ADVERTISEMENT

What's new on TMTV

Some recent shining examples ...

The Allagash cab ride tour

Touring the Texas Western Club | 3D printing: Draw a building in SketchUp | Mike Mackey's Texas & St. Louis

Watch now ...
Buy individual episodes or get unlimited access as a member

Registered MRH reader?
SAVE 10%
click here

www.trainmasters.tv

# DESIGN TIPS FOR CONTROL PANELS

1. Summit Tower panel for the Hudson, Delaware and Ohio (HD&O).

VIEW READER COMMENTS

Model Railroad Hobbyist | July 2023

## SCOTT DUNLAP GIVES INSIGHT FOR SUCCESSFUL CONTROL PANEL DESIGN ...

**DESIGNING A LAYOUT INVOLVES MORE THAN JUST LOCATING TRACKS,** structures, and scenic features. The needs of operators are equally important. How easy will it be to move around? Do the controls make sense? Is the layout enjoyable to operate?

Control panels can have a great impact on the overall success of any model railroad. Their locations can determine where people will tend to congregate and how well traffic will move through the layout room. Well-designed control panels improve operators' experiences, while poorly designed panels cause frustration.

Over the years I've have seen well over 800 model railroads and operated on over 150. I have developed a good sense about what works with control panel design, and I'd like to share my thoughts with you.

The control panels used as examples in this article are from the HO scale layout of The Model Railroad Club in Union, NJ. The newest panels are about 30 years old, and many are considerably older. They were installed during the era of conventional DC cab control, and their designs reflect that.

The club operates approximately 50 times a year, and runs trains for the public most Saturdays, during open houses, and on other special occasions. The panels have received quite a workout over time, and look worn. Despite their appearance, they continue to perform well, and most are expected to remain in service for many years to come.

The layout includes three fictional railroads: the Class 1 Hudson, Delaware and Ohio, the interurban and traction Trenton Northern (TN), and the Rahway River short line. Each railroad interchanges with the others, but has its own operating crew, procedures, and control panels.

The layout was converted to DCC several years ago, so future control panels will likely look very different than the ones in place now.

OK, let's get to the design tips.

## INCLUDE CONTROL PANELS IN LAYOUT DESIGN

This first tip is the most important. Too often the design and placement of control panels is not considered until the end of the process. This big mistake could lead to real problems.

## FUNCTIONAL, NOT FANCY

You can add as many bells and whistles as you like, but your panels should work properly, be well-designed, and clearly





labeled. Including important information such as town names and tower designations will help orient your operators. Indicating railroad East and West (or North and South if your prototype runs that way) will be particularly helpful, especially if some or all the panels have East to the left and West to the right.

The Summit Tower panel for the Hudson, Delaware and Ohio (HD&O) [1] may appear confusing at first glance, since there are a lot of lights and buttons, but it is easy to learn. Let's take a closer look.

The row of square white buttons at upper-left operates the phone system that allows the tower man to communicate with the HD&O dispatcher, the towers to the east and west, the Rahway River Railway (there's an interchange here), and the mainline engineers.

The black rotary dials and buttons were used to select cabs before the conversion to DCC. Future panels will not need these.

The blue buttons are used to kill the power to specific sections of track. These are also a throwback to DC operation that will not be used in the future.

The red buttons on the track diagram control the turnouts, and are illuminated to indicate the switch position. The yellow lights indicate occupancy. The green buttons will be used to control signals in the future. The row of red buttons along the bottom are for electromagnetic uncoupling ramps that have yet to be installed.

Did you see this article?
in the JULY 2023 MRH RUNNING EXTRA!

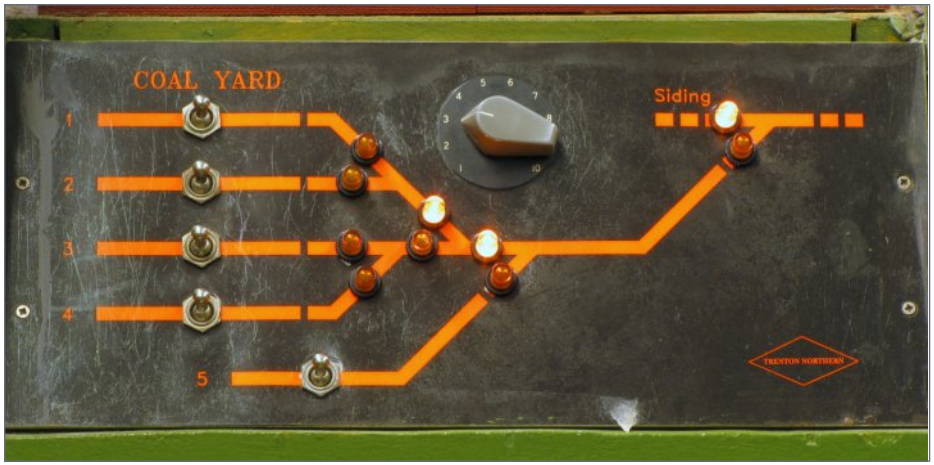
A question of the right model color
Get full eBook now ▶ ← click here
Each eBook has 80-100 pages
MRH RUNNING EXTRA

## MAKE CONTROL PANEL DESIGN CONSISTENT

Once you find a good design, stick with it throughout the layout. There's no need to reinvent the wheel. A consistent design not only will look better, but will make all the panels easier to learn.

These four sample control panels on the TN share a consistent design, are done in the railroad's colors, and include the line's logo [2-5].

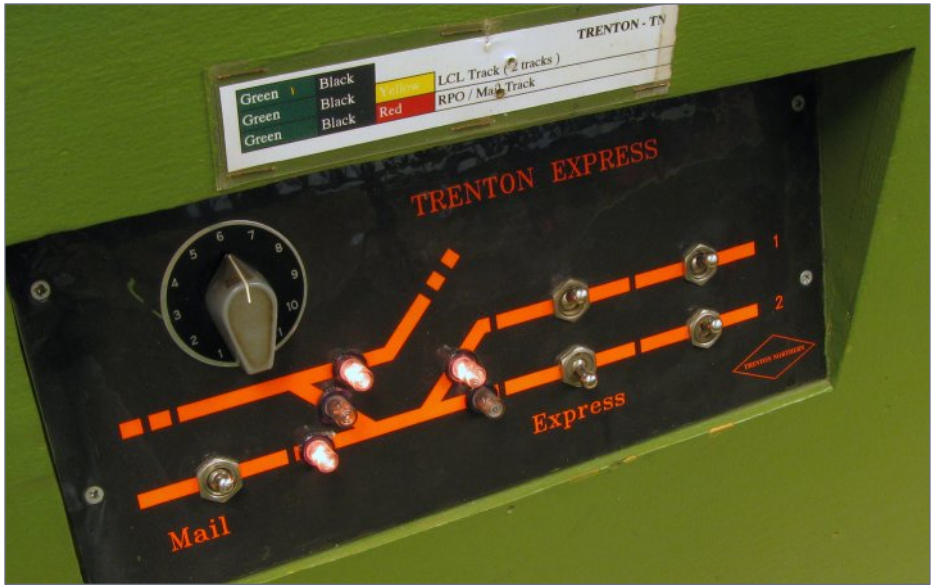
2. Bernardsville control panel (TN).



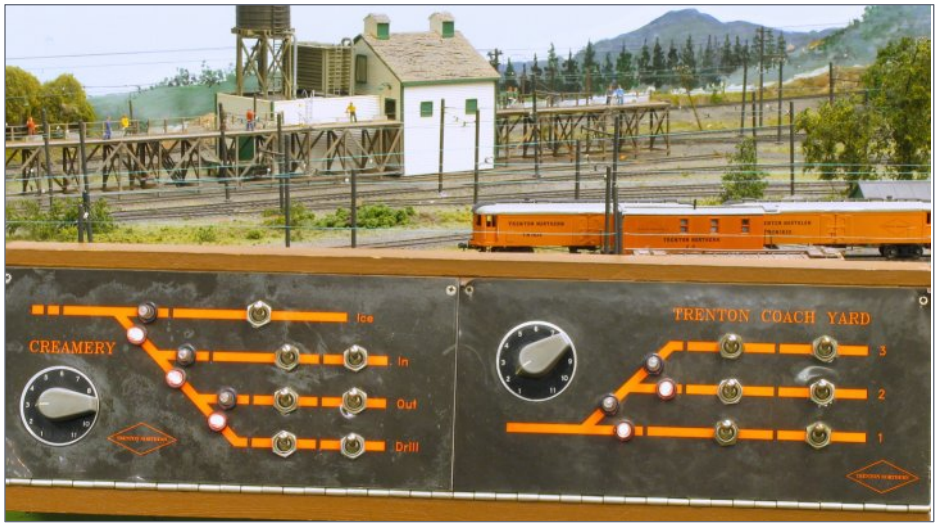

3. This TN panel controls access to the coal yard.








4. The Trenton express control panel.




5. The control panels for Trenton Creamery and Trenton Coach Yard.

## MAKE THE CONTROL PANELS ERGONOMIC

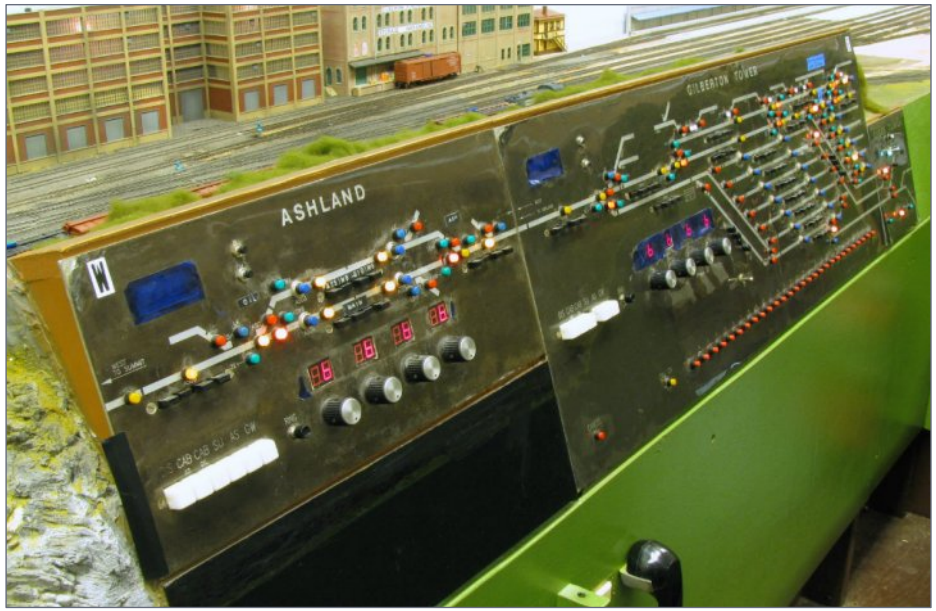
The best angle to mount a panel varies depending on its height off the floor, and whether it is designed to be operated while seated or standing. If the panel is to be operated while standing, then operators' eye level may also be a consideration.

Since there is no consistency in operator heights, some compromise is needed. Thankfully, perfection is not required; getting close is good enough. Consider some of these examples [6-8].

Get more articles like this
GIVE IT A LIKE

6. The Trenton Northern's Dispatcher's panel. The wrap-around design makes all the displays easy to see and the controls easily accessible.

7. Back to the HD&O, we see the panel for the Pittsburgh engine facility. It faces up at a near-perfect angle for the operator, who is usually standing.




8. The Gilberton Panel is the largest serving the HD&O, and one of the largest at the club. In addition to Gilberton, site of a major freight yard and passenger station, the panel also handles the town of Ashland (left). At one time it also served a hidden staging yard.

This Gilberton panel [8] is angled 20 degrees back from vertical. At its height, 45 degrees would have been more desirable, but this would have meant sacrificing layout space or encroaching upon a busy aisle. The extra-large track diagram helps to make up for the less-than-perfect viewing angle.

Panels designed to be operated while seated should be high enough that the operator's legs can fit easily underneath. This may seem obvious, but is not always considered [9].

## PLACE CONTROL PANELS IN LINE WITH PORTION OF THE LAYOUT BEING CONTROLLED

Many layouts have controls mounted all along the fascia, essentially making it one large, continuous control panel. This

9. The Ringoes control panel on the TN is usually operated while seated. While it is high enough, its lack of space for the operator's legs makes it uncomfortable to operate.





makes it easy to keep the controls in line with the layout functions they control, and works especially well when the fascia is high enough for easy viewing.

However, the fascia control panel works best with a limited number of tracks and switches. In yards, terminals, and other areas with higher track concentration, conventional panels still work better.

Sometimes, the area controlled is too vast for ready visibility from the control panel. This is the case with Gilberton on the HD&O [8]. The use of repeater control panels can improve the situation with better sight lines and access [10].

10. This repeater control panel for Gilberton provides better sight lines and access than the main control panel can.

## AVOID PLACING CONTROL PANELS IN THE AISLE

When a control panel intrudes into an aisle, it takes away from the aisle space. This is especially important to remember when aisles are narrow.

All the club's panels are built into the layout. Many are disguised into the backs of structures, which makes them almost invisible when viewed from the opposite side [11-14].

## CONSIDER SPATIAL RELATIONS BETWEEN PANELS

When panels are mounted too close together, it leads to overcrowding. Operators using two panels mounted across the aisle from each other can block the aisle.

11. The Summit Tower control panel hides behind this row of buildings.

12. Bellefonte repeater panel is behind Delco Battery. I was a member of the club for close to two years before I finally realized the Delco Battery building resembles a car battery.

13. A blocked aisle between Gladstone and Gilberton. Fortunately, the aisle is wide enough that the operators (Bob Nalbone at left, me at right) still have the comfort of personal space.

VIEW READER COMMENTS

The town of Gladstone on the HD&O is on the opposite side of an aisle from Gilberton. One operator can easily reach both panels when we are shorthanded, but the aisle is completely blocked when each panel has its own operator. A different location for one of them would have prevented this problem [13].

On multilevel layouts, mounting a panel for the upper level directly above a panel for the lower level can create the same problem. Unfortunately, in the case of a multilevel layout, widening the aisles would not help with the operators' personal space.

## BE CREATIVE!

Sometimes, you need a control panel after the layout is already in place. One technique we've used is to find buildings large enough to fit a control panel and make the needed modifications [14, 15].

14. This is an ordinary brick factory next to a quarry in Ashland.





## CONCLUSION

Even with careful planning and adherence to good design principles, it may not be possible to locate every panel perfectly, mounted at just the right height and angle. Compromise is inevitable. Including the control panels in the early design, as opposed to relegating them to afterthoughts, will help achieve superior results. ☑


## SCOTT DUNLAP

Scott was a member of The Model Railroad Club, Inc. of Union, NJ for over thirty years. His other previous clubs include the Baltimore Society of Model Engineers and the Dekalb Model Railroad Club. Scott relocated to Roswell, GA in 2021 and is currently a member of the North Atlanta Rail Barons as well as the NMRA and the LDSIG and OPSIG interest groups.

Scott's favorite railroads include the Baltimore and Ohio, the Pennsylvania, and the Atlantic Coast Line. ■



Did you see this article?

in the JULY 2023 MRH RUNNING EXTRA!

Finding decoder install examples

Get full eBook now▶

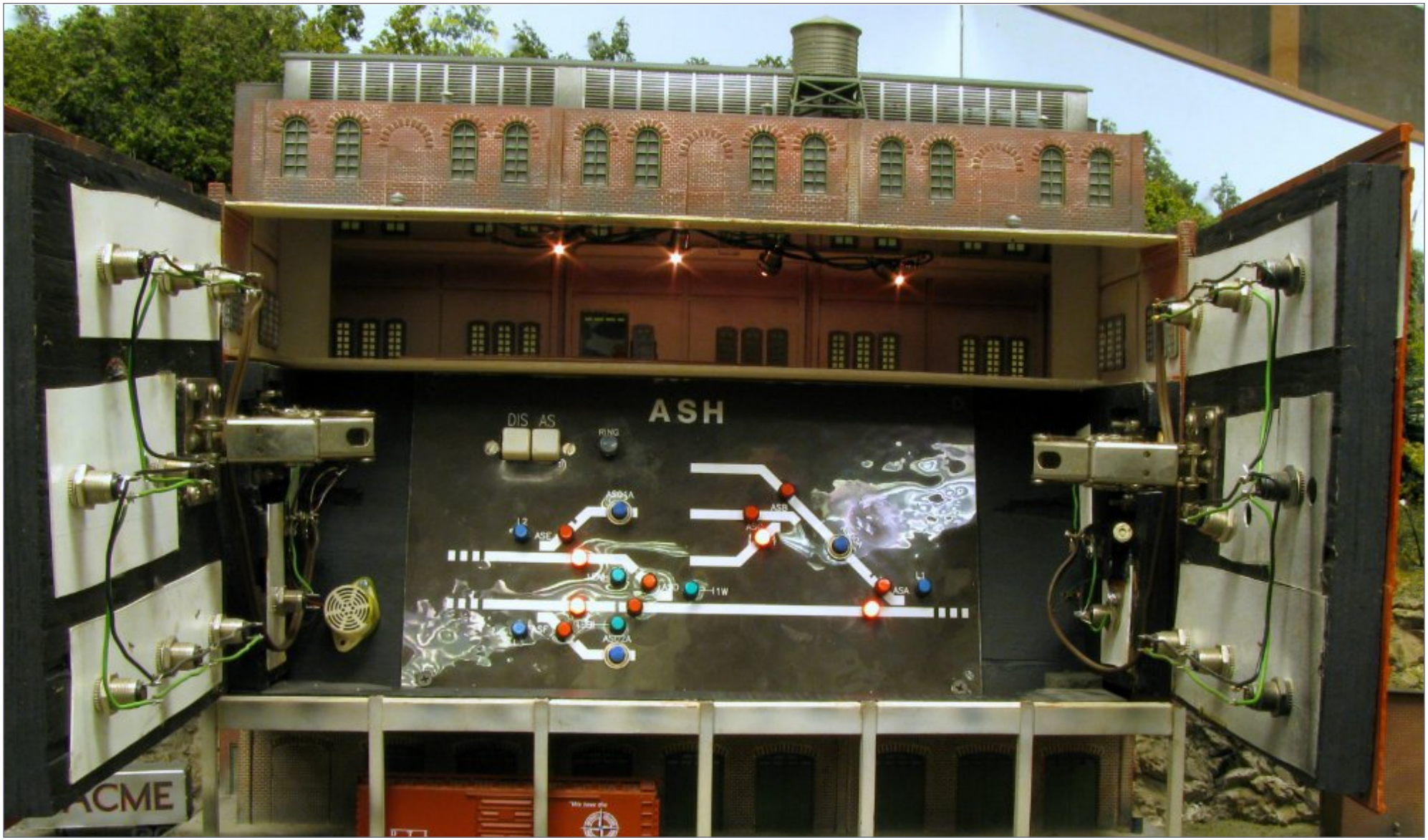
click here

MRH RUNNING EXTRA

Each eBook has 80-100 pages

Get more articles like this

GIVE IT A LIKE




15. Opening the brick factory reveals the control panel that handles the Ashland quarry sidings. Club member Paul Preuss added the control panel long after the building's installation. The design is a favorite among members and guests.

Get more articles like this
GIVE IT A LIKE