How to create a breath taking model railroad for the complete beginner

Breath taking railroads for Beginners

A complete, step by step, beginner's guide to create your first model railroad layout.

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How to build a breathtaking model railroad

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Introduction

The secret to a breathtaking model railway:

As my model train leaves the station, it passes a series of allotments. A gardener waves to the passengers while his neighbour uproots potatoes.

Up over a hill it climbs, before crossing an enormous arched bridge. A beautiful, clear stream runs underneath and some children are fishing along its banks.

Shortly after, the train passes a run down old shack. The owner sits inside drinking coffee, watching the cows meander through the fields, as the train approaches the next town.

Some more passengers are waiting to be picked up. The children struggle with suitcases. A little girl tugs excitedly at her mother's dress. They're going to the coast...

...The best layouts tell a story. That's what makes your guests gasp in astonishment.

But like any story, it takes careful planning and a great deal of thought.

When I look down on my miniature world, I know it wouldn't have come together so well if I were in a rush.

Trust me, if you want to build a breathtaking model railway, you'll have to build it twice. First in your mind, then on your table.

A little restraint now, saves you hours of hassle later, and adds so much to your enjoyment of this wonderful hobby.

Although we've never met, I suspect you're somebody who takes pride in their work. (That's the sort of person this hobby attracts.)

So this guide helps you build a clear mental picture of where your train's going and what the scenery looks like along the way.

You're shown which gauge is right for you, the sort of locomotive you might want to use, how to build scenery, the different ways you can power

your railway and even how to weather your accessories for a realistic, aged feel.

Along the way, I show you ingenious layouts from some of my readers. Some of these railways really are so beautiful and so realistic, you feel as if you're watching another world.

But please read this book in its entirety first.

Then, with your inspiration fired up, you can start to think about your own masterpiece. As you bring it to life, keep referring back to it for a helping hand.

Of course I would say this, but building model railroads really is a fantastic hobby.

You start to see the world differently. You notice the tiniest details in your surroundings and marvel as you watch them appear on your board.

Read this book carefully, and you'll be well on the way to bringing your dream railroad to life. A railroad that takes peoples' breath away!

Before you start

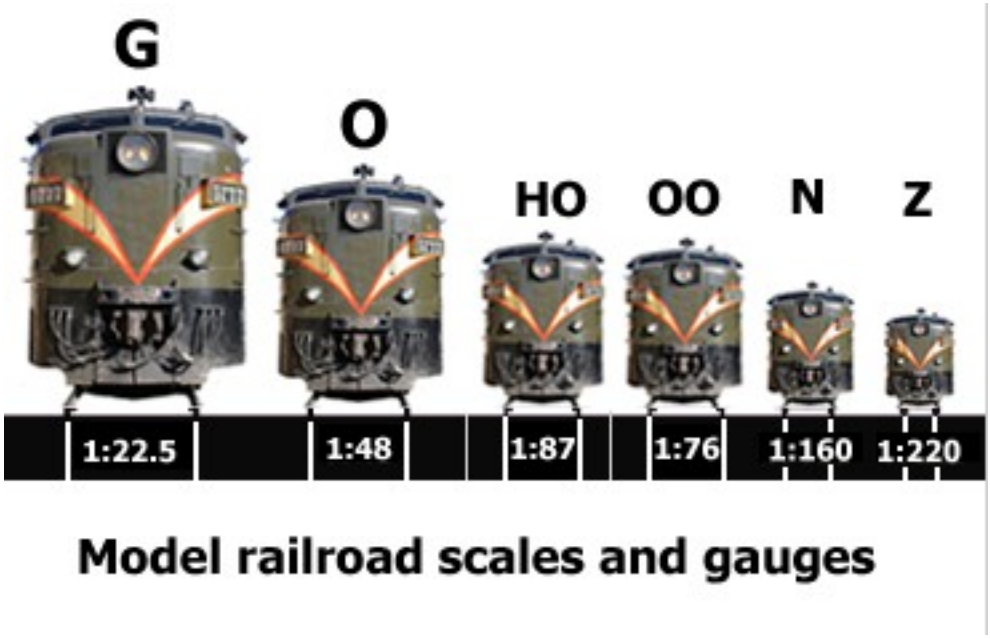
Choose the right scale:

Before you clear the dining room table, you need to decide which scale is best for you.

You can't, obviously, chop and change as you go along. So it is important to get this right first time.

You wouldn't believe the number of modelers I've met who got started on a tiny scale and forgot they had gigantic hands or poor eye sight. I've met even more people who chose an O scale set (only 48 times smaller than the real thing!) and watched it take over the house.

Realistically, there are 6 scales you can work with. The most common sizes are G, O, HO, OO, N and Z. This chart shows you their sizes.



Note: In the UK, the most popular scale is OO. This is slightly smaller than an HO scale train, at 1:76. HO stock will happily run on OO track.

The next thing to consider is track gauge.

Track gauge is the distance between the two rails. Unless you're building something specific, you'll probably end up using a standard gauge track.

This is the most popular size, and what you get in most starter packs. In fact, when I surveyed the readers of my blog, 68% used a standard HO gauge train track.

However, there are also narrow gauge tracks (‘n’), which have the rails closer together. On real-life railroads, narrow gauges are only 3-feet wide.

Arnie adds: there are some older 30 inch (2 1/2 ft.) narrow gauge track that were also used. Hence, you get the model railroad scale On30 or On2 1/2 to represent trains that ran on narrower 30 inch wide track. So, the modeling scale that easily fits the criteria of these earlier trains is using O scale trains on HO track (On30).:

They’re used to get locomotives through dense forests and mountain passes. If you’re building a replica of, say, Canada’s Rocky Mountaineer, this may be something to consider.

Narrow gauge tracks are represented by a baby ‘n’.

Suppose you want a narrow gauge train, HO scale. You’d need the box that says ‘HOn3’. The number 3 is to show it’s a replica of a 3-foot wide track.

Which scale should you choose? That depends...

Arnie adds: I would also point out that one should avoid trying to accomplish too much on any layout; especially smaller ones. You can end up cramming too much into the limited space. The clutter defeats the goal of trying to make scenes look realistic.

How much space do you have?

An O scale train doesn’t look intimidating on its own.

But when it’s surrounded by trees and buildings - all built to scale - you may well get that sinking feeling that you’re running out of space.

If you have the space, a beautifully designed large-scale set is stunning - and it’s definitely something to consider.

However, it’s much more important that you have room to be adventurous. And if you don’t have the space, your layout could easily become a sprawling monster that takes over the entire house.

Take a look at the room you want to work in. Be honest with yourself.

You should be able to comfortably walk around your entire setup and reach any section without having to stretch.

An HO scale layout would be approximately half the size of an O scale one. Most people find this is the ideal size. You can build a surprisingly adventurous HO scale layout on a 6 X 4 foot board.

Meanwhile, it's not so small that it's difficult to work with. If you have trouble with your eyesight, or if you're building with a child, this is a huge advantage.

If you still haven't enough space, try dropping down to an N scale. At 1:160, this fits into around 30% less space.

Careful though! N and Z scales can get a bit fiddly.

Next, consider how much time and patience you have.

A large scale set needs a lot more detail to look realistic. Imperfections show.

Look at Dick's unfinished O Scale layout.

"Scenes will include a mountainous area with a waterfall, a serene pasture for cows and horses, a cityscape, train station, locomotive maintenance, business scenes, and an elevated town that will cover the mainline tracks in one of the corners," Dick said.

You don't need me to tell you how breathtaking the result will be when it's done. But you can see how much effort goes into a layout this size.

Dick’s already spent 7 months getting it to this stage.

If you want a large scale set, and you want to make it look realistic, prepare to spend some serious time on it.

Can you manage an HO scale set?

If so, that’s the scale you should seriously consider.

Around 3/4 of all modelers work with HO scale. At 1:87, it’s big enough to work with comfortably, but small enough to build an adventurous layout on a reasonable sized board.

Michael’s HO scale set contains 2 bridges, 2 tunnels and plenty of hustle and bustle. Take a look:

Gathering the buildings and props for this marvelously intricate setup would have been much easier in HO scale, too. Being the most popular scale, HO also has the most accessories and rolling stock. (Have a look at this link to search for the most recent deals on ebay).

I have also seen train sets which use different scales to give an illusion of distance. An HO scale set takes the foreground with an N or Z scale train running in the background.

It's unbelievable, I know.

But it goes to show you why building a model railway is hands-down the best hobby you can possibly take up. There's absolutely no limit to what you can do.

If you can see it in your mind - and you think carefully - you can recreate it on a work bench.

Now, if you've decided which scale is right for you, let's look at what tools you'll need

Arnie adds: Might want to consider a ruler specific to the scale chosen to assist in determining appropriate scaled distances and heights of terrain and objects and the spacing between them.

Essential tools:

You don’t have to spend a fortune on tools to begin with. If you’re starting from scratch, here are 3 simple rules to follow.

1) Buy quality tools. They save you money almost immediately – as the saying goes, “Buy cheap, buy twice”.

2) Start with the essential tools in the list below, otherwise you'll drive yourself insane.

3) Add to your tool box as you go along.

I know it’s tempting to choose the cheap tools and keep your bill down. But cheap tools always cost you more in the long-run.

You can expect a good-quality knife to last 50 times longer than a cheap one. Do you really want to order 50 knives in the time you could spend using 1? Of course not.

So I’ve made a list of essential tools to get you started. Focus on these for now. Focus on quality. And as your layout expands, your toolbox grows with it.

- Hand cross-cut saw
- Electrical screwdriver set
- Small coping saw
- Electrical cutters (small)
- Safety glasses
- Needle nose pliers
- Small hammer
- Electrical pliers
- Soldering iron – Arnie adds: I suggest a low wattage iron so as to not overheat the parameters of lower voltage wiring and fine electrical accessories (especially in the smaller train scales), or burn/melt track if soldering rail joints together.

- Adjustable wrench
- Carpenter's Square
- Disposable gloves
- Utility knife with disposable/replaceable blades (lots below on knife quality)
- Fine paint brushes - great for detailed work. But also some common size (e.g., 1 to 3 inch) disposable brushes for applying and spreading glue and paint while building terrain and adding ground cover.
- Razor saw (small)
- Filter mask

Tool safety:

When you work on a train set, you work with carpentry tools, electrical equipment and solvents. You need to work safely - especially if you have little railroaders in the room.

Keep your toolbox well-organised. This encourages you to keep tools and clutter off the table where they can roll off and land on your toes.

Work in well-ventilated areas. Best to open a window or two when you crack open the glues or any aerosols.

Work under good lighting, and wear safety goggles when cutting. Also, make sure your knives are kept sharp so they don't (ouch!) slip.

I always use water-based glues and paints wherever possible. These work best with paper, wood and cardboard, and they're mostly harmless.

If I need to use something stronger, like super glue, I wear disposable gloves. No matter what sticks to your fingers, you peel off the gloves and throw them away. It just makes things easier.

Before you switch on your power pack, check the electrical cord is intact with no exposed wires.

Power packs are, on the whole, very safe to use. Most use a safe, low voltage and direct current (DC) from the power pack to the train set.

But it’s important to remember, the voltage from the mains to the power pack is very high.

Sounds obvious, I know, but never open your power pack for any reason.

Setting the stage

Your first layout:

Take a look at this layout from Alasdair...

https://modelrailwaylayoutsplans.com/alasdairs-layout/

Now look at a few of the sections more closely...

Can you imagine how much time was spent on each square foot? Hours! And that's why it looks so spectacular.

It's a good reminder that the best models almost always start out small. If you have a lot of space to fill, your attention is divided all over the board. You might even be tempted to fill it up with cheaper equipment.

When you start with a small board (around 4 X 8 feet, perhaps), it's much easier to focus on the tiny details. You can also focus on buying high-quality tracks, locomotives and accessories.

You've seen what happens to a cheap model train set. It gets stuck, you give it a nudge and it wooshes off the tracks faster than the Flying Scotsman.

A smaller layout with a better quality system is much more satisfying. You can turn it up to the speed you desire. Then, as you approach the station, dial down the power and watch it grind to a halt. Just like the real thing!

Since you're reading this guide, I'm going to assume you're interested in a highly realistic layout. And you can see why starting big is one of the most common rookie-railroader mistakes.

I suggest you start with a 4 X 8 board. Make it as realistic as possible. When you're satisfied, add another board and expand.

Jim's incredible layout is so big, it takes up the entire attic. The video below shows it in action.

https://modelrailwaylayoutsplans.com/jims-amazing-layout/

The layout has working cranes, sound effects and over 100 lights. Meanwhile, a narrow gauge system runs the inside track.

Jim spent 2 years working on this setup. Yet even elaborate layouts like this started as tiny train sets.

You can build a surprisingly interesting layout on a 4 X 8 board. But it will probably have some tight corners, and you'll want to avoid derailments.

Stick with short locomotives and carriages to begin with. Longer locomotives have more overhang. They're fine on a large board with long, sweeping corners. But on tight bends they're more likely to roll off.

Larger scale trains can also derail if the corners are too tight. This is another reason I recommend going with HO scale or smaller.

HO scale is small enough to work with in the beginning, but large enough to impress guests as you expand.

Your 4 X 8 board can be built on the dining room table for now. But your other half won't let it stay for long, and you'll need somewhere more permanent. Look for a space where you can leave your small layout undisturbed, but where there's also room to expand.

Jim chose the attic. Honestly, I can't think of a better spot.

Bill got to work in his garage, which is terrific if you have a clear space. See below:

Bill's used, what looks like an old kitchen counter top to stand his unfinished layout on.

"As this project is in the garage, that gives me the convenience of moving the whole platform into the centre of the garage so I can work around it instead of bending over it," says Bill.

"And I have drawers and cabinets to keep stuff in."

Well done, Bill.

If you live in a flat or a very small house, there are some ingenious solutions for you, too.

I remember seeing one layout that was attached to the ceiling. It lowered down on wires and became a centre-piece in the living room. Have a look:

https://modelrailwaylayoutsplans.com/pacos-suspended-railroad/

Another solution (definitely my favourite) was to build a Z-scale layout inside a glass-top coffee table. If you're desperate to build a model railway, and you haven't got much space, why not build your own coffee-table train set? I bet it's more interesting than any furniture your friends have.

https://modelrailwaylayoutsplans.com/lenzos-end-table/

Some important questions before you begin:

Once you've got your 4 X 8 board, you might feel tempted to grab your track and start drilling it down.

Before you do, take a little time to think about how the overall layout should look. Picture it in your mind...then make it a reality.

Arnie adds: This is extremely important. I think of it as sort of a 3 step process: 1. Imagine it; 2. Plan it; 3. Build it.

With regard to Planning, I recommend drawing out a track plan using graph paper. It will help to better approximate the scaling and the feasibility of the track routing and radii needed before going out and buying a lot of track.

There really isn't any limit to what can be done. This guide shows you how to build bridges, hills, tunnels, trees and buildings.

If it exists in real-life, you can stick a miniature version on your board. You're only limited by your imagination.

These 3 questions should help you get started:

1) What era do you want to recreate?

Is there a bygone age, you wish you could travel back to? Or did you see a fantastic train line on holiday and want to recreate it?

When you know your era, you know what sort of train to get (diesel, electric or steam?) and how the landscape might look.

2) Whereabouts is it set?

Mike's model looks like a sleepy town in the USA.

Jim's looked more like a European dock.

Knowing the location is crucial, because it helps you plan the geography of your board.

A quick tip: Google Earth is a fantastic tool for doing this. Here's a picture of the Rocky Mountains from space.

With enough care and patience, you can recreate the exact elevations, distances and landscapes of real-life places.

3) Is there a plan that already exists which you like?

Now you know the era and geography of your layout, it's time to think about the track. This demands careful thought, but fortunately, there is a totally free site that has more track plans than you can shake a stick at:

http://freetrackplans.com/

Building your bench:

So your other-half wants the dining room table back and it's time to take your layout elsewhere.

Do you have somewhere permanent it can go?

Arnie adds: I would recommend that even if your not planning building a layout in a permanent location, and/or you're moving it about, you should consider reinforcing the board. That is, even if you have a 4x8 sitting on a table-top, it will be subject to warping over time.

Warping can wreak havoc on track work.

I would at least recommend a more rigid frame for the board to prevent this. For example, using at least 1x3 planking to build a 'box frame' around the perimeter; and even securing a few 1x3s across the width and secured to the parallel 8ft. perimeter strips.

When you first start your 4 X 8 board, it's easy to carry it around and pack it away. But gradually the scene becomes more elaborate. You may even want to expand.

It's time to build a bench.

This chapter shows you how to do it, so you never have to move again.

Now, I've suggested you start with a 4 X 8 foot board. Thats' because it's a good starter size, but also the standard size of a plywood board.

This guide shows you how to build your bench to the same spec. However, you should put thought into...

- The height: If you have little-helpers, you'll want the bench to be low enough for them to see, but not so low that you're uncomfortable.

A good height for children is around 30-36 inches. Try setting it at a height where the kids can stand while you sit.

Or, if you're not working with children, bring the board higher - to around 42 inches or more.

Model trains look most impressive when they're close to eye level. Most enthusiasts like their layout to be at chest height.

- Your layout: Does it have one or two levels?

If you have your railway set at 2 different heights, consider dropping the bench a little.

- The position: Do you know whereabouts your bench will go?

It should - preferably - be in a permanent spot. You should also be able to reach any part of your layout with ease. There’s nothing worse than stretching to paint the roof of a house, worried that you might crush something.

It’s a good idea to position your bench against a wall. You save space, and if you bolt the back-end to the wall, you cut material costs, too.

However, this does make the back of your layout more difficult to reach. So consider dropping it a little lower.

To build a 4 X 8 base, you will need:

• 2 lengths of 1 X 4” lumber. Both 8-feet long.

• 6 lengths of 1 X 4” lumber. 3 feet, 10 inches long.

Most DIY shops and lumber yards cut your lumber to size. This saves you a job for when you get home.

Use screws and glue as opposed to nails. Your bench has to endure hours of vibrations from the rails. Nails don’t hold as well.

Always drill pilot holes for the screws. This prevents it from splitting. The diagram below shows you which sections go where.

Here's the simplest and easiest way to build a bench that will last forever, but best of all, you can take it down should you need to.

Go to your local DIY store....

Cut the planks so they form a frame around the plywood.

Once it's all square you need to glue and screw them down...

Use glue and screws – you want it to be as robust as possible.

Then put struts in the middle too.

Turn it over and put more screws in. The little folk love helping too.

You'll start feeling good at this point – because the dream is becoming a reality!

Now turn it back over – time to add the legs.

Just glue and screw some simple L shapes together – all the same height of course!

Screw them in. I used butterfly screws as you'll see below, so if I wanted to take the legs off, I could.

Get the screws nice and tight – then you're ready for the big moment.

Tadaaaa!!

Arnie adds: I might suggest checking the leveling of the board in your selected 'permanent' location. For example, in the photos shown the area may have uneven flooring. It would be best to level out the board to prevent wobbling. The unevenness can also affect grading that could impact train speed and pulling performance, especially for small scale trains like N scale.

You might want to add leveling feet to the legs. Adding casters that can be levelled would address both uneven flooring and ease of moving/rolling the layout if the need arises.

Expanding your model railway is simple. You just build another bench and position it next to your old one.

As your layout gets bigger, you want to make sure you can still reach every section easily. That's why it's a good idea to position your benches in an 'L' or 'U' shape.

Ed's benches (over the page) are pushed together to form an 'L' shape. This makes it easy to work on - and he saves space, too.

But if your heart is sinking from lack of space, don't worry.

You can fit a railroad anywhere. And to prove the point, take a look at John's. It's on an ironing board:

https://modelrailwaylayoutsplans.com/john-builds-a-new-layout/

Rolling Stock

The most important part of your setup:

If you only invest heavily in one area, make it the train.

90% of your railway's performance comes down to the quality of your locomotive. It can literally mean the difference between a smooth, slick railway and a jittery, hair-pulling nightmare.

When you choose a locomotive, you should judge it on the following points:

- How many metal wheels does it have?

The wheels connect the tracks to the motor. You should definitely aim to have more than 1 set of wheels picking up the electricity.

Arnie adds: I have always selected locomotives having all-wheel pickup (except for those wheels having traction tires for better pulling power)

- What's the gearing ratio and motor quality? *Arnie adds*: It's often very difficult to know just how good the motor and gearing are as these are not typical specs you get on the 'retail box'.

- I think sticking to brands with good reputations can help avoid headaches. Also, thinks like motors with brass flywheels make for better and more realistic performance.

You want a locomotive that needs very little energy to get started. *Arnie adds:* Again, dual brass flywheels make a big difference here.

A decent train starts slowly and picks up speed smoothly - just like in real life.

- How heavy is it?

You want a train that's fairly weighty to keep the connection consistent between the rails and the wheels.

Be careful not to go too heavy though. Later in this guide I show you how to build hills. You don't want to pick a train that can't make the climb.

- Does it have flywheels at one or both ends?

If it does, consider buying. If it doesn't, put it back on the shelf.

Flywheels help bring your train to a smooth take-off and halt. If you're focussed on realism (and who isn't?), this is an essential component.

- How long is it?

I suggest you choose a shorter train to begin with. Long trains tend to have a lot of overhang at the front.

They're more likely to derail on small layouts with tight bends.

Obviously, you'd struggle to find all these answers online. And you wouldn't be able to test your train out - which I strongly suggest you do.

So go to your local hobby shop.

Your local hobby shop costs a little more than you'd pay online. But, as I've said, this is the most important part of your model railway.

It's also the most expensive. And your local hobby shop can save you a heap of cash in the long-run.

Model shops are run by real enthusiasts. They know exactly which trains deliver the best performance for your budget.

Not only that, most of them have in-house tracks, so you can put your train to the test and see how it performs.

What should you look for when testing?

Well, real trains don't instantly hit 100mph and neither should yours.

When you run your locomotive, you're looking for a smooth action. Make sure it's able to start slowly, and pick up speed at a steady rhythm. Then, dial the speed down and bring it slowly to a halt.

A good quality train adds to the realism of your layout and your enjoyment of this wonderful hobby. Please don't skimp here!

Passenger and freight cars:

Even the most glorious train looks very sad without a freight or passenger car to pull along.

Anything which runs on your rails is called ‘rolling stock’. And you can have a lot of fun shunting it around.

When you see a passenger or freight car you like, look underneath it first.

Steel wheels work best, because they don’t attract as much dust. This means you don’t have to clean the track so frequently.

Saying that, I have seen plastic wheels which can be adjusted at the axle. This is particularly helpful if you’re having derailment problems. Or if you’re playing with different gauges.

One thing you must look for is a good quality axle. If the axle isn’t steel, put the car down and forget about buying it.

Check the wheels spin freely without any resistance. You don’t want to put unnecessary strain on your prized locomotive.

Finally look to see how much detail is included in your rolling stock. Take a look at this gem:

This train has been weathered by Eric, one of my readers. As you can imagine, the smallest details have an unbelievable impact on the realism of your layout.

Some modelers buy blank cars and add the detail themselves. But, as you can see from the spectacular picture above, this is no small job. And it’s certainly not for the impatient.

Since you’re just getting started, I suggest you buy detailed rolling stock while you focus on the layout.

If your passenger car doesn't have the interior kitted out, you can overcome the problem by tinting the windows

Undo the screws underneath and pull the outer wall away from the chassis. Add a small strip of window tinting to the inside window. Screw the carriage back on to the chassis.

Connecting your rolling stock:

The couplers connect your rolling stock together. It's a tiny addition to your layout - so small, guests won't even notice them.

But a high-quality set of couplers transforms your layout from a nice looking train set to a hyper-realistic living world.

Imagine watching your trains shunt cars around your track, connecting and disconnecting themselves - as if there were real people operating the trains!

As your layout develops, this is a must. This is what makes guests gasp in astonishment. And, not surprisingly, it provides hours of fun.

You can uncouple carriages hands-free by using electromagnets in certain sections of your track.

When you switch the magnet on, it pulls the steel coupler apart. As the train passes over, the rest of the rolling stock comes apart like magic!

It's important your couplers are the same on all your trains and carriages. Inconsistencies can cause derailments.

There are 3 main types of couplers:

1) Horn-hook couplers:

These couplers are made of plastic so, obviously, can't be used for hands-free uncoupling.

However, they're perfectly useable while you're starting out. You connect the rolling stock manually using a pin.

2) Lima couplers:

These are made of steel and better quality than the horn-hooks. They can be uncoupled using a ramp.

The downside is they're not particularly easy to connect, so you need to shunt with quite a lot of aggression.

3) Knuckle couplers:

By far the best, and certainly something to consider as your layout progresses.

Knuckle-couplers can be controlled with electro-magnets. *Arnie adds:* for the smaller N and Z scales, Kadee couplers, which are very popular, go under the name brand of Micro Trains Magne-Matic knuckle couplers.

Locomotive maintenance:

Your locomotive should come with guidance notes to help you keep it in good working order.

Regular maintenance should include lubrication of the moving parts.

The motors, gears and wheels are doing all the hard work on your railway. It's a good idea to lubricate them every 100 hours they're in use.

This shouldn't be any hassle at all...

Dip a small screwdriver into a bottle of light machine oil.

Gently touch the moving parts and try to keep it clear of the wheels and bodywork.

Clean the wheels with a washing pad and check they spin freely.

If there's any resistance in one of your wheels, it can wrench the entire train off the tracks. A dab of oil usually solves the problem, but take care not to get it on the paint work. Oil attracts dust and damages the finish.

When you've done this, check the couplers on your rolling stock. Clean any rough edges and make sure they're properly centered. If you've bought fancy new couplers, they should come with maintenance instructions. Keep these somewhere safe.

As time passes, the carbon brushes in your train's motor start to wear out.

When this happens, get somebody at your local hobby shop to open it up and fix the problem.

Laying the Track

Tracks usually come in 9" long sections.

There are 2 types:

1) Regular sectional track: is the most common. It's what you get in most starter packs. The track comes without a roadbed underneath. You have to make your own. (I show you how to lay and maintain your roadbed later in this chapter.)

2) All-in-one track: is sectional track with a plastic roadbed underneath. You don't need to build your own. The advantage of all-in-one track is it's easier to maintain. It's also easier to rearrange if you're playing with different layouts.

However, you don't get the same variety you get with regular track. This makes it a bit restrictive for larger, more permanent layouts. You might also find the roadbed isn't as realistic as one you can make yourself.

A track's rails are made from either brass, zinc-coated steel, or steel and nickel silver.

Brass conducts well, but it also oxidizes with the air. The performance tends to drop as they age, and they need to be cleaned regularly.

Zinc-coated steel, in my opinion, is the poorest material of the three. The zinc wears away, leaving the steel to rust.

As for the steel and nickel silver rails, they don't conduct as well as brass, but they're much longer lasting.

If you're building a permanent layout, I suggest you work with regular sectional track, with steel and nickel silver rails.

Flexible track:

Flexible track tends to be much longer. Whereas regular track comes in 9-inch sections, a strip of flexi-track is usually around 3 feet long.

The biggest benefit is you cut out the joins. Since this is where 99% of connection problems occur, your train's far less likely to get stuck.

You can also create unusual curves, taking your train through natural-looking inclines and descents. Just be sure to keep your bends smooth and natural.

Look at your track at eye-level to check for any kinks and bumps. This is common at the beginning and end of a hill, where your train is most likely to derail.

I like to keep my hill climbs at 3% or under. That means for every 100 inches forwards, it moves 3 inches up.

I find it makes the scene look more realistic. Plus, you shouldn't have to worry about your train stopping half way.

When you start with your small board, it's tempting to cram a steep hill into your layout so you have more room.

I've seen people do this, and I've seen them succeed.

However, you put more strain on your locomotive, and it's more likely to derail.

Watch those bends!

Tight bends are another common cause of derailments.

Larger scales need longer, sweeping corners. Smaller scales, meanwhile, can tackle a tight corner more easily.

When you've chosen a scale to work with, try not to make the track bend beyond the recommended radius. Make the corners realistic. The table below should help you do this.

Scale	Proportion	Minimum radius
O scale	1:48	24 inches

Scale	Proportion	Minimum radius
S scale	1:64	22.5 inches
OO scale	1:76	21 inches
HO scale	1:87	15 inches
N scale	1:160	7.5 inches
Z scale	1:220	5.75 inches

The same rule applies to your turnouts. Turnouts are the switches which allow your train to change tracks.

You can check the angle of these by looking at the turnout number.

The most common is a number 4. That means for every 4 inches forwards, it moves 1 inch to the left or right.

Meanwhile, a number 6 would only turn 1 inch for every 6 inches forwards. The corner isn't quite so sharp, and is perhaps more suitable for a larger scale train.

Always refer to the chart when planning your layout - especially at the beginning.

Choose high-quality turnouts if possible – skimping here can cause no end of problems.

The points on a decent turnout are made from the same material as the rails. They last the same length of time as the rest of your track, and won't need extra maintenance.

And if you want to go that extra mile, here's a foolproof way of doing it:

https://modelrailwaylayoutsplans.com/great-way-to-plan-your-railroad-layout/

The roadbed:

A real-life railroad needs a solid, flat surface to sit on. It also raises the rails above the ground.

We lay a roadbed on model railways for the same reasons, and to make it look like the real deal. I absolutely love how this roadbed looks.

This picture is taken from a 2 X 2 diorama! The layout is tiny, yet there's such extraordinary attention to detail.

You can get ready-made cork roadbed from your local hobby shop or on-line.

Mark your track's centre line on your board.

Stick your roadbed along the line with a water-based glue and use a pin to hold it in place.

You need to trim the roadbed for the corners. Always keep the off-cuts. You never know when they might come in handy.

Now it's time to lay your track.

Smooth transitions:

It's a good idea to stick with one brand of track.

Although different brands are compatible with each other, I find you get fewer connection problems this way.

Most brands join at the rails.

When you've connected them all together, run your fingernail over the tops.

Any problem with your track is almost certain to occur along the joins. You're checking for a smooth, level connection. If there are bumps, crimp the track with a pair of nose pliers.

As your train moves, the vibration can cause the tracks to wriggle and come apart. Avoid this by nailing your tracks to the board with small tacks.

Arnie adds: I think it would be worth mentioning that if you've used cork roadbed, then you best also glue the track to the cork roadbed rather than depend on nails/rail spikes for dependability.

If you've made certain of smooth running of rolling stock on the tracks, then you might want to solder all rail joints. This will pretty much guarantee dependable electrical continuity from section to section of track.

Now bring your eye level with the track and the underlying roadbed. Use some card to level out any gaps and bumps.

Arnie adds: I would make mention of never securing your track down permanently until you run all your intended rolling stock types (locos, passenger and freight cars) over every sections of track. Avoid later problems by finding any 'snags' now and correcting them.

Don't worry if it doesn't look the part just yet. You saw from the picture above, we still have to lay the ballast.

This is the fine sand which goes over the top.

The ballast hides any imperfections. It represents the gravel found on real railways, and makes your model look the business.

Dave kindly sent me this video on ballasting and covers a lot of commonly-asked questions.

https://modelrailwaylayoutsplans.com/ballasting-tips-from-dave/

Track maintenance:

There’s nothing worse than a train that keeps speeding off the tracks. And nothing kills your enthusiasm quicker.

But you can avoid frustrating derailments and keep your sanity, all thanks to a few simple checks and tweaks.

The first things to check are the joins between your track sections. As I’ve said, you can make sure these are smooth by running your fingernail over the tops.

If you’re having trouble keeping them in place, you can solder the joins together. Then file down the solder so it looks like one long, seamless piece of track.

Arnie adds: I think soldering done before ballasting would likely preclude any later problems. Also, before ballasting it's easier to solder only the rail sides without getting solder on the rail heads and having to clean off the rails of stray solder.

Be careful not to alter the gauge as you do this. When the rails get hot, they’re easy to manipulate.

Next, check your switch points on your turnouts. These need to stay sharp. Otherwise the wheels get caught on them and the train is wrenched off the tracks. Again, you can use a file to wear these down.

Your locomotive is driven by the electricity which runs through the track. It makes sense that a dirty track significantly reduces the electrical connection to the motor.

What you usually find on a dirty track is the train stops for no reason at all. So you dial up the power, give it a nudge and ‘ZIP!’ It speeds off the track.

Keep the rails clean.

If you have nickel silver rails, give them a wipe with a soft cloth. Brass or steel rails can be cleaned with a track rubber.

A track rubber is a bit like sandpaper, only much finer. It’s particularly useful for getting stubborn grime off the rails, or for cleaning sections that have oxidized.

Run a small hand-vacuum over your track from time to time. This gets rid of any loose ballast and other debris which could get sucked into your locomotive.

Here's how Dave cleans his:

https://modelrailwaylayoutsplans.com/how-dave-cleans-his-track/

Build your own track cleaner carriage:

You can buy a track cleaning carriage which contains a small tank of fluid and a pad which rubs on the rails.

But Kim thought ‘heck, why not make my own?’ And she got in touch to show me how he did it.

Kim’s cleaner car is fantastic, because it cleans the rails without you having to lift a finger. And if you fit it with a set of knuckle couplers, you could even have your trains collect it for you.

Here are Kim’s instructions:

You will need:

- 1 old car frame with wheels.

- Two screw’s with the heads cut off.

- A metal plate with a dish scrubber instant glued to it.

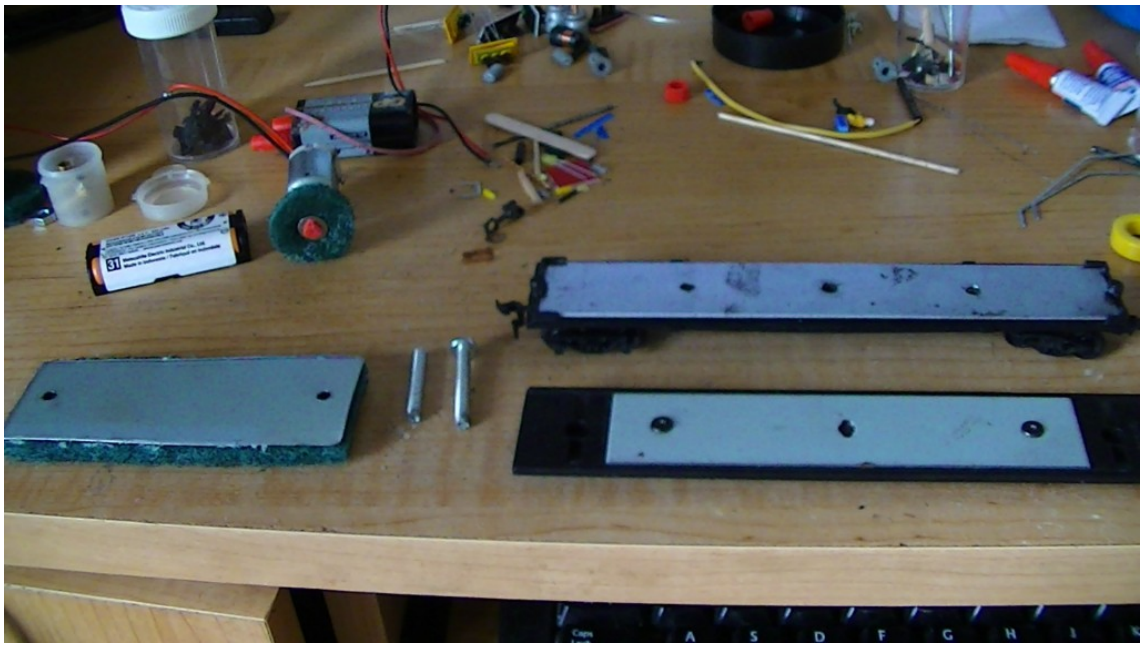
Take your old car and enlarge the two holes at each end. You make the hole’s slightly bigger than the screws so they slip through freely.

Line up the holes in the car body with the plate. Make pencil marks and drill two holes. Now make sure the holes are big enough so those two screw posts screw into them.

Glue the pad with instant glue onto the plate. Slip the posts into the body of the car. The scrubber will sit even on the track and if you lift the car the posts will slip through.

Now when the scrubber is sitting on the track you can add bolts to the posts so it pushes down with more force. If you secured the scrubber to the car, and you add weight, you find it causes the wheels to lift. This may cause the car to bend or warp.

The more force you add to the scrubber the more weight you will have to add to the car. Add tiny weights above the wheels on each side. This pushes down on the wheels so they make contact with the track.



I’m using the same dragging scrubber for the motorized one.

Take an old car. Take a small RC high output power motor - a hair dryer motor or something similar will do. It should be hard to stop with your finger.

Then, take a used instant glue top. Cut it. Add a tiny washer to the large end and slip on a pad that’s cut into a small circle.

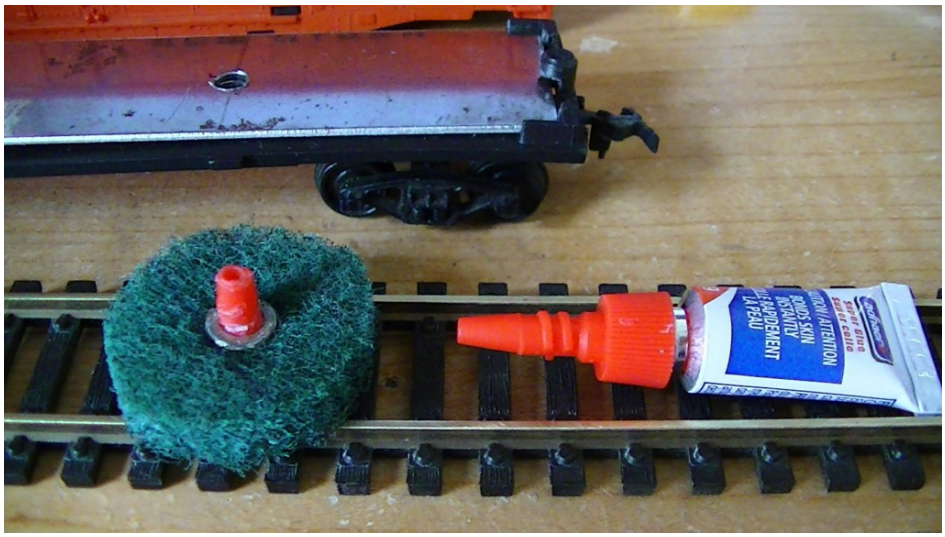
Slip it on the post. Add another tiny washer (see photo).

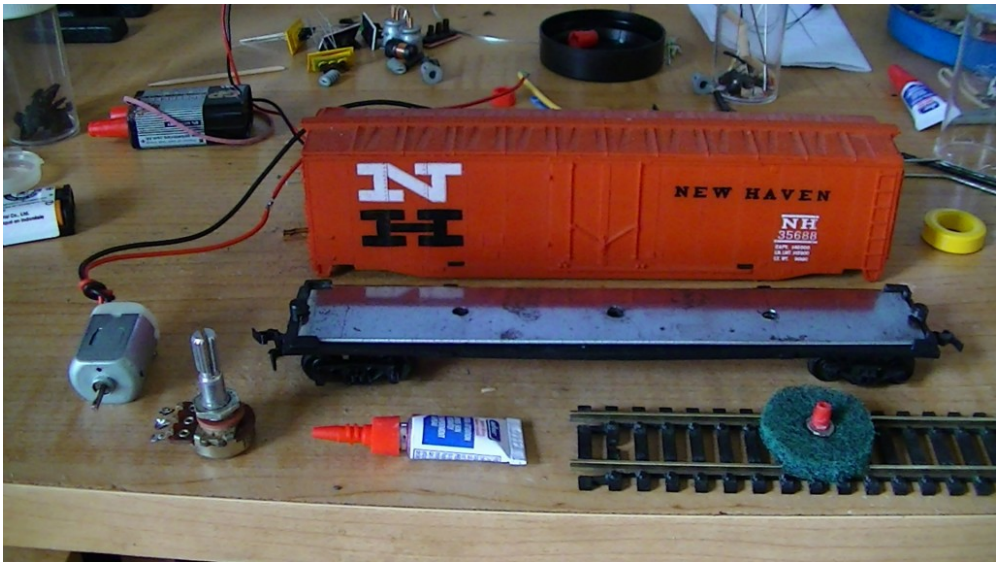
Now take your car. If it has a hole in the centre already, drill it out just enough to slip the head of the motor into it (where the post comes out that little head piece).

Now the motor post should be sticking out the bottom of the car. Attach your pad onto the post of the motor. It'll be tight so give it some force. Now secure the motor in place with a bracket so it doesn't move.

I took a volume switch from an old radio to vary the speed of the motor. A 2.7 volt battery can run this scrubber at high speed.

My test track is over 20 years old. You can see what a difference it made once it passed over the top.





Electronically it isn't hard to figure out how to hook the motor to the switch and battery. Positive power runs to the first post of the switch. Another power wire runs from the second post of the switch to the positive lead of the motor. Negative runs from the battery to the motor. If need be, add a resistor to the power wire going into the switch so it doesn't burn out.

The bracket you see in the other photos isn't very good and was moving too much. You can use the extra holes in the car body to make a bracket which holds the motor in place.

This build looks very crude but works amazingly well. If you don't mind making 2 tiny holes in the top of the car body, you can slip a thin wire inside to activate a power switch. This turns it on and off, as well as tuning up the speed of the motor.

Once done cleaning remove it till next time. The way it cleans, it will be a long while before you need it again.

Powering up

The basic power pack:

Your model train's power pack draws the high AC voltage from your wall socket and converts it into 12-15 volts of direct current (DC).

Direct current polarises your rails so the inside rail is positive and the outside rail is negative. It's also directional.

Most starter kits use a standard analogue control system to alter the current.

By moving the dial, you control the speed of your locomotive. What's more, you can reverse the polarity and make it move backwards. This is useful for shunting freight cars around.

Analogue control systems are most common, because they're easy and cheap.

When to change the power pack?

A basic power pack is extremely limited in what it can do.

You might only be able to drive a single train around a small oval. It's good enough when you're starting out, but it won't be long before you want something bigger.

Weak power packs make the train look jittery and inconsistent. It slows down as it moves further away from the power points and speeds up again as it draws nearer. Sometimes it stops entirely.

As for multiple trains, lights and working machinery, there's no chance of seeing them come alive.

A high-quality pack should last forever, so it's worth getting the best you can afford.

As your layout gets larger and more intricate you have the freedom to add multiple connection points to the track. This helps you keep a steady flow of power all the way around.

Your train becomes smoother - more fluid - almost as if it's being controlled by a real person.

You can add street lamps, level crossings, cranes...just about anything that exists in real life.

Some high-end power packs can even be controlled with a remote control. This is splendid if you plan on building a very large layout. You'd be able to walk around the room and control your miniature world from the palm of your hand.

If you thought the power pack was a boring purchase, you know now that it isn't.

Actually, it could add to your enjoyment of modeling in a way you never thought possible.

See how stunning Arnie's night time layout looks...

And as I'm writing this, here's the latest from Arnie. Just Stunning.

https://modelrailwaylayoutsplans.com/arnies-update/

See how the lights in the houses and along the streets add a touch of magic to this incredible scene?

I can tell you there's a very good power pack behind all that. And it's doing a wonderful job.

DCC control systems:

You can run a basic track with very little knowledge.

A basic power pack can power a small track on a 4 X 8 board with very little fuss.

However, as you start to add new sections, turnouts and accessories, it soon shows it's limitations. It needs a helping hand.

The old-fashioned solution was to add multiple power packs to different sections of the track. You then use toggle switches and relays to toggle from one power pack to another.

If you're not particularly good with electronics, this gets a bit confusing.

There is another solution - one which I highly recommend: 'DCC,' otherwise known as 'Digital Command Control' is a system which sends a computer signal to a receiver inside your locomotive.

Your railway becomes a network of computers, all communicating with each other at your command.

Each train has its own decoder and unique address. You can control each train without any effort or technical know-how.

It's a simple case of applying a constant voltage to the entire track and watching it come alive.

A DCC-driven track tends to look more realistic.

The voltage doesn't fluctuate, so your train maintains the same speed, regardless of where it is on the track.

What's more, if your train has a horn, lights, couplers, sounds and smoke, you can control these features individually. It's as if you're standing in the cockpit, manning the controls.

And there's nothing complicated to learn. You just plug it in and play.

Arnie adds: Yes, this is true for basic operation - but for example, if running more than one loco at a time then you have to program each with a different address (other than the default address of 3).

And if you want to control lighting effects, you may have to do some additional programming; similarly with sounds and their volumes - if your loco also has sound in addition to just DCC.

Honestly, I can't think of a single disadvantage to using a DCC control system. The only thing which might put you off is the price.

A starter kit usually begins at around $100, and prices can reach over $1000. You also need to get your trains fitted with decoders. This costs $20-$40 per locomotive. And about $75 to get a loco equipped with sound.

If you're interested in a DCC system, consider the following points before starting your railway:

- Although DCC decoders are getting smaller, there still aren't many available for Z scale trains. You may want to consider a larger scale.

- Decide if you want all the equipment in one box. You can get starter kits from Bachmann, Digitrax and Lenz, which have the command station and power booster all in one box. This is useful if you're starting from scratch.

- Be sure to test your DCC system at a local hobby shop - preferably with the train you're considering, too.

- Look for locomotives that are 'DCC ready'. This means they have a socket you can plug the decoder into. You might even be able to negotiate a better deal if you buy the train and decoder at the same time. *Arnie adds:* Or just buy the loco already DCC equipped.

- Consider the type of decoder you need. There are differences. A basic decoder will only control the locomotive. A more complicated system lets

you take control of the lights and sounds. As always, your local hobby shop is the best place to get advice.

Power pack safety:

Although your model railway's voltage is very low, it's enough to give you a good kick. So make sure the power pack is turned off when you work on your tracks.

Check the cord is intact.

And if the pack starts to smoke, buzz or overheat, get a qualified electrician to look at it. *Arnie adds:* I would note that if this occurs to IMMEDIATELY TURN OF THE POWER to the power pack. This is particularly true of DCC trains as the decoders can get 'fried.'

Remember, the voltage to the tracks might be low, but the voltage from the wall to the power pack is enough to set your hair alight.

Do be careful.

How to make realistic scenery

Pay attention:

Now it's time to think about scenery.

As I see it, this is what makes modeling the best hobby in the world.

Suddenly, you notice tiny details in all your surroundings...the types of shrubs and plants that grow along the railway banks...which parts of the roads are worn...or the places where buildings are weathered.

Paying attention to the world doesn't just make your model look more realistic. It adds a rich new perspective to your life.

By now, you should have a reasonably clear idea of what location and era you're going to recreate. It's a good idea to research these thoroughly.

Go to the library. Read travel books. Look up which plants are in the area. Make a note of the architecture. Are the cities filled with gothic cathedrals like Barcelona? Or Art Deco skyscrapers like New York?

The more you know about your chosen setting, the better it'll appear on your board.

There's another point I'd like to make, which seems embarrassingly obvious. Yet it's incredible how often this question is overlooked...

...What is your train's purpose?

Trains aren't built for no reason. They do more than travel in loops through scenic countryside.

Trains are used to transport people from cities to villages. They're used to shift materials from mines. They're used to haul resources across wide open expanses.

The best railway layouts tell a story.

Think about what story you want to tell. Then plan your scenery to give it the best possible impact.

And to give you an example of this, have a look at Barry's layout:

https://modelrailwaylayoutsplans.com/barrys-stunning-layout/

Building a hill:

Your layout needs a hill. Fact.

It doesn't have to be a big hill.

It doesn't even have to be a physical hill on your board. (If you're still working with a small space, a simple backdrop makes all the difference to how it looks.)

But your scene needs something to make it look less, well...flat.

If you have the space to create a 3D hill, I suggest you get a 4 X 8 foot sheet of 1" thick foam insulation.

Foam insulation is a popular material with modelers, because it's easy to sculpt and manipulate. And if you get a nice big sheet, you can add natural textures to an entire board.

Trust me, nothing brings a sheet of plywood to life better than a set of rolling hills.

I always get started by drawing out the shape of my hill on a sheet of paper.

Cut the paper out and stick it to the base of your foam insulation.

Next, use the template to cut your foam insulation and glue it firmly to your board.

You'll want it to be rock solid before you start chiseling away at it. So leave it a full 24 hours to set.

If you need to add more height, or if you're building a mountain range, add another layer of foam until you have a height that's roughly to scale.

Once the glue is set, it's time to sculpt your hill. You can do this with a rasp, serrated knife and hot wire foam cutter.

Hills don't look perfect, and neither should yours. So just chisel and rasp it away as you see fit. If a piece falls off which you want to keep, glue it back on. Those imperfections add to the realism.

I like to keep a picture of the hill I'm trying to replicate on my table. Hills have undergone centuries of erosion. The water that's rolled from the tops form gullies in the hillside.

You should pay attention to these finer details, because they have an enormous impact when you come to paint it.

Look at what shrubbery grows at the base of the hill - and how it changes as you reach the top.

I paint my hills with acrylic paint, and I paint layer after layer after layer.

You can obsess over painting the tiny details, but I find it never looks as good as when you just get stuck in and layer up the paint. Have some fun with it.

You can use real dirt from the garden and clumps of grass. You can even grab a few tiny twigs. On your model layout, they look like logs and dead, fallen trees.

If you want to make your hills appear more mountainous try adding some finely detailed rock faces.

Arnie uses Hydrocal - and extremely fine plaster powder, which he sets in rubber molds. Take a look:

Here's how he did it:

- When thoroughly dried, the castings are painted with various diluted blackish and gray shades of washes of stain and acrylic paints. (Or use other colors as appropriate to the terrain regions being modeled.)

- The dried castings are then glued against the supporting pink extruded foam surfaces to create rock outcroppings and cliff walls.

The foam board can be carved and painted where needed to blend into the rock formations. Placing a string of such rock castings in line next to each other is the basis for creating a length of cliff or a rocky- faced mountain side. To provide a continuous, uninterrupted wall of rock, the spaces between the castings are filled with Sculptamold (by Scenic Express). This is a paper mache-like product of plaster powder and paper fibers.

When wet, it forms a putty-like mass that is then pressed into the areas around the rock castings. When dry, the Sculptamold can be stained in the same way as the Hydrocal castings.

• Pieces of small fallen rocks and gravel of the same color are then placed on larger horizontal rock surfaces and at the base of mountains/hills and glued into place.

• Then to create a weathered look with natural color variations in the stone, 'dry brushing' with acrylic paints is used.

This means you dip the tip of a paint brush of the desired width into the desired color of paint and then vertically tap the tip of the brush onto a surface (e.g., a piece of foam board or paper towel) until the tip is almost dry. Then you lightly brush that color over the rocky surfaces. I used browns and greens to simulate soil, earth and moss on the rocks. (See photo 3 of the completed waterfall.)

• The water on the horizontal surfaces of the waterfall is created using "Realistic Water." It's brushed on the surfaces of the water path of the falls. Additional coats are added to create more depth and sheen. The product "Water Effects" is used to create the falling water. When dried, it's placed on the falls and glued in place using a coat of "Realistic Water" at the contact points of the ledge and catch basin on the ground. The surface of the falling water is then lightly dry brushed with white paint to create the illusion of moving aerated water. (See photo 3 of the completed waterfall.)

• Then, turf (finely ground foam rubber of various colors) is sprinkled and glued to the ground and between the base rocks at the falls. I used earth, soil and mossy turf colors to finish the ground cover. Add foliage and figures and you have a very realistic scene.

Building structures:

You might think building a church or a house from scratch sounds tricky. I did.

But it's actually a lot easier than you'd think.

There are heaps of plans online. So you can build an entire town without any two buildings looking the same. And if you follow them correctly (not much of a challenge), they should all fit exactly to scale.

Building a structure from scratch is a lot of fun. And it's so fulfilling to see your masterpiece take its place on your scene.

However, you might like to begin with a plastic kit first - just to help you get started. Have some fun playing around with it. Make it your own. Then apply what you've learned to a building of your own.

A lot of modelers follow a kit's instructions by the letter. I think this is a shame. You miss a tremendous opportunity to add a touch of uniqueness to your building. Not to mention realism.

Look at the old stations and houses in any town. They don't look like they've been built from a kit, do they?

They've stood for decades - even centuries - and their appearance has changed over time.

I always take the trouble to weather my buildings. (In the next chapter, I show you how to do the same.)

A plain matte spray is a good way to start. It takes that 'plasticy' shine out of your buildings and paints. You can then add your own details to show their age and wear.

Weathering is a painstaking process. But when all your buildings come together with their rust marks and water lines, the whole scene looks lived in. As if there are people who've been there for generations.

It's for the same reason, I'd encourage you to add your own details and flourishes to the buildings you create. Make them your own.

You can scan old newspapers or download decals off the internet. Shrink them down to the correct size and print on good paper.

You can paint over the images with a plain matte spray if it's too glossy. Add rust to the metal signs. Or tear pieces off the posters and billboards.

Michael created billboards from a bygone era with images of adverts he found online.

Advertising has been around for as long as the railways, and there are tons of examples online from every decade. These make great additions to your train stations.

Laying roads:

A good road enhances your entire railway.

It connects the towns and villages to your stations and helps your model tell a story.

I always add my roads after I've finished the structures. That way, I know what needs to be connected and I'm less likely to make mistakes.

You can use a fine-grit sandpaper to replicate concrete roads.

Black rubber matting with an imprint of paving is also available from model shops. With some insulation foam used for the road edgings, this makes an excellent modern pavement.

For bygone eras or small villages, I make the roads from a course sandpaper. The texture gives the effect of dust and gravel.

Finally, I always, always fill my scenes with lots of people.

Arnie adds: This is a point worth stressing as our world is PEOPLED! Living creatures, especially people, connect us to the world around us.

A village, town or city scene lacks vitality without people moving about. It's otherwise at best just a movie set, and at worst a ghost town!

When you add people, try to do more than have them sitting on a bench or walking along the streets.

You should have people doing mundane things, but they can also help you tell a story about what’s happening in your miniature world.

I absolutely love what Alan’s done here:

And here are some men putting out a fire on Arnie's layout. Let's hope they can save the rest of the town:

Do you see how the simple positioning of your people can add intrigue to your layout?

Do you see how they tell a story?

You can fill your model with quirky little details like this. Every time people come round, they notice something new. Something they missed last time.

Making tunnels:

The best tunnels, I find, are the ones that make the entire train disappear.

It just brings out the kid in me. I love watching them vanish and reappear on the board. And that's why I suggest building your tunnel into a hillside, just like Arnie did.

You can carve a tunnel out of foam insulation. Stick it to your board. Then build your hill same as you would normally.

The first thing to do is decide where the portals should be. The portal is the entrance/exit of your tunnel.

After you've done this, you need to keep the tunnel even and structurally sound from one end to the other.

Alan builds his tunnels out of grapefruit cans.

"Remove both ends and cut along the length to open it out," he says. "It may need two cuts depending on how high you need it to be."

Don't glue your tunnel down until you've finished the inside. I like to paint the inside with a matt black spray. This darkens the inside, adding to the mystique.

Finally, place it over your track and run a train through it. You want to get the position right before you glue it down. Otherwise you could ruin hours of hard work and a perfectly good layout board.

When you're satisfied with the your tunnel's structure and clearance, glue it to your board and start carving the hill.

Building bridges:

Bobby messaged me with pictures of some bridges he built from scratch.

“I wanted to share my first scratch-built bridges,” he said.

“Two are Howe through truss bridges. I have always been interested in scratch building so I have it a shot. They are almost done so let me know what you think.”

I don’t know about you, but I think they look absolutely terrific. Brunel couldn’t have done better.

And think how satisfying it’ll be for Bobby to see his trains running over the tops of these magnificent structures.

You can buy bridges from around $7 in a model shop. While you’re starting out, this may be the option you want to take.

But after you’ve got your train running, you can afford to slow down a little. Building a bridge of your own is a wonderfully rewarding exercise.

A bridge can be a simple log clearing, a stream, or a gigantic suspension bridge.

It doesn’t matter which sort you build. Nothing beats the feeling of seeing your train clear an open gap and safely reach the other side. It’s something I could watch for hours.

Any bridge - big or small - is a magical addition to your layout.

Most model railway bridges are truss bridges, like Bobby's.

They're kept short and simple. Nothing fancy. So they can clear a river or stream without too much difficulty.

When I build a truss bridge I use a plywood base. This has all the strength your locomotive needs.

Next, I use balsa wood for the trusses. They have no structural use. They're just for decoration.

Finally, I get to work on adding the detail and spray the entire structure.

Your attention to detail has the biggest impact on the finished result. Look closely at some pictures of truss bridges and notice where the rivets appear.

You can create your own rivets with a small modelling knife and balsa wood.

After you've sprayed the structure, look to see where the rust and water marks appear. Are there any places where the paint has discoloured?

Make your details more and more refined.

In the next chapter, I show you how to weather your structures and rolling stock.

Adding trees:

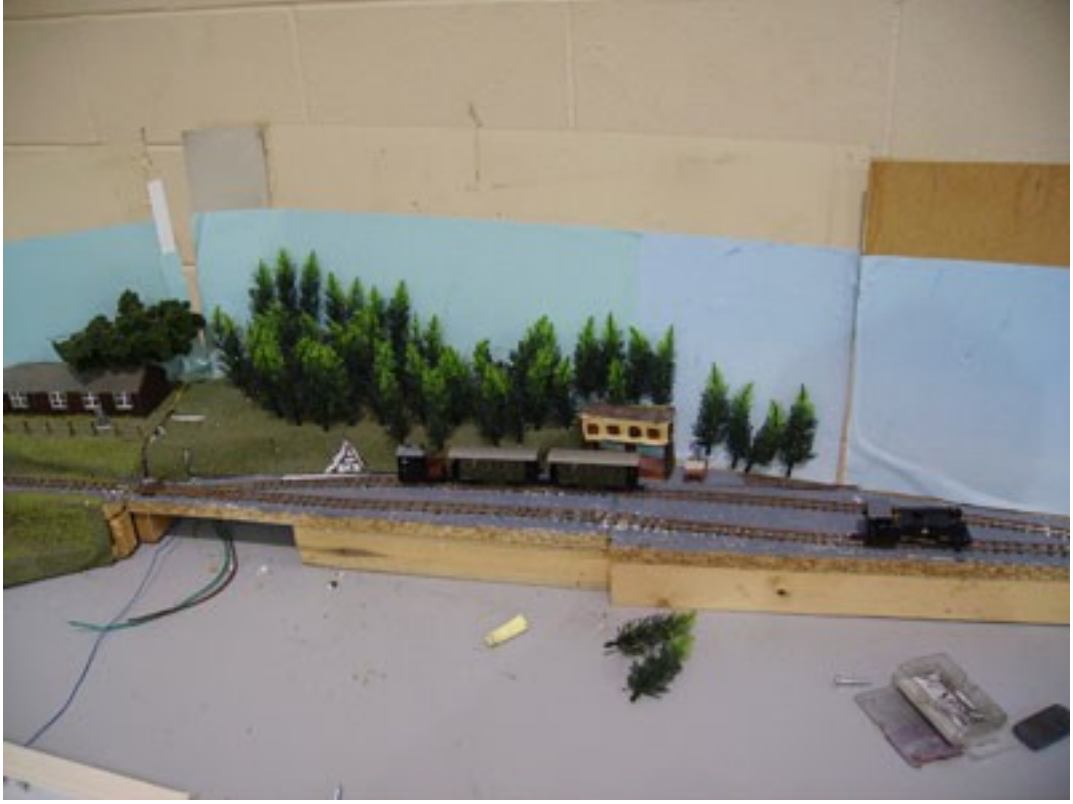
Nothing adds to the grandeur of your scenery like a nice dense forest.

The only problem is once you've made 2 or 3 trees, it starts to get a bit boring. We need a way to make trees faster.

Richard uses the needles from an artificial Christmas tree:

"Drill a hole in the baseboard to take a matchstick, paint the "trunk" of the needle brown and slip it over a match. Hey presto! I did an entire forest of 60+ trees in an hour!"

Here's how they turned out...



You can insert these trees into your layout with a small hole and some glue. I find the quickest way to make the holes is to bash a 4” nail into my board and pull it out again.

Roland’s technique for tree building is similar to Richard’s. Here it is, divided into 3 steps:

(1) A garden fern, Foxtail, provides ideal armatures. When the frond dies, remove the dead stems and trim to whatever height or scale you want your trees to be. If they are curved, gentle pressure will straighten them.

(2) Take a can of spray adhesive, the type used for mounting photos, etc. It is usually available in clear or colours such as white or yellow, (ONLY USE THE CLEAR or it will show in the finished product), and some ground flocking material. Holding the base of the armature between the thumb and index finger, apply a liberal coating of the adhesive and immediately dip it into the flock. Remove from flock and holding it upside down, twirl it gently over the container to flick off any excess. If necessary repeat the process for a heavier coating. Set it aside in a block of foam and continue with the next one.

(3) Allow the trees to dry for an hour or so, then take a can of any cheap and nasty firm hold hair spray,(the smell will eventually disappear), and give the trees a good coat or two to set the flock.

“If you can’t turn out a realistic looking tree in a minute and a half or less I will be very surprised,” Roland said. “It’s dead easy.”

“These trees are N scale but I also have them in HO. They would also work for O scale. Just make them as tall as you need,” Roland says.

I’m glad Roland mentioned scale, because modelers often get the tree size wrong. It’s a common mistake among beginners.

What a lot of modelers don’t realise is just how big your trees have to be. Your tallest tree on an HO scale layout could be as high as 12-15 inches!

So look at some photographs of your chosen location. Check the height of the trees in relation to the trains and buildings. It seems unbelievably obvious, but it’s so often overlooked.

What’s not so obvious is the position of your trees, and this takes a little research. Your era or geographical location will affect where they go. For instance:

- During the steam era, trees were cleared from the edges of the train tracks. This was to prevent fires.

- In windy places, tall trees are cut back from railway lines. (I find real twigs make excellent dead and fallen trees. You might like to position a few near to the sides of your track.)

- You don’t often find living trees near a freight yard, because fallen leaves can interfere with the operation.

Few modelers take the trouble to research these details. They’re easily overlooked.

So before you add trees, give yourself a plan. Find out...

- Which trees grow in your location

- Where they’d be positioned, and

- How tall/short they are in relation to your buildings and rolling stock.

Weathering

The world isn't new:

The world doesn't look brand-spanking new.

There are buildings which have seen a hundred winters. There are hills which have seen 100,000. Over time, their age starts to show.

Weathering is a technique which makes your shiny buildings, rolling stock and scenery look old. Get this right, and it has a dramatic effect on the realism of your layout.

This chapter shows you how it's done. But once again, your success will come down to how attentive you are to the world around you.

Notice where the water marks appear on train carriages, and whereabouts the rooftops of old buildings oxidise in the sun.

Ask why the paint on a locomotive might discolour. Diesel smoke causes the paint to discolour nearer the exhaust. Meanwhile, a desert train would have a more faded appearance all over. Pay attention to these details.

Weathering takes a little practice and it's certainly not something to rush. But if you can set aside the time to do it properly, it's a lot of fun.

Moreover, the results are well worth the effort.

How to weather your trains:

Eric wanted to depict a train, riding through the Scottish highlands in the late 1960s.

His models were perfect for the job. There was only one problem...they looked too perfect.

“The first step was to disassemble the body of the train from its chassis and, then, cut the wires connecting the engine to the motor. (I’ll later install a small connector and a DCC decoder),” Eric wrote.

Here are Eric’s steps for weathering the train and carriages:

- I start by brushing a coat of « Dirt » paint (8 parts of “Black Glaze” for one of “Smoke”, three of “Dark Flesh”, one of “Glossy Black” and five of “foundation White). This mix is drybrushed on the chassis, wheels, and even on the front of the locomotive’s body (the part in black) and the steam deflectors (the Elephant Ears, as we call them) without forgetting the cab’s roof.

- Then I prepare a mix of « Dark Green » with a bit of my « Dirt » mix to lighten and tone it down before brushing a wash of this mix on the green parts of the locomotive and tender bodies (the first layer wiped dry with a

sponge, the next ones brushed dry with a Filbert brush, as a “Glacis” in artistic painting).

- After this, I prepare my « Grime » mix (one part of « Smoke » for three of « Black Glaze ») that I brush as a « Glacis » lightly diluted on all the areas first weathered with the « Dirt » mix.

- Then I prepare my own « Rust » mix, composed of three parts of « Cavalry Brown » for one of « Burnt Umber » or of « Chocolate Brown ». I then drybrush this mix on the locomotive’s and tender’s bodies, and also on the tender’s chassis.

The Locomotive’s chassis also receive a drybrush of “Rust”, but not as heavy as on the other parts, and I mostly concentrate on the front buffers, the footsteps and some other parts of the chassis.

- I then prepare some « fresh Rust » (one part of « Smoke » for three of « Cavalry Brown ») and highlight some of my previous rust application

spots and also apply some « rust leaks » on the tender where water spills from the tank when loading or near some steam valves. The leaks are applied with a round brush and for this diluted at a ratio of one part of paint for two parts of water.

- I prepare next a mix of one part of « Black Glaze » for one part of « Foundation White ». I brush it very lightly with a small round brush near the water tank and the valves to represent lime streaks where there are some water or steam leaks.

- The last step is to apply a « control coat » of « Grimmy Black ». I prepare a wash of “Black Glaze” diluted at a ratio of one part of “Black Glaze” for three of water, and brush a liberal coat of it on the entirety of the engine and the tender, being thorough especially on the wheels and the driving rods.

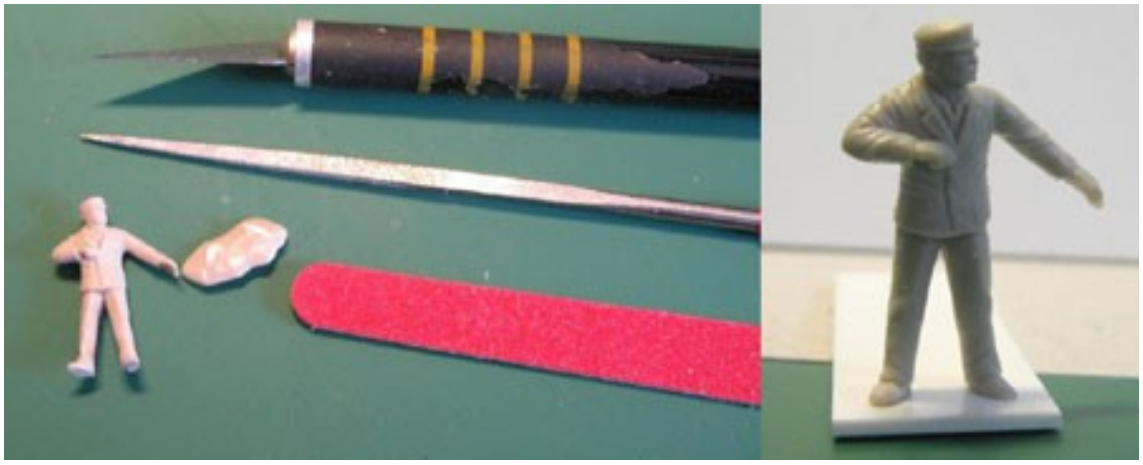
The last steps of the « detailing » would be first a drybrush of light grey (mix of « Black Glaze » and « Foundation White ») to highlight the de-

tails on the inside of the cab, then a brush of « Glossy Black » on the tender's coal load to make it look more realistic, and finally applying some of this « Glossy Black » on the handrails and tubes on the engine's body and also on the buffers (greasiest parts). The last thing to do then will be to reconnect the locomotive to its tender and put it on the tracks to admire the final result.

How to weather your coaches:

Now that the locomotive is done, we can devote ourselves to the weathering and detailing of the Marklin coaches.

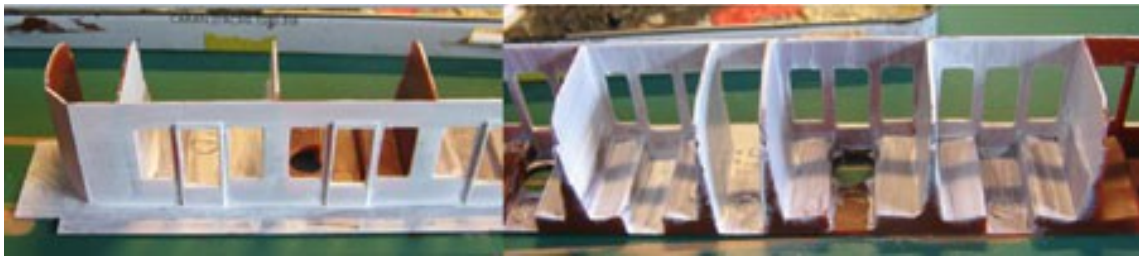
The first step would be to paint the OO scale figures (here from Dapol's range). I first remove the plastic base, then trim the imperfections with a small file. After this, I glue them on a small strip of plasticard to handle them easily while painting them.



- I first brush a liberal coat of « Foundation White » before painting them in order to detect any defect on the figure. Then I paint them with the

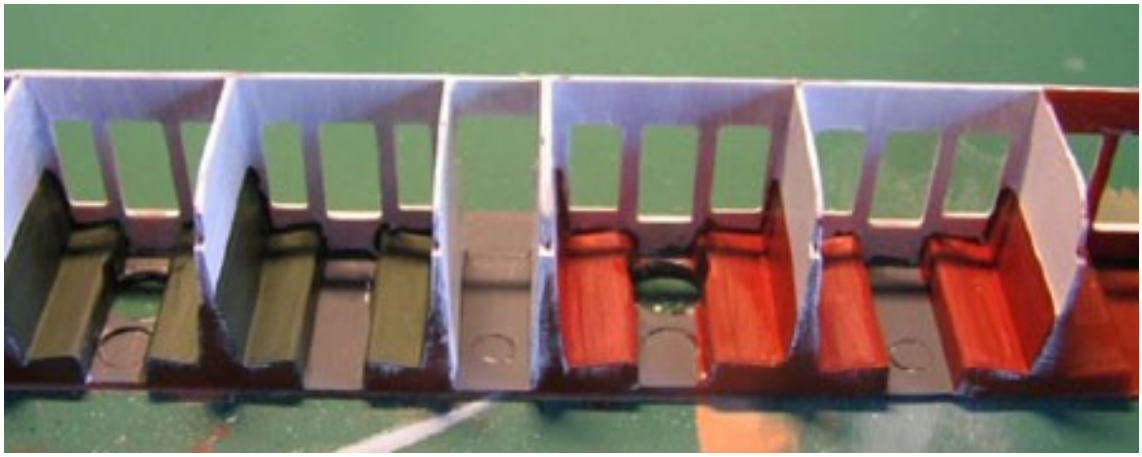
darker tones first before drybrushing lighter ones afterwards in successive and lighter drybrushes till obtaining the wished result. For the Steam engine team, very visible in the cab, I decided to push the detailing level higher with more highlighting drybrushed to make them more realistic and more “like moving”.

- The interiors of the coaches are first painted with « Foundation White » as a Primer. The interior walls being white, I had not to work anymore on them…

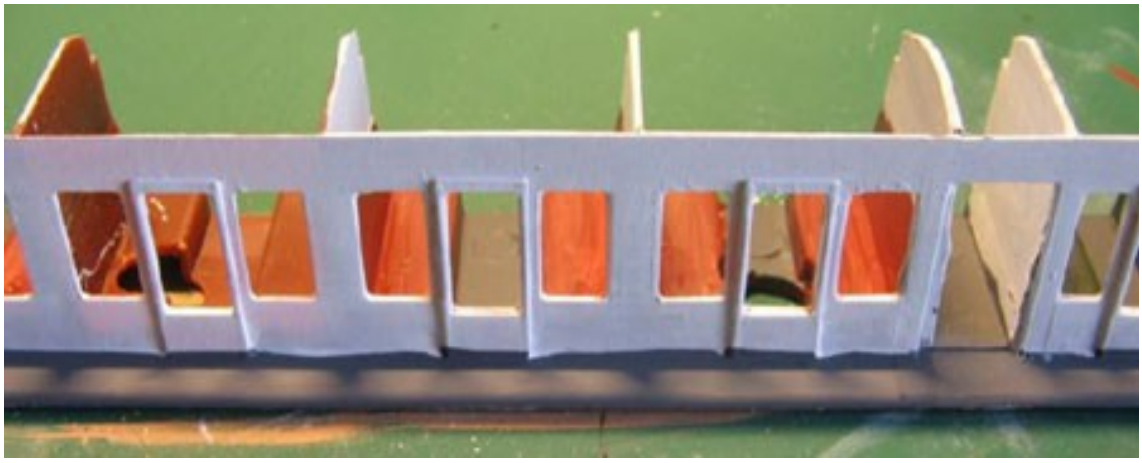


- I then painted the seats in red or in green (depending if it was first or second class). The correct red color for the first class seats is a mix of “Red” with a bit of “Burnt Umber” or “Chocolate Brown”, and the one for the second class seats is a mix of “Dark Green” with a bit of “Foundation White”). An easy way to make the difference between First and Second class compartments on the Marklin interiors is that the space between the

seats is larger in the first class compartments than in the second class ones.



- Next step : Brushing a mix of four parts of « German Grey » for one of « Foundation White » on the floors.



- Now, we can place the figures, but first we'll need to cut away the feet as they will be too tall for the interiors to be realistic. We also put some blinds on the windows of the compartments that are not detailed or will house the wires for the interior lightning (to be installed later from a Dutch DIGIRAILS coach lightning strip).

- The Locomotive driving team is also glued inside the cab of the « Royal Scot » steamer. Before gluing them in place with some Scotch universal glue (the green tubes) we test-fit them in the cab to find the most appropriate disposition before gluing them definitely there.

And after looking at the coaches with the interior put back inside them (relatively easy to do on the Marklin models), you can see this through the windows.

- Now we can start the main weathering process. I prepare a mix of “Dirt” that I drybrush on the bogies and the chassis of the coaches.

- I then dilute this mix (1 part paint for three to four parts of water) and brush this wash over the coaches bodies. I do not apply masking tape on

the windows as I have my own cleaning method to use afterwards. The first wash is dried with a clean tissue in a light up to down movement on the flanks of the coach. The second and third are brush dried with the filbert brush. After applying those washes, I clean the windows this way : I brush some medical alcohol with a small round brush on the window glazing, and then scrape the paint with an old shortened flat or a cotton swab. The result will be cleaned window with a really light coat of dirt on it and dirt agglomerated near the edges.

- I then prepare a wash of « Black (3 parts paint for one part water and a drop of alcohol). I apply this with a small round brush in the recessed lines and crannies to darken them.

I then can start weathering the roofs. I prepare first a mix of Black Glaze and Smoke (10/1) and I brush it on the roof. I then immediately wipe it with a sponge, leaving a light coat on the roof and darkening around the structure lines. The second and third coats are wiped dry with a large flat brush in transversal movements, perpendicular to the sides of the coach, starting from one end to the other end of the roof. I finish with a wash of the mix, highly diluted, and directly wiped dry with a clean tissue. When dry, I then brush some lightly diluted “Black” on the centre of the roof and then blur it to represent the soot deposits from the locomotive’s exhaust.

We'll now start with the rust. I prepare first a mix of "Old Rust" (2 parts of Cavalry brown, one of Burnt Umber and a bit of my black wash to darken it). I drybrush this mix on the bogies, the chassis and the roofs.

Then I prepare a mix of « Fresh Rust » lightly diluted (3 parts of cavalry brown for one of water) and brush it near the roof vents and then blur it with the sponge to simulate rust. I do not forget to drybrush a bit of this mix on the chassis and bogies to represent some fresh rust there.

And here is the final result of this work : the 2-3-0 « Royal Scot » BR steam locomotive from Airfix with the two Marklin Ex-LMS coaches. The pictures clearly speak for themselves and are a true and real plea in favour of the Weathering of Scale Model Trains !

Applying the weathering technique to buildings:

Since playing around with Eric's techniques, I've found they apply equally well to your buildings and structures.

Whenever I paint the roof or sides of an old building, I use three types of paint washes.

Take the colour you need, and mix it to form 3 different shades. Then, dilute them all right down so they form a wash.

Starting with the lightest colour, spread it on to your building.

Afterwards, add the next shade up and finish with the darkest colour.

What happens is the wash doesn't form one block of colour. It's translucent. So when you layer on the different shades, they each show through.

This gives you buildings a lovely aged effect.

Look closely at the buildings you walk past. Notice where the paint tears, or where trickles of rust appear.

These are all things you can recreate on your buildings, structures and rolling stock.

Alan uses a wonderfully useful 'Rust Effect' paint.

See how effective it is at making these flakes of wood look like scrap metal.

Arnie adds: Eric's weathering techniques are highly effective producing very realistic results. The narratives are greatly detailed as to the procedure to obtain the effects.

But I think some mention should be made that novices to weathering should not be dissuaded by lesser successes. It becomes an art form that is honed over time and practice.

However, weathering techniques can be practiced on things of lesser complexity and expense than a prized locomotive.

And starting to learn weathering using chalks/powders of differing colors is less ominous. You can simply take a wet brush or sponge and erase your mistakes, and start over. When you obtain a result you like you can secure it with a spray sealant such as Dulcote or similar product depending on the degree of sheen desired.

68 model railway revelations

Tricks and tips from other modelers.

These keep cropping up, time and time again on the site, so to save you ferreting around for when you need them, here you go:

If you want to build a breathtaking model railway first time, you'll need some sage wisdom from other modelers who've earned their buffers.

Every day I open my inbox to a new batch of railway revelations, and every day I learn something new.

These tricks and tips come from modelers just like you. So I've included them for you to learn from and enjoy. There are 68 by my count, which should be enough to get you started.

Print them off. Circle your favourites. Keep them nearby as you work on your railway.

There are some fantastic ways to save money, improve your railway's performance and add to your enjoyment of this wonderful hobby.

"We use a flower called Sedum. when small– looks like little trees. Spray with glue and dip in the " green stuff" and then carfefully repeat the process. Pine trees for the upper region– we check out the craft stores — like after Christmas and buy " sprigs of fake pine and little trees from the dispaly villages." – Robert

"For the higher mountains we start with a base of pink styrofoams used for insulation. Its cheap and can be carved with an xacto knife. A 4X8 sheet is about $3 pounds UK. If you make a mistake you can fill in with plaster. WE hinge our tunnels so we can get back to a train wreck." – Roy

"Another idea that was given to me by a train shop owner was how to make chain-link fence. You take screen wire and cut it at a 45 degree angle. Put some piano wire (pins) in the ground and you have fence post….walaaa." – David A.

"I have always had good luck using drywall compound and fiber pink insulation or fiber paper insulation blow mixed together to form mountains and

ridges. I shred the fiberglass pink insulation mix it in joint compound and clump on a screen or form, let dry, paint and age. Pour some plaster & paris rocks from molds and work in the arrangement for some sharper rock like surfaces to give good depth between the two textures. Also the great foam insulation in a can can be used to get both smooth like peaks or volcano lava look to a table design or when dry rough ti up and take some chunks out to give a less smooth like appearance" – Michael

"I was able to use (non-clump), kitty litter for ballast on my HO layout. I know the clumping product does not work….. I tried it once." – Anon

"ACCESS INSIDE TUNNELS – Take an old picture frame. Discard glass, just keep frame and backing. Integrate into the scenery above the tunnel FACE DOWN. The backing sheet can be taken off and instant access is achieved. OK there is an oblong break along the backing sheet edge but this can be masked by bushes or a fence on the near sides. Far sides can be hidden behind a ridge." – Alan

"My only scenery suggestion is 1/8″ thick cork, which is only brown in colour. It comes in rolls 18″ x 1 or more yards at most smallbox hardware stores. When there is a canyon wall (long vertical jags of rock) or rolling grasses, cork shapes it best. Smooth boulders are much easier than jagged ones. Cork will take any shape that you can imagine, regardless of the distance to be covered.

The magic twist to changing a flat sheet of cork into any terrain is water. A cookie pan or appropriately sized (flatten in just enough [part of the experiments] water for best absorption. A stee,l not teflon, PAN works best for cutting, or just scoring, the sheet. Experimentation with the local cork will aid in shaping different effects. However after mastering the limitations of your 1/8″ cork sheet, cutting the sheet in the drained excess water will maintain the work area's dryness. NOTE: Soaked sheets fold (rolling-type folds) or bend (crisp accordian-shaped bends) over full-lengths or short-lined sections. This is how scoring atop or beneath the sheet helps. Plan the terrain for best results, according to previous results.

All in all, no ground display is beyond this material. The trick to hills, as eventually with other landscape, is the DRYING. You determine the paint and painting time. While the sheet is wet, place it how, not where, you want it. Secure the shape's position and let it dry (by air or by lamp's heat or by both.)Additional scores or cuts can achieve tighter corners/better curves.

As for rocks, the cutting of slits or removal of ungiving folds/shaping helps attain the nearest smoothness. Scoring aids sharp foldings, as it does on

construction paper, for the production of jagged boulders. The latter is excellent for changing rolling landscapes (before green grass) into rougher terrain; blending boulder bottoms with supporting cork base can produce realistic structures.

Why use cork when paper-mache is familiar and reliable? LIGHTNESS. Depending on how you fashion a bottom to this HOLLOW STRUCTURE, affects its portability. Hollowed WITH CRIMPED INWARD EDGES can suffice for careful transport. Such crimping (inward edge wherever openess results at the back or bottom) strengthens all shapes, but beware — the bigger gaps influence flimsiness. Stiff steel wire glued inside crimped edges guaranty longevity of the shape. Where buildings are to stand atop any part of this cork, reinforcements inside the shape are required. They can be stand-alone topless cones or part of the wire skeleton mentioned above.

The best part of this scenicking method is discovered at changing the scene time. First, depending on the cork and shape, most scenery is reusable. Second, the teardown is easier and less messy. Third, the cost for a whole cliff is far less than paper-mache.

I hope that this helps in developing your scenicking techniques. I'm lazy, so I had to think this method into existence; it is not related to something read elsewhere." – Mike

"Only thing I suggest is would be modelers should read books on the hobby first, not just head in to it, and my main tips are:

1 Run a bus line under your layout with connections every 3ft.

2. Always make sure your track is laid level with good firm connections.

3 Never ballast till you are sure every loco and rolling stock runs 100% over your layout without de-railing.

4 Join a railway forum or club where advice is always available.

I have lernt the hard way, Al, causing me to re-lay my layout many times, to get it right., and of course you are never 100% happy so it is a continuing saga.

Dave"

“I was thinking 6inch diameter plastic pipe cut to length and the bottom cut accross for tunnels, appropriate size jewelry chain for the railcars it is cheap at Michaels craft store. I have some branches off of trees here that are the right size for logs on the rail cars. A small 7.2 volt motor out of a vacuum cleaner power head to make a working single drum winch.” – Leigh

“I have been collecting sawdust, bits of wood, large pieces of polystyrene, beach gravel; hard paper mache packing and bits of dried up ‘plastic wood’ that was in a tin and which I think will form ‘boulders’ in a landscape. I used to enjoy making scenery so am looking forward to ‘retirement’ to get going. The one major problem … where in the house can I house it!” – Peter BB

“A good way for HO scale, with a lot less effort, is to move small scenery away from the tracks and proceed to duct-tape your camera to a 50′ flatcar that’s pushed in front of the loco. Works well for me.” – Connor

“Follow your wife, mother, sister, girlfriend, etc. to every hobby store, fabric store and craft store they go to for a month. You will find a wealth of tools, materials, techniques and ideas that you would not know existed.” – Mike

“Since I’m modeling mid 1950′s I use many of those plastics used to mount items to cardboard, such as nail clippers, small paint bottles, cars, trucks, and farm equipment in place. I paint them flat OD green and cut them to fit as flat car loads. It may not be the best idea, but as I’m going to buy the product, I see what I can make out of the packaging. I get two for one this way. I could use flat black as well, but for my time period canvas was the most popular. Those modeling modern eras could use many other colors because of the many colored tarps.” – John

“I use the grit when they tarmac the roads, I put the grit in a sock then bash it with a hammer ,then spray it black for my coal, then i put the polystyrene in my trucks then i put pva on top then sprinkle the grit on top ,but don’t put to much in it will be to every.,or you can put blue tack in them ,but paint it black first, when you make trees when you put the foliage on i spray them with watered down pva let the dry then spray them with airlaker.” – Anon

“Round toothpicks $1.50 for 500 in a plastic container, chop the point and turned top off and you have round logs/fenceposts for a wagon load Polystyrene cut to shape and painted with granules glued to it for wagons loads

– could be coal, gravel, sand, rock etc Matchsticks drilled with 1mm holes to allow thin copper (armature wire) to be threaded for fences Fibreglass/plastic/wire flyscreen cut diagonally then supa glued to fence-posts (straightened paper clips 37mm long) set in 1mm holes 5mm deep gives 8ft fencing Instead of modroc/plaster gauze, I use household painters masking tape crisscrossed then thinly coated with polyfilla plaster for land-scapes. Look out for polystyrene sheeting from packaging of appliances for building up landscapes. Use a box cutter knife (v sharp!) to shapes. Less mess than with bread knife." – Greg

"A very easy way to make "asphalt roadways" is to use the self-stick type of 'non-skid' strips used for stairs, diving boards etc. (has the roughness of about 80 grit sand paper and comes in black). One such piece was sized at 14 inches long, 8 inches wide. You can cut it with scissors or a razor blade. Using whatever color paint you wish, draw a dotted line (or double yellow etc.) down the center. Have done bike paths on the side also with white paint. Then peel and stick your new roadway wherever it's called for." – Peter

"For tubes and things that are hanging around in railway yards and factory yards visible from the railways use tube spaghetti,you can paint it any colour you wish,rusting tubes and pipes,looks fantastic !

Micropore plaster is fantastic stuff,if you want to fix something quickly or even build things then apply the plaster first for example to two card joints of a building,touch the plaster with cyno adhesive,and zap ! welds like rock so keep your fingers away.

Wooden bobbins as used for cotton reels make super electrical wire hold-ers,paint them up and wrap suitable wire around them,you can even add discs of card on the ends to simulate the part where the cable is fed.

Never throw that material you get from oranges as they are held together in packs,the mesh can be put to good use for hoding the loads onto wagons etc,or vehicles around the layout,it is mesh made from nylon normally.

Tie wraps have many uses in holding things securely to the layout board,you can drill holes into the board and thread them through.

I never pass any barbecue sticks by,they come in all sorts of diameters and sizes,also lollipop sticks as well can be fashioned into all sorts of things on your railroad,you can easily make your own telegraph posts from the sticks,to make a batch make up a simple jig that determines the length of the cross pieces,with a round Swiss file cut s semicircle into the places where the cross pieces go and glue them into place,the wires can be fash-

ioned from button thread,just make sure that you drill holes for the posts and glue into place before attempting those wires.

Kneadable rubbers obtainable from art shops make great track cleaners,you can pull off a small piece and dispose of it once the crud has been lifted from your precious rail track.

Why buy weathering powders ? go to the sae art shop and purchase some pastel sticks,burnt umber,Yellow ocre,a good green will do,on a piece of glass crumble the pastels with an old rolling pin,then decanter them into jam jars,label up and you will have enough weathering powder to last you for some time,mix the colours and apply with a cheap art stiff brush,you can fix the colours with a flash of artists fixitive,a trial piece first to check compatibility is a wise move.

Those track pins have more uses than fixing track,you can assemble balsawod buildings with them dry,then once happy flash some cyno down the joints,after a quick rub down spray the balsawood with car/auto primer,do this outside as it is smelly,once dry rub down and paint the buildings with acrylic paints.

To make an effective locomotive/rolling stock oiler take a cork and push a small dressmakingneedle into the cork so that the eye part shows,dip the oiler into thin oil and the eye retains just enough lubricant to do the job.

Another quick oiler is made from the humble cocktail stick,just make a small slit in one end,this retains enough oil to do the job,once used just dispose of them.

The metal mesh that comes in those car repair body kits makes a suitable fencing material once cut into strips with any old pair of scissors.

Why not make yourself a track cleaner utilising any old railway wagon ? add a block of balsawood stuck with epoxy resin underneath the wagon and glue a piece of felt onto the block,make it so that by applying slight hand pressure on top of the wagon the felt just touches the dirty track,apply a dab of tree alcohol to the felt and with your hand run the wagon over the rails and see the dirt lift,allow the alcohol to evaporate before useing,never use inflammable materials near a flame and open doors to allow the fumes to go away.

Signal arms are expensive,have you considered making your own from Plastruct ? design the signals on paper first and assemble with polystyrene contact cement,signal arms can be plastic sheet or even those flat lolly sticks mentoned above.

Fine sawdust mixed into any old left over household paint makes good crud for scenery work,you can also mix the sawdust with PVA adhesive (Elmers I think you call it in the USA ?) either paint later or add acrylic colour to the mix.

Florists wire twisted to make tree trunks then worked at right angles for the various branches,dip the trees into PVA adhesive and hang up until dry,paint them then apply spray adhesive and dip the branches into flock for the leaves,they look superb.

Happy ingenious and money saving modelling to you all !"

Barry

(A big thank you to you Barry – Al)

"I am a diabetic, so medical supplies are abundant in my house. Especially insulin needles, finger sticks and such. I have taken the orange protective cap from over the needle and cut it down a bit to make traffic control cones which I use around my road construction sites. I went to my son's sign making shop and asked him for a piece of scrap reflective white vinyl which I cut into strips to make the white stripes around the top of the cone. The other end of the needle has a cap which protects the plunger. Orange paint makes these look like the traffic barrels used around construction sites also. Decorate it with a strip of white reflective vinyl and you will have a perfect traffic control devise. Also, a little black or silver paint, makes these look like trash cans that are set out on trash day.

My glucose test meter uses test strips that are dispensed from a drum. I peeled the label off of the drums and painted them silver. They make excellent rolls of steel for my steel plant. Naturally, a litte weathering makes them look more realistic. Place them outside the steel mill as inventory waiting to be shipped by rail or put them in the rail car as a load.

I haven't tried it yet, but I was looking at the bottles the insulin comes in. If I paint them white and letter them, I just might have made a propane tank for that service station at which you buy propane for your BBQ grill. (I think I'll get my son to make the decals for the tanks) I'll let you know how this works out.

Green sponges found in the kitchen, make great hedges around some of my houses. I purchased the sponges and sliced them into strips. I lined a few of the yards in my layout with these hedges and they look pretty good. Vary the width of the strips for different size hedges.

Its funny, but when you're into model railroading, you look at trash from a 1/87 point of view.

Happy trash picking!" – Richard

"One of the things in my Saw Mill I use on the floor is Saw Dust and dried tree branches, Dressed and trimmed to look like logs. Also for trees I use Old Christmas tree branches Hope you can use these." – Peter

"I use natural products for scenery, usually i just find it in the field by my house. Its a cheaper more realistic alternative to most products. On top of that I use a lot of ground foam to thinken up scenery. (dry weeds work great for trees)" – Andrew

"One tip I use ho scale telephone poles to make the hook up for the switch track for the fiber pin. They fit fine when you cut the poles about inch or more to fit the track neutral side." – Garry

"Am totally new to the construction of layouts.Have made a tunnel system-nearly 3ft in length using washing up liquid containers.Cut to size-(n gauge) then covered with plaster bandage and landscaped,then finished with conventional tunnel pieces. Any other innovations-I'll let you know." – Martin

"The best tip is. To have grade A track work & wiring for faulless operation." – William

"Builders skips are full of items you can use. But the best is the tins of expanding foam, spray it on, let it dry, cut to shape." – Adrian

"Make endless tracks using matchsticks as 'wooden sleepers' and the track can be thick copper wire with the right dia!" – Lionel

"In reference to hills and cliffs, I have found on many fine layouts, the cliffs to be clearly 'Trowelled' and not realistic. Here in New Zealand, we have thousands of river (water) or Weather etched terrain to model from. River cuttings can bed done by layering polystyrene (polyfoam) foam held in place with wire (DO NOT glue this will leave glue lines and woose the effect) and spray with Solvent Based spray paint. this will effectively weld the layers and give that weathered look. For Rock Cliffs, I do the same thing tufting ledges as they would appear in real situations." – Wayne

"To make hills, fields and rock faces cheaply and quickly, I have always used strong brown wrapping paper (got 2 sq metres from our local furniture store) – cut roughly to a bit bigger than the area to be covered – crumple

the paper up as tight as you can – smooth it out again (roughly for rock faces – smoother for hills) – using clear Bostic stick one edge down using 1/4″ overlap – then trim the other edge to 1/4″ overlap and stick it down in the same way – rubbing smooth – if it's quite a big piece then some crumpled newspaper underneath will help to support it. Once dry (10 mins) you can paint it with any suitable paint (I used Homebase satin green, brown or grey) and sprinkle with coloured sawdusts while still wet (use a sieve) and hey presto, 24 hours later it has all set solid. Vertical rock are painted grey or brown, and when sprinkled with green grass it sticks to the horizontal surfaces – quick and easy. I can complete a whole section in a couple of hours..! Note: try not to get Bostic on your fingers – excessive amounts can dry the skin…" – Duncan

Like the use of the Sedum flower for trees, I use the flowers off the shrub 'Spirea', there are a few varieties of this popular shrub and all produce very usefull flowers that make great looking trees.

I spray them first with florist paint oasis 'brown' to give its trunk colour and to seal the flower. I first tried to spray with a very strong glue that upholsterers use but found that it went all over the trunk and branches and didnt really look good with the final green scatter all over the wood. Now I just use PVA glue watered down as the spray. I give them a 2nd coat of glue & scatter to get different shades of leaves.

The finished product is better in apearance from the usual trees on offer for sale. Down point is they get brittle and do not transport too well. However the small broken branches do make goos shrubs which are needed in abundance on a good landscape scene or garden. The use of the pink insulation foam is by far the best material for hills & cliffs, but I havent found any for £3 a sheet. I found some in B&Q stores about 4′x2′x3″thick but it was much more expensive than £3. I did however get plenty offcuts from a local housing scheme who were cladding the houses with it. I find with water based emulsion paint it looks great. I have plenty pictures of this." – Mattin

"My best tip is to keep an open mind in regard to model building supplies. you never know what you'll find that you can use for a model. like using the little individual coffee creamer cups painted a silver color to use as trash cans in O and larger scales." – Tom

"Believe this or not. If one was to take a bag of plain old kitty litter, strain it through a piece of screening, like you would find in an outside door, or, window, you will come up with an alternative to store bought ballast, at a much cheaper rate. This works just as well as store bought ballast, and re-

acts the same to a mixture of water and Elmers glue to hold it in place. It does work, believe me." – Anon!

"I have a very inexpensive landscaping tip. I use florists Oasis, its the stuff that they stick the flowers into when the florist makes a display . You can shape it with your fingers ,its easy to cut and its great for small mounds of earth or even large embankments. It can be glued with PVA or Evostick and I normally smother mine with diluted PVA and then throw on the scatter material .It looks good when used as an embankment and because its so light telegraph poles and trees can easily be pushed into it. Ive also used it as the bulk of a mineral wagon load. Just cut it to the right length, mould it with your fingers, stick it in the wagon and then stick your ballast or spoil onto it,easy and cheap. Here in Canada you can buy it from the Dollar store ,the equivelant of the bargain store in England. I pay a Dollar a block but I look for it when it goes on sale I then buy several at a time. I hope this helps some modellers especially the ones on a tight budget like me." – Keith

"I wanted real water on a mountain that was pre-made from a hoppy shop. It had a place that looked like a water fall. So I took a fish tank air pump and opened it up. Put a hose from the air intake out of it and hooked a fish tank hose to the air output side. Punched a little hole at the top of the mountain tunnel for the output hose and at the bottom of the mountain there was an area that looked like a pond. Put the intake hose up threw it to suck the water into the pump. Plugged it up and I had a water fall to a pond below. Cheap and easy water to have a water fall." – Glenn

"Another alternative for making ground cluttuer or trees is to harvest wild flower growth or weeds, tie together in a bunch, then spray with regular old hair spray to preserve and "solidify" so they do not fall apart after drying up. The hair spray acts as an adhesive, keeping the weeds bunched together. If you want to make mountains out of moleholes, so to speak, use watered down drywall joint compound, thinned down to resemble the texture of pancake batter, wad up old newpaper, or ,grocery sacks, soak in this compound, then, form over cardboard strips, laced throughout each other to form your mountains, Much cheaper than commercial compounds sold at hobby shops for the same purpose." – Anon

"My 'best tip' for modelers in any scale is never, EVER get married … sorry but i got's no pics fer that one … no need to reply – just sayin" – nic

(Pondered over publishing that one – but seeing as it made me laugh so much…. – Al)

“I am a newcomer to your e-mail (only a few weeks) and enjoy the tips. Another great source for “the right size” tree stock is to find a Bonsai enthusiast. The trees are constantly being trimmed an shaped; instead of throwing the clippings away we now save them. As with any other flower a gardener would grow, sometimes one of these little guys die (especially after the winter). Since the plants are “miniaturized”, the branching is also smaller. Trees for different gauge railroads just need to be taken from different parts of the branches.” – Bob

“I take locomotives that dont run well, turn them into dummys and the add a relay with a decoder making a DCC uncoupler loco. The relay is conected to the coupler with a piece of black tread and the decoder is reprogramed to the same address as a nother loco, and reprogram rear light to Fn 3. When you push Fn 3 the relay works and you have a uncoupler” – Anon.

“One of my favorite tricks is to take advantage of another hobby. I do a lot of wood working. This means I generate bags and bags of sawdust, from my saws, my sanders, and my drill press. The first, most important tip is that you can color sawdust with food coloring. The food coloring soaks into the wood for a permanent, non-fading color. You can also use old stains. Local hardware stores often put old stains on a bargain table and you can pick them up cheap. Water-based stains seem to work best and can be easily diluted for more even coating. Put the sawdust in a plastic bag, add food coloring or stains diluted with either alcohol or water and shake vigorously.

It can actually pay to sort your sawdust.

Very fine sawdust from a belt sander makes a beautiful lawn or road surface. Slightly more coarse sawdust from larger grit sanders or a saw makes a fine ground cover or simulated gravel, and the curls from a drill press make great bramble along a fence, base of a tree, or forest ground cover.

Spread the sawdust where you want it, and spray down with a dilute solution of white glue to “fix” it in place.

A second trick is another “zero waste” idea. So many devices these days have Styrofoam packaging as end caps, and protective spacers. Take a serious look at those pieces as sources of buildings for your layout. One Styrofoam end cap, painted with water-based colors reminiscent of the 1950′s, made a great art deco museum. The coarse texture of the Styrofoam made an interesting stucco effect after painting. The key is fitting the appropriately scaled doors, windows, and other features to the complex. Creating a convincing roof with air handlers, vents, and skylights completes the effect.” – Ken

“You may have heard this one before, but before you start casting your rock formations, color your plaster before you mix it. I’ve tried two different methods; adding powered water-color mixes to the plaster before mixing; use a color or blend of colors that matches the color of rocks you’re going to model. Or add Black India ink to the water for a gray color. This way, if the plaster gets chipped, you won’t have the very obvious “white” showing through.” – Gary

“I’ve had two heart attacks. Lots of pill bottles around the house. They are hard to paint which is actually an advantage. The streaking when you overlay rust brown and silver looks naturally weathered. I use Pinewood Derby dry transfer fuel signs to add tanks to my Oil Refinery. Old parts sprue make cheap piping.

Vitamin bottles come in terrific shades of green, orange, and blue. Cut into scale two by four foot rectangles, they make great skylights in buildings with a natural curve. I also put them parallel to entry doors in homes for a 50′s look entry.” – Kenneth

“Twigs from the Japanese Maple, Silver Birch and a certain pine shrub whose name I’ve forgotten make excellent dead/winter trees for N, TT, OO, and H0 scales.” – Connor

“Track in Tunnels: 2 insure good electrical contact, solder the rail joiners to the track” – Paul

“Keep a large magnet handy from an old radio or hi fi speaker. The is a great tool for picking up that dropped box of rail nails, nuts, bolts, you get the idea.” – Stu

“A great, inexpensive stain for ties is OUTER Black Walnut shells soaked in water (not the stuff the nuts are in at the grocery store – hat HARD one on the outside). Like coffee, the longer the wood sits in the soup the darker it gets. WARNING – use gloves, tongs or other devices – it stains hands every bit as effectively (an nearly as permanently) as it does the wood! Other types of nut shells also make good stains (Pecans for instance), but the color will be lighter. If you need more ideas look for what back-to-nature people who dye yarn and fabric use (lots of sites on the web); there are lots of colors besides browns. Mushrooms, berries, grasses, etc.” – Bob

” i’d probably say that the key to a good layout is that it all runs smootly and reliably, so make sure that all your stock and track is in good nick a few things i do to help, is; on points, bend the ends of the gaurd rails out, so that the wheels of the train are pulled to the rail, and do not ride up onto the frog. make sure that there is no ballast preventing wheels from rolling

smoothly. don't put points where gradient changes. put weight in your stock (i blutak down spear heavy nuts and bolts). make sure that the track and locomotive (and stock!) wheels are kept clean." – Robert

"I use roofing felt paper for roads and parking lots, looks like asphalt. " – Eric

"I am an operator, so my number one tip to enjoying this hobby is "Get the track work right." I hate cleaning track. All the cleaning in the world will not correct bad track work. Smooth transitions into curves, switches, and grades make all the difference in the world. Poor operating equiptment operates better, operation looks more realistic, the modeler is happier when they spend less time on maintenance and more time operating." – Michael

"Cat's Whiskers

Cat's whiskers make good paint brushes for that extra fine work where the ordinary brush has been reduced to a single bristle is too soft. Take ONE whisker, cut it to about 20mm (3/4"), tape it to a pencil with about 10mm beyond the end. You now have a reasonably stiff brush (that holds paint) and is ideal for the likes of painting people, etc. Depending on the size of the cat is how long the whiskers will be (I have a 9kg Ginger Tom – a good source). Cats generally break them off when washing their face

Yard Hoardings and Signs

Business Cards are used for my yard hoardings and signs that measure about the size of a standard sheet of plywood 2400 x 1200mm (8' x 4'). Using the 'Scale-up' ratio of 1:80 (midway between OO & HO [1:86 & 1:76]) for a reasonably realistic sized sign. For example, part of a business card measuring 35mm x 15mm (1 3/8" x ½") Scaled-up (x80) gives me a full size sign of 2.8mr x 1.2mr (9' x 4'). Stick onto a backing board, give it a pair of legs and plant it

Hoods over Coloured Lights

For hoods over the lens' of Railway and Street Traffic lights, use plastic drinking straws cut off at an angle of about 30 degrees. These are 'Tailor-made' to suit the size of the lights, i.e 3mm or 5mm LEDs or Grain 'o' Wheat bulbs. Paint them Matt Black and you're done

Steel and Concrete Pipes

Steel and concrete pipes can be made out of those Plastic Drinking Straws that you didn't use for the traffic lights, can be painted light grey (gray) for

concrete pipes and primer/silver for steel pipes to load on your Flat top Bolster wagons. Cut straws to what ever size you want, they can be either ‘Uniform’ or ‘Random’ lengths. Remember to paint the inside ends of the pipes for effect. Finger knotted Black cotton can be used as ‘Tie-down’ chains”

Wayne (New Zealand)

“I’m new to the site so I don’t know if these have been posted before. I know that sticks for logs have been mentioned. The best one that I found is a butterfly bush. The bark is rough and looks a lot like older fir tree trunks.

Small bamboo branches are good for smaller tree trunks and wood fence posts. It also can be used for rail fences. Moss has undoubtedly been posted for shrubbery. Bags of green moss can be had at craft and garden stores and can be used for taller shrubs like rhododendrons. I’ve found that moss that grows on your roof, at last mine, grows in small tight clumps. It has really short foliage which makes for very realistic shrubs.

The final tip is for roads and parking lots. Use roofing felt (tarpaper). Unlike the premade model road material, it is cheap and can cut it to whatever configuration needed. For curves, the commercial ones just have sharp 90’s and doesn’t look that realistic. For center lines and fog lines, use a paint pen. If your lines aren’t quite perfect, no big deal. You can blame on the road department. Rolls of the paper are available at home improvement stores but it is a large amount. A person could probably grab some scraps at job sites where a roof is being replaced.” – Emil

“Just for fun I used real (red) soil and rocks from Arizona to landscape an N-scale desert layout that I did a few years ago. You should’ve seen the quizzical looks on the airport employees faces as I passed through security with my bags of rocks and soil especially when I told them that they were for a model train layout! Most definitely added realism to my scenery. Cheers!” – Walter

“Well may I tell you how I fixed my tunnel? Ok, When I built my tunnels the little lights that you put inside each house, and inside each bussiness, work really great inside the roof of the tunnels. You might suggest to him that if he takes his telephone poles, Cut the base off of them, stick the pole into a small hole, Glue the pole, Than take some small welding wire from a wire feed welder, Glue the wire to each peg that sticks up on the telephone pole, He can run the wire to , like I said to all buildings, attach the wire to the accessory on his transformer , Run the wire through a sideing switch so to turn the lights on and off.

Also, Here in NORTHWEST ARIZONA , Mohave county, We have a weed that grows here and it gets up about 3 to 7 inches tall, and they look just like the trees grow in AUSTRELIA . I just knew that I was going to mess that word up. SORRY. anyway the weed , When it goes dorment for the winter, it turns red And the top of the weed where the leaves would be , turns out like a canipie." – April

"My tip refers to people who try to stop modellers changing to DCC. Do NOT listen to the 'DC forever' brigade, go to as many Model Shops as needed and try DCC systems and find out for yourself how easy it is to use." – Geoff

"My tips:

1 iif making a road use the dvla online highway code as it has raoad makings ECt and can use the coloure as the road (if n gauge it's the same sizeif copy past it)

2 if using a flat baseboard for simple hight and to add river use then cover with 2 foam boards as if using foam under can take top 1 off and it right hight also styrene is easy to cut to make rivers embankments and lower levels." – Matthew

"The red and white napkin and utensil wrappers used at TGI Friday's can be cut down and make excellent safety stripes or no clearance markers. The corrugated hot cup sleeves at 7 – 11 when turned inside out & trimmed make a decent cat walk or yard crossing." – Paul

"A very easy way to emulate corrugated siding reasonably for metal structures is to get a piece of the desired material made of polystyrene in your scale from a supplier such as Woodland Scenics, Evergreen Scale Models etc. Cut the piece in half or use a second piece of the same material, reverse it so that the groves of the two pieces fit into one another. Place some heavy duty aluminum foil on one piece and use the other as you would a putty knife at a proximately 30 degree angle squeezing and scraping the foil strip into the groves of the plastic. Cut the foil to length and width desired. With just a bit of practice you can make all the corrugated needed for your next project." – Lowell

"Not sure if this is a new idea – but for what it is worth : the next time you are out for Chinese food – save the chop sticks – they work great for logs." – Roy

"Dried used tea leaves make an excellent ground cover over a painted surface. They come in a wide variety of shades depending upon brand. They

are great combined with twigs etc. as a forest floor. They can also be crushed finer for earth." – Fred

"I've got one – I've used this idea many times in building my layouts – When laying track (either flex or 'snap track') I've strategically placed rerailer track pieces (in my case, HO code 100, Atlas Snap-track rerailers every 6 – 10 feet. First it similar to generic grade crossings w/o gates or lights and can be used anywhere. Second,you can use it in tunnels or near backdrops (whre you might get a hand stck). If I have a minor mid train derailment, there's no need to stop the train, keep going, the rerailer will fix it in short order." – Dave C

"Hi Al, Our model club used dry flowers for trees. I think it's called caspia. Anyway, any hobby store that sellls dry flowers sells them. Buy a bundle and break it up into twigs. Hold a few and wrap with brown floral tape. In two football games I can build an entire forest of trees and people always complement about how great the trees look during a club open house. Fast, easy and cheap." – Anon

"Create a system of organization and hone, it stick to it , and have it become second nature, This will save you time and time is also money.

If you can, put up a few peg boards and a chalk or grease pen board. Remind yourself of priorities.

Use the peg board to hang tools that you use all the time (label tool placement) you'll know where they are in an instant.

Shelves for supplies , designate areas for supplies.

Keep a journal , it is very helpful to know what steps you left off on a certain project if you have to stop and order supplies for it.

Organize has to be the best tip I can give anyone.

GLAD makes cheap clear plastic containers that are stackable I find them indespensible for organizing just about anything small.

They come in many sizes. For instance you want to paint 5 freight cars , (Have your journal handy make notes about things like paint mixtures , brands ect…)

label 5 containers 1-5 with inkjet labels , place a label

As you disasemble each car and place those parts in their own separate containers, use a plastic bag for each cars small parts put it in the container also.

Use a simple system 1-5 it can be reused for the next batch. Some cars may look the same but that does not mean they are exact.

so if you keep parts designated to that car you will have less trouble later. When you finish your car ." – Martin

"A great, inexpensive stain for ties is OUTER Black Walnut shells soaked in water (not the stuff the nuts are in at the grocery store – hat HARD one on the outside). Like coffee, the longer the wood sits in the soup the darker it gets. WARNING – use gloves, tongs or other devices – it stains hands every bit as effectively (an nearly as permanently) as it does the wood! Other types of nut shells also make good stains (Pecans for instance), but the color will be lighter. If you need more ideas look for what back-to-nature people who dye yarn and fabric use (lots of sites on the web); there are lots of colors besides browns. Mushrooms, berries, grasses, etc." – Bob

"1 I would save all saw dust and use that for contruction scenes

2 I have also use a 24volt transformer like the kind use for door bells and and ran all my street lightsoff of with simple copper wire and plug it in to a regular outlet with a timer so it only came on at night time to light the city.

3 I have also save all my packing stuff from boxex and they make great tunels and mountainns with a little newspaper and glue." – Tom

"On diesel/electric locos i like to replace the plastic fan grill with an etched brass one, however, the roof is curved, how do i curve the etch to match?

i use a mouse and a wooden dowel, place the etch on the mat and roll with the dowel, checking regularly until the profile matches the roof" – Andy

"ALASTAIR; I HAVE AN IDEA ALMOST LIKE THE CHAIN-LINK-FENCE.BUT YOU USE 2INCH BY 2INCH MEDICAL GAUZE UNFOLD IT UNTIL YOU HAVE ONLY ONE LAYER THEN SPRAY, PAINT EITHER YELLOW.OR A ORANGE. WHEN DRIED CUT INTO STRIPS AND MAKE SAFTEY FENCE AROUND A CONSTRUCTION SITE. YOU CAN SUPPORT IN WITH PIANO WIRE,OR USE SOME STRAGHT PINS FROM A SOWING KIT. IT REALLY MAKES A NICE JOB WHEN FINSHED.AND IT DOSE NOT COST VERY MUCH EITHER. THANK FOR THESE TIP THAT YOU SEND MAYBE THIS ONE CAN HELP YOU. KEEP IN TOUCH STEPHEN "

Stephen

“Dear Al Ive used a hand cranked meat grinder to grind up old couch coushion foam and then die it for background ground folage and I used a lot of pencil shavings for ground cover.” – BB

“Best tip I can offer anyone is to try to use real material,ie sand for beaches and break up real coal for wagon loads.” – David

“For those who like pink insulation foam, but don’t like the cost, try the nearest constuction site and talk to on site supervisor. There are usually lots of scraps and they will probally let you have all you want. Sometimes I had to climb into the roll off dumpsters and other times I just had to go around and pick the stuff up Free Free Free No better price than that!” – Fred

“Here is a tip for ensuring your track flows smoothly. Use a ladies square handbag mirror sitting on the track and angled toward you instead of getting down to eye level, which is very difficult in tight corners or on wide baseboards! You sure can spot the dog legs or misaligned fishplates with this one.” – Steve

“green scoring pads cut in strips for hedges.” – John

“Old fashioned curtain rods, painted flat black, makes perfect HO scale I-beams for bridges and overpass, or extra weight for flatbed cars.” Matt

Final thoughts

Enjoy the process:

As you think about your railroad, you begin to see a picture of how it should appear, and the urge to start work becomes irresistible.

You see the hills, bridges and streams.

You see the cluster of houses and shops which lead down to the station.

Don't hold back! Grab your board, knife and glue and bring it all to life.

You're going to spend hours lost in your layout and there are challenges on the way. You need energy and enthusiasm to carry you through.

Now's the time to start.

And when you start, make sure you enjoy every moment of it.

Some modelers are so wrapped up in seeing the finished result, they forget to enjoy the process.

They're in such a hurry, they don't bring their full attention to the little details - and little details are what make a big difference.

When you enjoy the process of building your model railway, the tiniest details can have you absorbed for hours. You notice and appreciate every small achievement along the way.

Every roof you paint, every bridge you build and shop window you decorate is a cause for celebration.

Do little things well every day.

And when, at last, you put down your knife and brushes, you're rewarded with a breathtaking railway. One that's so full of life and realism, it knocks people off their feet.

You have a long journey ahead of you, but I'd like to help you along the way - cheering you on from the sidelines.

So if you liked this guide, the first thing I suggest you do is print it off and leave it on your modeling table. Keep bits of scrap wood and plastic nearby so you can experiment with the techniques before applying them to your layout.

Refer back to this guide often. You might catch something you missed the first time around.

And please, please get in touch if you have any questions - or to send pictures of your progress.

Modeling can be a solitary hobby, but that doesn't mean you're on your own.

I'd love to know how you're getting on, and I'm sure my readers would, too.

Best of luck.

Yours,

Al

PS I want to finish with the step by step that I believe is the easiest to follow, and looks fantastic.

Follow it, and your friends and family will marvel at your first layout!

It's on the following page!

Many thanks to Barry for this excellent 'how to'. Easy to follow and looks fantastic:

“1) Purchase a foam cutting “hot knife”. I think I bought mine from Home Depot for less than $20.00.

2) I use mine on the highest setting which is #6 on temp. dial.

3) Just let the hot blade do the cutting with twisting and reciprocating motions and occasionally changing the angle of the blade to achieve an unevenly cut edge that I think looks like real rock formations.

4) You can use 3/4, 1, 1-1/2, and 2? foam. This shown with 2? foam and that’s probably the thickest my knife can cut through. (enclosed is a picture of the hot knife That I use)

5) Caulk all the joints with painter’s caulk and let dry. Then paint the entire surface of the layout with a tan acrylic paint. (from Walmart or a crafts store—they are much cheaper than from a model train hobby shop)

6) Then using a darker shade of brown drybrush highlights on the rock formations to create depth and perspective.

7) Then paint the lakebed with an olive green color paint leaving some tan color around the outside edges to simulate sand in the shallow water. Then I use a flat black spray paint with just a few short bursts to give the illusion of deeper areas.

8) On this layout I only used a 2-part epoxy fake water from the crafts Walmart as I wanted the lakes/ponds to look like stagnant water instead of my normal ripples on the water created by the wind.

9) Last before the water is dry(approx. 24 hrs. add schrubs, fallen dead trees in the water and normal trees to the entire layout with white glue as desired.

I’ve enclosed (2) early stage pics showing the pink foam and the white caulk, (1) pic of the hot knife. And the rest of the pics are final results.

I also did not use foam grass on this layout to keep it more user friendly for the young operator.

Hope this help your readers to understand better and want to try it.

Regards,

Barry”