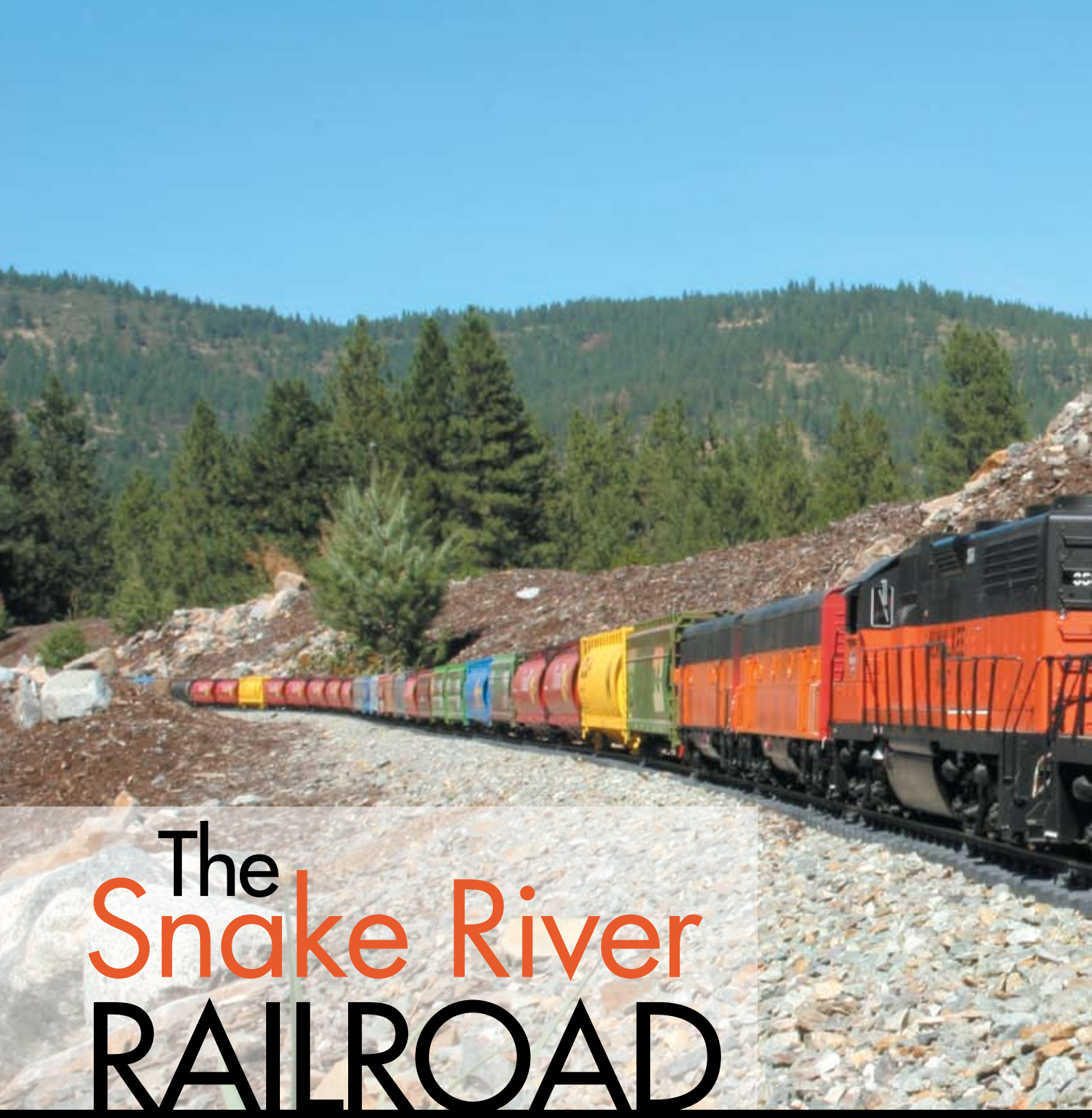

The Snake River RAILROAD

Mainline railroading in the Northwest

by Jens Bang | Blanchard, Idaho Photos by Marc Horovitz

I love trains—steam engines, diesels, electric, standard gauge, and narrow gauge. However, I'm especially partial to heavy, modern, standard-gauge freight trains, circa 1940 to the present day. In my work with this railroad, I've been greatly influenced by North American railroads in general, and those in the western US, including the Union Pacific, Great Northern, Northern Pacific, Milwaukee Road, Santa Fe, Southern Pacific, and the Spokane, Portland & Seattle, in particular. I love the landscape and the scenery that is found in the Great Northwest.

When we left our home in California to move to rural Idaho in 1990, I sold my railroad there. I used the money to buy 500' of Aristo-Craft track for a new railroad.

I couldn't imagine the amount of digging I would have to do and how much work I was in for on this new line. All I could

1. A long Milwaukee Road freight consist out on the mainline of Jens Bang's Snake River Railroad in Idaho. Broad expanses and sweeping curves characterize this impressive line.

Rolling stock on the Snake River

Rolling stock on the Snake River Railroad includes a mix of weathered commercial stock and scratchbuilt cars made by the author and his friend, Grant Minor. The material used is primarily styrene. The scratchbuilt cars, while not highly detailed, are correctly proportioned, painted, and weathered, and go a long way toward enhancing the overall operation.

These pulpwood cars and the wood-chip car were scratchbuilt by Grant Minor. The variety of rolling stock helps make the train more interesting.

Cylindrical grain cars. The Alberta and Canada cars were built by the author; Grant Minor built the Scoular car.

The high-cube boxcars were built by the author out of styrene. The first is an 89-footer.

The hopper car is an LGB product weathered by Grant Minor.

Grant Minor scratchbuilt this bay-window caboose, also from styrene.

The author scratchbuilt the high-cube boxcar and wood-chip car from styrene sheet.

think of was how much fun I would have running prototypically long trains on the railroad. But that had to wait. In the meantime, I had to move about a billion shovelfuls of dirt and figure out how to support long, wide-radius curves without frost heave messing up my track.

My philosophy

With the Snake River Railroad, I'm trying to recreate a moment in time with a train that seems real. I have a lot of space available, so I decided that scenery, landscaping, and prototypically wide-radius curves would be the outstanding features of this railroad, not a lot of buildings and many trains running at the same time. Buildings, towns, and other structures are not a priority here. The open spaces that the trains traverse is paramount—that and the adventure of building it.

I wanted to watch the trains. I wanted wide, open spaces and long-distance trains. My goal was to create the feeling of being in the woods in the north or south Cascade Mountains, about 5,000 to 7,000 feet elevation, and being able to watch a train running through this environment. This is the setting of my railroad.

Part of my philosophy is that a railroad in the garden needn't be expensive. I just used what was available to me and took it as far as I could, trying to do as much as I could with what I had.

The railroad

The Snake River Railroad is so named because of my special interest in the Union Pacific. This has been my favorite railroad ever since I saw the Big Boy.

The 200' x 300' railroad is shaped sort of like a mirror image of Idaho State. One of the reasons the railroad is shaped the way it is was because of some very large ponderosa pines that had to be circumnavigated. There are two separate loops. The first, around 550' long, has been operational for 13 years; the second—around 750'—for around two years, but it was connected to the first loop about a year ago. There are approximately 300' of storage tracks as well.

Landscaping and plants

I first had to get a land grant from "Federal Mom" before work could proceed. I focused on building a railroad that wouldn't be excessively expensive. When I started, I was unemployed. Later, I got a job at a bark plant as a loader operator. This, and having a Ford F350 truck with a dump bed, helped make this railroad possible.

Landscaping the railroad has been the first priority from the beginning, as well as my biggest task. I wanted the contrast to be staggering. There had to be a lot of space around the planned four big bridges and the railroad needed mountains, with valleys for the bridges to span. On the finished railroad, there is almost 15' of elevation difference between the highest and lowest points.

I decided to build up the ground along the track so my trains wouldn't run in a constant ditch. I did this using the dirt that came from the valleys I dug. This was a lot of work, done primarily with a wheelbarrow and shovel, which were the only tools available to me for about two years. Later, a tractor came and I added to what I had already done. The second half of the dirt was moved in a fraction of the time of the first half.

2. A USA Trains Hudson takes a long string of Aristo-Craft heavyweight cars across the high steel trestle, seen here at its highest point, perhaps 12 feet tall. The scratchbuilt bridge has been in place for 14 years. The 56-foot-long structure was created based on a single photo.

Plants on the Snake River Railroad

Blanchard, Idaho
USDA Hardiness Zone 6

The landscape of the railroad represents the scenery of the woods in the mountains of the Northwest, such as the North or South Cascades in the 5,000-7,000' range. All the plants are indigenous to the area and are able to grow with no additional irrigation. A thick layer of bark mulch helps keep weeds down and conserves moisture.

Collecting trees in the wild is an inexpensive, but challenging, method for acquiring landscape plants. It's best to collect in an area where there are many healthy plants to choose from. Never collect on public lands, and be sure to get permission when collecting on private land! Woody plants, like trees and shrubs, should be collected while they're still dormant. Late spring is the best time because soon after they're in their new home, they'll be ready to start growing again; this helps them transplant even more quickly. Herbaceous plants, like mosses, can be moved at almost any time of the year. Spring and early fall transplants are the most successful.

Douglas (red) fir
Pseudotsuga menziesii
Tamarack, western larch
Larix occidentalis
Ponderosa pine
Pinus ponderosa
Western red cedar
Thuja plicata
Mosses

3. The passenger trains crosses the Crooked River Bridge. This structure is modeled after one in Oregon. Supports are cast concrete. Douglas fir and ponderosa pine trees, collected as seedlings, will eventually create a small forest along the banks of the river.

The roadbed is almost 24" above the original ground level. The angle-iron track base (see p. 63) was put in place before I finished moving and shaping the dirt. When that was done, I added some trees and mulch (usually bark).

Everything I planted on the railroad had to be able to survive without watering. A foot-thick layer of bark helps a great deal to retain moisture. All plant material is indigenous growth—red firs, tamaracks (larches), cedar, and some moss. I've planted about 2,000 trees, of which about 500 survived. You have to be very careful when transplanting trees from the wild, especially when they're taller than one foot.

I started digging in July 1990 and finished the first loop in August of 1992. It took two years and two weeks. I moved, by wheelbarrow and shovel, probably about one or two hundred yards of dirt in the first two years. (I still have the shovel. I wore an inch off the blade, but never broke the handle.)

There were a few problems to figure out, including how to plot the wide, sweeping curves of 30' radius or more. Some curves are 1,200' radius, but I don't consider these curves; they're negotiations—they negotiate the landscape.

One of the problems with a railroad this size is weed control. About four years ago I started hauling waste bark into the railroad, which I got free from the bark plant where I work. My one-ton Ford pickup can't handle much of this stuff, as it's wet and heavy, but this is what I covered all the ground with. I've

4. Two freights meet near the north end of the line. Locos are a mix of scratchbuilt (Grant Minor), USA Trains, and Aristo-Craft.

5. Grant Minor, a friend of and collaborator with the author, heavily rebuilt these Lionel GP20s. The pilots and almost all of the roof details were scratchbuilt.

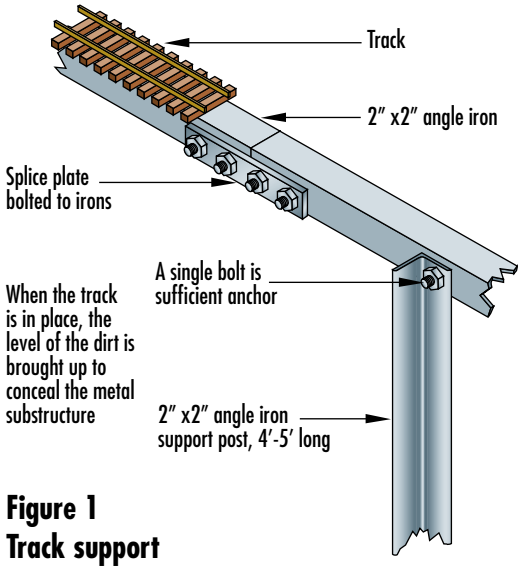

Figure 1
Track support

hauled in about 1,000 yards of waste bark over time.

Lots of rocks were used in the landscaping. I took whatever I could get. I spent no money on landscaping materials, as I didn't have a job at the time I started the railroad. I hauled in about 100 tons of rock.

I used about 30 bags of Portland cement, types I and II, mixed in a wheelbarrow with gravel dug from the ground. When mixed, I poured it into forms I had made for bridge abutments and other things. I reinforced these structures with fencing T-posts, barbed wire, and anything else I could find.

When the landscaping was finished, I laid the track.

Roadbed and track

The only problem I had was how to support the track. The most serious factor I could think of was the ground heaving from frost. I considered using concrete roadbed, but the thought of mixing that much cement was insane. A millwright suggested that I use angle iron. At the time it was about 16¢ per foot for 2" x 2" x 1/8" angle. I bought about 2,500 feet of it. By cutting it, I could make it do whatever I wanted. I used nuts and bolts to put the pieces together (see figure 1). I secured the track to this. Every five feet I hammered a 5'-long piece of the angle iron into the ground to support the horizontal pieces. Unfortunately, there were places where I found it physically impossible to hammer the iron a full 5' into the ground, and ended up having to cut the

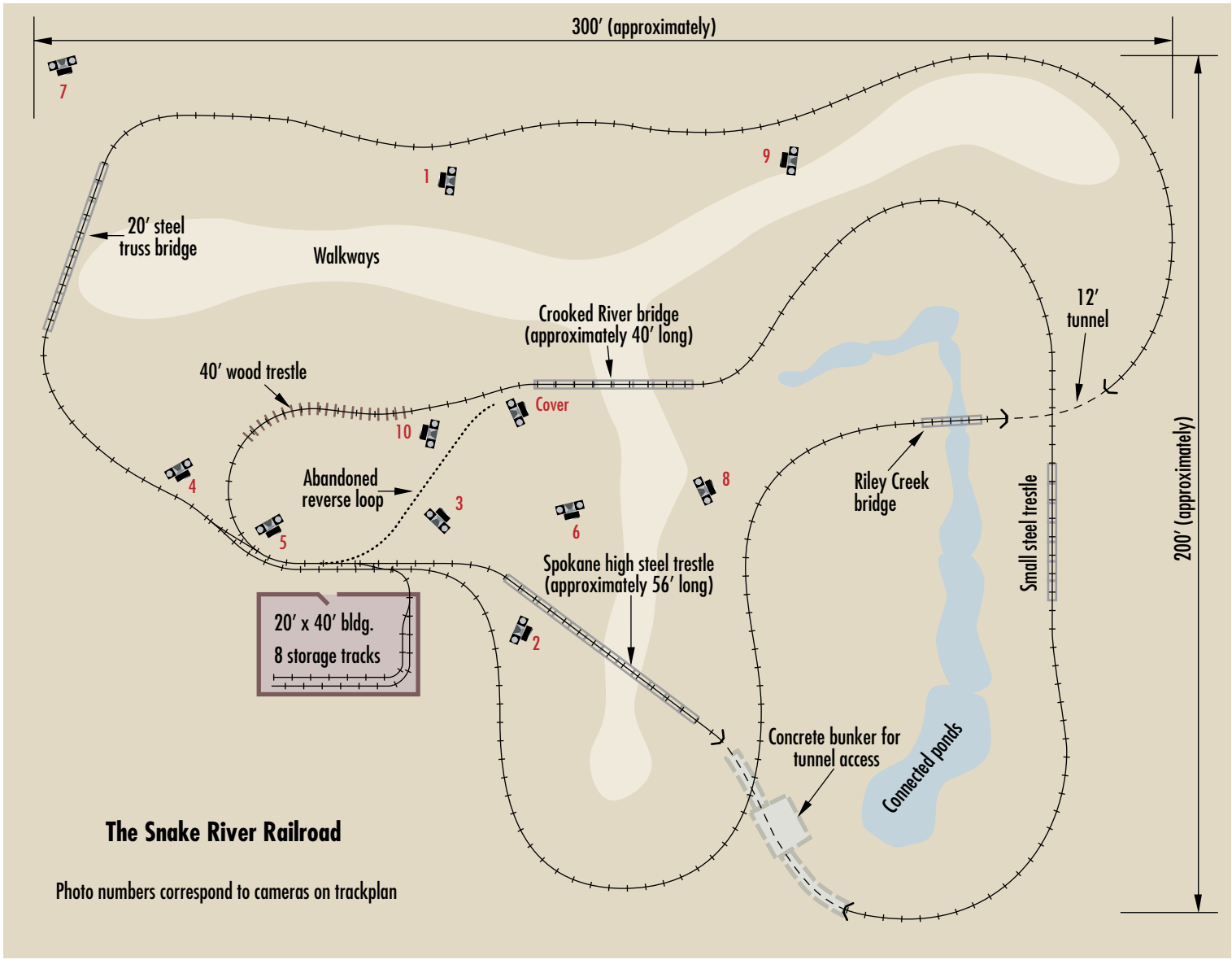

ILLUSTRATION BY MARC HOROVITZ

tops off of several uprights.

I used Aristo-Craft brass track. No one made sectional track to the wide radii that I wanted, so I made my own flex track. I disassembled the long, straight sections of track, removing the little screws that hold the tie strips to the rail. I then stacked the strips five or six high and cut through every other plastic connector between the ties, on one side only. This gave the tie strip flexibility. Getting the rail back into the tie strips was sometimes a struggle. I found using various types of pliers helped. I used a propane torch to solder all the rail connections.

About every 40 to 60 feet, I put in a homemade expansion joint, usually over the joint in the angle-iron support. I try not to place them in curves. These were made by milling away one side of the rail for about 6" or 7" and matching it with a similarly (but oppositely) milled rail. The tie strips hold them in place. I think that my homemade expansion joints, which are about 8" long, allow more room for movement than commercial joints.

I built all the switches on the Snake River Railroad myself, for a couple of reasons. First, no one made switches just the way I wanted them. Second, I love switches. They are one of those particular details I've always been fascinated by, especially the frogs. The finished switches have all-brass frogs, soldered together. Opposing guard rails are soldered to the adjacent rails.

I used brass rail (the same used on the track) and redwood ties cut from boards that came from a 100-year-old barn in Arroyo Grande, California. This redwood is very red and porous and lasts quite well outside. Treating it makes it last longer, of course.

I first used aluminum tacks to hold the rail to the ties, but now I use steel spikes I found at my local hobby store. They do rust and may eventually die, but I'll just have to replace them then. I use jumper wires to maintain continuity across rail joints.

I soak the ties in used motor oil from the Cat 966 at work. It's really black and lasts quite a while. And it smells so good—just like real trains! I still have some work to do to perfect my switches, but they work (most of the time) and they look good.

Bridges, trestles, and tunnels

The long, wood trestle took 28 days to complete. It's built from pine stick wood. I bought a couple of units, not knowing how much I was getting. I ended up burning 90% of it after all was said and done.

I trimmed each piece down to a stan-

6. USA Trains and Aristo-Craft diesels cross a model of the old Spokane high steel trestle. The third engine, a U30C, was built by Grant Minor. The bridge has been in place for 14 years. In the background is the second loop.

The railway at a glance

Name: Snake River Railroad
Size of railroad: 200' x 300' (approximately)
Scale: 1:29
Gauge: N° 1 (45mm)
Theme: Mainline railroading in the Northwest
Era: Modern
Age: 15 years
Motive power: USA Trains and Aristo-Craft (fitted with USA Trains motor blocks)
Length of mainline: 1300' (one loop 750', one loop 550')
Maximum gradient: 2%
Minimum radius: 30'
Type of track: Aristo-Craft with hand-built switches
Structures: Scratchbuilt bridges and tunnel only
Control system: Two Crest power supplies with 10-amp controllers, power through the rails

All switches, including this one on a curve, were built by the author. They utilize brass rail on wooden ties. Switches were scratchbuilt so that each would fit where intended without compromise.

To compensate for temperature-caused movement in the long expanses of track, the author made his own expansion joints. Basically, rails have been split longitudinally, then the halves mounted side by side so that they can slide against one another.

7. The steel truss bridge spans a deep gully. It was assembled entirely with screws and nuts on a purpose-built table.

8. A grain freight snakes through the wooden Riley Creek bridge, built by Grant Minor. The author loves winding trains, hence the S-curve.

9. Watching trains travel through wide-open spaces, as can be seen in this picture, was one of the main objectives in the construction of this railroad. The actual hills in the background (the "borrowed view") add to the sense of distance.

dard size. Then I made a jig for the largest bent and worked my way down to the smallest. The trestle was built in five sections, which were assembled on site.

I first stained the structure with traditional stain. Now, as with the ties, I use old motor oil from the Caterpillar at work. I soaked the wood in a plastic tub with the trestle disassembled. Next time I'll have to get a sprayer.

All the bridges are models of structures found somewhere in the Northwest. My railroad was built around the bridges I wanted.

From early on, a long tunnel was as important to me as a long, tall bridge. A tunnel is sort of like a bridge, as it goes from point A to point B through space that is normally not navigable. I wanted a 38'-long tunnel on a curve. Because of the length, and the inaccessibility of the trains inside, I decided to incorporate a 4' x 8' x 6' concrete bunker in the middle, accessible via an 11' ladder through a hatch in the hill above. This resulted in an 8' window inside the mountain that gave me access to derailed cars that would otherwise be out of reach.

Since putting it in, the north end of the tunnel has settled about an inch. Other than this, I've experienced no concrete settling on the railroad.

Trains

Trains on the Snake River Railroad are mostly Aristo-Craft and USA Trains, with some additional scratchbuilt rolling stock. Engines are primarily USA Trains GP-38s fitted with Northwest Short Line's replacement wheels. I have tried 36" and 40" wheels and found the 40" wheels superior. The 36" wheels have smaller flanges, which still cause wrecks. The locomotives with 40" wheels have never derailed.

I have three Aristo-Craft SD-45s that I've fitted with USA Trains motor blocks. I'm not fond of Aristo-Craft's axle ends that screw onto Teflon gears. They work OK if you're not pulling trains longer than 20 cars or so, but I enjoy running prototypically long trains—trains with three or four engines and 60-70 cars (sometimes up to 150). Although I used to try to pull as many cars as I could, I now enjoy shorter trains of 30-50 cars. It's much easier on the power packs.

I also run a USA Trains' Hudson, which I liked the instant I saw it. It pulled 77 cars up a steep grade (a section of track that no longer exists). The Hudson is the most impressive and dependable engine I've ever had.

10. This 40-foot-long structure is typical of wood trestles. It's 4' tall at its highest point and took only 28 days to construct.

Control and operation

Trains are powered by a pair of Crest power supplies with 10-amp controllers that provide 24V. If you keep the needle of the ammeter away from the 10-amp mark, everything works fine. I feed power to the track every 30' or so using 1,500 feet of 12-2 outdoor lighting wire.

I use prototypically wide, sweeping curves, which are necessary for running long trains with body-mounted Kadee #820 couplers, closely coupled in a prototypical manner. Over time I discovered that truck-mounted couplers will not work. With trains of 50-60 cars, if the locomotives hiccup just once, there'll be a derailment—sometimes a big one. I hate those! Cars with body-mounted couplers won't derail as easily. For the most part, trains run without problems, but problems do mysteriously happen when I'm not looking.

Conclusion

The other very important part of this endeavor has been the people whom I've met and become friends with. This has been the most exciting and unexpected part of this project. I built the Snake River Railroad for me, first and foremost, but watching people see it for the first time is wonderful. I wish I could have seen it when I was a child!

Now that the railroad is nearly complete, the only real problem is maintenance, ballasting, constant track cleaning, weeding, and more ballasting. With the exception of time, frost heave is the greatest force working against the railroad. But that's railroading. If I had to do *everything* real railroads had to do on a full-size scale, I would not be doing this. II

Jens Bang, seen here with his friend and companion BJ, is a native of California. He has lived in Idaho since 1990, when he began building the Snake River Railroad. For the past 13 years, he's been a loader operator at a bark processing plant. He says, "I currently operate a loader with an eight-yard bucket, so I have an idea what a cubic yard looks like."