



Rebuilding the Sacramento Model Railroad Society Standard Gauge Layout

Presentation Points

- 2001 SMRHS promotional DVD
- Why the SMRHS rebuilt the standard gauge.
- Getting the Society to go along
- Our objectives – cutting edge techniques
- The layout
- The specifics
 - Benchwork
 - Track and switches
 - DCC & train control
 - Electrical
- The results and issues

2001 Promotional Film

Why Change the Layout?

- Quality of the track
 - Uneven hand laid track on spline roadbed
 - Electrical problems
 - Problem track covered by scenery
- Change in direction of the Society
 - Became an educational nonprofit 501(c)3
 - Layout changed to represent Northern Calif.
 - WP & SP

Better to just start over

Getting Society to go along

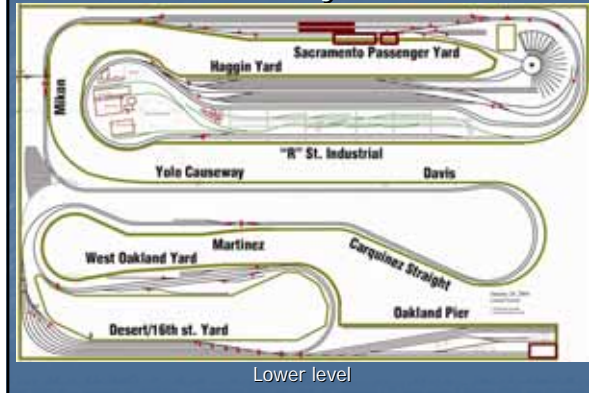
- Change required by 501(c)3 status
- Initial vote of concept
- One year of planning
 - Involved most of the members
 - Detailed implementation plan
 - A demo module was built to test concepts.
 - DCC with Analog
 - Switches
 - 3 color signal system
 - Scenery
 - CadRail provided accurate plans
- Final vote 34 to 4
 - Four members left the Society.



Our Layout Objectives

- Take advantage of emerging technology
 - DCC, better switches
 - New benchwork and scenery techniques
- Run long trains
- Increase train operations
 - Seven operating areas rather than four
- Set high standards
 - 40 inch minimum radius
 - #8 switch – mainline, #6 switch – yards
 - Maximum 1.5% grade

The Layout



The Layout



The Benchwork

- Old layout
 - Spline roadbed very hard to level
 - Affected by the environment
- New layout
 - "L" girder construction
 - 9 ply 5/8 inch Baltic birch plywood
 - Homabed 1/4 inch sheet, 60° and 45° bevel roadbed
 - Wall sections use wall mount brackets.



The track

- Atlas code 83 track - \$\$\$
 - Pinned in place
 - Carefully leveled
 - Inspected by track inspectors
 - Glued in place – white glue
 - Three opportunities to level and adjust



The Draw Bridge



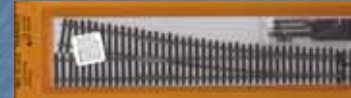
Thanks Kalmbach Publishing

The Switches

What design?

Commercial?

No



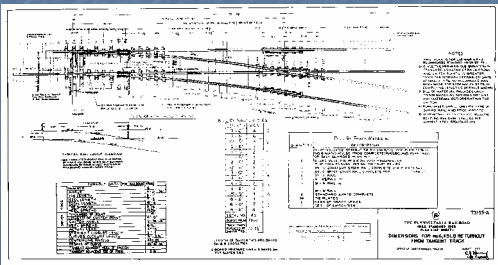
NMRA?

No



The Switches

Pennsylvania RR prototype? Yes



The Switches DCC friendly

PC board
ties

Gapped for
DCC

Point rail serves
as a guard rail



Solder filled
.030

Solid point
rail

#8 right switch

The Switches



#11 curved switch

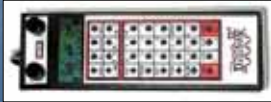
Switch Machines

- Tortoise & custom built



DCC

- Digitrax DCC
 - One Chief command station – 5 amp
 - 5 booster districts – 5 amp
 - PM42 circuits “sub-power districts”
 - Two radio units
 - 15 member-owned DT400R throttles
 - Dual throttles add flexibility.



DCC

- Two computerized programming stations
 - Decoder Pro software



Train Control

- Centralized Traffic Control (CTC)
 - Three color signaling
- Supports 4 analog throttles
 - Uses EDA system (Kermit Paul) - Chubb



1942 Western Pacific
CTC panel

Electrical Best Practices

- All track has 16 gauge drop wires connected to a 12 gauge bus.
- New wire – color coded



Electrical Best Practices

- Under the table electro-magnets uncoupling ramps with snubber diodes



The Control Panels

- Laser cut panels with light indicators



The Results



The Results

- Very reliable operations
 - Up to 5 mainline trains at a time
 - Up to 30 car trains
 - 85' passenger cars with operating diaphragms
 - Derails have been due to out of gauge equipment.
 - Mandatory equipment certification has helped.
 - Increased member satisfaction
- Members skills have increased.

The Results

- The effects of DCC have been amazing
 - Virtually total support from the members
 - "DCC Friday" clinics have helped.
 - We run trains not a layout.
 - Prototype speeds
 - Consistent trains
 - Increase member discipline
 - Member training has helped.
 - Increased member involvement
 - May not implement analog

Issues

- The layout
 - False starts – learn from your mistakes
 - Don't compromise quality
- DCC
 - Radio requires a disciplined operation.
 - Capacitor in-rush current is a problem.
 - Limit use of QSI decoded locomotives
 - Solutions – change capacitors, use current limited circuits
 - Some vendor solutions
 - Digitrax has presented few problems.
 - Support has been excellent.



- Operating days:
 - Tuesday – 8:00 p.m. to 10:00 p.m.
 - Friday – 8:00 p.m. to 11:00 p.m.
- Address:
 - 1990 Grand Ave., Sacramento, CA 95836
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