

# FLOOD FIGHTING EQUIPMENT

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*"The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."*

NOTE  
TAMPER GATE  
NOT SHOWN



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# ***FLOOD FIGHTING*** – WHAT IS THE NEED AND WHAT ARE ***MY OPTIONS?***

## ***Need***

- Sand Boils/Seepage
- Closure Structures
- Drainage Structures
- Levee Raise
- New levee segment
- Erosion

## ***Things to consider:***

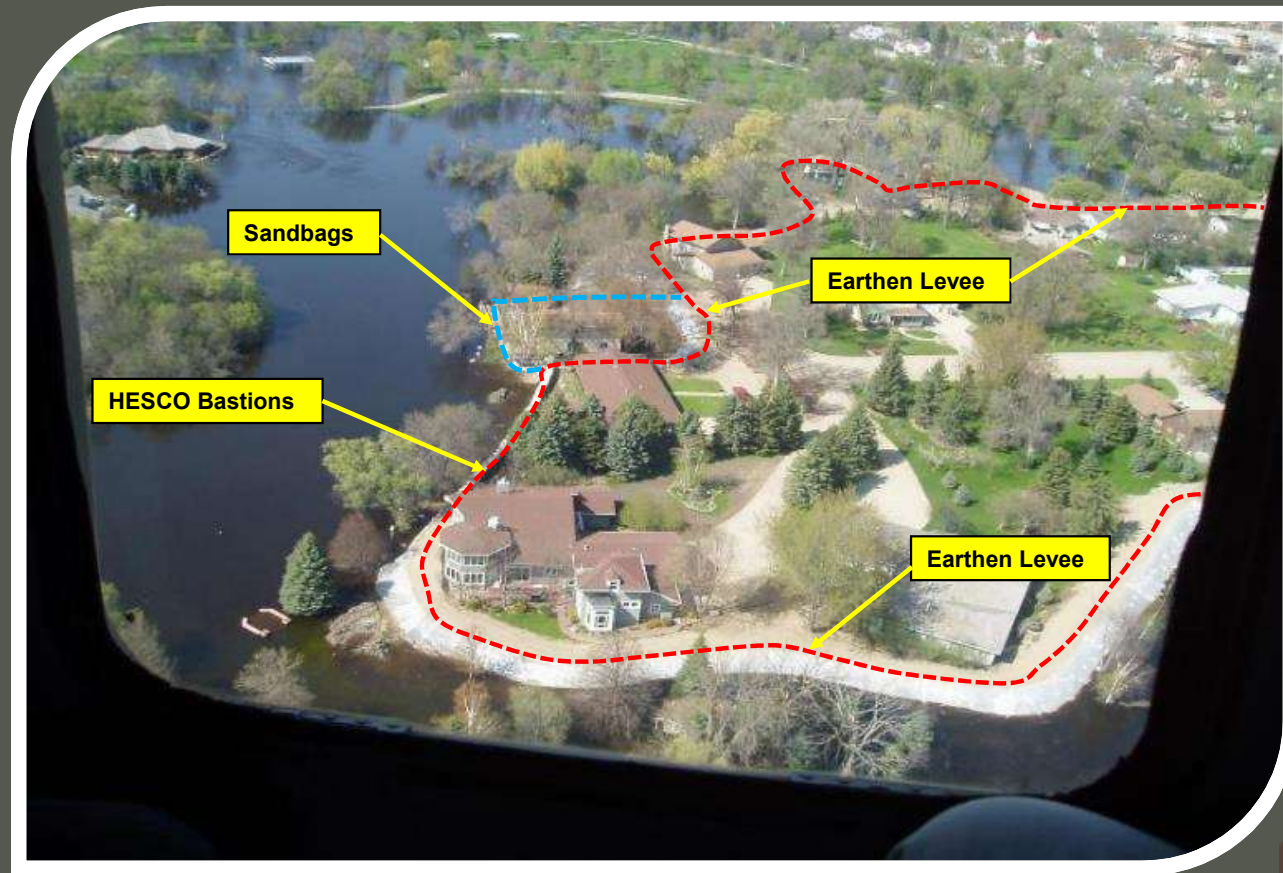
How much lead time?  
Placement location?  
Available resources?

## ***Options***

- Sandbags
- Seepage Berm
- Earthen levees
- Innovative flood fight products
  - HESCO Bastions
  - RDFW
  - Portadam
  - Others
- Riprap (rock)



# ***TIME AND PLACE***





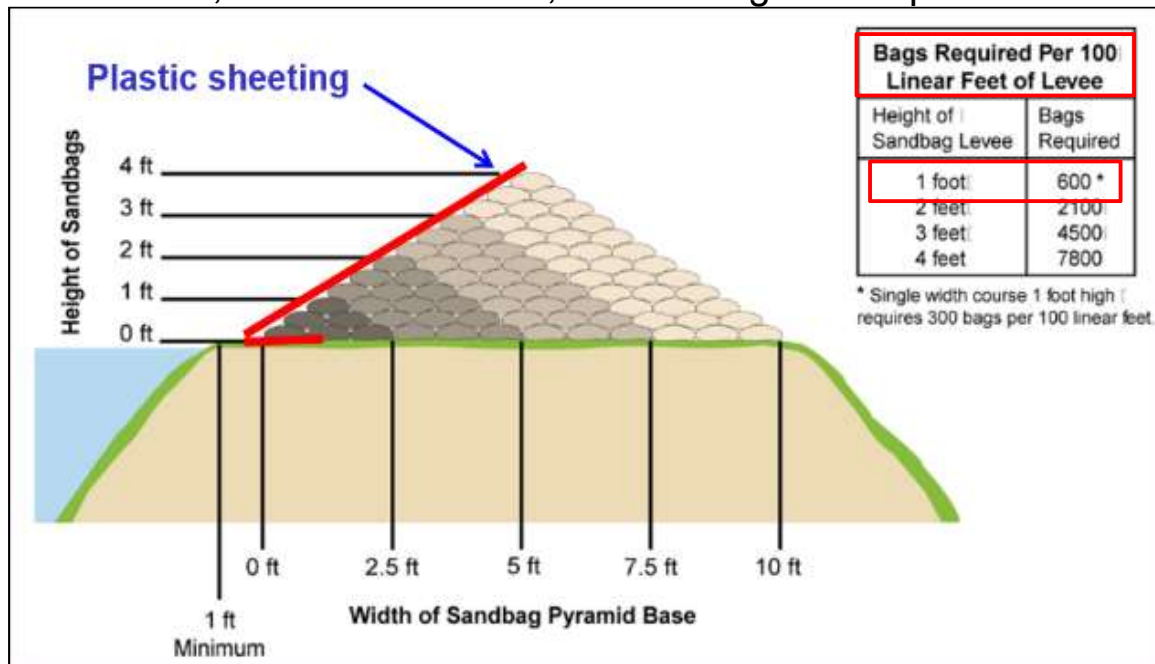
# ***SANDBAGS***



# SANDBAG FLOOD STRUCTURE

## USACE Recommendations

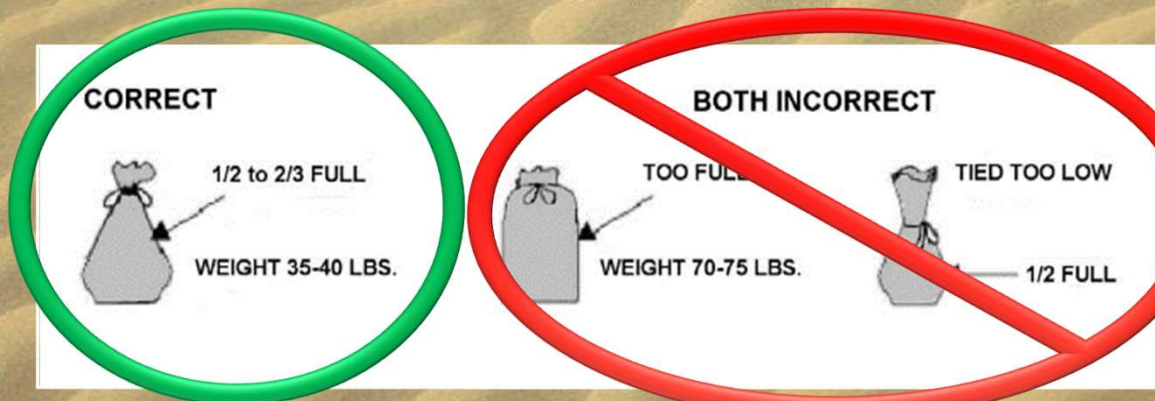
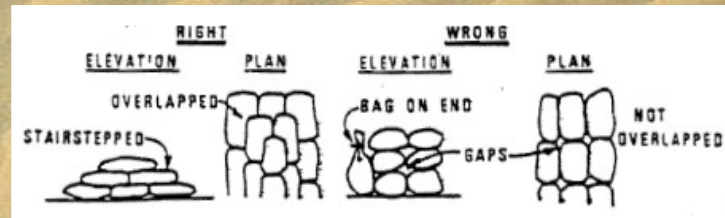
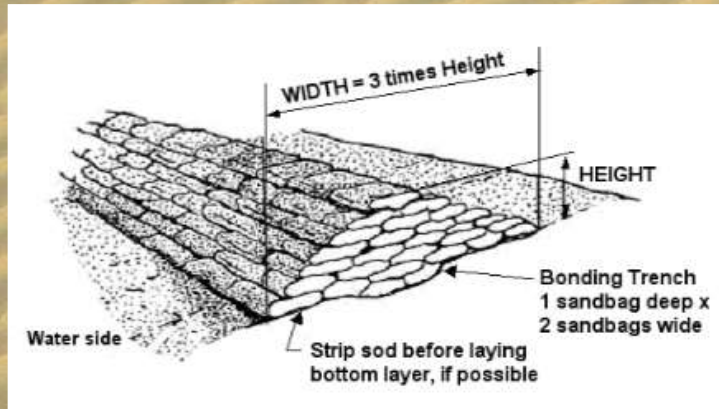
- 1V:2.5H (1 foot high for 2.5 foot width)
- 5 foot max (3 foot or less preferred)
- Typically used for low/short barrier, transitions, constricted areas, directing flows, closures, around sand boils, and to weigh down plastic.



- A typical sandbag is 14 inches wide and 26 inches long.
- Polypropylene (most common)
- Burlap
- Filled 1/2 to 2/3 with sand.



# SANDBAG FLOOD STRUCTURE





# ***SANDBAG FLOOD STRUCTURE***





# ***SANDBAG FLOOD STRUCTURE***

- *Very labor intensive*
- *Filled sandbags must be kept from freezing prior to placement*
- *Store preferably inside and away from critters.*





# ***SANDBAG FLOOD STRUCTURE***



## USACE SANDBAG FILLING MACHINE

- New sandbag filling machine
  - Production: 20 sandbags per minute (1200-1500 bags per hour minimum)
  - Functions in all weather conditions
  - Custom built by Express Scale in Lenexa, KS
- Applicant provides sand, diesel fuel, sandbags, and personnel/equipment to fill hopper and sandbags
  - Sandbags may also be requested from USACE through State
- USACE provides two machine operators and transport







# TREATING ISOLATED BOILS

- **Do NOT ring a sand boil if its not moving material (i.e. water is clear)**
- **Do NOT stop the water flow, it can cause the seepage path/boil to move.**
- **Do NOT place sandbags directly on top of sand boils.**
- **Height of ring levee should be only sufficient enough to create enough head to reduce flow through the boil so that no more material is displaced and the boil runs clear.**





# ***TREATING ISOLATED BOILS***



# ***TREATING ISOLATED BOILS***





# ***TREATING MULTIPLE BOILS***



# ***SANDBAG FLOOD STRUCTURE***





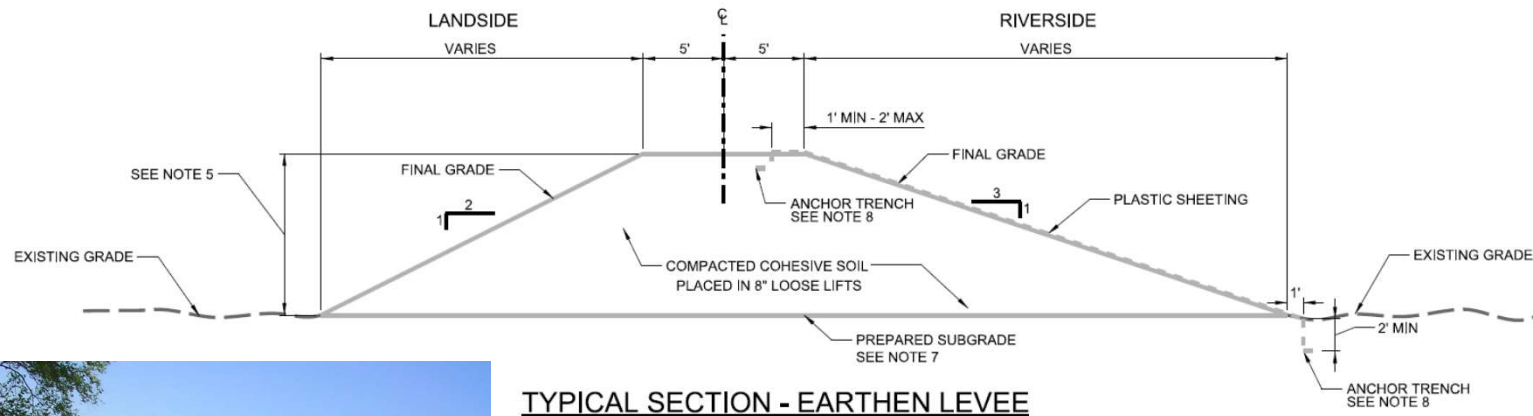
# ***EARTHEN LEVEES***



**Why Plastic?**



**Notice anything?**



**TYPICAL SECTION - EARTHEN LEVEE**  
NO SCALE





# ***EARTHEN LEVEES***





# ***EARTHEN LEVEES – RIPRAP PROTECTION***



Corps  
se



# ***EARTHEN LEVEES – RIPRAP PROTECTION***



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# ***HESCO BASTION STRUCTURE***





# ***PORTADAM STRUCTURE***



[www.portadam.com](http://www.portadam.com)

# TOPOTUBE



[www.topocare.com/en/onshore.html](http://www.topocare.com/en/onshore.html)



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# ***HESCO JACKBOX***



[www.hesco.com/products/flood-barriers/jackbox/](http://www.hesco.com/products/flood-barriers/jackbox/)

# BIG BAGS USA



[www.bigbagsusa.com](http://www.bigbagsusa.com)





# TRAPBAG STRUCTURE



[www.trapbag.com](http://www.trapbag.com)

# ***DEFENCELL***



[http://defencell.com/environmental\\_home.html](http://defencell.com/environmental_home.html)



# ***FLOODBREAK***



[www.floodbreak.com](http://www.floodbreak.com)

# COMBINATIONS / TRANSITIONS

RDF

Sand



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# ***PL 84-99*** – **THE USACE EMERGENCY MANAGEMENT AUTHORITY**

## **FLOOD FIGHT SUPPLIES**

### **Equipment & Supplies**

- Sandbags, Pumps, Poly, & Innovative Flood Fight Products
- Supplemental to state, tribal, and local efforts
- State sends request for supplies
- Reimbursement of materials used
- Locals responsible for providing sand, pump power supply (tractor), O&M, & manpower
- Sign equipment loan agreement

### **Omaha District**

- 5.13 million Sandbags throughout the District
- 2,690 Super Sandbags
- 1350 LF of Portadam
- 16,020 LF of HESCO Bastion
- 2,153 Rolls of Poly
- 4 Sandbag filling machines
- 28 Pumps (22 Trailer-mounted PTO-driven pumps (10"-16") and 6 Gas Operated Trash Pumps (2"-6"))
  - 10 in Omaha
  - 3 each at Garrison and Fort Randall
  - 4 each at Fort Peck and Gavins Point
  - 2 each at Oahe and Big Bend
- Additional quantities available from the National Flood Fight Material Center in Rock Island (MVR)

**\*Additional quantities available from the National Flood Fight Material Center in Rock Island (MVR)**

QUESTIONS?



**UNPREPARED ?**  
Plan Now, Don't Wait  
for the **EMERGENCY**