

# Contents

## Introduction

A matured approach to layout design.....4

## Chapter 1 Defining the purpose

No sense making a big commitment unless you really need to.....6

## Chapter 2 A mature technology

Multideck railroads have been in operation for decades .....18

## Chapter 3 Key design considerations

Benchwork height and depth, getting between decks, backdrops, and more.....26

## Chapter 4 Then and now on the Nickel Plate

Comparing aspirations with realizations at the two-decade mark.....52

## Chapter 5 When stuck with lemons ...

Multidecks are about compromises, so make the most of them .....78

## Chapter 6 The aesthetics

Ensuring that crew members, visitors, and you are comfortable .....84

## Chapter 7 Operating a multideck railroad

There will be twice as many crew members in the same aisles..... 96

## Chapter 8 Multideck photo gallery

Scenes on railroads discussed in this book.....102





## CHAPTER TWO

# A mature technology

**Jack Burgess, who models California's Yosemite Valley Railroad as it appeared in August 1939 in HO scale, built one of the first multideck model railroads. The "California basement" (garage) required him to think creatively and expand the railroad upward rather than outward. Merced yard is visible in the foreground, and the logging incline is evident at upper left. Jack's quest for perfection is evident in every aspect of the YV and its setting.**

*Jacque Burgess*

We've come a long way from the days when multideck railroads were at best curiosities. Myriad examples exist to prove multideck designs are not only a valid concept but also an increasingly popular way to get more model railroad in a given footprint with acceptable compromises in terms of construction, maintenance, and operational challenges. Let's look at several examples of railroads that have been around long enough to have made their attributes and possible shortcomings known.



Having a second deck allowed Jack Burgess to avoid having more than one town or industry on the same side of the room on that deck. Due to the ruling grade, the maximum train length is generally a locomotive, four to five freight cars, and a caboose. Trains leave one station or switching location and continue on to the next side of the room (or beyond) before entering the next station or switching location. *Jack Burgess*

### Let's start with a pioneer

We've read about some model railroads for so many years that we've forgotten that they were once at the very forefront of a new wave of model railroad design. Jack Burgess's HO depiction of the famous Yosemite Valley Railroad is one such pioneering effort, **1**. Jack's model building, which has won numerous awards and accolades, usually draws our attention away from the fact that the layout design itself is equally deserving of our intimate scrutiny.

Jack is a Californian who suffers from a sometimes-debilitating disease called sansbasementitis. The only known cure is to move to a state where it snows a lot, so Jack chose to live with it and instead declared that his vehicles could stay outside while he took over the garage for more noble purposes. But even then, the



Train No. 2 rolls slowly past the Yosemite Valley station at Merced, Calif. Railway Post Office 107 is trailed by a Southern Pacific diner leased by the YV each summer when Pullmans were operated daily between Merced and El Portal at the western boundary of Yosemite National Park. *Jack Burgess*



## CHAPTER THREE

# Key design considerations

**Bill Darnaby's design goal was a typical train length of 15 feet with at least three train lengths between sidings. He places great value in providing train crews with the sense of "going someplace" with their trains. Having the locomotive in one town while the caboose is still in or just leaving another negates that feeling.** *Bill Darnaby*

All looks rosy when you have a blank sheet of paper on which to plan your layout. However, your best bet is to start the task at hand by listing key design and operational considerations and objectives—where do you want to go, and how are you going to get there from here? It's time for a sanity check: Are you still convinced that you really do need more than one deck to achieve your goals? Yes? Let's press on!



**At 5'-7", Sue Laframboise considers the 60" upper height just about ideal for viewing but a little high for operating and finding cars on sidings on husband Randy's and Mike Sparks' HO Rutland layout. The use of repurposed exercise steps helps crew members locate cars buried in sidings, especially where the upper deck is relatively deep. The 40" height of the lower deck has worked out well for reasonable viewing angles.** *Randy Laframboise*

### Town spacing

One of the "prime directives" that leads to multideck designs is to increase the mainline run and with it the number of towns and passing tracks, and the spacing between those towns and passing tracks. Train length, dispatching methodology, and even train speed also figure into the equation.

Bill Darnaby is an advocate of single-track railroading dispatched using timetable and train-order rules. To that end, he reports, "My goal in designing the Cleveland, Indianapolis, Cincinnati & St. Louis (the Maumee Route) was a train length of 15 feet with a minimum of three train lengths between sidings, 1. A 3:1 ratio between siding length and distance between them was quite important to me, as I place great value in providing train crews with the sense of 'going someplace' with their trains. This

calculation was therefore foremost in mind as I drew the track plan, and it determined how many sidings there are and how they were placed. Because of other considerations such as not placing important towns above/below each other, there was some compromise in this, but it generally holds true.

"I really dislike a compromise that results in towns or sidings that are in sight of each other or literally a couple of feet apart," he states, "as that completely destroys the illusion. Also, now that my railroad is complete, I really appreciate how the changing scenery compounds the illusion of traveling distance with the train."

One big exception, as anyone who has operated on the Maumee Route is keenly aware of, is from Beech City to Avoca, which is roughly 75 feet, or 5 train lengths. This happened, Bill recalls, "because nearly all of this

distance is the grade to the upper deck, and I did not want a siding or town on the grade. There is a short level spot for the Pennsylvania Railroad crossing at Sciotovale, but cars will not stand still on their own. On average, however, I accomplished what I wanted. Within the roughly 560 feet between the East Yard and Dacron yard limits, there are eight places to meet trains, or 70 feet for each including the sidings."

On my Nickel Plate layout, my passing sidings allow for 30-car trains, and there are typically several train lengths between passing tracks (see track plan, 4-26). Ideally, the next refuge is around a bend so that the crew of an inferior train has to rely on the schedule and/or train orders to decide whether it is safe to proceed. Bill Darnaby's L-shaped basement is ideal for this purpose, and a central peninsula is also helpful in this regard.



## CHAPTER SEVEN

# Operating a multi-deck railroad

Even with only three crew members—from left, Glenn Glasstetter, Mike Evans, and Bill Badger—working in a 40"-wide aisle, things can get crowded. And Bill is using a step stool to gain a few extra inches of height as he works on the 60"-high upper deck of Mike Sparks' and Randy Laframboise's Rutland layout. *Randy Laframboise*

Operations on most multideck model railroads are assumed to have the built-in advantage of more main line to support greater flexibility of train movements. Otherwise, they aren't significantly different from those on single-deck railroads with two notable exceptions: There may be more trains on the railroad, hence people in the aisles.

## An ideal platform for timetable operations

Let's review one of the primary goals of building a multideck railroad in the first place: increasing the mainline run. And a long mainline run, especially for a railroad with relatively high train speeds, is critical for timetable and train-order (TTTO) operations.

"Some 40-odd years ago during the early construction of the Midwest Railroad Modelers club in Batavia, Ill.," Bill Darnaby recalls, "there was a faction lobbying for Centralized Traffic Control, which I instinctively resisted because I knew that the only person who derived intellectual stimulation during a session would be the guy running the CTC panel, 3. I didn't really fully grasp timetable and train-order operation at the time, but I understood the 'skin in the game' aspect for road crews that TTTO operations affords, 4. I had little support except for a couple of other guys in the club including Scott Given, but we figured it out with the help of former Western Pacific dispatcher Peter Josserand's seminal *Rights of Trains* book (Simmons-Boardman) and some prototype railroad training documents that we found."

Bill had his first Maumee operating session at the club in early 1987 with handmade train-order and clearance forms, and he was hooked. His first session on Jack Ozanich's Atlantic Great Eastern was in January 1988 where he saw how it was really done. "When friends like Steve Karas started coming to my sessions at the club, TTTO quickly spread through the Friday night operating sessions, replacing 'mother may I.' That sealed the deal," Bill remembers. "Any railroad I would build would operate that way."

"By then, I also knew that it would be a walkaround railroad without really knowing what the control system would be at the time. We tend to forget how limited our choices of control systems were not that long ago," Bill adds. "There were Dynatrol and CTC-80 and maybe one or two early command control systems at the time. In 1993 or '94, I met Jerry Bellina and saw him drop one of his



**Dave Abeles had several step stools with vertical handles made by a friend who is a carpenter. The handles make moving them around easier. "They're especially useful when working with trains in the back of Onondaga Yard," he reports.**

*Dave Abeles*

Rail-Lynx infrared-equipped engines on Chuck Hitchcock's railroad and start running it using only the existing track power but controlling it using his IR throttle. I was impressed enough to purchase a starter kit and used it during layout construction. Then I met Paul Lator, the first Digitrax vendor, at an operating weekend in San Diego and learned about sound and DCC capabilities, and I never looked back."

Bill notes that many early single-deck track plans depended on central control systems. "Although we had a cobbled-up radio control system at the club," Bill concludes, "one can say that DCC with radio throttles made timetable and train-order operations truly practical." With timetable and train-order concerns resolved,

multideck railroads that facilitated them became practical as well.

Bill notes that many of his regular operators have since built multideck layouts, and that's a strong testimonial to the success of his design. Even concerns like requiring the yardmaster at lofty Dacron to stand on a step stool in a busy, narrow aisle don't seem to bother anyone. As regular Dacron yardmaster Jim Singer puts it, "I even know a few wider loads than I am that make it happen! But you have to stand in the right spot as Bill designed it."

Roger Sekera adds that double decks usually mean that the actual benchwork is quite narrow, which is far more conducive to switching. "But for someone of my height—around 5'-10"—the elevation of the second