

Floodwall Protecting Mechanical Equipment

Overview

- Floodwalls can be installed to protect indoor and outdoor utility systems and associated mechanical components from flooding.
- 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 level
 - Hydrostatic forces
 - Impact loads
 - Type of flooding
 - Water velocities
- Mechanical equipment floodwalls are generally only a maximum of 3 or 4 feet high as they are intended for floods only lasting a few hours with depths of less than 3 feet.
- Depending on the height of the floodwall, detachable closures (shields or flood gates) may need to be installed for access.
- Sump pumps and emergency back-up power systems should be installed to remove rainwater and seepage from inside the floodwall.
- If a flood event occurs that overtops the floodwall, flood damage will not be avoided.
- Mechanical equipment floodwalls can only be constructed in non-residential buildings in Flood Zone A.
- This measure should only be utilized if it is not possible to elevate the mechanical equipment.
- This measure may be used to bring non-residential buildings which have been categorized as Substantially Improved or Substantially Damaged into compliance with NFIP guidelines.

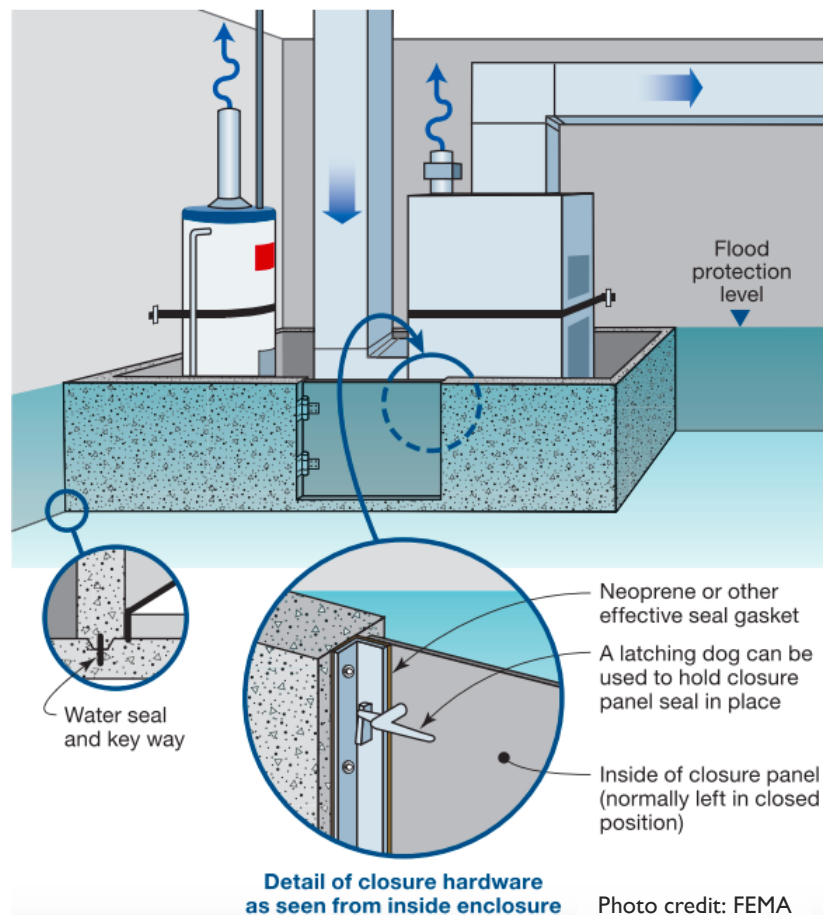


Photo credit: FEMA

Key Takeaways

During flood events, water can inundate a structure's mechanical equipment. Additionally, water may exert pressure on the equipment and/or carry floating debris, which can damage mechanical equipment.

In cases where the indoor or outdoor mechanical equipment cannot be elevated or relocated, floodwalls can be constructed to act as a barrier to advancing flood waters, associated pressurization and flood borne debris.



I-ADAPT

Other Adaptation Floodwall Protecting Mechanical Equipment

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+
Sump pump system	\$100-\$4,000		\$39,800- \$185,700+
ESTIMATED TOTAL COST	\$5,700 (4' x 6' x 8') - \$20,000+ (4' x 20' x 20')	ESTIMATED TOTAL SAVINGS	\$10,800- \$185,700+

Potential Funding Sources

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

Additional Resources

- [FEMA Floodproofing Non-Residential Buildings](#)
- [FEMA Protecting Building Utility Systems From Flood Damage](#)
- [FEMA Reducing Flood Risk to Buildings That Cannot Be Elevated](#)

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

Additional Actions

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

Expected Maintenance

- A maintenance plan including regular inspections and implementation drills is required.

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

