



NATIONAL FLOOD BARRIER TEST PROGRAM



INTRODUCTION

The Association of State Floodplain Managers (ASFPM) in collaboration with FM Approvals and the US Army Corps of Engineers National Nonstructural/Flood Proofing Committee (NFPC) have implemented a National program of testing and certifying flood barrier products used for flood proofing and flood fighting.

The purpose of this program is to provide an unbiased process of evaluating products in terms of resistance to water forces, material properties, and consistency of product manufacturing. This will be accomplished by testing the product against water related forces in a laboratory setting, testing the product against material forces in a laboratory setting, and periodic inspection of the product manufacturing process for consistency of product relative to the particular product that received the original water and material testing. Upon products meeting the consistency of manufacturing criteria and meeting the established standards for the material and water testing, the certification part of the program becomes available to the product. Since the testing part of the program is conducted in a laboratory setting, not all forces and impacts to which the product could be subjected will be tested.

The testing protocol for each category of product will define the limits of the product testing based on the limits of the laboratory setting. Any subsequent product certification will reflect the testing limits of the laboratory setting. Certification will also reflect, in terms of flood proofing, the suitability of the product, the performance of the product based on the product deployment literature, the durability and reliability of the product, and the consistency of the product. All products will be examined and evaluated on a model by model, type by type, plant by plant, and manufacturer by manufacturer basis.

There three certification levels possible (silver, gold and platinum) that are described in detail further in this document. The levels represent the height (one, two and three feet respectively) of hydrostatic testing attained.

This program is funded 100 % by vendors/manufacturers of products. The five (5) step process consists of application, proposal issue and manufacturer authorization, testing and first audit (which includes water related testing, materials testing, plant and product inspection), follow-up services, and certification.

FLOOD PROOFING/FLOOD FIGHTING PRODUCT CATEGORIES

The National Flood Barrier Testing & Certification Program is testing/certifying products that are designed and marketed to be used to provide flood risk reduction to facilities that are exposed to flood risk such as buildings. These products are intended to provide flood risk reduction to



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residential, commercial, agricultural, and industrial property. They are generally categorized into the following five broad categories:

1. **Temporary Barriers:** Temporary barriers are intended to provide temporary flood risk reduction. These barriers are generally setup just prior to a flood event and are generally taken down immediately after the flood threat has passed. Setup of these barriers does not require any permanent fixtures to which the barrier is attached. Flood warning times prior to the flood event must be long enough in order for these barriers to be setup and become flood worthy. Temporary barriers are basically of two general types depending upon the method of making the barriers stable to resist the forces of flood water. These methods are generally water filled or sand filled in order to provide product weight and hence stability and using the weight of the flood water itself on the barrier to anchor the product and provide the needed stability. Depending on the product, they can generally be deployed in a large variety of conditions. These products are usually the flood proofing system.
2. **Semi-permanent barriers:** These barriers also provide temporary flood risk reduction. They also rely on having enough flood warning time in order to be able to erect the barrier and they are generally erected just prior to the flood and removed shortly after the flood. These products rely for stability on an anchoring mechanism that is permanent attached to the ground upon which these products are erected. These products are usually the flood proofing system.
3. **Closures:** These products are intended to close openings in flood proofing systems. They are generally categorized as closing window and door openings into buildings. They are usually a part of a permanently installed flood proofing system. They also require sufficient warning time prior to the flood event in order to achieve installation. They are removed from their closure position after the flood event passes in order to be able to freely use the opening that the product closed. These products are part of a flood proofing system.
4. **Backwater Valves:** Backwater Valves generally are used in sewer and drain systems to prevent the flow of flood water through these systems and into the building or structure desiring flood risk reduction. These devices are permanently installed and do not function until flood water reaches sufficient depths that will allow the water to flow into the building via the sewer or drain system. These devices are part of a flood proofing system.
5. **Sealants:** Sealant products are generally used to coat material that is not completely resistant to the passage of water when exposed to floods. The sealant material is applied in order to make the material water proof in terms of the passage of water through the material. These products are permanently applied. They are part of a flood proofing system.



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- Mitigation Pumps:** Flood Mitigation Pumps are used for the removal of unwanted water. Types of flood mitigation pumps include but are not limited to submersible (ex: a sump pump) and self-priming pumps. Flood mitigation pumps shall be utilized in one of the following applications; as part of an open automatic barrier system, installed in a building and used for removal of unwanted water, and/or as a portable emergency device used for removal of unwanted water from a building.

Currently, the program is only certifying temporary barriers, closures, backwater valves and mitigation pumps.

ROLES & PROCEDURES

APPLICATION

The application for a product to be tested will be done by completing the National Flood Barrier Testing & Certification Program application form. The application form can be obtained from FM Approvals, ASFPM, or the USACE National Nonstructural Flood Proofing Committee. Once an application is submitted it will be forwarded to ASFPM for processing. After initial processing, ASFPM will coordinate a call among the manufacturer, ASFPM, FM Approvals and USACE to discuss the application, testing level desired, testing protocols, and next steps. If the manufacturer wishes to proceed with evaluation under the program, the manufacturer will submit the non-refundable application fee to the ASFPM to initiate the testing process.

PROPOSAL ISSUE AND MANUFACTURER AUTHORIZATION

The ASFPM will initiate a contract with the manufacturer and schedule water based testing with the US Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC). Concurrently, FM Approvals will initiate an FM Approval project directly with the manufacturer in accordance with their typical business process.

TESTING AND FIRST AUDIT

Once contracts are in place, the following testing is scheduled and conducted:

Water Related Testing

All water related testing of temporary water barriers will be conducted by U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) in Vicksburg, MS. Qualified alternate test laboratories may be chosen on a case-by-case basis. All closure water based testing will be conducted either at ERDC, at the manufacturing facility or at an independent laboratory. Testing is conducted in accordance with [FM Approval Standard 2510](#) and witnessed by FM



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Approvals. Water related testing refers to that suite of tests that will examine the ability of a product to withstand flood related exposure such as hydrostatic, hydrodynamic, overtopping, velocity, and debris.

Material related testing

All material related testing will be conducted by FM Approvals. Material related testing refers to that suite of tests that will examine the ability of a product to withstand the forces of nature that impinge upon the product when deployed. These tests may include such factors as resistance to internal leakage if the product is water filled; component durability/cycling; and resistance to impact and wear, abrasion, vibration, salt spray corrosion, environmental corrosion, and hail. Additional factors are tensile strength, degradation due to ultraviolet light, heat and cold variability, material aging, compression strength, tear and puncture, and biological degradation. The component makeup of the product will dictate the applicability of the material testing specific for that product. Material related testing is conducted in accordance with [FM Approval Standard 2510](#).

Plant and product inspection

Plant and product inspection will consist of a manufacturing facility audit by FM Approvals. This visit will be to confirm that proper quality guidelines are in place to ensure the manufacturer's ability to consistently produce a product identical to the one tested.

CERTIFICATION

Dependent upon the maximum hydrostatic depth of water tested, there are three levels of certification available. These levels are:

- **Silver:** This level attained if the product passes all water related testing standards including a minimum of one foot of hydrostatic test, the product passes all of the materials testing standards, the plant and product were inspected prior to product testing, and FUS will be conducted. In order to achieve the Silver certification, the product must not only meet the standards and be subjected to the inspections just discussed, but any testing must be witnessed by a representative of FM Approvals.
- **Gold:** This level is attained if the product passes all water related testing standards including a minimum of two feet of hydrostatic test, the product passes all of the materials testing standards, the plant and product were inspected prior to product testing and FUS will be conducted. In order to achieve the Gold, the product must not only meet the standards and be subjected to the inspections just discussed, but any testing must be witnessed by a representative of FM Approvals. Any testing that was conducted without prior plant and



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product inspection and without being witnessed by a representative of FM Approvals will require complete retesting if a Gold certification is ever desired for that product.

- **Platinum:** This level is attained if the product passes all water related testing standards including a minimum of three feet of hydrostatic test, the product passes all of the materials testing standards, the plant and product were inspected prior to product testing, and FUS will be conducted. In order to achieve the Platinum certification, the product must not only meet the standards and be subjected to the inspection just discussed, but any testing must be witnessed by a representative of FM Approvals. Any testing that was conducted without prior plant and product inspection and without being witnessed by a representative of FM Approvals will require complete retesting if a Platinum certification is ever desired for that product.

FOLLOWUP SERVICES

Follow up services [FUS] will consist of periodic visits to the manufacturing facility for as long as any type of product certification is desired by product manufacturer. This long-term periodic FUS will be for the purpose of verifying consistency of product manufacture relative to the product that was originally tested at ERDC and FM Approvals.

PUBLICATION

A benefit of participating in the National Flood Barrier Testing & Certification Program is that any product passing the tests shall be identified as such on the program's webpage which is hosted by ASFPM. Links to the manufacturer and any certifications of compliance/approval will be posted as well. Certifications will also be listed in the Approval Guide, an online resource of FM Approvals (www.approvalguide.com).