

# Castle Peak & Thunder Railroad

Article by Dave Sheegog, photos by Pat Raymer unless otherwise noted



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It is hard to remember a time when there was no railroad in the backyard. We purchased this house in 1994 and installed minimal landscaping. By 1997, we were ready to do something a little more intentional. I was 39 years old with three small children and worked as a partner in an architectural firm. Life was quite full, but I wanted to create something special. My sister-in-law requested something to do with Thomas the Tank Engine for her young son as a birthday present. We found ourselves in a model train store looking for a gift, and I stumbled upon a display for outdoor garden railroad merchandise. And the dream was born. Design started in 1997, construction began in 1999, and we hosted our first open house in 2002. There have been many revisions, rebuilds, and additions through the years, and today, through open houses that are free to the public, the railroad has become a community event, attracting thousands of visitors each year.

## Inspiration

Inspiration for garden railroads comes from many sources, some expected and some by surprise. Many modelers have themed their railroads after fond memories from childhood, having grown up close to a railroad or from a fascination for a particular route. I suppose my story is no different. I grew up in Southern California in the 1960s in a newly built tract home surrounded by orange groves. If the wind was blowing in the right direction and you were listening for it, you could clearly hear the routine sounding of a steam whistle and the clanging of a bell signaling the coming and going of trains. However, the passengers of these trains were not headed for a destination but were bound for a "Grand Circle Tour" around a new prototype of family entertainment: the theme park. This new park was Disneyland. I grew up within walking distance from "The Park," as we call it, worked on the canoe attraction during my summer breaks from college, and held annual passes for over 30 years; I guess

*Left: Engine No. 2, E.P. Ripley, pulls into Main Street Station with Partners statue and Sleeping Beauty Castle in the background.*



it rubbed off on me. I never intentionally set out to build a model of Disneyland at my home, but the rich history of Disney films and park structures have served as a wonderful theme for my backyard project.

### Design

I wanted the design of this railroad to have more than just a theme; it should fulfill a predetermined set of design objectives in a consistent and integrated way. I started with a list of must-haves. The overall feeling should be quiet and soothing, more garden than railroad. It should have music and the sound of water. The track plan should be such that you never see too much track at one time. It should not be obvious the train is simply traveling in a circle. Each of the structures should be exquisite in design and execution. It should not feel crowded. Humor, drama, and surprises should pop out to delight the observant visitor. And most of all, it should be fun.

From the beginning, I knew this would be a long-term project and that it deserved adequate design time. I hope you are sitting down and don't laugh too hard, but I first built a scale model of the model railroad. This model was built at 1 inch = 1 foot scale and was a working design model. The overall yard is roughly 62x45 feet, so my model was 62x45 inches. It consumed our dining room table for about a year, being pushed and pulled until I was happy. This model was the tool by which I worked out topography, sight lines for photography, track layout, and major plantings. My wife,

**Right: Stinky Pete mans the stamp mill. The working stamp mill and steam crane add special detail for visitor enjoyment.**

**Above: The gate to the yard was custom designed to represent the "Moon Gate" at Downtown Disney at the Disneyland Resort.**

**Right: Over the railroad's entry is this plaque, which is a reproduction of the sign that greets visitors to Disneyland.**



could push peaks around, ensure tunnels would work, etc. The first two rock projects, Mermaid Falls and Big Thunder Mountain, were constructed using only this model as a guide. Not fully satisfied with the results, I could see that this rough model was not detailed enough to guide the construction process precisely. For the second two rock projects, Castle Peak and the Temple of Doom setting, I built much more detailed models of the rockwork from polymer clay at a larger scale. These two projects went more smoothly. I found that if I had sculpted it accurately at a small scale, I could

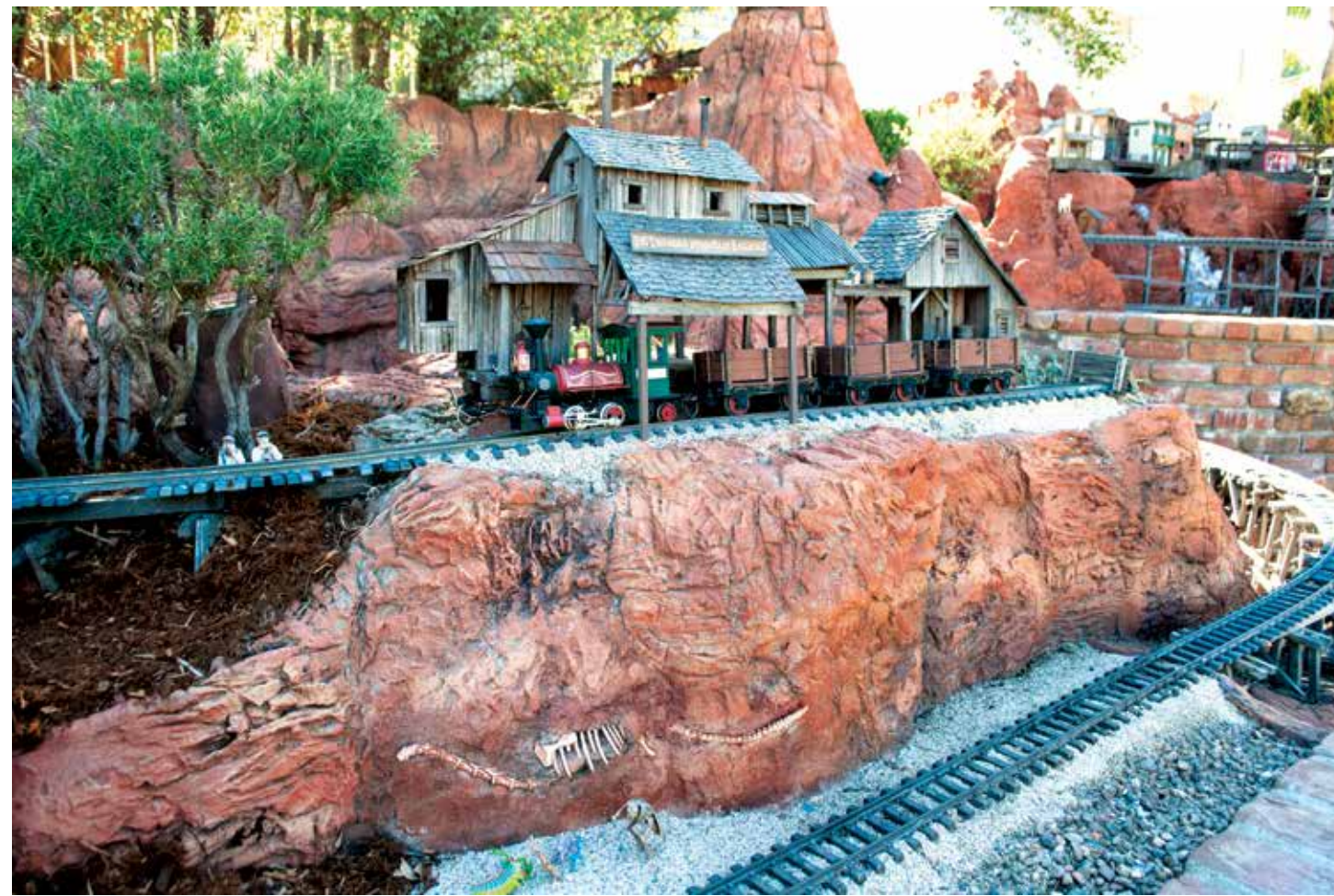
Frances, always supported the project, but she wanted to be sure her lawn did not disappear as the railroad grew. This model helped her see that she would still have a usable yard and there was peace in the home.

I drew the track plan and structures in a CAD program. I would print out the track plan at 1-inch scale, cut out just the track portion, and lay it on the model. Structures were printed on a small scale, and little mock-ups were made of each in polymer clay. The rockwork was molded in non-drying modeling clay. This way, I

confidently reproduce it at a larger scale in concrete. The most recent rock project, Big Thunder Boom Town, was completed in 2023 by a talented rock sculptor named Brian Murphy. Brian has sculpted for Disney at Carsland and Galaxy's Edge, and I am so glad I found him.

### Track

The railroad's design called for raising the main line off the ground by 20 inches, setting it at seat height so that you would not have to be on your hands and knees



**Above: The Big Thunder Station is one of the original structures built 25 years ago.**

to set trains out, and bringing it closer to eye level for viewing. A short retaining wall was built, which also helped separate the railroad from pedestrian areas. I was concerned the fill dirt might settle unevenly, so I decided to screw all the sectional track in place on pressure-treated 2x6 lumber cut and securely assembled to fit the track plan. I had seen this technique in a video purchased at a train show. This solution proved not to be the best as the boards warped and caused derailments. The track and underlying wood were removed in subsequent years, and a concrete foundation was poured. AristoCraft brass track employed San-Val stainless steel joiners for the first five years to ensure electrical connectivity.

Over time, corrosion took its toll, and it became apparent that this would not be a long-term solution. So, I broke down and invested in a resistance soldering unit and soldered jumper wires at the rail joints. This also proved problematic. In 2016, track power was abandoned, and the locomotives were refitted with AirWire batteries and control boards by CVP Products. The transition to battery power has made all the difference in the world. Typically, we only

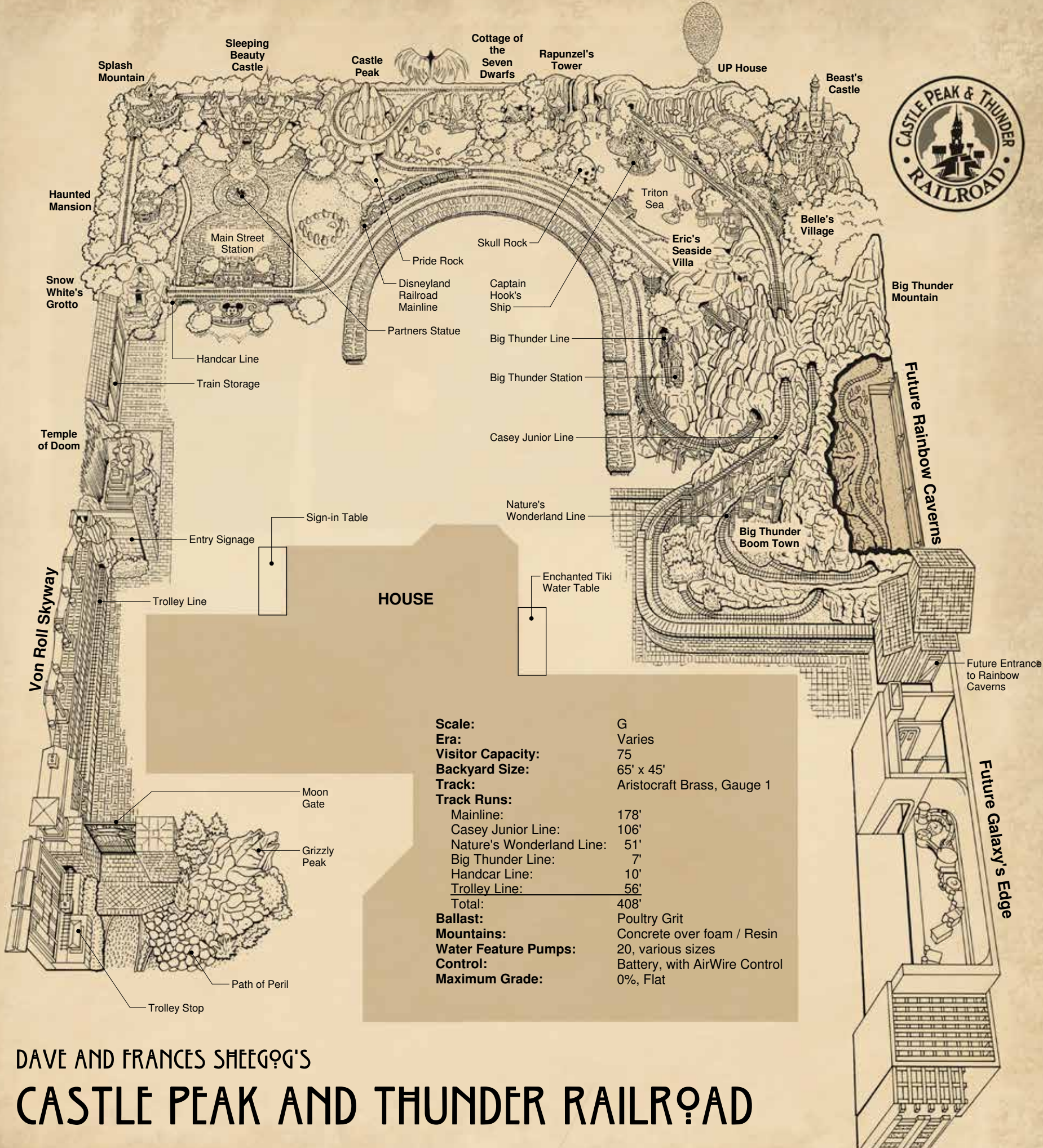
run trains during our open house seasons. The rest of the year, they are stored in an outdoor cabinet. In the past, with track power, getting trains to run after several months of non-use was quite a chore, and many open-house events saw static trains. Now, with battery power, we simply clear the track of any leaves or wild creatures' nests and place the trains on the tracks, and they run pretty reliably. We still use track power at our point-to-point lines, controlled by a shuttle unit sold by RR Concepts. Ballast is granite poultry grit secured in place with a 50/50 mixture of Elmer's Glue-All and water.

### Rocks and Water

After the track was in place and the trains were running, the major rock and water features were built. Each feature was undertaken in separate years. Most of the rocks are concrete over foam, except for the Splash Mountain feature, which is a two-part casting resin. The basic technique is really quite simple. First, cut the foam roughly to the desired shape, leaving room for the concrete. Here is where the design models were very useful. Next, wrap "chicken

wire" around the foam and secure it with baling wire. Sometimes, we would stab rebar through the foam and drive it into the ground to secure it. Once all the foam is in place, apply the first coat of cement and sand, basically stucco, at least 3/4-inch thick to cover the wire and let it harden completely. The second coat of concrete should be as thick as is needed to sculpt the major rock features. As the second coat hardens, there comes a time when it will take the texture of a "skin" rubber mold. The skin should be dusted with a release agent prior to pushing it onto the semi-set concrete. The next day, wash the hardened concrete to remove the white powder release agent and paint the wet mountain with exterior latex paint that has been thinned or use concrete stain. This process is more of an art than a science. If the paint is too thin, then there will not be enough "hold power" in the paint to withstand the weather, and it will appear to fade with each rain. If you do not thin it enough, it will just sit on the surface and look like house paint on your mountain.

Years after all the rockwork was complete, I was lucky to meet a gifted decorative



DAVE AND FRANCES SHEEGOG'S  
**CASTLE PEAK AND THUNDER RAILROAD**

painter named John Rayburn. John has worked extensively for Disney and has painted many of the attractions at Disneyland, including rocks. John added his magical touch to my rocks; in fact, my Big Thunder Mountain is painted with paint left over from the painting of Disneyland's Big Thunder Mountain. How about that! There are nine major rock features on the CP&TRR, each with a waterfall or set of waterfalls. I wanted as much of the sound of water as possible to help mask traffic noise, as our rear property line abuts a busy street. Independent pumps circulate the water for each of the falls. These pumps were readily available at the local home improvement center. Currently, 20 pumps are running on a typical open house day.



Above: The yellow coaches known as "Retlaw 1" were retired in 1966. Here, the author has modeled the observation car, 106, known as the "Grand Canyon." — Author photo

**Structures**

Initially, there were five primary structures on the layout. I wanted each one to be distinctly different, so I set out to learn a different technique for each. The first was The Dwarf's Cottage (wood, plaster, and thatch roof), the second was Sleeping Beauty Castle (plywood, PVC, wood turnings, and cast resin veneer), the third was Big Thunder Station (redwood slats glued together to form walls and left natural to weather), the fourth was Main Street Station (laser-cut acrylic), and the fifth was the Temple of Doom (solid cast resin). I first saw the mold-making and resin-casting technique at a garden railroad convention clinic and decided to try it. I like it because it withstands the weather so well. Since the completion of the original design in about 2008, Belle's Village, Rapunzel's Tower, Beast's Castle, Big Thunder Boom Town, and Prince Eric's Castle have been added, as well as a complete rebuild of Sleeping Beauty Castle and Main Street Station. These later buildings were built primarily with polyurethane foam boards and 3D-printed doors, windows, finials, corbels, and anything better reproduced through 3D-printing. I "build" each structure as a digital model in a program called Revit. From this digital model, I create the vector files that will be used to cut the foam boards with a laser cutter and the 3D files that will be printed for details or other components.

**Locomotives and Rolling Stock**

The Disneyland Railroad locomotives and rolling stock are among the most recognizable worldwide, yet they are difficult to find commercially available. Many made by major manufacturers and bearing the Disney name have little resemblance to their full-size counterparts. Needless to say, I had to build my own. Five engines run on the CP&TRR main line. They are scratchbuilt replicas of the five engines of the Disneyland Railroad; thanks to Steve DeGaetano for his wonderful books *Welcome Aboard the Disneyland Railroad!* and *From Plantation to Theme Park*. These books contain the fascinating history of these steamers and include engineering drawings I used to build the replicas. Much of this construction was documented on Burnsland.com, a website devoted to the Disneyland Railroad. The engines all started with Hartland motors and chassis. The cabs are sheet styrene, and the boilers are ABS tubing. The cab pieces were drawn in a CAD program and then laser-cut. The domes were turned on a wood lathe, and detail parts were purchased from Hartland, Bachmann, Ozark Miniatures, and Trackside Details. I created the graphics in a computer program and applied them to the models using a custom dry transfer system called DecalProfx (PulsarProfx.com).

Map linework by Dave Meeke; Logo and Graphic Design by Andrew Alsbaugh



**Above:** The stone bridge is cast resin with concrete reinforcement. Here, Casey Junior crosses over Triton Sea with Belle's Village to the right and Prince Eric's Seaside Villa below.

Casey Jr. runs on a separate elevated line. This engine did not receive any cosmetic alterations since it was a faithful reproduction. It was built by Accucraft and sold under the Disney name. I removed the undersized, noisy motor, and the grinning locomotive is now pushed by an LGB motor block located in the calliope car. The

cars behind Casey Jr. are all scratchbuilt replicas that I 3D-printed from digital models I created from photographs.

The Big Thunder locomotive No. 4 travels in and out of the mines of Big Thunder Mountain. This little engine began life as the petite LGB Olomana and has been modified to resemble the famous runaway mine train. The rolling stock was produced as follows. The yellow coaches and combine, known to Disney insiders as Retlaw 1, are kit-bashed Bachmann Jackson

Sharp coaches. Reproducing the paint scheme and lettering took some research since the cars were retired in 1966. The freight train, or Retlaw 2, was scratchbuilt using laser-cut acrylic sheets. The benches are laser-cut hardwood, and the canopies are 3D-printed ABS plastic.

### Plantings

As much as I wanted the overall feel to be more garden than railroad, I am a modeler first and definitely a gardener sec-

ond. The irrigation system was installed to allow flexibility, as my master model only identified planting areas and not the exact watering needs of any particular species. The plantings were all purchased from local nurseries. As crass as it sounds, I just replace them if they die. We are blessed with a mild climate, allowing almost anything to grow, and most do quite well. I found one nursery with a wide variety of ground covers, including many sedums, thymes, and mosses. I pick the ones that I think will look good,

considering sun or shade. I put them in the ground and hope they do well. Over the years, we have somewhat refined our gardening skills to help reduce the required maintenance, but this is a work in progress.

### Operation

The original intent was to have the railroad fully automated such that it could be turned on at social gatherings and not need any attention. This never proved practical as someone has always got to keep an eye on things. The originally implemented automation allowed two trains to run on the main line. Each one would slow to a stop first at Main Street Station and then again at the water tower. One train would only leave the station once the other passed a sensor on the opposite side of the main loop, thus keeping a safe distance between the trains. The Casey Jr. line was a double-reversing loop controlled by LGB electronics. As mentioned earlier, I eventually replaced this system with a battery system. Each train has a separate controller and can be stopped and started independently. The side yard trolley and the Big Thunder engine No. 4 run on point-to-point routes and reverse themselves every five seconds.

### Maintenance

All the structures stay outdoors year-round. The major maintenance is in the gardening realm — plants need pruning and often replacement as they get too big or overgrown. If the ponds get dirty, I start the pumps and turn a valve to divert the waterfalls to a drain line. Once drained, I hose the basins out and then refill them. Locomotives and rolling stock are stored in an outdoor cabinet. Structures may need repainting every few years but remain relatively trouble-free.

### Visitor Experience

In 2021, we expanded the visitor experience to begin at the public sidewalk in front of the house. As guests enter the property, they pass a series of eight planter bowls that pay tribute to “It’s a Small World.” Each bowl has a child from a different part of the world with banners greeting guests in the child’s native tongue. The last bowl even has a child from out of this world.

Next, visitors pass a water feature with scenes from the Jungle Cruise as they approach the “Path of Peril” — a series of rock stepping stones with water rushing between them that emanates from Grizzly

Peak Falls. Once past the Path of Peril, guests pass through the “Moon Gate” and walk along the side of the house, where they follow the Von Roll Skyway, which leads them to the entry to the backyard and the first view of the railroad. Here, my wife or a helper checks in each group of visitors, and they are given a scavenger hunt sheet and a pencil. This activity sheet serves as a guide to help them find all the hidden gems that await. On the railroad, every Disney animated classic motion picture and most of the Pixar films are depicted. There are many “Hidden Mickeys” for those dedicated souls who can never get enough.

### Future Plans

The two projects currently in design will be, by far, the most ambitious yet undertaken: “Rainbow Caverns” and “Galaxy’s Edge.” These will be self-contained, enclosed “shows” with a start and finish and will be housed in a controlled environment. Rainbow Caverns will feature the Nature’s Wonderland train that will travel through black-lit caverns with multiple water features, fluorescent glowing waters, and special effects in the dark. At our tribute to Galaxy’s Edge, visitors will be booked on a Star Tours destination to Black Spire Outpost for a date night excursion. There, they will find themselves caught in the middle of a First Order skirmish, complete with a space battle and many special effects. These two additions will differ from anything built to date but will have the same attention to detail and playful character that epitomizes the current railroad. (For more information, visit [cptrr.com](http://cptrr.com).)

### Conclusion

Walt Disney said that Disneyland would never be complete as long as there was imagination left in the world. The same could be said of this project. This wonderful hobby of ours provides as much enjoyment for the creator while working on it as for the guests who experience it. Some say that happiness comes when you are doing what you want to be doing. Building a project like this requires a lot of doing, so I guess I could legitimately call the Castle Peak & Thunder Railroad my “Happiest Place on Earth.”

The Castle Peak & Thunder will be on tour during the 2024 NMRA National Convention, The SurfLiner, in Long Beach, California, August 4–11, 2024. Register today at <https://surfliner2024.org/>.