

# RainTank

*Storm Water Detention/Retention*

## RainTank Installation Field Guide



**Assembling**



**Installing**



**Backfilling**

**PRICE & COMPANY**  
Solutions Grounded in Experience

**ACF**  
Environmental

## **Step 1: Assemble RainTank Units**

If RainTanks arrive on your project in flat panels they will need to be assembled on-site. Building the units should take roughly 3 minutes per segment.

Single	=	3 minutes
Double	=	6 minutes
Triple	=	9 minutes
Quad	=	12 minutes
Pent	=	15 minutes

*Assembly Instructions* - following the drawings on the right, bottom: Connect four small panels (B) into one large panel (A) using the short pegs (not the long pegs). Place the panels on each end of the large panel, and two more into the holes closest to the center as shown (right). Do NOT use the row of pin-holes directly in the center or the two middle rows nearest the edges.

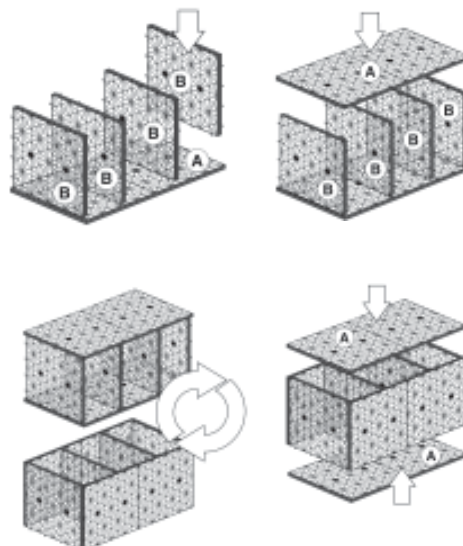
Next, working from one end to the other, attach a second large plate (A) on the opposite side of the first.

Once the top and bottom large plates are attached, two more side plates (A) are attached to complete the sides of the RainTank unit. This is a SINGLE RainTank.

To build a DOUBLE unit (or larger), follow the directions above, starting at "Assembly Instructions:" using the top of the existing unit as the large plate.



*Build as shown. DO NOT use the rows of holes marked by arrows.*



*Follow these steps to assemble the RainTank.*

Completed RainTank units should be staged as close to the installation area as possible.

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## **Step 2: Excavate**

In addition to the width, length and depth of the RainTank itself, you'll want to excavate enough depth to install a base below and cover above the RainTank. You'll also want to excavate additional width on all sides of the system to accommodate compaction equipment required during backfilling.

If excavation dimensions are not given or can't be obtained from the plans, consider the following:

- Base - 3" minimum
- Cover - 12" for non-loaded areas  
- 18"-24" for traffic loads
- Side backfill - 24" perimeter



*Excavation should be in accordance with all safety requirements.*

## **Step 3: Prepare Base**

Base material should be 95% compactable material such as sand or stone. If the design of the project incorporates infiltration of water into the sub-soils, base material should be sand or open-graded stone. If no infiltration is required, a more durable road base material can be used.

Place base material and spread to 3" minimum depth, and compact.



*Establish a smooth and level working platform. Base depth is not critical but creating an even platform will make tank installation easier.*

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#### **Step 4: Place Geotextile to Wrap Tanks**

For most applications the geotextile should be 8 oz/sy nonwoven material. When infiltration is the primary method for water to enter or exit the RainTank, use a woven monofilament geotextile instead.

Place the geotextile into the excavation, over-lapping edges by 12" or as specified by the manufacturer or engineer. Whenever possible leave enough on the ends to wrap over the RainTank units.



*Use pins, rocks, or sandbags to prevent geotextile from sliding or blowing down into the excavation.*

#### **Step 5: Install RainTanks**

It is helpful to begin by using a string line to establish two straight lines on one corner of the installation area. Typically this should be an area of a critical pipe connection that would be difficult to adjust.

Using these marks as a guide, place the RainTank units into the excavation along the lines, filling in the field as you go. Minor gaps ( $< \frac{1}{2}$ " ) between adjacent units or variations in height ( $< \frac{1}{2}$ " ) are acceptable.



*While the perpendicular row has been installed correctly, these units have been placed on their SIDES. This is evident from the lines formed by the edges of the top and bottom panels, which should NEVER be seen from the top.*

Whenever possible, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. This perpendicular row is required when the base of the RainTank is  $>10'$  below finished grade.

Be sure to place the units right side up. The top of the RainTank should ALWAYS be one large panel. The edges of any panel should NEVER be seen on top.

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## **Step 6: Install Inspection / Maintenance Ports**

Typically made from PVC Pipe, these provide vertical access into the system. They should be long enough to sit on the bottom of the RainTank, rising to the finished surface where they are capped.

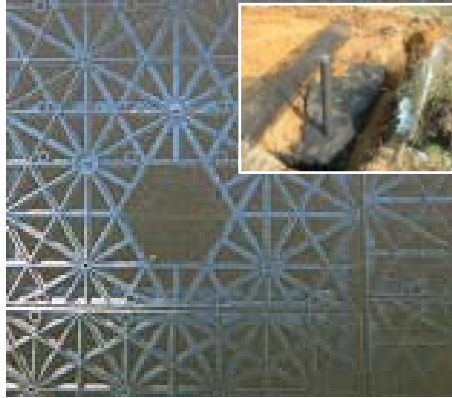
*Inspection Ports:* Typically these are small diameter perforated pipes (<6"), and can be cut through the RainTank unit with ease. Simply cut all horizontal plates with a reciprocating saw, fitting the pipe between the internal vertical plates. For larger pipes, see the section below on Maintenance Ports.

*Maintenance Ports:* Typically these are larger diameter solid pipes with large notches cut into the bottom installed to backflush the system. Ports of 12 – 15" can be cut through the RainTank as noted above, removing internal plates to accommodate the pipe. Ports of 15" – 18" can simply displace ½ of a RainTank unit, fitting in-line with one row of RainTanks.

After the installation, be sure to install the cap to cover the opening, preventing debris from entering the system.

## **Step 7: Wrap RainTanks**

Wrap geotextile placed in Step 4 over the RainTank units, creating a fabric envelope around the RainTank, completely sealing the system to keep backfill materials out of the system. Use duct tape to temporarily secure overlaps. To cut inspection/maintenance ports through geotextile, follow directions in Step 8.



*All horizontal plates must be cut. For double RainTanks through penta's, it is easiest to disassemble the unit and cut all necessary panels at once.*

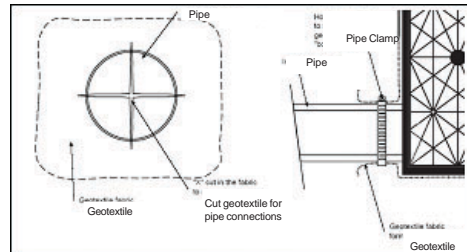


*When folding geotextile around corners, make clean folds and secure with duct tape.*

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## **Step 8: Connect Inlet / Outlet Pipes**

Pipe connections can be made anywhere on the top or sides of the RainTank by simply butting the pipe to the RainTank. Connections to the side of the unit can be made at any invert between the top and bottom, so be sure to check the plans for proper elevations.



*Cut X slightly smaller than pipe - fabric will stretch, making a tighter boot.*

Wherever a pipe must pass through the geotextile, cut an “X” in the textile, pull the four flaps back over the pipe, and clamp them off to the pipe using a stainless steel band clamp. Inlet and Outlet pipes do not need to penetrate into the structure of the RainTank, but may simply butt against the side of the unit. Pipes should rest firmly against the RainTank with no gaps or voids. Whenever possible, pipes should contact the RainTank at a 90° angle.

RainTank systems should not be activated or brought on-line until construction is completed and the site is stabilized. This will prevent construction debris and unusually heavy sediments from contaminating the system.

## **Step 9: Backfill Sides**

Using compactable material such as sand or stone (Clay should NEVER be used), backfill the wrapped RainTank System evenly on all sides to prevent units from shoving. Compact backfill material in 12" lifts to a 95% with a powered mechanical compactor. Even if a self-compacting stone is used, compaction is still required as vibration from compactor will help eliminate minor gaps between RainTank units, adding stability to the system.



*Plate compactors and trench rollers are ideal. Be sure to point the muffler away from the geotextile.*

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### **Step 10: Backfill Top**

When backfill reaches the top of the RainTank units, begin covering the structure with backfill material. Exercise care when placing the first 6" lift on RainTanks. This can be done with an excavator or walk-behind machine. Alternately, using a Low Ground Pressure (LGP) Dozer, push 12"-18" over the RainTank and back-blade to 6". Use a lightweight powered mechanical compactor, and continue filling and compacting in 6" lifts.



*Most contractors use Low Ground Pressure (LGP) equipment to place cover materials.*

### **Step 11: Place Geogrid**

Geogrid is required for load-bearing applications such as systems placed below parking lots. Geogrid should be BX-1200 or equal, and should extend 3' beyond the excavation footprint. Overlap all edges by 24" or as recommended by manufacturer or engineer.



*Extending the geogrid at least 3' beyond the excavation footprint will help prevent differential settlement.*

# RainTank™

*Water Management Solutions*

## Are You Really Ready?

### RainTank Pre-Construction Checklist

#### Tools You'll Need

- If you're building RainTanks from Panels:
  - a. Dead-Blow Mallet
  - b. Work Table
- Duct Tape
- Band Clamps to Fit Inlet and Outlet Pipes
- Razor Knife
- String Line & Marking Paint
- Reciprocating Saw (if Inspection or Maintenance Ports are Required)

#### Materials You'll Need

- RainTank Units
- Geotextile
- Geogrid (Only for Load-Bearing Applications)
- 95% Compactable Backfill Material (NOT Clay)

#### Equipment You'll Need

- Powered Mechanical Compactor
- Small Skid Steer with Tracks
- Small Vibratory Roller

Note: This list does not include equipment or tools needed to excavate or level the floor of the excavation.