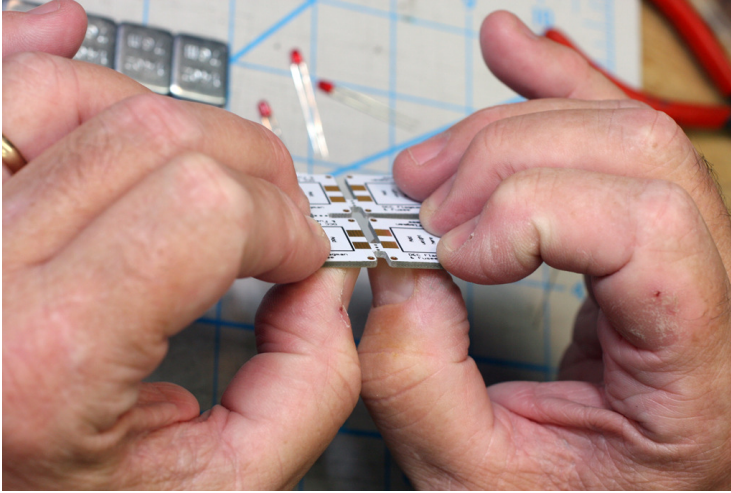


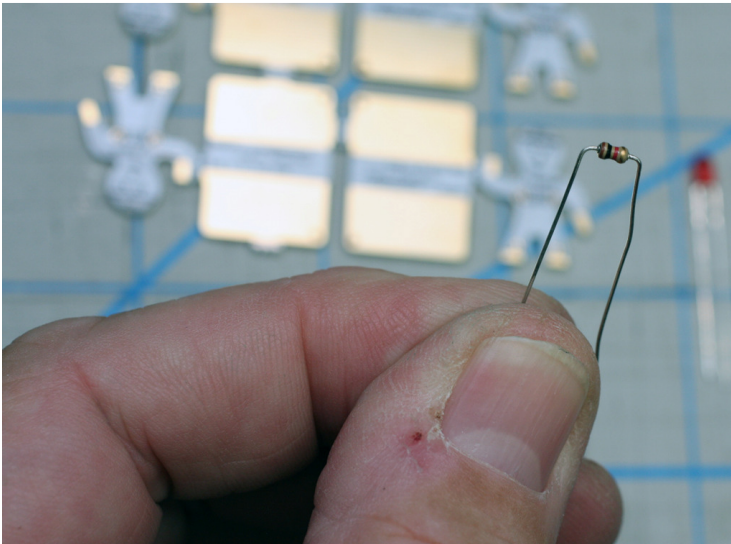
## Flagman 4/Flagman 8 Instructions

The DCC Flag Man is a John Plocher Design. John's notes for the original (surface mount) flagman can be found at: <http://www.scuba.net/wiki/index.php/Brakeman> Due to fabrication concerns we've switched back to through-hole components.

1. Gently snap the flagmen apart by holding each flagman and base firmly and bending the board

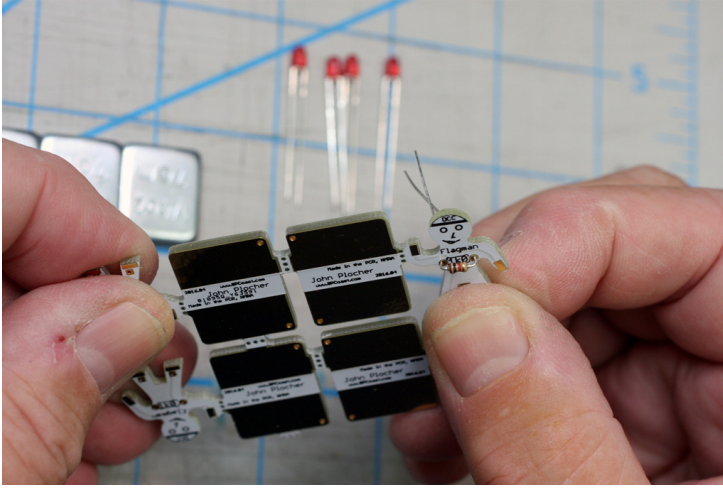


2. Bend the 1/8W 1K Ohm resistor to match the holes in the flagman's torso

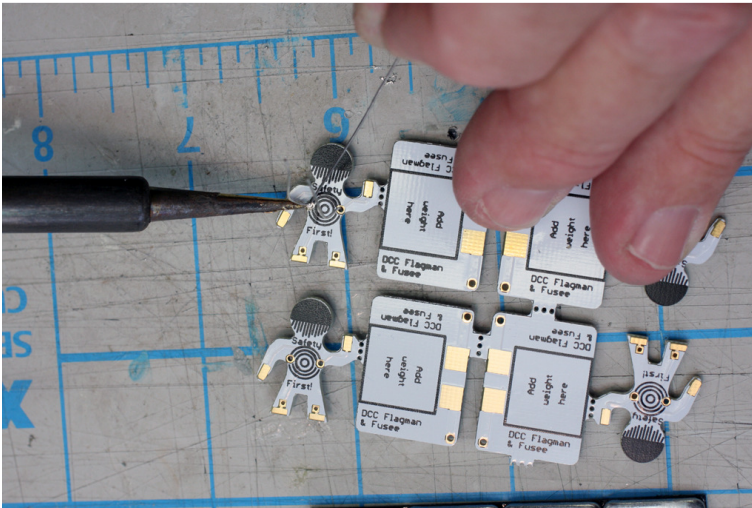


## Flagman 4/Flagman 8 Instructions

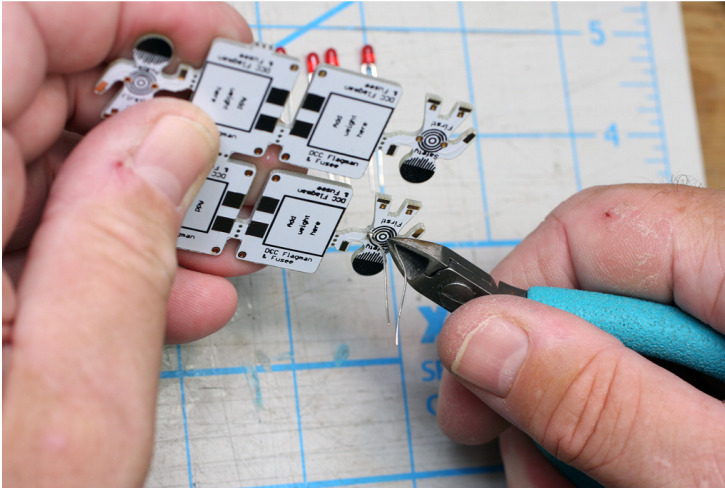
3. Insert the resistor so it's flat up against the torso (you can make it a fanny pack if you want)



4. Solder the resistor (I recommend soldering each component in turn to prevent things from flopping around)



5. Trim the resistor leads

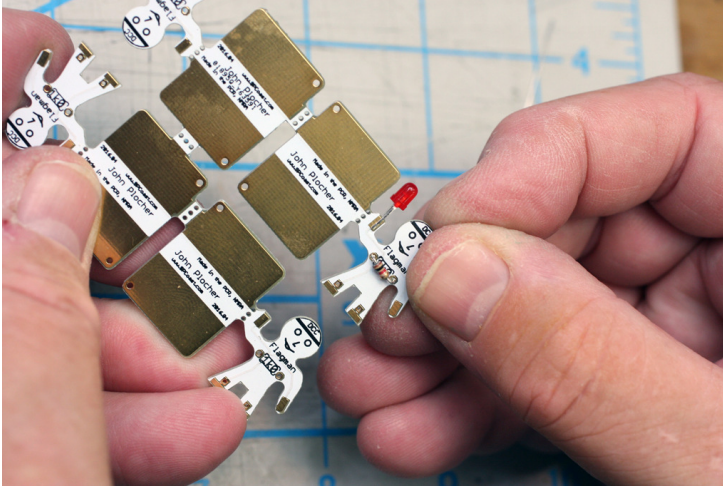


6. Trim the LED leads to about 1/4".

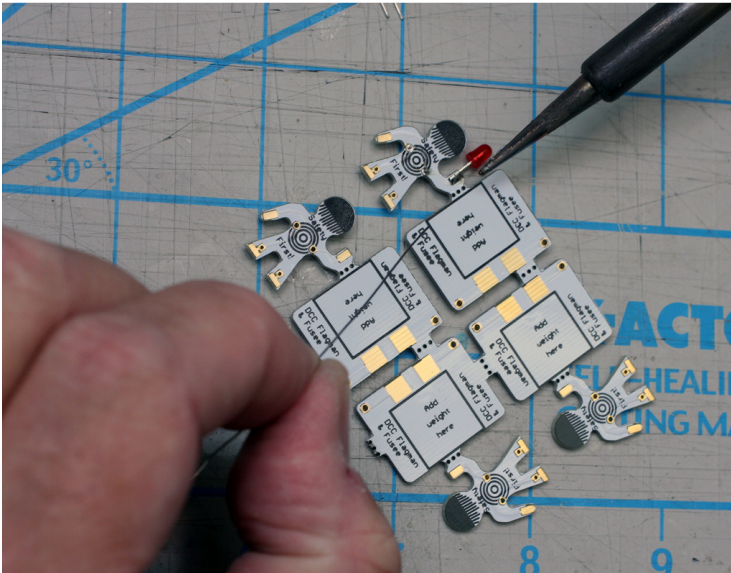


## Flagman 4/Flagman 8 Instructions

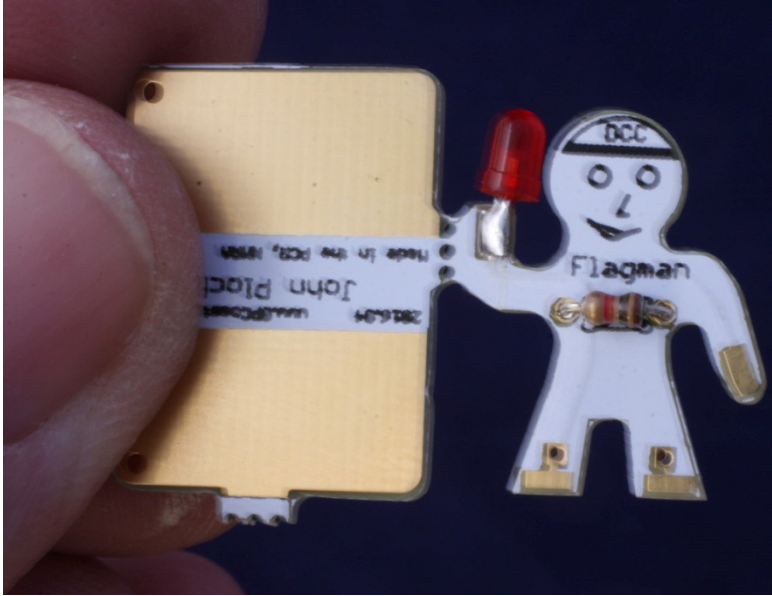
7. Place the red\* led with one lead on the front and one on the back of the hand you use (you can use either hand or both). Polarity is not important as DCC is alternating current. You may need to bend the leads a little get some tension to hold the LED in place. Use a fine pair of needle nose pliers.



8. Solder the LED to either his hands with one lead on each side.



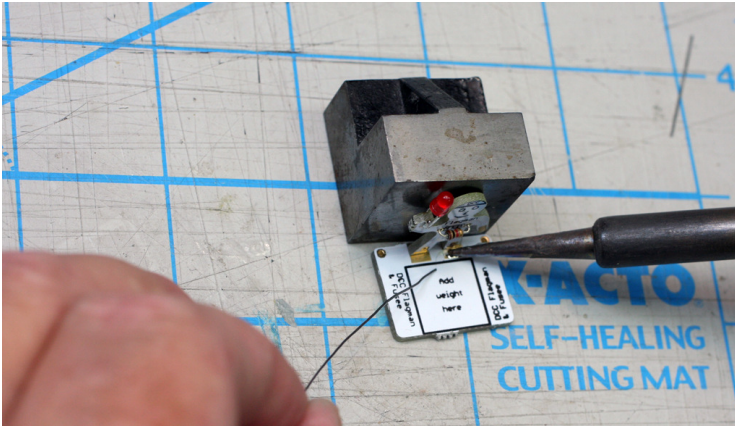
\*Red LEDs have a reverse breakdown voltage of 30V and can handle the reverse voltage (typically 14) of DCC, for other colors, especially white and blue, check the data sheet. A good solution is to place two of these LEDs (one in each hand) with polarity back to back so each LED clamps its mate



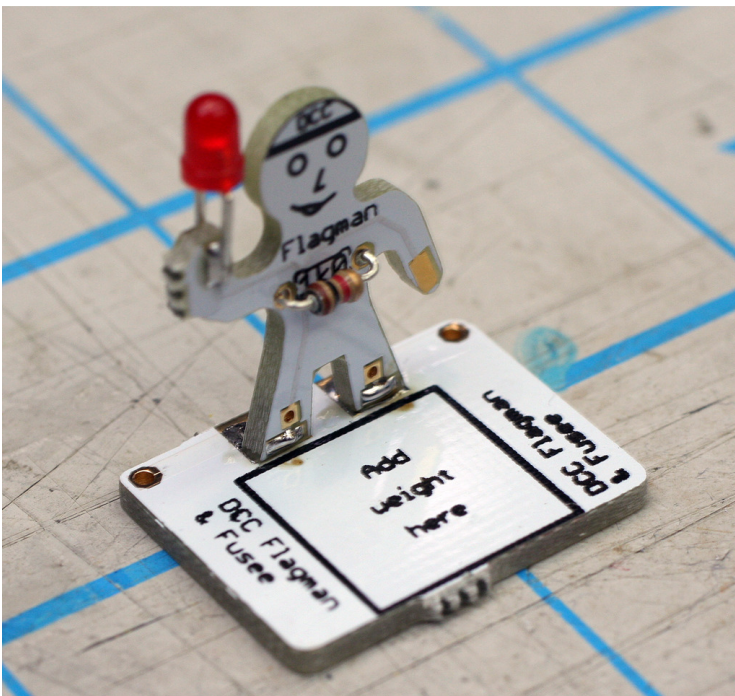
9. Use a track nipper to detach the base from the hand holding the LED. (The arm is too thin for reliably snapping)



10. Solder the two feet to the two small gold pads on the top of the base. I use a block to prop him up while soldering the first pad. Then you can re-flow the solder if you need to adjust his posture (although depending on your era Rule G may have been observed in the breach <g>). Check so see that you a good bead of solder on the front and back of both feet.



11. Trim any loose bits of circuit board that stick out with an old (not your good one) rail nipper and dress with a file as required.



12. Attach the weight to the top of the base next to (but not touching) his feet



13. Place the large gold pads across the rails to light the red lantern. Not only can you flag on a dark railroad, but the Flagman draws about 10mA so it will force detection on a railroad using current detection. The Flagman also makes a handy tester for track voltage!