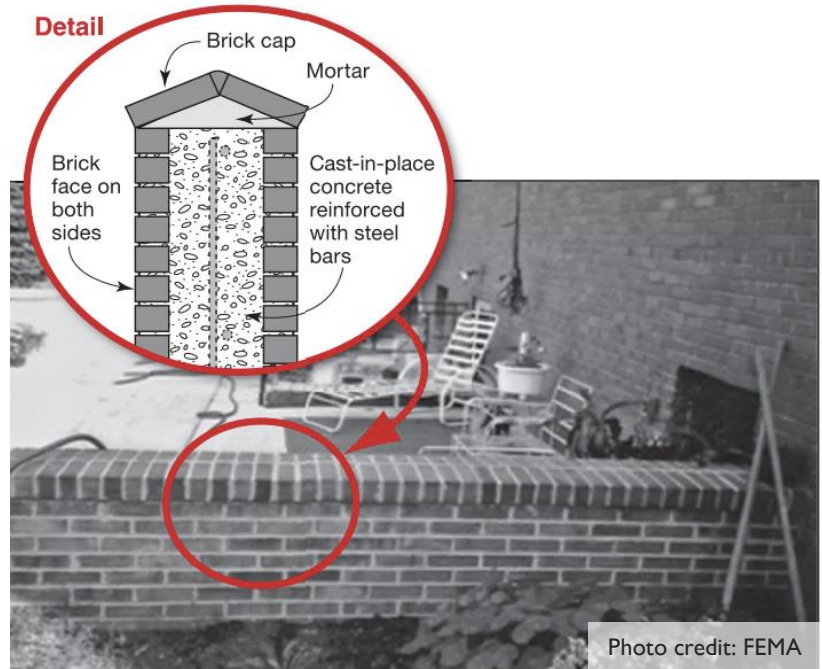


Floodwall

Overview

- Floodwalls are generally constructed with concrete or masonry materials and can be built to be aesthetically pleasing.
- Floodwalls must be designed with several factors in mind:
 - Base flood elevation line
 - Hydrostatic forces
 - Impact loads
 - Type of flooding
 - Water velocities
- There are several floodwall design types including gravity, cantilever, buttressed, and counterfort.
- Residential floodwalls are generally only a maximum of 3 or 4 feet high.
- Depending on the height of the floodwall, movable closures (shields or flood gates) may need to be installed for driveways or other openings if vehicle ramps are not feasible.
- Sump pumps and emergency back-up power systems should be installed to remove rain and seepage from inside the floodwall.
- The design professional/engineer must make sure that the floodwall will not cause flooding on adjacent properties.
- If the floodwall is not designed properly with all flooding forces taken into consideration, the floodwall can pose a significant safety hazard and can cause more damage to the structure than if there was no floodwall.
- If a flood event occurs that overtops the floodwall, flood damage will not be avoided.
- A floodwall can not be constructed in the floodway.
- This measure cannot be used to bring non-NFIP compliant structures into compliance.

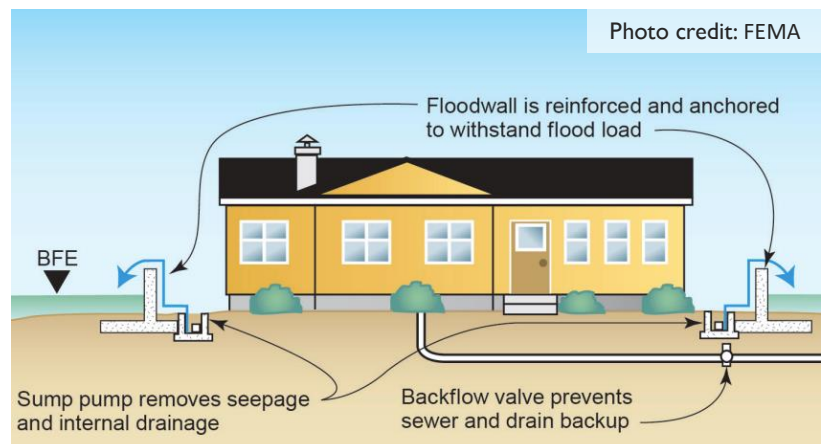


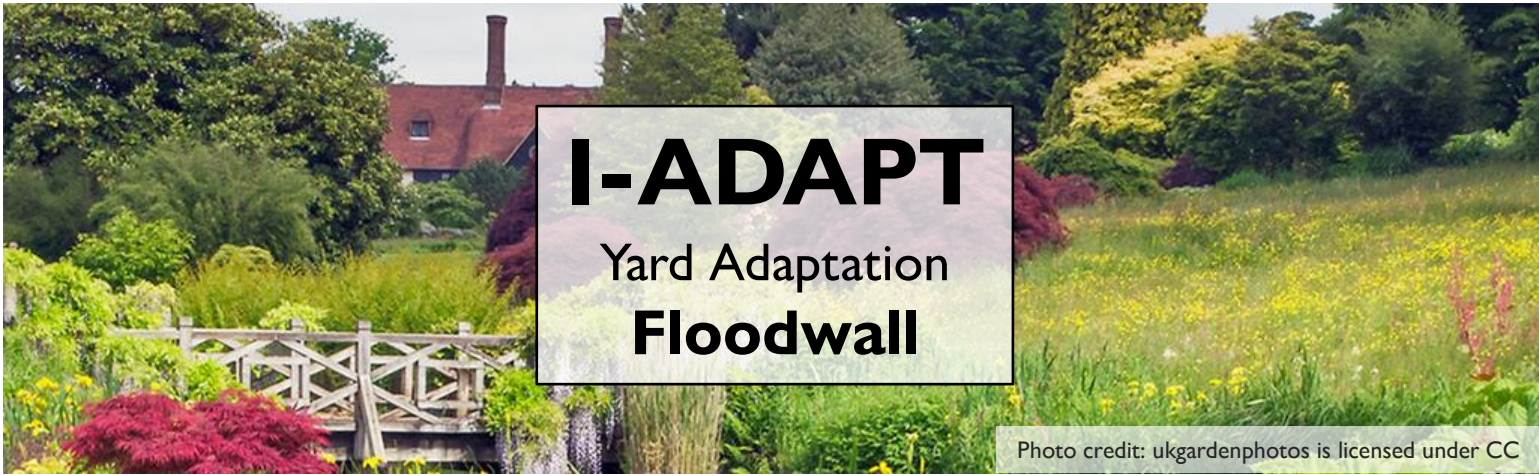
Key Takeaways

During flooding events, floodwater can inundate a structure's basement or lowest floor.

Additionally, flood waters may exert pressure on the structure's walls and/or carry floating debris and ice which can damage the structure.

In cases where structures cannot be elevated or relocated, floodwalls can be constructed to prevent flood damage costs by acting as a barrier to advancing flood waters and associated pressurization and flood borne debris.





I-ADAPT

Yard Adaptation Floodwall

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Estimated Costs/Benefits

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

Potential Costs		Potential Benefits		
Item	Estimate	Post-Flood Recovery Actions	Estimate	
Floodwall construction (this cost estimate has a very wide range and is highly dependent on property conditions, the length of the wall, and the material type)	\$200+ per linear foot	Flood damage recovery (professional clean-up, mold removal, replacement/repair of flood damaged items)	1 inch water ↓ 3 feet water	\$10,800-\$53,500+ ↓ \$39,800-\$185,700+
Sump pump system	\$100-\$4,000			
ESTIMATED TOTAL COST (50 ft floodwall)	Highly variable depending on size of wall and conditions	ESTIMATED TOTAL SAVINGS	\$10,800-\$185,700+	

Additional Resources

- [FEMA Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures \(FEMA P-259\)](#)
- [FEMA Homeowner’s Guide to Retrofitting \(Chapter 8\)](#)
- [LSU AG Center: Floodwalls](#)

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

Potential Funding Sources

- [Flood Mitigation Assistance Grant \(FMA\)](#)
- [Building Resilient Infrastructure and Communities Grant](#)

Additional Actions

- If the floodwall has a detachable closure, the closure will need to be placed before anticipated flooding events.

Expected Maintenance

- This measure requires extensive annual maintenance and inspections.

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
- [DNREC Coastal Construction Permit](#)

Who to Contact

- General contractor
- Design professional/engineer
- Utility companies

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

