

## Building a Cheap Effective Light Shield

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Like many amateur astronomers, I suffer from a light polluted neighborhood environment. We have a street lamp to the southeast, all night spots on houses to the south, southwest, and northwest. My house blocks all light from the north and east.

When I can get fully dark adapted, I can see magnitude 5.2 stars from this site so the sky can be seen reasonably well if the light trespass from the neighbors can be blocked. To stop the light trespass, I have built 3 6.5'x 5' light shields at a cost of about \$10-15 each. The first one is somewhat more expensive since you have to buy the "general equipment". These take ~1.5-2 hours to build if all parts are present I chose this size as it is easy to get in and out of my garage door. (The shields nest and take up only a little room in the garage. If you follow the gluing instructions, they can be easily disassembled for transport.

Three of these devices have been successful at shielding me from all of the lights above and all car lights going by my house. I can now remain with dark adapted eyes for hours in my neighborhood. If you make a shield this way, please e-mail me with comments and suggestions for improvements. Clear (and dark) skies!



**To build a 6.5 foot x 5 foot light shield, you need the following:**

General equipment:

1. Can of PVC cement \$4.95 (good to make many light shields)
2. 1 roll (10ft x25 ft) of 3 mill black plastic sheeting (enough for 8 shields) \$4.95
3. Hack saw \$8.95
4. 1 bag sturdy 7" circumference rubber bands (cheap?)

For each shield you need the following:

1. 3 x10ft pieces of 1.25" PVC pipe \$1.48 each (\$4.44 total)
2. 4 x1.25" PVC Tees \$0.88 each (\$3.52)
3. 2 x1.25" PVC 90 degree elbows \$0.78 each (\$1.56)
4. ~12 Medium (1.25" wide) binder clips (\$2.59)

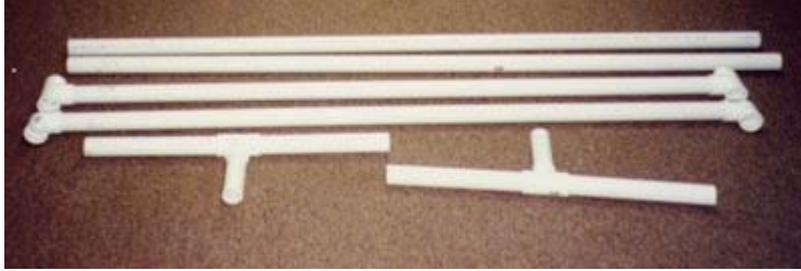
**Directions:**

**Cutting:**

1. Cut 1 PVC pipe into 2 x 5'0" pieces
2. Cut 5'7" pieces from the other two 10 foot pipes
3. From one of the 4 ' 5" remnants, cut 2 x 6" pieces and 3 x 1 foot pieces
4. From the second remnant, cut 1 additional 1 foot piece

**Gluing:**

1. Glue 90 degree elbows to each end of 5 foot section (be sure they point same way - as in [picture](#)) (Piece #1)



2. Glue the center hole of tee to each end of the other 5 foot section (be sure that they line up parallel as in picture) (Piece #2)
  3. Glue 2 1 foot section in to ends of 3rd tee
  4. Glue 2 1 foot section in to ends of 4th tee
  5. Glue 6 " piece into center hole of parts from step 3 and 4 (Piece #3 and #4)
- The two 5'7" pieces are pieces 5 and 6.

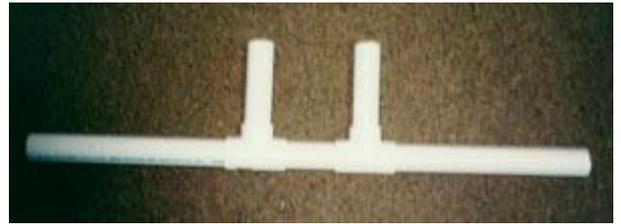
Once the glue has dried, the frame is assembled. I put a very small amount of grease on the unglued joints to be sure I can easily separate them when desired.

Attach 4 clips to the top (piece 1) and the sides (pieces 5 and 6) using the rubber bands and space about equally. (I usually run the rubber band through the handle on the clip and then wrap both sides over the tube). In this way the clips are tight enough not to move about on the tube. (See picture of clips).



Assemble the frame as in the pictures. On the next page is a picture of a completed single frame unit.

Cut a 6 foot piece of the black plastic off the roll. Hang the strip (it is 10 foot wide) over the frame so that both sides are equal. Cut the plastic sheet in half. This gives you two 6 foot x 5 foot sheets. Clip one of the sheets (five foot part horizontal) to all 12 clips and your light shield is complete. You may or may not wish to trim the bottom inch or two off the bottom of the sheet. (mine drag the ground by about an inch and keep ground level light out nicely).



### **Connecting 2 light shields**

Two light shields can be hooked together by building a modified foot. A picture of the [double foot](#) is shown above right, and a 3-6" central pipe can be used. Light coming through the edge of one light shield can be blocked by the second shield at right angles, see the picture at the start of this article. To use this you remove the single feet from one side of each light shield and plug in the double foot.