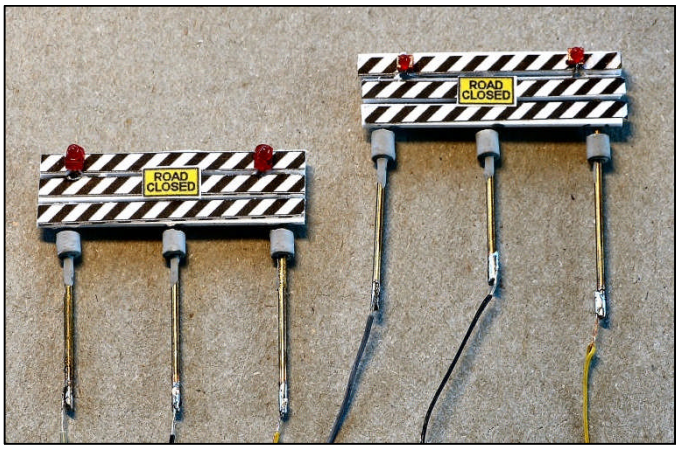
Road Barricade Flasher

A micro-controlled model railroad project

By Fred Miller, MMR

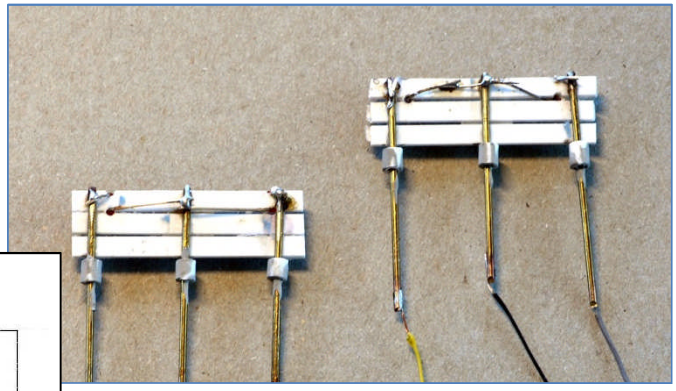
A reasonable representation of a flashing barricade can be modeled using a simple micro-controller and small Red LEDs. This is a simple job for micro-controllers such as the popular Arduino series. The project described in this article was built for around $5 - a good price to perhaps sprinkle many such road barriers around a layout. The micro-controller can be programmed to control alternating LEDs and fade the brightness gradually ON and OFF, simulating incandescent lights.



Building the flashing circuit

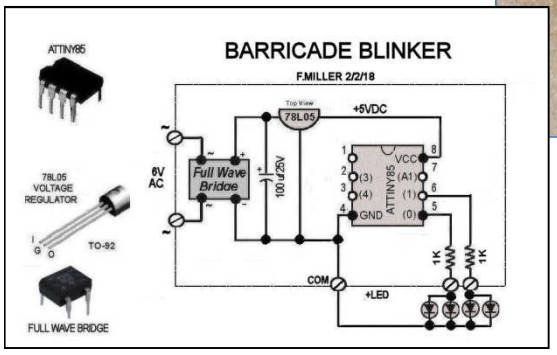
I constructed my HO scale barricade flasher by assembling styrene strips ACC fastened to three brass rods. Computer graphics were used to create the hash marks. Small red LEDs were glued to the boards with the common cathode connected to the center brass rod. The individual LED anodes were soldered to the outside brass rods.

The barricade rods are passed through the layout surface and connected to the circuit from below.



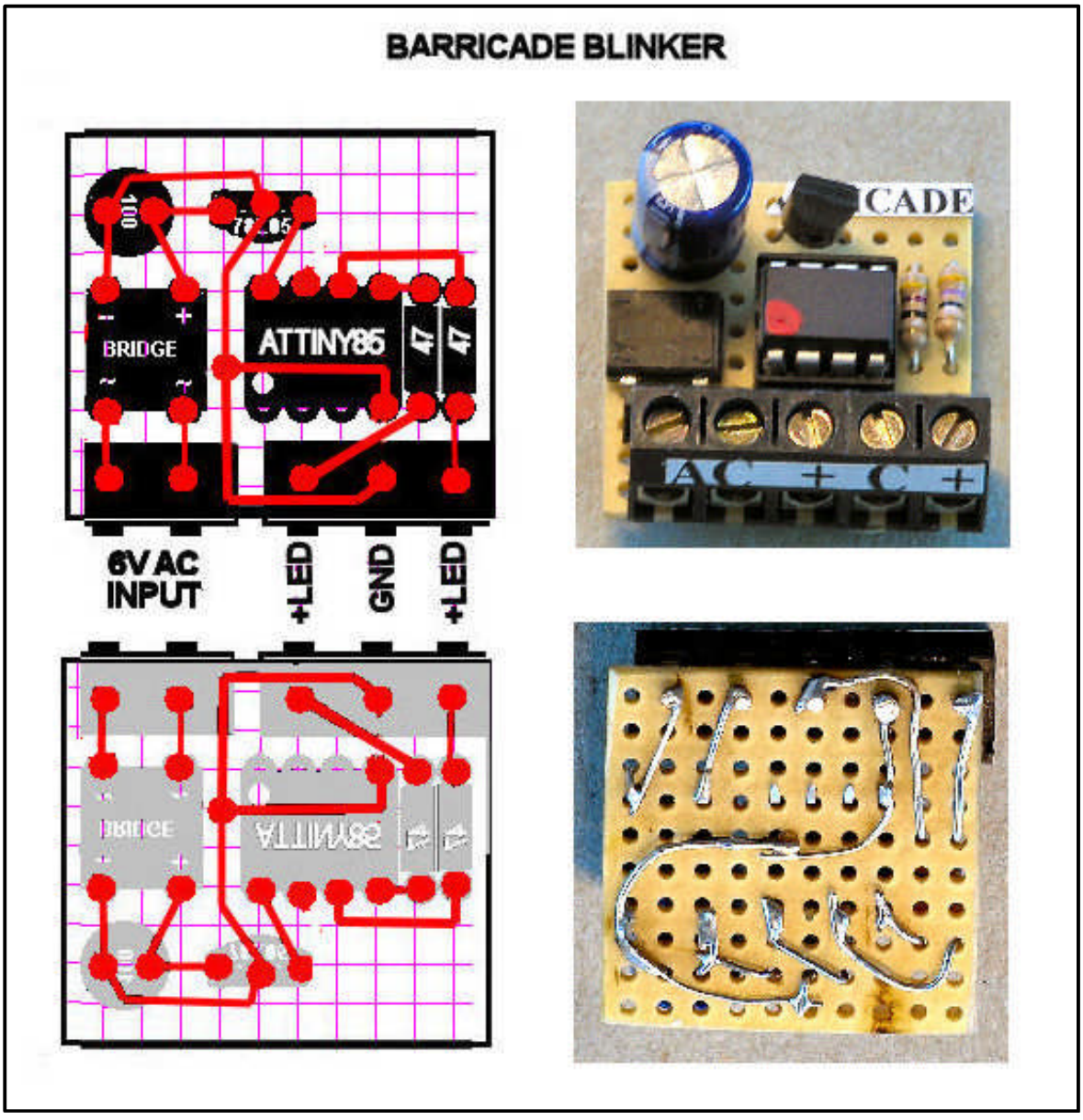
The electronic circuit

All of my Arduino micro-controller projects begin by developing the program code (called “sketches” in the Arduino world) and preliminary electronic circuit on an Arduino UNO with a plugged in Bread-board “shield.” This starting point “workbench” facilitates easy changes in software and the controlled circuitry.



The “sketch” is developed using the free Arduino development system (IDE) running on a PC. The software is written, compiled, and then downloaded to the UNO for testing using the provided simple menu controls and a USB cable to the UNO. Rather than use the larger Arduino UNO for the completed project, I generally move the software to smaller micro-controller chips. In this case an inexpensive 8-pin chip called an ATTINY85 was used. The Arduino IDE can be used to program the ATTINY85. A stand-alone circuit board then is designed and assembled to house the micro-controller chip and parts.

The developed design and final board layouts are shown below:



The parts can be acquired from a number of online electronic parts suppliers.