

MISSENDEN ABBEY

RAILWAY MODELLERS' RESIDENTIAL COURSES

PLANNING & SET UP

At the beginning of a Missenden Abbey Modellers backscene course, I very often run through a few basic steps for starting out with a scenic layout or diorama. It's just a sequence of safeguards that might help to keep a project out of trouble at a later stage. Although I've written a few notes before, I've never actually put the content into an article before, so if you are planning a scenic layout I hope it comes in handy.



When it comes to depicting the surroundings of a scale railway model, we really want it to look as convincing as possible as an illusion of the great outdoors. Sometimes it needs to be an accurate & prototypical 'window into the past', but it might also be a more generic depiction to suit an imaginary railway. In either case, there are number of methods that we can use to persuade the viewer into perceiving a landscape as a real place, and here's a backscene that uses some of the tricks we'll be covering.

DIORAMA

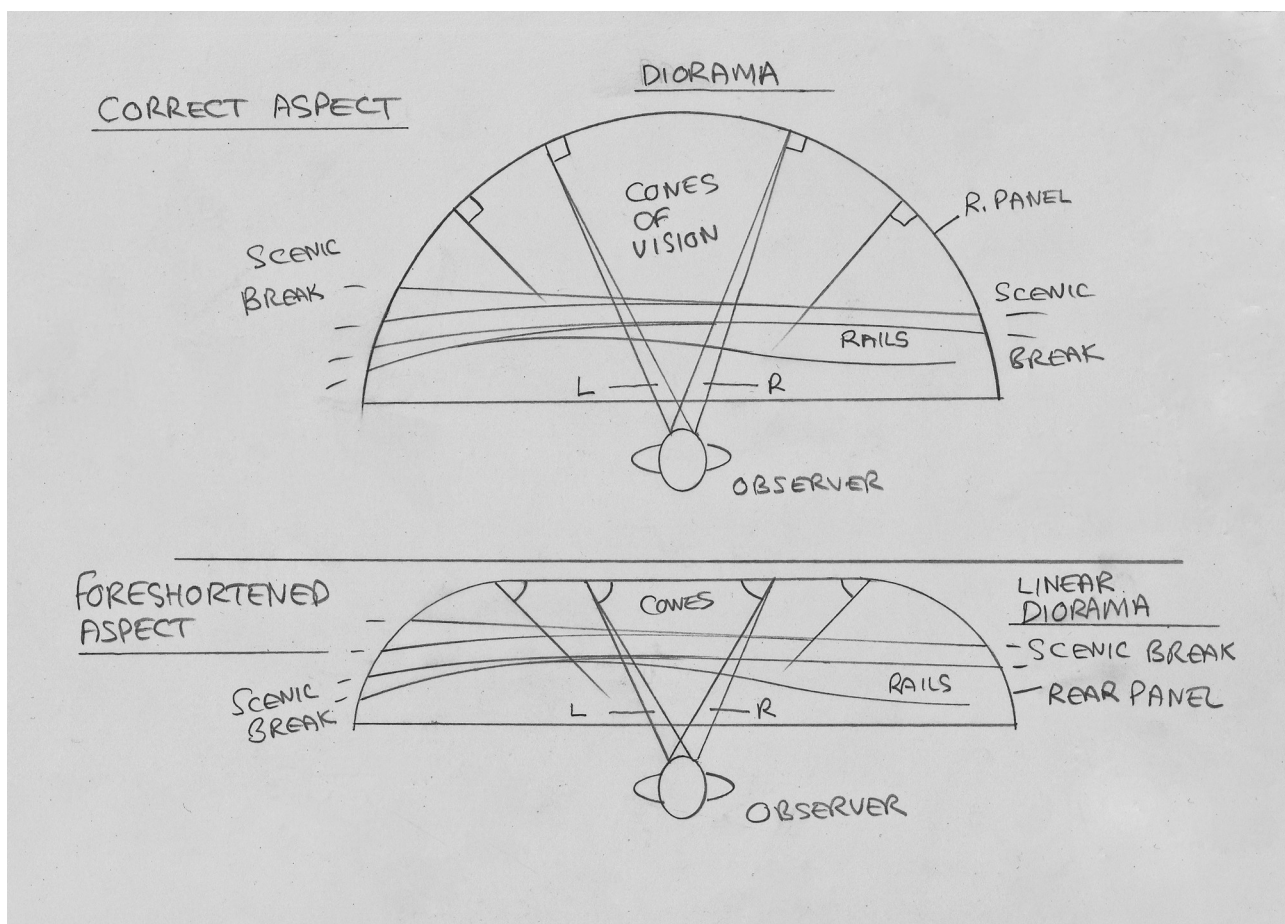
Unlike a framed painting or photo, as we look around us in a real outdoor location, we can perceive a panorama as we rotate through 360 degrees of vision. We can look up at the sky far above us, or down to the surface close by. With a linear subject such as a railway line, it's usually necessary to observe it from a relatively nearby viewpoint, so it becomes a focus of visual interest, only requiring a directional left to right survey of the scene. For most of our models, only a partial panorama is necessary.

This configuration is usually referred to as a diorama, with a limited sweep of vision, so it's a cross between a framed image and a 3D panorama. The human eye must naturally perceive a flattened image at its furthest reach, so a similar two dimensional backscene appearing at far distance is quite familiar to us.



The rear panel of a backscene or diorama can be made to work perfectly well as an illusion of distance, as it simply reproduces our limitation of depth detection at distance. This also works for the cloudscape, which also appears to us as a flat image, only becoming three dimensional when viewed from closer by, like a view from an aircraft. This scene accurately replicates the view over a coal yard as it used to look in 1912, using elements rendered in progressively smaller scales.

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The ideal configuration for any diorama backscene is a semi circular arrangement, replicating our natural survey of the surroundings, but with the typical linear nature of railway models, it's often the case that there's insufficient room for this, and a linear panel is required instead, running parallel to the railway itself. This can lead to one of the first problems when doing a backscene, which is a vertical foreshortening of the image. The effect can be seen in the sketch, where the diorama produces correct right angles, but the linear arrangement produces acute viewing angles. The next sketch shows one practical method of minimising the problem.

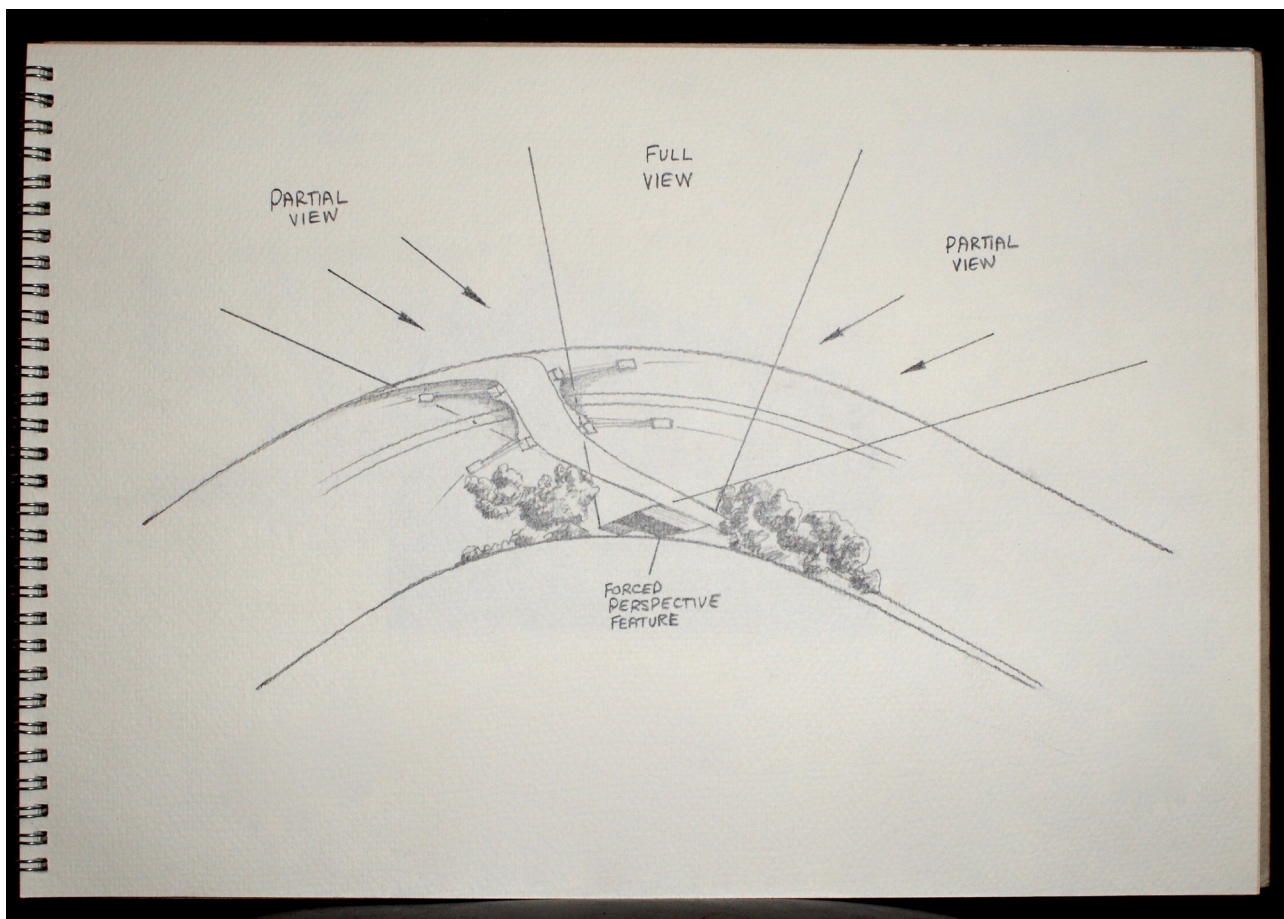
VIEW BLOCKERS

Backscenes often turn out to be long thin strips, due to the linear nature of railway models, and this configuration can sometimes lead to problems with foreshortened images appearing in photographs or views of the railway from any angle not square to the layout itself.

Particularly with photographs, this leaves the backscene exposed as a fraud, with an unrealistic foreshortening effect having to be dealt with as best as possible. The more two dimensional the backscene has to be, the more the problem becomes exaggerated.

So what can be done to alleviate it? One answer is to include the use of view blocking devices which are placed deliberately to obscure foreshortened areas of a backscene that are becoming unrealistic. These can really help with the land surface and sometimes even the lower sky.

Such devices are sometimes known as view blockers and they can be arranged to partition an awkward linear backscene into a number of visually separated dioramas. These work surprisingly well as the eye is persuaded into restricting its own view, largely remaining between a carefully arranged pair that have been cleverly placed to distract the eye away from a continuous flat strip.



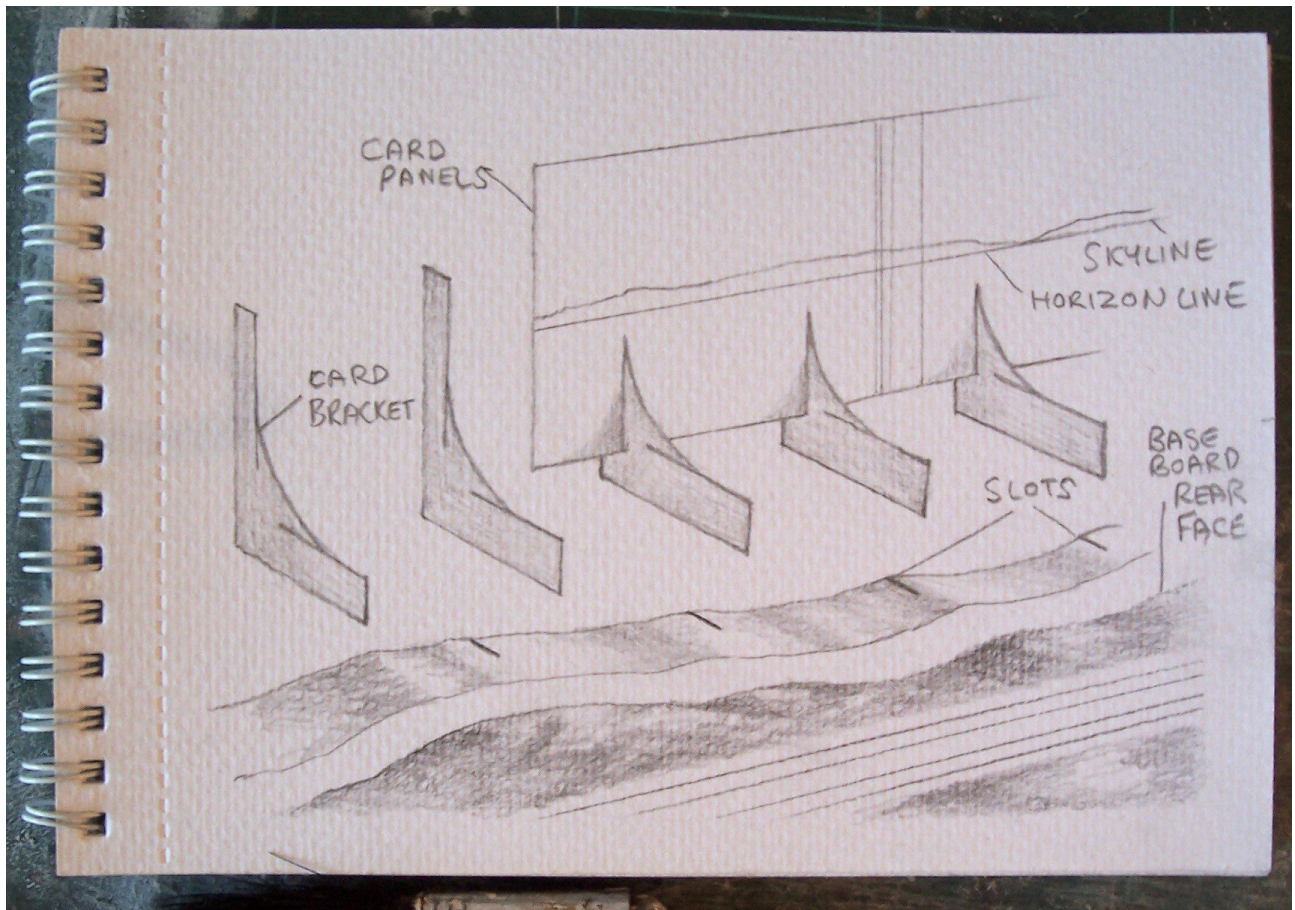
Although this backscene is drawn as a plan view of a 'difficult to manage' convex curve, it's still possible to get away with a 3D feature, by arranging elements of the landscape as screens, or 'view blockers'. You do need a bit of depth allowance to pull this off, because it's impossible to play this trick with a purely 2D effort.

MOCK UP

The first practical step is to draw a pathway behind and around your layout, using the largest radii possible to try to get as close as possible to that ideal semi circular rear panel shape. Use any means necessary to get the rear panel itself as far away from the rails as possible, by extending it well beyond any baseboard edges. This effort will pay us back later by allowing the maximum amount of available depth.

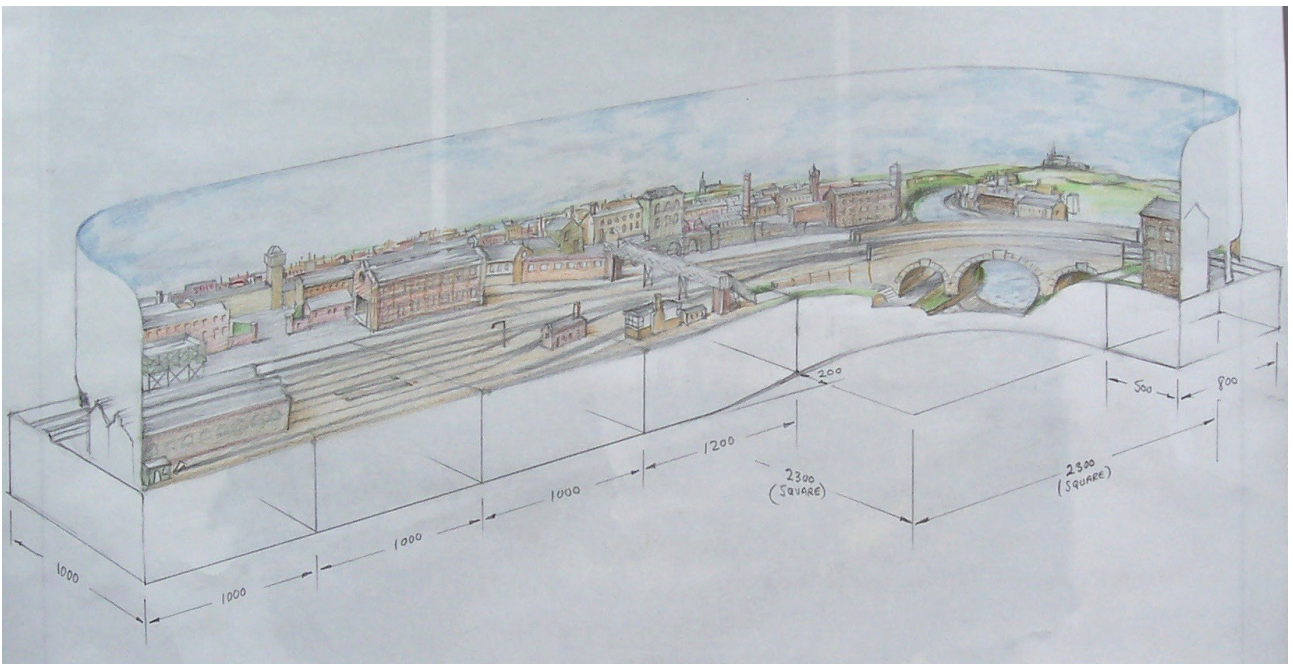
Before committing to anything, I find it's best to come up with a mock up, which can be made of foamboard and mounting board, curved to follow your drawn rear pathway. Access points for scenic breaks etc can just be crudely cut out for the time being, and if necessary it can simply be glued into place using wooden batten extensions from the base boards to locate an upright rear panel mockup.

The height of the rear panel, can be decided by a number of factors, the first one usually being a requirement to reach over the backscene panel to manage hand coupling or uncoupling for instance, but if this turns out not to be the case, so much the better. Sometimes a necessary requirement might just to be able to see over the top of a panel, so this then becomes the ruling height, and in other cases, a physical limit may appear, such as a ceiling or possibly the roof beams of a loft area.



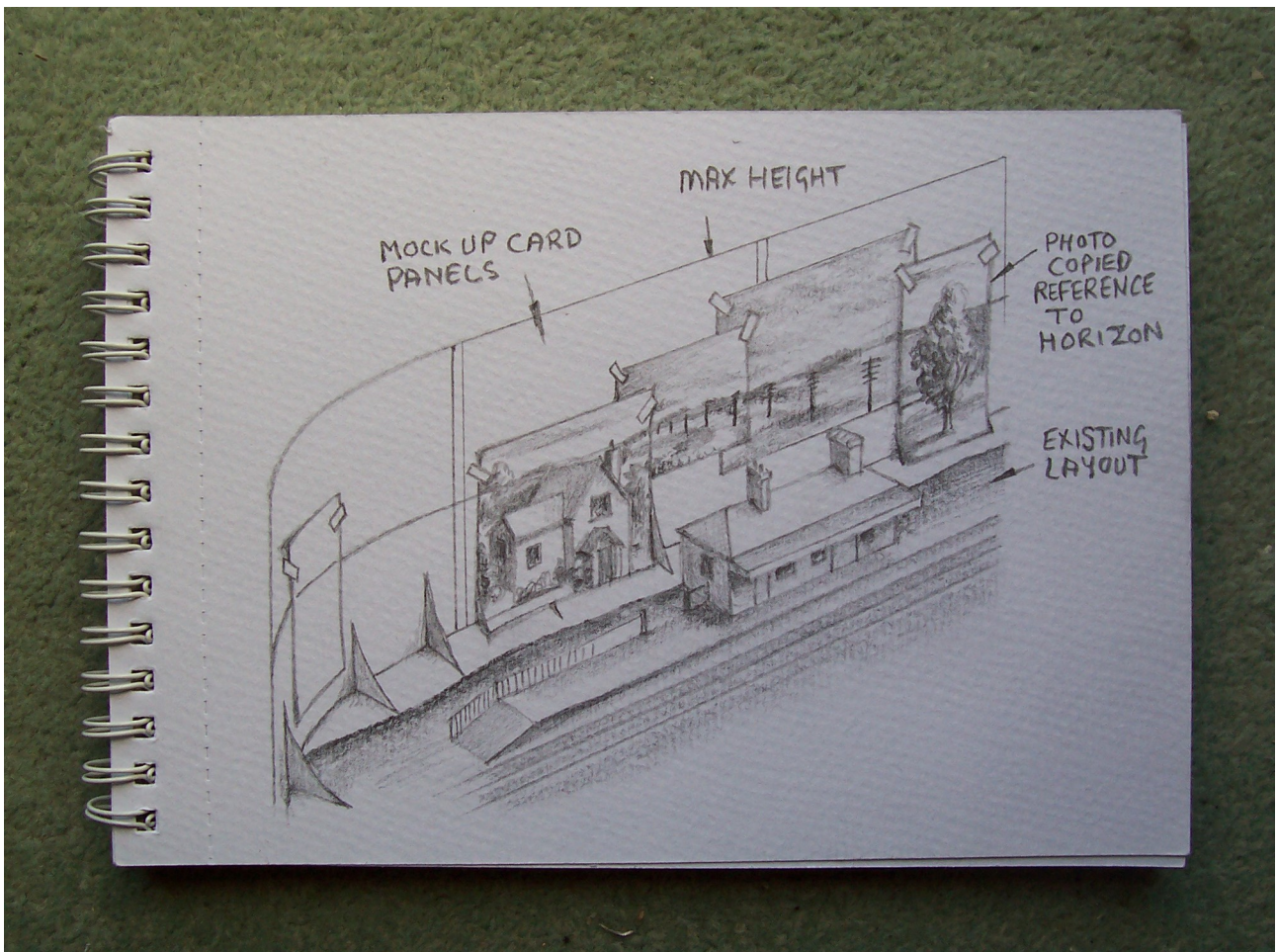
A rough card mockup something like this can be arranged behind your baseboard, with a rear panel resting on card brackets, or horizontal wooden battens clamped in place. The rear panel can just be mounting card to start with, which is easy to fit in gentle curves. It can be joined up to make a full length panel by overlapping card joiners stuck on with Mitre Bond adhesive from the rear.

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This mockup sketch could be for a terminus or a through station, but in either case, it follows the diorama configuration. It avoids unrealistic sharp corners, while keeping the rear panel as close as possible to a right angle to the viewer.

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A sketch of a mocked up backscene just using pictures and reference temporarily stuck in place.

HORIZON LINE

Now we have the best possible rear panel position, it's time to deal with one of the most critical aspects of the landscape, and this is the all important 'horizon line'. This datum is vital, but it's an artificial one in every case. It's unable to adjust itself up and down automatically to eye level like a real outdoor view as it's too close by, and because of this limitation, we are forced to choose a compromise height for it because our only permissible adjustment is the viewing height, and it's only that variance that makes it correct or not.

Because it's a false (drawn) horizon then, it can only be correct from one viewpoint, and this is where the line height comes into play. In practical terms, it's the relationship of the trains, compared to your own viewing position. Most scenic models have a much higher viewpoint than a scale 5' 6" figure, and it's why most reference photos can't be used directly. It's a personal choice of course because the added elevation allows a good overview of the railway, it's also true that the further up you are, the further away you can see!



This is a pretty typical viewing height for a scenic model, and it's much higher than the scale figures. The people on the platform wouldn't be able to see any distance at all with the train in the way, whereas we can see right over it. This makes all the difference when you are trying to come up with the best compromise for the horizon datum.

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Firstly, to get your datum pencilled on, let's see if your own typical viewing height is likely to be from a standing or sitting position? For instance, if you're doing an exhibition layout, most of your visitors will be viewing the scene from a standing position, that's going to affect your choice of height compared to that say of a sitting operator, who would typically be a foot and a half or so lower relative to the railway. It does make a huge difference, just measure a foot and a half in terms of your railway's scale! It's not a decision to be taken lightly, so take your time and try a few printed out reference photos of your intended backscene onto the rear panel and judge for yourself what the optimum position would be.

Now just to make things even worse, we need to remember that the skyline is different to the horizon line, and to explain this, just imagine for a moment that your scenic model is located in the middle of a completely flat plain without a single change of contour. That would give us a single horizon line and skyline combined, like being out at sea. If you are doing a Nullarbor plain layout, thats fine, but most locations have land masses rising between the viewpoint and the far distance, and these naturally obscure any view beyond them. The two lines now separate with the skyline rising above the flat horizon datum. For now, just pencil in the flat horizon, and we'll worry about the skyline later on. As long as we grasp the principle of an invisible horizon datum concealed behind obscuring land masses, we can continue on a safe foundation.

With the best horizon datum established, pencil the line all the way around the backscene mockup and we can refer to the accompanying article on the Missenden Abbey modellers web page entitled 'Generate a Panorama', as this will help you to describe the skyline. From here, I'll put a series of captioned photos here to help avoid problems if you happen to planning or re-doing a scenic model.

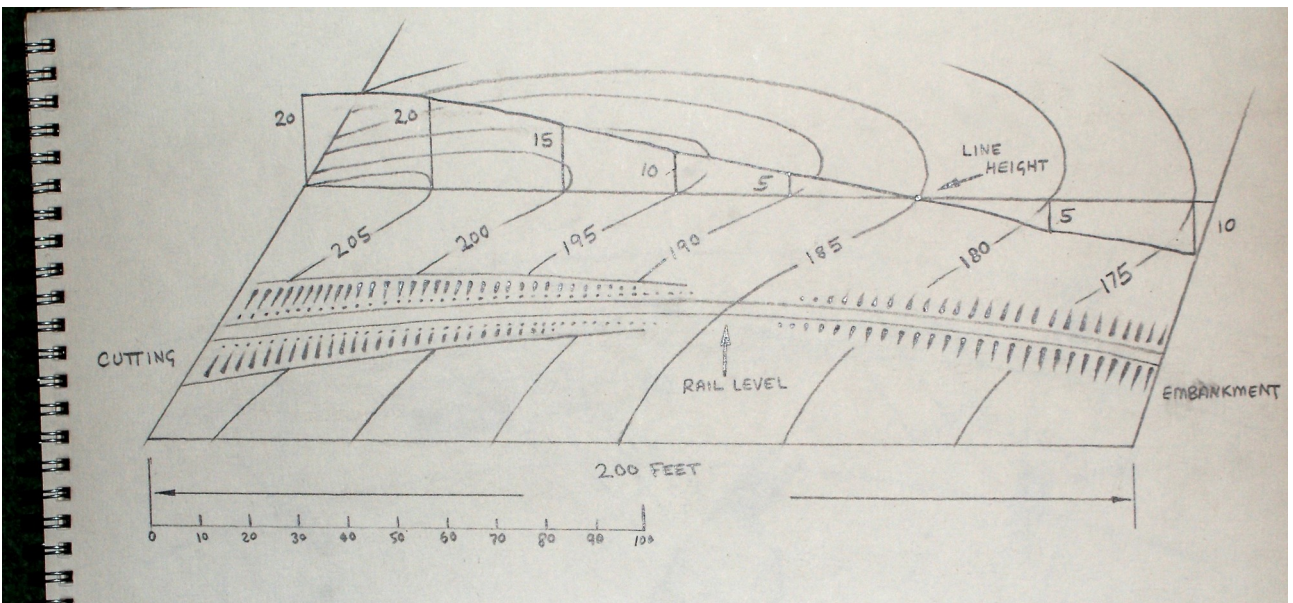


This backscene shows us that the skyline is different to the horizon line in nearly every case unless you happen to be out at sea or in the middle of a vast entirely flat desert plane, (neither of which is a likely environment for a railway diorama). Land masses in between the viewpoint and the far distance can be superimposed onto your rear panel like these headlands, which rise up either side, to obscure the far distant sea level datum, which remains visible at centre.

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The tick marks to the right of this sketch suggest the receding layers of apparent size reduction, relative to their distance from the viewpoint. This effect applies to both the elements upon the land surface, and to the underside of the cloud layers above. From the ruling scale of the trains themselves, we can reduce the scale of the elements in our miniatures, allowing us to use the same visual deception as a landscape painter, implying a distance that doesn't really exist.



Lineside contouring from map reference can be combined with a 'Generate a Panorama' print to get the lie of the land relative to the railway. You can see the line height above nominal sea level crossing at 185 feet in this sketch for instance, and of course, part of a mockup job will have to include lineside contouring as well as distance.



Try any lighting out right from the start, at the mockup stage, because it might warn you of potential problems. A rear panel is a false distance and throwing unwanted shadows against the vertical surface is quite a common problem. Trees, spires and other features standing above the skyline will do their best to throw directional shadows so try a diffused light source and experiment to minimise problems.

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Here's an example of a section of scenic railway under construction, with plenty of well considered design features already in place. It already has all the ingredients to become a balanced and interesting diorama, so let's have a quick look as to why this display is ahead of the game. Firstly, there's plenty of depth allowance behind the rails to include a landscape without having to cram it all into a tight space as an afterthought. Secondly, there's room for a curvature to the rear panel, allowing the observer to confront the rear panel at right angles, avoiding any foreshortening issues. Thirdly, a pelmet has been mocked up to provide an upper frame for the landscape, thus obscuring the upper limit of the sky panel, and finally the railway's control system has been arranged without any need to reach over the sky panel, thus allowing a full height framed 3D landscape to surround the trains for maximum realism.

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Hope that comes in handy, there's more info at my website, so please do pay a visit.

<http://bambrickstudio.co.uk/>



This sketch shows a view along a typical Derbyshire dale, and it will eventually appear as the background to the railway in the previous photo. It can be turned into a 3D scene and mocked up in situ using card and foamboard to describe the contours of the riverbanks and peaks, which rise to either side. There are taller high peaks beyond, and in the middle distance, a typical stone built village has grown up around a bridge, and a bend in the river. This also lends a certain 'believability' to the small station's presence in the foreground, as it can be seen to serve the local community, as well as connecting to both road and river trade. A background such as this could just as easily be done with a mobile phone photograph, blown up to fit the available area, and used as reference for a 3D presentation.

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