Flood prevention
Water-Gate Flood Defense

Source: https://en.megasecureurope.com/flood-protection-flooding-control/
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1. Flood Protection Water-Gate

PRESENTING THE CONCEPT

Water-Gate is an extremely effective and safe emergency flood protection product:

- Water-Gate instantly replaces thousands of sandbags
- Water-Gate remains stable regardless of its length, current direction or land slopes

Water-Gate can hold thousands of cubic metres of water without anchorage!

Water-Gate can hold thousands of cubic metres of water without anchorage! The design of the Water-Gate movable flood barrier, at a height of x and width of 1 to 4, ensures perfect stability and traction to all floor types, regardless of the height to be protected.

The thrust exerted on the backdrop is 4x greater than the horizontal thrust.

The Water-Gate flood barrier automatically deploys according to the pace of the flow.

Water-Gate products are acknowledged on a worldwide basis, due to their more than 15-years performance (see references).
GENERAL FEATURES

Water-Gate Flood Barrier

Implementation:
The mobile flood barriers come in rolls, which are then laid out on the ground and unrolled, or they come packed in a specially designed box for fast deployment.

Manoeuvrability:
The Water-Gate flood barriers are manufactured in unit lengths, which are less than or equal to 15.2 metres, so that its implementation can be undertaken by just one or two people (depending on the height of the protection). This feature also enables discontinuous flood protection, which can be adapted to all situations.

Modularity:
It is possible to indefinitely extend the length of the flood protection product, and without loss of efficiency. The Water-Gate flood protection product can be extended at will by continuously adding new lengths, regardless of the different protection heights chosen: fast connections without tools using a double Velcro system. Conversely and with the same simplicity, the elements become useless because such a reduction of the flood, can be quickly removed without even compromising the effectiveness of flood protections in place.

Stability:
Water-Gate remains stable regardless of its length, land slopes or direction of the current (front, side or reflux). There is no risk of it slipping and as such, it requires no anchorage.

Waterproofing:
The Water-Gate flood protection product ensures excellent waterproofing thanks to the water pressure exerted on the canvas floor and to its integrated weight system that prevents water from seeping in underneath the barrier.

- Leaks on smooth ground (such as concrete): 4 L / min / linear metre
- Leaks on natural ground: 6.5 L / min / linear metre
Flexibility of the chosen perimeter:

The Water-Gate flood protection product can be bent at any point and in every direction, so that it can be adapted to all situations (such as the peripheral protection of a building). It is possible to form a right angle without an additional element, simply by folding (this is described in the User Manual).

It fits all reliefs:

Mounds, ditches, sidewalks, stairs, rails, etc.; the ground does not need to be flat. Nevertheless, we recommended positioning ballast bags to free areas rupture, such as curbs, walls.

Overcoming obstacles:

The Water-Gate flood protection product can go over obstacles / objects. The water pressure on the canvas will conform to the shape of the object, thus avoiding leakage.

It fits all types of ground:

Asphalt, grass, gravel, pavement, slabs, tiles, etc. It also works on sand, although with special precautions.

Implementation during flooding:

Implementation of the Watergate barrier during flood is perfectly possible however, it does require the assistance of more staff.

Example of drying an already flooded house:

![Example of drying an already flooded house](https://example.com/example_image)

Shock resistance:

Due to its design in flexible materials, the Water-Gate Mobile Flood Barrier is particularly resistant to impact (for instance, drifting objects).

The energy arising out of an impact is easily absorbed by the barrier, without breaks, tears or losing its stability. Impact resistance testing are carried out using branches from trees that are thrown at an impressive speed (see FM Global Certification and a video of the test: [https://youtu.be/51ytObyMMVc](https://youtu.be/51ytObyMMVc)).

In the exceptional case of a tear occurring when the barrier is in water, simply slide a piece of cloth inside the barrier to close the gap (waterproofing is secured by the water pressure exerted on the canvas).
Durability:

The Water-Gate flood protection barrier is an extremely strong and robust product. The barrier is designed in polyester coated with PVC, very resistant to abrasion and tearing. Safety stitches are made of 100% polyester thread, using lockstitch. A broken lockstitch will not compromise the next lockstitch. The barrier materials can easily withstand temperatures of 50 degrees Celsius and up to minus 40 degrees Celsius, as well as most chemicals.

The Water-Gate flood barrier is exclusively made of polymer materials, it is estimated to last up to 20 years, when used 2 to 3 times a year.

Maintenance:

Water-Gate mobile flood barriers require very little maintenance. We recommend cleaning and drying the flood barriers following each use (the loops are provided in order to suspend the barrier for drying). Dirt and moisture have no effect on the quality and strength of the Water-Gate barrier, however unpleasant odours may occur when it is next used.

Warranty:

Each flood barrier is manufactured and inspected according to strict quality standards. A serial number is registered at the end of each flood protection product, in order to ensure its traceability.

Our flood barriers are warranted against defects in design, material or performance during a period of two years for UV resistance, waterproofing, the mechanical strength of fabrics and technical materials stored in their original container.
COMPETITIVE ADVANTAGES

- Efficiency guaranteed
- Ultra-Fast Installation
- 3 People
- Easy connections
- Reduced Storage
- Easy Repair
- No anchor required
- No tedious joints
- Without pump
## TECHNICAL SPECIFICATIONS OF THE CANVAS

### Outer shell - PVC Canvas

<table>
<thead>
<tr>
<th>Properties</th>
<th>Minimum specification</th>
<th>Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>750 g/m²</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Base fabric</strong></td>
<td>Filet de polyester tissé</td>
<td></td>
</tr>
<tr>
<td><strong>Tension resistance</strong></td>
<td>Warp 55 kg / cm  Weft 50 kg / cm</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Tear resistance</strong></td>
<td>Warp 45 kg</td>
<td>Weft 35 kg</td>
</tr>
<tr>
<td><strong>Adhesion</strong></td>
<td>Warp 1.5 kg / cm</td>
<td>Weft 1.5 kg/cm</td>
</tr>
<tr>
<td><strong>Temperature resistance</strong></td>
<td>-30° +70° C</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>UV resistance</strong></td>
<td>More than 80% resistance after 2000 hours of exposure</td>
<td>No</td>
</tr>
</tbody>
</table>

### Interior partitions - Polyethylene Bags

<table>
<thead>
<tr>
<th>Properties</th>
<th>Minimum specification</th>
<th>Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>300 g/m²</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Base fabric</strong></td>
<td>100% Polyéthylène</td>
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</tr>
<tr>
<td><strong>Tension resistance</strong></td>
<td>Warp 80 kg / cm  Weft 50 kg / cm</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Tear resistance</strong></td>
<td>Warp 40 kg</td>
<td>Weft 40 kg</td>
</tr>
<tr>
<td><strong>Resistance to cold</strong></td>
<td>-40° C</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>UV resistance</strong></td>
<td>More than 80% resistance after 2000 hours of exposure</td>
<td>No</td>
</tr>
</tbody>
</table>
CERTIFICATES

The Water-Gate flood protection product is EC certified.

Water-Gate Flood Barriers have successfully passed the tests and have been certified by FM Global, the worldwide leader in property damage insurance.

Three heights were tested: 100 cm, 130 cm and 150 cm.

Tests were carried out in collaboration with the US Army Corps of Engineers.
Sample test video: https://youtu.be/51ytObyMMVc

Points tested (during 24 hours for each test):

- Waterproofing and stability at 30%, 60% and 100% of the capacity of the barrier
- Wave testing at 60%, 80% and 100% of the barrier capacity
- Resistance to parallel currents
- Shock resistance (trunk impact)
- Resistance to overflows (120% of the barrier capacity).
REFERENCES

France
Airports, Transport networks
SNCF Paris Protection of RER C | EUROVIA

Army, Civil Protection, Fire and rescue
Cuers Pierrefeu Naval Air Station | 25 SDIS

Civil Engineering, Nuclear Energy, Energy Transport, Environment
SPAC | Vinci construction | HydroAlsace

Industrial Environment and Logistics
Hager Electro Bischwiller | Géant Casino Aix en Provence | BURGEAP | Nestlé Nutrition

Cities, Towns
City of Bretteville l’Orgueilleuse 14740 | Town of Petite-Rosselle 57540 | City of Rohr 67270 | City of Simandres 69360 | City of Valencia 26000

Europe
Army, Civil Protection, Fire and rescue services
Eppingen Fire Brigade - Germany | Gernsbach Fire Brigade - Germany | Furtwangen Fire Brigade – Germany

Civil Engineering, Nuclear Energy, Energy Transport, Environment
Sellafield Nuclear Power Plant - UK | Environment Agency of Nottinghamshire – UK

Water Management and Treatment
Thames Water – UK

ERP – Universities
Southampton Solent University – UK

Cities, Towns, Parishes
Bergen - Norway | Chaudfontaine - Belgium | Frutigen - Switzerland | Greve Strand - Denmark | Milan - Italy | Mons - Belgium | Neuchatel - Switzerland | Tubize - Belgium | Aosta Valley - Italy

Worldwide
Airports, Transport networks
Tokyo International Airport - Japan

Civil Engineering, Nuclear Energy, Energy Transport, Environment
National Grid, Natural Gas & Electricity, Syracuze, New York – USA | Exxon Mobil

ERP – Universities
Good Samaritan Hospital, New York, New York – USA | Battery Park City Parks Conservancy, New York, New York – USA

Cities, Towns
Bangkok - Thailand | Mexico City - Mexico | Montreal - Canada | Sydney - Australia | Tokyo - Japan
Individuals protected at Woodborough (UK) in July 2012.
1 barrier WP 2050

City of Furtwangen (Swiss) July 2014.
3 barriers WL 0630
2. Long distance devices

**OTHER MODEL PRODUCTS AVAILABLE FOR LONGER-LENGTH FLOOD PROTECTION**

Each model unit of the Water-Gate flood protection barrier can retain up to 2M of water:

- across several hundreds of metres | by joining together the WL range barrier product
- whatever type of terrain: flat or uneven ground | we can combine different barrier heights on sloping ground
- and in minutes only | the flood barriers come pre-packed in boxes for rapid deployment. A Water-Gate exclusive!

**WL: The Reference code for greater length flood protection range**

Max. withholding 200cm / Integrated ballast / Extended partitions / Canvas in Polyester PVC.

Available heights:

<table>
<thead>
<tr>
<th>Height (cm)</th>
<th>Code 1</th>
<th>Code 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>WL 1430</td>
<td>WL 1450</td>
</tr>
<tr>
<td>50</td>
<td>WL 2030</td>
<td>WL 2050</td>
</tr>
<tr>
<td>67</td>
<td>WL 2630</td>
<td>WL 2650</td>
</tr>
<tr>
<td>80</td>
<td>WL 3230</td>
<td>WL 3250</td>
</tr>
<tr>
<td>100</td>
<td>WL 3930</td>
<td>WL 3950</td>
</tr>
<tr>
<td>130</td>
<td>WL 5030</td>
<td>WL 5050</td>
</tr>
<tr>
<td>150</td>
<td>WL 6030</td>
<td>WL 6050</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td>WL 7850</td>
</tr>
</tbody>
</table>
PACKAGING THE BARRIERS INTO BOXES FOR EXPRESS DEPLOYMENT

The different sections of WL flood barrier are pre-assembled and folded into skeins (like an accordion) in custom-made boxes. The boxes are subject to special controls: they are made of wooden panels (lighter version) or metal panels (for long-term storage). They can be equipped with wheels for ease of moving the box. The flood barriers should be well protected from adverse weather conditions, UV rays, rodents and vandalism.

Depending on their size, boxes can be handled using a forklift or trailer. Simply throw the first barrier onto the ground then place the box onto the entire protection line.

Sample video: https://youtu.be/37w9TOKmmRM

An outdoor signage indicates the deployment direction as well as the corresponding sections.
Installing the barriers in deployment boxes

Deployment of a 300 m box: 5 minutes / 3 people

1. Unlocking the box.
2. Positioning the box into the deployment direction at 2 metres distance from the protection.
3. Take the first barrier to the starting point and deploy the protection throughout its length by following the ground contours.
4. If necessary combine the joints between the different boxes (length in excess of 500 m).
5. Place some sand bags where the protection barrier ends (on a relief or against a wall).
3. Abstract

“When we can prevent this weakness from occurring.”

Jean de Rotrou (1609-1650)

The Water-Gate Flood Protection product is the lifejacket of our cities, when all other structural protection measures are reaching their limits. It is imperative that it can be mobilised in a short time and across great distances to protect where and when needed. The dynamics of flooding still remain a poorly mastered art, given the diversity of physical processes that come into play. Prevention! Prevention! Prevention!

Quick and easy to assemble, with minimal man power a no need for prior planning, the Water-Gate is an effective and reliable flood protection product.

The Water-Gate is a flood device that fits all types of relief and grounds. It will remain effective over time, regardless of the changes that may take place around the site. Its durability, low implementation cost and low maintenance costs make the Water-Gate a particularly economic flooding solution, as regards the value of the property to be preserved.