

How to build a better model railroad the first time.

This article is intended for new model railroad enthusiasts thinking about building their first model railroad layout.

Most experienced model railroaders have built more than one layout. Why? Because at some point, each of us grew disappointed with our first layout and decided to build a better one. If by reading this you can build a more satisfying layout the first time, I will have accomplished my purpose.

This article also contains some of the same information that is in my earlier one titled "Where do I start." The difference is that the information in this one is much more closely related to my personal opinions, and my own experience gained in building several layouts. There is no reason that you have to build your layout according to the ideas expressed here. It's your layout, not mine, or anyone else's. Build whatever you want. You are the only one that needs to be satisfied with it.

However, when you're just starting out in the hobby, it's not always easy to actually know what you want now, let alone what will hold your interest later on. That's where experience comes in. My first layout was exactly the kind that I'm suggesting you may want to avoid. From that experience, I

learned that it did not offer any real operating potential, and that I wanted something that would.

Part 1 [Developing a Concept]

My advice for new modelers is to follow this basic “Three-S principal.” Make your layout Simple, Small, and Sectional.

Keeping things simple will let you finish your layout in less time, spend less money, and have fewer frustrating problems than you will have if you attempt some grandiose scheme on your first try.

Keeping it small goes hand-in-hand with keeping it simple. A layout that fills most of your basement will not be simple.

Building your layout in sections, say 2'x4', will help greatly with construction, wiring, and being able to take all the money and hard work you've put into your railroad along with you, if you ever need to move.

It is also much, much, easier to install wiring, switch machines, and any other under-the-layout hardware by taking one section at a time to the workbench, and turning it upside down.

Sectional construction also lets you have a better chance of adding on to the railroad, or improving on your early efforts as

your personal skills, and goals, advance with your own experience.

So let's look at the way most first layouts are built; and then see how we can improve things to get you more lasting satisfaction from your first effort.

One of the most common choices for a first layout is one of the track plans published by the Atlas Co. I started with one, and so have many others. Most of these track plans involve cramming as much HO, or N scale Atlas sectional track onto a 4'x8' sheet of plywood, as possible. So, right from the start, we are led to try fitting the railroad to fit the table; instead of building the Table(s) to fit the railroad. There are some advantages to this approach, but, in my personal opinion the many disadvantages outweigh the few advantages.

Advantages:

- 1) On the positive side, such layouts are easy to build. The large, flat surface of the plywood forms a handy table on which to arrange your track. If you are not happy with the first arrangement, it's easy to switch to another.
- 2) The table doesn't require much in the way of construction time, effort, or skill. You can attach a frame and legs, and you're done. Some folks simply lay the 4x8 on a pair of sawhorses and avoid any construction at all.

(NOTE: I strongly recommend not using the sawhorse idea. The plywood will likely sag, and/or warp without a rigid frame attached to it. Also, it's awfully easy to catch your foot on one of the sawhorse's legs and send trains, or even the whole layout, onto the floor!)

- 3) The Atlas track plans are easy to follow. They are written somewhat like cooking recipes. "Buy these "ingredients" (track pieces) and "blend together" (assemble) according to the "recipe." (track diagram) It's very simple.

So what are the disadvantages of using this system of building a first layout?

Disadvantages:

- 1) You are going to invest a lot of your money, and a good deal of your time, in building something that; while it's fun at first, you will most likely get bored with rather quickly.
- 2) When/if you do get bored with your layout, you are very unlikely to be able to sell it. Used train layouts are a drug on the market. They seldom sell at all, and never for anything like the amount of money that was put into them. Salvaging the track and structures is possible, and frequently done.

However, as your personal experience grows so will the sophistication of what you want on your railroad. For instance, most people who start out with sectional track, or roadbed track, end up scraping it and switching to flex track eventually. Why not use flex track in the first place? It may save you some money, and aggravation.

3) You may also find that, sooner or later, you have derailments, and other problems with the Atlas “turnouts” (track switches) included in the Atlas track plans. These turnouts are not as reliable as other brands. Atlas “Snap Switch” turnouts have an unusual design. The device that physically moves the points to change the route the train takes is called a “switch machine.” Atlas sells their turnouts with either a manual or electric switch machine attached to the side of the turnout. Both versions are quite weak and barely able to move the “points.” (the two moveable rails) reliably. For this reason, everything that needs to move in an Atlas turnout is made very loosey goosey. The material used to make them is quite flimsy also. While it is possible to improve the operation of Atlas turnouts*, in my personal opinion, it is better to buy the much more reliable Peco brand turnouts in the first place.

(*See my post “Improving Atlas turnouts” for more information.)

- 4) It's important to realize that the Atlas track plans are, primarily, advertisements for Atlas products. While they have helped many people build a first layout, they exist mainly to sell Atlas track, electrical controls, and turnouts. Like any advertisement, they are not going to praise another company's products, or point out any possible problems with their own.

- 5) While it's the first shape most new modelers think of, and is usually what those Atlas track plans are designed to fit on, The 4'x8' rectangular sheet of plywood also has some built-in disadvantages. It is bulky enough to fill a large part of most rooms. It can be difficult to move away from the wall to access the other side of the table. (Mounting it on casters, equipped with brakes, can make this much easier.) You will need access to both sides because four feet is much too long a reach from the front side. Track will need to be cleaned, and trains put back on the track way back there.

Many new people build the frame and legs using 2"x4" lumber. They may also use $\frac{3}{4}$ " thick plywood. This results in a very heavy, somewhat more expensive, and way, way,

overbuilt table. Remember we're building this train table to support model trains, not real trains!

The plywood can be 3/8" thick, and the frame and legs made of 1"x3" lumber. This will be plenty strong enough. It will also weigh, and cost, less. To prevent warping, it is a good idea to make the frame and legs as "L-girders." These can be made by gluing a 1"x2" and a 1"x3" together to form an 'L' shape like a wooden version of a piece of angle iron. I also recommend painting or sealing all the wood parts to prevent warping.

Some model railroaders dispense with the plywood sheet altogether. A two inch thick sheet of extruded foam insulation is strong enough to be self-supporting, and even man supporting, when mounted directly on top of a 1x3 frame with crosspieces every 16" or so.

6) What if you have to move?

According to Google, the average American moves about eleven times in their lifetime. I have moved nine times, and the tenth is coming up in a few years. Even if you only move your household once, sectional construction will be a great help. Trying to maneuver a 4x8 up steps, around corners, and through doorways, is a major pain in the posterior!

Especially if it's way overweight by being built with the oversized lumber just described. Several 2'x4' sections are much easier to move.

7) A 4x8 also doesn't have enough room on it for HO-scale track to do much more than form an oval, two concentric ovals, or some combination of an oval and a figure eight. You can fit more N-scale, or Z-scale, track on a 4x8, but soon, in any scale, things may easily become clogged with track. There won't be much room left for scenery, buildings, or anything else.

8) The 4x8 is nowhere close to the shape of a real railroad's "right of way." This is the actual land on which a real railroad is built. It is usually many miles long but, except for yards and large terminals; it is typically only about 100 feet wide. In other words, it's very long and very skinny. A 4x8 is only twice as long as it is wide. That's not the same shape at all, not even close. You can break up the all-too-obvious "round and round the oval" by building a range of hills, or a two sided backdrop down the center of the table. Now we have to separate "scenes". They can be two different towns, an industry on one side and a consumer of that industry's product on the other, or anything else you chose. The important thing is that the train seems to be traveling from one place to another, rather than chasing its own tail around and around.

9) This brings up an important decision for you to make. Do you want to build a “train setup” or a “model railroad?” The difference is realism. There is no “right” or “wrong” answer to this question. Both options are fine, and each person can, and should, make his/her own choice.

A “train setup” can be simply a bunch of track that lets the trains go round-and-round, up and over, in and out of the tunnel, etc. There’s nothing wrong with that, as long as it’s what you really want. Most people soon get tired of just watching trains go around. Others don’t. If you are in the latter group, then such a “train setup” type of layout may be a good choice for you. Those track plans from Atlas, and many other track plans too, are basically plans for “train setup” type layouts.

On the other hand, a “model railroad” should ideally, look, and operate, as much like a real railroad does, as you can practically make it. To do that it needs to be long and skinny, since that’s the shape of real railroads. Look at the real railroad track near your neighborhood. Does the track form an oval, or a figure eight? No, of course not. Real railroads exist to make money by hauling freight from one city to another. They have curved track to get around natural obstacles, but their overall “track plan” is pretty much a straight line from point ‘A’ to point ‘B’.

They don't have their track laid out for what we modelers would call "continuous running." (In some form of circle) Most modelers do want continuous running however, so on your long and skinny layout, you may want loops of track at both ends to let the trains get back and forth along the main line. These end loop sections will need to be wider than the rest of the layout. This arrangement is called a "dog bone" track plan, and it will let us have a long main line on shelves along one, or more, of the walls of a room; and still allow continuous running. Building your layout on relatively narrow shelves on the walls often leaves more space in the room for other activities than the 4x8 table would.

Each modeler's home is different, so you will need to look at your own home to see what space is available.*

When making your search, try to think in terms of long and skinny, rather than big rectangular blobs.

(*Note: If you are married, you, and your spouse, may have very different definitions of the word "available!")

Once you find a suitable space, the next step is to carefully make an accurate scale drawing of the space. This can be done on a computer if you have a drawing program, or you can do it "old school" style with pencils, a ruler, and paper. At this point we are only concerned with drawing the outline of the available space, the actual track plan can be added later. It's a good idea

to make several photocopies of your space diagram. Later you can test draw different track plans on them.

New model railroaders are seldom very familiar with how a real railroad operates. For now it's enough to just include in your track plan at least two passing sidings and some spurs to serve your favorite industries. If you will have a double-track main line, two "crossovers" that will let trains change tracks, and get back, can act as one passing siding.

Learning about, and mimicking in miniature, how a real railroad operates to earn its profit is a very interesting activity. You can read about real railroads, and how they operate, online, or at your local public library. If the library doesn't have books on the subject, they may be able to request some for you. If you do elect to do this kind of research, be on the lookout for some small, simple, part of the real railroad's large route system that you might be able to model.

As an example, my own model railroad is very loosely based on the Milwaukee Road's trackage near Seattle, Washington. Even the few miles of their route represented on my model are very compressed versions. It would be a very rare model railroader indeed who had the space needed to build an exact scale replica of a real railroad. We have to "cheat" by picking out the most important elements that we want to model, and leaving

out a whole lot of others that we simply don't have room for. This is a series of tough choices.

In my case I wanted to model passenger operations in and out of Seattle Union Station. My model of the station occupies most of the limited space I have to represent "downtown Seattle." The other buildings need to be flats, or painted on the backdrop.

I hope I have got you thinking about different shapes, materials, and track plans for your first railroad. If you decide that you would rather build one of the Atlas track plans on a 4x8 sheet of plywood, that's fine. It's your railroad, so you decide.

Good luck with whatever you choose, and have fun!

Traction Fan