SANDBAGGING AND DIKE CONSTRUCTION

SAFETY TIPS

- Individuals with a medical condition that would make it dangerous for him/her to participate should avoid taking part.
- Wear protective gear such as steel toe boots, hat, safety glasses, gloves, etc.
- Be attentive of large equipment moving in the area.
- Be aware of flood water dangers: contamination, varying water flows, strong undercurrents, floating debris.
- Adhere to proper sandbag handling technique:

⇒ Do not bend more than 20 degrees in any direction 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 do not twist through the back while handling sandbags

- Do not throw sandbags

SANDBAGGING AND DIKE CONSTRUCTION

SHOVELLING TECHNIQUE

- Choose the proper shovel and use it correctly to reduce risk of injury when shoveling fill into sandbags
- The shovel should meet the following criteria:

⇒ Weight—between 1.5-3 kg

⇒ Length—between elbow and chest height

⇒ Shape—triangular or round blades

⇒ Handles can be added to shovels to keep the back and wrist straighter

FILLING SANDBAGS

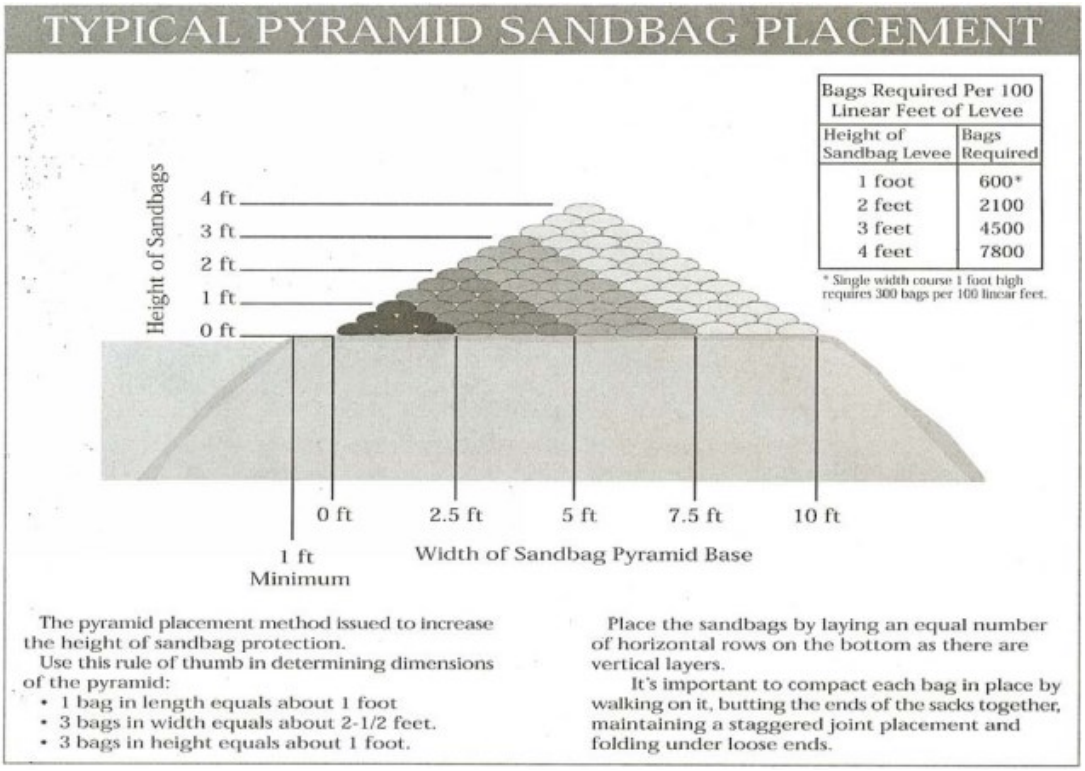
- Fill Sandbag to half its capacity (no more than 50lbs) with sand clay or silt
- Tie the flap of the bag or fill half full and fold the flap down.
- The open ends of the sandbags should be facing upstream and/or uphill so that the moving water will not remove the sand from the bags.
- Do not drag the 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 (30cm to 60cm) apart. If there are not enough people to form a continuous line, use a wheelbarrow to move sandbags
- One method for filling sandbags is:
    - to use two sawhorses and stretch a ladder or two 2x4's across them.
    - Invert construction cones in-between ladder rungs or boards.
    - One person places a bag around the cone, the second person shovels the sand into the cone.

Disclaimer: This document is for information purposes only

SANDBAGGING AND DIKE CONSTRUCTION

Sandbag Placement

The number of sandbags needed to protect a home or building varies depending on the local topography and the anticipated depth of water. Limit placement to two layers unless they are stacked against a building or sand bags are placed as described below in the pyramid pattern.



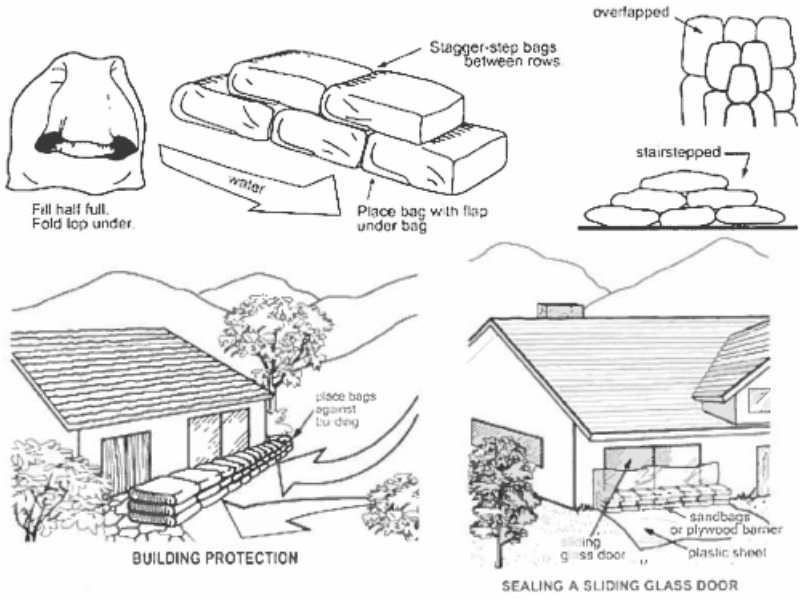
If you are planning to erect a flood barrier you should do so for all non essential entrances or exits prior to flood and freezing weather. Do not block emergency exits while building is occupied. Maintain a stockpile for your needs. Weather events may limit or prevent the ability to obtain sandbags or build sandbag barriers.

SANDBAGGING AND DIKE CONSTRUCTION

Sandbag Placement (Continued)

It is important to place the bags with the top of the bag in the upstream or uphill direction (facing the flow of water) to prevent them from opening when water runs by.

The image below indicates one of the proper installation techniques:



Sealing Entrances and Working with Frozen Sandbags

Sandbags can freeze making them hard to handle or stack effectively. If you have the option or the space to bring them inside, do so. If you do not have the ability to store them out of the weather, then you will have to soften them, much like breaking up a bag of ice by impacting before stacking (toss them on the ground to the person stacking them)

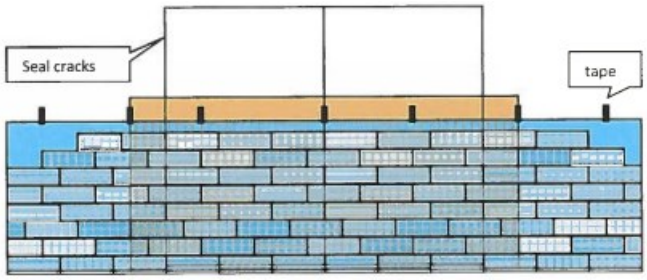
If all you plan to do is create a flood barrier at the openings to your building, try the following method. This utilizes your building as structural support for your sandbag wall, allowing you to stack sandbags vertically.

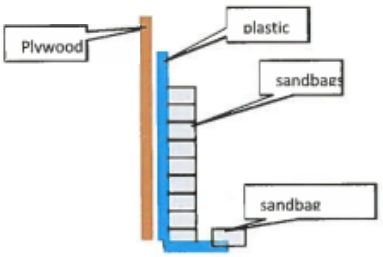
Not recommended if floodwaters are expected to be higher than three feet as this could result in structural collapse.

SANDBAGGING AND DIKE CONSTRUCTION

This procedure is designed to minimize flood damage. (Takes approximately 30 to 45 minutes with 2 people per entrance)

- **Execute shut down procedure and evacuate non essential employees from your facility (if applicable)**
- **Secure facility (lock up)**
- **Seal door cracks with duct tape, sealant/caulking or expanding foam.**
- **Place duct tape over any sharp edges of building that may tear plastic.**
- **If you are barricading glass windows or doorways, you should have sheet of 3/4" plywood to place between the framework and keep the load off of glass. This may require some additional structural framing depending on span. (Consult a contractor if required)**
- **Stretch plastic barrier against wall extending past openings several feet in each direction and tape. (A freestanding wall would require plastic on outside of wall)**
- **Stack your sandbags against wall. Stagger your sand bags with top of bag pointing in direction of the next sand bag your stacking, to lock in place**





Disclaimer: This document is for information purposes only

SANDBAGGING AND DIKE CONSTRUCTION

Sand Estimation Worksheet

Individual Homes:

1. Bagging foundation opening, per house (250 to 500 each)

Estimated Number of Homes: _____

Estimated Bags per Home (x) _____

= Bags Subtotal _____

2. Protection of groups of buildings with Levees and Dikes (per linear foot of dike/levee)

Height Required	Number of Sandbags
1 Foot	8
2 Feet	20
3 Feet	34
1 Ton of Sand	50 Sandbags

Estimated Linear Feet of Dike/Levee: _____

Bags for Height per Linear Foot : (x) _____

= Bags Subtotal _____

Grand Total Estimated Number of Bags : _____

3. Sand Estimate (@ approximately 40lbs per bag)

Grand Total number of Bags (above): _____ (divide this number by 50)

Equals the number of tons of sand : _____

(i.e. 2000 sandbags requires 40 tons of sand)