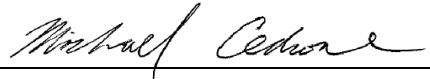


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APPROVAL REPORT

Project No: 3046488
Class: 2511
Product Designation: AquaFence Perimeter Flood Barrier – Model V1200
Name of Listing Company: AquaFence USA Inc.
Address of Listing Company: 1299 – 156th Ave. NE, #150
Bellevue, WA 98007
Customer ID: 140565
Customer Website: www.aquafence.com

Prepared by:



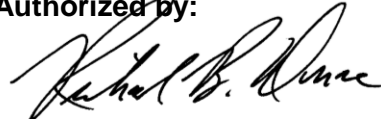
Michael Cedrone
Engineer
Fire Protection Group

Reviewed by:



Brian K. MacDonald
Technical Team Manager
Fire Protection Group

Authorized by:



Richard B. Dunne
Manager
Fire Protection Group

October 29, 2013

Date of Approval

INTRODUCTION

1.1 AquaFence USA Inc. requested Approval of the products listed in Section 1.4 for compliance with the standards listed in Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standards

1.3.1 FM Approvals Standards

Title	Class Number	Issue Date
Approval Standard for Flood Abatement Equipment	2510	March 2013

1.4 Listing

The products will appear in the Approval Guide, an online resource of FM Approvals, as follows:

Building Materials → Flood Abatement Equipment → Temporary Perimeter Barriers

Product Designation	Barrier Type	Maximum Design Water Depth	DIOM Manual
AquaFence Model V1200	Wall Panels	3 ft.	<i>AquaFence Installation, Removal, and Operating Manual, Version 1.2, October 2013.</i>

2 DESCRIPTION

2.1 The AquaFence Model V1200 perimeter flood barrier is a portable wall structure designed to protect the area surrounding a building. The barrier has been performance tested to withstand water depths up to 3 ft. (0.9 m).

2.2 Each model V1200 AquaFence unit is comprised of 2 reinforced plywood panels which are unfolded to form an L-shape. Four aluminum strut braces are used to hold the vertical panel upright. The braces are pre-installed on the horizontal panel and are easily swung out and attached to brackets on the vertical panel. The action of unfolding the panels and installing the braces takes very little time.

2.3 Each model V1200 AquaFence unit is approximately 83" long by 47" wide by 47" tall (2.1m x 1.2m x 1.2m). Each unit weighs about 160 lbs. (73 kg) and is easily carried by three or four men. Multiple units are connected together to create a continuous perimeter barrier. The right side of each vertical and horizontal panel is lined with fiber reinforced PVC membrane material which is attached to the left side of adjacent panels. The free ends of the membrane material are sandwiched between the panel and metal clamps lined along the left side of each unit. Adjustable metal latches are also used to secure the base of the panels together.

- 2.3.1** The panel connections may be slightly shifted to create a maximum angle of 5 degrees. Custom panels are available for 90 degree corners or other situations where an angle of greater than 5 degrees is required. Special side closer adapters are also available if it is necessary to attach the structure to a pre-existing vertical wall. The side closer adapters are directly bolted to the wall.
- 2.4** The horizontal panel is designed to be positioned facing the water side. The outside edge of the panel is lined with a foam Neoprene gasket material to mitigate seepage underneath the structure. Unlike other flood barriers, seepage actually decreases with greater water depths due to the weight of the water compressing the foam gasket against the ground surface.
- 2.5** The structure is secured to the ground surface using four anchors along the outside edge of the horizontal panel. Anchors are passed through brackets attached to the end of the panel and then drilled into the ground surface. Different types of anchors are used depending on the ground surface type.
- 2.6** A debris shield made of additional fiber reinforced PVC membrane material is used to protect the structure from floating debris. Each debris shield covers 2 units and is attached to the top of the vertical panel and the outside edge of the horizontal panel, therefore protecting the aluminum strut bracing components.

3 EXAMINATIONS AND TESTS

- 3.1** Perimeter barrier performance testing was conducted at the US Army Corps of Engineers' Engineering Research and Development Center (ERDC) located in Vicksburg, MS. The testing was completed in August 2012 with successful results. All data is kept on file at FM Approvals.
- 3.2** Component samples were submitted for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.
- 3.3** All testing and analysis considered appropriate was conducted and verified to be in compliance with the Standards defined in Section 1.3.

4 MARKING

- 4.1** The following information appears on all model V1200 AquaFence units identified within this Report and meets FM requirements:
- Manufacturer's Logo/Trademark
 - Model Designation
 - Serial #
 - Country of Manufacture
 - The FM Approvals "Diamond Mark"

A copy of the label drawing is attached to this report.

5 REMARKS

- 5.1 Applications of these flood barriers are subject to the limitations specified by the manufacturer and are subject to FM Global acceptance of plans prior to installation at FM Global insured properties.
- 5.2 This barrier has been evaluated for use in resisting riverine flooding conditions at water depths no greater than 3 ft. (.9 m).

6 SURVEILLANCE AUDIT

The facilities at the following locations shall be visited on a routine basis. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that tested and Approved. A Form 797 shall be submitted to FM Approvals for requesting any additional manufacturing facilities which are not listed below.

Design

AquaFence Latvia
Mezdarzi Pope, Popes pag.
Ventspils nov., 3614
Latvia

Manufacturing

AquaFence Latvia
Mezdarzi Pope, Popes pag.
Ventspils nov., 3614
Latvia

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 Documentation that is applicable to this approval is on file at FM Approvals and listed in the Documentation File, Section 8, of this report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product - Revision Report, FM Approvals Form 797, shall be forwarded to FM Approvals as notice of proposed changes.
- 7.2 The manufacturer is responsible for control of the product marking and installation instructions.
- 7.3 The manufacturer shall provide installation, operating, and maintenance manuals with each product.

8 DOCUMENTATION FILE

All documents pertinent to this Approval are outlined in the Critical Document List attached to this report.

9 CONCLUSION

The products listed in Section 1.4 and described in Section 2 have met FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

PROJECT DATA RECORD: 3046488

ATTACHMENTS: Critical Document List
Label Drawing

Critical Document List

<u>Document No.</u>	<u>Revision Level</u>	<u>Document Title</u>
-	Version 1.2	AquaFence Installation, Removal, and Operating Manual
-	Version 1.2	AquaFence Approval and Changes of Product
-	Version 1.0	AquaFence Production Manual
-	Version 1.2	AquaFence Quality System
-	Version 1.0	AquaFence Proposal of AquaFence Marking Sticker Design
5546-000	04	Main Assembly
5546-001	04	Front Beak Bracket
5546-300	00	Lip for Beak
5546-002	06	Horizontal Canvas Clamp
5546-003	09	Stabilizer Strut
5546-004-01	00	End Stabilizer Strut
5546-005-03	00	V1200 Horizontal Plate
5546-006-08	00	V1200 Vertical Plate
5546-007	04	Top Profile
5546-008	06	Maze
5546-009	03	Strut Bracket
5546-011	03	Pressnut 01
5546-014	00	Ground Anchor
5546-016-01	F2	Canvas Lock Sheet
5546-017	02	Canvas Bracket
5546-018	05	Vertical Canvas Clamp
5546-020	03	Canvas Bracket Perm Horizontal
5546-021	04	Rear Corner Bracket
5546-022	04	Gasket
5546-023-01	X	Folded Support
5546-024	00	Element Fixing Clamp
5546-024-B	00	Tube for Element Fixing Clamp
5546-025A	00	Bracket
5546-026	02	Canvas Bracket Perm Vertical
5546-027	03	Element Fixing Hook
V2100-18	00	Canvas Clamp Hook
5546-010-01	00	AquaFence V1200 Element: Canvas

