

## Plans & Materials List for Handwashing Station



### **Required Tools**

Arc Welder (mig or stick)

Chop or metal band saw

Grinder (bench and/or handheld)

3/8" Drill

1/8", 1/4", 5/16" Drill Bits

Copper Pipe Cutter

Soldering Kit ( propane bottle, regulator/torch, solder paste and brush, abrasive paper, soldering wire)

Basic hand tools ( end wrenches, pliers, safety glasses ect.)

### **Required Parts**

40 gallon *Tuf-Tank* (can be purchased from IFA or Cal-Ranch)

3/4" copper pipe (it was cheapest to just buy a 10' length)

1 tube silicone

1 tube pipe joint compound or teflon tape

9' x 1.00" schedule 40 pipe

3' x 1.25" schedule 40 pipe

4' x 1.5" x 1.5" angle

7- 5/16" x 1" bolts

7- 5/16" nuts

5- 5/16" flat washers

8- 1/4" x 1 1/2" bolts

8- 1/4" nuts

4- 1/4" flat washers

4- 3/4" 90 degree copper elbows

1- 3/4" copper tee

3- 3/4" threaded flange

1- 3/4" threaded pipe - male hose adapter

1- 3/4" threaded pipe - female hose adapter

1- 3/4" faucet

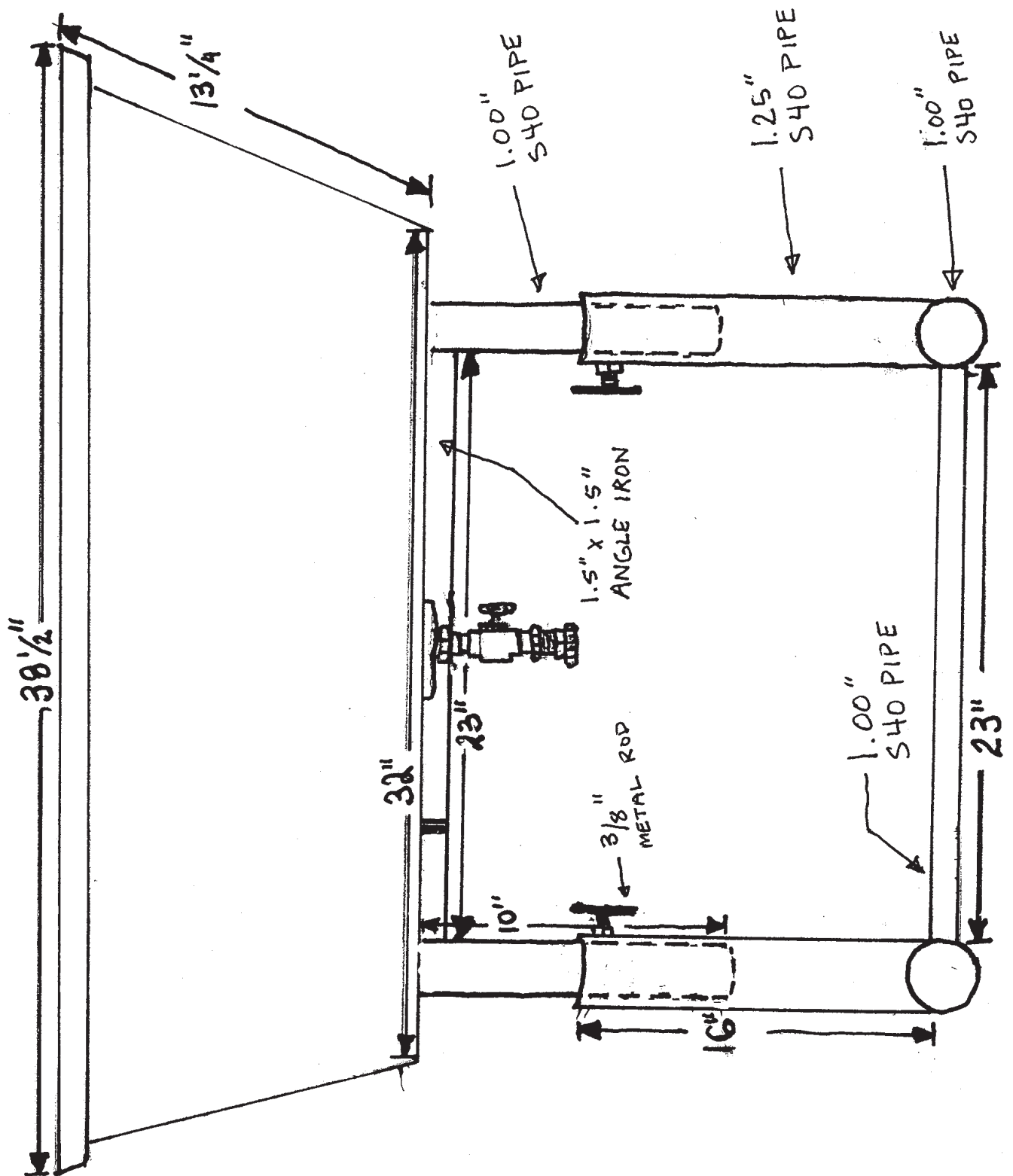
4- 3/4" copper pipe - 3/4" threaded male pipe adapter

6" x 3/8" metal rod

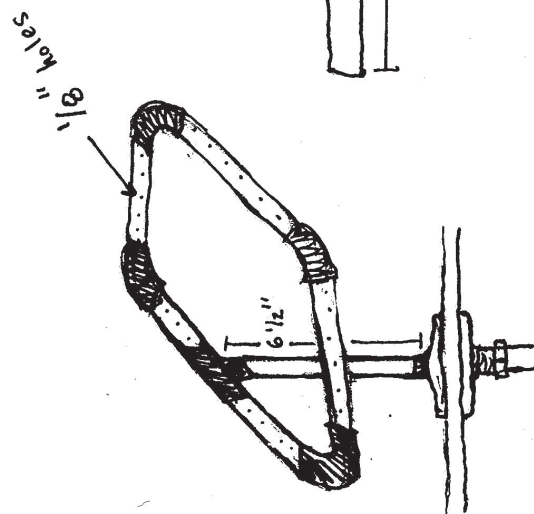
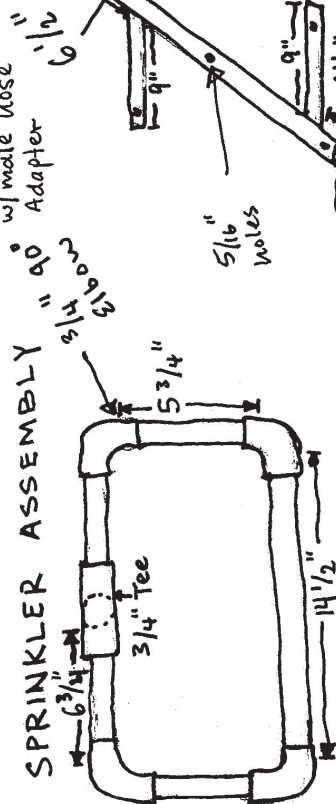
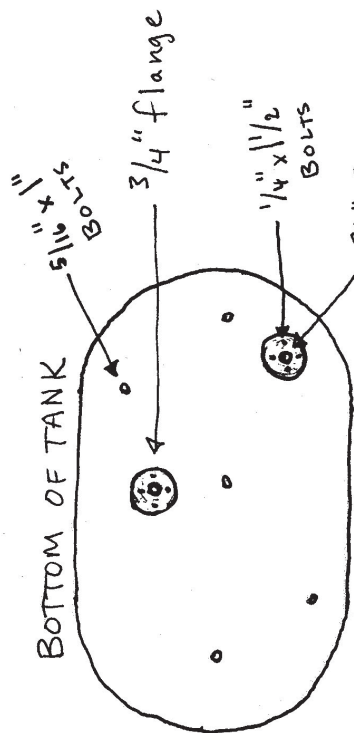
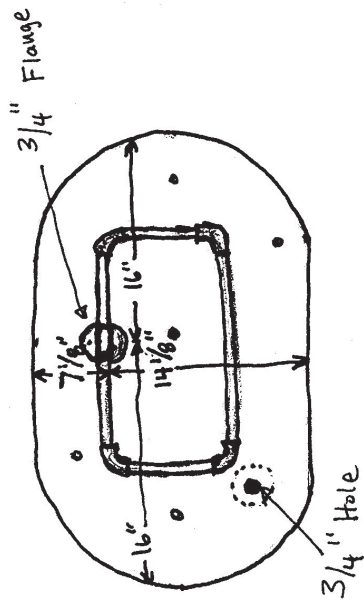
## **Assembly Instructions**

1. Cut 2 lengths of 1" schedule 40 pipe each 32" long
2. Cut 2 lengths of 1" schedule 40 pipe each 10" long
3. Cut 1 length of 1" schedule 40 pipe 23" long
4. Cut 2 lengths of 1.25" schedule 40 pipe each 16" long
5. Cut 2 lengths of 1.5" x 1.5" angle each 9" long
6. Cut 1 length of 1.5" x 1.5" angle 23" long
7. Cut the 6" x 3/8" rod in half making two 3" pieces for the height adjustment handles (after cutting all the metal you can grind the ends smooth on a bench grinder or wait until you have finished welding everything and then use a hand grinder to smooth everything up)
8. Drill a 5/16" hole into the 1" x 10" long schedule 40 pipe about 2" from one end
9. Weld a 5/16" nut over the hole
10. Weld the two 3" pieces of 3/8" rod to the head of a 5/16" x 1" bolt making a handle
11. Screw the handle into the 5/16" nut you welded over the hole
12. Insert the 1" x 10" pipe into the 1.25" x 16" pipe and tighten down the adjustment handle so that there is about 2" of the 1" x 10" pipe sticking out the top of the 1.25" x 16" pipe
13. Weld the 16" x 1.25" pipe to the center of the 32" x 1" pipe forming a tee; do this twice to form 2 separate tees
14. Weld a tee that you just made to each end of the 23" x 1" pipe making sure that everything is square
15. Weld the 23" x 1.5" x 1.5" angle iron to the top of the 1" x 10" pipe sticking out of the 1.25" x 16" pipe
16. Weld one piece of 9" x 1.5" x 1.5" angle iron to the 23" x 1.5" x 1.5" angle iron about 6" in from the end pointing to the left
17. Weld the other piece of 9" x 1.5" x 1.5" angle iron to the 23" x 1.5" x 1.5" angle iron on the opposite about 6" in so that it points to the right
18. Drill five 5/16" holes in the angle iron in the pattern shown in the illustration
19. Cut the 3/4 copper pipe into the following lengths:
20. Solder the pieces of copper pipe and fittings together to form a rectangle (refer to illustration for location of fittings and pieces of pipe)

21. Using the drill and 1/8" bit drill holes about 1/2" apart all the way around the copper rectangle that you built. It is much easier if you use a punch and hammer to center punch where you are going to drill first
22. Solder the rest of the pieces of copper pipe and fittings together to form the faucet and supply hose connection ( make sure to put teflon tape or joint compound on all threads before assembly)
23. Attach one 3/4" flange to the down pipe from the copper pipe rectangle
24. Attach the second 3/4" flange to the faucet assembly
25. Using the soldering torch and pliers, heat up a scrap piece of copper pipe and push it through the bottom of the plastic tank to form a hole in two places according to the diagram
26. Place 2 of the 3/4" flanges so that they are centered over the holes you just made
27. Using the drill and a 1/4" drill bit drill through the tank using the third 3/4" flange as a template
28. Place silicone around the outside of 2 of the 3/4" flanges and put them on the inside and outside of the tank and over and under the center of the hole you made with the heated copper pipe
29. Secure the flanges using the 1/4"x 1 1/2" bolts and nuts
30. Place silicone around the outside of the remaining flange and place it on the underside of the tank, centered on the hole that is in the corner of the tank
31. Secure the flange using 4- 1/4 x 1 1/2" bolts, nuts and washers, making sure to place the washers and the head of the bolts on the inside of the tank on the opposite side of the flange
32. Put teflon or joint compound on the male hose adapter pipe thread side and screw it into the 3/4" flange
33. Center the tank over the support structure you welded together
34. Drill 5/16" holes through the tank using the holes previously drilled into the angle iron as a template. This is most easily accomplished if you tip the tank and support structure upside down, re-center it, and then drill
35. Bolt the tank to the support using the 5/16" x 1" bolts, nuts, and flat washers making sure that the head of the bolt and the flat washer are in the inside of the tank (**caution: due not over-tighten the bolts as they may pull through the plastic tank**)
36. Place a dab of silicone over the heads of the bolts and the washers to ensure that the tank won't leak.



# TOP OF TANK



# TANK SUPPORT STRUCTURE

