APPROVAL REPORT

Project No:	3052640
Supplements Project No.:	N/A
Class:	2510
Product Name:	Aluminum Alloy Flood Gate, Manual Sluice Gate, and Multi-Function Flood Window
Product Type:	Flood Mitigation Opening Barriers
Name of Report Holder:	Dai Chen Watertight Gate Technology
Address of Report Holder:	938 Fenglin 2nd Road Daliao District Kaohsiung City, Taiwan, P.R.C.
Customer ID:	148667
Customer website:	http://en.daichen.com.tw

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November 4, 2014

Date of Approval

FM Approvals
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INTRODUCTION

1.1 Dai Chen Watertight Gate Technology requested FM Approval of three flood mitigation products – an Aluminum Alloy Flood Gate, a Manual Sluice Gate, and a Multi-Function Flood Window. The details of the components can be seen as listed in section 2.1.

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

1.4 **Listing**

The Flood Gate, Flood Ditch Gate, and Flood Window will appear in the Approval Guide, an on-line resource of FM Approvals, in the following section as described below:

Building Materials → Flood Abatement Equipment → Opening Barriers

Product	Function	Operation	Max Approved water depth	Max Approved Structure length	Design, Installation, Operation, Maintenance Manual
Flood Gate	Contingent	Manual	3.28 ft (1.0 m)	18.04 ft (5.5 m)	DCAM-01

Product	Function	Operation	Max Approved water depth	Max Approved Structure length	Design, Installation, Operation, Maintenance Manual
Flood Sluice Gate	Contingent	Manual	2.46 ft (0.75 m)	2.46 ft (0.75 m)	DCSD-03

Product	Function	Operation	Max Approved water depth	Max Approved Structure length	Design, Installation, Operation, Maintenance Manual
Flood Window	Contingent	Manual	2.82 ft (0.86 m)	2.82 ft (0.86 m)	DCAMW-02

2 DESCRIPTION

2.1 The Flood Mitigation Equipment being examined in this report are as follows.

2.2 The Flood Gate is a permanently installed opening barrier which is made up of a metal frame that remains in place. In order to protect the opening, removable panels are stacked on top of the base plate and secured in order to create a temporary flood mitigation barrier.

2.3 The Flood Sluice Gate is a permanently installed opening barrier which is a metal panel that can be moved into place by a manual wheel when a flood risk is present.

2.4 The Flood Window is a permanently installed opening barrier which is a standard window that can be open or closed, but instead of a glass panel, it includes an aluminum panel to prevent the failure of the window due to debris.

3 EXAMINATIONS AND TESTS

3.1 The performance testing for each of the mentioned products in this report were tested on site at Dai Chen Watertight Gate Technology in Kaohsiung, Taiwan. The testing was completed over 3 days in August of 2014, with successful results. All data is kept on file with FM Approvals.

3.2 For environmental tests conducted on materials, samples were submitted to FM Approvals 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 Standard defined in Section 1.3.

4 MARKING

The following information appears on all types of Flood Mitigation Equipment units that have been identified within this report and meets FM Approvals requirements:

- Manufacturer’s name or trademark
- Model identification
- Serial number
- FM Approvals Certification Mark
- Manufacturing location

5 REMARKS

The Flood Mitigation Equipment shall be used in accordance with the manufacturer’s installation and use instructions and shall satisfy the requirements of the Authority Having Jurisdiction and all applicable codes and standards.

6 SURVEILLANCE AUDIT

6.1 An audit of the manufacturing facility for these barriers was conducted as a part of this examination to verify implementation of an appropriate quality assurance program. Its purpose was to determine that the manufacturer’s equipment, procedures, and quality program are sufficient to ensure a uniform product representative of that which was examined and tested.

6.2 Follow up facilities and procedures audits (F&PA) shall be conducted by FM Approvals or its representative program on an annual basis, or more frequently if required by jurisdictional authorities

6.3 FM Approved products shall be produced only at the locations audited by FM Approvals and as specified in this Approval Report. Products bearing the FM Approvals

Certification Mark are not permitted to be manufactured at any other location without prior written authorization by FM Approvals.

6.4 The manufacturing site for these barriers is:

Dai Chen Watertight Gate Technology
938 Fenglin 2nd Road
Daliao District
Kaohsiung City, Taiwan, P.R.C.

6.5 The facilities and quality control procedures in place at this location have been found to be satisfactory to manufacture product substantially equivalent to that examined and tested as described in this report.

7 MANUFACTURER'S RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals. No changes of any nature may be implemented unless notice of the proposed change has been provided to, and written authorization obtained from, FM Approvals. The Approved Product Revision Report, FM Approvals Form 797, must be forwarded to FM Approvals as notice of proposed changes.

7.2 FM Approvals requires assurance that subsequent equipment produced will present the same quality and reliability as the specified samples examined. The manufacturer must maintain a quality assurance program, which includes as a minimum: incoming, in process, and final inspection and testing, equipment calibration, and drawing change control.

7.3 The manufacturer shall notify FM Approvals of changes in product construction, design, components, raw materials, physical characteristics, coatings, component formulation or quality assurance procedures prior to implementation of such changes.

7.4 Where all or part of the quality control has been subcontracted, the manufacturer shall, at a minimum, conduct sufficient oversight audits to verify the continued application of the required controls.

8 DOCUMENTATION FILE

The documentation listed below is considered critical to this Approval and is on file at FM Approvals under P.I. 3052640.

Drawing	Revision	Description
DCAM-01	A	Aluminum Alloy Flood Gate DIOM Manual
DCAMW-02	A	Multi-Function Flood Window DIOM Manual
DCSD-03	A	Manual Sluice Gate DIOM Manual
MG140816-01	A	Illustration of Aluminum Alloy Flood Gate
MG140816-02	A	Elevation of Aluminum Alloy Flood Gate & Detail View of Main Mullion and Back Support

Drawing	Revision	Description
MG140816-03	A	Detail View of Main Mullion and Bilateral Mullion
FIMG01	A	Detail View of Watertight Plank, Tightening Screw, Main Mullion, Bilateral Mullion, Base Plate and Storage Shelf
FIFA01	A	Elevation of Bilateral Mullion
FIFB01	A	Elevation, Side view and Detail view of Back Support & Back Support Base
FIFG01	A	Detail Diagram of Tightening Screw
FIFG02	A	Detail Diagram of Main Mullion
FIFG03	A	Detail Diagram of Watertight Plank & Base Plate
MW140816-02	A	Illustration of Multi-Function Flood Window
MW140816-03	A	Detail Diagram of Multi-Function Flood Window
SG140601-01	A	Illustration of Manual Sluice Gate
SG140601-02	A	Detail Diagram of Manual Sluice Gate

9 CONCLUSION

The flood barriers described in this report meet 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: 3052640

Attachments: Blueprint Report / Critical Document List

Blueprint Report

Dai Chen Watertight Gate Technology Co., Ltd (148667)

Class No 2510

Original Project I.D. 3052640

Drawing No.	Revision Level	Drawing Title	Last Report	Electronic Drawing
DCAM-01	A	Aluminum Alloy Flood Gate DIOM Manual	3052640	Yes (pdf)
DCAMW-02	A	Multi-Function Flood Window DIOM Manual	3052640	Yes (pdf)
DCSD-03	A	Manual Sluice Gate DIOM Manual	3052640	Yes (pdf)
FIFA01	A	Flood Gate Bilateral Mullion (AM-03)	3052640	Yes (pdf)
FIFB01	A	Flood Gate New back support	3052640	Yes (pdf)
FIFG01	A	Flood Gate Achnoring Plates	3052640	Yes (pdf)
FIFG02	A	Detail Diagram of Main Mullion	3052640	Yes (pdf)
FIFG03	A	Detail Diagram of Watertight Plank & Base Plate	3052640	Yes (pdf)
FIMG01	A	Detail View of Watertight Plank, Tightening Screw, Main Mullion, Bilateral Mu	3052640	Yes (pdf)
MG140816-01	A	Aluminum Alloy Flood Gate Assembly	3052640	Yes (pdf)
MG140816-02	A	Elevation of Aluminum Alloy Flood Gate & Detail View of Main Mullion and B	3052640	Yes (pdf)
MG140816-03	A	Detail View of Main Mullion and Bilateral Mullion	3052640	Yes (pdf)
MW140816-02	A	Multi-Function Flood Window	3052640	Yes (pdf)
MW140816-03	A	Detail Diagram of Multi-Function Flood Window	3052640	Yes (pdf)
SG140601-01	A	Manual Sluice Gate	3052640	Yes (pdf)
SG140601-02	A	Detail Diagram of Manual Sluice Gate	3052640	Yes (pdf)