

Engineering Secrets of the Eastern Loggers

John Burchnall

July 2016



Handouts

- Cincinnati Division 7, MCR, NMRA *website* at “www.cincy-div7.org”
- Click on “Modelers Aid” tab
- Scroll down to the clinic handouts list
- Click on “Engineering Secrets of Eastern Loggers” for 9-up b&w pdf file



The Eastern Loggers Layout

- 10'x20' portable HO/HOn3 sectional layout
- 1920's era logging in central Pennsylvania
- Emphasis on wood products industries
- Pioneering design and construction features



Layout Intrastructure Needs

- Portability/durability
- Pleasing appearance
- Ease of construction
- Ease of operation
- Low cost



Especially key for a portable layout
Also applicable to any layout



5 Engineering Solution Areas

- Foamboard Layout Construction
- Layout Connections
- Other Portability Features
- Operational Features
- Presentation Features



But First ...

A Brief Introduction to The Eastern Loggers



The Eastern Loggers

- | | |
|--------------------|---------------------|
| • Jon Barker | • Dave Keith |
| • Merle Bevis | • Jim Keith |
| • Chris Boylan | • Mike Mereness |
| • Vince Bradley | • Paul Miklos |
| • John Burchnall | • Clark O'Bryne |
| • Mike Davis | • Ray Persing |
| • George Feintheil | • Larry Pockras |
| • Ed Heeg | • Don Rigling |
| • Rick Hughes | • Jerry Strangarity |
| • Brad Jonas | • Mike Tener |
| • Rick Lasita | • Phil Wilkin |



Lou Sassi photo

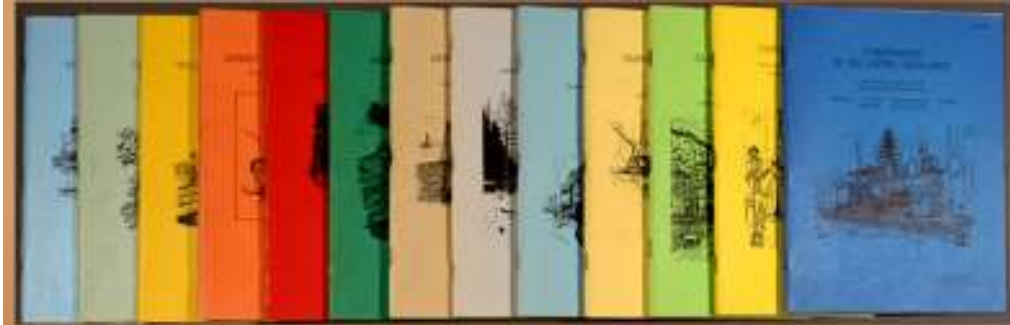


The Eastern Loggers Layout

- Inspired by “*The Logging Railroad Era of Lumbering in Pennsylvania*” book series by Benjamin Kline, Walter Casler and Thomas Taber
- Featured in GMR, RMC and NMRA magazines
- Other photos in NMRA Calendar, NMRA Bulletin, Narrow Gauge & Shortline Gazette, Walthers
- Displayed at 2 NNGC’s, 3 NMRA Nationals, Cass Scenic Railway and Pa. Lumbering Museum



The Logging Railroad Era of Lumbering in Pennsylvania



- 13 “Unpublished” Books – plus:
- Introduction/Table of Contents
 - Addenda/Index/Chapter 14



Other Inspirations



Layout Design Features

- Scenery and wood industries focus
- View blocks and compression
- Undulating elevation changes
- No tracks parallel to front edges
- No ballast, just dirt under ties
- Summer foliage (previously Fall)
- Scratch built wood structures



Layout Track Plan Features

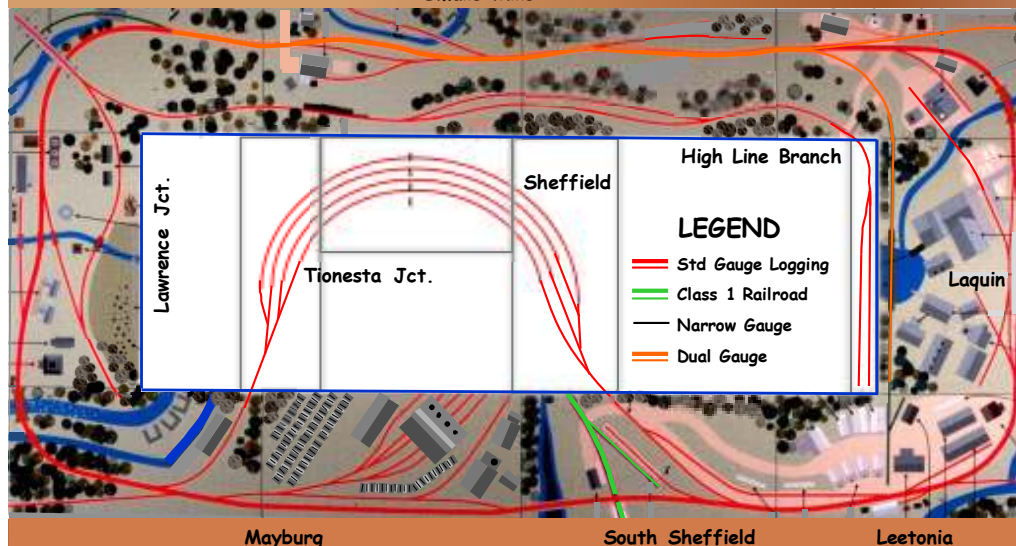
- Single track loop, plus high line
- Point-to-point narrow/dual gauge
- 5 passing sidings, plus staging
- Hidden interior staging yards
- Water and switching on each section
- Class I railroad interchange
- Handlaid code 70 track



Eastern Loggers Track Plan

10 x 20 feet with 10 visible sections + 4 staging sections

Smalls Mills



Train Control System

- First used tethered DC cabs w/o memory
- Then tethered Lenz DCC memory cabs
- Experimented with wireless Infrared Catnip
- Using Radio Control Digitrax since ~2002



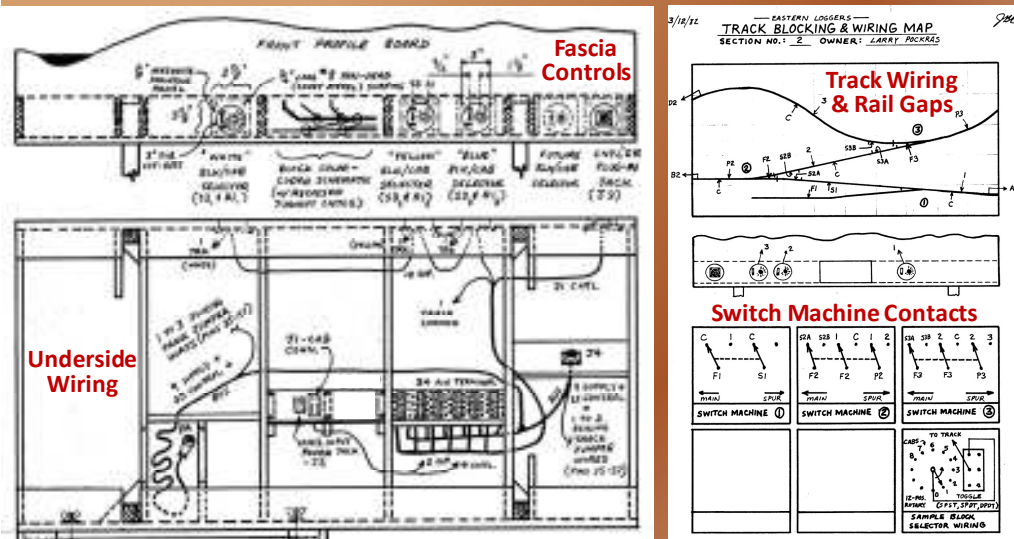
Turnout Control System

- Twin coil switch machines with homemade capacitor discharge power supply
- 2 to 3 contact sets for special track wiring



Electrical Documentation

Fascia Controls, Wiring, Gaps Schematics



5 Engineering Solution Areas

- Foamboard Layout Construction
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- Other Portability Features
- Operational Features
- Presentation Features



Foamboard Layout Construction

- Horizontal laminations of thick foamboards as base for both track roadbed and scenery
- No plywood, splines or wood risers
- Since late 70's John Burchnall and then the Eastern Loggers pioneered this now proven method



Foamboard Construction

- Basic Concept



Foamboard Advantages

- Simultaneous construction of both roadbed and scenery
- Realistic 3D scenery and contours
- Solid track and scenery bases
- Easy to build/modify
- Very rigid, durable, and often lightweight layout or module



Foamboard Construction Tips

- 2" White Beaded Foam Works Best!
- Stanley Surform Tool #21-115 a must!
- Spray "magic" solution while carving!
- Use non-solvent based thick adhesives
- Use stiff steel wires to pull elec. wires
- Nested brass tubes for switch throws



Foamboard Types

- 2" white beaded foam works best!
- Extruded foam too hard to hand carve!
- Florists foam too weak and brittle



Foamboard Carving

- Stanley Surform Tool #21-115 a must!
- Small saws and rotary rasp also helpful
- Fish filleting knives also great
- If hot cut, use hot knives, not hot wires



Foamboard Carving Secret

- Spray wet water while carving!
- Cuts static + makes shavings heavier

Net Result =

No nasty flying shavings +
easy clean-up with wet/dry
shop vacuum



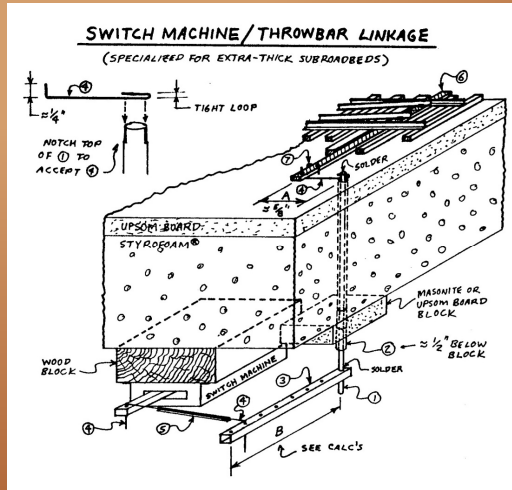
Foamboard Adhesives

- Use non-solvent based thick adhesives



Foamboard Construction Tip

- Nested brass tubes for switch throws



5 Engineering Solution Areas

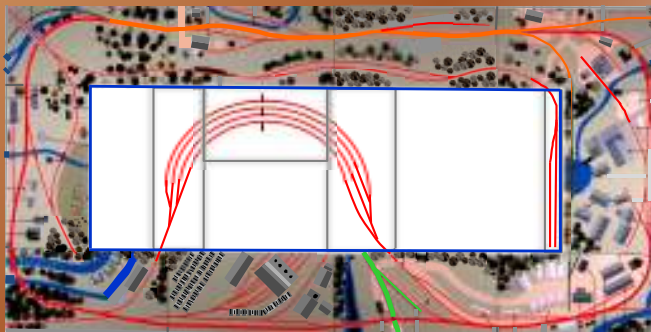
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Layout Connections

3 Types -

- Mechanical
- Electrical
- Track



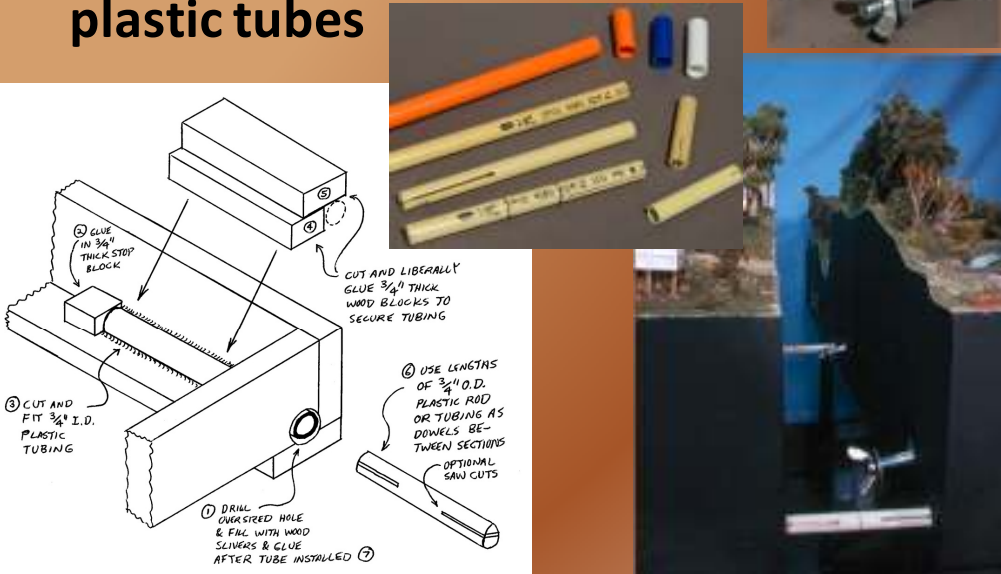
Mechanical Connections

- Section-to-Section
- Legs Assembly and Attachment
- Backdrops Attachment
- Staging Yards and Shadow Boxes



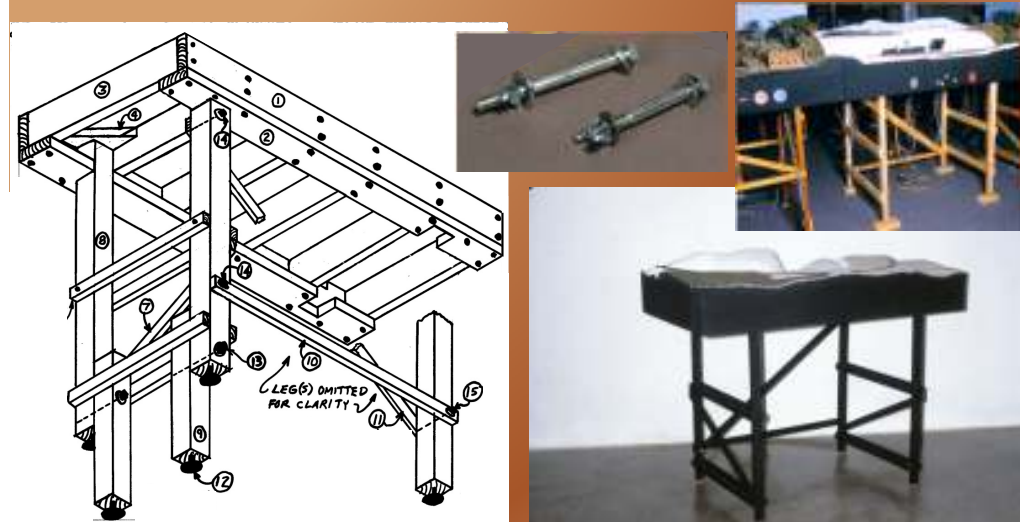
Mechanical Connections

- Section-to-Section – nested plastic tubes



Mechanical Connections

- Legs Assembly and Attachment – gravity + 3 brace bolts with wing nuts



Mechanical Connections

- Backdrops Attachment - via notched wood brackets + angled wood dowels



Mechanical Connections

- Main Staging Yard – wood brackets with wood and plastic dowels + a few bolts



Mechanical Connections

- **Main Staging Yard Shadow Boxes – black foamcore board and nylon bolts**



Mechanical Connections

- **Upper Staging Yard and Shadow Box**



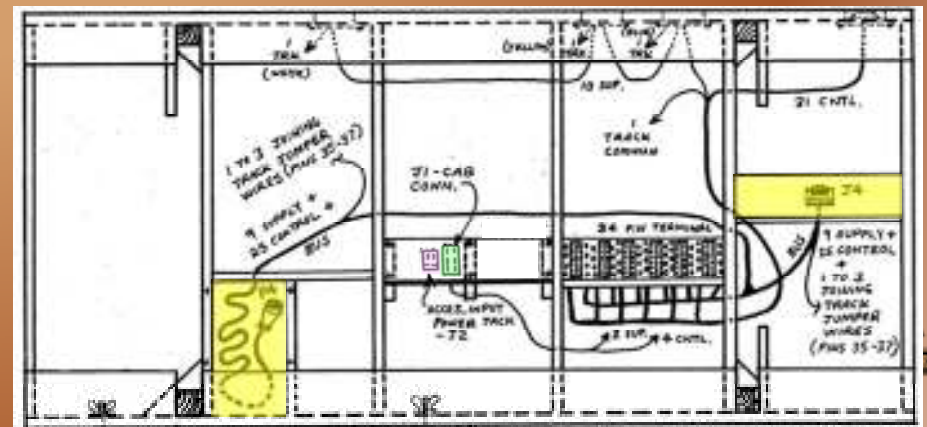
Electrical Connections

- Track Power Bus
- Switch Machine (SM) Power Bus
- Digital Command Control Bus



Between Sections Connectors

- 4 pin rectangular Jones plugs – SM bus
- 37 pin circular AMP plugs – track bus
- 6 pin Jones plugs – track power in
- LAN cables – between Digitrax panels



Underside Electricals

Boxes with sliding doors hold cables for transport



Electrical Connections

- Between Module Connectors
 - 37 pin circular AMP plugs (8 cabs)
 - 4 & 6 pin rectangular Jones plugs (switch machine + DCC track power in)



Electrical Connections

- Between Module Connectors
 - LAN cables between Digitrax plates
 - 4-pin Jones plugs, 14 ga. wire, for switch machine bus



Track Connections

- ~2" rails span joints between modules
- Each pair stored in own tubular vial
- Rail joiners provide electrical power



Track Connections

- Ties and scenery finished to all edges



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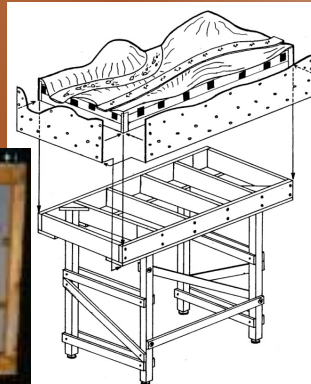
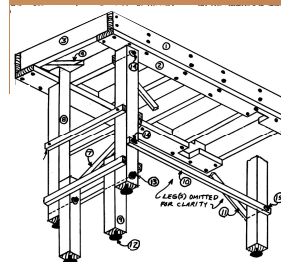
Other Portability Features

- Benchwork Running Boards
- Recessed Controls
- Stacking End Plates
- Leveling Shims



Benchwork Running Boards

- Reinforce Open Grid Benchwork
- Act as skids to slide sections in/out of cars
- Provide hand holds when carrying
- "L" mount area for connector tubes
- Protect front panel controls
- Slots hold tops of legs



Recessed Controls

- All controls fully recessed to eliminate any snags/projections
- Use 3" and 1" hole saws
- Hardboard panels screwed on back



Stacking End Plates

- To transport 2 sections in mini-van
 - vs. duct taping modules base-to-base
 - vs. stacking with bottom module in box lid
- Fast, simple, minimizes damage



Leveling Shims

- Use wood shims to quickly level legs
- Minimizes adjusting screw foot pads
- 1/8", 1/4", 3/8", 3/4", 7/8", 1", 1-1/2"
- Some are circular cutouts from fascia



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Operational Features

- Simple Color Coded Controls
- Non-Shorting Turnout Points
- Turnout Automatic Stopping Blocks



Simple Color Coded Controls

- Color coded track schematics
- Matching color on block controls
- Spring toggles recessed in schematic to throw turnouts



Recessed Fascia Controls

- Recessed toggles to throw turnouts
- Multiple colors denote reverse feed turnouts



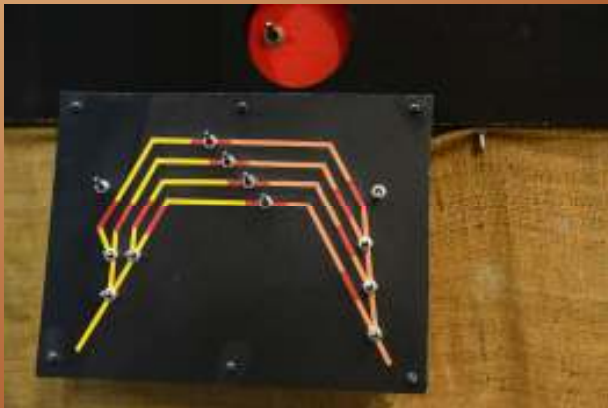
Recessed Fascia Controls

- 37 pin AMP connectors for old DC cabs
- Digitrax loconet plate
- Rotary switch for old cab control system

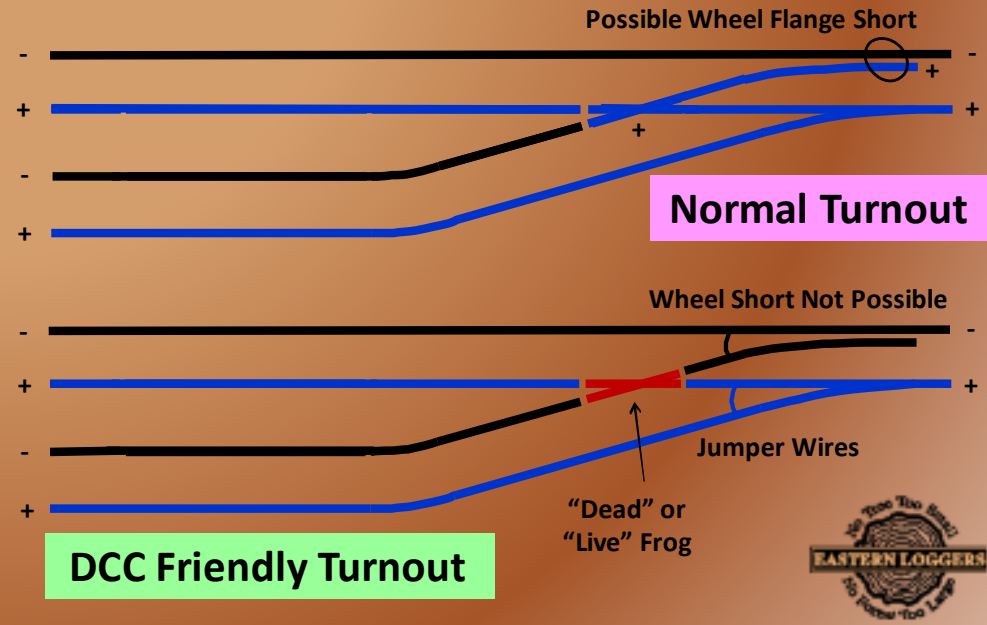


Main Staging Yard Controls

- Mini panel for turnouts and stop blocks
- Two trains per staging track
- Stopping blocks enable blind auto stops



Non-Shorting Turnouts

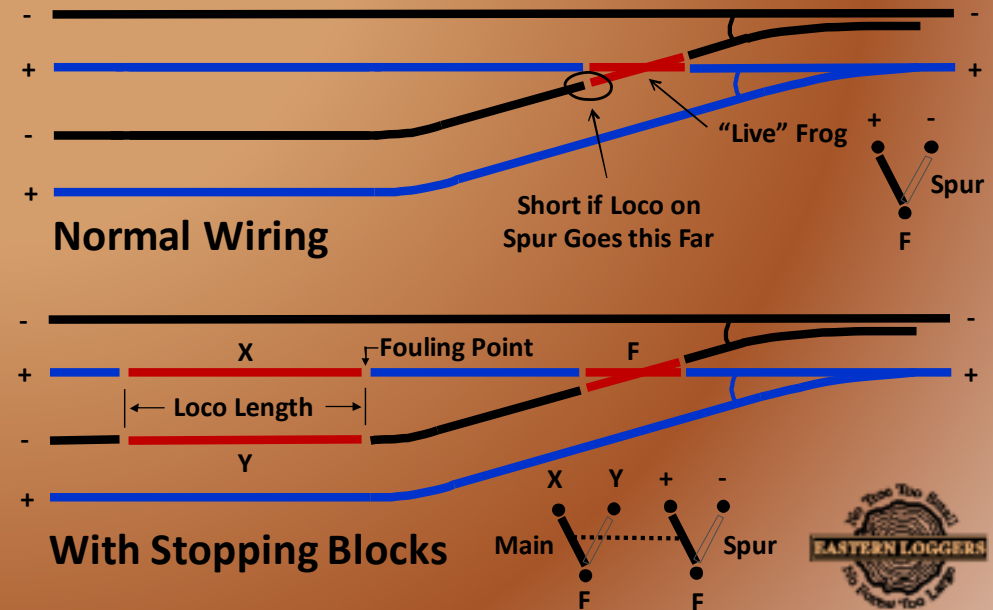


Turnout Auto Stopping Blocks

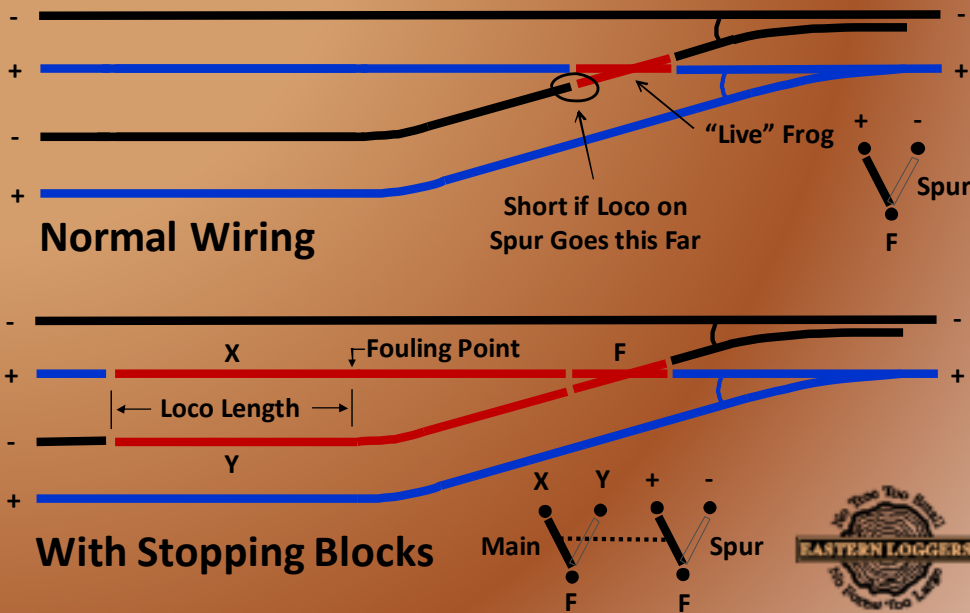
- Stops locos from splitting switches
- Stops locos from fouling switches
- Uses switch machine extra contacts
- Works great for single loco consists



Turnout Stopping Blocks



Turnout Stopping Blocks



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Presentation Features

- Burlap Skirting
- Stanchions and Security Ropes
- Shadow Box Lighting Valance



Burlap Skirting

- Brown burlap has rustic logging feel
- Attached via heavy metal stick pins
- May devise dowel hanger system



Stanchions and Security Ropes

- PVC pipe stanchions every 5'
- 1' sq. wood bases w/ pipe threads
- 2 rows of yellow ski rope



Shadow Box Lighting Valance

- Uses expanded PVC board panels
- 1/8" (3mm) thick, 5'x10' black panels
- Hung in groove of 2"x2" wood



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