

## Layout Basics

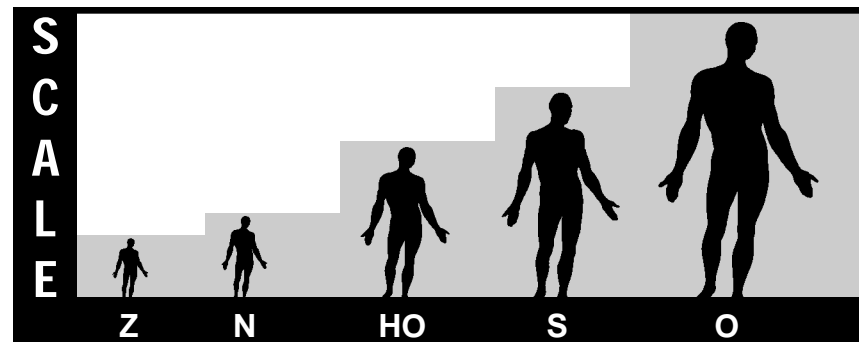
### RAILROAD PREMISE

When you build a model railroad, you are creating a miniature world of your own conception and design. Some of the excitement of model railroading is in building the towns and industries, and then designing the transportation network to keep them running. In a world where we often have little control over our surroundings, model railroading offers the opportunity to be in charge of the world, even down to the naming of railroads, towns, and businesses.

In general, there are two methods of modeling. One is to design a model railroad after some particular *prototype\** (real railroad or location), and the second is to create an imaginary railroad. The choices you make constitute your *railroad premise*. Each method has its advantages and each offers a multitude of possibilities for scenery and *operation*. The methods can also be combined to use, for example, a real prototype railroad in a location that is imaginary, or a real location with a railroad of your own creation. Model a railroad in your local area, a railroad you or someone you know has worked for, or a part of the country that is interesting to you. The choice is yours.

### SCALE

Model railroads are generally built as *scale* railroads, that is, everything on the layout is built to a specific percentage of what it is in the real world. "In Scale" is the relationship between the size of two items, and in model railroading is generally expressed as a ratio. For example, HO scale is 1:87, that is: one inch on the model represents 87 inches in the real world. This illustration shows the height of an average man in some of the more common scales used in model railroading. In model railroading, there are a number of common scales with engines ranging from small enough to hold in the palm of your hand up to those large enough to ride on. The selection of which scale to model in is entirely up to you. There are a number of items that can be considered before selecting a scale.



*\*Words which appear in italicized type are defined in the Glossary at the back of the book.*

These include the available space, how much railroad you want to work with, money available to put into the hobby and where the railroad is to be located. Commercially available equipment, buildings and detail items are more abundant in HO scale than in any other model railroading scale. According to the recent surveys, 77 percent of hobbyists model in HO scale and 12 percent in N scale. Each of the other available scales make up the remaining percentage. If you want the most abundant selection of ready-to-use items, as well as kits and detail parts, it would be wise to select the more popular scales.

Many items of scenery have no real scale. Real world trees, bushes, grass, mountains and streams all occur in a variety of sizes. The Woodland Scenics scenery materials can generally be used in any scale. Any Woodland Scenics product that is designed for a particular scale has that information listed on the product label.






## GAUGE

*Gauge* in railroading terms refers to the distance between the *rails*. In 1886 a federal law was passed setting the *standard gauge* for railroads in the United States at 4'-8 1/2". This standardization means that engines and cars from any railroad can run on the *track* of any other railroad. There were a few specialty railroads in the United States, some still in operation, which did not follow the standard gauge. They are known as *narrow gauge* because their rails are closer together than the standard gauge. Primarily, these were railroads that ran in mountainous areas where railroad construction problems made it more advantageous to use a narrower track, a tighter radius on curves and the shorter engines and cars that this type of construction allowed. These railroads used a variety of specific gauges on their tracks, with 3' being one of the most common.

In model railroading it is possible to model in either standard gauge or narrow gauge. The *National Model Railroad Association (NMRA)* has developed standards for manufacturers that make the engines, *rolling stock* and track you purchase interchangeable within each scale and gauge. Standard gauge equipment and track are available in all scales. Narrow gauge equipment and track have a greater availability in some scales than in others.

## TIME ERA

At this point, you will probably want to give some thought to a time era you prefer. Some of the possibilities include Early Steam Engine Era, Mid-to-Late Steam, transition to Diesels, Early Diesel, current time, etc. No prototype railroad would have engines and rolling stock from all these eras running at one time. Even if the railroad is an imaginary one, it is still difficult to try to include engines and rolling stock from every time era and make it believable. By selecting a time era it is possible to logically limit the equipment to what was available and running in that time period. A time era also helps in the selection of appropriate buildings and detail items.

T I M E  E R A	1831-1880	Early Steam	
	1881-1921	Middle Steam	
	1922-1940	Late Steam	
	1941-1960	Transition to Diesel	
	1961-Present	Modern Diesel	

## GEOGRAPHIC LOCATION

In choosing a geographic location for the railroad, be as specific or as general as you want. It is permissible to choose to model a particular county in Colorado or an individual small town in Nebraska. But it is just as acceptable to model a representative New England town or a typical lumbering area of the Pacific Northwest. The extent of the geographic location you choose to model may be somewhat determined by the scale you model in and the size of layout you plan to build. Obviously, in the larger scales, more actual space will be required to model a specific prototype area than in the smaller scales.

Modelers frequently talk about a concept known as "*selective compression*." This means selecting model representative items from an area because it is not really possible to put in every single item that exists there. For example, select two or three houses to put in a town rather than all the houses that really exist there. Model three or four industries that a railroad services or use a couple of mountains to represent all the mountains in a range. Selective compression makes it possible to put a fairly large amount of actual geography on a small layout.

Another consideration is the type of buildings and industries you plan to model. For example, are you interested in showing mining and the types of industries that grew up around it? Or is your interest in cities with large *railyards*? These kinds of considerations can help in the selection of the geographic location for the railroad.

## A SPACE FOR THE RAILROAD

Once some decisions are made about what kind of railroad is to be modeled and in what scale, the next step is to find or create a space for the railroad. There are many alternatives depending on space available, your interests, time, budget and geographic location.

If this is your first layout, or if the available space is small, consider building a *module*. A module is a small model that can be combined with other modules to make a large layout. In many areas of the country *modular groups* exist where each person builds only a small part of the layout, perhaps 2' by 6'. The modules are then put together to form a larger layout when the group meets. Joining a modular group may provide an opportunity to know and work with some experienced model railroaders. Sometimes these groups display their modular layout for railroad shows and conventions, or in public displays at malls or other areas.

A larger personal layout can also be built using modules. Perhaps the resources are not available for a large layout now, but will be in the future. Begin by building a module or two. Later on they will serve as the base for a larger railroad. One of the advantages of modules is that they can be built with removable legs for easy disassembling and storage. In the smaller scales, a module or two can be the entire railroad.

Another good choice for new modelers with small areas is to create your layout on a sheet of plywood, 4' by 8' or smaller. With a little planning and imagination, a lot of railroad can be built on a plywood sheet, even with some of the larger scales. If space is limited, this type of layout can be built so it can be stored when it is not being used.

The more ambitious modeler can consider using part of the basement, an extra bedroom, part of a garage, or an attic. Perhaps a separate train building can be constructed in the back yard, if money and space allow. Successful layouts have been recorded in such unlikely areas as wine cellars, utility rooms, former bomb shelters, and on shelves circling living rooms or bedrooms. Be creative! But by all means check this out with other family members before beginning to build.

## RAILROAD PLAN

After a decision has been made on where the railroad will be, the next step is to create a plan of what the railroad will look like. This may be a very elaborate scale drawing or just a rough idea. It should include at least a general concept of where track will be as well as locations for rail yards, towns, roads, and industries. Also include geographic features such as mountains or bodies of water.

The plan can and probably will be changed after the building stage has

begun. In many instances, particularly for beginning modelers, track, buildings and scenery will take up more space than anticipated. Plan the track first, then work other items in around it. If there is some particular building or scenery item that you feel must be included, plan for it early, and know the size of the space which must be allowed.

## BENCHWORK

To begin the actual building of the railroad, start with the *benchwork*. This is the understructure that holds up the roadbed, scenery materials and wiring of the railroad. There are several possibilities for the benchwork depending on the type of railroad that is being built.

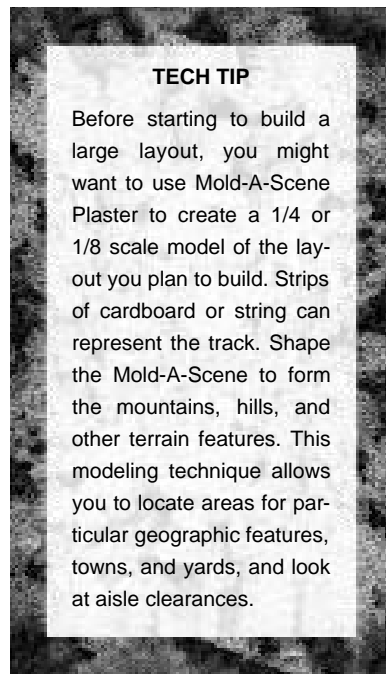
Perhaps the entire railroad is to be constructed on a sheet of plywood. In this case you might want to use lumber to build a supporting frame and legs for the plywood at whatever height is convenient. Or perhaps the plywood will sit on an existing table. The frame and legs or the table the plywood sits on will serve as the benchwork.

Modular groups will usually establish a plan of how every module is to be constructed so that it will coordinate with others in the group. This plan will probably specify the size and type of building material, as well as height and exactly how it is to be put together. These specifications must be followed to make it possible for all modules in the group to be combined into one large layout.

An individual module may or may not be planned for later inclusion in a larger layout. If it is to stand alone as the entire layout, decide whether the module will be taken down and stored at times. If so, foldable or removable legs under the frame may be desirable. A module that is to be part of a larger layout can be constructed with a supporting frame at whatever height is chosen for the entire layout. Lumber is probably the best material for the legs and frame of the benchwork.

For larger layouts, a more extensive benchwork is required. Before beginning, we suggest reading more about benchwork. Many model railroading books and magazines devote sections or articles to this aspect of the hobby. You may also want to discuss benchwork with other model railroaders or your local hobby shop. The benchwork needs to be strong enough to support the railroad. It needs to be open enough to allow access to maintain and repair the railroad. And, it should help hide some construction features such as wiring.

In the next chapter you will learn about the revolutionary Woodland Scenics SubTerrain System.



## TRACK

Track, of course, is a vital feature on any model railroad because it determines where the trains will go. There are many excellent books and magazine articles that will help in track planning. If this is your first railroad, try to keep the track plan fairly simple. It is always possible to expand it later on. If you have joined a modular group, be sure to check their module specifications for information on track. The group will probably dictate track distance from the front of the module, how the track is to be configured, track elevations, whether track is purchased assembled or hand laid and the size of rail to be used.

A real railroad is built to carry freight, passengers, or both from one place to another. In planning track for the layout, be sure to consider what the railroad will do. Think about how the railroad will provide service to local towns and industries, how it really or imaginatively connects with the larger world and what kind of purpose it could have on the layout that is being built. Of course, other important items such as the radius of curves, *clearance* around planned geographical features and a realistic look must also be kept in mind.

Track can be purchased ready-made, with ties and rail put together, or the ties and rail can be laid individually by hand. Obviously, purchasing it ready-made is the quickest and easiest way to get track down and is preferred by most people. *Switches* can also be purchased ready-made, which saves considerable time in laying track. It is generally easier to lay the track before completing the scenery.

The material that is put directly under the track is known as *roadbed*. Track must be securely fastened down to this material so that it does not move when the trains run. Keep in mind that train motors and wheels are noisy and that a proper roadbed material can help deaden their sound. Be sure to look for a material that will absorb sound.

Though other materials can be used for roadbed, we recommend our revolutionary roadbed, **Woodland Scenics Track-Bed**, available in N, HO and O scales. It has been awarded the National Model Railroad Association Conformance Seal for excellence. More information about Track-Bed can be found in the **Woodland Scenics SubTerrain Manual**. Track-Bed Strips, Track-Bed Rolls, Track-Bed Sheets and Super Sheets all feature the same qualities:

- **Quieter Operation**-with sound-deadening material that gives your train a smoother ride
- **Smoother Operation**-with vibration-cushioning material
- **Easy To Use**-apply with Foam Tack Glue, flexible, compatible with cork, won't dry out or crumble and requires no soaking.
- **Better Value**-high quality, lower cost

Track-Bed is easy to use and can be glued to any base using Foam Tack Glue. Woodland Scenics Foam Nails are used to hold the Track-Bed in place while the glue dries. Our Track-Bed Rolls are best for an almost seamless application, because they give you a 24-foot continuous roll of roadbed.

## WIRING

The wiring of a model railroad involves installing the electrical connections that will allow the trains to operate. There are a number of possibilities available here which are appropriate for different situations, different experience levels and different budgets. We advise reading books or articles, talking to model railroaders, or checking your local hobby shop before making a decision. With a *modular group*, their specifications will detail how the module wiring is to be done. It is usually easier to have the track wiring complete before beginning scenery.

## THE SUBTERRAIN SCENERY KIT

The SubTerrain Scenery Kit by Woodland Scenics helps you learn by doing. The SubTerrain Scenery Kit contains complete instructions, plus all the SubTerrain, Terrain and Landscape products needed to build a 12" X 24" N scale display *diorama*. It is the simple way to learn and practice these techniques right now, even if you do not have a layout.

### THE SUBTERRAIN SCENERY KIT

The best way to experience Woodland Scenics'landscaping products, before beginning your layout, is to build the SubTerrain Scenery Kit. This 12x24-inch N scale *diorama* teaches you the basics of the Woodland Scenics SubTerrain, Terrain and Landscaping Systems.

- You build the terrain base using the SubTerrain System's five easy steps – all without power tools or complicated calculations!
- You build realistic terrain features with Plaster Cloth, pre-cast Rock Faces and a Tunnel Portal.
- You finish the kit with a selection of landscaping materials, such as Ballast, Talus and a variety of Turfs and foliage.

