

Volume

3

DISASTER RELIEF & INNOVATIVE PROTECTION SYSTEMS, LLC

Big Bags USA©

Installation and Removal Guide

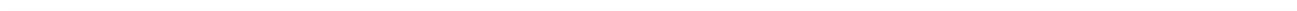
BIG BAGS USA©

Installation and Removal Guide

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Introduction to Big Bags USA® Installation and Removal Manual

Thank you for choosing Big Bags USA Rapid Deployment Flood Barrier. In this manual you will find step by step instructions on the installation and removal of the Big Bags USA® protective flood barriers systems. Also this manual will provide instructions for general maintenance and answer commonly asked questions while deploying our Big Bags USA® sandbagging alternative flood barriers.

M A N U A L
C O N T E N T S
✓ Deployment
✓ Maintenance
✓ Recovery
✓ Questions

This manual contains proper instructions for deployment and removal of Big Bags USA Rapid Deployment Flood Barrier. Misuse or failure to follow instructions may result in undesirable effects.

Before you Begin

Before you begin your deployment of Big Bags USA Rapid Deployment Flood Barrier there are a few things to consider. What are your projected water levels for your area? Does your terrain change in elevation? Will the water levels vary with the terrain? Will you need to stack the systems to gain height? Do you have the proper equipment? What kind of labor availability do you have? Can you safely deploy Big Bags USA® flood barriers without a spreader bar lifting device?



Recommended Deployment

While you can deploy Big Bags USA® in almost any environment DRIPS, LLC strongly recommends safety and proper training for the most effective deployment. Beware of any excessive obstructions that may alter barrier protection and provide any necessary maintenance in order to protect the integrity of the flood barrier.

Required Equipment for Deployment

The required equipment for the deployment of Big Bags USA™ protective flood barrier is varied and versatile. There are very little limitations to the type of equipment used in deployment, but your basic equipment includes.

Front End Loaders
Front end loaders are the standard recommended filling equipment for Big Bags USA™

- Cordless Construction Drills for Labors Attaching Systems
- 3/4 inch (8mm) Screws to Attach The Systems
- Heavy Equipment for Hauling Sand Fill
 - Front Loaders
 - Fork Lifts
 - Skid Steers
 - Back Hoes
 - Side Dumping Trucks
 - Cement Trucks
 - Cable Wench System for Lifting Pre-filled Systems (optional)
- Transforming Spreader Bar for Lifting Pre-filled Systems (optional)

System Deployment

STEP 1: UNPACK SYSTEMS

Your Big Bag USA flood barriers will arrive on pallets of seven systems each. Cut away and remove plastic wrapping. When cutting be careful to *NOT* cut the Big Bags USA© flood barriers. Every 50lbs. system is easily removed from the pallet with one or two men. DRIPS, LLC recommends always using safe lifting practices when handling Big Bags USA© or any other equipment. For more information on safe lifting practices please visit Brookhaven National Laboratory web site at;



<http://www.bnl.gov/esh/shsd/pdf/safe%20lifting%20and%20carrying%20techniques.pdf>

-or-

Occupational Safety & Health Administration training presentation at;

www.osha.gov/.../11_material_handling2.ppt

STEP 2: Deployment of Systems

Place Big Bags USA© flood barrier system in desired location, next the system is expanded. To expand the system, two workers grasp each end of the system firmly and walk away from each other. Insure all supporting u-frames are in a **straight up right** position and **evenly spaced** from each other. Once Big Bags USA© flood barrier is expanded the system **will** stand freely. There is no need for additional support. Repeat process for remaining systems.



Try this: Using one ground crew to attach systems while two other ground crews expand Big Bags USA© systems will enable continual deployment for a fast response time.

Step 3: Attaching the Systems

Big Bags USA© flood barriers are attached using seven $\frac{3}{4}$ inch (8mm) screws and a cordless screw gun. To attach the systems position the flood barrier so that the systems u-frames are evenly touching each other. Place one screw in the center of the cross bar of the u-frame. This will help hold the position of the barriers during the rest of the attachment. Place the remaining screws, three on each side of the vertical bars. Screws must be placed a minimum of 6" (16cm) from the ground and in the top corners. Continue process for remaining systems.



❖ If using a Spreader Bar skip step 2 and continue on to step 3

STEP 4: FILLING THE SYSTEMS

When filling the systems, heavy equipment is the recommended method for deploying Big Bags USA© effectively and efficiently. For best results fill the systems directly in the center then from one end to the other. Dump sand in slowly to prevent bulges and spillage. The ground crew should always stay a safe distance from heavy equipment. Ground crews can further provide even distribution of filler material.



- ❖ DRIPS, LLC Does NOT recommend stacking systems over heights of 15ft (5m).

Maintenance of Deployed Systems

Big Bags USA flood barriers are comprised of the highest in ultra-violet protection woven directly into Big Bags USA polypropylene sandbags. Should water penetrate Big Bags USA both sides and bottom weave of systems and are woven to allow access moisture to drain away. Little to no maintenance should be required. However, monitoring and preventive maintenance are the best way to insure the integrity of your flood barrier. DRIPS, LLC recommends these tips for a long lasting barrier.

1. Monitor water levels and add additional levels of barriers BEFORE overtopping occur
2. Do NOT allow flood debris to collect on or around the barrier structure. (This may allow for debris to wear holes in the barrier weave or possible build-up may cause undesired water flows)
3. Extra monitoring is recommended in area with free flowing ice or below freezing temperatures exists.
4. Should an area of your barrier breach Drips, LLC recommends placing additional system(s) directly behind the problematic area. Allow at least double the width of the area on both sides of breach.

- ❖ Big Bags USA is NOT a permanent solution or structure.

Removal of Systems and Resources

When ready to dismantle Big Bags USA flood barrier the same equipment as in deployment with the addition of a front fork attachment (if applicable). When Big Bags USA barriers are properly removed they may be washed and stored for a later date. Any sand that is NOT contaminated may be re used as well.

There are two preferred methods of recovery recommended by DRIPS, LLC.

1. FRONT FORK REMOVAL

Using a front fork lift, place ALL four utility loops onto loops. DO NOT lift bags with less than four loops connected. When lifting individual bags they will tear away from the systems. This is normal, the bag will remain unaffected. If bags are to be reused thoroughly rinse and dry bags BEFORE storage (if bags are not washed and dried thoroughly mold and fungus may grow and effect the integrity of the bags as well as the health of workers).

2. FRONT LOADER REMOVAL

When using a front loader position the bucket of loader against bottom of system. Move bucket slightly under system and raise corner of bucket to allow system to tear and topple away from barrier dumping contents of the bag(s). The tearing is normal, the bag will remain unaffected. If bags are to be reused thoroughly rinse and dry bags BEFORE storage (if bags are not washed and dried thoroughly mold and fungus may grow and affect the integrity of the bags as well as the health of workers).

- ❖ Front loader removal method is NOT recommended for stacked systems.

Commonly Asked Questions

Where can the Big Bags USA protective flood barrier be effectively be used?

The systems can effectively be used most anywhere- The flexible design of no rigid bottom structure allows the Big Bags USA sandbags to conform to any sub-surface, making a water-tight seal. Thus, wherever a protective flood barrier is needed, tops of levees, in the streets, surrounding a building, sides of hills, over sewers, Big Bags USA sandbags can adapt to the topography.

Can Big Bags USA be placed on top of levees?

Yes, there is no need for ground preparation, Big Bags USA sandbags protective flood barrier mold to any surface for a secure/water-tight seal.

Can Big Bags USA be stacked?

Yes, 2 flood barrier systems high (6 feet) can be stacked directly on top of each other, 3 or more protective flood barrier systems high a pyramid deployment is suggested.

Can the Big Bags USA protective flood barrier be placed around corners?

Yes, Big Bags USA flood barrier can be placed at any angle required. Making sure systems are 'snugged' up against each other prior to filling, a water-tight seal is created. Encircling an area, equipment, buildings is a strategic way to utilize the flood barrier system if flood waters cannot be stopped or diverted in a given area. How do Big Bags USA systems connect? Each 15ft. long/5 bag system connects to the next system with ¾ to 1 inch wood screws inserted on-site once the flood barrier systems are opened and prior to filling. The screws are only to hold each sandbags system to the next as they are being filled.

How much does a single 5 bag system weigh?

Empty, each sandbags system weighs 50lbs. within the safe handling guidelines for one person. Filled, each sandbags system weighs 15,000lbs (7.5 tons), 5 cubic yards of sand total. Are Big Bags USA water-proof? The 'water-side' of the sandbags are coated with a water-proof resin so water does not enter the sandbags. If water did enter the food barrier from the top, the sides and bottom are not coated to allow water to flow out of the

sandbags and prevent sand from being washed out. If water does not enter the flood barrier, then sand is uncontaminated and re-usable.

What does a deployment team consist of?

A typical deployment team would be six men. 2-man system set-up (placing and opening systems on-site in flood control location), System connector (man with screw-gun following set-up crew, connecting systems before filling) Truck operator (carrying sand), Pay loader operator (takes sand from truck and dumps into bags), System fill guide (works with pay loader operator to guide shovel over bags for filling). Flood barrier systems can be set up in 2 minutes and filled in the same amount of time, thus within 10 minutes a 5 bag system can be set-up and filled in place, which is the equivalent of 675 sandbags.

What is the best way to fill the sandbags?

Big Bags USA flood barrier systems are easily filled to top or near top of bags height. There are no additional 'techniques or requirements' to fill the sandbags. The flood barrier can be filled with a loader, excavator, crane and bucket or a cement mixer. The front loader is the favored option for speed and efficiency of filling.

What is the life-span of the Big Bags USA protective flood barrier system?

Big Bags USA flood barrier can have a life, depending on conditions. Direct sunlight, over extended time will weaken the polypropylene material. If the sandbags show signs of weakening after extended time under sunlight when lifted by straps, then the sandbags should be lifted by loader shovel from beneath for removal.

Can the sandbags system be re-used?

Yes, Re-use of Big Bags USA flood barrier can continue if emptied without damage, washed and stored properly. Additional wood u-frames may be required to be inserted as they may be destroyed during the emptying of the sand from the sandbags.

What are the advantages of the Big Bags Systems?

There are many advantages of these systems. The main advantage is the lack of labor involved with assembly and filling. The second advantage is the speed with which you can protect an area from flooding. The third would be the cost savings compared to any other flood protection product available.

How long does it take for delivery?

It depends on the size of the order, but typically it will take 5 to 7 business days delivered to your destination.

How are the sandbags emptied?

Clean-up is quick with Big Bags USA protective flood barrier system. They can be emptied either on-site or lifted individually by forklift or pay loader. The sandbags are dumped by placing individual sandbags into a pay-loader, lifting bucket 8-10 feet, tilting bucket forward until the sandbags turn upside down and fall top down. The sandbags can then either be lifted off the sand pile or will need the bucket to push or pull it to loosen

the sandbags from the sand pile. If the flood barrier will be re-used, then a staging location must be available for washing and drying the sandbags. If sandbags are to be destroyed, they can be incinerated as there are no toxic chemicals used in the manufacturing