

# Floodproof Window Barrier/Shield

## Overview

- Window barriers/shields can be used in combination with sealants to provide protection from flooding.
- Shield types:
  - Steel or aluminum
  - Custom window barriers
- Shield/barrier pricing will vary depending on whether the barrier must be custom-made.
- As this measure is typically a temporary flood-damage prevention measure, installation of the shield should be designed to be quick and easy.
- Prior to flood events, shields will need to be placed after vacating the structure.
- Shields are not recommended for structures that may experience flooding lasting longer than 12-24 hours.

## Design Considerations:

- Some window barriers will require the installation of permanent anchors on the walls surrounding the windows in order to enable quick deployment of the window barrier before flooding events.
- Even with shield installation, there will still be some water infiltration. Therefore, floodproof windows and/or a sump pump may still be necessary.
- The structural soundness of the building, walls, and floor slabs, including their ability to withstand flood loads, must be determined. Therefore, a design professional or engineer is required for shield selection and installation.
- If the amount of flooding exceeds the capacity of the structure's walls, the shield can cause more damage to the structure.

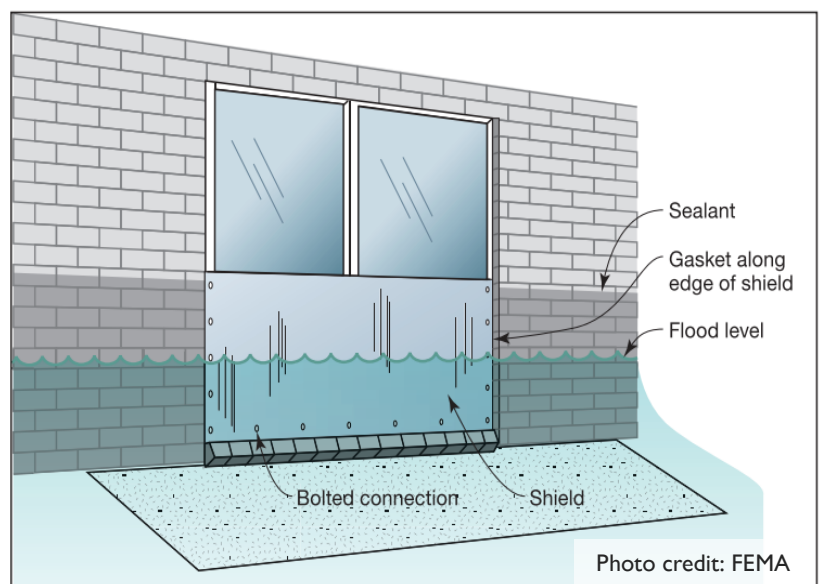


## Key Takeaways

During flood events, water can enter a structure through un-sealed openings like doors and windows.

To avoid flood damage inside of a structure, shields can be installed on the un-sealed openings.

Shields are water-tight systems that cover the un-sealed openings on the exterior walls of the structure. They transfer flood-induced forces to the surrounding exterior walls and help prevent water from entering the building.





# I-ADAPT

## Exterior Adaptation Floodproof Window Barrier/Shield

### Estimated Costs/Benefits

\*U.S. dollars (2022), estimates are subject to change

Potential Costs		Potential Benefits		
Item	Estimate	Post-Flood Recovery Actions	Estimate	
Aluminum shield	\$75-\$900	Flood damage recovery (professional clean-up, mold removal, replacement/repair of flood damaged items)	1 inch water	\$10,800-\$53,500+
<b>OR</b>			↓	↓
Steel shield	\$300-\$1,000		3 feet water	\$39,800-\$185,700+
<b>OR</b>				
Custom-made shield/barrier	\$1,000-\$2,000			
<b>ESTIMATED TOTAL COST PER WINDOW</b>	<b>\$75-\$2,000</b>	<b>ESTIMATED TOTAL SAVINGS</b>	<b>\$10,800-\$185,700+</b>	

### Expected Maintenance

- Periodically check shields and fixtures to ensure they have not corroded or been damaged in any way.

### Additional Actions

- Apply waterproof sealants on exterior walls of structure.
- Shields must be installed manually before each flooding event.

### Permitting Agencies

Contacts for permitting requirements include but are not limited to the following:

- Your city and/or county government for local flood ordinances or regulations
- Your city and/or county government for building permits

### Who to Contact

- Design professional or engineer
- Floodproofing contractor

### Additional Resources

- [FEMA Engineer Principles and Practices for Retro-fitting Flood-Prone Residential Structures \(FEMA P-259\)](#)
- [FEMA Flood Mitigation Assistance Individual Flood Mitigation](#)
- [FEMA Homeowner's Guide to Retrofitting \(Chapter 8\)](#)

Resources can also be found at <https://de.gov/iadapt>

Technical definitions and more information are located on the I-ADAPT website: <https://de.gov/iadapt>.



This information is intended to be used for planning purposes. It is not intended to substitute or take precedence over the guidance of design engineers, contractors, utility companies or regulatory agencies.

For more information, contact DNREC's Division of Climate, Coastal and Energy at [DNREC\\_IADAPT@Delaware.gov](mailto:DNREC_IADAPT@Delaware.gov)

