

So You Want to Build a Dream Model Railroad?

Reflections on One Man's Journey

Bill Decker, McMinnville, Oregon
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Having built, enhanced and operated my railroad for the past nine years, I have taken time to reflect on what brought it to its current state.

My HO scale railroad and crew lounge area occupy about 2400 sqft of basement space. In this space I rendered my version of the prototype Southern Pacific Cascade Line, from Eugene to Crescent Lake, Oregon, just past the summit of the Cascades. Four hundred feet of mainline connect the throat switches for reverse loop staging at both ends of the railroad. Starting at the historic helper station of Oakridge, the railroad climbs at the historic 1.8 percent gradient to Cascade Summit, climbing an actual 3.5 feet.

The railroad was built as an operating layout, with extensive wood products industry at the base level. The mountain climb employs manned, mid-train helpers, entrained at Oakridge and removed at Cascade Summit. A normal full operating crew employs 16-20 people. Although Centralized Traffic Control is planned, the railroad currently employs Direct Traffic Control, the system Southern Pacific used to dispatch more lightly traffic lines and branches in the radio age.

More details can be seen in my blog at: <https://espeecascades.blogspot.com/>

Model Railroad Design Thoughts

Layout design is the process we use to translate our dreams and images of a railroad into a realizable scale model form in whatever space we can devote to the railroad. Layout Design Journal Editor Byron Henderson notes three distinct phases of planning: Conceptual, Structural, and Detail Design. The Conceptual Design phase identifies the theme, vision, and concept for the proposed railroad, with a lot of research employed. During the structural design phase, the dreams and vision of the conceptual phase begin fitting within a real space. The "Givens and Druthers" inform this process as the designer selects features and scenes to include within the design. For me, a simple schematic of selected stations led to rough sketches placing those stations and features within the railroad space. This phase is where I wrestled with where to place the two turning wyes and where to site the prominent steel trestles (viaducts) which are important scenic features. The actual track plan was drafted during the detail design phase. Many people think this is all that layout design entails, but those first two phases of conceptual and structural design are essential to successful translation of the dream into something tangible.

I kept a design journal throughout my decade-long design process. I find the process of writing down my thoughts helps organize those thoughts into something I can work from. One of the earliest notes in that journal was a list of priorities for the ultimate design. That list proved important to breaking a design roadblock near the end of my design journey.

I find a successful model railroad design occurs when the design goals match the owner/builder, space, and vision. Objectively and honestly evaluate yourself as to what type of model railroader you are. Are you a detailed craftsman, a railfan, or an operator? What skills do you have. Where or who do you need to recruit to augment skills you find weak or uninteresting? Consider your time, experience or skill, money, and space and try to match your vision to those “constraints.” Note that one can exchange money for time and skill. Finally, consider your discipline or motivation level. A large layout takes considerable discipline to bring into reality.

As you refine your design vision, consider the level of prototype fidelity you wish to achieve. Most of us fall on the prototype modelling spectrum somewhere between strict and scaled prototype model to anything goes freelance to perhaps fantasy. Try to identify where you and your vision are and apply that to your design efforts. Similarly, an “operating” layout will have features and priorities different from a more set-piece (museum) representation. There are no wrong answers here. Acknowledging those goals will help the design to better fulfill your long-term enjoyment.

Project Management

As a retired research engineer, I found myself applying project management tools to my railroad, particularly during construction. Time and cost budgets are important. An important data point I got from recent retirees was that we spend on average about twenty hours a week—half time—on our railroads. I found deadlines useful to moving my construction forward. A huge deadline for me was completing the mainline in time for the 2015 NMRA National Convention in Portland—three years after the start of construction. I just made it, but that final year required a major effort. Regular progress reports helped keep me on “track” (pun intended). My reports take the form of regular postings on my blog, listed above. I write lots of lists. I enjoy crossing off completed items, no matter how trivial. Try to devote at least some modest time to the railroad every day. An hour a day accomplishes a lot over a month.

With my focus on a completed mainline for an operating railroad in just three years, I found myself pushing hard to complete the mountain grade in the third year. I also found it important to begin test operating sessions with others after the second year when I could run between the Eugene depot and classification yard through the industrial area of Springfield and on to Oakridge. Lessons learned in those sessions informed revised construction techniques, helped develop the operating scheme, and validated rolling stock and locomotive standards. As an alternative, many modelers concentrate on building scene by scene, bringing each scene to a desired level of “finish” before moving on to the next scene. Both of these constructions paths are valid. Selection depends upon your priorities. I wanted/needed a complete mainline to demonstrate for the NMRA National Convention attendees.

As an experienced model railroader, or perhaps because of my length of time in the hobby, I still found myself falling into several construction traps wherein early design practices inherited from 4x8 model railroads found their way into a much larger space where they absolutely did not belong. I revised one curve without easement and with a kink to remove an operational headache. Other examples may get similar treatment. My advice is to be on-guard about old habits that may appear in spite of more refined knowledge gained later in your hobby life.

Model railroad operations is a great segment of the hobby. An operating session is a social event, conducted with like-minded and motivated individuals. Find a balance between direct, clock-on, operations and “off-duty” social time. Both are important. Real human operators are giants relative to our models. They need space to move about and pass one another. My careful aisle design settled on three-foot wide aisles with careful evaluation of operator work flow versus my original goal of four-foot wide aisles. One of my design goals sought to achieve “satisfying” operations with a crew of only six, scale-able up to twenty or more. That small crew size and broad aisles payed huge dividends during the pandemic. Designing for the human operators is at least as important as designing for where the trains go!

I hope that some of my experiences provoke thought and help inform your own layout design, construction and operating journeys.

Bill Decker
McMinnville, Oregon
sp.bildd@att.net