Tractive System Active Light: Errata

Below is shown the pads layout of the tractive system active light. The circuit itself is fairly simple, however a few mistakes were made when this was sent out to PCB. I hope to identify those mistakes here so that if someone was to need this circuit again, they could get it error free. Errors are indicated by a yellow double bordered rectangle around the point of correction and have an associated number.

1) GLV24, S24, TASL Labeling: The first error has to do with the labeling on the IOs of the low voltage side. The positive and negative terminals of each should be identified. It is obvious in the circuit that the top pin is positive and the bottom pin is negative, but they should be labeled as the following (from top to bottom):
   - GLV+
   - GLV-
   - SL24+
   - SL24-
   - TSAL+
   - TSAL-
2) IO Holes: The part for the inputs and outputs on both sides of this circuit board was given to us from the department and didn’t have a label. They are your typical PCB screw terminals, but we needed to measure all the dimensions for ourselves. While we did get the spacing right, the diameter of the hole we made was too small and to rectify this we drilled into the PCB board. Each of the holes with the label of “2” needs to be enlarged from its current size.

3) Opto-Isolator Resistor: The circuit works as is with the 160K resistor as R5. The current that comes out at 5V is just enough to be greater than the voltage divider between the 16K and 7.5K resistors. For the EV competition the comparator needs to turn on at 30V. You really have a lot of ways of doing this, but I would suggest looking for a large potentiometer (160K*6 = 9.6M) in the 10M Ohm range so that you can tweak the value to be more precise. Alternatively, if that resistance is too large, you could find a different opto-isolator that produced more amperage, but I would still change that resistor into a potentiometer to give yourself a little more freedom.