SANDBAG DIKE CONSTRUCTION

***Disclaimer**: This document is for information purposes that may be insufficient in addressing all your concerns about sandbag dike construction.*

SAFETY TIPS

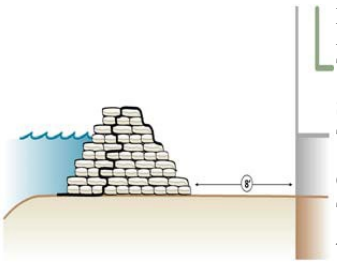
- Wear protective gear such as steel toed boots, hat, safety glasses, gloves, sunscreen, etc.
- Be aware of floodwater dangers, including, but not limited to: contamination, varying water flow and strong undercurrents and floating debris
- Adhere to proper sandbag handling technique:

Do not bend more than 20 degrees while handling sandbags.
Keep heavy weights below shoulder height, above knees and close to the body. Limit reaching with arms when passing the sandbags.
Pivot feet and don't twist through the back while handling sandbags.
Do not throw sandbags.

FILLING SANDBAGS

- Fill sandbag to half its capacity (no more than 40 lbs) with sand, clay or silt.
- Fold or tie the flap (tying or sewing is not necessary).
- Do not drag the bags (this could cause lower back injury and bag to weaken).
- When forming a line to pass sandbags, face each other and stand no more than one to two feet apart. If there are not enough people to form a continuous line, use a wheelbarrow to move sandbags.

BUILDING A SANDBAG DIKE



Location:
Base area of dike should be clear of snow and ice.
To avoid flood water moving under a dike, do not build on porous land or on a septic field.
The dike should be at least eight feet from building foundation. This prevents foundation damage and allows room for people and equipment to move.
To create a more secure dike, when possible, create a trench in the soil that is one sandbag deep by two sandbags wide.

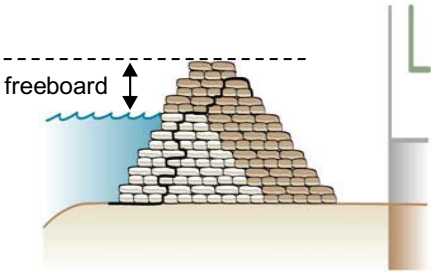
Construction:

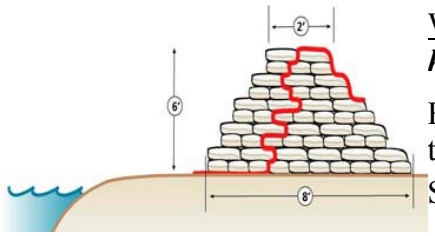
Dike size: <u>Height</u>: Sandbag dikes require at least two feet of freeboard. Freeboard is the area of the dike between the highest floodwater level and the top of the dike:

predicted floodwater rise above ground level + two feet of freeboard= required dike height

For example, if floodwater is predicted to rise four feet above ground level, the required dike height is at least six feet.
(4' + 2' of freeboard = 6' high dike)

At least two feet of sandbag dikes will compact when they get wet, which can reduce the available freeboard. The amount of compaction due to wetting increases with the size of the dike. Add at least five per cent to the required height of the dike to account for compaction.



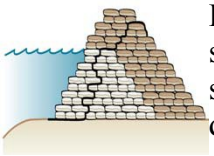


Width: The base of a sandbag dike is two feet wider than it's required height:
height* + two feet = *width at base

For example, a dike with a required height of six feet would have to be eight feet at its base. (6' + 2' = 8' wide at base)

Sandbag dikes must be at least two feet wide across the top of dike

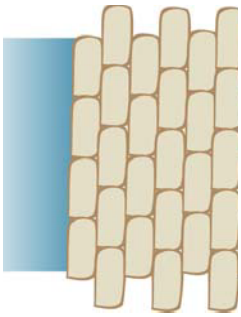
Polyethylene (Plastic) sheets



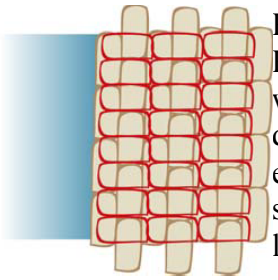
Proper use and placement of polyethylene sheets is important to reduce the rate of water seeping through the dike. Use six mil polyethylene in three meter wide rolls on the river side of the dike. Have the plastic sheet overhang the ground on the river side of the dike. The plastic sheet will be weaved between the courses of sandbags.)

First course/bottom layer:

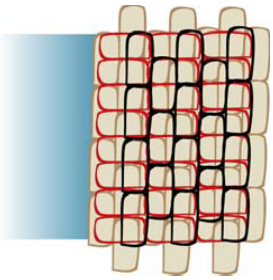
- Lay first course/bottom layer of bags parallel to river/water with the closed side of bag against river flow direction.
- The filled portion of the second bag sits over the empty portion of the previously placed bag. This is known as lapping.
- Drop the bags into place and tamp bags with feet to lodge them into place.
- Offset the bags from the previous row in the same course to form a brick pattern.

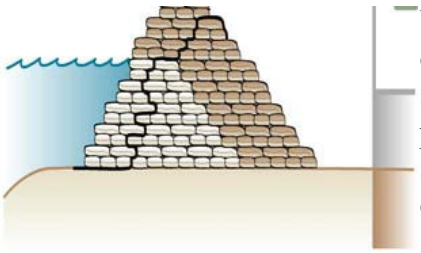


Second and remaining courses:

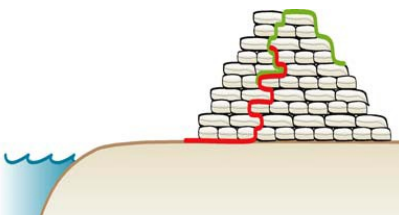


Rotate bags 90 degrees when laying second course of sandbags. Keep seal side of bag towards water/river. Ensure sandbags are well packed against each other and firmly in place. Change direction of bag from parallel to perpendicular to the river for each course of bags. Every second course of sandbags should be set back a 1/4 of a sandbag width, both on the river side and the land side of the dike, producing a step-like appearance.





Weave the plastic sheet between the courses of sandbags as to have at least two layers of sandbags protecting the plastic from debris punctures. Maximum depth of the plastic sheet should be three sandbags or a 1/4 of the cross section of the dike.



No matter how well you build a dike, extreme water pressure may cause water to seep through the dike or bubble up through the ground. It is advisable to have pumps with sufficient fuel and oil readily available to last the duration of the flood event and an escape plan.

SANDBAG REMOVAL: Sandbags should be removed with the same precautions as they were laid.

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