Tortoise Wiring/LED Clinic

By Bob Cochran

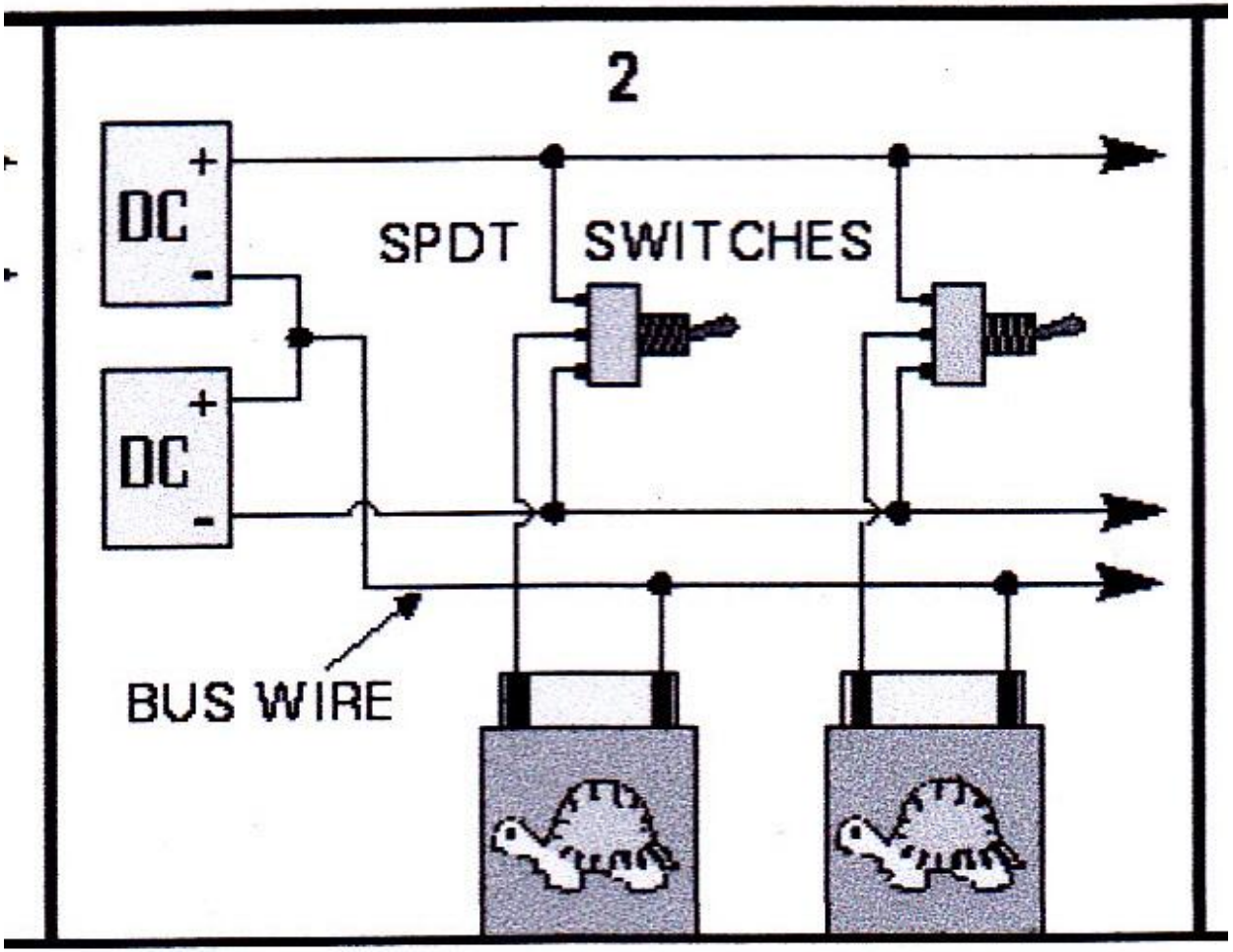
Overview of what will be covered

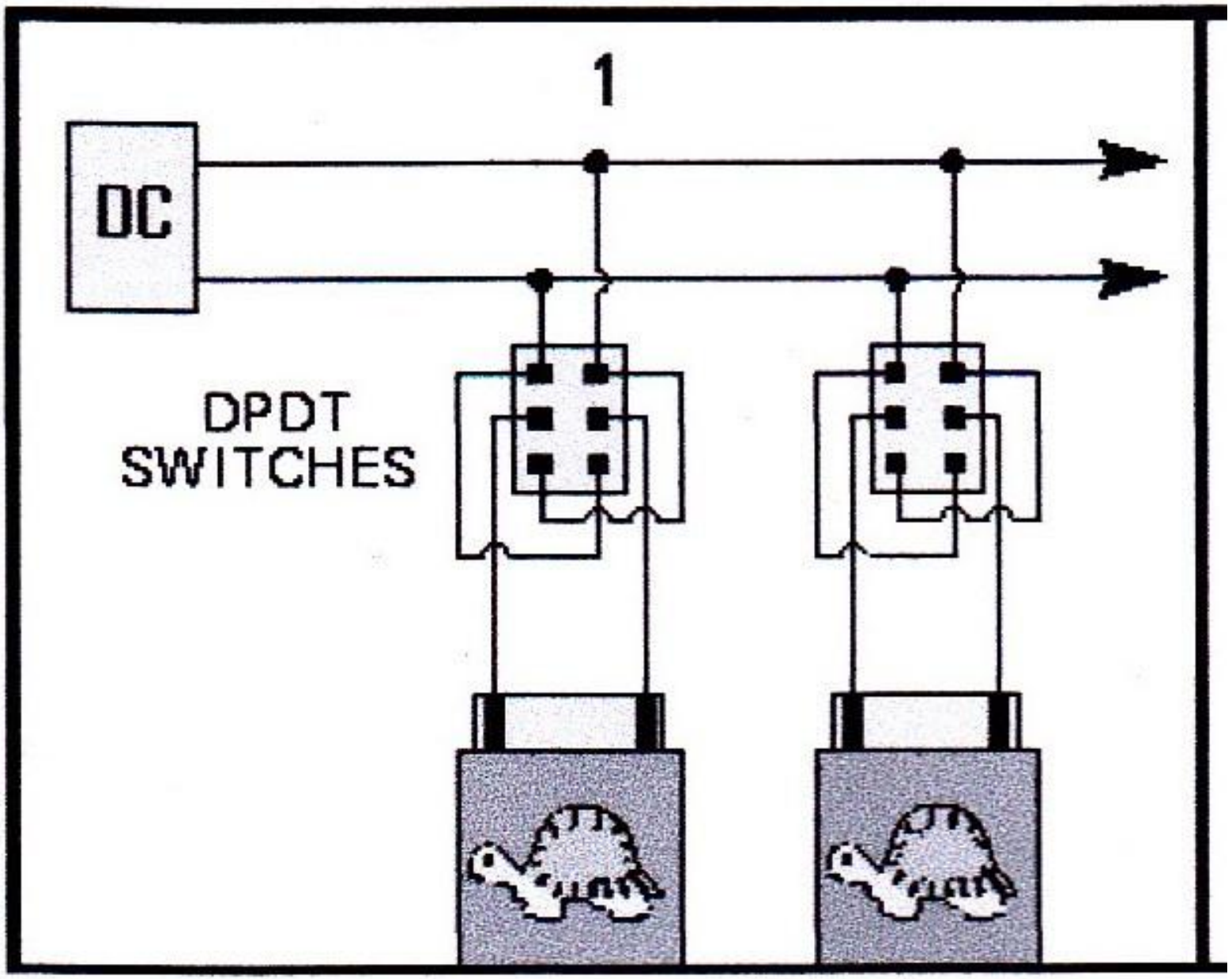
- 1. How to wire toggle switches, LED’s and frog on a turnout.
- 2. Material used.
- 3. Offset mounting/dual control

Methods of providing changeable polarity DC

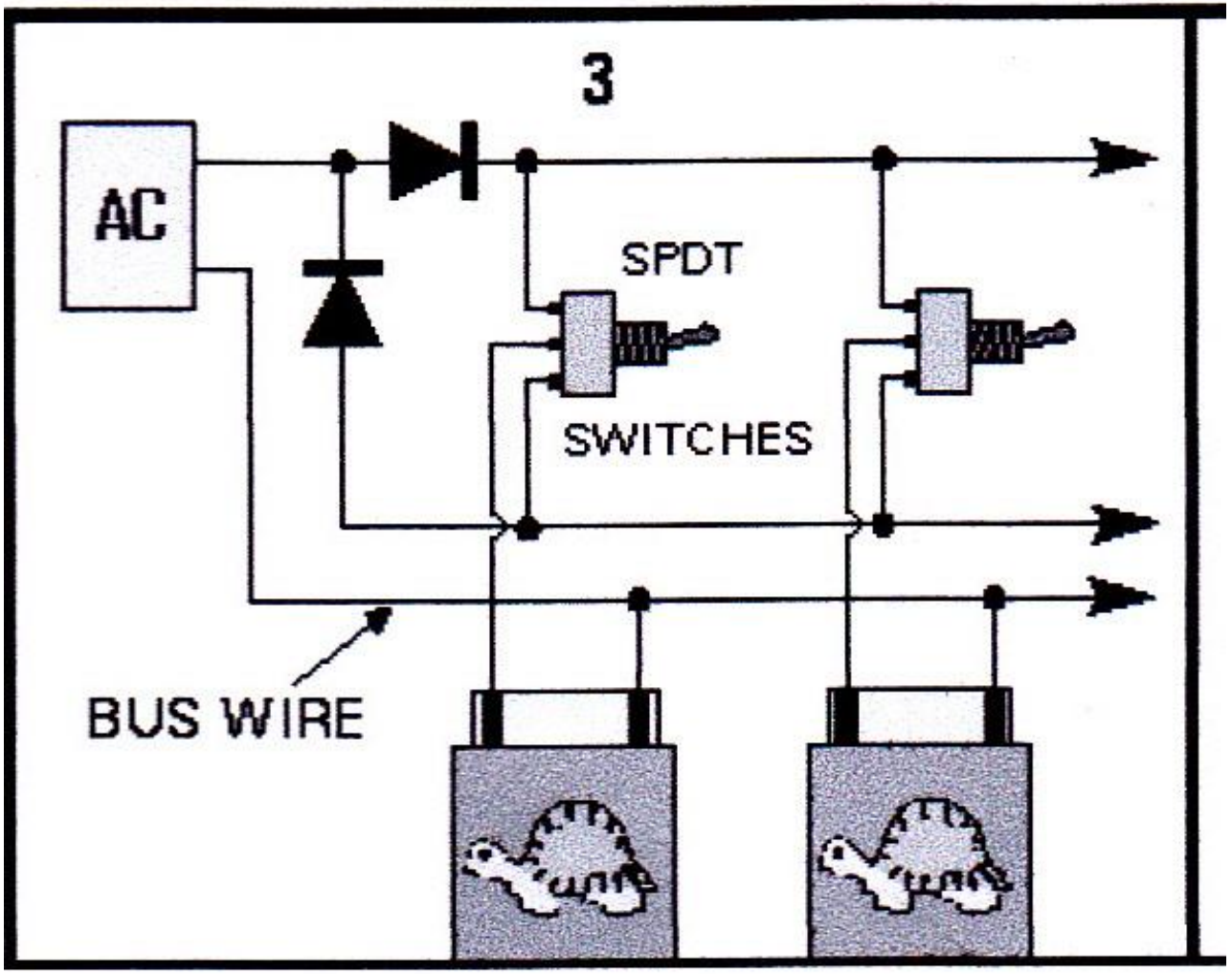
- 1. DPDT Switches
- 2. Bi-Polar DC wit SPDT Switches
- 3. AC with Steering Diodes

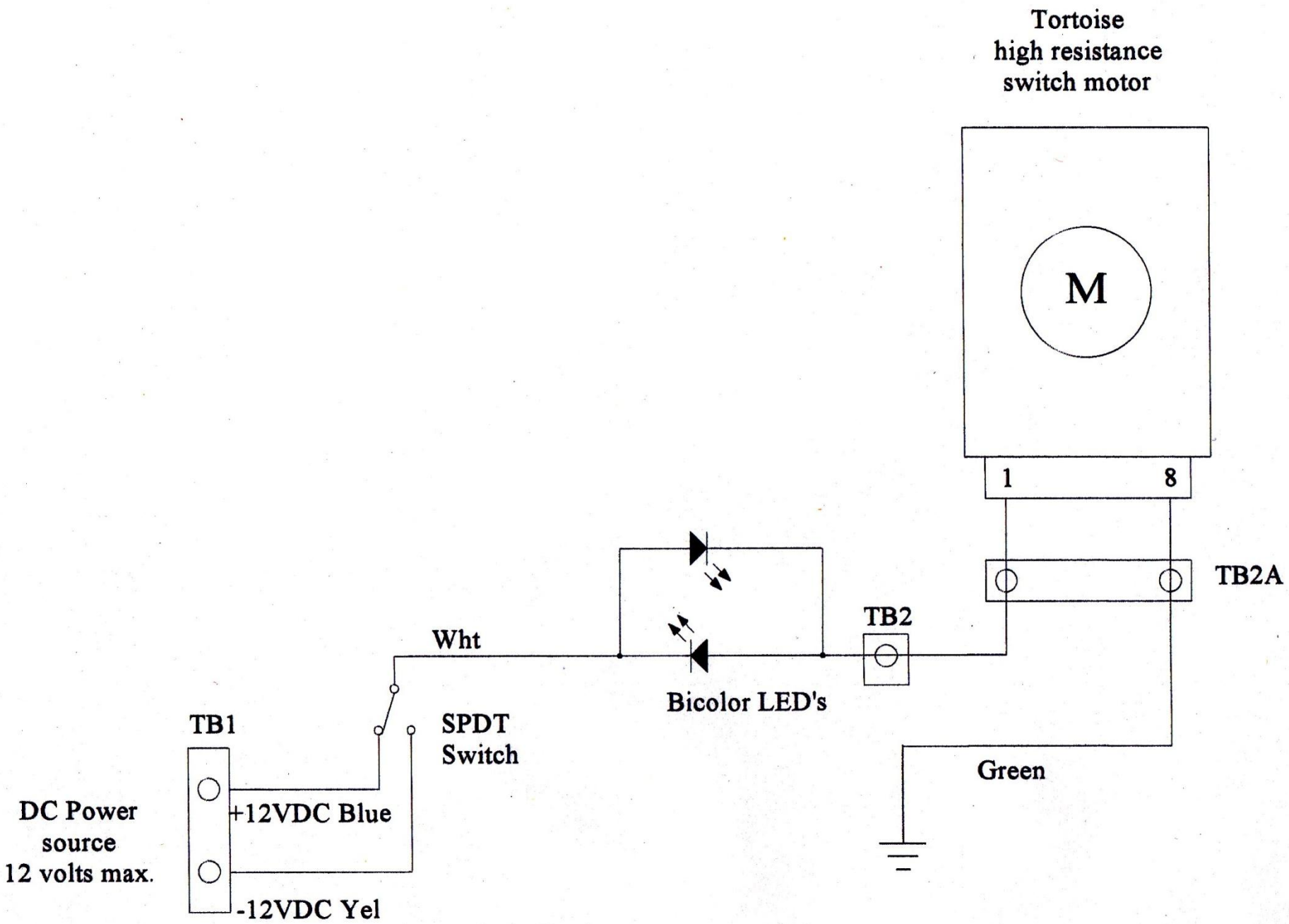
BI-Polar DC




1
DC
DPDT
SWITCHES

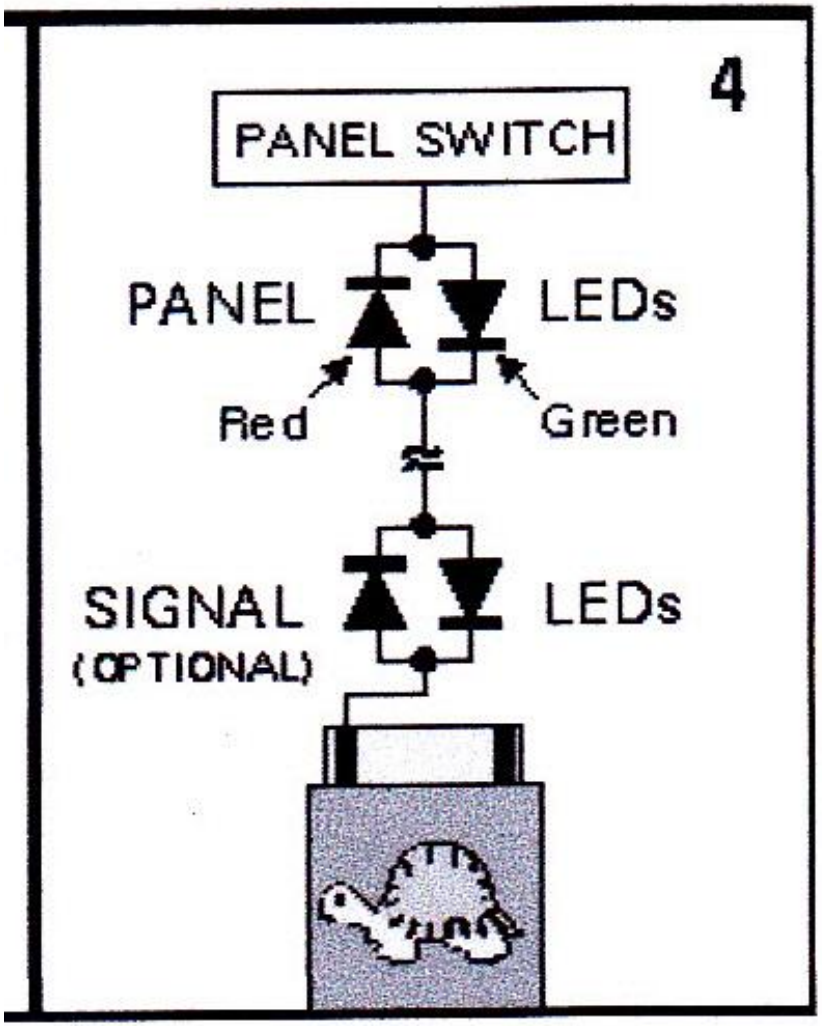
AC with Steering Diodes

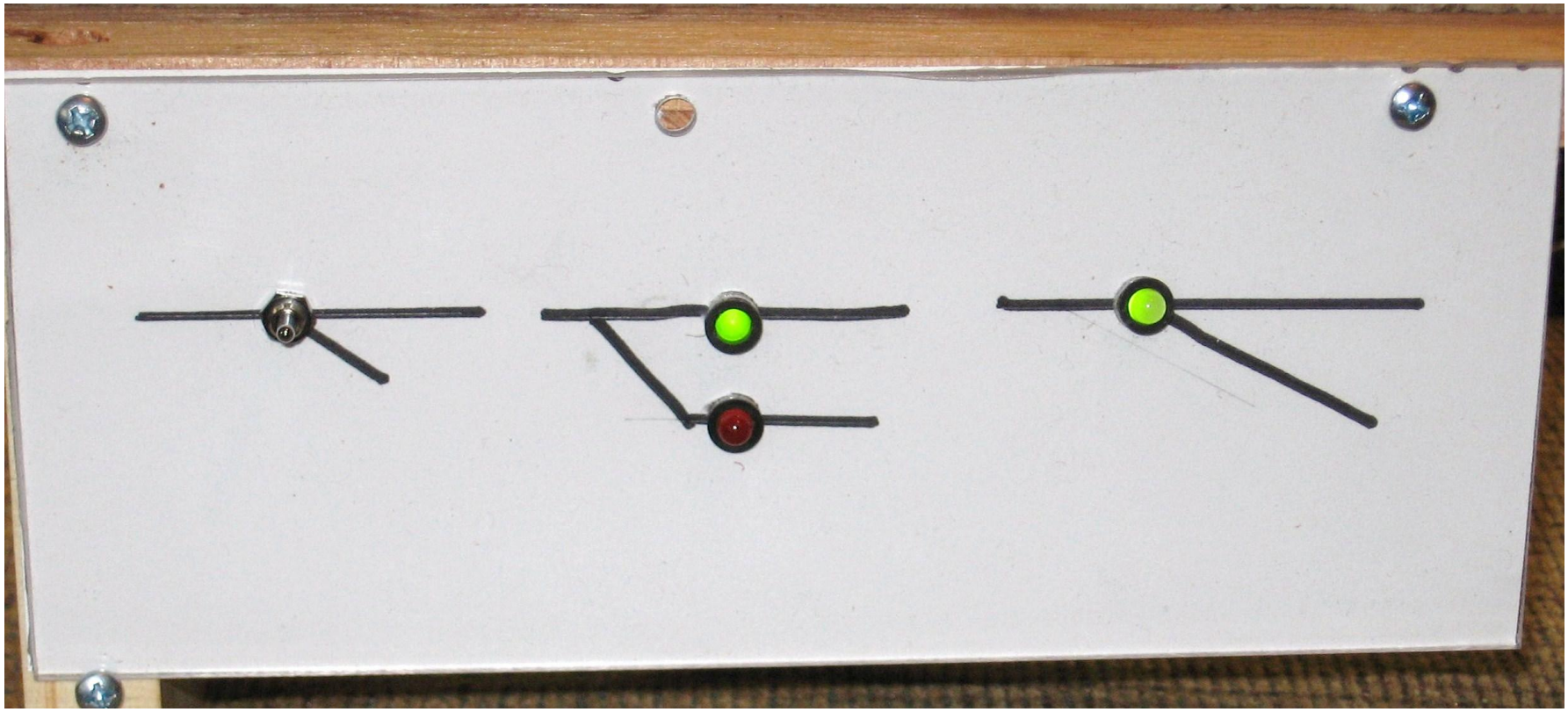


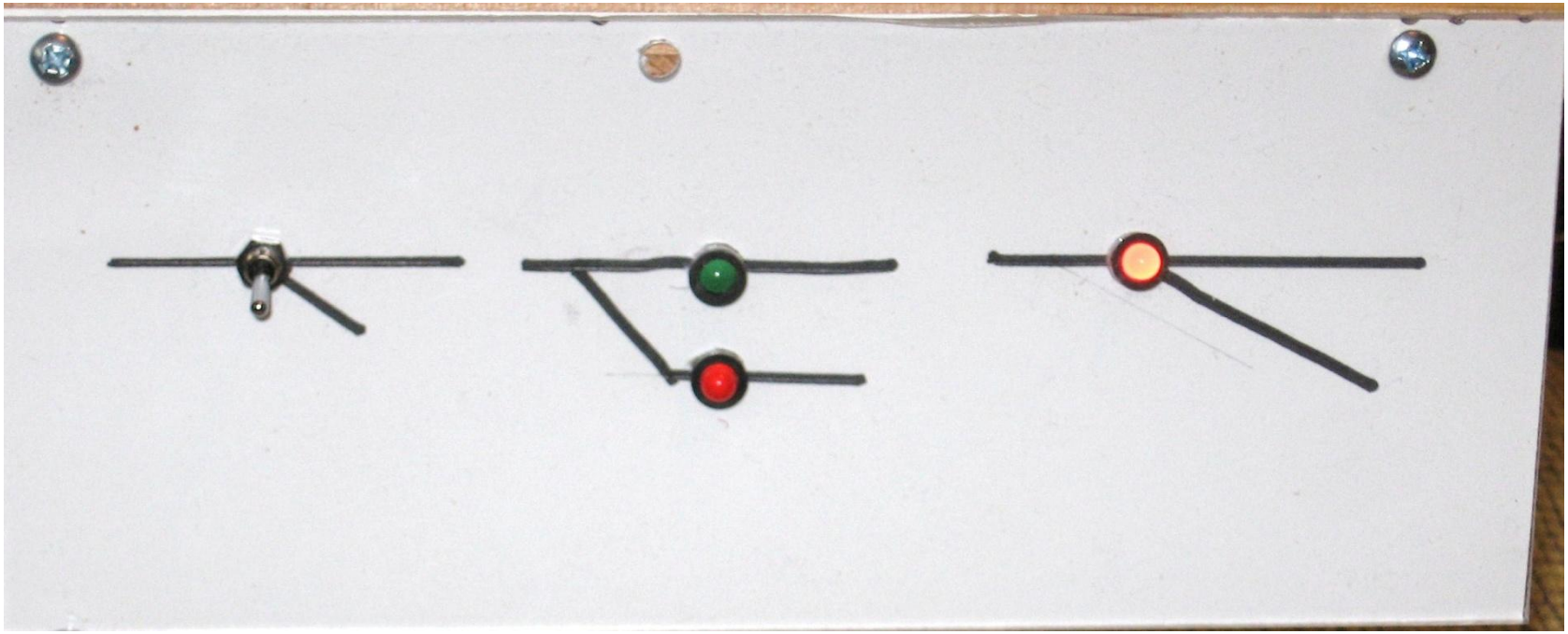

Tortoise
high resistance
switch motor
M
1
8
TB2A
TB2
Wht
Bicolor LED's
TB1
SPDT
Switch
Green
DC Power
source
12 volts max.
+12VDC Blue
-12VDC Yel

Panel lights/Signals

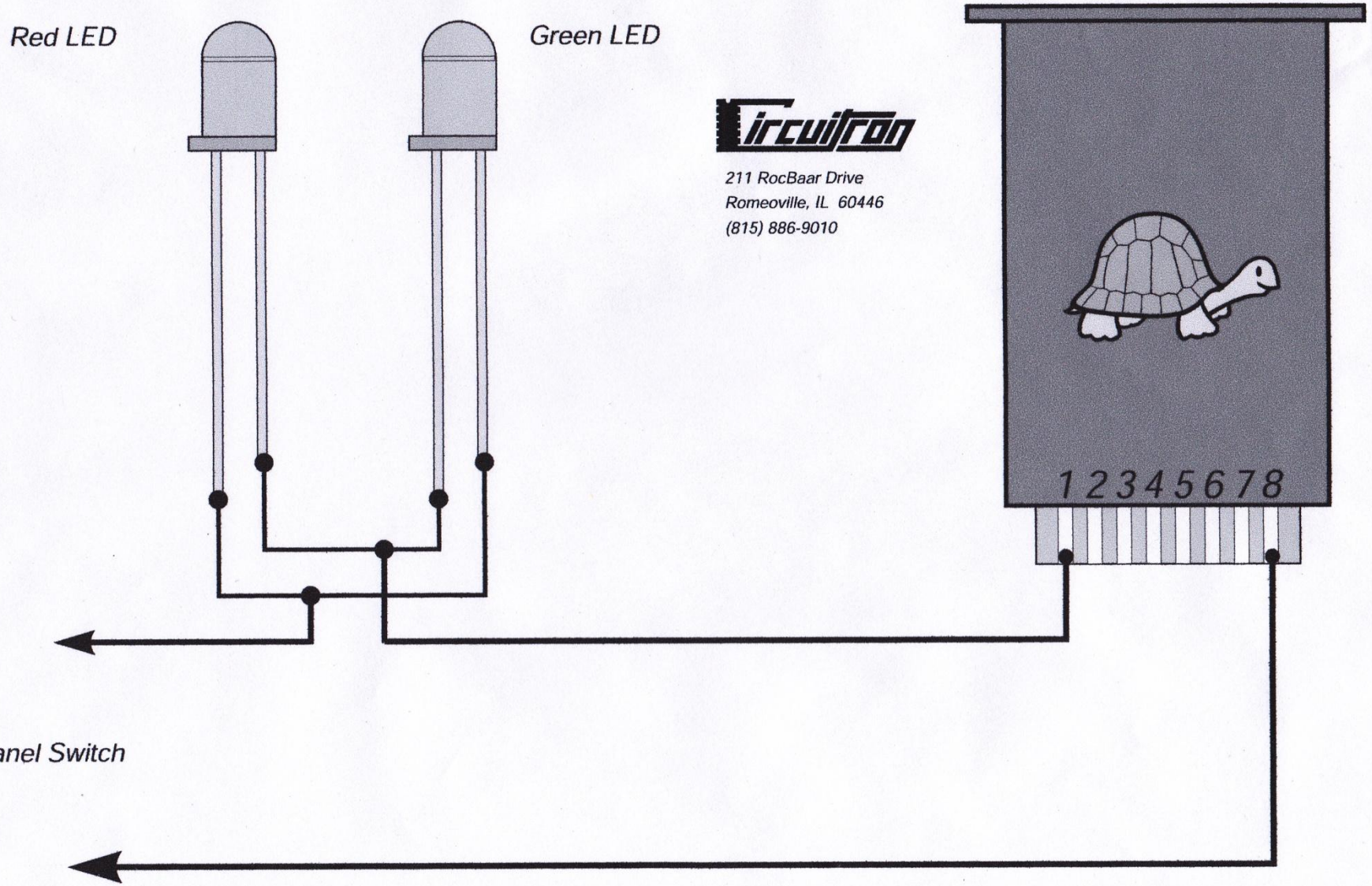
- Can use 1 each red and green LED
  - Green in normal route
  - Red in diverting route
- One Bi Color LED green/red
  - In the normal route
  - Have to use 2 single LED's or 1 Bi Color LED if you are going to use Led's


4
PANEL SWITCH
PANEL
LEDs
Red
Green
SIGNAL
(OPTIONAL)
LEDs



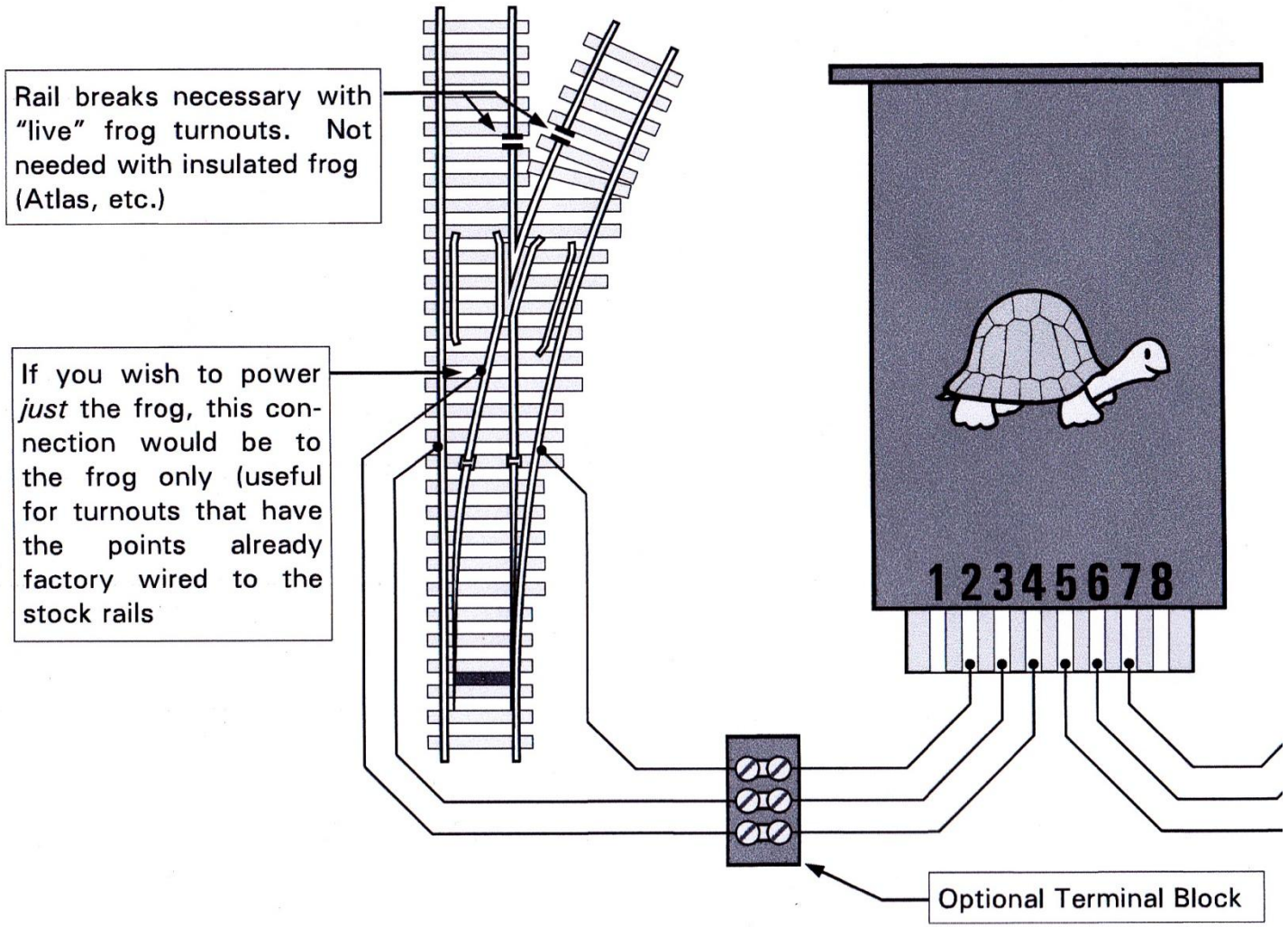


AN-6000-7 *Wiring Panel LEDs in Series with the TORTOISE Switch Machine*



Note: Do not use additional resistors. The resistance of the TORTOISE motor is about 600 ohms, an ideal limiting resistance for LEDs.

Frog Wiring


Rail breaks necessary with "live" frog turnouts. Not needed with insulated frog (Atlas, etc.)
If you wish to power *just* the frog, this connection would be to the frog only (useful for turnouts that have the points already factory wired to the stock rails
1 2 3 4 5 6 7 8
Optional Terminal Block

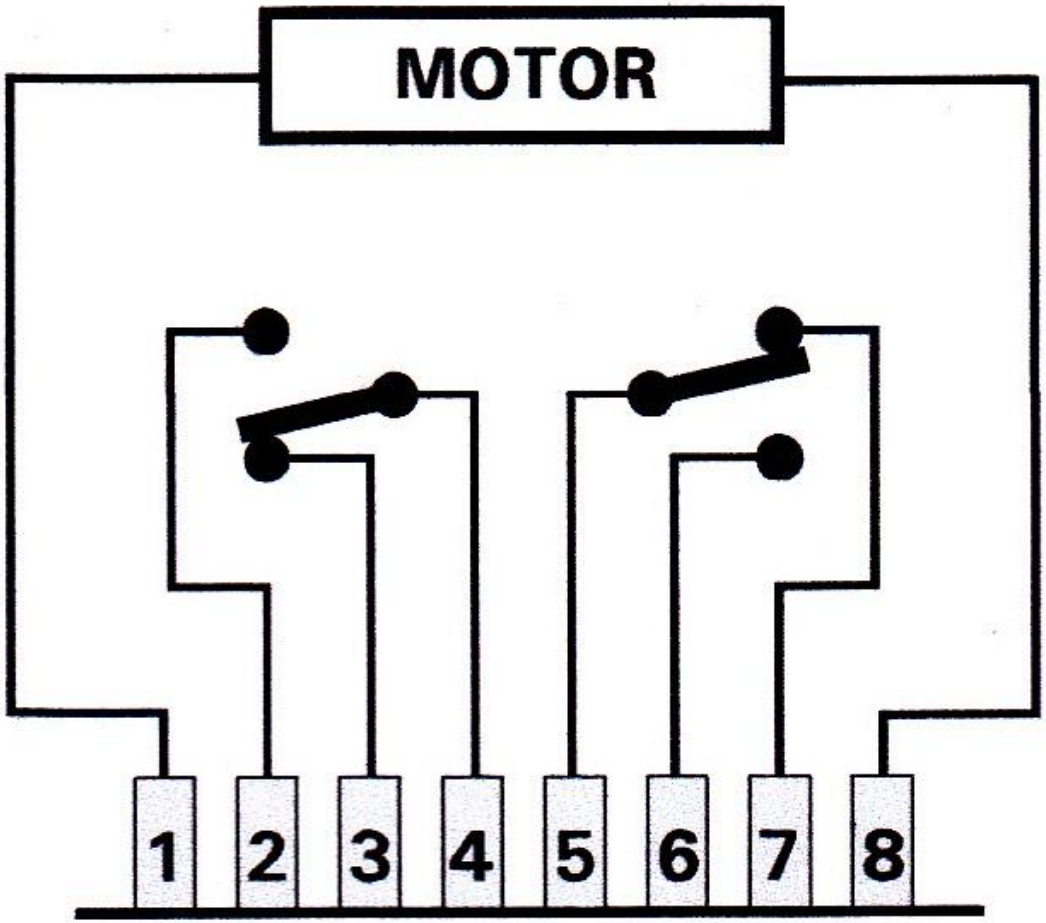


FIGURE 2.

Materials Used

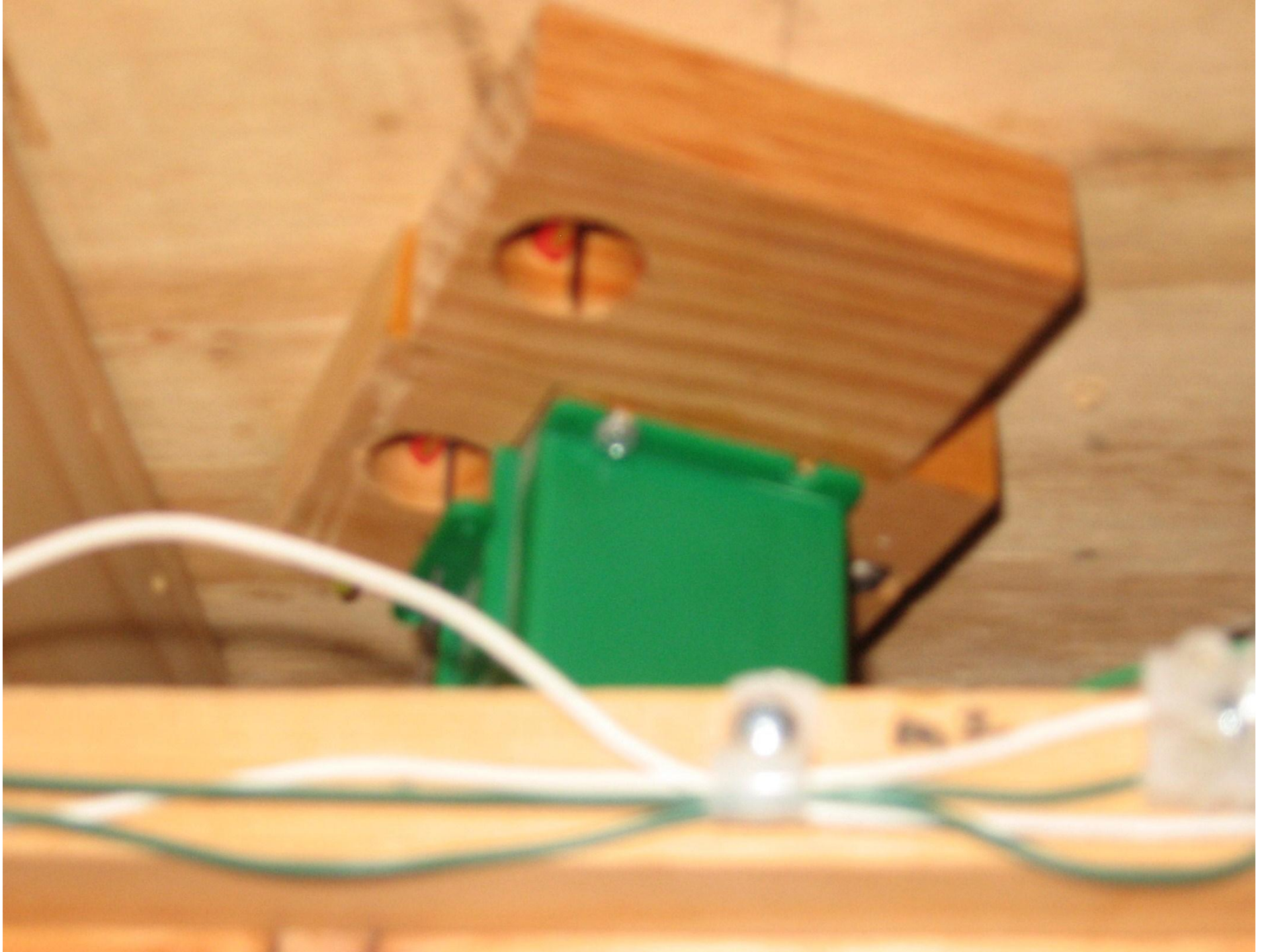
- 2 AC to DC Adapters with 12vdc 500ma output
- 1 SPDT Toggle Switch
- BI-Color LED 3mm or 5mm
- 22AWG Stranded wire
- Terminal Boards
- Crimp on spade connectors

Sources for Parts

- Mouser
- Digi-Key
- All Electronics
- Jameco

Additional Reading

- One Turnout Two Controls MR July 2002
- Route Control for Slow motion Motors
- MR Nov. 2000
- Tortoise Tips MR Feb. 2000
- Kalmbach
  - DCC Projects
  - Easy Model Railroad Wiring
  - Basic Electricity & Electronics for Model Railroaders

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