

Floodproof Door

Overview

- Floodproof doors can be installed to provide protection from flooding.
- Floodproof doors have a water-tight seal and prevent water from entering the structure during flood events.
- Floodproof doors are generally used instead of more extensive floodproofing measures if the building cannot be elevated, if the likelihood of timely installation of temporary flood protection measures (e.g. barriers or shields) is low, and/or if the building cannot be blocked off by flood barriers due to commercial use.
- Floodproof doors are typically constructed with stainless steel.
- The building must be constructed with concrete or masonry materials in order to be a candidate for a floodproof door.
- The structure's walls must also be floodproof or resistant in order to keep water from entering the structure.
- Before flooding events, the doors must be closed and locked.
- Floodproof door pricing can vary greatly depending on the size of the door and construction materials.
- The structural soundness of the building, walls, and floor slabs, including their ability to withstand flood loads, must be determined prior to installation. Therefore, a licensed structural engineer is essential for floodproof door installation.
- If the amount of flooding exceeds the capacity of the structure's walls, the doors can cause more damage to the structure.



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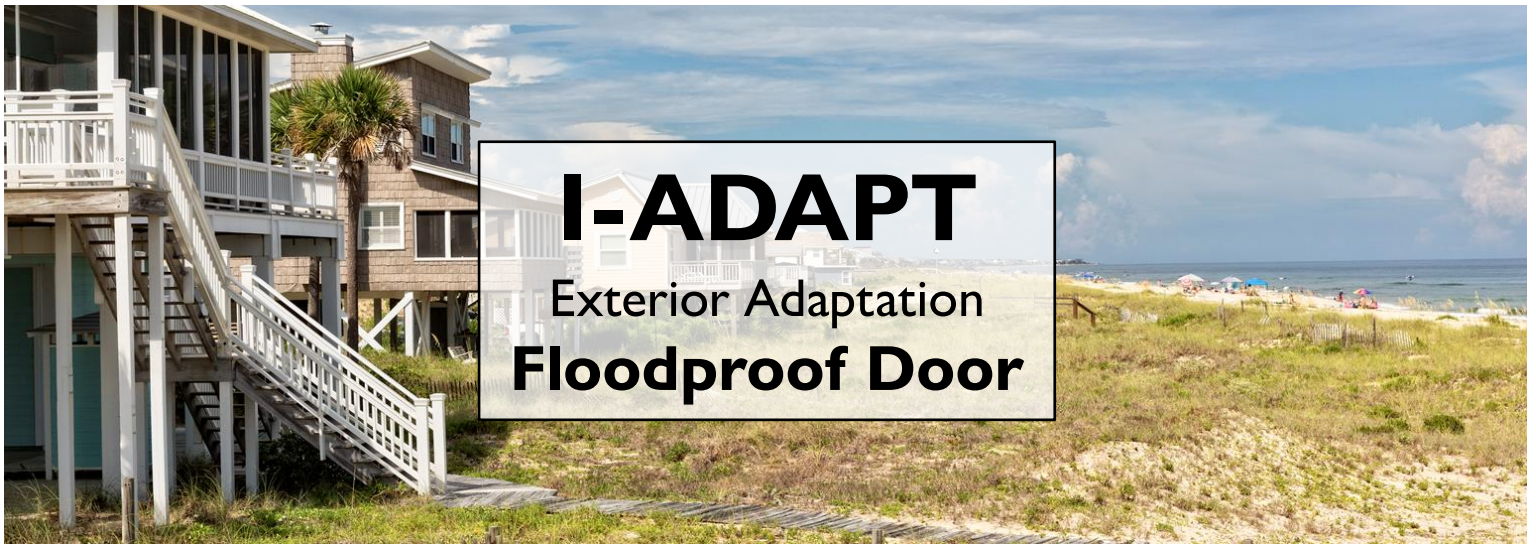
Key Takeaways

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

To avoid flood damage inside of a structure, floodproof doors can be installed. Floodproof doors are designed to prevent seepage during flood events. They are typically only recommended for buildings that cannot be elevated.



Photo credit: FEMA



I-ADAPT

Exterior Adaptation Floodproof Door

Estimated Costs/Benefits

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

| Potential Costs | | Potential Benefits | | | |
|--------------------------------------|--------------------------|--|--------------------------------|----------------------------|--|
| Item | Estimate | Post-Flood Recovery Actions | Estimate | | |
| Residential flood door | \$1,700-\$2,500+ | Flood damage recovery (professional clean-up, mold removal, replacement/repair of flood damaged items) | 1 inch water | \$10,800-\$53,500+ | |
| Structural engineer | \$400-\$600 | | ↓ | ↓ | |
| Installation | \$250-\$600 | | | | |
| OR | | | | | |
| Commercial flood door | \$7,000-\$50,000+ | | 3 feet water | \$39,800-\$185,700+ | |
| Structural engineer | \$400-\$600 | | | | |
| Installation | \$300-\$1,000 | | | | |
| ESTIMATED TOTAL COST PER DOOR | \$2,350-\$51,600+ | | ESTIMATED TOTAL SAVINGS | \$10,800-\$185,700+ | |

Expected Maintenance

- Periodically check doors to ensure they have not been damaged in any way.
- Clean the doors after flooding events.

Additional Actions

- Apply waterproof sealants on exterior walls of structure.
- Ensure that the doors and windows are closed and locked before flood events.

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

- Structural engineer
- Door installation contractor

Additional Resources

- [FEMA Engineer Principles and Practices for Retro-fitting Flood-Prone Residential Structures \(FEMA P-259\)](#)
- [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

