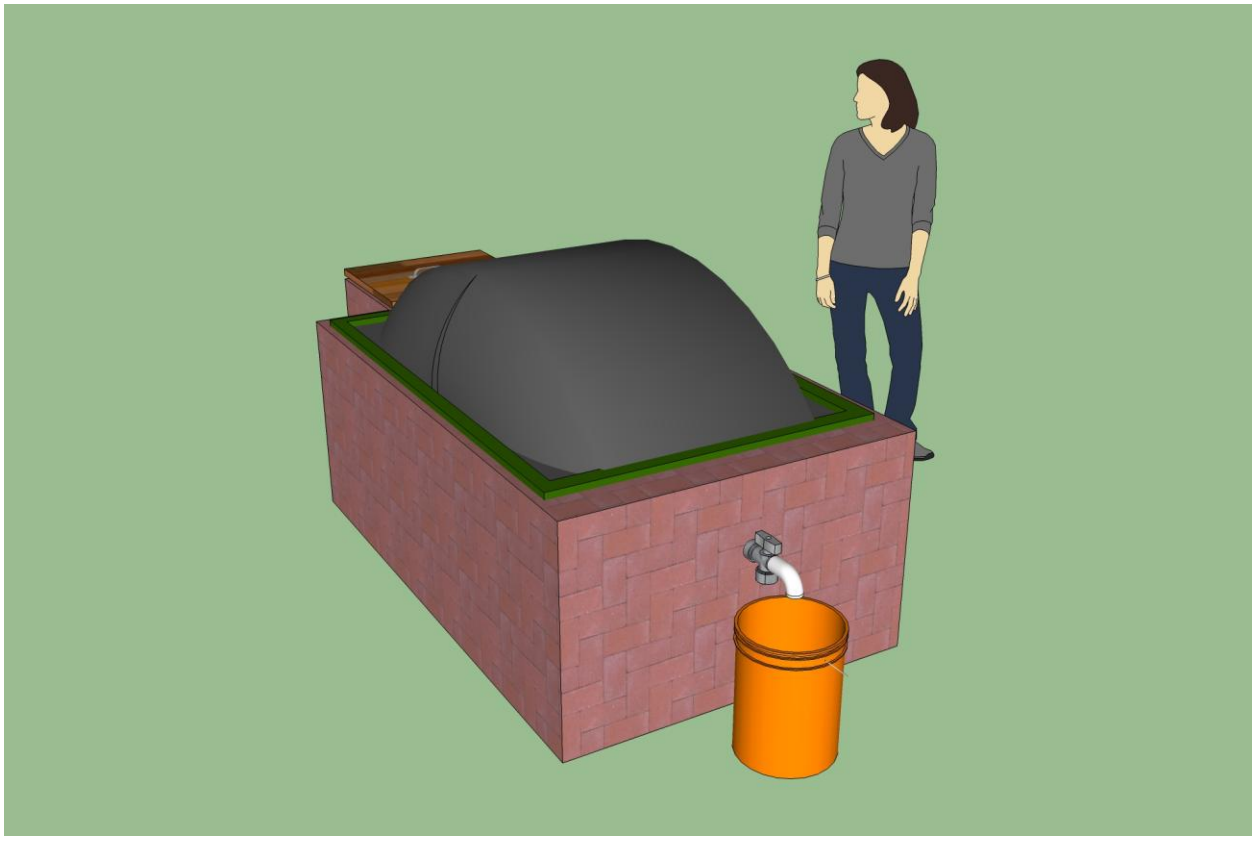

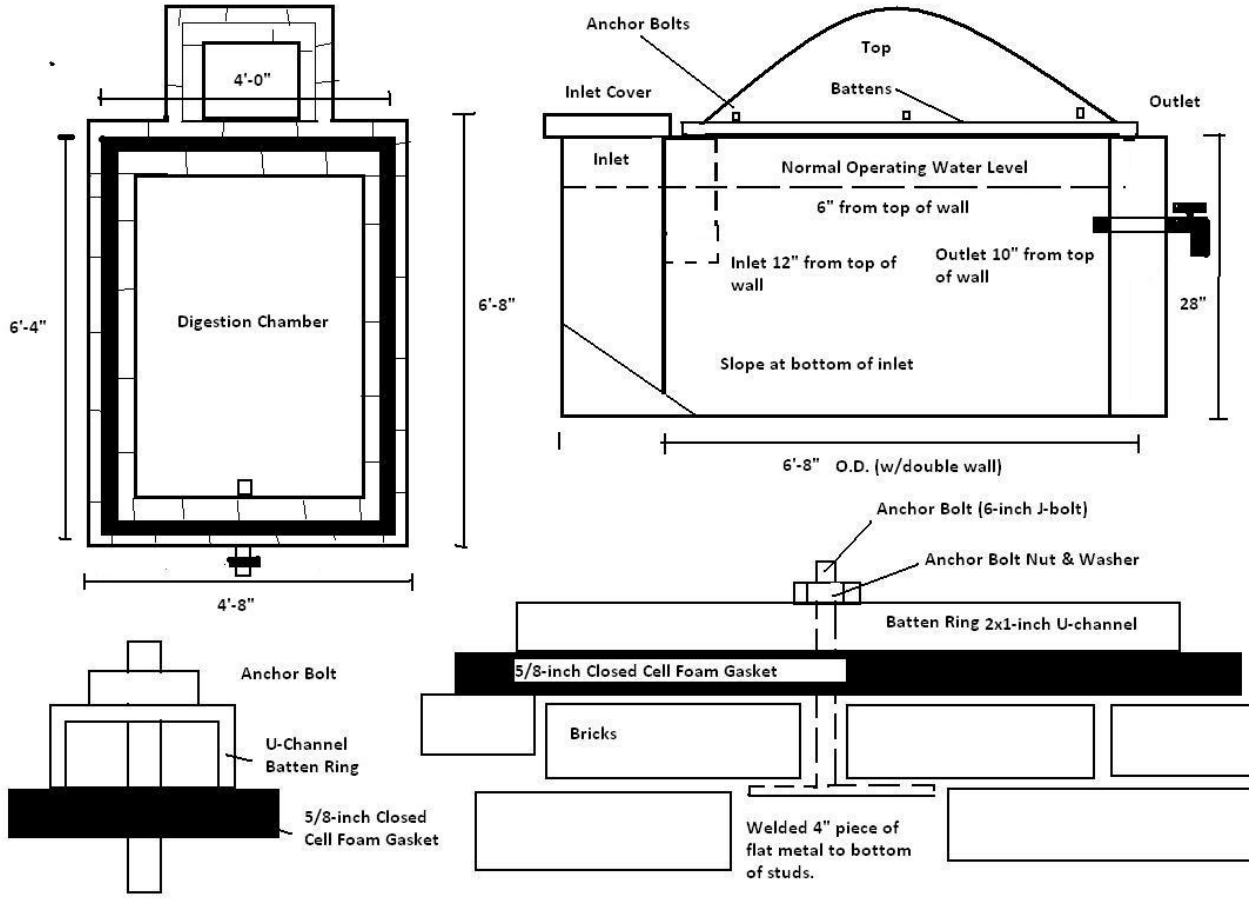

2 cu.m. Inflatable top plug-flow biogas digester

Materials Required:

5-foot x 7-foot 40-mil EPDM top

90-degree ½-inch barbed hose fitting gas outlet (centered in top)

1-gallon concrete bonder

1 Small bag of Portland cement (powder only)

2x4-foot 1x2 U-channel 13 gauge steel battens.

2x6-foot 1x2 U-channel 13 gauge steel battens.

(8) 4-1/2 threaded studs with 4-inch flat pieces of metal welded on bottom. w/nuts and washers (3/8 or 1/4-inch diameter)

22-feet x 3” x 5/8” closed cell foam gasket

Rubber cement (to glue gasket down)

14” piece of 2-1/4-inch steel or PVC pipe with spigot. (for outlet)

Masonry:

For Double Walls (Recommended)

8x2.5x3-inch (US Standard) bricks: 652

8x2.5x3-inch (US Standard single wall: 326

Brick Calculator:

http://www.calctool.org/CALC/other/fun/bricks

The Diameter of the digester is: 22-feet

The height of digester walls are: 28-inches

Mortar Calculator:

http://www.csgnetwork.com/mortarqtycalc.html

Building Directions:

1. Choose location where digester will be visible from kitchen and/or where people will see it and know when it is full and compost buckets can be conveniently carried.
2. Level 8-foot diameter site and tightly compact soil with a tamp or other means. Make certain no stones or uneven areas where bricks can pivot or move.
3. Lay digester floor using batten ring as a guide. Anchor bolt holes should be between brick rows in walls.
4. Lay bricks for walls, inlet and outlet.
5. Install anchor bolts in wet mortar of top row of bricks, using batten ring as a jig. Mark batten ring with location of outlet or inlet so that it can be taken off and returned using same bolt holes.
6. Seal digester interior. Make certain interior is clean and dry. Digester interior gets 4-coats of mixture of Portland cement and bonder. First coat: Bonder only, slowly paint bonder avoiding bubbles and reaching all areas of interior. Allow to dry completely. Second coat: Mix bonder and Portland cement to consistency of peanut butter and fill in major gaps. Heavy coats will crack as they dry. This is normal. Third coat: Mix bonder & Portland cement to consistency of a milkshake and apply all throughout interior, carefully fill in any cracks from previous coat. Apply to entire

interior. Fourth coat: Mix bonder & Portland cement to consistency of house paint and paint interior or digester.

7. Wait for bonder mix to dry completely.
8. Water test. Fill digester completely. Check for any wet areas on exterior or bubbles rising inside digester. If there are any leaks, drain and/or bucket water out and use sponge to dry completely. When completely dry, apply third and fourth coats of bonder mix again.
9. Retest for water tightness.
10. Once digester passes water test, it can be loaded either through the digestion chamber before putting the top on or through the inlet if top is already on.
11. Use rubber cement to glue closed cell foam gasket down to top of digester walls, making slices for anchor bolts to protrude through center of gasket.
12. Align top over digester with gas outlet in center.
13. CAREFULLY cut small slices to push top over anchor bolts, being carefully not to cut the top with the knife. Work in a cross-pattern to avoid creating a fold in the top.
14. Place batten ring over top and secure with anchor bolt washers and nuts. DO NOT OVER-TIGHTEN. This will pull the anchor bolts out of the mortar and/or cut the closed cell foam with the U-channel. Tighten only 1-2 turns tighter than finger tight.
15. Cut off any excess top material.
16. Attach gas outlet hose to the gas outlet fitting.
17. Fabricate a removable cover for inlet and outlet.
18. Digester will begin operating within 2-3 weeks and operate continuously every day afterwards.