



Table of Contents

Introduction

Section One, Red Oak

1 Introduction	4
2 Benchwork, terrain, and track	9
3 Terrain and scenery	16
4 Scenery, structures, and rolling stock.	23

Section Two, The Beer Line

5 Introduction	30
6 Benchwork	36
7 Roadbed, track, wiring and DCC	40
8 Ballast, streets, rivers and bridges	46
9 Signature structures for the Beer Line	52
10 Scratchbuild a lumberyard	59
11 How to model a big industry	64
12 Making a multimedia highway overpass	70
13 Build a cement plant	76

Section Three, Bay Junction

14 Introduction	82
15 Model a grain elevator and fertilizer plant.	88
16 Kitbash industries against a backdrop	94
17 A commuter station and downtown scene	100
18 Final details and operations	106

Introduction

Model Railroader's project layouts have been a popular part of the magazine for decades. They're a great way for beginning and intermediate-level modelers to get started on that first or second layout, and they provide interesting ideas for more advanced modelers to apply to their own layouts.

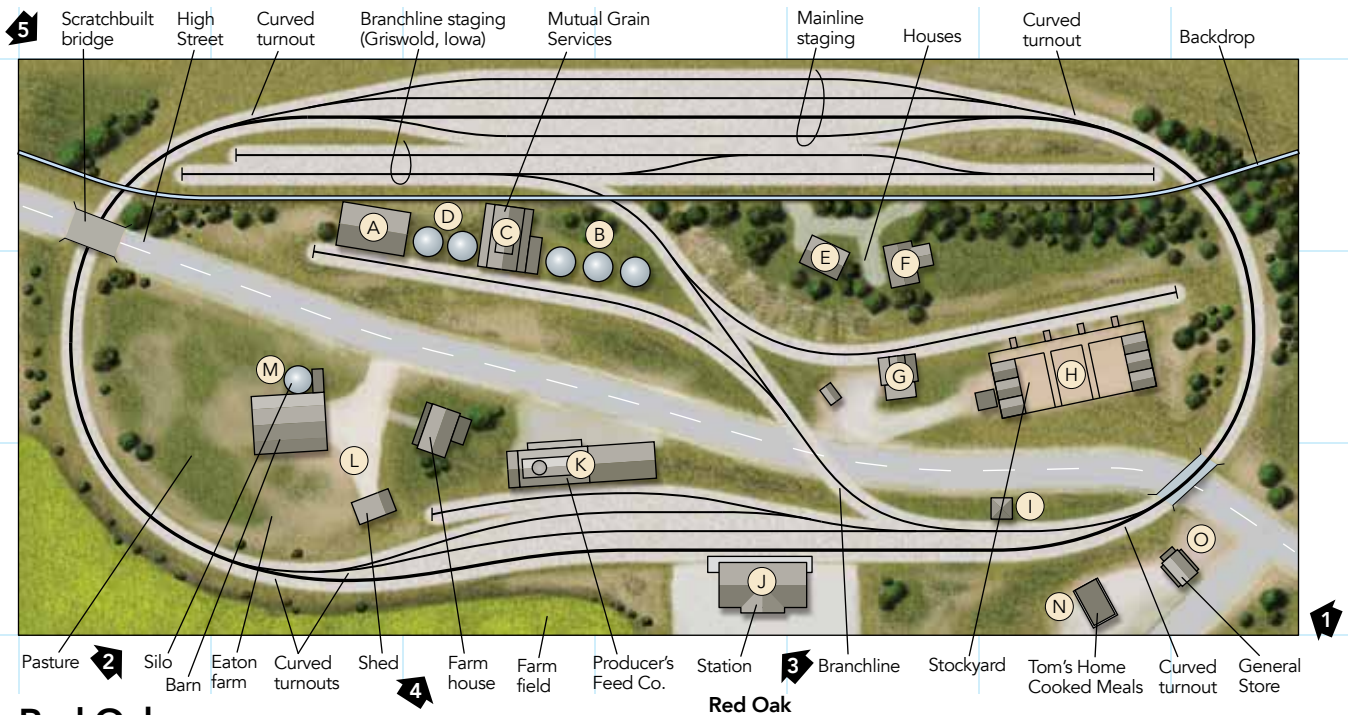
In this book, we've collected three layouts that could satisfy a variety of situations and desires, what layout planning guru John Armstrong referred to as "givens and druthers." The "givens" are the things you can't change, such as the size of the room you have to build a layout in. The "druthers" are the things you'd like. "I druther switch freight cars than run passenger trains." If that sounds like you, check out the Beer Line and Bay Junction.

These layouts feature yards for classifying cars into trains, and places to take those cars—industries—where they can be loaded and unloaded before heading out on the next train. Of course, Bay Junction has a depot designed to accommodate both long-distance Amtrak trains and local commuter rail.

The Red Oak is another layout that has room for passenger trains, as well as mainline freights. Designed to fit on a hollow-core door, the N scale Red Oak is more about running trains, with just a bit of switching to keep things interesting.

No matter what your givens and druthers are, we're sure you can find something here to get you started. With clear step-by-step instructions, we show you how to build benchwork, lay and wire track, build scenery and structures, and even operate your new layout. So, start reading and planning, and before you know it you'll be out of your armchair and building your layout!





Red Oak

N scale (1:160)
 Layout size: 36" x 6'-8"
 Scale of plan: 1" = 1'-0", 12" grid
 Numbered arrows indicate photo locations
 Illustration by Rick Johnson and Roen Kelly
 Find more plans online in the
 ModelRailroader.com Track Plan Database.

Red Burlington Electro-Motive Division GP20s on its cover. That, and the Kato EMD E5-led Burlington *Zephyr* passenger train we had previously reviewed, sealed the deal for the CB&Q as the prototype for this year's project layout.

Also on the layout is a Kato NW2, and after we started building, Kato released its F2 diesels painted in a gray Burlington freight scheme. Our good motive-power fortune continued when Hornby/Arnold announced the release of its N scale General Electric U25C locomotive, another 1960s-era diesel, in a Burlington paint scheme.

Track plan and design

We started with a concept similar to the Carolina Central, which was a *Model Railroader* project layout published starting in the December 1996 issue. That railroad featured staging on the back side of the layout, hidden by Appalachian foothills. Since we were modeling Iowa, the foothills were out and a sky blue backdrop was in.

While David was sketching track

plans, I was thumbing through contributing editor Tony Koester's book *Realistic Model Railroad Operation*. On the bottom of page 16 was a track sketch titled "Truncated Interchange." It showed an interchange track piercing the backdrop of a shelf layout. I adopted Tony's idea for the branch line on the Red Oak layout, which features a line that passes through the backdrop to its own staging tracks.

With a little persuasion and some carefully placed curved turnouts, David was able to incorporate the idea into his Red Oak drawing.

If you look closely at the Red Oak track plan, you'll note that the two branch line staging tracks are independent of the four mainline staging tracks. Though they're physically next to each other on the layout, operationally the two sets of track represent places dozens of miles apart.

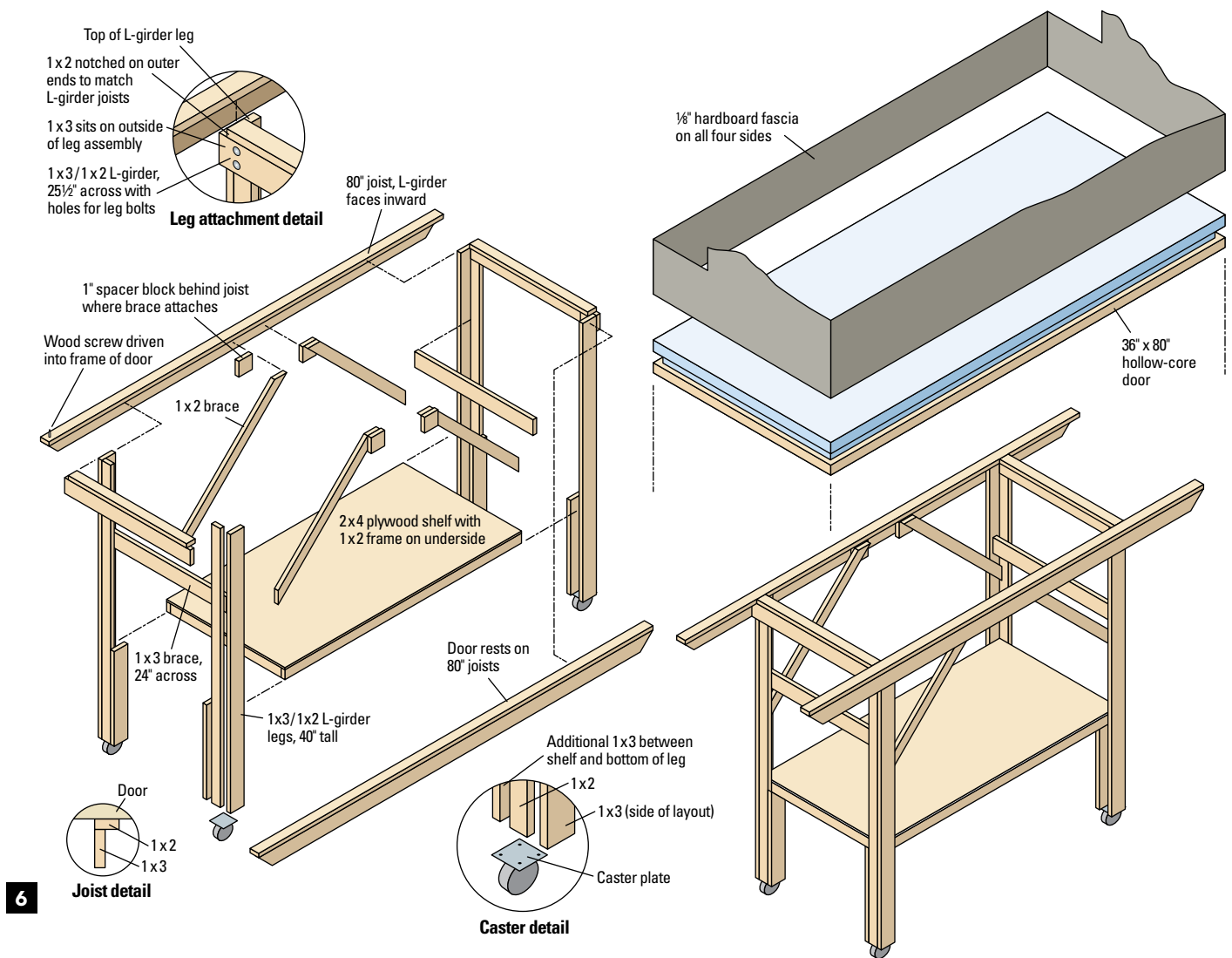
On the modeled portion of the branch are spurs to two elevators, a small warehouse, and a small stockyard. A feed company is on a track off the main line. The stockyard was built separately on a piece of 1-inch foam insulation board for an earlier story. We simply cut a corresponding hole for the pen in the Red Oak's foam insulation board, shimmed the hole, and dropped the pen perfectly into place.

The layout at a glance

Name: Red Oak
Scale: N (1:160)
Size: 3'-0" x 6'-8"
Prototype: Chicago, Burlington & Quincy RR
Locale: Red Oak, Iowa
Era: early 1960s
Style: island, portable
Mainline run: 15 feet
Minimum radius: 13"
Minimum turnout: Peco no. 6 medium
Maximum grade: none
Height: 47"
Track: Peco N scale code 55 turnouts and flextrack
Scenery: extruded-foam insulation board and Sculptamold
Control: Digitrax DCC

Backdrop divider

In a way, we cheated when building the sky backdrop on this layout. It's a 1/16" piece of styrene without any support structure. The sky doesn't fall because it's wedged into a groove cut in the foam insulation board. The groove is cut at a slight curve at each end of the layout, which gives the self-standing styrene sheet additional support. The backdrop is only 14" tall, 2" of which are sunk into the foam board. If the



Here's how the different pieces of wood went together into the benchwork for our layout.

door for a better bite. Otherwise, we would be fastening screws into the thin veneer of the door with nothing but air behind the veneer.

On our layout, we ran a bead of wood glue between the top of the 80" girders and the underside of the door as well as using the four screws.

Details and dimensions of the benchwork are shown in 6, and the lumber and fasteners we used are listed in the bills of materials on pages 10 and 13.

Foam board surface

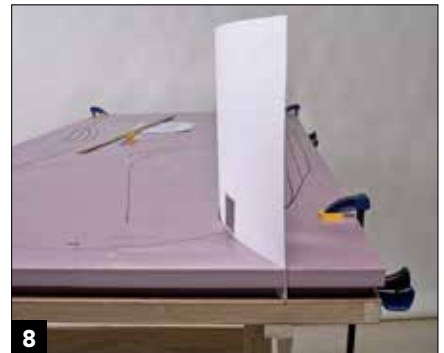
The surface of the layout is two sheets of 1" extruded-foam insulation board. Our foam was pink, but the blue stuff works just as well.

Why two pieces of foam board? First, it allows us to carve terrain that drops below track level and lets us



David Popp used two sheets of foam board for the surface of the layout, with the lower piece cut smaller to create a wiring recess.

cut a deep slot for the otherwise free-standing styrene backdrop. Second, by making the bottom piece an inch smaller than the dimensions of the door on all four sides, we created a recess for track wiring, 7 and 8. Once



The gap between the top foam sheet and the door is for bus wires; the backdrop cuts through both sheets of foam for stability.

the layout is complete, the recess is hidden by the layout's fascia. If access to the wiring is needed at a later time, it's easy to unscrew a section of the fascia board.

Why the recess? Normally, we just



CHAPTER SIX

Building sectional benchwork

BY DAVID POPP
AND ERIC WHITE

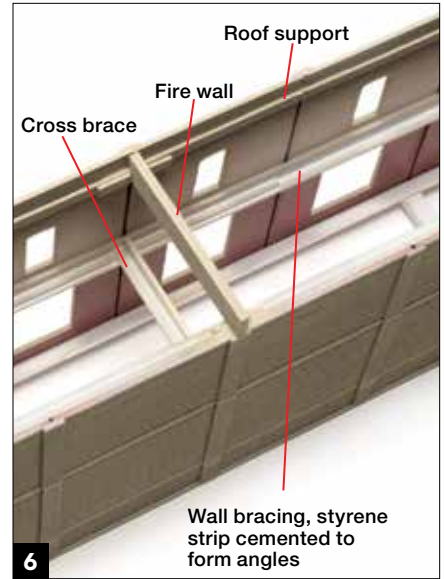
Photos by Bill Zuback and Jim Forbes

The Snake Track job switches a boxcar full of lumber for Steinman Lumber on the Beer Line addition. In this chapter, we show you how we built benchwork and created the landforms with extruded-foam insulation board.

Since the Beer Line is designed to be reconfigured, it's important that all mating surfaces match. This was especially important once we decided to add on to the layout, **1**. Having established standards when we built the original sections, it was much simpler to come back with more layout. This can be an advantage to the home builder as well, as skills and space may change over time, allowing for more railroad than was initially possible.



5 The Milwaukee Road's Juneau Avenue freight house is represented on the Beer Line by this structure Andy built mostly from Design Preservation Models modular wall sections. Finding that DPM didn't have the single-window panels he wanted for the second story, Andy molded his own with casting resin.



6 Here's the bracing Andy installed to keep the long walls straight, and also the simulated fire wall he made with extra parapet sections.

photo, including a fire wall, ventilators, and access hatches.

Modular modeling

To save time and since he wasn't too concerned about prototype dimensions, Andy built the freight house from Design Preservation Models (DPM) modular wall sections:

North wall (office front), one 30101 for the ground floor and one 30130 for the second story.

East wall (river side), ground floor, one 30134 and eight 30104; second floor, one 30130 and eight 30133.

South wall, one 30136 for the ground floor with one 30133 above.

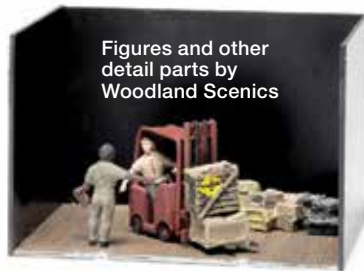
West wall, ground floor, a 30104 and eight 30135; second floor one 30130 and eight – uh-oh, no DPM part works!

Andy thought having a single second-story window above each freight door bay was worth some extra effort, since it was one of the few distinctive features he could see in photos. "Casting your own walls," on page 55, tells how he made a master from a couple of extra DPM wall sections, then made a silicone rubber mold to cast the single-window wall sections with two-part resin.

Once he'd gathered or cast all the wall sections he needed, Andy



7 Floors, scribed styrene painted as well-used wood



Figures and other detail parts by Woodland Scenics

Andy made two shadow boxes to fit behind open freight doors and suggest interior detailing.

mixture of wooden and printed-circuit board (PCB) ties glued to a base of 1/8" foam core, 4. He soldered the rails to the PCB ties and spiked them to the wood ties.

Milwaukee Road freight house

The Milwaukee Road freight house at Juneau Avenue and the Milwaukee River was a long, narrow, two-story brick building. It had an office fronting on the street and freight doors serving both rail cars and trucks along its west side. It stood on the north side of the street with its office on the south end, but its location is by necessity reversed on our layout, 5.

Andy had few prototype photos to work from, and tried to make that an

advantage. All he'd have to do was re-create the building's general shape and textures to have a reasonable model. Here are the features he set out to capture:

- Two-story brick construction with parapet walls on three sides and a roof sloping east toward the river.
- Red brick facing for the street level of the office, the rest of the building of less-expensive "cream city" brick, a local product with a buff color.
- Painted signs reading "C.M.ST.P.&P. Freight Office" facing the street as well to be seen from the east and west.
- A single second-story window over each freight door bay.
- Roof details to match an aerial



CHAPTER THIRTEEN

Build a concrete plant

BY ERIC WHITE

Photos by Bill Zuback

Tews Lime & Cement Co. had several locations in the Milwaukee area, including its plant on North Avenue. Eric White used techniques from scratchbuilding, to kitbashing, to rearranging kit parts to build the complex.

The layout has three prototype-based industries on it, and modeling them offered a variety of challenges. With Tews Lime & Cement Co., I had a distinct advantage: access to someone who worked there.

John H. Tews, a grandson of the two brothers who founded the company, is a model railroader who is deeply involved in the Milwaukee-area National Model Railroad Association division. John is also a buddy of retired *Model Railroader* senior editor Jim Hediger, so a call to Jim set up a meeting with John, and the project was off and running.

I did a bit of research before meeting with John. In addition to the Beer Line book mentioned in the introduction, I searched online for Tews Cement; North Avenue and Humboldt

Avenue in Milwaukee, Wis.; and Humboldt Yard. I found photos and maps, and even a blog entry by *Classic Toy Trains* Editor Carl Swanson about the North Avenue Viaduct. Old maps and aerial photos are prime sources of information, and one of our favorite websites is www.historicaerials.com.

I made cardboard mock-ups of the buildings on the site. These made it much easier to see the relationship between the four buildings in the complex. They helped me realize, for example, that my footprint for the warehouse was too large, creating