

John Rumming - My Helix.

This document describes the making of my helix for my Model Railway layout. I have to do two of them, one for each side. Here is a pictorial and guideline that I used to build it. I also used Geoff Bell's 'helix calculator' to give me a good estimate of the angle I would encounter. It can be found on the Australian_N_Scale email group through Yahoo.

I searched for the size that I required. I found that 6mm MDF was ideal for the helix rises. I knew that I could go to 900mm across maximum, so this became my base measurement. When I went to the hardware store, I found that the 6mm MDF was 1830 x 915mm in square. This is ideal as if you cut the board straight down the middle, you will get 2x 915mm x 915mm perfect squares! An extra 15mm was very nominal, so I went with this.

You will also notice that the wood was cut with an angle on one side. This meant that the track and fascia of the layout would come in very nicely to 600mm, the width of the layout boards. I did the base around the MDF and put on the legs (Fig 1).

Fig 1.



Before you cut the wood for the helix so you can get inside in case of accidents, mark the middle of the board, drive a nail in the center and then draw circles from the edge coming in. This will be the guide lines for the track, as the track here will not have any underlay on it. I had a straight bottom layer and the helix started on the inside. Cut the wood for the rise before you go to the next step.

Fig 2.



I made the inside cut-out 62cm. This is a good size for an average sized person to get up inside of. I then made 4x 45 degree supports. I did this so that the supports will take the pressure of the uprights and the other layers (Fig 2) without depending on the strength of the bottom layer alone. Drill the holes through the top and halfway into the supporting wood for the uprights to sit neatly and tidy in. (see Fig 5)

Fig 3



Here are the next sections for the helix already cut. There are 6 sections here, making 7 sections all up. The finished elevation will be 48cm above the point where it started off.

You can see the drawn circles for the guide of the tracks. On the right of each one there is also a cut across the board so as they progress up, the boards will butt together.

Fig 4



Lay the first row of tracks. I have a loop on the bottom and the helix on the inside. As the trackage gets to the next level, it will move out one drawn ring. Determine where the tracks are going to enter the board and exit. I used a program called XTrackCad as it can print to a scale of 1 to 1 so you can print the sections and place them onto your work to get the track work right.

Fig 5



Once most of the track work for the first layer is in place, then put the uprights in. These should slot neatly and tightly into the slots you drilled earlier. To make the levels lock into place, then put one nut and washer on the bottom and another on the top. When you tighten the nuts up in a minute, then they will lock the wood in place.

Now my distance to the next level is 6cm. This is the height of the well wagons I have with 2 containers on it, plus about 1cm as spare gap. As the far upright in the

above picture is on the level surface, then each level must be 1.5cm high. This makes one circuit 6cm high from each other.

Fig 6



Fig 7



On the end where the connector piece for the next section is to go, use 2 pieces of 19x19mm wood about 10cm long to connect to the next one (Fig 6). If you don't, the pieces will twist opposite directions and will not line up. I also used self tapper screws to hold down the rail as these have a flat bottom and low curved head, so the wheels and other items such as the trip pins will not foul them. Near where the joins are, I then use the nails as they hold the track perfectly in line. Adding the next section is the tricky part!

Put the nuts and washers in place for the next section. Move the track to one side. Be careful not to damage the sleepers. Slide the next level into place and place onto the nuts. Secure the connecting sections with screws (Fig 7) and continue laying track. Adjust the height to your minimum as you go screwing up or down the nuts. When happy, tighten them. Continue to the top layer.

Fig 8



Fig 9



Fig 10



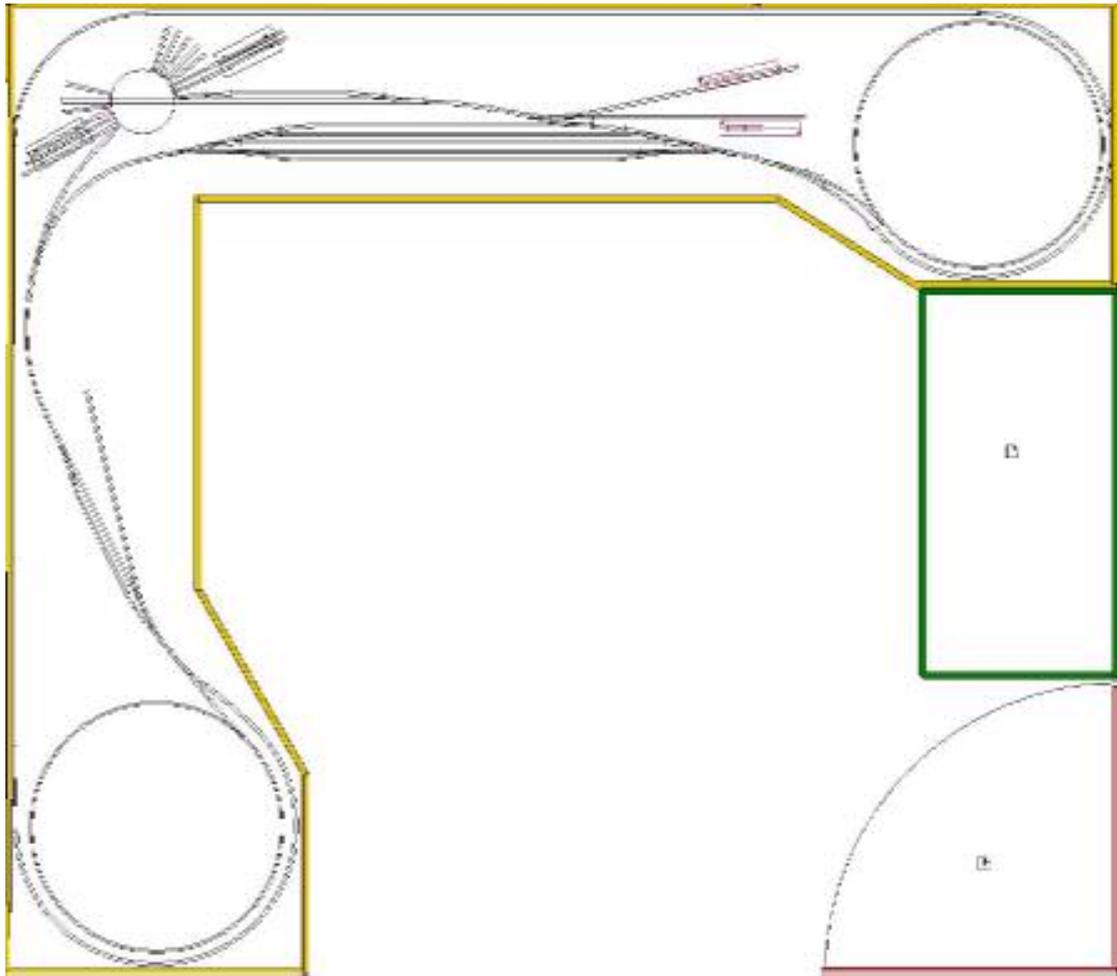
Fig 11

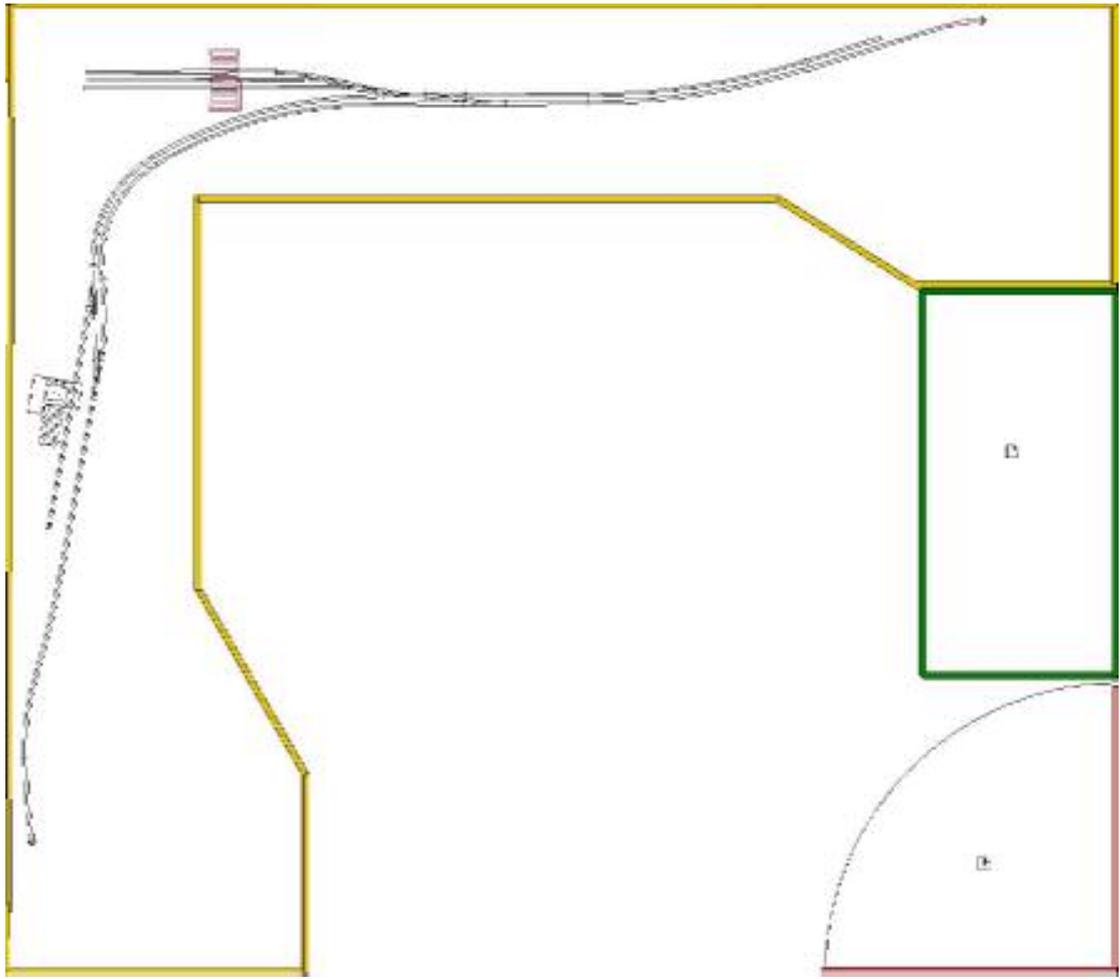


And there you have it. Test run a train to make sure all joins are connected for continuous running. Below is the track plan that I originally was working to. As most of you know, the track plan has changed in some areas due to some restrictions when laying the track. You can see the helix's on both side going from the bottom to the top area. I will be taking photo's of the layout when all the track laying has been done so you can see the helix's in place and the job they do.



Panoramic stitched picture of the layout.





Points To Remember:

- Draw circles on the board before cutting out the center for guidelines.
- Find the tallest carriage and add 10% to the height. This is your vertical distance.
- Leave space on the sides for accidents. If the carriage falls, let the wood catch it.
- Diagonal struts take the weight of the helixes.
- Lay track one layer at a time. Try not to rush it, if you make 1 mistake like not lining up the tracks, it will ALWAYS be a problem.
- Threaded rods make adjusting the layers and heights easy.
- Make all the sections of the wood the same shape, size and keep all the drill holes in the same place too.
- Work out the places where the track will enter and exit the helix.