Building the Beaver Creek Branchline Modeling and photos by John Feraca MMR



Introduction the Stone Canyon RR

- The Stone Canyon Railroad is a fully operational freelanced single deck layout based in the western U.S. The layout was built in various stages between 2004 and 2018. Timeframe is 1950's steam/diesel transition era. UP and ATSF are the predominate roads.
- Overall layout size is 28' x 39' including staging. The mainline is 400' double track, east and west bound closed loop. There are 120' of hidden staging track that can accommodate up to 12 pre-staged trains. Total trackage is 1000+ ft. Visible track is code 83, hidden staging is code 100. Over 100 structures. Scenery is 100% complete and ranges from rugged mountains to a complete lighted city scene.
- Control is DCC using Digitrax Super Chief Duplex Radio. Motive power includes a variety of steam engines as large as 4-8-8-4 Big Boys. Diesels include switcher and road units along with E and F units for passenger operation. Operations include passenger, local freight, coal and through freight. Switching opportunities include a coal mine, 30+ industries, a large freight yard, lumber branchline and a full service steam/diesel engine shops. The shops includes a 130 ft. turntable, 12 stall roundhouse, coal, water, sand, cinder pit and diesel shop.
- A typical 3 hour operating session involves the movement of approx. 200 cars, 18 locomotives and up to 16 trains. Operator positions include; Dispatcher, Yardmaster, Branchline operator, Motive Power Hostler, Engineer and Conductor. Communications between dispatcher and operators are via FRS radio/headsets. Car forwarding is done with car cards and waybills. In addition to the dispatcher, a minimum of 5 and maximum of 9 operators are required. The layout has hosted over 75 operating sessions since 2013 and has participated in every IslandOps weekend since its inception in 2014.

Track plan



















Why build the Branchline?

- The Branchline was built to enhance operations. The SCRR has been operating monthly since 2013 and has been expanded once before in 2014 with the addition of the Flat Rock/Little Fork peninsula.
- The lumber branchline operation serves as an onlayout shipper sending products to several industries on the layout including; RR ties for the Stone City Shops, dimensional lumber for Carl's Lumber and Ward's Furniture, and pulpwood for Engel Paper. There are also supply freight cars forwarded to and from the branchline from the Transload facility.
- Lastly and most importantly, I enjoy all aspects constructing a model railroad.

Designing with CAD

The original SCRR trackplan was drawn 1:1 scale using AutoCad 2D software. This software was used to design benchwork, sub-roadbed, trackplan, roads, structures, scenic boundaries etc. All turnouts are drawn to scale based on Micro Engineering, Walthers or Peco templates. AutoCad allows you to draw in different layers and colors. The left image shows only the track, structures, backdrop and benchwork outline layers. The right image shows only the benchwork, sub-roadbed, backdrop and benchwork outline layers. Numbers shown are track elevation heights.

The sub-roadbed was printed full scale, adhered to 3/4" plywood and cut with a jigsaw. The sections were then assembled together and supported off the benchwork. This method assured the finished track matched the drawing.



Planning/CAD Layout

The Branchline measures approx. 14' x 2'. The depth of the benchwork tapers from 24" to 4" left to right. This allows maximum aisle space to be utilized. The minimum aisle dimension is 24". There is ample space between the Branchline operator and road crews.

Turnouts are #6 code 83 from Micro Engineering. Track is code 83 Atlas flex track. I used pre-drawn turnout templates which allowed me to play with different track plans in CAD until I was satisfied. Once the CAD track plan was complete, I plotted the plan full scale on an inkjet roll plotter. The plot was then laid out on the benchwork to verify the location of turnouts, sidings etc. Once I was satisfied, the track centerlines were transferred to the benchtop.



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Benchwork Construction

Construction began with the removal of the existing facia hardboard and hardshell scenery along the mainline. The original extended back drop can be seen in these photos. I always planned on adding an extension in this corner and pre-installed the backdrop.



Benchwork Construction

Using a laser level I shot a line level with the existing roadbed around the walls. Next, I used construction glue to fasten a pine 1 x 4 along the wall about 2" below the laser line. This acts as a mount for the L shaped plywood deck supports. These L shaped supports were made from 1 x 3 and 1 x 2 pine. They were aligned with the laser at the correct height and screwed into the 1 x 4. The plywood along the mainline is supported with extensions from the existing benchwork. Plywood is ³/₄" furniture grade. A single 4' x 8' sheet was enough for the entire project. The branchline ties into the eastbound mainline using a Walthers #8 curved turnout. The mainline track radius is 32" which matched perfectly with the #8 turnout radii of 32"/36".



Benchwork Construction

(continued)

The center section of the branchline is supported by an existing book shelf. I did not want to remove it and it worked out perfectly. The bench top goes over it and is supported with additional 1 x 2's screwed to the side of the book shelf. The cutout section of the benchwork in the center photo is for the river scene. Other than the bookcase, the entire branchline extension is mounted off the wall and existing benchwork.







Backdrop Construction

These photos show the completion of the benchtop and installation of the backdrop. The backdrop is supported on 1 x 3's attached to the wall with construction glue. The backdrop is 1/8" hardboard sheet (Masonite) screwed to the 1 x 4's.

For a finished look I installed a facia made from 1/8" hardboard painted black to match the rest of the layout.





Backdrop painting

Backdrop painting started with sealing and sanding all the seams and screw heads with joint compound. Next I primed the hard board surface with Kilz All Purpose interior/exterior primer. This assured a smooth even surface to apply the finish paint. For the basic sky color I used white and blue flat interior house paint. Any brand will suffice. Luckily, I had the same blue paint left over from the original backdrop I painted in 2004. I started by rolling on white to the bottom 1/3 of the backdrop followed immediately with blue to the top 2/3. The most critical step is blending the two colors while still wet. With a wide (4" min.) clean, high quality brush, I quickly blended the two colors with long even strokes until the backdrop was deep blue to white, top to bottom.



Backdrop painting

For inspiration, I found hundred of photos on the internet of mountains and forests. The most difficult task was re-creating the same mountain colors as my original backdrop. After a lot of trial and error I was able to blend the colors seamlessly. The mountains were created using flat latex house paint in a gray base color. I then made several lighter colored batches by adding white to the gray base color. These colors were applied to sun facing areas to create depth. Pure white was used for snow.







Backdrop painting

In some places my backdrop is only 4" from the facia so the painted image had to be convincing even though the backdrop should not be the focal point on your layout. Painting terrain and trees was especially challenging for me. Although I consider myself an artist, landscape painting is not my specialty. I turned to Bob Ross for inspiration and watched many of his videos on YouTube. His simple techniques were the key to creating a visually convincing scene. I used a variety of artist acrylic paints and good quality brushes. I used at least three shades of of green for the conifer trees and a variety of yellow and orange for the aspen trees. Since I model fall, I painted the grass and underbrush in fall colors. When I was satisfied with the overall effect, I airbrushed a VERY dilute mix of white acrylic from the tree line up into the mountains to create an atmospheric haze.







Track laying

The track installation began with the full scale plot taped down the bench top. The left photo shows the turnouts being placed over the plot to verify alignments. Once this was complete, I carefully cut the plot along the track centerline and traced a line onto the benchtop. The cork roadbed was cut from 3/16" sheet and glued down along the track centerline in two halves using Loctite Power Grab.





Track laying (continued)

Once the cork roadbed installation was complete, I filled in the surrounding terrain with a layer of sculptamold. This creates a more realistic looking terrain rather than flat plywood. The sculptamold was painted with earth colored flat latex paint diluted 50% with water. The latex paint is diluted to help it flow better into the cracks and crevices. I immediately sifted on real dirt that had been pre-sifted to a very fine consistency. When the paint dried, the dirt created "teeth" for additional scenic elements such as static grass and ground foam. Prior to laying track the cork roadbed was sanded flat.



Track laying (continued)

The photo in the lower right shows the completed track work. All track and turnouts are mounted using Atlas track nails. These nails allow easy re-adjustment if necessary and can be removed after ballasting. All the turnouts have insulated frogs. I ran a 14 ga. buss under the benchwork and soldered 22 ga. feeders to track on both sides of each turnout. All connections to the buss were made with suitcase connectors. The track was tested diligently for both smooth running operation and dead spots before ballasting. Prior to ballasting, rails and ties were weathered. Real stone ballast was used in a mix of HO/N scale and real dirt.







Scenic Elements

Scenery began prior to track laying in the deepest, most hard to reach areas. My tried and true hardshell method starts with a carboard lattice hot glued together. I then hot glue brown kraft paper to the lattice. Over that I apply two layers of plaster gauze. I used Woodland Scenics rock molds to cast plaster rocks. These were applied to the hardshell with sculptamold. The final application was a layer of sculptamold to blend in the castings and to cover the rest of the hardshell. The castings were colored with diluted artist acrylics, raw/burnt sienna and raw umber were the primary colors. The remaining hardshell was painted with flat latex paint and colored with acrylic washes.







Scenic Elements (continued)

Ground cover is a mix of real dirt, ground foam, twigs, sagebrush and static grass. Trees and shrubs are a combination of commercial "bottle brush" conifers, scratchbuilt conifers and Super Trees. Super trees were flocked with fine ground foam in fall colors and secured with unscented hairspray. Shrubs and underbrush are leftover Super Tree scraps. I further enhanced static grass by dry brushing artist acrylics on the tips of the grass. This simulates burnt grass, flowers etc. I scratchbuilt the stumps from pine dowel and colored with acrylics.





Modeling Water

A logging scene would not be complete without a river to transport logs. I dedicated an area approx. 20" x 5" for my water scene. I created the river bottom with a layer of sculptamold, sealing the bottom up to the facia. Once dry I painted the river bottom black in the deepest part then gradually tapered to tan at the shore. Stone gravel and random twigs were then glued in place on the river bottom. To simulate water, Envirotex Lite was poured in three stages to a depth of 3/8". I scratchbuilt the "floating" logs from 1/2" pine dowels. The log ramp was scratchbuilt from scale basswood, weathered and glued in place prior to pouring the "water".





Scratchbuilding logs

I needed a number of realistic pine logs for both the water scene and for log cars. I decided it would be fun to scratchbuild them. Starting with 1/2" pine dowels, I first dragged the dowel over a fine-tooth back saw (a back saw has a stiff reinforced back) to create the bark texture. This created a lot of fuzzy strands that I removed with a wire brush and sand paper. For coloring, I painted on a heavy coat of burnt umber tube acrylics that I wiped off while still wet. This left darker bands in the grooves that created a 3D effect. To simulate the bark layer on the cut ends I carefully painted a ring of raw sienna acrylic. The river logs were glued in place before pouring the Envirotex Lite.







Scratchbuilt sawmill

I decided to scratchbuild the sawmill after having no luck finding a commercial structure to fit the space. I designed the structure in CAD and created a scale drawing. The structure was built using scale basswood, and scribed siding. The loading dock was also scratchbuilt with scale basswood. The roof is scale corrugated metal over 1/32" plywood, painted and weathered with acrylics. The windows are from Tichey. The structure was finished with acrylic paints and weathered with pastels. The sawdust burner is an old plastic kit I kitbashed, painted and weathered.







Operations

The branchline has been operational for about 10 sessions since 12/2018. I can operate the branchline with or without a permanent crew member. When a permanent crew member is present, their job is to first sort up to 12 cars to their pre-assigned spots. There are up to 4 trains that will pickup/setout cars from the branchline throughout the session. The permanent crew member will assist road crews with pickups/setouts. If a permanent crew member is not present, prior to the session cars will be pre-spotted and road crews will handle pickups/setouts.



