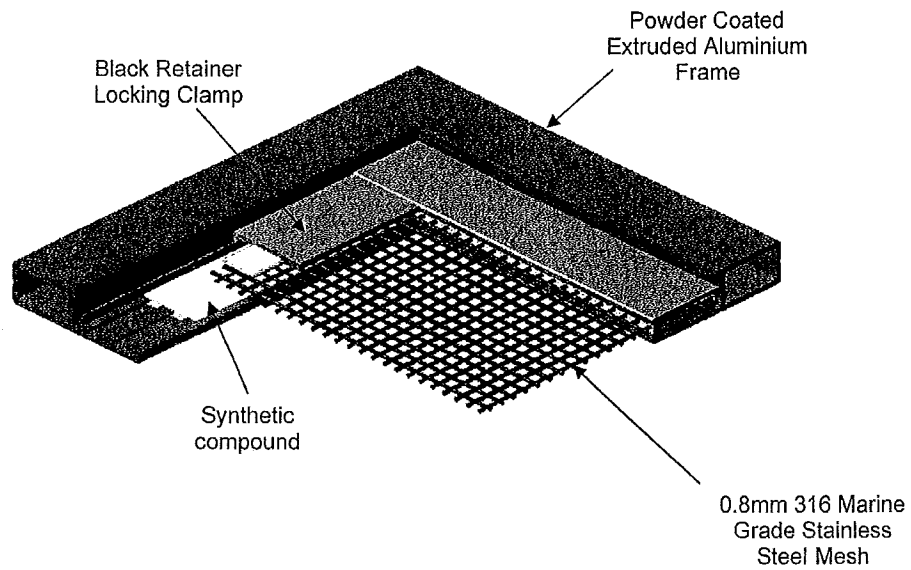
Window 11mm


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TECH John



ForceField®

ForceField® – Assembly Detail



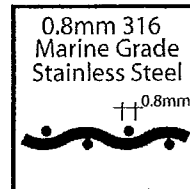
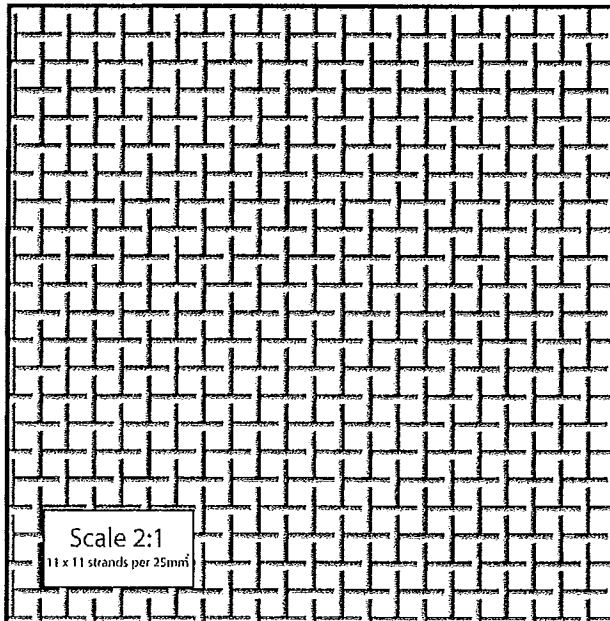
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DATE 6-23-11
TECH JG



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 310-1790
DATE 6-23-11
TECH JLR

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.