Camp 4

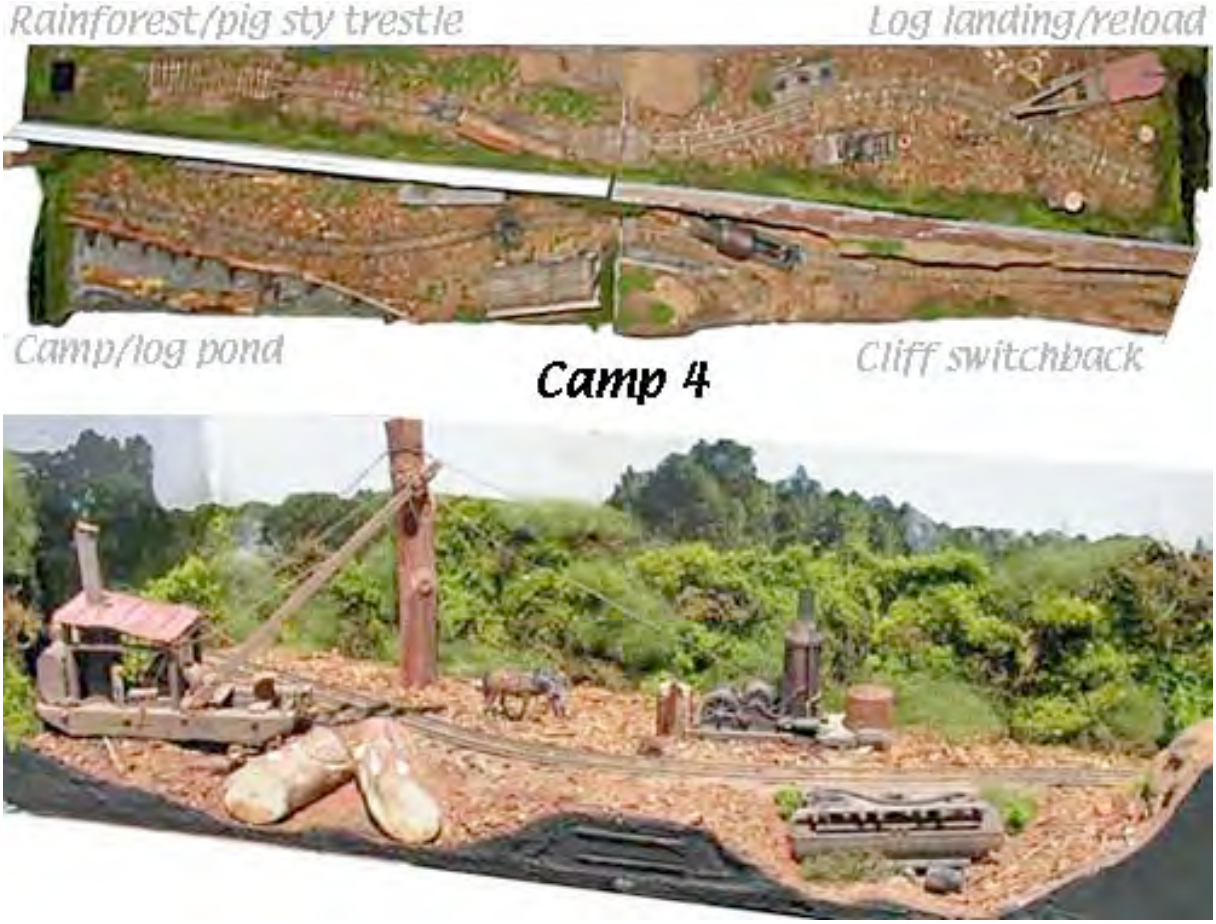
This is a quick over-view of the "Camp 4" layout, built during 2000/2001 for the 2001 Australian Narrow Gauge Convention "Layout in a Box" competition.

The "Layout in a Box" competition was an intriguing challenge set up by the organisers of the 2001 convention. The rules for this "special category" were:

1 The layout must not exceed 13" X 19" X 9" overall when packed for transport. This size was dictated by the size of the average allowable domestic airline carry-on baggage dimensions.

2 The layout could be to any scale, and depict any prototype. The only requirement was that it must represent a Narrow Gauge Operation. (This was for a Narrow Gauge Convention after all ;-))

3 All equipment must travel in the allotted space. This includes trains, layout, power packs, throttles, lighting rigs, (if included), everything had to fit into the 13" X 19" X 9" space.



Design

When designing any small layout, everything has to work together. Every idea has to be a good one, simply because you do not have the space to waste. I have a personal bias towards logging, so the theme of the layout was pretty much a foregone conclusion. But how to get a decent amount of interest into a layout that had to fit into such a small space?

The "Eureka" moment came when the idea hit that anything above visible eye level was wasted space, and could be used to "interleave" the modules together for packing. With this also giving an instant doubling in length of the layout, and railroads generally being better suited to fitting in long thin spaces, the stage was set.

The overall size of the box was constricted by the competition rules, and once the decision was made on what the theme would be, and thus what equipment had to be

carried, provision was made to house said equipment. The drawer idea was taken directly from the Pro Sound and Lighting world, where sleeve type drawers, mounted in 19" rackmount cases, are a regular feature.

The size and design was dictated by the dimensions of the throttle and power supply primarily, as they were the biggest and heaviest items. Locos, rollingstock, and assorted other items were then "jigsawed" around until a nice fit was found.

So, a box of known dimensions, minus the room required for the drawer, equals the space available for the layout. Final dimensions were 8" wide X 10 1/4" tall X 18 1/2" long. 2 modules, interlocked together, fit this space, and unfolded to give a layout 8" wide X 37" long. The space is set, let the trackplanning commence!

Being unashamedly small in real estate, Camp 4's trains are equally so. One loco and two 24' cars are a full train. In HOn30, that meant that the layout was around 3 train lengths from one end to the other. Just enough room for a train length switchback, and a pair of points ;-)

A question still nagged at me though. How could I plausibly explain away so many tracks in such tight proximity? To build this layout as one scene would destroy any illusion of going anywhere. The donkey winch could haul the logs to the log pond, why would we even need a railroad?

The solution to this problem lay in a concept already proven by Broughton Vale Tramway, and espoused by many US modellers. By breaking a small layout up into smaller scenes, deliberately viewblocked off from each other, the small layout designer can force the viewer to concentrate on one scene or another, but not both simultaneously. This means that to see everything, the viewer must actively pay attention, move around to get the best vantage point for each scene, and all the while be blissfully unaware that the scene they have just viewed, depicting some geographically far flung location, is actually no more than a few inches from his or her current viewpoint. This technique is especially suited to layouts which are displayed at or near the eye level of the intended audience.

So, with the ground work done, the "usual" modelling tasks of selecting buildings and structures, handlaying track, trying new scenery techniques, and tuning rollingstock commenced. But that's another story... ;-)

Lightweight Construction

As a layout, Camp 4 did not seek to break any new ground for model railroading. However, as the competition specs suggested a small lightweight design, the opportunity to try something different was too great to pass up.

Art supply stores have been selling Foamcore for a while now, usually for the purpose of mounting pictures in frames. For those who have not heard of Foamcore, it is a sandwich made up of a core of expanded polystyrene foam, faced with thin cardboard on either side. Here in Australia, it is generally available in 3mm and 5mm thicknesses. Sheet sizes may vary, but common sizes appear to be 20" X 30", and 40" X 60".

As a material, it carves with a sharp X-Acto knife or similar, takes acrylic and spray enamel paint well, and can be laminated together using regular PVA glue. (Just as with paper products, weight the laminations down flat with heavy objects such as books while they are drying).

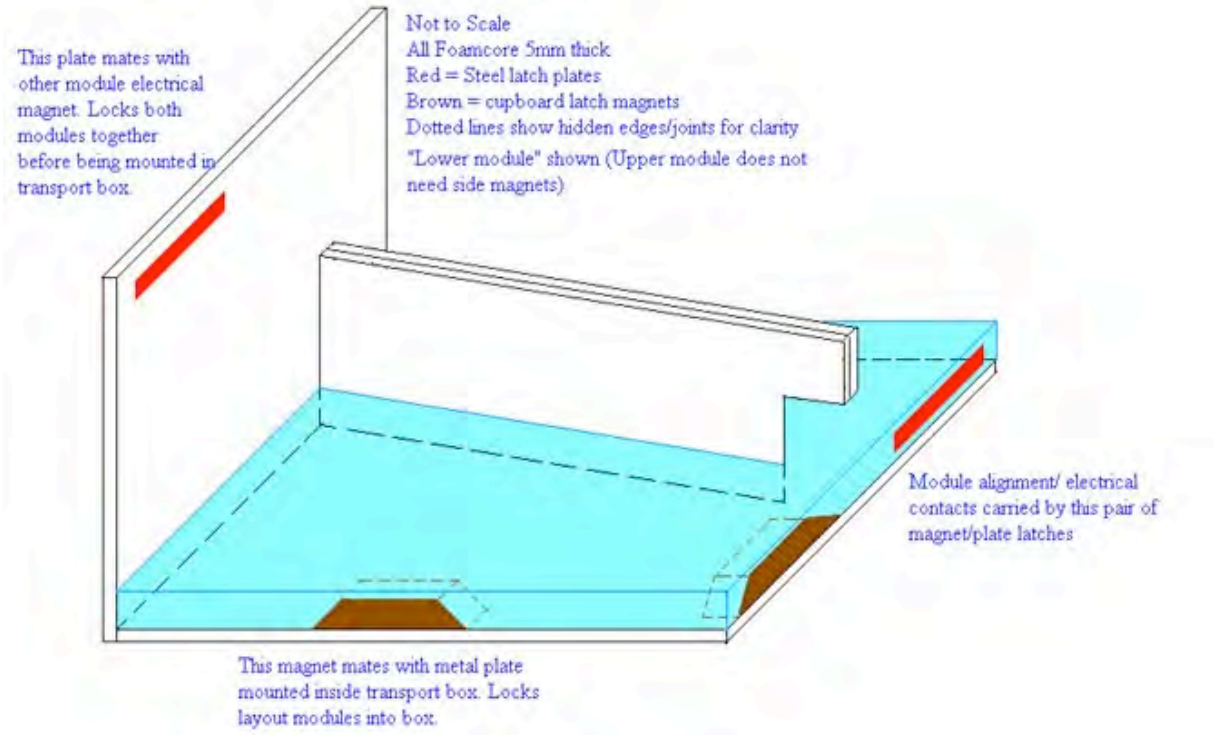
In the case of Camp 4, the entire layout, transport box, and equipment drawer is built of 5mm Foamcore The box was quickly put together in one night, (pretty much designing as it was built ;-)), using a hot glue gun to

join the pieces. The carpet was mounted by gluing one of the edges with hot glue to anchor the carpet, smearing a thin layer of PVA glue over the Foamcore surface, and then carefully laying the carpet down, ensuring that the carpet was kept taut, and that there were no air bubbles or wrinkles.

The equipment drawer was similar in construction. The base, and 4 walls were assembled first. The location of the throttle and power supply were then decided, and smaller pieces of Foamcore strip were cut to length and hot-glued in to form dividing walls. From there, the other pieces of equipment were test fitted until a suitable arrangement was found. Guidelines for dividing walls were drawn on the inside base of the drawer, and measured for length. Suitable strips of Foamcore were cut and mounted with hot glue. A strip of carpet was then mounted on the "front" face of the drawer, and it was finished.

The rough diagram below (not to scale), shows the basis of the module design. The centre viewblock, formed with 2 layers of Foamcore laminated together, acts as a gusset, giving the base/end Foamcore joint it's overall strength.

The light blue area represents a sheet of 20mm thick extruded foam, which was used to give some space for belowtrack- level "earthworks". All Foamcore joints were made with regular hot-glue. If deemed necessary, some light 20mm wooden square doweling could be used to reinforce the base/end 90 degree joint.



Electrical & Mechanical

Being so small, and built in 2 halves, Camp 4 presented many of the challenges familiar to modular layout builders, but with added wrinkles. For example, how to you wire and

connect modules, when you do not have any room on the "underside" , (or the top side for that matter! ;-)), of the module to mount wiring looms, connectors, and suchlike? How do you ensure alignment of 3 separate tracks across the module joint, when many of the regular solutions call for protrusions which would interfere with the transport box? And as a bonus, if you can operate from both sides of the layout, how do you know which physical direction the "reversing" switch on your throttle refers to?

The technique for solving these problems was to attack them one at a time. The big issue was that once a solution was found, building it into the layout usually called for a specific sequence of assembly, so that all of the mechanical and electrical items worked together.

I should point out that while the techniques used on Camp 4 aren't "groundbreaking" in their approach, I haven't personally seen any modellers or modular layout builders use them before. (I stand to be corrected, and will happily be so). Remember, basic principles and techniques, combined with a healthy dose of "lateral thinking", can often overcome seemingly complicated and/or expensive model railroad problems. Firstly, the trackplan was devised early on, and accurately plotted on the Foamcore base sections. All of the appropriate locking magnets and steel plates were then mounted.

At this point, a decision was made as to which of the 2 modules would be the "lower" one. Said module recieved an extra pair of magnets, to mate with the metal plates mounted inside the transport box. This system would ensure that when inserted correctly, both modules would be firmly locked inside the transport, and would not be able to "slip" out during transport.

Wiring looms were then constructed, and linked to the magnet systems as required. Because the track locations were marked, feeders could be accurately located and soldered to the loom. When the time came to lay the extruded foam on top of the foamcore bases, (covering the already installed main wiring looms in the process), holes were punched, and the track feeders were inserted through them. Thus, when trackplaying, (oops, I mean tracklaying ;-)), time came, the feeders were already in place, ready to be soldered to the rail.

The "upper" module required one extra item be added to the wiring loom assembly sequence. 2 pairs of red L.E.D.s were wired up "back-to-back", much as many throttles have as direction indicators. One L.E.D. assembly was mounted on each side of the layout, so that it could be seen just below the scenery edge. These lights served 2 main functions.

1 Even without a train on the track, they could be used to confirm if the intermodule magnets were passing track power from the "lower" module,(which had the power pack and throttle connections), to the "upper" module, (with the L.E.D. indicators).

2 When a train runs through the viewblock, and appears on the "other" side of the layout, the red L.E.D.s on the layout always confirm which direction the train is heading.

As a silubrious by-product of using the

magnets to pass trackpower, and assemble the modules together for operation, the very same magnets happened to be in the perfect position, when the "upper" module was flipped upside down for transport, to lock the 2 modules together. Transported in this fashion, the ends and bases provide protection for the scenic areas, even before the transport box is slipped down over the modules.

Accurate track alignment across the module joints appeared to still be a sticking point, (as it is with any multi-part layout ;-)). However, the magnets came to the rescue again. Bearing in mind that the modules are "flatbottomed", and are designed to simply sit on a table or shelf for operation, the track level is always 25mm above the support surface. (5mm of Foamcore + 20mm of extruded foam base). So vertical alignment isn't an issue. As the track is handlaid, it was easy to mount a 10mm wide strip of Printed Circuit Board, (P.C.B) across the module joint edges, (directly above the magnet/plate sets). Each module recieved one strip of PCB, which spanned the entire 8" width of the module. The modules were assembled, and all of the track was laid in one sitting. When tracklaying was complete, the tracks crossing the joint were soldered to the PCB strips. Isolating gaps were cut in the P.C.B. to eliminate short circuits between the tracks. Then the rails were cut in-between the modules, directly aboce the module joint, with a cutoff disk in a motor-tool.

The result of the above construction details is a pair of modules which interlock together for transport. When removed from their transport case, the "upper" module is simply flipped over onto it's base, and pushed together with the "lower" module. When the magnets "click" together, a quick visual check ensures that the track "butt joints" are in horizontal alignment. Then it's plug in the power pack and throttle, put a train on the track, and let's go logging! ;-)

Unpacking

"OK, so how does it all go into the box?" That was the most common question asked by the convention attendees, when they cast their eyes over the competition entries. The following is how Camp 4 did it.

Here is the box in question (above). Please note the hole towards the top. This is your first clue that this is no ordinary carpet covered box.

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The hole gives a fingerhold to slide out a drawer. This drawer contains everything not glued down to the layout proper. This includes a loco, 2 trains worth of rollingstock, the throttle, powerpack, a steam donkey winch, a steam log loader, and a PECO track cleaning block and graphite stick, among other things. Note that the drawer has specially shaped partitions for each item.

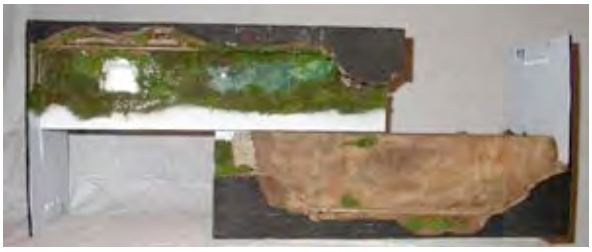
Now comes the clever bit. Using some cutouts thoughtfully provided in the ends of the box, and a hole in the bottom of the drawer recess if required, the box is lifted up to reveal what appears to be recognizable scenery.

While we've got the chance, here's the "inside story" on the box itself. The box dimensions are just under the required 13" X 19" X 9" overall. The carpet ensures that the box "sneaks up" to the dimensions, and if it were to be packed tightly, would have a protective shock absorbing layer.

Note the small dark rectangle on the inside of the box. This is the metal plate half of a cupboard magnetic latch. There is another one opposite it, mounted on the inside face of the other wall. These, plus the magnet halves, which are located in the "lower" layout module, ensure that layout won't slip out of the box "sleeve" when being carried.

Now this sort of looks like a layout.. Ahh, now I see.

If we flip the "upper" module over, and mate it with the "lower" one.



Taa Daa! we get one HOn30 Layout in a Box! ;-)

Hopefully the overview below should clear some things up. At bottom left we have a log pond dump, and the Camp 4 log camp.

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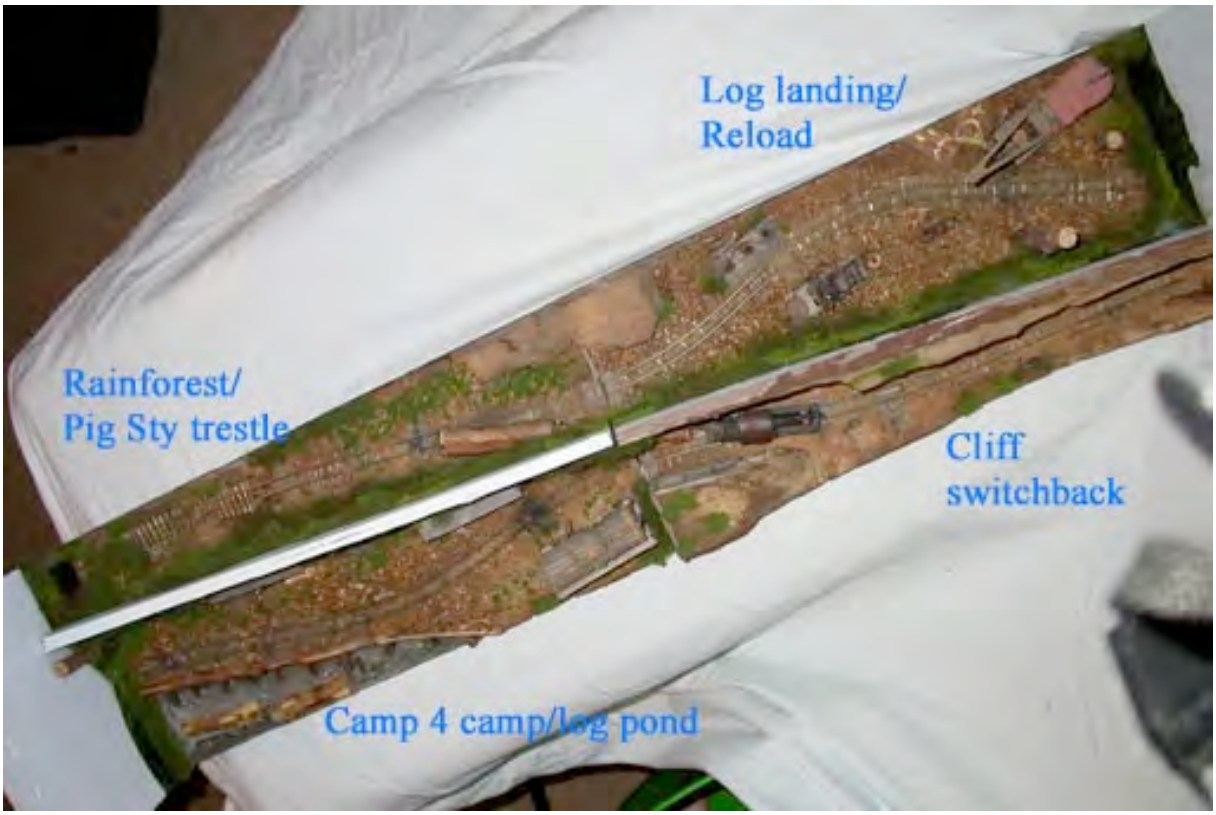
Moving to the right, we pass the wooden water tank, past the wood cribbing, (past the brass Joe Works Shay ;-)), and out onto the Cliff switchback. From here we back up (to wards the left), through the centre viewblock, (where the log train is sitting), and arrive in the rainforest/pig sty pier trestle scene. Changing direction again, we head to the top right of the picture, arriving at the log reload. You can see the below track water tank, 2 drum Washington Iron Works donkey winch, and the AH&D A frame loader.

4 scenes, a pig sty pier bridge, a log reload featuring ground snigging operation and A frame loader, a log camp, and a log pond. And all of this, in 8" deep X 36" long.



Camp 4 Gallery

These are just some random pics of Camp 4, taken as I had the chance, while playing with a new toy camera.

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Welcome to Camp 4. This is the home of the railroad. Small as it is, it has everything we need to get the logs downstream to the mill. The log pond is a vicious brew of Enviro-Tex and Selley's "All Clear" silicon sealant. The two camp huts are actually only one Master Creations "McCabe" bunkhouse. The watertank, at right is a scratchbuilt structure, using leftover wood from a John Rendell kit.

As our small Class A Shay drags a load of logs up the Cliff switchback, we can see some of the inhospitable terrain the loggers had to conquer.

Here's a overview shot of one of my favorite scenes on the layout, the pig sty pier trestle at Rainforest. One of the loggers was a keen photographer, and some period sepia tone pics of the early operations have recently been unearthed.

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Here the Class A Shay prepares to head from Rainforest to the Cliff switchback.

Many years later, this is how the pig sty pier trestle looked when photographed by logging researchers. Note that time has not diminished the flow of water over the waterfall ;-)

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The log landing at Camp 4 is a curious affair. While a small W.I.W. 2 drum wideface yarder "ground snigs" the logs in from the bush, there is a A frame loader on-site to speed loading of the snigged logs. Note the below track water tank, which makes use of an old (N scale) tank car. The inspiration for this came from a emergency watertank located on the Cass Scenic RR, and an article on modelling it by Pete Moffet in the May '98 NMRA Bulletin.

The A frame loader is a scratchbuilt unit, one of the first ever built by the Broughton Vale blacksmith for the smaller Camp 4 operation. Much has been learned about winch design and construction since then, but this loader continues to give good service.

Because the W.I.W. winch is only ground snigging, there is no "trip" or "haulback" line in place to get the choker back out to the bush. So, at least one horse continues to work in the bush at Camp 4, even if it is only to haul the mainline back out.

Camp 4

Another period picture discovered recently, apparently from the camera of the same logger as previously. Note the dissimilar drum drive gears on the W.I.W. winch. This may have been due to a rebuild at some stage during it's career in the bush. Note also the siphon hose on the deck of the water tank. It is unclear as to whether the tank was used mainly to water the loco, or to provide a water supply for the yarder and loader winches.

And finally, a shot that suggests that small modular layouts allow photo opportunities and angles that larger permanent layouts may find hard to achieve. This long shot was taken looking up the track towards the log reload.

We hope you've enjoyed this look at Camp 4. For info on Camp 4's parent layout, please visit the Broughton Vale Tramway notes.