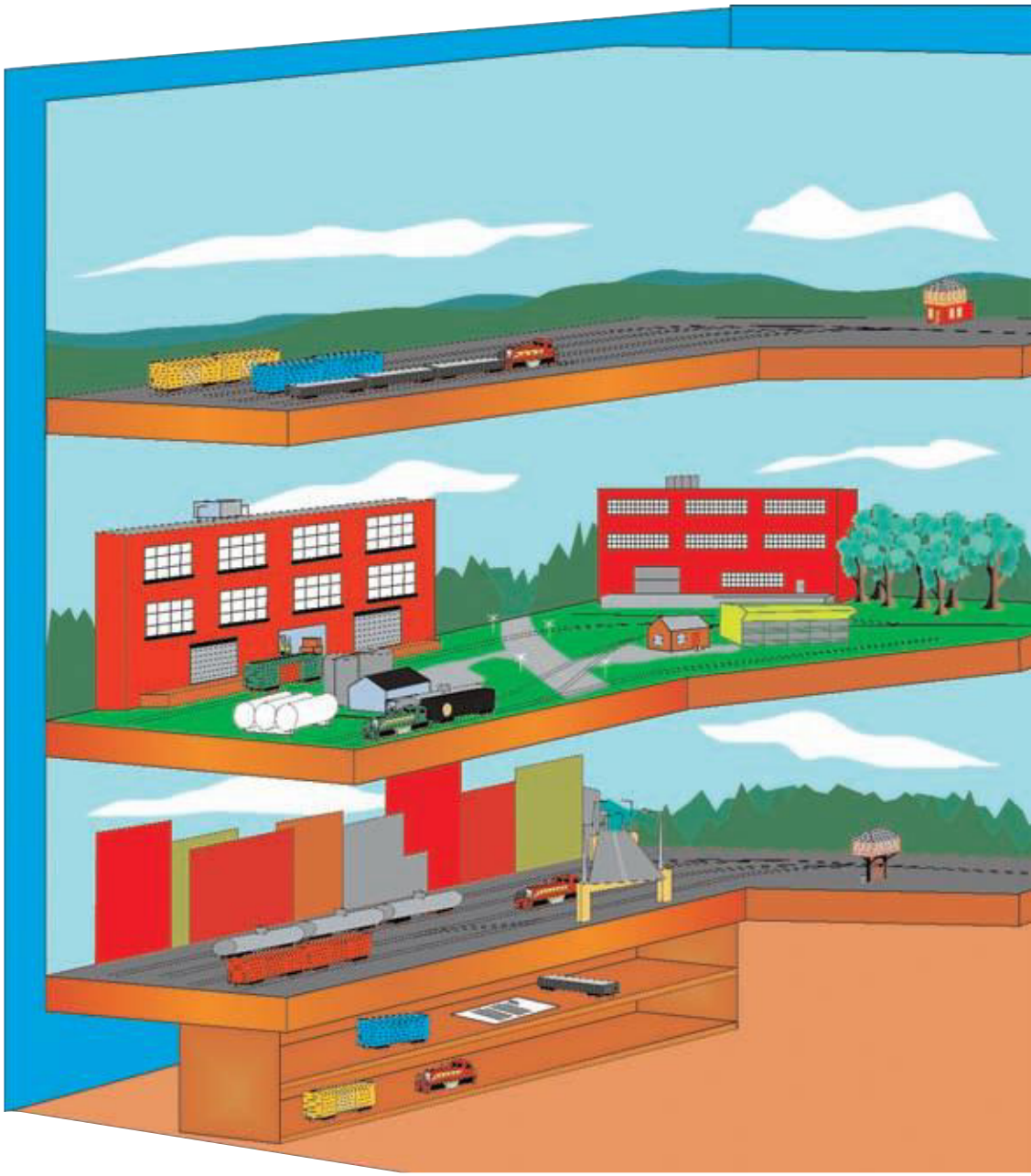
The L&N and Southern RR:

By Carey Hinch

Illustrations by the Author



Let's suppose you have a spare room or a corner of the basement. If the attic ceiling is high enough, maybe... you can start a layout! A dream layout in two rail O scale. Think it is out of reach? Look no further, a simple solution to cramped space is the helix. A helix switching layout has numerous advantages compared to an around-the-wall design. The most obvious is space usage and the ability to run trains with no duck under. By utilizing a multideck design, scenes that would take considerable space to string along in a layout room 20' x 30' can fit in a room 11' x 14'.

What's In A Name

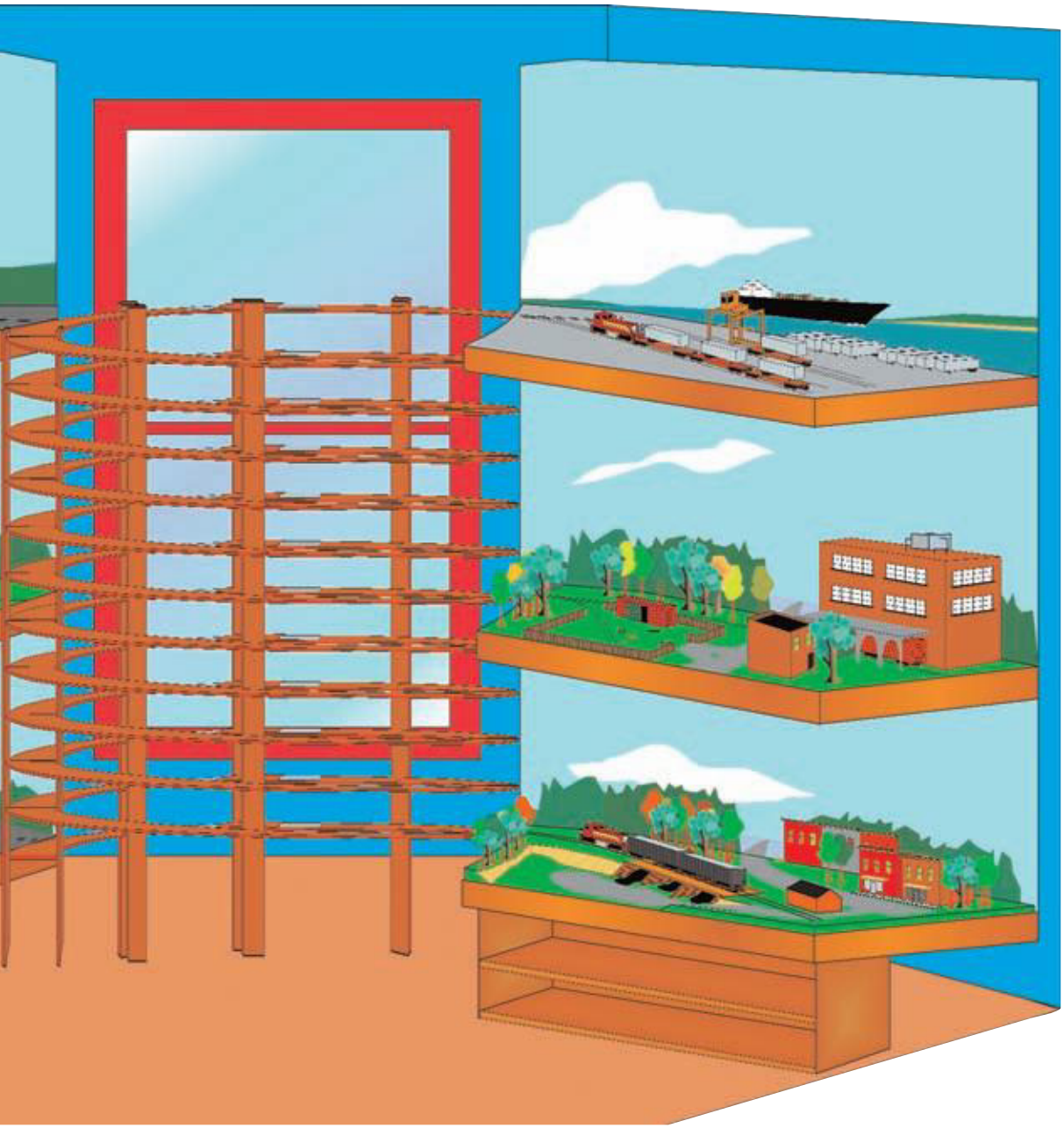
This helix design, with six switching levels, includes upper and lower staging yards. It is a basic point-to-point railroad. The helix allows the operator to traverse from any given level to another. The helix begins at the lower L&N yard and progresses at a 3.15% grade to each successive level to terminate at the TOFC yard. The 3.15% grade is well within the parameters of the Atlas RS-1 or SW8/9 series engines. Minimum radius on the helix is 36 inches. The Atlas #5 switch can be modified (shortened to the points and frog) to fit into the helix curve so a diverging line can feed each level. Turnouts are #5 throughout. Simple open-frame grid construction can be utilized for the level sections. Plywood or foam board can be used for the top of these sections. The helix is, in short, a circle which could be "cookie" cut from 4x8 foot sheets of ½" or ¾" plywood. I have noticed there is even a manufacturer of a plastic helix system that could be used for O scale.

Tools and Gadgets

Anyone with the slightest knowledge of a jigsaw, drill, screws, and a square would have little trouble planning and assembling the helix and level sections. I think the intimidation lies in the thought of the helix. Much has been written on the virtues of helix use in layout design and articles have

A Switching Layout Built on a Helix

An O Scale Trains Magazine Contest Entry



appeared in many magazines over the years on constructing a helix. See the sidebar "Round and Round We Go...". If desired, this layout could be built in stages to facilitate money and material by only building as much of the helix as is necessary to go to the next level-section. Layout wiring would be minimal with DCC. Conventional block wiring could divide the layout into blocks for each level-section. The helix could be divided into blocks allowing a train to hold a level-section while another passes on the helix. Turnouts could be controlled with ground throws or remotely by Atlas switch machines.

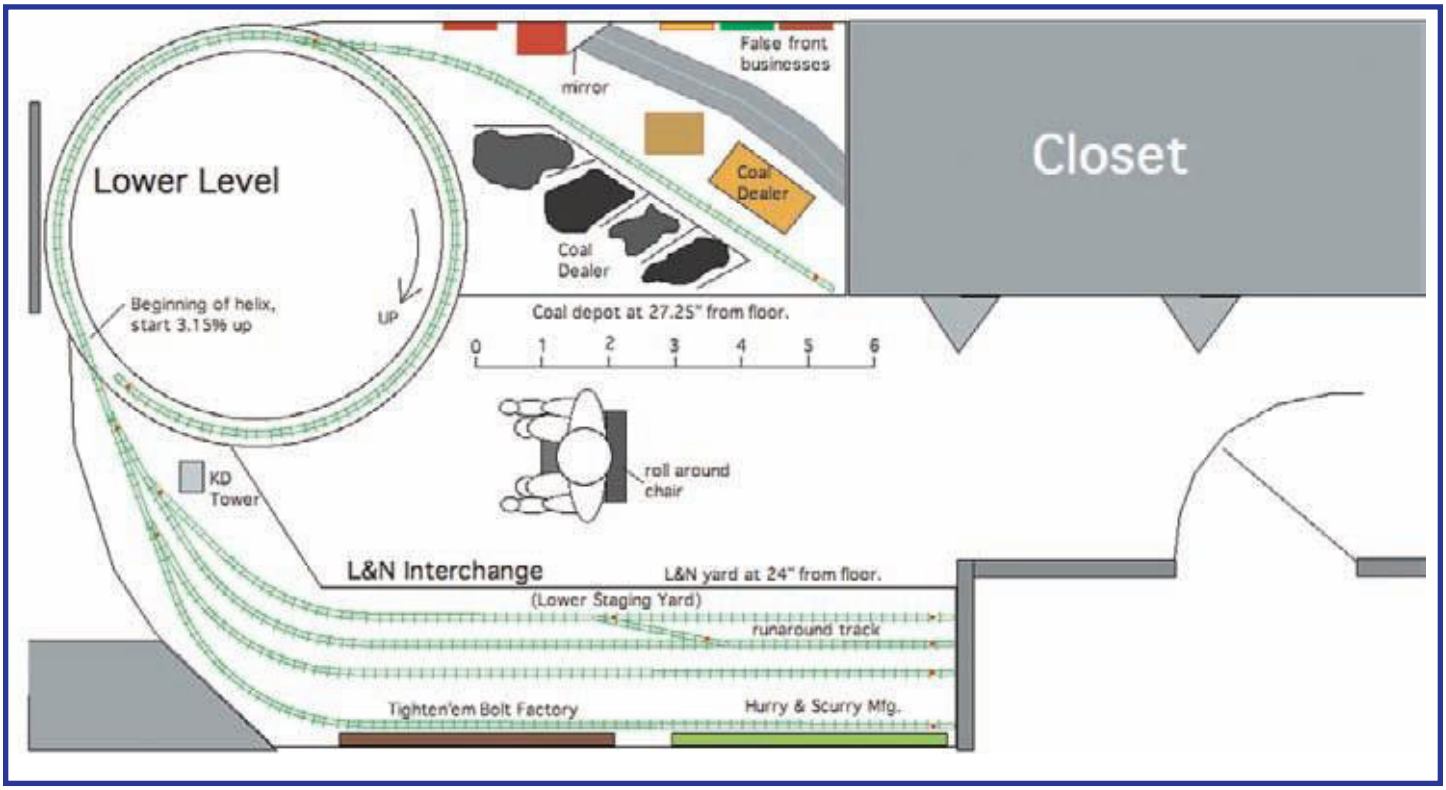
Variety of Life

The level sections can be highly diversified in structures and scenery. The height difference between level sections is around 20 inches. The L&N yard would begin around 24 inches from the floor. This would put the TOFC yard at 69.25 inches from the floor, near eye level and still reachable. While at 24 inches the L&N yard is low, a roll-around chair would make it easier to view the first three levels.

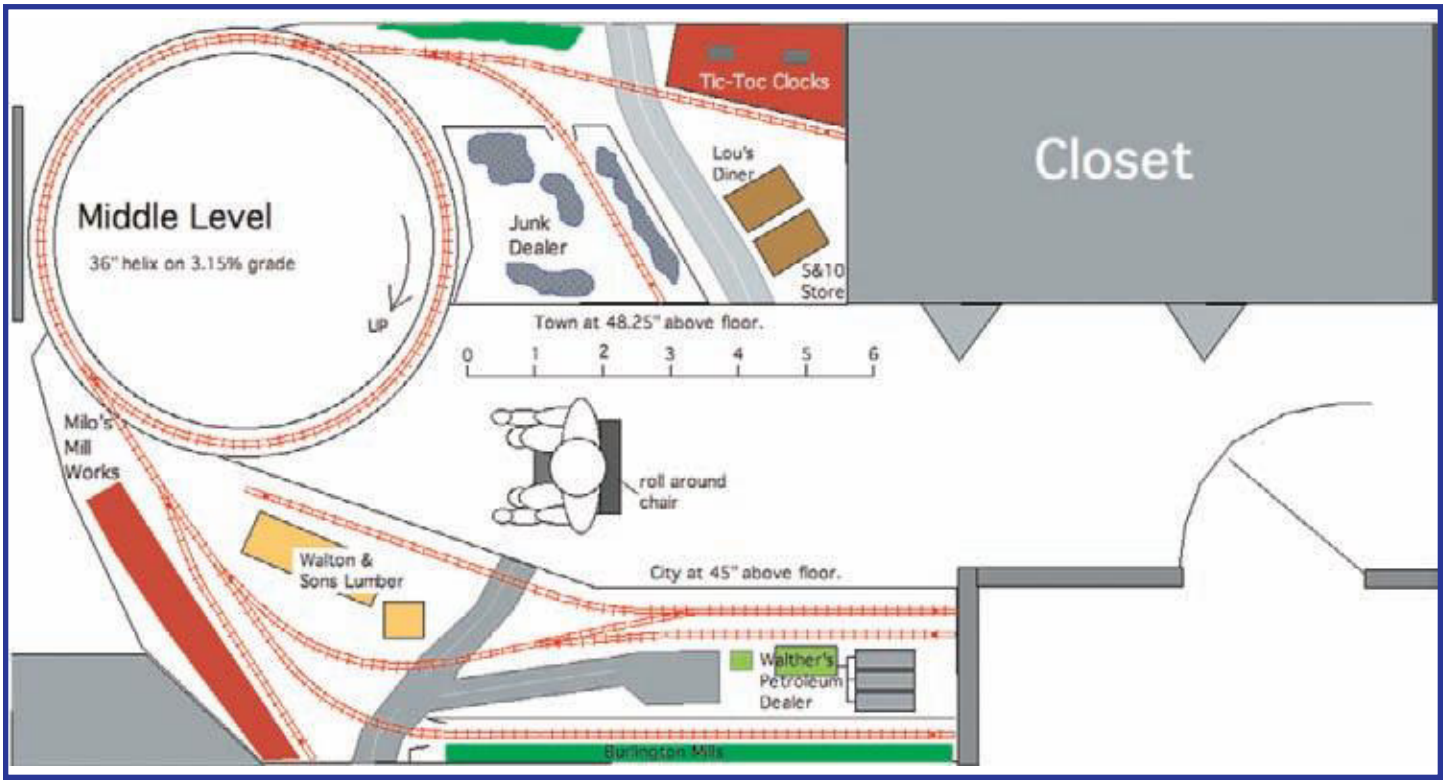
The L&N and Southern yards are essentially fiddle yards. A car/card system for train routing would function well here. Rolling stock can include almost any car made with exception of the very largest 89'6" cars. A time frame for this layout could be set from the 1920's to today. Two operators could move easily in the wide isle space.

Reaching the backs of level-sections is easy since they do not go much deeper than the NMRA's recommended three feet. The back of the helix is another story. At six feet in diameter the helix is a spread. Since the main level section starts at 24" off the floor, the front of the helix section would be around 30" from the floor. This could vary since not everyone is

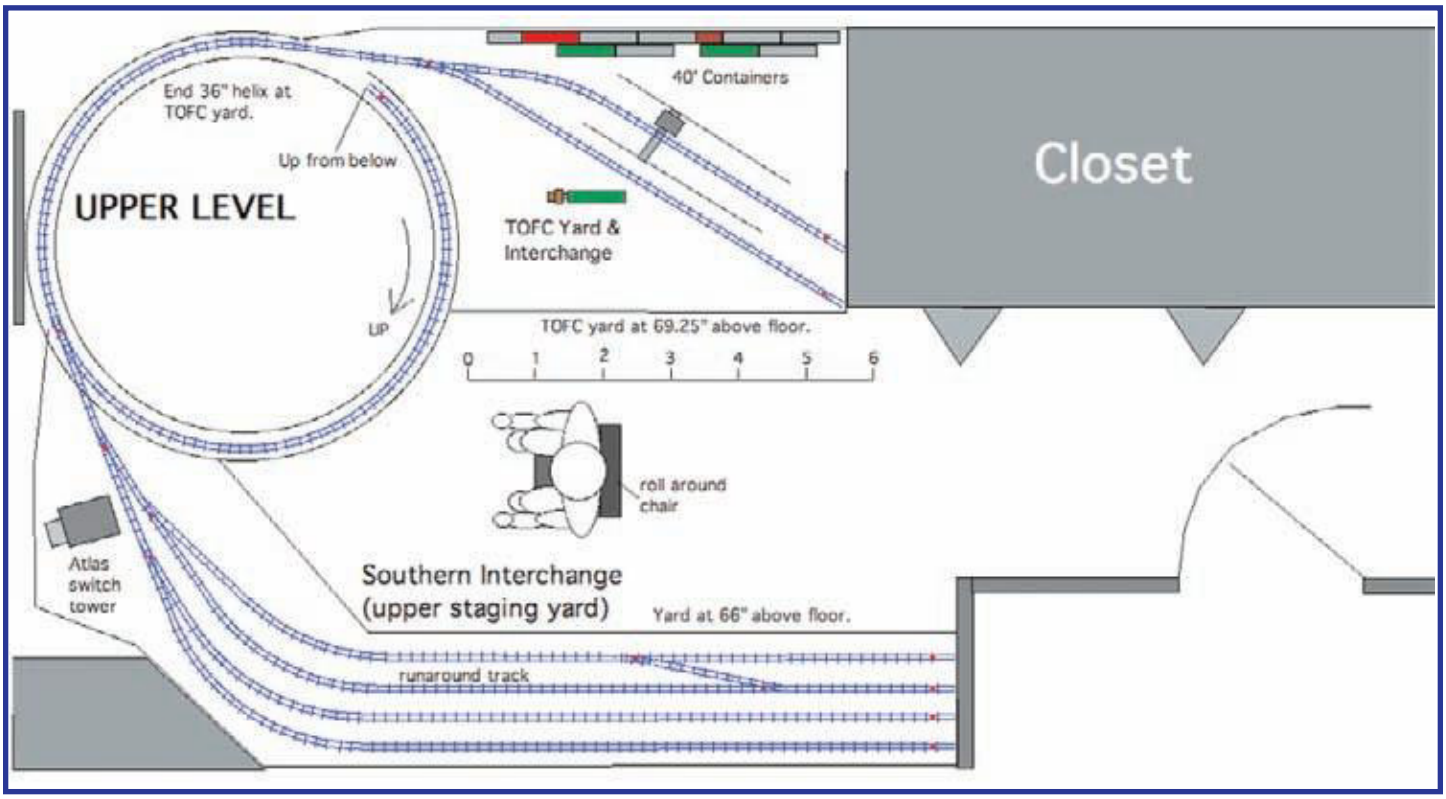
The L&N and Southern RR: A Switching Layout Built on a Helix



A rolling chair would greatly assist an operator when switching the lower level yard.



Sitting in a rolling chair, the operator could switch the middle sections at near eye level.



The upper staging yard and TOFC Yard are just below eye level and easy to switch.

5'10" as I am. The main reason for the 30" height is the ability to roll under the helix on a mechanics dolly. Fill'er up and check the oil. A dolly is the easiest way to go under the helix. Stepping through is not possible. Reaching through is a possibility and you could use one of those reaching tools as seen on T.V. By lining the edges of the helix with a three inch strip of ⅛" hard board panel, you can keep trains from falling to the floor in the event of a derailment. ◆

Round and Round We Go...How to Construct the Helix

A helix is a vertical spiral, much like a spring. The trick to building a railroad with a helix is building the helix itself. This process is no more complex than layout wiring can be to a beginner. To start, let's break down the helix into its most basic element - a circle. The minimum radius for the layout is 36", but we need some space to either side to safely guard in case of a derailment. By adding 2½" to the minimum radius and subtracting the same amount from the minimum radius we have a width of five inches and a maximum diameter of 38½" and a minimum of 33½". To cut a circle out of wood is as simple as laying down a pattern and cutting. But if you are not careful you will waste more wood and money than necessary. By dividing the helical circle into quarters and cutting from a pattern you can maximize your wood purchase.

Figure 1 (next page) shows how to lay out the pattern on a 4x8 foot sheet of plywood. The thickness of the plywood is not critical, ½" to ¾" is sufficient for strength. To make a radius cutting template I use brown package paper to lay out the helix pattern. This paper is used to wrap packages for shipping and can be found at an office supply store or craft store. Give yourself some working room. Since the paper is only 24" wide, two pieces can be taped together to get the required space. Figure 2 (next page) shows the layout. Start 40" in and at the edge closest to you. You really should have a protractor to give yourself an idea of where 45° is in relation to your starting point. Make a mark at 38½" and at 33½". Using the protractor, place 0 degrees on the edge of the paper and mark 45° without moving the protractor. Now use a straight edge long enough to draw a line from your starting mark out to 38½" on the 45° angle. Make a five inch line from 38½" toward your starting point. Voila! You have the quarter section needed to make the helix. To make the curved lines that join the outer and inner marks you will need a string and a nail or tack. Tie the string to the nail or tack and with it partially driven into a suitable surface, loop the string around a pencil several times to prevent slipping. Stretch the string tight and move the pencil from one mark to the other. Repeat the steps for the inner circle. Done! Cut out your template and trace the edges to the plywood. Using the template

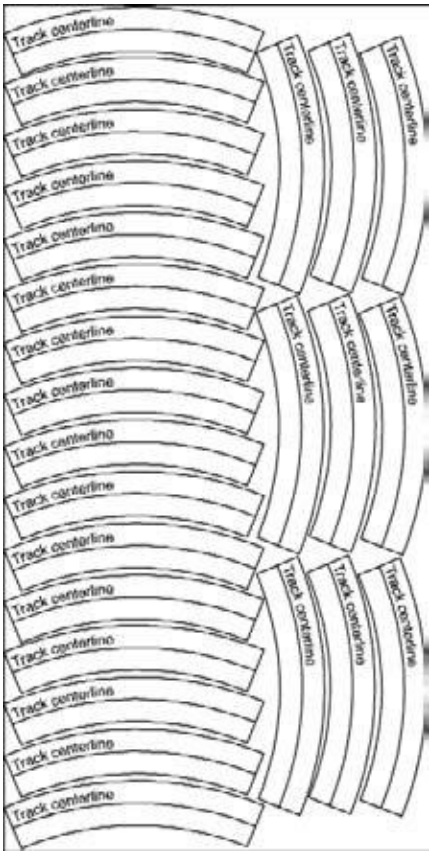


FIG.1 This is the segment layout for three turns of the helix. Shown is a 1/8 segment. The 1/4 segment is too wasteful.

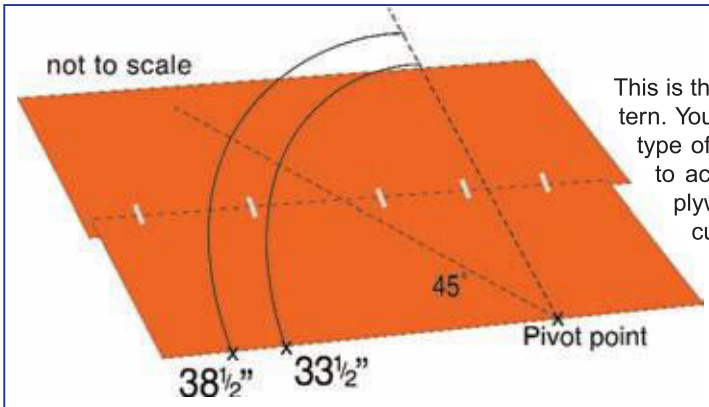


Fig. 2

This is the layout for the paper pattern. You can use just about any type of paper that is big enough to accommodate the radius. A plywood "master" could be cut and used repeatedly without the risk of destruction from use.

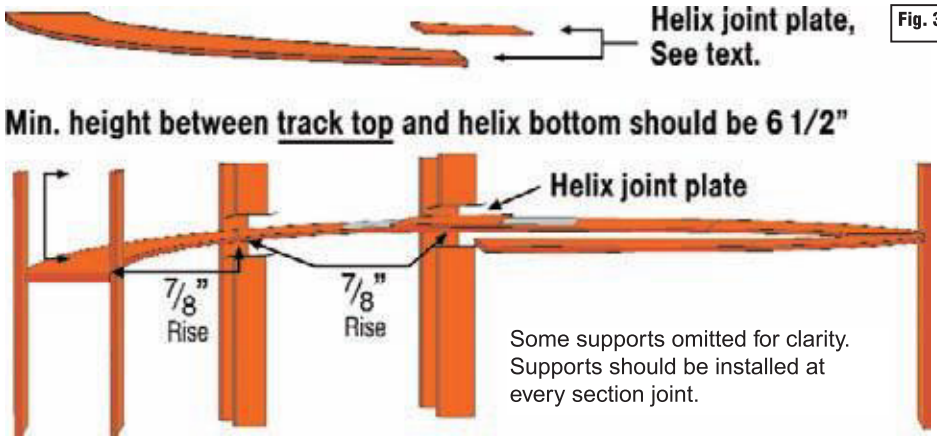


Fig. 3

over and over will give consistent results. The ends are the most important they should all be cut straight as possible for the best fit.

To join the helix sections (Figure 3) glue and screw is the best method. To insure the sections are straight before joining two sections completely, measure from the inside edge of one section to the other. It should be 47⅜". If not, make it that way and finish joining the sections. A half section of helix should measure 67" inside to inside. It doesn't have the be 0.0001 exact, but over and over and it will throw the helix out of alignment.

So how do you join two sections and not compromise the clearance below the sections? Use a shortened curve section cut from ¼" ply, if you use cork or vinyl roadbed, and join the sections on top. When you lay roadbed, just stop at the section joint and continue on the other side. Run the track right over the joint as if it were roadbed. If you use homasote for roadbed use ½" plywood for the joint. Support the helix with 1"x4" lumber glued and screwed at each section joint. The helix sections should rise ⅞" every joint. An assistant is very helpful when trying to assemble the helix. To prevent a train disaster when the helix is completed, use 3" wide strips of ⅛" hardboard to line the outer and inner edges of the helix sections. If a train derails the strips prevent a car from pulling the rest of the train to the floor.

Now that the easy work is out of the way, you can get on to the hard part of deciding what track arrangement you'll use at each level-section for your operating enjoyment. And, that is what it's all about! ◆