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# INSTRUCTIONS FOR ACRYLIC MACHINING COMPANY

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## ACRYLIC BLOCKS

The acrylic blocks are 1.25" cubes of clear acrylic with a centered  $\frac{5}{16}$ "-18 threaded hole drilled top to bottom (Fig. 1). A total of six of these blocks will be glued to the bottom of the bottom piece of the encasing. Leveling feet will be screwed into each block and provide support for the model. A total of six are required per model.

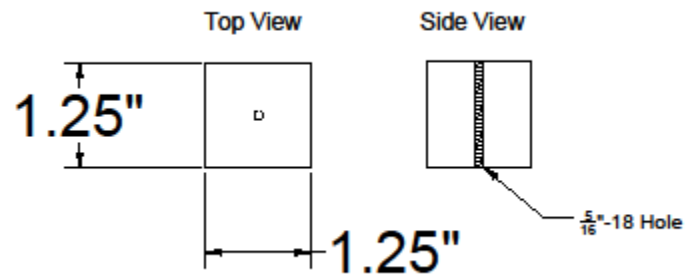


FIGURE 1. ACRYLIC BLOCKS

## ACRYLIC JUNCTIONS

Each acrylic junction will be made from a 2" x 2" x 1.25" clear acrylic block. Seven total are needed for each model; four elbows, two vertical tees, and one 4-way tee (Quantities are also listed in respective blocks in Figure 2). These blocks will connect 1/4"-18 acrylic pipe, so each hole in the block must be tapped with 1/4"-18 threads. The exact placement of the holes is not crucial as long as it is consistent within the series. Suggested locations are marked in Figure 3. Through each block a 3/16" hole will also be drilled for later fastening the blocks to the model. The hole will run through the entire block top to bottom.

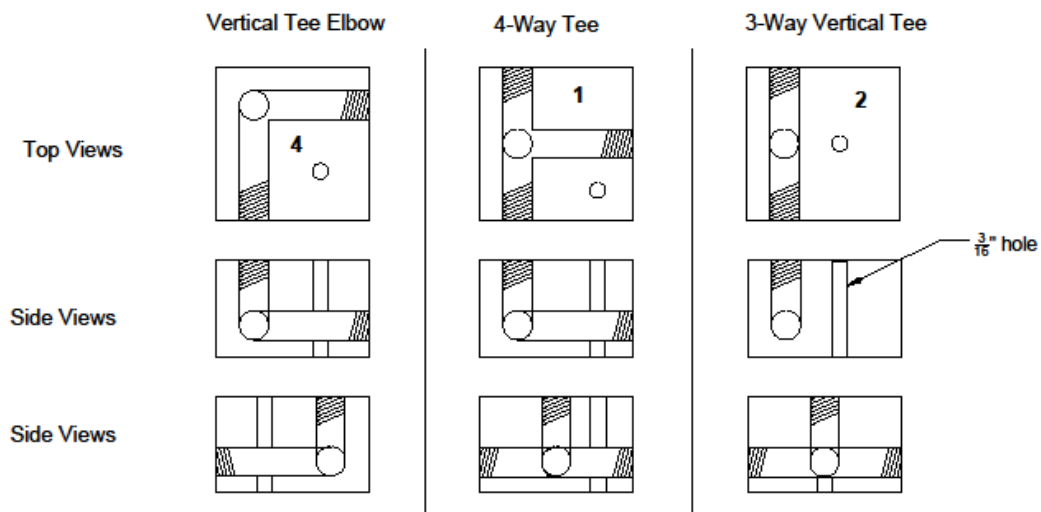


FIGURE 2. ACRYLIC JUNCTIONS

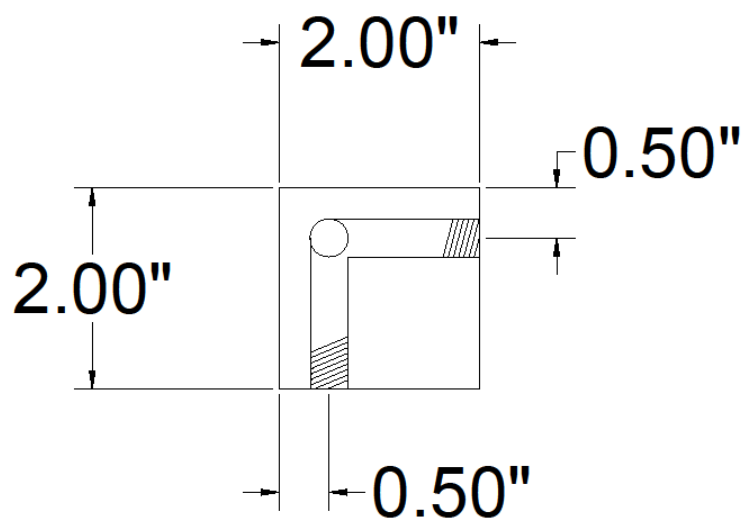


FIGURE 3. ACRYLIC JUNCTION: ELBOW (ABOVE)

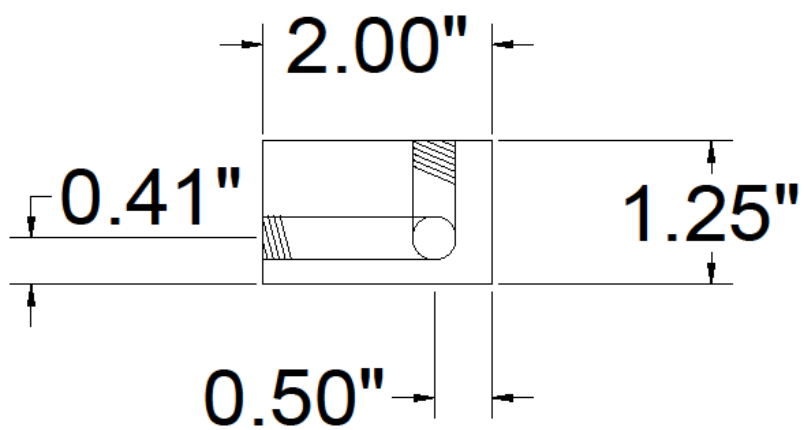


FIGURE 4. ACRYLIC JUNCTION ELBOW (SIDE)

## SIDE WALLS

Each side wall is cut from  $\frac{1}{4}$ " clear acrylic and shown in Figures 5-8. Two copies of Side Wall 2 are to be made, and one each of Side Wall 1,3 and 4 to give a total of five pieces per model. These side walls will be glued to the outer  $\frac{1}{4}$ " along the outside edge of the top of the bottom piece.

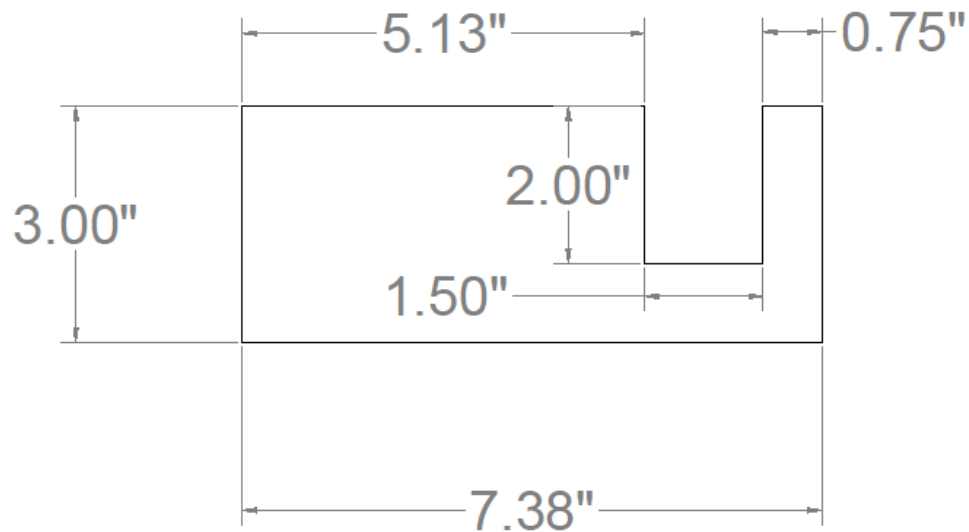


FIGURE 5. SIDE WALL 1

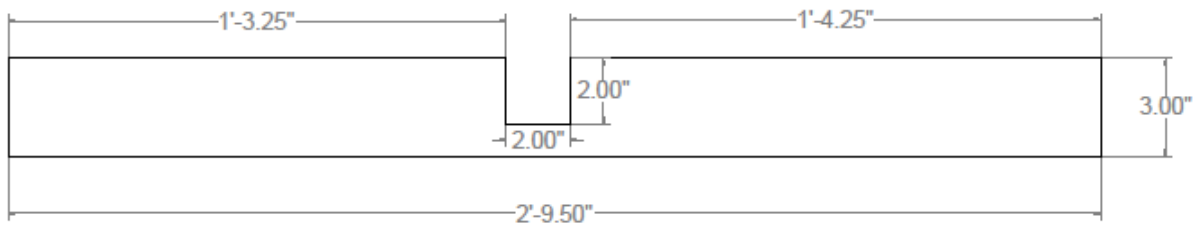


FIGURE 6. SIDE WALL 2

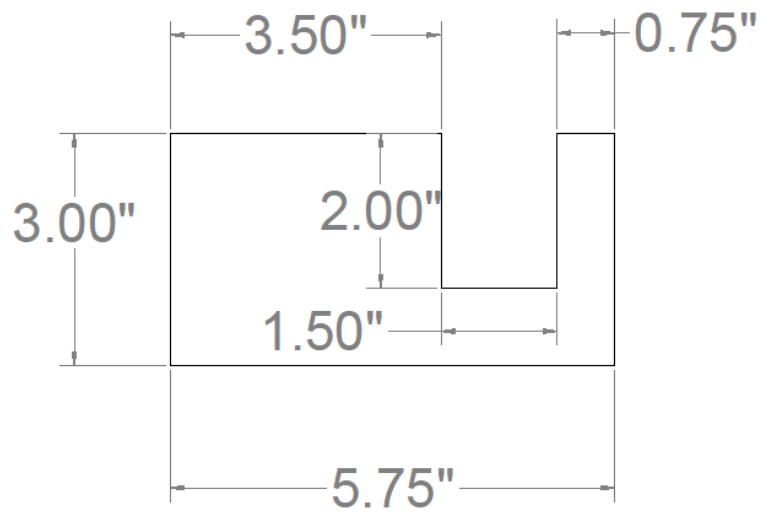


FIGURE 7. SIDE WALL 3

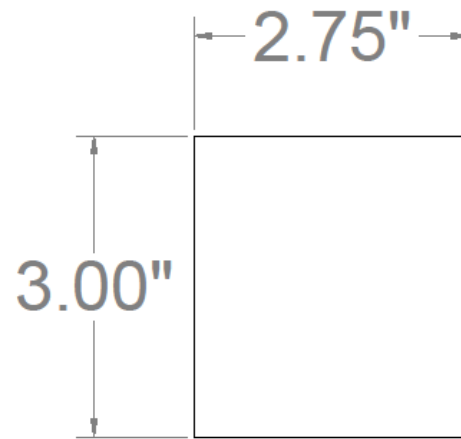


FIGURE 8. SIDE WALL 4

## TROUGH

The trough is made from a 3" OD semicircular tube  $\frac{1}{4}$ " thick, which is capped on one end with  $\frac{1}{4}$ " acrylic. The other side is glued to a machined acrylic block which acts as an outlet elbow allowing water to drain through a  $\frac{1}{2}$ " NPT tapped hole. The specifications of the block are not important as long as the end of the trough is sealed and water can exit to the right of the trough through a  $\frac{1}{2}$ " NPT connection. The tunnel in the block should be large enough to allow for quick drainage. Specs and diagrams of the trough are shown in Figures 9-11.

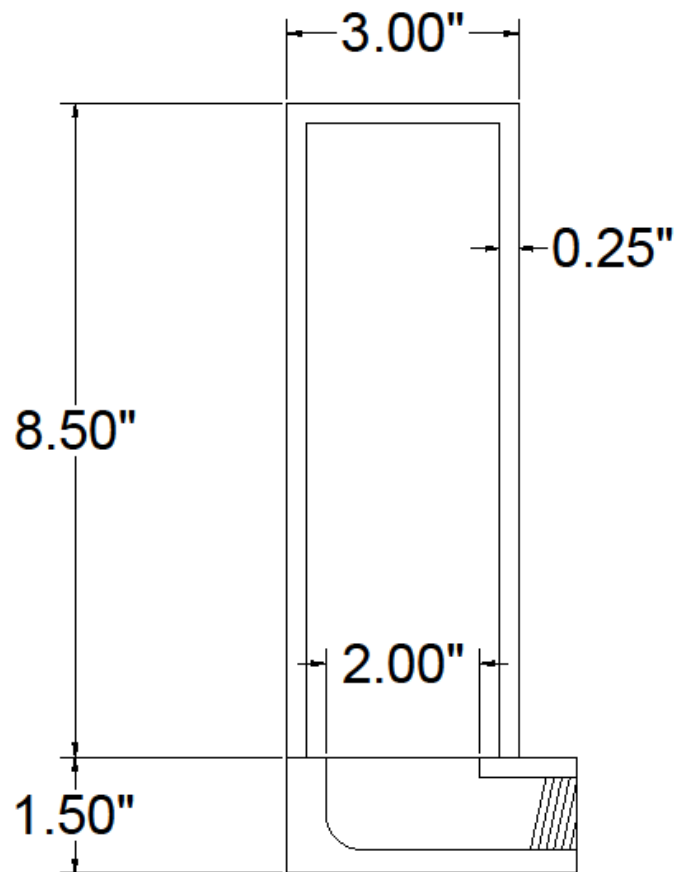


FIGURE 9. TROUGH (ABOVE)



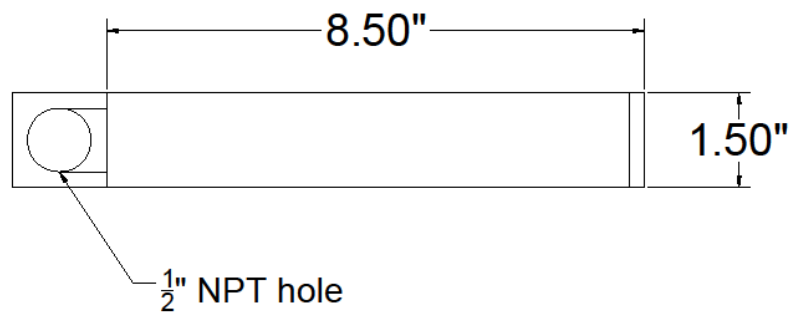


FIGURE 10. TROUGH (SIDE)

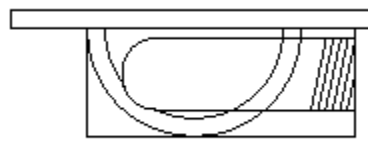


FIGURE 11. TROUGH (SIDE)

## BOTTOM PIECE

The bottom piece is cut from a  $\frac{1}{4}$ " clear acrylic sheet. The bottom piece is 2'-9.50" in length and 1'-7.25" in width. From the bottom piece two rectangular holes will be cut out one 8" x 2.5" and the other 0.75" x 1.25". Exact placement of these are shown in Figure 12. A 0.5" radius hole will be drilled through the acrylic as shown in Figure 12. The trough piece (see Trough section) will be glued to the bottom of the bottom piece and will line up exactly with the 8" x 2.5" hole as shown in Figure 13. The side walls (see Side Wall section) will be glued to the outer  $\frac{1}{4}$ " edge of the top of the bottom piece. This is shown in Figure 14 where the corresponding side pieces are laid to the side to show placement.

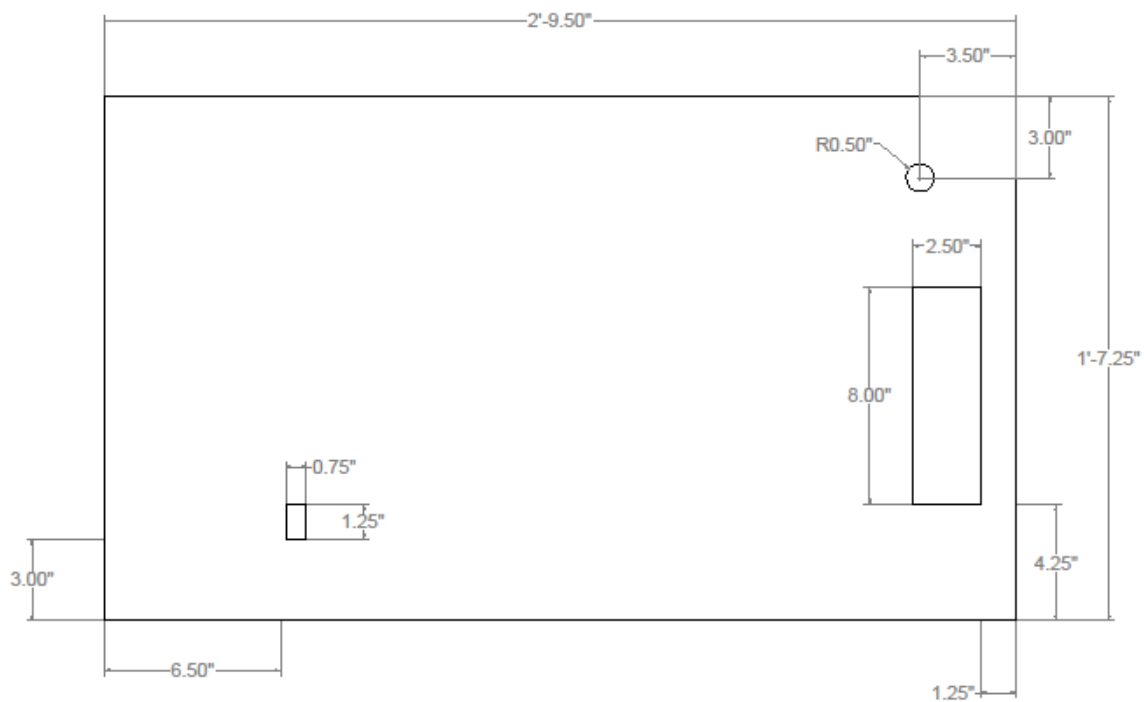


FIGURE 12. BOTTOM PIECE



FIGURE 13. BOTTOM PIECE WITH TROUGH

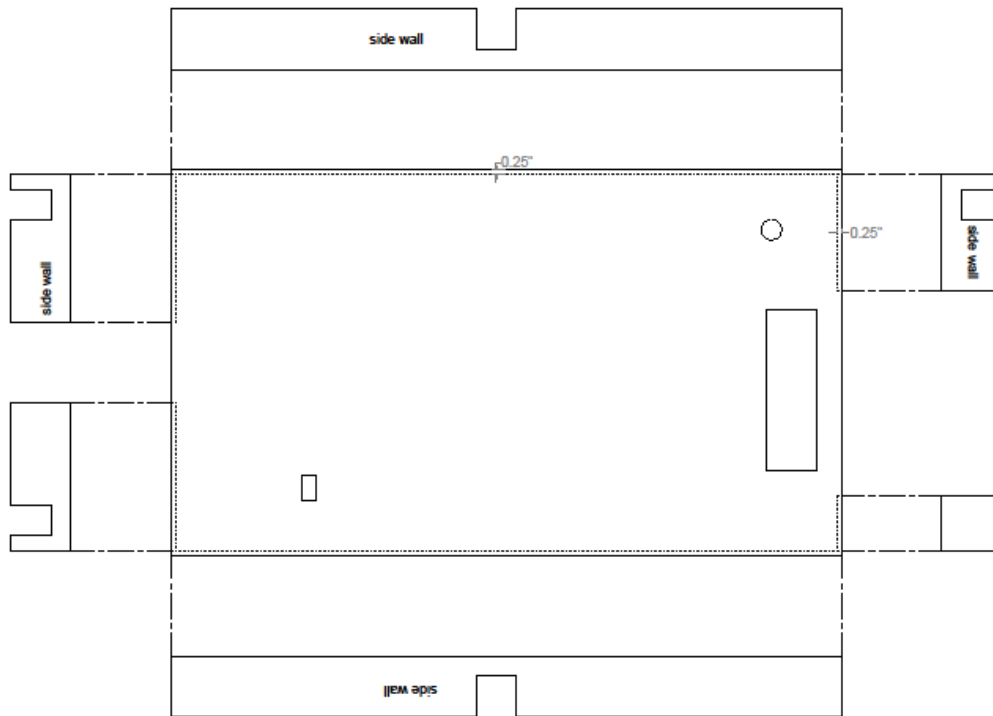


FIGURE 14. BOTTOM PIECE WITH CORRESPONDING SIDE WALLS SHOWN

## STABILIZERS

Stabilizers are  $\frac{1}{4}$ " x  $\frac{1}{4}$ " x 1.5" acrylic segments designed to secure and align the top piece of the encasing to the rest of the encasing acting as a lid. They will be glued to the underside of the top piece  $\frac{1}{4}$ " from the outer edge so as to set just inside the encasing side walls when the top piece is placed onto the rest of the encasing as a lid. The stabilizers are shown on the top lid in Figures 16 and 17.

## TOP PIECE

The top piece is cut from a  $\frac{1}{4}$ " thick clear sheet of acrylic. It is 2'-9.50" in length and 1'-7.25" in width with many smaller cutouts from the edges. In addition two holes, both 0.5" in radius will be drilled in the locations shown in Figure 15. The stabilizers (see Pg. 13 on Stabilizers) will be glued as shown in Figures 16 & 17,  $\frac{1}{4}$ " in from the outer edge of the top piece. These will create a lip on the top piece that will fit into the side walls of the assembled bottom piece and walls.

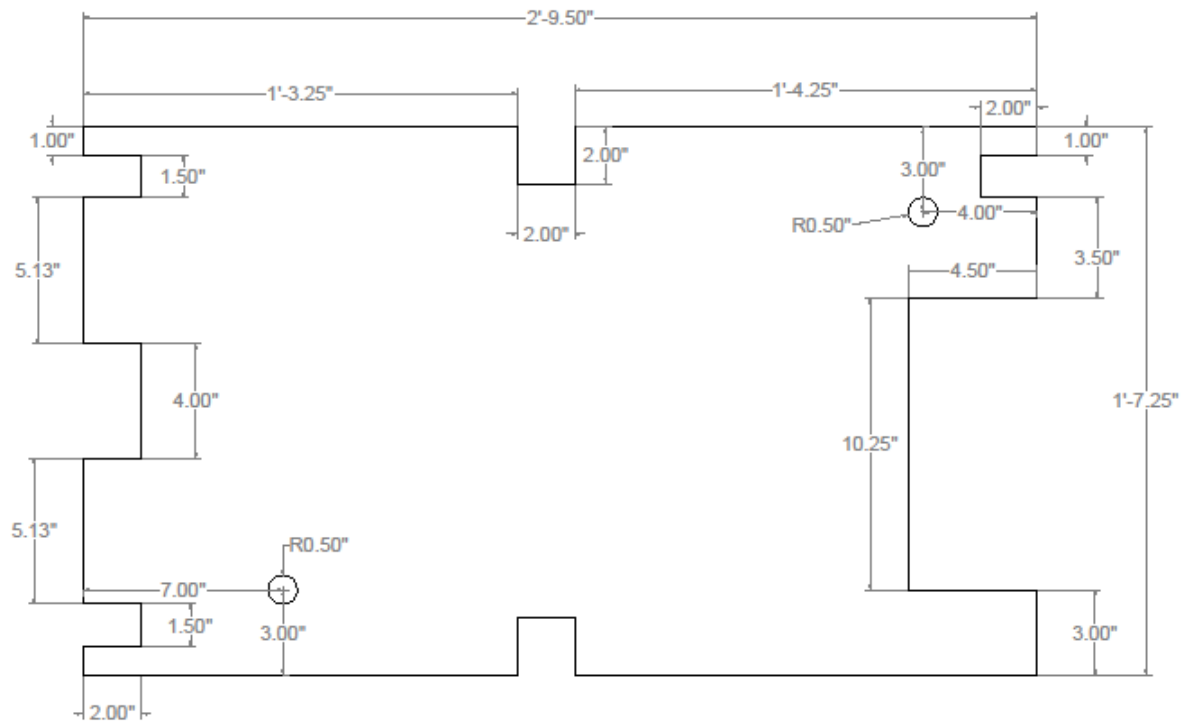


FIGURE 15. TOP PIECE

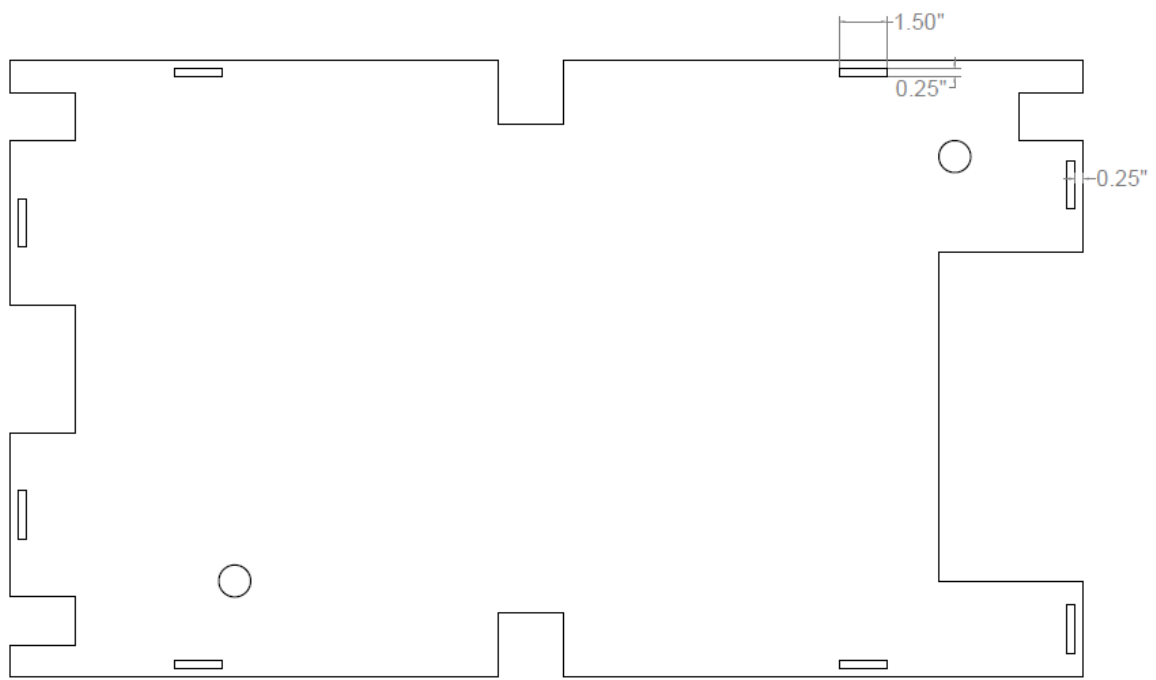


FIGURE 16. TOP PIECE WITH STABALIZERS (TOP)

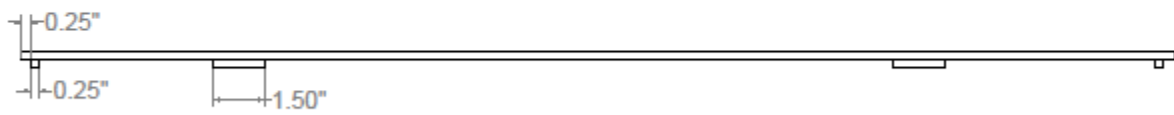


FIGURE 17. TOP PIECE WITH STABALIZERS (SIDE)

## ASSEMBLED ENCASING

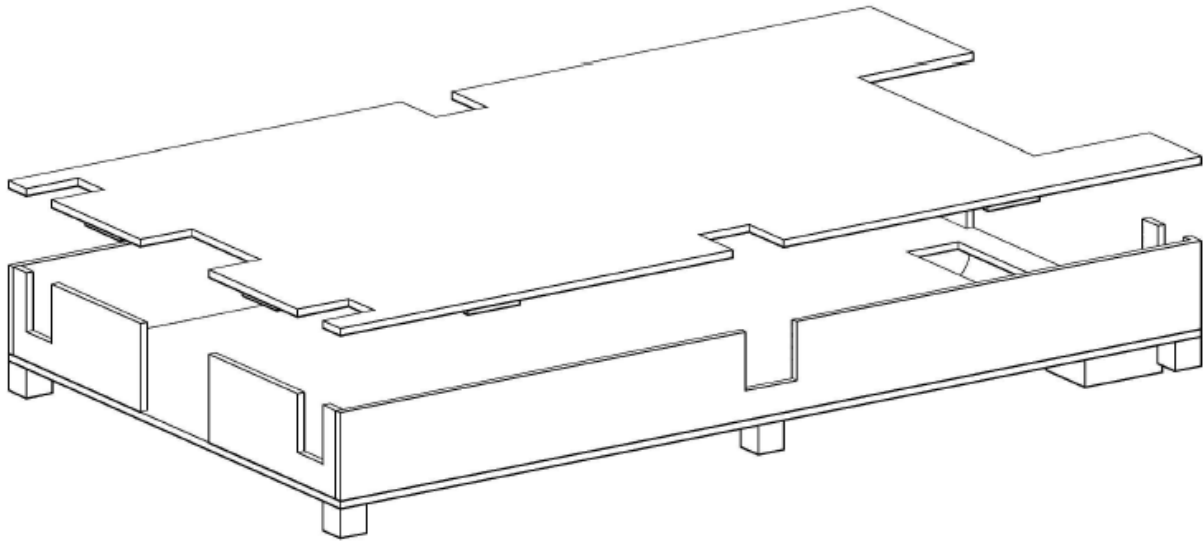


FIGURE 18. TOP, SIDE AND BOTTOM PIECES ASSEMBLED

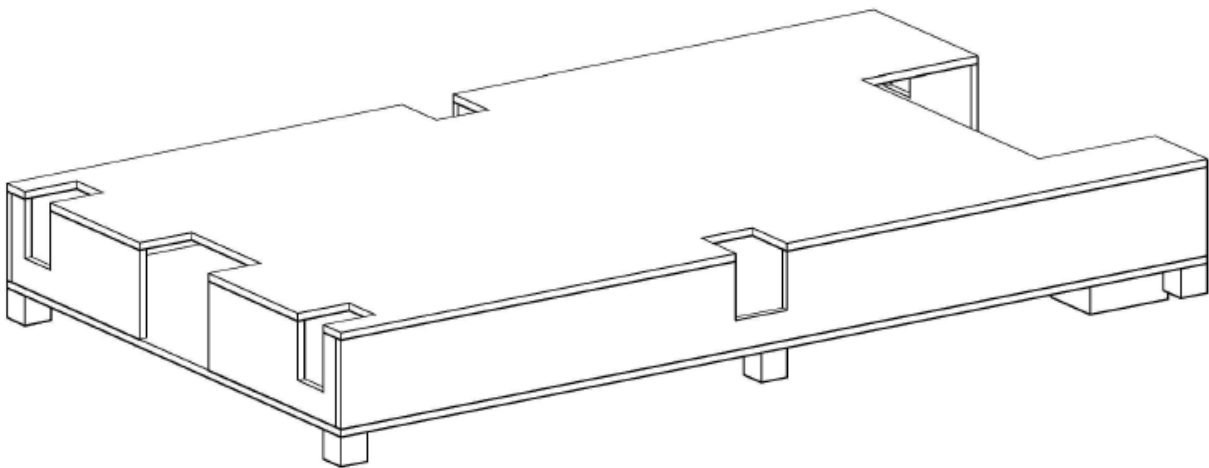


FIGURE 19. ENCASING ASSEMBLED WITH LID ON



## HOUSE

The house is a clear lidless cube created from 5 clear acrylic rectangles  $\frac{1}{4}$ " thick: a 5" x 5" rectangle, two 5" x 4.75" rectangles, two 4.75" x 4.50" and one 2" x 4.5" rectangle. The 5" x 5" rectangle acts as the base and the other four large rectangles are glued on as sides. The remaining 2" x 4.5" rectangle acts as a divider in the middle of the house. Two tapped holes are made within the acrylic pieces. One  $\frac{1}{4}$ " NPT hole on one of the 4.75" x 5" rectangles, and the other a  $\frac{3}{8}$ " NPT tapped hole on the 5" x 5" base. Upon assembly the hole in the base and the hole in the side wall should be located on the same side of the divider. Figures 20-23 show these details.

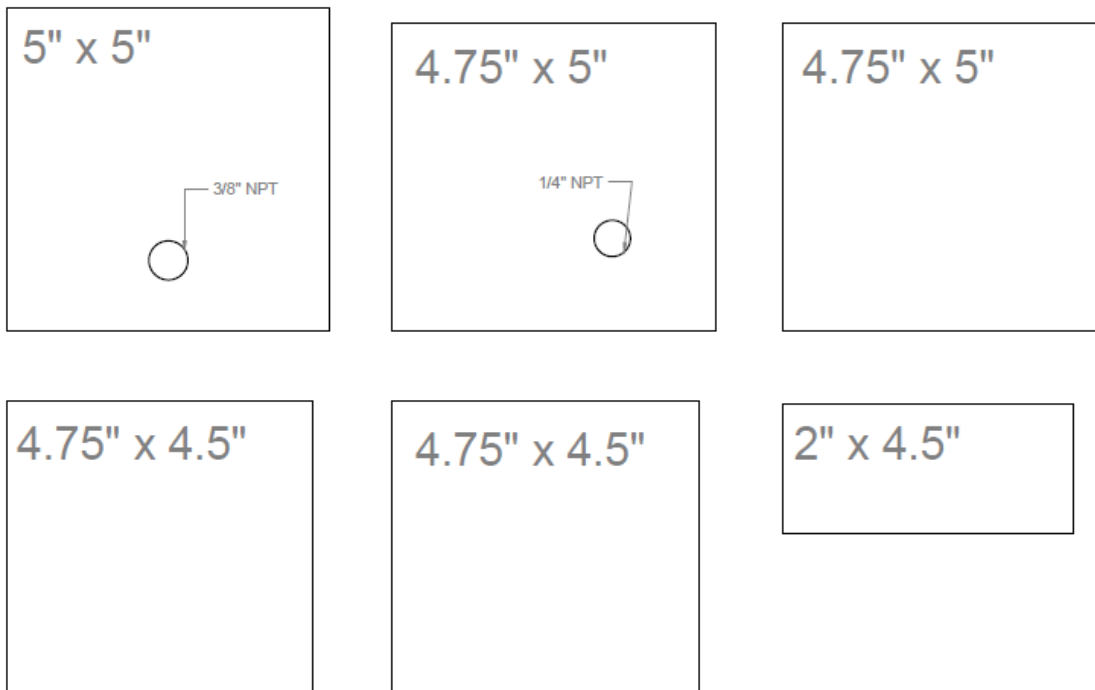


FIGURE 20. ACRYLIC PIECES OF HOUSE

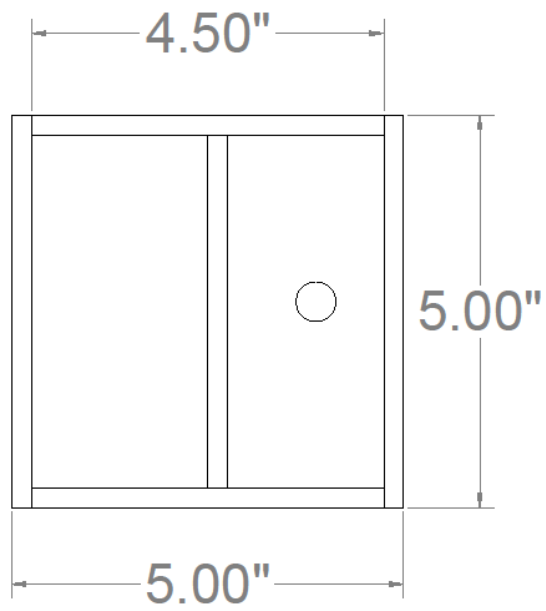


FIGURE 21. TOP VIEW OF ASSEMBLED HOUSE

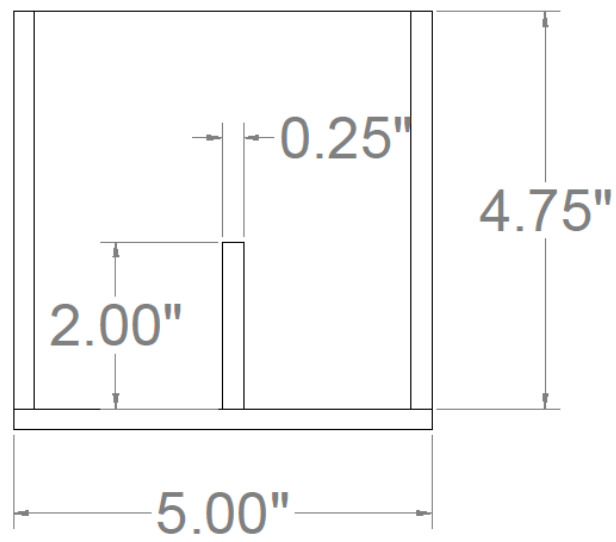


FIGURE 22. SIDE VIEW ONE OF ASSEMBLED HOUSE

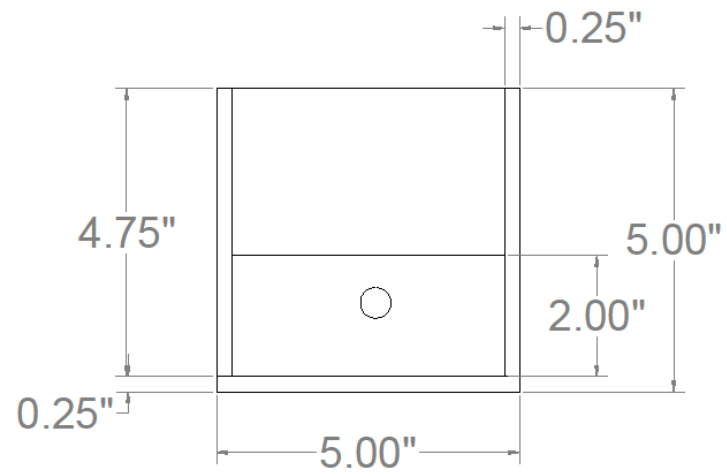


FIGURE 23. SIDE VIEW 2 OF ASSEMBLED HOUSE

## WATER TOWER

The water tower is made from three separate pieces: the base, the tower and the basin. The base is a 6.5" x 6.5" rectangle of acrylic. On the base three small arced segments of acrylic are to be glued along a 2" OD circular path as shown in Figure 24. These small arcs will secure the tower as they will slide flush into the inside of the 4" diameter tower when it is placed on top.

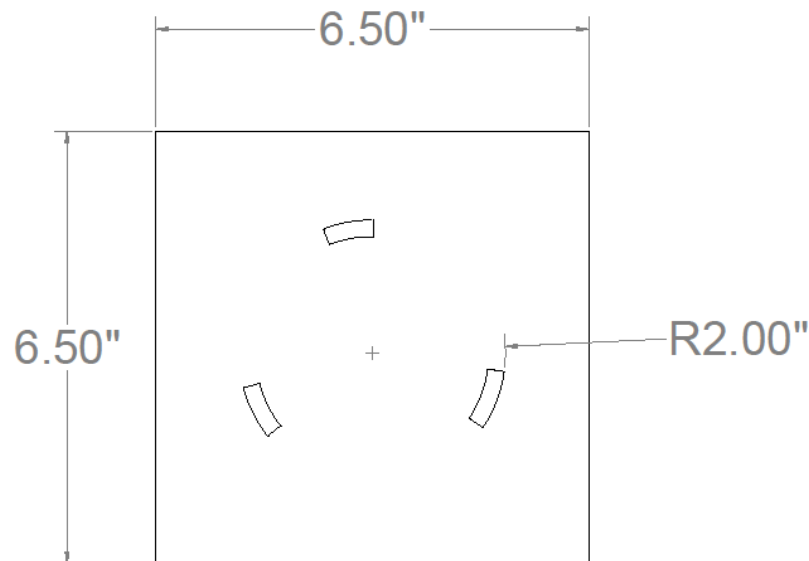


FIGURE 24. WATER TOWER BASE

The tower, which has a 4" ID, is 1/4" thick and 14.5" tall. The tower has two separate holes cut from the bottom portion of the tower. One hole is 0.75" in diameter and lies 1" from the base. The other, one quarter turn from the first hole, is a rectangular hole 2" x 1.5" of which one side is open to the base of the tower. This is more specifically outlined in figures 25 and 26.

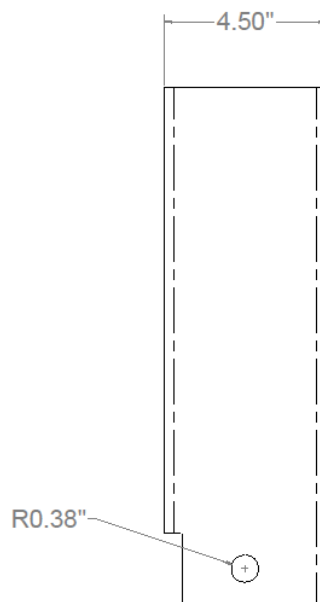


FIGURE 25. WATER TOWER TOWER (SIDE VIEW 1)

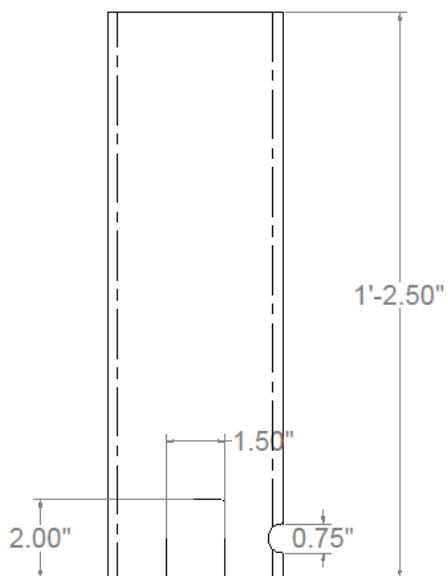


FIGURE 26. WATER TOWER TOWER (SIDE VIEW 2)

The tower should slide down onto the base and sit securely in place. The base and tower fit together as shown in figures 27 and 28.

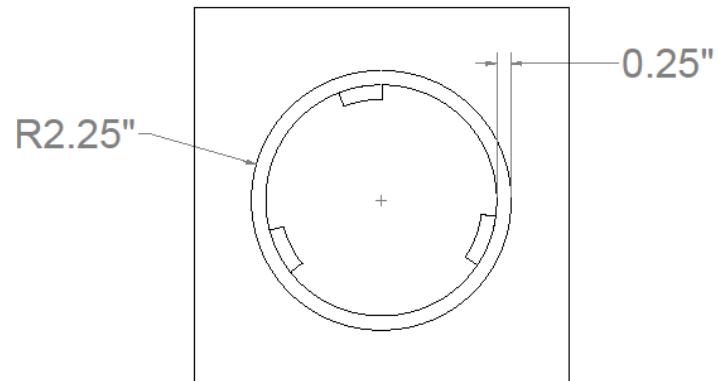


FIGURE 27. WATER TOWER BASE & TOWER (ABOVE VIEW)

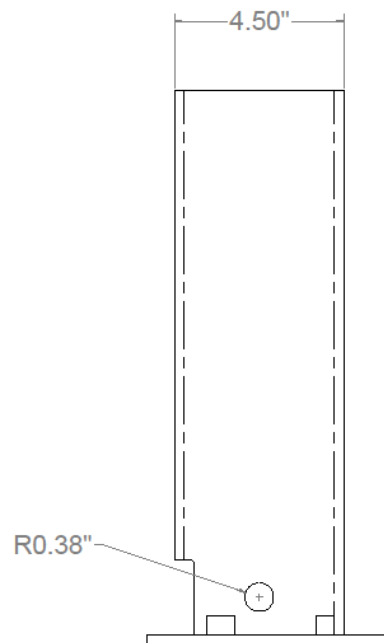


FIGURE 28. WATER TOWER BASE & TOWER (SIDE VIEW)

The water tower basin is made from a 6.5" OD tube of acrylic 5" deep and 1/4" thick. A 6.5" 1/4" acrylic disk is tapped with three holes and glued to the bottom of the tube as a base. Two of the holes are tapped 1/4" NPT holes and one is a 1/2" tapped NPT hole. In a similar fashion to the base, three arced segments are glued in a 2" OD circle around the three holes. These will help secure the basin onto the tower as done with the base. This is shown in Figures 29 and 30.

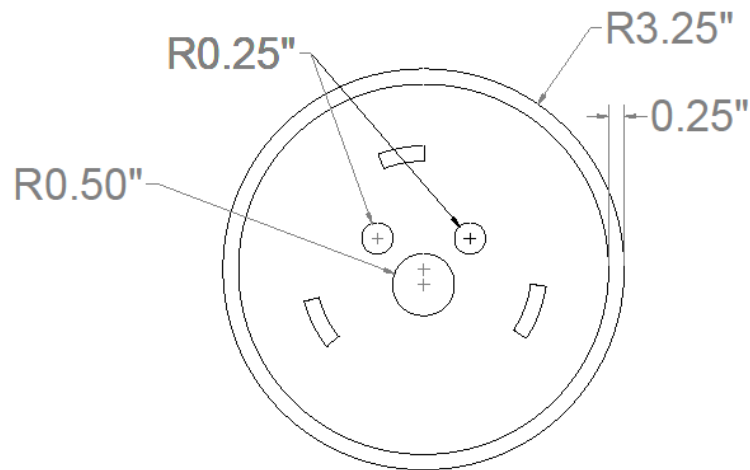


FIGURE 29. WATER TOWER BASIN (TOP VIEW)

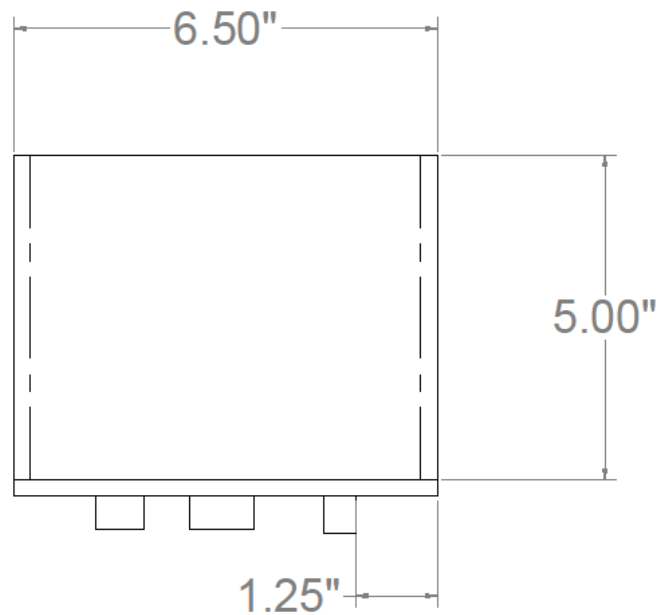


FIGURE 30. WATER TOWER BASIN (SIDE VIEW)

Once the three components are complete, they should fit into one another and sit secured due to the small arc spacers. Figures 31 and 32 demonstrate the completely assembled tower.

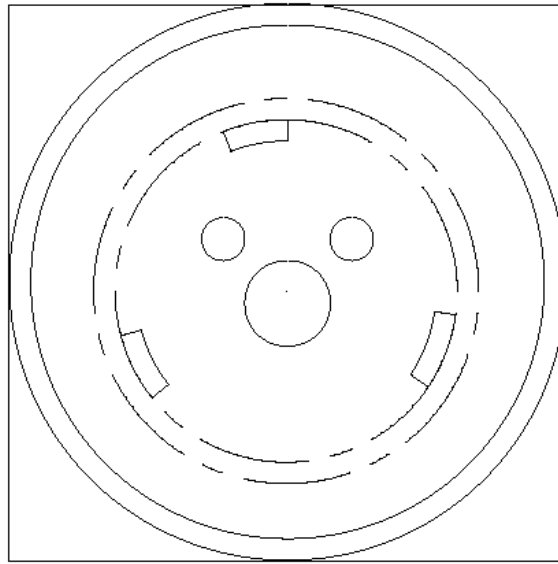


FIGURE 31. WATER TOWER PUT TOGETHER (TOP VIEW)

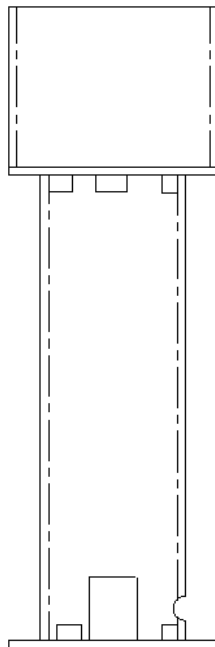


FIGURE 32. WATER TOWER PUT TOGETHER (SIDE VIEW)



