

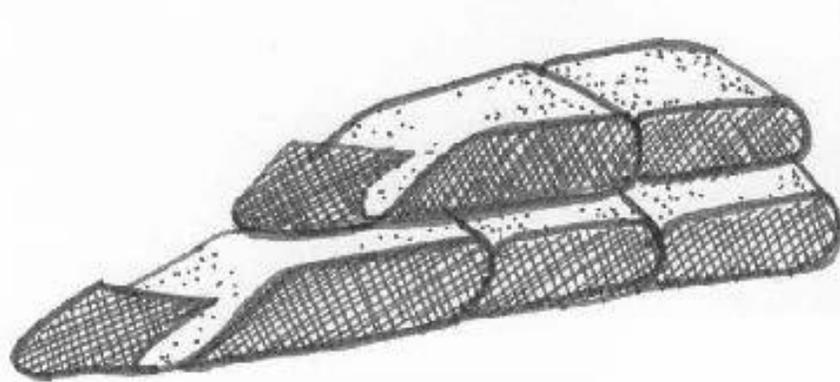
Temporary Flood Protection Using Sandbag Dikes and Walls

Properly filled and placed, sandbags can act as a barrier to divert moving water around structures, divert flow, hold back rising water and shore up permanent protection systems.

You may think sandbagging is a mindless process, but it requires planning and organization to be effective. Time, weather conditions, hours of darkness, and your available resources can all impact your success.

How to Fill and Lap Sand Bags

Sandbags for this purpose are a specific size 13" x 34". The smaller size makes for an economical use of sand and is easier to handle and put in place.



Cross section showing overlapping sandbags. Fill bags half to two-thirds full, and keep the weight under 30 lbs. There is no need to tie the bags.

- Clean off all snow, ice and debris and try to strip sod before placing bottom layer
- Dig a "key" trench 1 sack deep by 2 sacks wide
- Fill bags 1/2 to 2/3 full (no more than 30 lbs.)
- When filling, you should work in pairs with one person holding the bag while the other shovels (wearing safety equipment such as glasses and steel-toed boots is preferable)
- Tying of bags is not recommended

Before each flood event, have a practice run, plan your strategy, find your resources and test your construction.

- Loosely fold back open end and the bag on top will seal the opening, and this also allows the sand to settle for best results
- Face the “butt” of the bag upstream
- Tamp bags in place to prevent holes and to prepare a flat surface for the next bags
- Stagger the bags so that the joints alternate like bricks
- Alternate the directions of the bags “bottom layer lengthwise, next layer crosswise (for dikes)
- Complete each layer before starting the next

Have an evacuation plan. Decide in advance when you will abandon a flood fight.

Site Selection

Select the location for the wall or dike by taking advantage of natural land features that keep it short and as low as possible. Avoid obstructions that would weaken the dike.

Do not build against a building wall. Leave room (6 to 8 feet or more) between the dike and the building for maneuvering and for pumping out any water that leaks through the wall.

Short Sandbag Walls

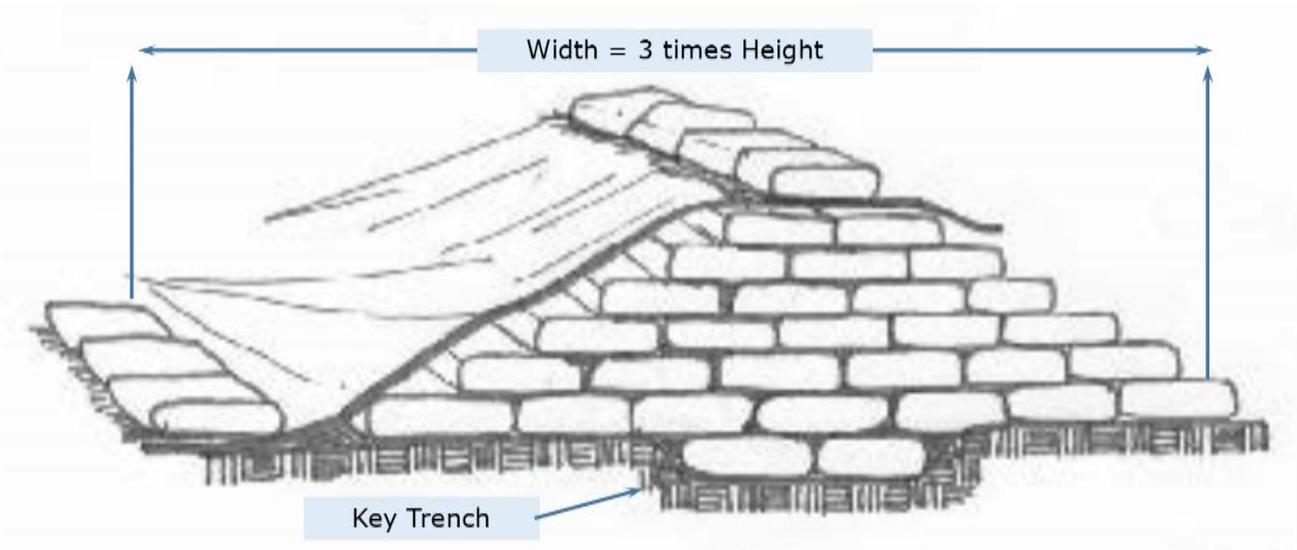
For walls four bags high or less, a simple vertical stack can work. Support the wall with “clusters” of bags every 5 feet.

For Sandbag Levees

For protection from water deeper than 2 feet, the stack should form a levee or pyramidal shape.

Bags Required for 100 Linear Feet of Dike

- 600-800 bags for 1 foot dike (10-13 cubic yards sand)
- 2,000 bags for 2 foot dike (23-33 cubic yards sand)
- 3,400 bags for 3 foot dike (37-57 cubic yards sand)
- 10,000 bags for 6 foot dike (167 cubic yards sand)



Cross section of a sandbag dyke.

Sandbag Levees or Dikes

- Do not use sandbags as the sole erosion protection or where they would be subject to wave attack
- The base of the levee should be three times as wide as the dike will be high
- If possible do not construct bearing directly against a home, leave room for working and for pumping out leakage
- To increase the height of a levee add bags to the inside and the top
- A plastic membrane (such as 6 mil plastic) on the water- side, can be used to reduce leakage, it should be loosely placed so the weight of the water does not rip it, and can be anchored into a trench, sealed with sandbags or lapped under the dike (do not walk on or puncture after it is in place)
- Use a continuous roll, or leave plenty of overlap between rolls
- Use drain tile or other suitable piping to direct downspouts over the wall and not into the area between the wall and the building

Safety

- Work safely, lift correctly and set up a “line” for passing bags
- Avoid twisting your back while filling bags
- Wear safety glasses and boots (slicing off a toe would add to your emergency situation)
- Have plenty of fresh bottled water on hand, as your well supply might become contaminated during the flood event

Large-Scale Operations

For large-scale operations, filling and transporting of bags can be expedited by bag holding racks, funnels, or high speed sandbagging equipment, however this type of specialized equipment is not always available during an emergency.



For further information contact:

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This document was adapted from the following sources:

- Essex Region Conservation Authority
- Manitoba Emergency Measures Organization
- Safety Central
- North Dakota State University of Agriculture and Applied Science
- Emergency Management Branch – City of Kansas
- US Army Corp of Engineers
- Sacramento County Department of Water Resources
- LSU AgCenter

Disclaimer: This document provides only basic information about temporary flood protection. Sandbags do not guarantee protection or water-tightness and other measures may also be required as backup in case of failure, or for protection from other threats such as sewer backup.