

United States Department of Agriculture



Natural Resources Conservation Service
Room 3416, Federal Building
700 West Capitol Avenue
Little Rock, Arkansas 72201

VIA EMAIL

ARKANSAS BULLETIN NO. 210-8-2

November 7, 2007

SUBJECT: ENG -Tire Tank Drawing

Purpose. To transmit standard drawing for tire watering tanks.

Expiration Date. October 31, 2008

Used equipment tires may be modified and used as livestock watering tanks. They are approved for payment programs. Attached is a standard drawing to use for construction and installation. No other drawings for tire tanks have been approved for use. Any old drawings should be discarded.

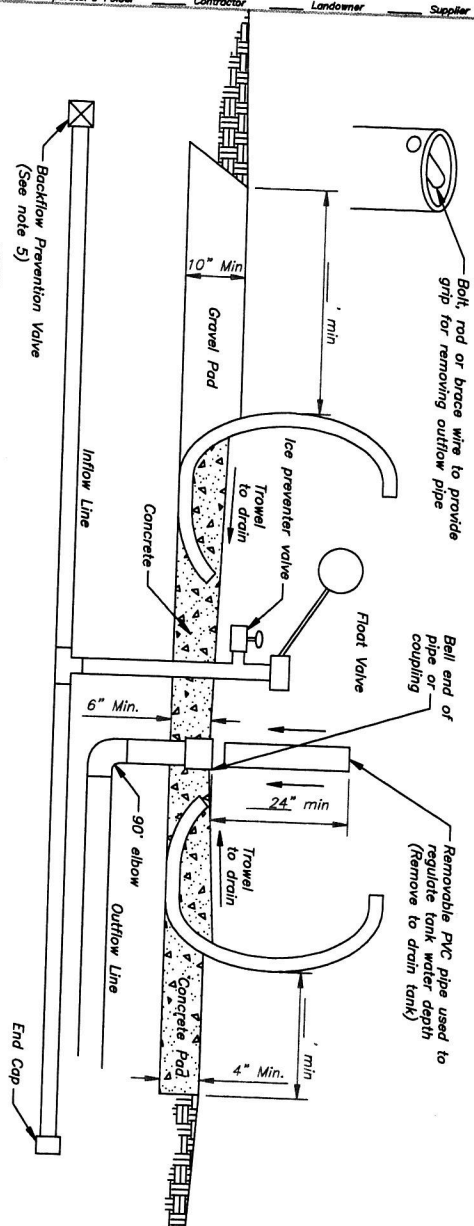
/s/ Walter Delp

WALTER DELP, PE
State Conservation Engineer

Attachment

Helping People Help the Land

An Equal Opportunity Provider and Employer



TIRE TANK WITH CONCRETE FLOOR AND CONCRETE OR GRAVEL PAD

- GENERAL NOTES:**
1. Pipe shall conform to Arkansas Construction Specification AR-45.
 2. The outflow pipe shall not be smaller than the inflow pipe. Minimum two inch is suggested for a gravity system and minimum three inch for pressure systems. A larger pipe facilitates draining the tank. On larger pipes, a bolt or rod secures removal.
 3. The collector's inflow and outflow lines shall be buried below frost line as needed to prevent freezing.
 4. Flow from stock watering systems through earth dams or pressure systems may be regulated by a valve to ensure the desired quantity of water.
 5. A backflow prevention valve shall be installed on the inflow line that is connected to any water supply that is providing water for human consumption. Backflow prevention valve shall be located where it can be serviced or replaced. Local codes and regulations shall be followed.
 6. See adjoining sheet for pipe, float valve and ice prevention recommendations.
 7. After the inflow and outflow lines are in position, thoroughly tamp or compact the trenches as they are filled in the area where the tank and pad are located to minimize settlement and the possibility of leakage. The finished surface shall be level.
 8. The heavy equipment shall be free from breaks or other defects that would cause excessive leakage. For sheep or other small animals, 19.5x24 12 ply backhoe tires work well. For larger animals, 23 1/2x25 loader or larger scraper tires work well. For large narrow tires may not have enough depth for the float to part of the sidewall from the tire. For smaller tires, a utility knife may work. All fabric ply tires may be cut with a reciprocating saw and wood blade. NOTE: steel belted and cut resistant tires may be difficult to get saw cut started. A starting hole can be bored with an electric drill. After starting the cut, a wedge or other device inserted into the cut will help provide clearance for the blade. Liquid dishwashing detergent can be used to lubricate the blade. After cutting about one quarter the prevent kinking the blade. Warnings: Tires and their sidewalls can be quite heavy and dangerous. Use all necessary precautions to prevent personal injury. In addition, tire cut fibers may cause digestive problems in horses.
 9. Concrete shall conform to Arkansas Construction Specification 32. Concrete, except Sackcrete is adequate. Mix the concrete wetter than usual to ensure good tire contact. Take appropriate measures to eliminate all air spaces in the concrete, especially under the bead.
 10. Steel bar reinforcement may be used inside of tire if landowner desires. Normal cracking of concrete pad should not be a problem. If reinforcing steel is required inside of tire it shall be #4 steel deformed bars of 12 inches center to center. Steel reinforcement is not required for pad but #4 bars at 12" C.C. inch clearance is acceptable. All steel shall have minimum 2 1/2 inch clearance from top of concrete. Steel is not required if concrete containing fiber mesh is used. Fiber mesh shall be fibreglass polypropylene fiber designed to disperse during mixing. Install float and ice prevention valves.
 11. The pad surrounding the tank may be either concrete or gravel. Exercise care when backfilling with gravel. Distortion of the tire can cause leaks.

QUANTITIES

1	Ft. PVC Pipe for outflow line
1	Ft. PVC Pipe for inflow line
1	tee
1	end cap for inflow line stub
1	Backflow Prevention Valve
1	C.Y. Gravel
1	C.Y. Concrete 5 1/2 bag mix
1	Eq. Used heavy equipment tire Ft. Trenching

TYPE OF PAD

Concrete
Gravel

CONCRETE REQUIREMENTS

- Fiber mesh concrete is required
- Floor of tank is reinforced with steel bars
- Pad is reinforced

TANK SELECTION TABLE
(Based on 24 inches of depth)

TANK INSIDE DIA. - GAL.	TANK INSIDE DIA. - GAL.
6'-0" Tank --- 423 GAL.	10'-0" Tank --- 1,296 GAL.
6'-6" Tank --- 495 GAL.	11'-0" Tank --- 1,482 GAL.
7'-0" Tank --- 576 GAL.	11'-6" Tank --- 1,584 GAL.
7'-6" Tank --- 661 GAL.	12'-0" Tank --- 1,692 GAL.
8'-0" Tank --- 752 GAL.	12'-6" Tank --- 1,806 GAL.
8'-6" Tank --- 849 GAL.	13'-0" Tank --- 1,936 GAL.
9'-0" Tank --- 952 GAL.	13'-6" Tank --- 2,142 GAL.
10'-0" Tank --- 1,061 GAL.	14'-0" Tank --- 2,303 GAL.

TANK SELECTION

TANK DIA. - FEET	TANK CAPACITY - Gallons
------------------	-------------------------

TANK 'AS BUILT'

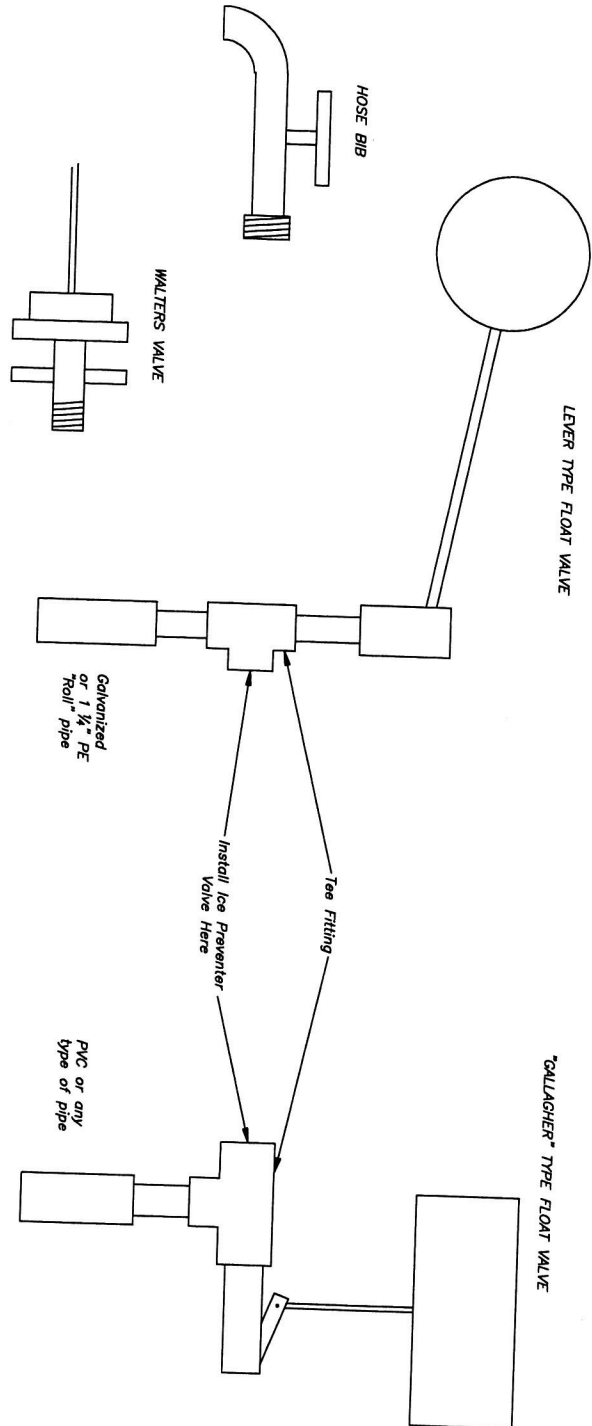
TANK DIA. - FEET	TANK CAPACITY - Gallons
------------------	-------------------------

As Built - Verify that the tank is 24 or more inches deep. Measure the inside tank diameter round to the nearest 1/2 foot and enter the gallons for payment from this table.

Landowner:

<p>National Resource Conservation Service United States Department of Agriculture</p>	Designed _____ Date _____
	Drawn _____
	Checked _____
	Approved _____

Drawing Name: AR-ENG-801
Sheet _____ of _____



TIRE TANK FLOAT OPTIONS


NOTES:

Lever type float valves often require a considerable amount of force to stop the flow of water, especially with pressure systems. When this type of valve is used with PVC pipe, breakage can occur below the valve body as a result of excessive flexing or animal damage. Metal pipe is recommended. PE pipe will work, but flexing may cause float shut off problems. One of the following or an equivalent method shall be used to prevent animals from nudging the float. Method 1 is to use wooden posts set on both sides of the tank with heavy boards attached above the float. Method 2 is to use wooden or metal bars bolted across the top of the tank on both sides of the float and attached to the posts. Method 3 is to use treated 2x6 boards laid flat across float valve assembly and bolted to tire with 4 - minimum 3/8" lag bolts, 6 inches long or equivalent bolts. All methods will also help prevent animals from standing in the tank.

When using PVC as the supply pipe, a "Gallagher" style float valve or equivalent works well. They require little effort to shut off and their compact size with string attached float reduce the chances of animal damage. A Hudson float valve also works well. While functional in both vertical and horizontal positions, install horizontally with pressure systems and shallow tanks. NOTE: Be sure the float you purchase has pipe threads (NPT). Not all do.

If using a manually operated valve for ice prevention, a hose bib works well. They are inexpensive and a handle can be made easily from PVC pipe to adjust the flow without getting wet. If the valve has been shut off, expansion of the rubber seat will reduce flow. Therefore, initially open the valve more than needed to compensate. This will not be a problem if using a gate valve. When adjusted correctly, a Walters valve will flow water at below freezing temperatures and shut off above freezing.

Landowner:

 National Resources Conservation Service United States Department of Agriculture	PRESSURE WATER SYSTEMS WITH HEAVY EQUIPMENT TIRE TANK		Date _____
	Designed _____	Drawn _____	Checked _____
	Approved _____		
	Drawing Name AR-ENG-801		
	Sheet _____ of _____		