

**Bridges Bottom  
Story & Pictures by Dan  
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**(Photo 1 - Bridges Canyon bottom of left-hand module.**

Bottoms, and backside, too. What you have not yet seen, will now amaze you. These photos were taken during the assembly of the Bridge's Canyon Module at Winterfest 2004. Designer/builder Bob Pawlak has reviewed this story for errors and omissions. I appreciate his help.

As previously reported, two 3 x 6 foot sections make up the whole display. Because of their size and complexity, weight reduction, while maintaining structural strength, was of prime consideration. In addition to the 3-track mainline which is built to Ntrak specs for connections to other modules, there are three, grade-separated, loops for continuous-running built within the overall length of 12 feet. During operation, the Bridges offer endless opportunities to study the details of the scenery and the trains entering and leaving tunnels and crossing the bridges. The photos give some idea of the design and construction solutions involved.



**(Photo 2) Bottom of Bridges Canyon right-hand module.**

Photos (1) and (2) show the undersides (bottoms, if you prefer) of the left- and right-hand sections of the module, respectively. The framing is one-half inch marine plywood. The brown areas, the undersides of the zero-thickness rivers, are quarter-inch plywood. The lighter colored material is extruded polyurethane insulation foam. Most wiring is in harnesses. Together with the legs, the "hands-off" screens, and a two-wheel transport dolly, the heavier right-hand section "flipping" weigh is about 103 pounds. The other section weighs 2 pounds less. Separately transported are sky boards and power supplies (16 and 27 pounds, respectively). In spite of the large size of each section, almost 18 square feet, the weight has been reduced by use of the lightest weight materials available, by voids - empty canyons, tunnels and other space not needed for structural integrity (for example, see the unfilled area inside the fascia in Photos (1) and (2)), and by avoidance -- the power supplies stand on the floor.



**(Photo 3) Bridges modules standing on edges during assembly.**

In Photo (3), Bob is attaching a leg to the right-hand section (right-hand as seen by the public). Both sections are standing on their backsides as they do when transported in Bob's van. The cross-sectional profiles can be compared. The tracks have been cut flush with the end of each section. The mating section end pieces were made starting with two pieces of plywood temporarily nailed together. Holes were drilled through the two pieces for two 1/4" steel pins used for alignment and 7 pairs of "T" nuts to clamp the sections together. The 1/4The right-hand

module (Photo (4)) is now flipped to the upright position. The holes on the backside allow access to the passing sidings on three levels and the holes on the corner are needed to run trains between the modules. (Incidentally, the sight of trains appearing and disappearing at the rear access ports fascinated toddlers of a certain age). Bob is on the left, Ernie Poole on the right and Dennis Yip is inspecting the scenery." threads of one "T" nut of each pair were drilled out to help maintain alignment and the mating pieces were pinned and bolted together while they were shaped as a finished matched pair. Twenty tracks cross the gap between sections (without connector tracks). Wires cross the gap using mostly 10-pin connectors. Female connectors are screwed to the right section and male connectors dangle on short cables from the left section.



**(Photo 4) Right-hand Bridges module in upright position.**

The right-hand module (Photo (4)) is now flipped to the upright position. The holes on the backside allow access to the passing sidings on three levels and the holes on the corner are needed to run trains between the modules. (Incidentally, the sight of trains appearing and disappearing at the rear access ports fascinated toddlers of a certain age). Bob is on the left, Ernie Poole on the right and Dennis Yip is inspecting the scenery.

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