

Earning the NMRA AP Electrical Certificate with Small Layout(s)

By William Mosteller

AP Electrical Requirements

- Things a model railroad electrician should be able to handle
- Probably enough elements present in a basement, or even room sized layout
- What if yours is/are smaller?

AP Electrical Requirements, Cont'd

- This presentation works best if you have the document at hand
 - <https://www.nmra.org/electrical>
- Only some requirements will be discussed

AP Electrical Requirements, Cont'd

- You don't need to be an electrical engineer
- But some familiarity with proposals might help
- The NMRA requirements are a request for proposal (RFP)
- Your submittal is a proposal that must meet those requirements

My Layouts

- 3-Track by 6'
 - Working overhead wire
- Crooked Creek & Cimarron (CCC) (Adopted)
 - 4' by 6'
 - Brass track
 - Fiber ties
 - Power routing using turnout points

The Layouts, Cont'd

- Too small to qualify for the Golden Spike
 - No ballast
 - No structures, would 5 fit CCC?

Advice from Bob Reid

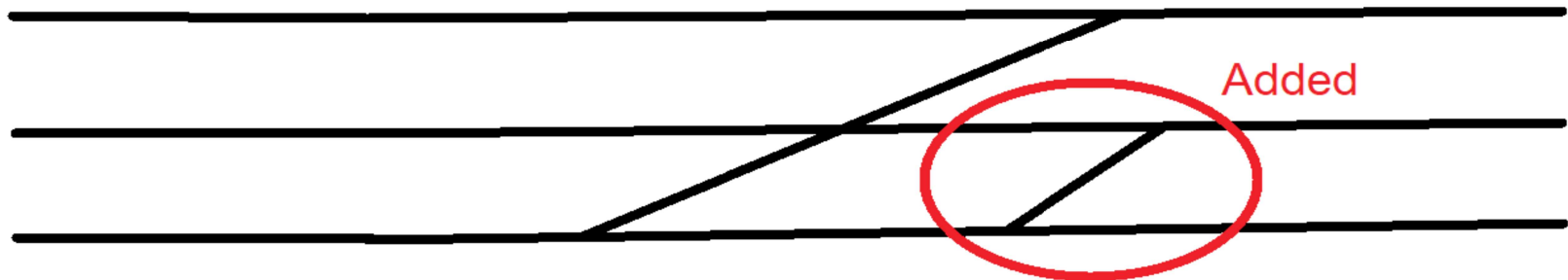
- 90 Degree crossing on a logging branch
 - Needed for his Civil Engineering Certificate
- With small layouts, you may need to add things
- Or make a separate diorama?

A-1 Independent Control of 5 Blocks

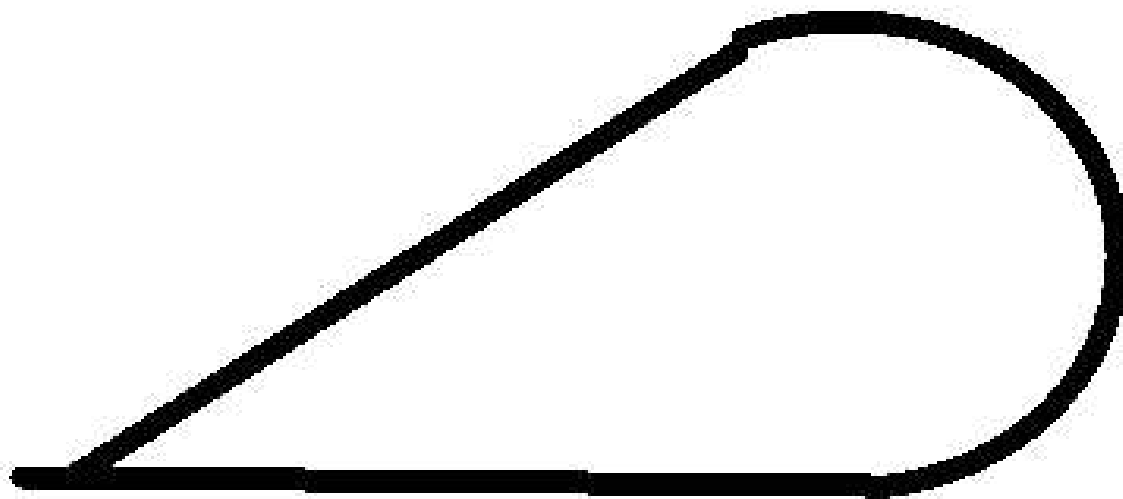
- Small railroad needs small trains (CCC)
- Bachmann Brill Trolley
 - Valid train
 - All wheels collect current
 - Double ended
- May have to add sidings (4 needed)

A-2 Passing siding

- No room on the CCC
- 3-Track is 3 parallel tracks, ideal
 - But had to add overhead switches as well



What's This?



A Short Circuit

- Two-Rail track wiring challenges (A-3)
 - Loop
 - Wye
 - Turntable
 - Transfer table (*don't know why this is there*)

John Armstrong

- *Track Planning for Realistic Operation*

Chapter 6

- A “square” - big enough for a quarter circle of track
 - 3-Track: 0 squares
 - CCC: 6 squares

Size of A-3 Elements

- Loop: 4 squares
- Wye: 2 squares, plus tail tracks
- Turntable: <1 square
- **Only the turntable could possibly fit**
- Shoehorned Atlas turntable into CCC

Turtable w/Trolleys



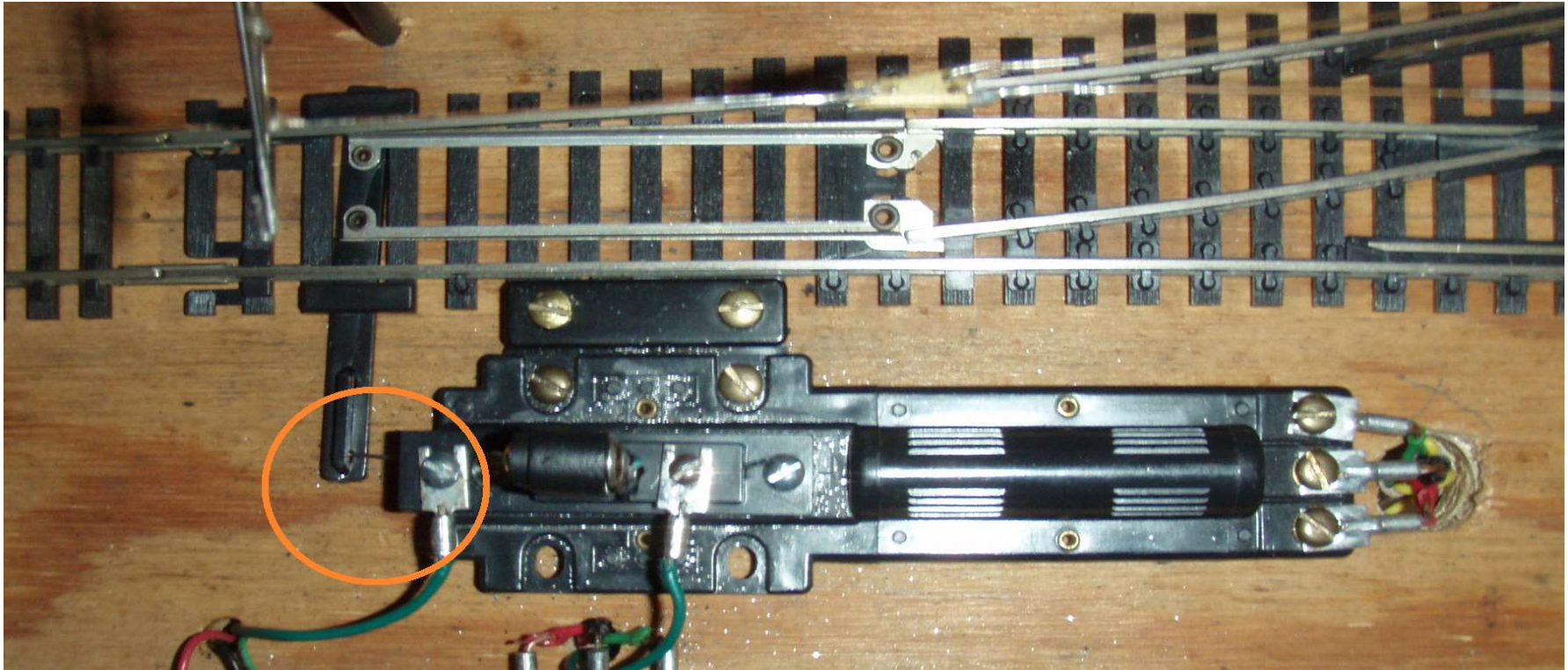
A-6, C-7 Circuit Breaker, Momentum

- MRC Tech II Railpower 2500 DC Power Pack



B-10 Spring Switch

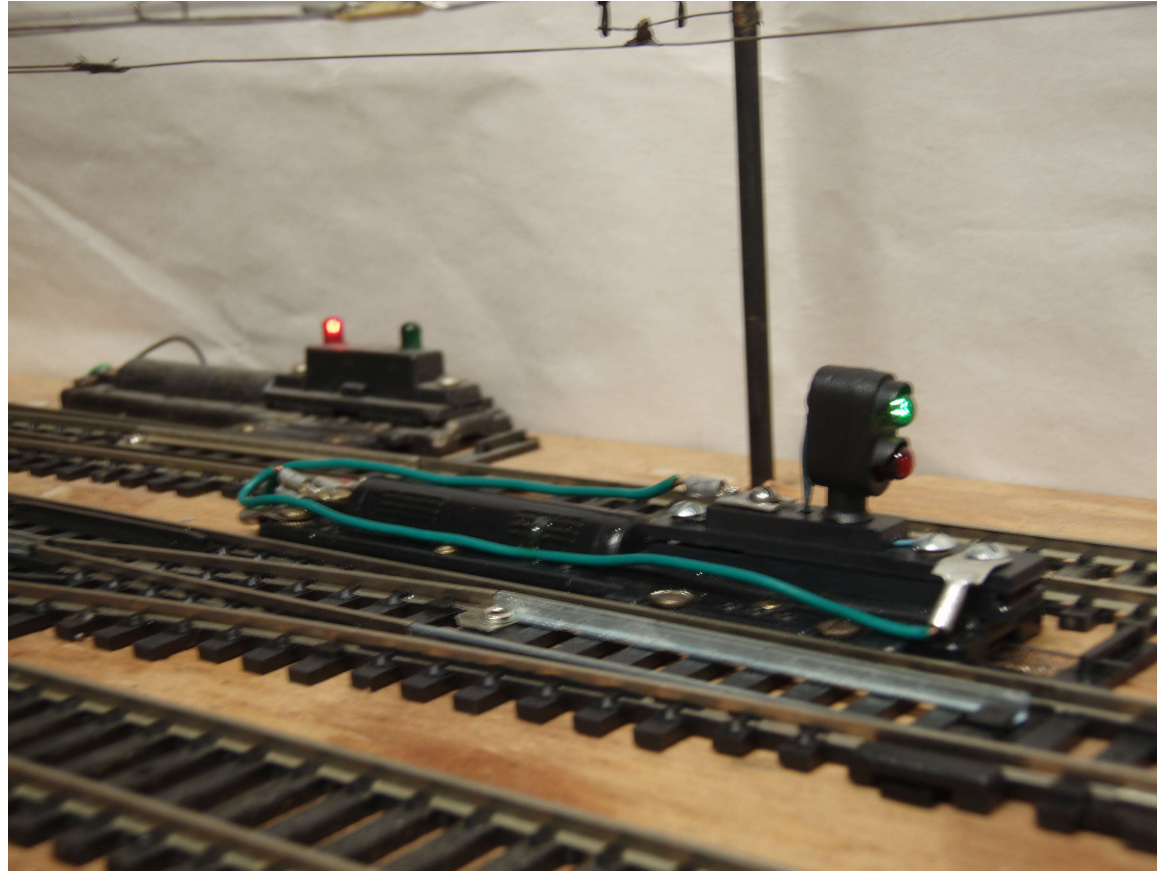
- Atlas switch machine: wire throw rod works



C-1 Turnout position indication

- SPDT switch on CCC twin-coil switch machines already in use for power routing
- 3-Track already had two
- Tower Engineering
 - T-600 Switch lite
 - T-602 Switch lite indicator

Tower Engineering



C-10 - Operating Overhead Wire

- Also B-11 and A-4
- *Not a shortcut*

C-16 to C-23

- Commercially assembled complete units are not acceptable
- Every published circuit diagram I've ever seen was followed with a correction
- *Do you have the resources to debug the circuit you're trying to build?*

Track Cleaning

- New Idea
<https://www.youtube.com/watch?v=IBYxjcTWCb0&t=19s>
- Clean w/low odor mineral spirits (Home Depot)
- Apply NO-OX-ID "A Special" from Sanchem Inc. (or Amazon)

My Submittal

<https://greatdecals.com/APElectrical.pdf>

These slides:

<https://greatdecals.com/APElectricalSlides.pdf>

Thanks

- Pete LaGuardia, MRR
- Dale Latham
- Captain James Osmer, USN
- Bob Reid, MRR
- Mat Thompson, MRR