ARCHITECTURAL MODELMAKING GUIDES

These guides have been compiled by 4D modelshop staff and David Neat. The products are available from our shop and through our website www.modelshop.co.uk where you will find more guides, product information and details of all our workshop services.

SCRATCH MODELLING

ADDING DETAIL TO YOUR MODEL

LANDSCAPE MODELLING

SPECIFIC PROJECT

MODELMAKING RESOURCES

Compiled September 2014 by 4D modelshop Ltd

4D MODELSHOP PRODUCT INFORMATION SHEET

FINNBOARD

RK10081-85

- A pulped paper board
- Alternative to greyboard for sketch modelling
- Can be cut with a laser
- Can be dampened & formed into curves
- Now used by many top architect practices
- Cheap, recycled and sustainable

Finnboard is fast becoming the preferred material that architects are turning to for sketch modelling due to its versitility above the traditional greyboard.

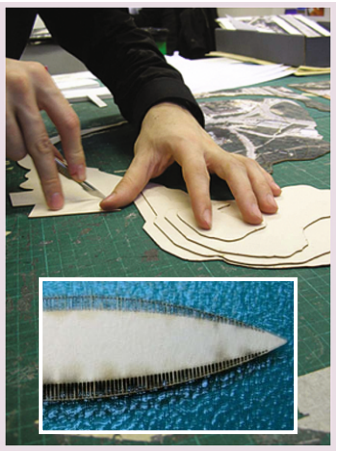
Finnboard is made from pulped paper, it is a by-product of the Finnish timber industry, and therefore fully sustainable. It contains no colourant and comes as a natural off white/beige colour.

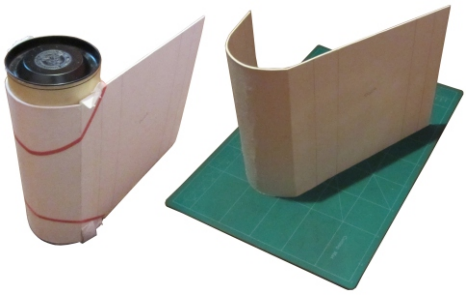
Finnboard can be easily cut with a scalpel.

Finnboard can also be used with a laser, with precise cuts and scribes made, although scorching does occur where the work is fine.

This versatile material will accept most glues including PVA, UHU and superglue.

Its most interesting attribute is how easy it is to form into curves. Being a pulped paper product, it absorbs water when sprayed.





To create the curve, we masked off the surrounding area, then using a plant sprayer, sprayed the exposed Finnboard with water.

We then left the water to soak in before gently forming the curve.

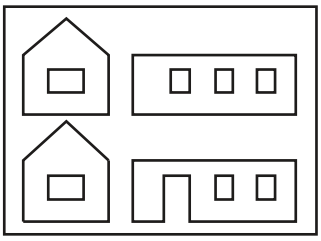
Using a suitable form, we secured the Finnboard with rubber bands and left it to dry.

FURTHER INFORMATION

- Finnboard can be left its natural colour or painted with any water based paints or undercoat.
- Economic, eco friendly and sustainable
- Sheets are 700 x 1000mm
- Finnboard is available in a range of thicknesses: 0.9, 1.5, 2.0, 2.5 & 3.0mm

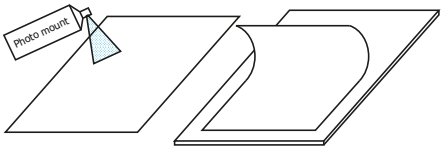
A BASIC GUIDE TO FOAMBOARD MODELLING

SETTING OUT THE ELEVATIONS



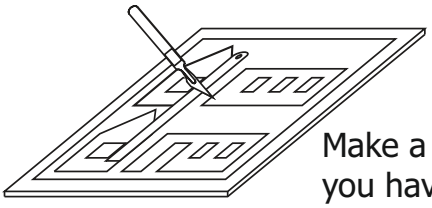
Firstly plot out the different elements of your design that will make up the 3 dimensional model.
This can be drawn on computer and printed out or by hand onto paper which is then photo mounted onto the foam board. Alternatively the design can be drawn directly onto the foam board. Drawing the design on computer allows extra detail to be added such as brick patterns.

PHOTO MOUNTING



If your elevations are on paper it is best to photo mount them onto the foam board. Spray a light even coating onto the back of the design, let the glue become tacky then apply the paper to the foamboard working from one end smoothing out any trapped air.
For a very strong adhesion of the paper to the board use the spray mount as a contact adhesive by spraying both the paper & the board allowing the glue to become touch dry before adhering.

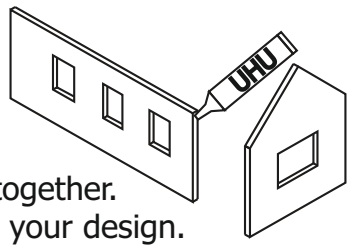
CUTTING OUT THE ELEVATIONS



Place the foam board onto a cutting mat then cut out the elevations by holding the steel rule firmly on the foam board and holding the scalpel fairly upright.
Make a cut through the top layer of card then repeat several times until you have cut all the way through the board. You are much less likely to cut yourself by making gentle cuts rather than trying to cut all the way through in one go. Remember to try and keep the scalpel as vertical as possible so your cut leaves a right angle between the top surface and the cut edge. Repeat until all the elevations are cut out.

GLUING THE ELEVATIONS TOGETHER

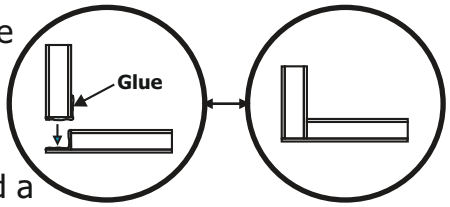
To glue the elevations together use the UHU glue as a contact adhesive. Run the glue down one surface touch it onto the other surface then quickly pull apart.



Allow the glue to become touch dry then firmly place the elevations back together. This will form a strong joint. Repeat this process until you have completed your design.

TIP FOR A STRONGER AND NEATER JOINT

When you cut out the elevations on one side of the joint cut away the thickness of the board but only cut through the top board and the foam leaving the bottom board uncut.



Then glue together as before. This will give a greater gluing area and a concealed joint. If you are using this method an allowance needs to be made on the elevations.

STYRENE FACTS

Styrene: Flexible but rigid extruded plastic from the polystyrene family.

Uses: Cladding for architectural models, vacuum forming and quick builds.

Colours: White, black, clear (frosted), green, blue, red, yellow, pink and mirrored.

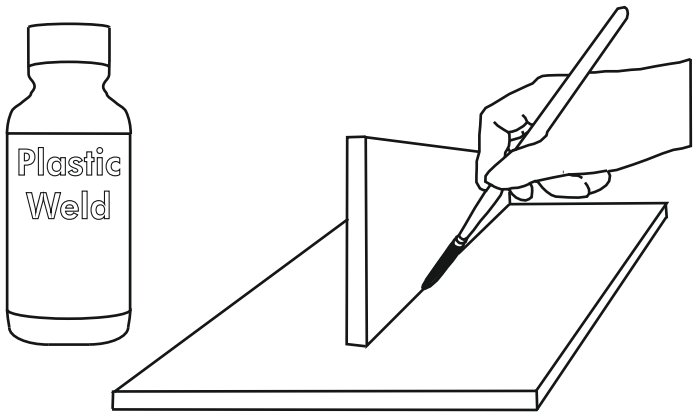
Thicknesses: 0.25, 0.5, 0.75, 1.0, 1.5, 2.0mm.

Accessories: White styrene strip, tubes, channels, angles, half rod, H columns, I beams, truss, quarter rod, rectangular rod, ladders, spiral staircases and figures.

AS IF BY MAGIC

The advantages of styrene over other building materials is speed, score, snap, glue.

Four tools required: Scalpel, rule, paintbrush & liquid solvent adhesive (eg Plastic Weld).



Method

- **Measure your shape**
- **Score the surface**
- **Snap apart**
- **Pare the edge to tidy**
- **Hold together for instant bond**
- **Run liquid solvent along the joint**

CAPILLARY ACTION

The Plastic Weld is a solvent that will melt a small part of the styrene, drying in air the melted styrene will solidify and seal the joint

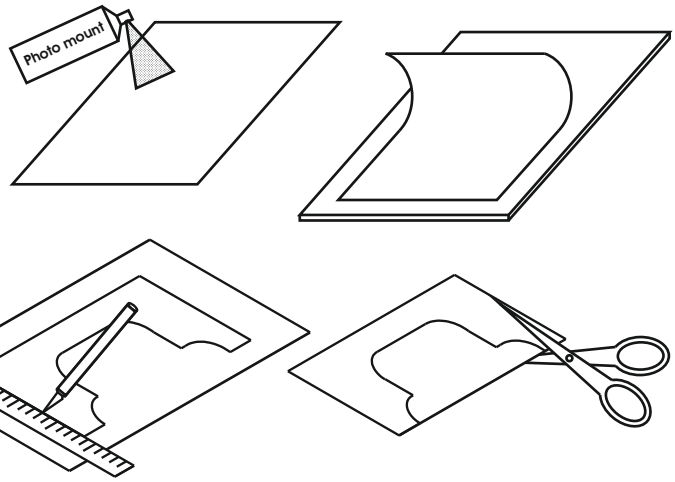
If you don't like it, peel apart, pare the surplus melted styrene off and start again.

Don't like it much later, score the surface, snap apart, pare again and off you go.

A BASIC GUIDE TO HOTWIRE CUTTING

MAKING A TEMPLATE

You can either draw your template directly onto stiff card or draw your design on a computer, print out the design and glue it onto the card.

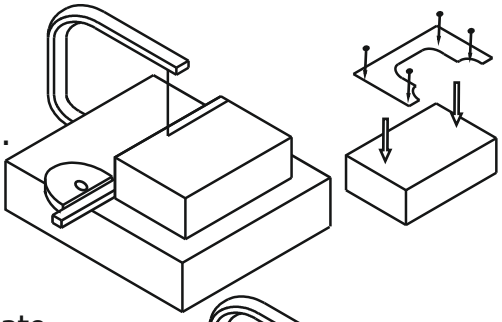


If gluing the template onto the card spray glue is usually the easiest method of gluing. Spray a light even coating onto the back of the design and onto the card, let the glue become touch dry then apply the paper to the card working from one end smoothing out any trapped air. Using spray glue as a contact adhesive will give a very strong adhesion of the paper to the card.

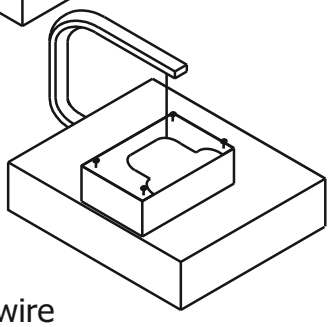
Cut out the template using a steel rule and craft knife on a cutting mat for the straight edges and scissors for the curved edges.

USING THE HOT WIRE CUTTER

Before you start you need to check the hot wire cutter is set up correctly.
1. Make sure that the wire is under tension and not loose.
2. Make sure that the wire is set at right angles to the cutting bed.
3. Set the temperature control to the correct setting for the thickness of the material you are cutting.

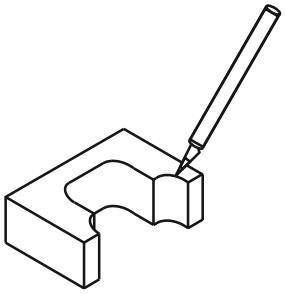


Then using the guide on the hot wire cutter cut the styrofoam to width, length and height required. Now pin your cardboard template onto the foam and cut out the details of the design.

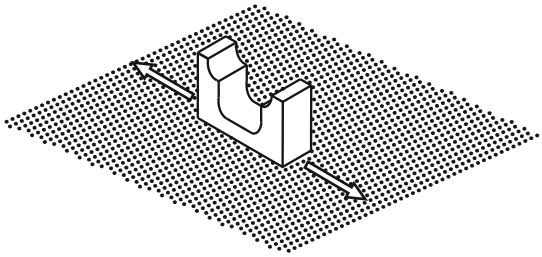


note: When cutting the foam try and make sure that you use one smooth movement as you pass the wire through the foam. The temperature of the wire will determine the speed that you can cut through the foam, you need to find the optimum cutting speed. Cutting slowly will melt the foam too much causing uneven edges, where trying to cut too fast will distort the wire and could also cause it to break. Use some scrap pieces to get the feel of the cutter before start.

FINISHING THE FOAM



You can now tidy any uneven areas on the styrofoam using a craft knife and a sanding board.



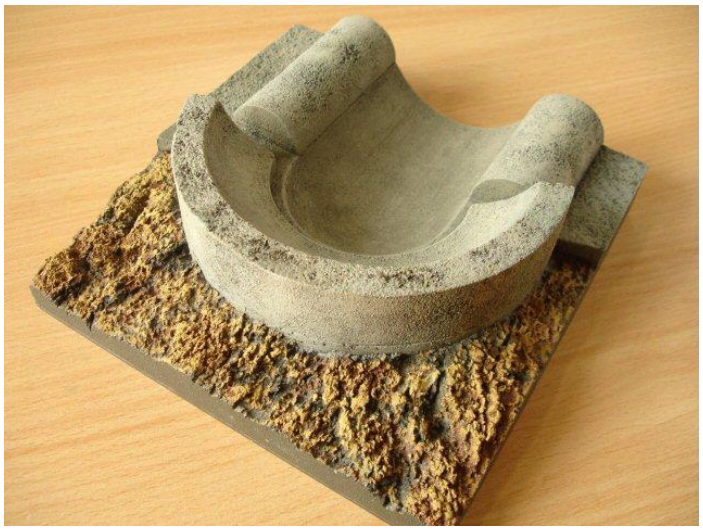
SHAPING STYROFOAM

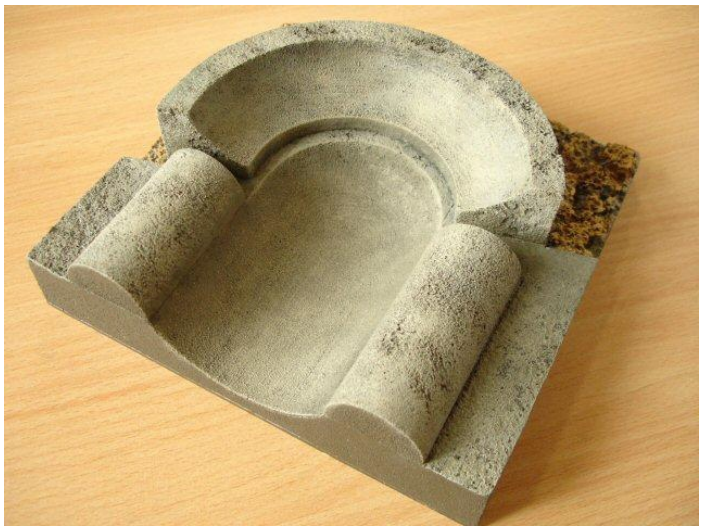
- **Written by David Neat author of 'Model-Making: Material and Methods' (BH00007)**
- **This is an abridged version of this guide, a full version available here: davidneat.wordpress.com**
- **Wide range of styrofoam are available: yellow, grey and white 1mm - 165mm thick**
- **Dark grey has replaced the blue in this guide**

Styrofoam is one of the easiest materials to shape by normal means e.g. slicing with sharp knives or a hot-wire cutter, sawing with serrated blades, rasping with files, and smoothing with sandpaper.

The real challenge lies in controlling the shape and especially, in this case, how one achieves concave forms.

Here are the methods I've employed for a particular model piece which needed a 'bowl-like' form and very regular curves.

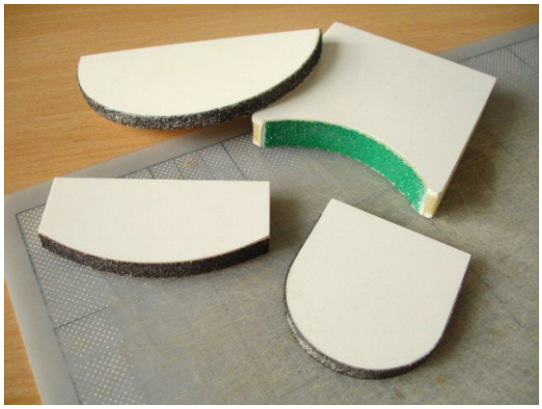


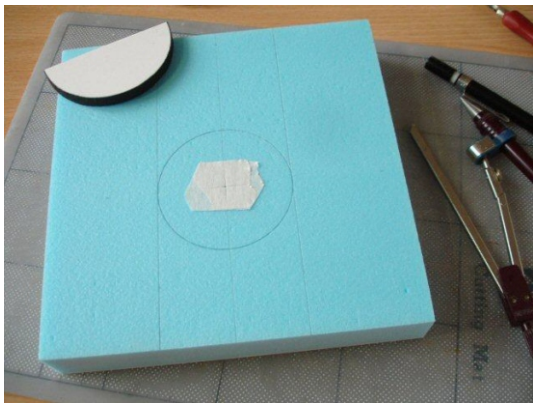


I've used the standard blue styrofoam for this, in it's most available thickness (2.5cm). There are other styrofoams, such as orange/pink or white, which are even finer and slightly denser.

I found that blue styrofoam will respond to sanding with even quite a thin strip of sandpaper if this is supported.

I made a 'sanding former' by gluing the strip onto the edge of a prepared shape, in this case a half-circle corresponding to the diameter of the 'bowl' I wanted. I have used a 40 grit sandpaper for this.

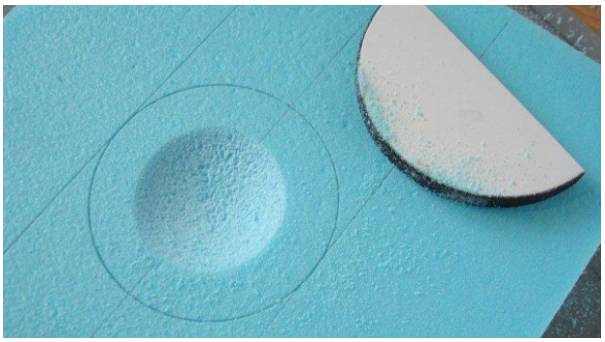




First the outline of the 'bowl' needed to be marked on the surface.

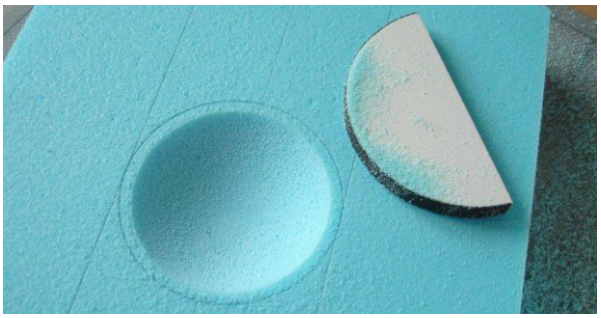
Styrofoam is too soft to hold the compass point securely so the centre area needs to be strengthened with some tape. This is then removed.

I then sanded by revolving the former on the central point. If pressed too hard while turning the former will just tear up the foam surface, but this may not matter at first.



After a while sanding will get smoother as one gets used to how the material reacts to the tool.

It didn't take long to reach the marked circle.

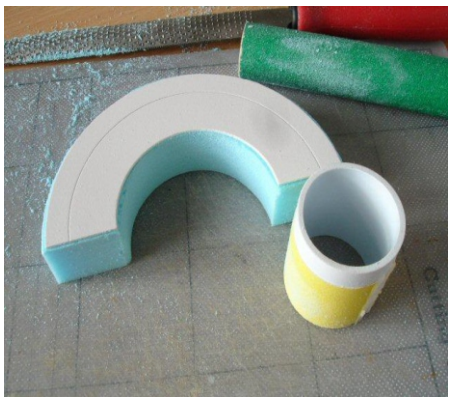


I then extended the lines from the circle and marked the shape and depth of the concave on the edge ... because here I wanted a 'niche' shape rather than just a circular bowl.

I started hollowing out 'by eye' using another 'customised' sanding tool ... 60 grit sandpaper fixed to a piece of wooden dowel.

As I got nearer to the marked depth I returned to using the previous former to finish off (because it has the right curve) but this time dragging it straight.

The finished 'niche' form can be seen in the photo on the right.



Composite forms in styrofoam (or any rigid material for that matter) are best achieved by deconstructing the intended form into parts or layers to be worked on separately.

For the 'half-ring' which encircles the central bowl I first cut a template shape (using plastic or cardboard) outlining the form.

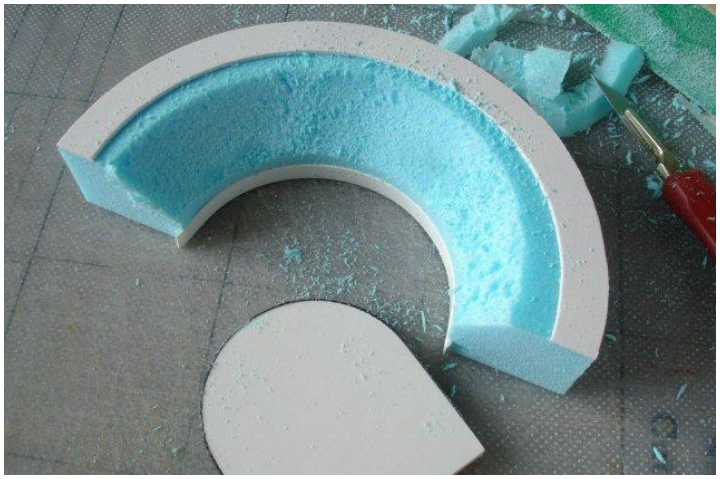
I secured this onto styrofoam (using double-sided tape) and cut roughly round it, being careful not to undercut at this stage.

I use either sharp, thin kitchen knives (i.e. fruit knives) or thin, self-supporting saw blades ('padsaws') to cut styrofoam, but a hot wire will also work well with a bit of practise.

To get a smooth, right-angled edge on the form I've fashioned yet another 'custom' tool .. this time sandpaper fixed to a short length of PVC pipe which has been sliced at a right-angle.

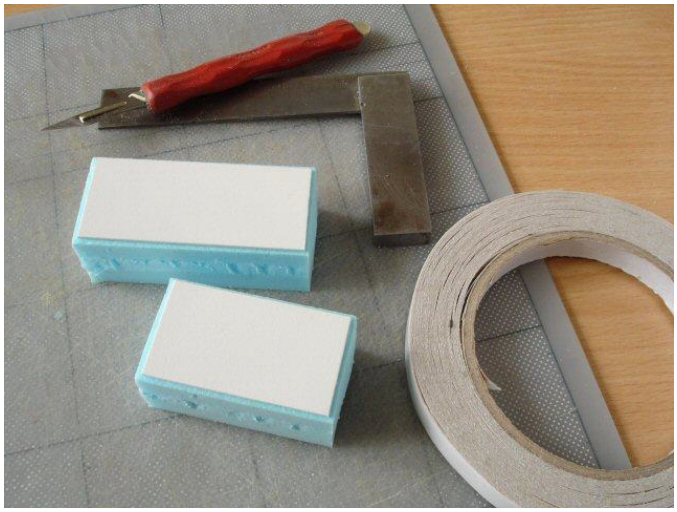
The sander can be dragged round the form, keeping it flat on the work surface, and will gradually create a smooth perpendicular edge. The template shape is left on to act as a 'stop' in the sanding.

As long as the plastic (or cardboard) is a little more resilient than the foam the difference will be felt once the edge is reached.



The second part of creating this half-ring shape involves fixing similar 'stops' to the top and base of the blocked shape as shown.

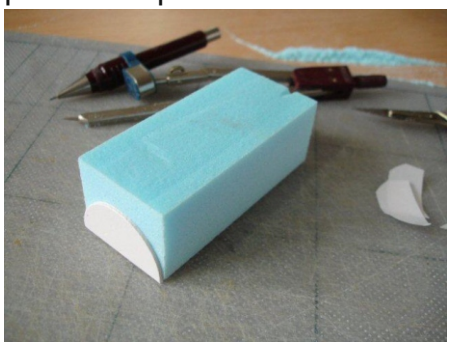
Between these edges I used another curved sanding former (smaller circle this time) to create the inside profile.



The other small additions are shaped using much the same methods, starting with a base template to create blocks.

I then fixed profile templates either end, and used a flat sanding block to sand down to the templates.

The forms need to be sanded lengthways with a longer sanding block that will be guided by the profile templates.



The rough rock texture around the outside of the bowl was created by slashing with the back of the scalpel and also breaking down using a wire brush.

The most reliable way of gluing separate styrofoam parts together is to use a special 'foam friendly' glue such as UHU Por.

Strong double-sided tape can also fix flat surfaces together very well but is not guaranteed to be permanent.

MORE ON GLUING STYROFOAM

I've bonded pieces of styrofoam together with a strong, double-sided carpet tape for years and they're actually much more permanent than I'd first imagined. A few observations are necessary though! ... the two surfaces have to be smooth and flat against each other; if these surfaces have been sanded to make them fit, all dust should be removed, ideally vacuumed using a brush attachment. For the same reason the best bond occurs between the slightly 'skinned' surfaces of the sheet as it comes. When using the tape it's particularly important to avoid placing it too near to where the styrofoam will be carved or sanded if one wants a seamless join ... but this applies almost equally when using most glues.

If it's impossible to predict, or avoid, gluing in an area which will later be carved through or sanded, I've found some of the following options most suitable because they offer the least resistance.

Spraymount

Works surprisingly well as a bond between flat styrofoam sheets is spraymount, by which I mean the permanent spray-glue types from 3M.

It should be sprayed on both sides to be joined (different to how it's normally used), and it's best to wait a little i.e. half a minute, before the two pieces are firmly pressed together.

Hot-melt glue

If you want to glue pieces of styrofoam together which do not lie completely flat against each other ... you will need something 'gap-filling'. There's hardly anything more gap-filling and instant that hot-melt glue! Contrary to what you might have read elsewhere, hot-melt glue will work reasonably well with styrofoam ... as long as it's not too hot!

Gorilla glue

Both styrofoam surfaces need a light misting of water first, best with a small pump spray. The glue needs to be applied thinly to just one of the surfaces before the two pieces are pressed together.

The glue expands 3-4 times in volume, so the pieces should be clamped so the excess is forced outwards rather than upwards.

A couple of hours are needed for the glue to cure.

If it is properly cured the glue sands through well . although it is different to the styrofoam it is much more alike than other glues. Also the bond is as strong as they say it is! I think polyurethane grabs on the styrofoam particularly well ... at least, I couldn't pull the blocks apart.

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Epoxy resin

I hadn't even considered epoxy resin glue with styrofoam because I'd just assumed it would dissolve the surface as polyester resin does .. one really shouldn't assume anything!

I tried it and it works perfectly on either styrofoam or polyurethane foam .. no damage to the surface, and a very strong bond.
Epoxy glue is very tough though, so it is no good in any area that needs to be cut or sanded.

PREPARING STYROFOAM FOR MOULDMAKING

If a styrofoam shape is being made as a prototype form intended for casting it doesn't need to be made particularly durable ... it only needs to withstand silicone rubber being either brushed or poured over the surface.

It does however need to be sealed, because if not the silicone rubber will grab into the surface too much and become very difficult to separate.

Vaseline (petroleum jelly) is an ideal temporary sealant in this case because it can be easily brushed or rubbed into the micropores without damaging the surface. If care is taken not to use too much of it the Vaseline will also even out the surface, although I've noticed that most of it is absorbed into the silicone anyway. The only problem is .. it's very difficult to see where you're applying it! The solution is to colour it.

The best way to colour Vaseline is to first mix a little powder pigment, in this case half a teaspoonful, with roughly the same amount of Vaseline to make a thick paste not unlike tube oil paint.

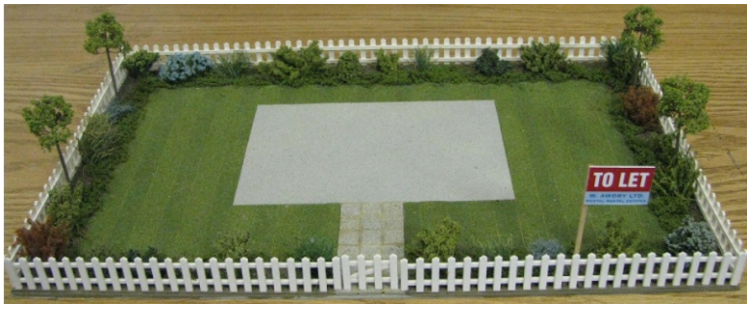
I chose the ultramarine here because it's a strong pigment and finely ground, combining smoothly with the Vaseline .. some powder pigments may be grainy or clump a bit, which is not so good!

The half teaspoonful was sufficient to give a strong colour to c. 50g of Vaseline when I added this to it, but one could use far less pigment.

For example, the pigment will stain a porous prototype, so you have to bear this in mind if you want to keep it or if it's an object of value.

There were a couple of larger scratches in the surface which I needed to fill and I've found that soft modelling wax (this one is the Terracotta Modelling Wax) is the easiest to use, worked carefully in with a brush.

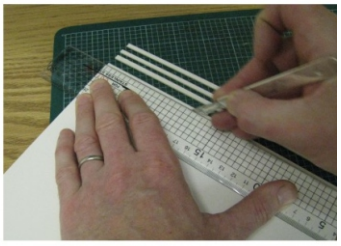
A BASIC GUIDE TO JIG MAKING



- **This is a guide to jig making using the example of a card picket fence on the model shown here.**
- **Always use a cutting mat and safety rule when using a scalpel.**

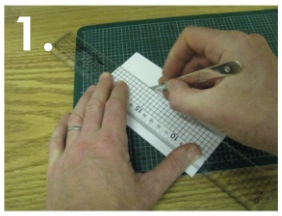
CUTTING THE PICKETS

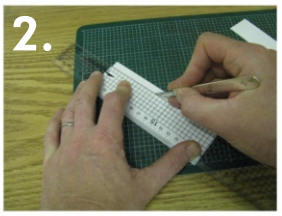
1. Using a ruler and knife mark a number 4mm divisions on either end of the card.
2. Line the ruler up to the knife marks made on the card and cut the card making a series of shallow cutsuntil you have cut all the way through.
3. Repeat this until you have cut all the strips.

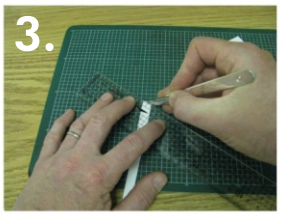


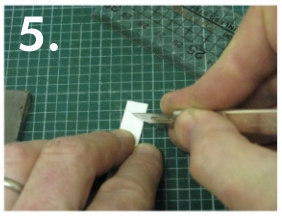
note: The first strip cut is often a slightly different width to the others so may have to be discarded.

MAKING THE PICKET JIG

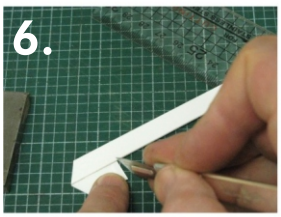


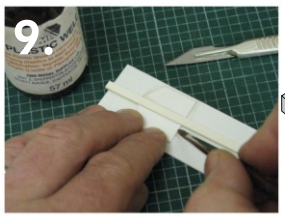


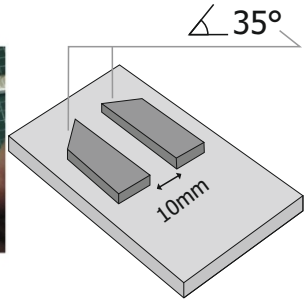




For this jig we used 1mm styrene.
1. Cut a piece of styrene big enough to make the base of the jig, in this case 30 x 120mm
2. Cut a 10mm strip of styrene to form the sides of the jig
3. Make an approximately 35° angled cut on the end of the 10mm strip
4. Mark the length of the picket on the styrene measuring from the pointed end and make a right angled cut using an engineers square
5. Using the cut piece as a guide cut the same 35° angle on the 10mm strip



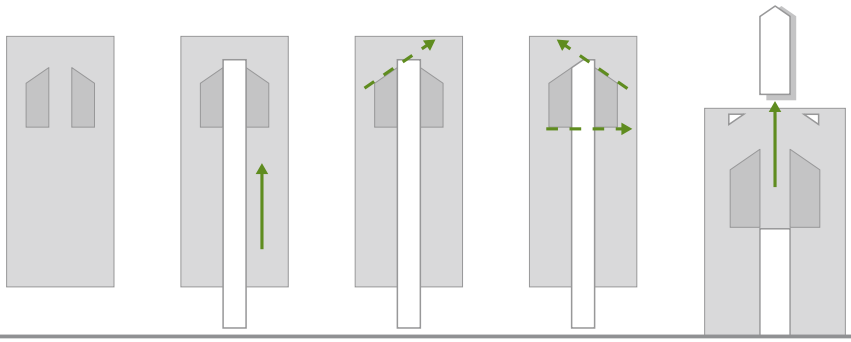




6. Then using the cut piece mark the length on the 10mm strip
7. Cut the 10mm strip to the same length using the engineers square.
8. Glue one of the angled pieces onto the base with plastic weld.
9. When dry place a strip of the card against the glued styrene and glue the other piece of styrene onto the base making sure the pieces of styrene match up exactly.

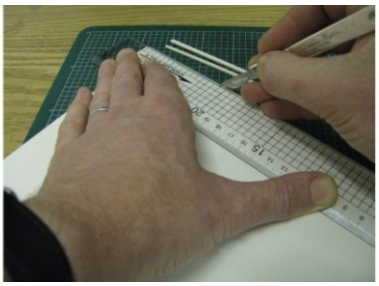
USING THE JIG

1. Insert the card strip into the jig
2. Make sure the strip does not move, cut the first angle.
3. Cut the second angle, then the length to complete the picket.
4. Remove and repeat until there are enough pickets to make the fence.

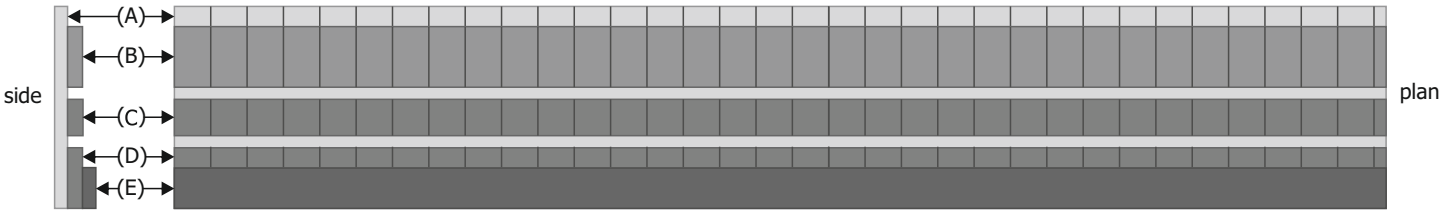


CUTTING THE RAILS

1. Using a ruler and knife mark a number 3mm divisions on either end of the card.
2. Line the ruler up to the knife marks made on the card and cut the card making a series of shallow cuts until you have cut all the way through.
3. Repeat this until you have cut all the rails.

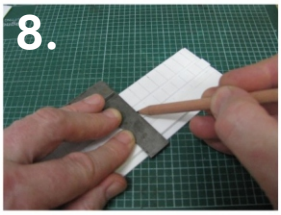


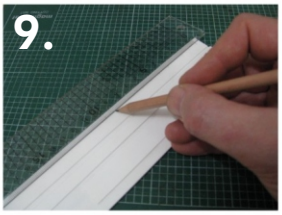
MAKING THE GLUING JIG

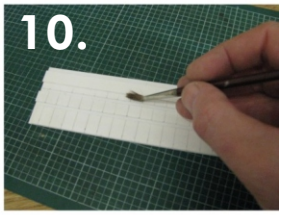


For this jig we used 1mm styrene.

1. Cut a piece of styrene big enough to make the base of the jig, in this case 300 x 50mm (A)
2. Cut a two 15mm strips of styrene to form the top and bottom of the jig (B + D)
3. Cut a 9mm strip of styrene which will space the rails apart (C)
4. Cut a 10mm strip of styrene which will be used to make sure the pickets are level when glued (E)
5. Glue the first 15mm strip onto the base using plastic weld making sure that it is glued exactly along the edge of the base (D)

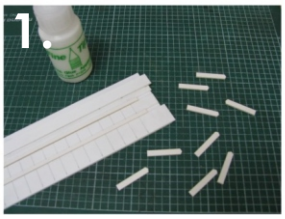


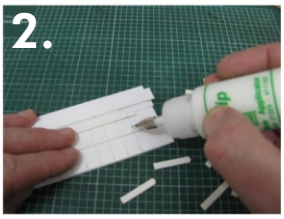


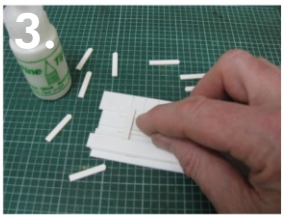


6. When dry place one of the rails against the 15mm strip and glue the 9mm strip against it (C)
7. When the 9mm strip is dry place another rail against it & glue the other 15mm strip to the base (B)
8. With a pencil mark 9mm divisions along the top of the jig
9. Using the engineers square draw lines across the jig from the division marks made
10. Glue the 10mm strip to the bottom 15mm strip (E)

ASSEMBLING THE PICKET FENCE







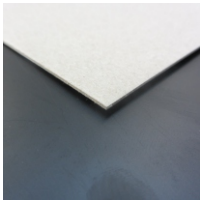
1. Place the two rails in the jig
2. Using the pencil marks as a guide and put a dot of glue on each rail
3. Glue a picket onto the rails using the lines to keep the picket straight and the 10mm strip at the bottom to keep all the pickets level
4. Repeat gluing the pickets until the fence is complete

PRODUCTS USED

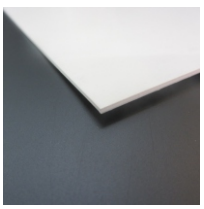
1. Plastic Weld Solvent 57ml
(AM00001)

2. Fast Tack glue 115ml
(AP00019)

3. Fine hair 5 paint brush
(FB10008)



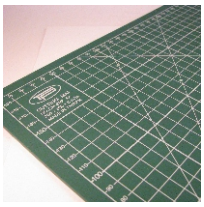
4. Card
1.2 x 510 x 640mm white
(RK10076)



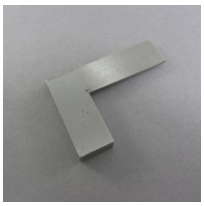
5. White styrene
1.0 x 660 x 340mm
(RS10060)

6. Scalpel No3 &
5 x 10a blades
(TK10065)

7. Fine Tip glue applicator
(TL10021)

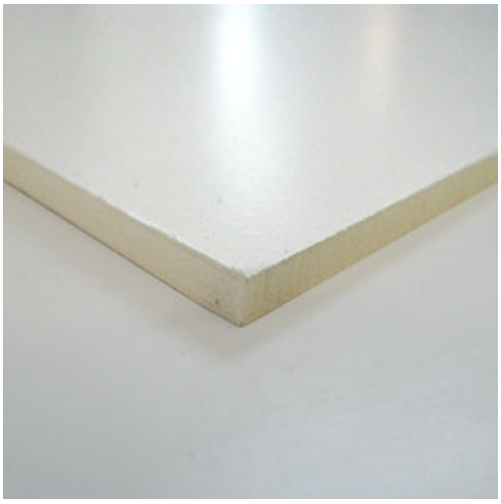


8. A4 cutting mat green
(TM00009)



9. Square 50.8mm
(TQ00001)

10. Aluminium safety rule
(TR10016)



CREATING SURFACES WITH KAPA-LINE FOAMBOARD

- **Written by David Neat author of 'Model-Making: Material and Methods'**
  KAPA line available:
- **White 3, 5 & 10mm available (eg RF50058)**
- **Black 5 x 700 x 1000mm (RF50021)**
- **Model-Making: Material and Methods (BH00007)**

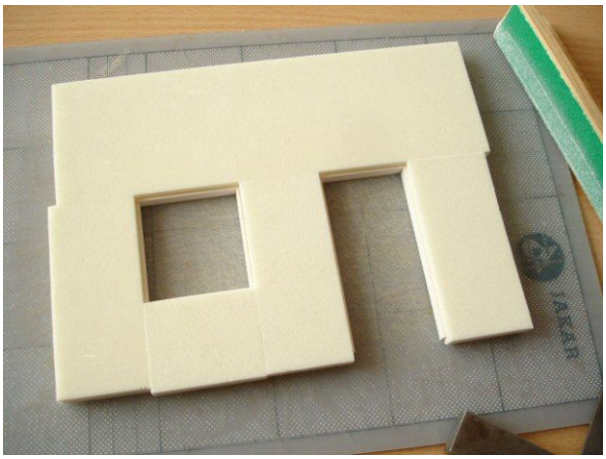
There are various different types of 'Kapa' brand foamboard. Most of them differ from regular foamboard in that the paper covering can be carefully peeled off to use the soft foam layer beneath.

This foam layer can be easily inscribed, carved, sanded, embossed or generally 'broken down'. The product named 'Kapa-line' (with an ivory/beige foam inside) is the best to use for this purpose, available either 3, 5 or 10mm thick.

Below, the paper layer needs to be carefully peeled off in strips to avoid damaging the foam surface too much.

The foam is polyurethane (different from the polystyrene in standard foamboard) and is stronger, much denser though still soft.

It can also be glued well with solvent glues, including superglue, without dissolving. It accepts all paints very well, even thin watercolour, and I've used either DecoArt or Rosco acrylic for these examples.



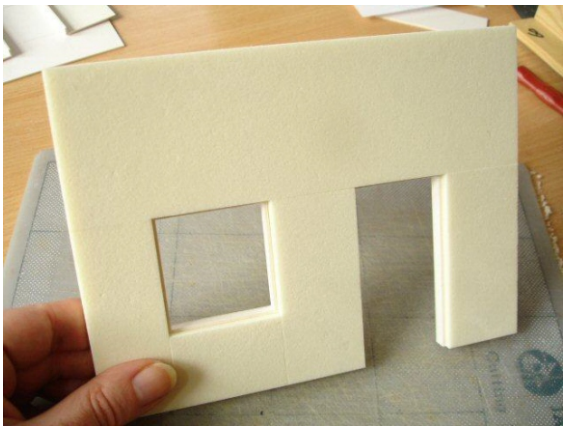
Once the paper has been stripped (on one side or both as one prefers) it is usually not robust enough on its own for larger constructions such as walls.

It should be glued to a stronger (card or plastic) backing form. This should be cut out first, including any door and window openings .

For a simple rectangular wall the foam can be stripped on one side and glued to the backing form paper side down. Its easier to cut the piece a little bigger and trim it once on the backing.

Either permanent spraymount, UHU (applied on both sides as a 'contact' adhesive) or a good double-sided tape can be used.

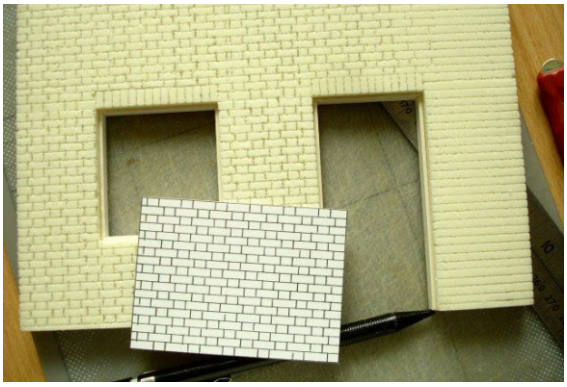
If the template backing form is complicated (with doorways and windows) I recommend removing all paper from the foam sheet, gluing as above, trimming close but not quite on the outline and sanding down - 'squaring off' the edges using a right-angled sanding block as shown below.



In fact this particular example was clad piecing together separate strips of foam to achieve square edges around the window and doorway without having to sand afterwards.

All that then needed sanding were the outside edges.

Different kinds of brickwork are simple to achieve in the foam.



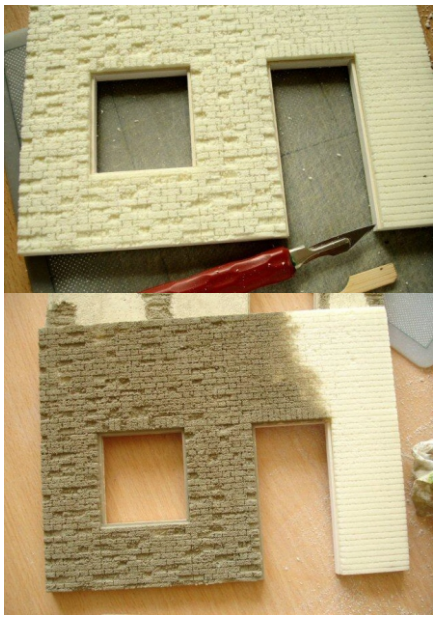
The main tool needed is just a 'push lead' pencil (0.5mm best for 1:25 scale work). Brick divisions or 'mortar lines' can be inscribed in the foam (horizontal lines first) guided by a ruler and not pushing too firmly with the pencil.

It's best to start with a gentle stroke but this can be followed by a deeper incision if a more pronounced effect is wanted or if one purposely wants to fracture the line a little.

I recommend taking the trouble to draw up a small sample of scale brickwork which can then be used to mark spacings.

The brickwork template shown represents the 'Flemish bond' arrangement of bricks common for most structural walls especially in older buildings.

Make sure if you can that the brick arrangement fits in 'comfortably' around openings. Vertical spaces between bricks are easiest achieved by pushing with a small screwdriver or a piece of wood you've shaved down to a similar shape.



Here I've started to make the brickwork look more ruined by 'scratching' away with the point of a scalpel.

Alternatively a small piece of wood can be used to push single bricks or whole sections in.

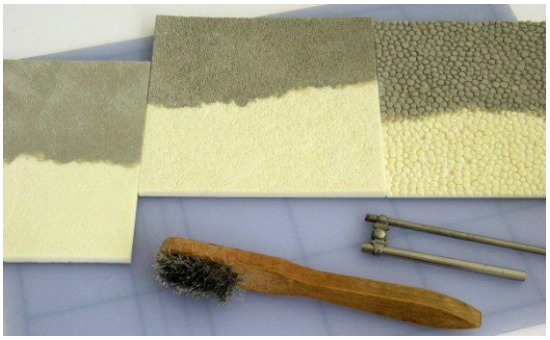
Once pushed they will stay and will not expand back even with painting.

I have crumbled the surface even more by beating it with a small wire brush (TA30000).

I always paint a thorough basecoat on surfaces first, often a 'mid' or average colour, and then achieve most of the final affect through dry brushing on top.

A fairly recent discovery of mine was that, if a small wire brush (available from 4D modelshop - TA30000) is dragged strongly a few times over the foam surface it gives a texture not unlike heavy, weathered wood.

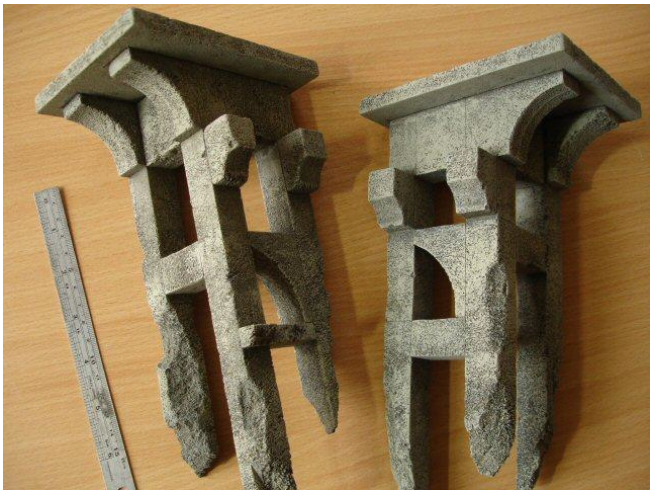
These samples have been basecoated, awaiting their final colours.

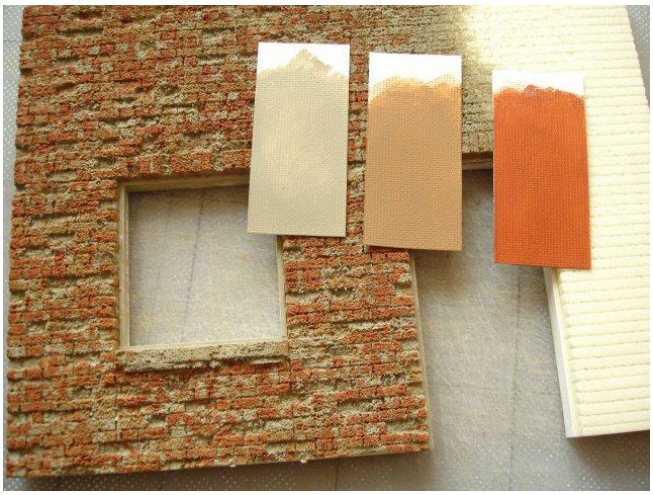


As well as using pencil or wire brush to create effects, I often impress the ends of metal tubes, in this case creating the effect of street cobbles. (photo Astrid Baerndal)

Kapa-line foam is not only very impressionable, it will hold that impression. Anything that's strong enough to press in will create an effect.

Here for example I've used decorative jewellery 'findings' and dental modelling tools to create different patterns.





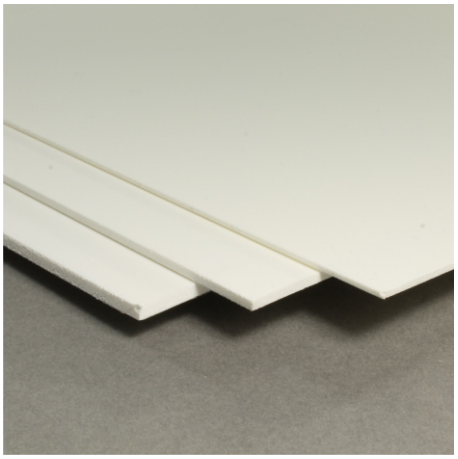
The thick (10mm) version of Kapa-line foam can also be ideal for building up whole structures, especially if all paper is removed.

For the concrete structures in progress below I made the thicker bits by gluing 2 layers together and then breaking down with wire brush and scalpel. All joins were glued using superglue, though this may need a couple of tries because thin superglue will soak into the surface too quickly.

If Paverpol (mixed with acrylic or dry pigment to achieve the right colour) is used as a basecoat the surface becomes a lot tougher. These have been given an additional dry brushing in a lighter green/grey but still need all the stains and 'blooms' of old concrete added.

When layering colours it's important to keep a record of which, including the order, so that one can repeat the effect if successful.

There may be as many as 7 different colours needed to simulate brickwork convincingly.



WORKING WITH FOAMED PVC

Written by David Neat author of 'Model-Making: Material and Methods' (BH00007)

Foamed PVC (Palight) available:

- **1, 2 & 3mm 210 x 297mm (RS12011/21/31)**
- **1, 2 & 3mm 301 x 603mm (RS12010/20/30)**

Foamed PVC is an extremely versatile sheet plastic. Of all the different brands I've tried over the years Palight has proved to be by far the easiest to work with by hand. In fact it's become my own first choice as the basis for almost everything I make!

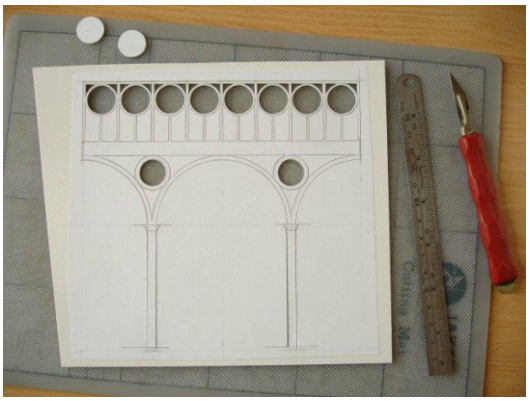
It can be easily cut with a scalpel, or carved, sanded, even embossed to a certain extent. It can be painted without any danger of warping (though it will usually require priming first) is not affected by humidity or (within reason) heat from strong lights. It is also incredibly light.

For example, when I use it to make larger-scale sets for stop motion animation it delivers the structural strength of MDF at a fraction of the weight! The only caveat in all this is the fact that it can only be glued with superglue, but on the other hand this gives a very strong bond and also once one has mastered the option of 'gluing from outside' it all becomes much easier!

I've chosen and illustrated three examples of its use: firstly using 1mm PVC (the thinnest available) for intricate forms; secondly using 2mm PVC for general construction; thirdly using PVC as one may not otherwise have expected, to create surface effects.

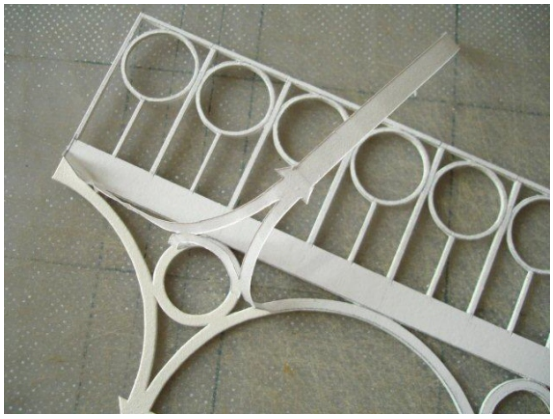
Although it's much easier to draw on foamed PVC with a pencil (unlike styrene or ABS) I prefer to work out a design on paper and spraymount a copy on the plastic.

In this photo (right) I have started cutting out the ironwork shape through the paper.



Curves are much easier with PVC than cardboard because the composition is much smoother, with no particles or fibres to affect the passage of the blade.

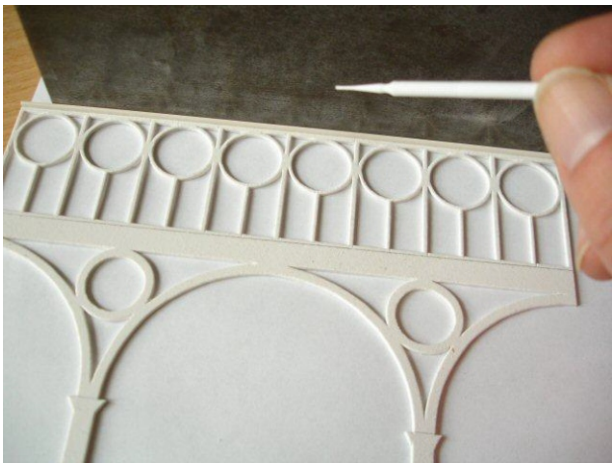
Cutting is easier also because it is more porous (foamed) on the inside and will 'give' a little under the blade causing much less friction.



If the paper cutting template is lightly fixed with spraymount (especially the repositionable type) it can be easily peeled off the form once cut.

In this case the PVC cut-out serves as a firm, cleanly cut basis upon which more detail, profiling or strengthening can be added on top.

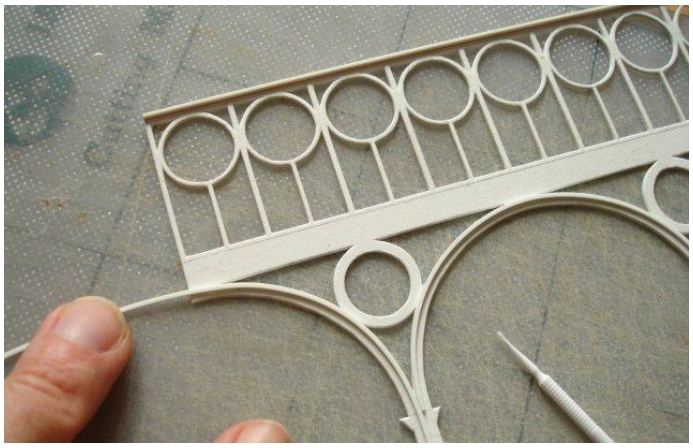
It's a constructional principle of 'building in layers' which I've developed for myself over the years and try to follow most of the time.



Here (right) I'm adding a strip of styrene (a harder plastic which can be bought in a wide variety of pre-made strip formats) to make a thicker top rail.

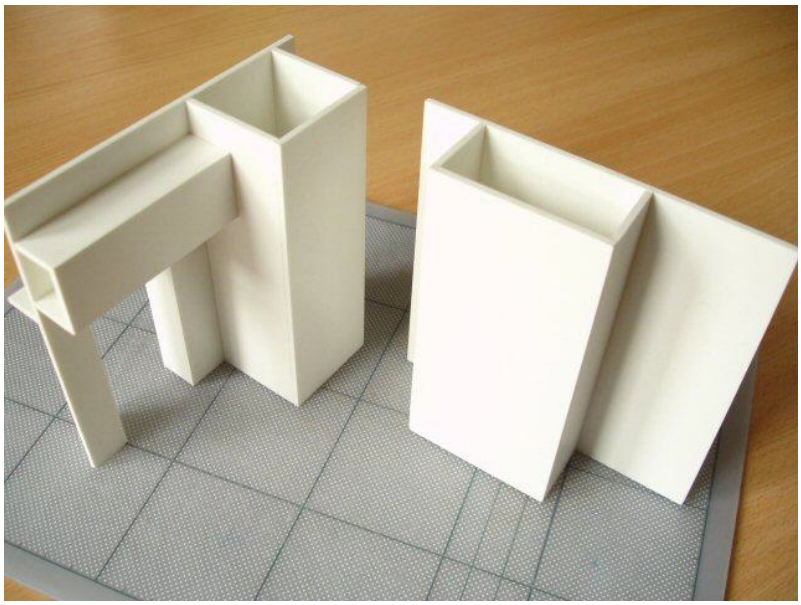
The easiest way to glue this in exactly the right place first time is to position a guide-block (in this case a metal block) against the top, press the cut length of styrene against it and run a little thin superglue (using a plastic gluing brush or cocktail stick if preferred) into and along the join.

The thin type of superglue will travel further into the join and set immediately. This is what I mean by 'gluing from outside'.



I am doing similar but this time with a very thin (c. 1mm) cut strip of the same PVC to give the arches more substance.
PVC is nicely bendable, especially in thin strips. The trick with bonding a strip in an exact curve is to fix the strip with a spot of glue at one end first, then curve and position the rest, spot-gluing at intervals to the other end.

I've cut the strip a little longer, to be trimmed off when the end is reached.



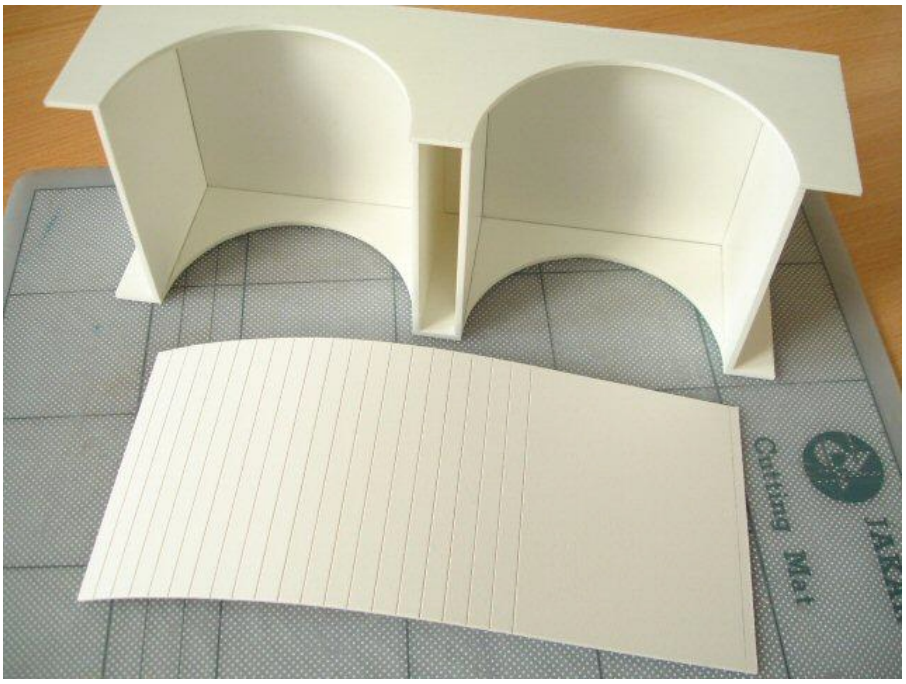
This example illustrates some of the benefits of using foamed PVC to construct walls etc.

Even thin PVC will retain its rigidity well. For example 1mm PVC can be used to represent walls up to 30cm high easily, as long as they're not load-bearing.

Because PVC sands well cut edges can be cleaned up if uneven and right-angles bettered prior to gluing together.

Also because PVC sands well the visible joins after gluing can also be sanded often to invisibility!

In the next example I am constructing a piece of vaulted ceiling by first making a framework box (2mm PVC) and then curving a thinner piece of PVC underneath it.

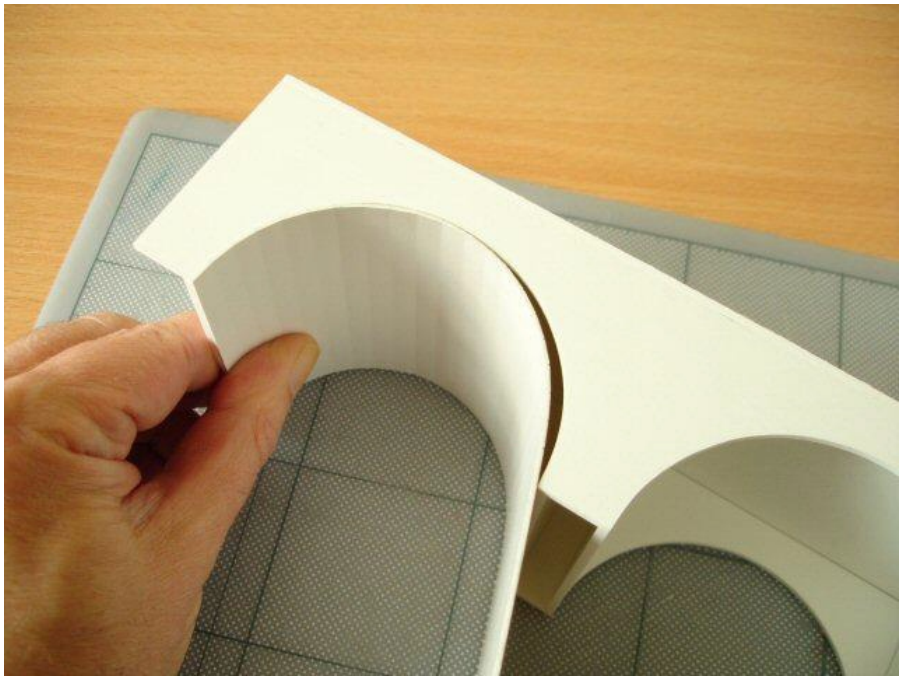


Circles are much easier to cut smoothly in PVC because there is no grain and the material 'gives' a little.

It is also possible to make a definite guiding groove in the soft surface using a compass fitted with two metal points.

Curves can also be perfected by sanding them.

Here I have scored the 1mm on one side to help it to bend.



The same can be done by heating it uniformly and securing it until cool on a curved surface such as a bottle.

The piece can be glued in position, in much the same way as the curved profiles on the ironwork example, by first securing one end, pressing the rest into position and 'spot gluing' from outside.

Here the end has been made purposely longer and can be easily trimmed off once the rest is glued.

Other plastics such as styrene or ABS can be sanded to modify the surface, but because foamed PVC 'gives' so much more it can also be inscribed or even embossed to create different textures.

Here is just one example where I have scraped the surface with coarse sandpaper to simulate wood.

To build up the structure of wood panelling I first cut out the raised areas (the frame) as continuous pieces, then pressed firmly with sandpaper (120 grit, mounted on a small block) along the length of each part.

'Grain follows length' almost always for any realistic wood construction.

I scraped those areas of the base piece which would remain visible as panels then stuck the frames into position (just spacing dots of superglue).

I used different thicknesses of 'half-round' profile styrene (also sanded) inside the panels and around the door frame.

The painting method and the choice of medium are fairly crucial in making this technique work.

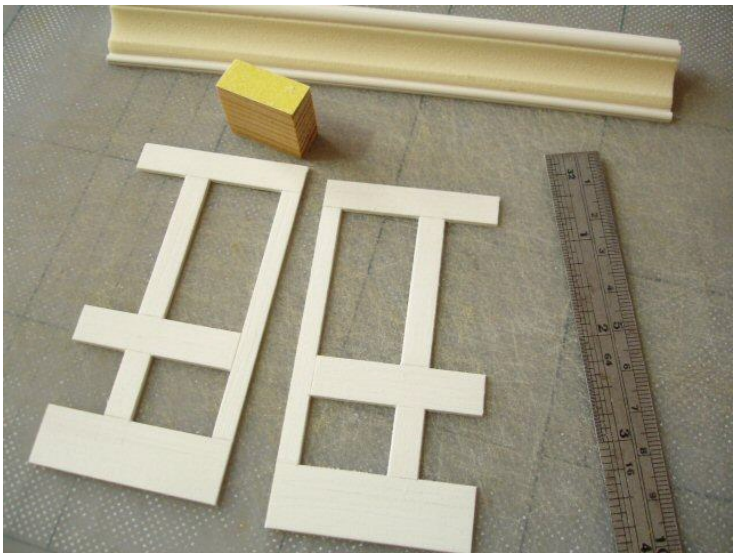
Normally it wouldn't be reasonable to paint plastic with any water-based paint and expect it to stay, but because the surface is sanded it can grip quite well.

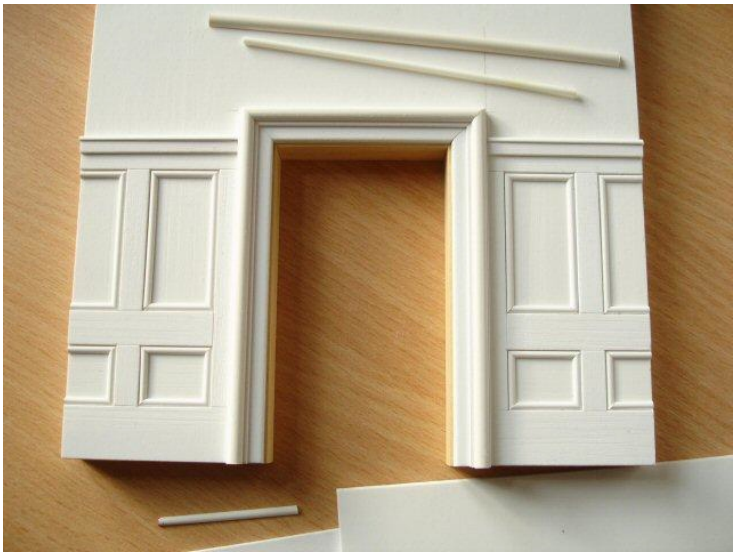
The paint needs to emphasize the scratches made by the sandpaper, settling well in the grooves but not too much on the surface.

Sometimes this can be achieved well with washes of thin paint, other times by rubbing in/rubbing off like a polish.

For this example I just used a regular 'System3' yellow ochre acrylic thinned down with a little water and 'rubbed into' the plastic surface using a medium-hard brush.

It takes some practise to find out for oneself what a particular painting medium might do and how best to use it.





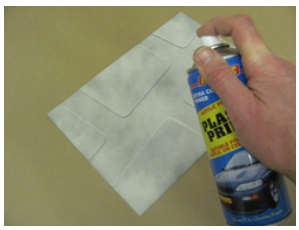
NOTES BEFORE SPRAYING

When spraying always spray in a well ventilated area, preferably in a spray booth wearing a suitable fume mask.

The spray paint should be applied in thin even coats to give a consistent finish across the model making sure the paint does not pool on the surface using the technique as described below.

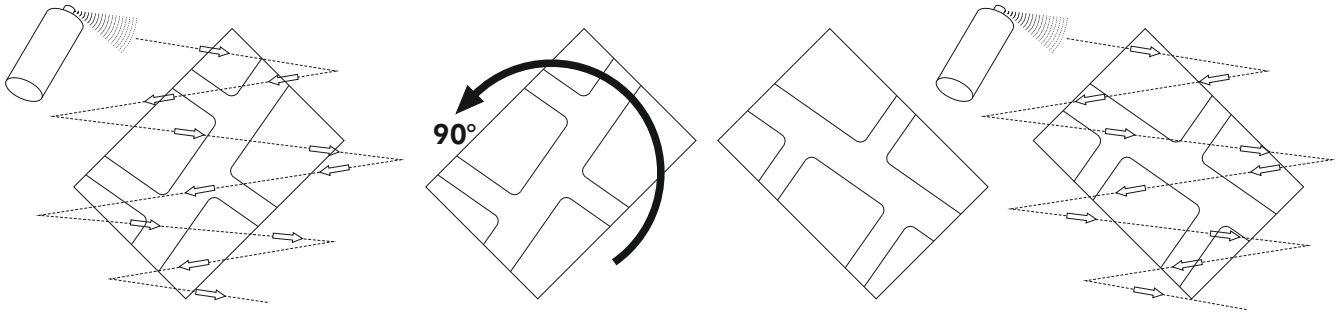
Before you start spraying shake the can well and check that the nozzle is clear. Test the paint by spraying the can off the model to make sure the paint is coming out evenly and is not spitting out any blobs of paint. You need to be especially careful with the white paint as this colour is particularly prone to this. For the colours being used for speckling make sure you are using the blue dot nozzles as these give a softer spray ideal for this effect.

BASE COAT (GREY PRIMER)

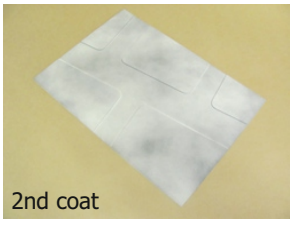


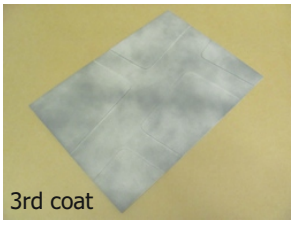
To create the roads and pavements, glued raised areas of card to create the pavements onto on to a card base.

Spray the grey primer holding the can around 250mm from the surface of the road moving the can swiftly in a continuous zig zag over the model, making sure you start spraying off the model and ending each pass off the model, as shown below. This will give a more even paint finish.

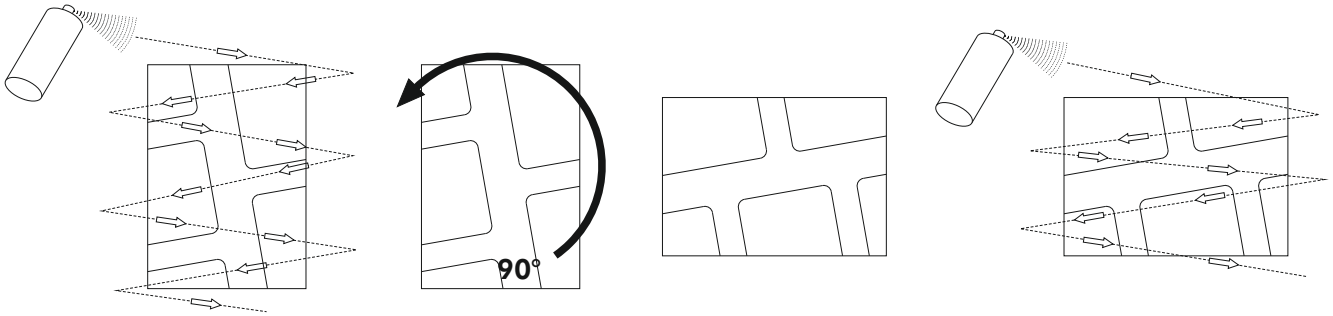


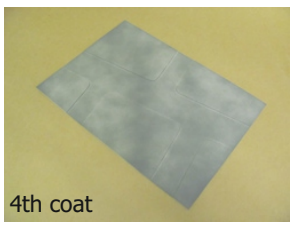

1st coat

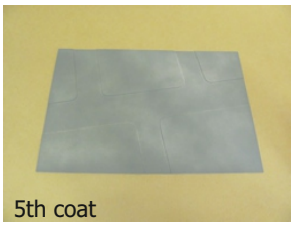

2nd coat

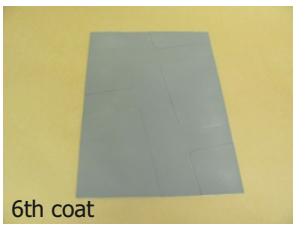

3rd coat

Rotate the model by 45° and spray as before 2 more times to give a total of 6 thin coats. This should given an even grey surface finish but apply more coats if required.



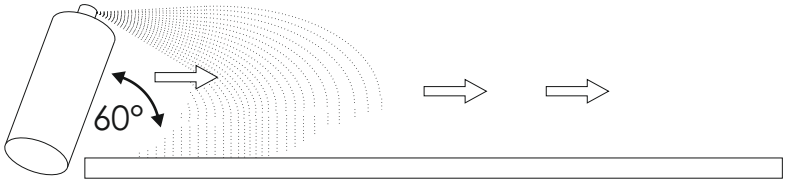

4th coat

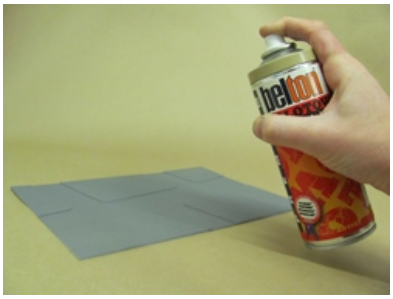

5th coat


6th coat

THE ROAD SURFACE

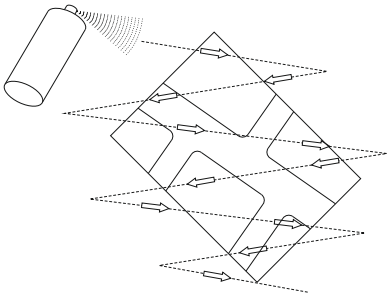
Creating the road tarmac surface is done by speckling the beige, white and black paint onto the grey base.

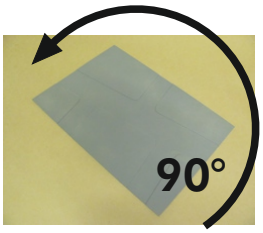


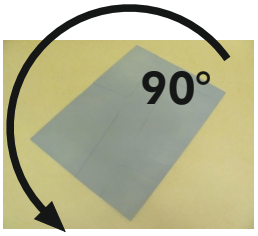


You need to let the paint fall onto the surface rather than spraying it directly onto the surface as with the base coat, this is what creates the speckled effect. If you are using a spray extraction system turn it off so as not to interfere with this process.

Start by spraying the milk coffee paint over the top of the model so the can's nozzle is not directly pointing towards the surface at around a 60° angle in a swift zig zag as before allowing the droplets of paint to fall onto the model's surface. It is very important that this is done as evenly as possible to avoid the appearance of patches of colour on the model. Rotate the model by 90° and repeat from all 4 corners (4 coats). The beige colour is important as it removes the blueness of the grey base coat.



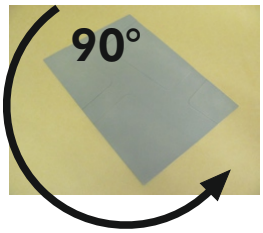


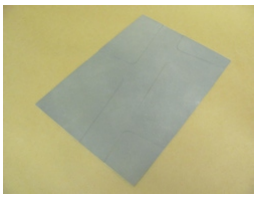


Then for white spray, from all 4 corners then horizontal and vertical (6 coats)

Finally for the black spray, from all 4 corners then horizontal and vertical (6 coats)

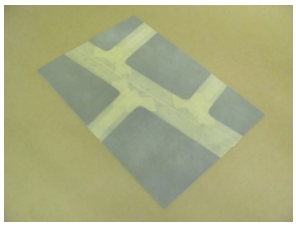
This should give you a reasonable representation of a road surface but you can add more coats if you feel the colour is not quite right for your model.



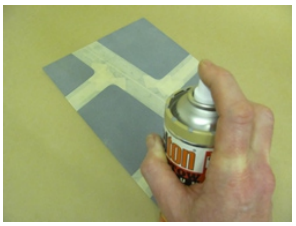


THE PAVEMENT SURFACE

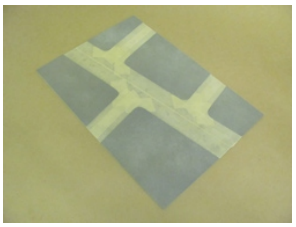
Firstly gently brush of the dust that will have accumulated from the speckling of the road colour. Then mask the road using masking tape and speckle the pavement colour as the road colour to the following ratios using the same method as the road surface.



masked road surface



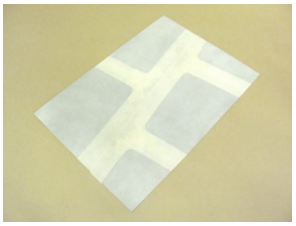
Speckle with Milk coffee



after 6 coats of Milk Coffee

Milk Coffee - 4 times from each corner then 1 horizontal and 1 vertical (6 coats)

Speckle with white paint



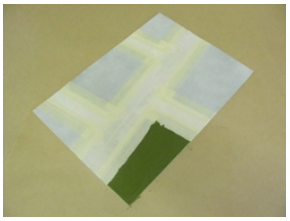
after 12 coats of white paint

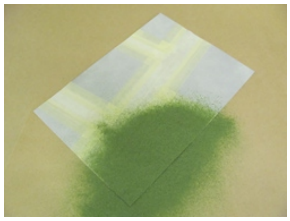
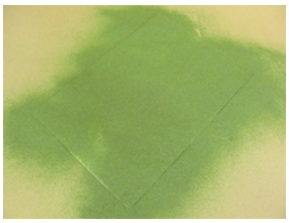
White - 4 times from each corner then 4 times from horizontal and vertical then 4 times from each corner again (12 coats)

This should give a reasonable representation of a pavement colour. Peel back a bit of the masking tape to check how the road looks against the pavement, if you feel it is not quite right add speckled coats.

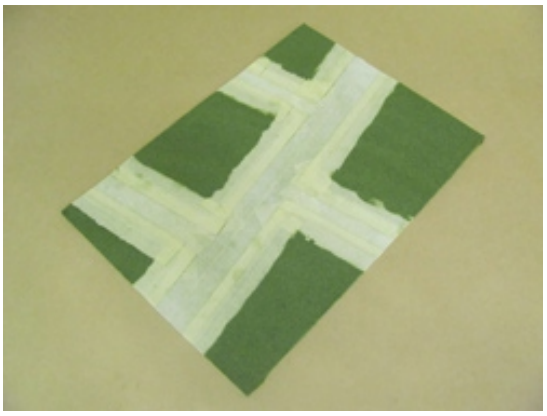
THE GRASS SURFACE

Before masking the pavement throughly brush the dust from surface to ensure the masking tape adheres to the surface. Mask the paved areas pushing the tape down firmly. When all the pavement has been masked paint the grass areas with the flock adhesive making sure that this is applied as evenly as possible. Then using a flour sieve, sieve the flock onto the adhesive making sure it is completely covered.

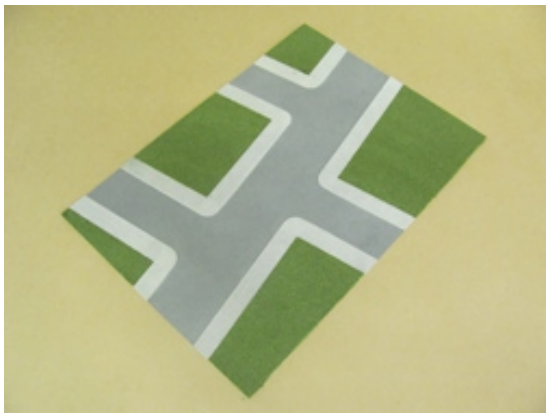


Leave to dry for about an hour then tap off the excess flock collecting it for further grassing projects. Carefully start to remove the masking tape between the pavement and the grass. It is important that the adhesive is still soft as you remove the tape so it leaves an even line. Be careful not to touch the flocked surface as it will mark or will be damaged until the adhesive is fully dry. Once all the masking tape has been removed leave to dry for about another 2 to 3 hours, when dry any loose flock can be knocked off and vacuumed.



flocked grass ready to be unmasked.



Unmasked completed model

PRODUCTS USED

AT10007 - Masking tape 24mm x 50m

FP20014 - Plastic Primer - Grey 400ml

WK00075 - Belton 400ml Milk Coffee

WK00160 - Belton 400ml Signal White

WK00080 - Belton 400ml Deep Black

FB20059 - White Bristle Brush 25mm

AG00015 - Flock Adhesive 250ml (green)

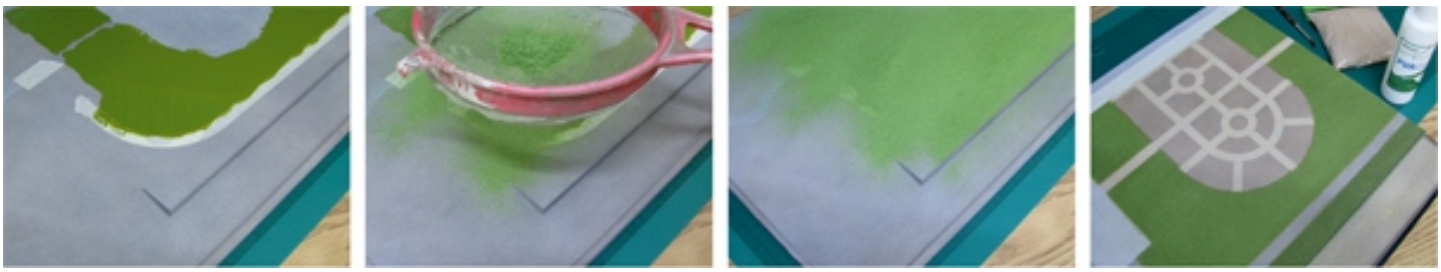
LG20013 - Flock - Mid Green 22g

MATERIALS USED

This is a basic guide to creating a formal model garden showing simple techniques to produce some of the planting that is likely to be found in such a garden.

AT10007	Masking tape 24mm	LG30073	Mid green med texture
AG00015	Flock Adhesive	LG60002	Light green texture mat
AP00036	PVA glue	LG60003	Mid green texture mat
FB20059	25mm white bristle brush	LP00019	Violet garden flowers
LG20012	Light green flock	LP00021	Magenta garden flowers
WK00160	Belton Signal White	LT11042M	42mm tree
WK00101	Belton Med Grey	AS00016	Slo-Zap
WK00075	Belton Milk Coffee	ST10151	1.5mm round brass tube
LG10079	Brown ballast small	SR10101	1.0mm brass rod
LT40005	Hedging 25 x 12 x 150mm	LT20006	30mm sisal trees
LG30072	Light green med texture	LT20138	42mm conifer trees Pk5

GRASS AREAS



Mask out the areas that are not grass using a good masking tape then paint on flock adhesive using a paint brush. Sieve light green flock over the adhesive completely covering it and allow to dry for 3 to 4 hours. Knock off the excess flock and remove the masking tape and then allow to dry overnight.

GARDEN PATHS

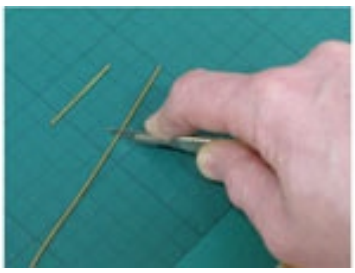
To prepare the path, spray the path a similar colour to the texture speckling with white, grey and milk coffee paint (this should be done before grass is applied). Then paint the path with watered down PVA glue and sprinkle over the light brown ballast leaving to dry for about 2 hours. Knock off the excess ballast and leave for another few hours to allow the glue to fully dry.

THE FORMAL HEDGES




Cut the 25mm high hedging to the correct length with scissors and then paint PVA glue onto the cut ends and sprinkle on mid green texture. When dry glue the hedging in place with the PVA glue.

CREATING SAPLINGS OR POLLARDED TREES

Taking a 42mm tree scrape the paint from the planting spigot. Extend the trunk with a 1.5mm tube, cutting it by rolling a blade on the tube and snapping it. Trim the planting spigot back on the tree so it extends to half way down the tube.




Super glue the tube onto the tree's spigot, then super glue the rod into the tube to extend the planting spigot. Trim the rod to length then thicken the trunk by painting with PVA glue, allowing to dry and repeat until the trunk thickness looks correct. When dry paint brown and glue in place with PVA glue.

CREATING LOW BOX HEDGES




Take a light green texture mat and cut into 6mm strips. Then using a plan of the hedges as a guide cut the strips to length, gluing together with PVA glue. Continue until all the hedges are complete.




Using PVA glue stick light green texture onto the cut edges. When dry trim any ragged edges and glue to the base board with PVA glue.

FLOWER BEDS



Split a medium green texture mat by tearing it apart and then cut the texture mat to the size of the flower bed using scissors.




Paint a light layer of PVA glue onto the texture mat so it is not completely covered and sprinkle the coloured texture on to it to create the flowers with the green foliage showing through below. When dry knock off the excess texture and stick the flower bed in place with PVA glue.

SMALL BUSHES



Use string and wire trees as bushes and small trees, drilling planting holes and then sticking in place with PVA glue.

LOW HEDGING




To frame the formal garden cut 25mm hedges in half length ways, paint PVA glue onto the cut ends and sprinkle on medium texture. Stick in place on the model using PVA glue.

LANDSCAPE MODEL - ROUGH SCENIC AREAS

MATERIALS USED

This is a basic guide to creating a rough scenic area showing simple techniques to produce some of the planting that is likely to be found in such an environment.

AT10007	Masking tape 24mm
AG00015	Flock adhesive
LG20022	Flock - Grass mix
AP00036	PVA glue
LG10040	Scatter earth brown
LG30073	Texture mid green
LG30074	Texture dark green
LG60002	Texture mat light green
LG60003	Texture mat mid green
LG40401	1:45 Calcareous tufts summer
LT50018	Lichen olive green
LT11075M	Deciduous green tree etched 75mm
LT17075	Silver Birch tree etched 75mm
LT11150M	Deciduous green tree etched 150mm

APPLYING GRASS FLOCK

Mask out the areas that are not to be flocked with a good masking tape then paint the grass areas with flock adhesive using a paint brush. Sieve the flock over the flock adhesive and allow to dry, ideally over night then knock off the excess flock.

WOODLAND PATH

Paint PVA glue onto the brown speckled path then sprinkle turned earth texture onto it. Allow to dry for at least 30 minutes then knock off the excess texture.

ADDING ROUGH GRASS

Glue mid and dark green texture in clumps with pva to create the rough grassed areas. Then for low lying shrubs tease out pieces of the light and mid green texture mats and glue down with pva glue to add rougher areas and low lying shrubs.

ADDING LONG GRASS

Remove a tuft from the backing sheet with a pair of tweezers. Paint a blob of PVA glue to the base of the tuft and glue into place.

ADDING SMALL BUSHES

Take pieces of lichen and cut with scissors to the correct size for the model then glue in place the PVA glue to add height and to represent shrubs and bushes.

ADDING TREES

Add some different types of trees to give more height and variety to the planting.

Drill a planting hole in the base board and glue into place with PVA glue.

MATERIALS USED

This is a basic guide to creating a river and waters edge using some simple techniques to produce the ground work and planting that is likely to be found in these areas as well as the water itself.

Riverside path

WK00101	Belton 400ml Med Grey
AP00031	PVA glue
LG10077	Ballast granite small grade

Rivers edge and bed

WK00160	Belton 400ml Signal White
WK00075	Belton 400ml Milk Coffee
WK00080	Belton 400ml Deep Black
AP00031	PVA glue
LG10094	Ballast beige mix
LG10077	Ballast granite small grade
LG10079	Ballast brown
LG10074	Herebrook grit (Richard Stacey)

Rough Grass and overhanging plants

AP00031	PVA glue
LG30073	Texture mid green
LG30074	Texture dark green
LG60002	Texture mat light green
LG60003	Texture mat mid green
LG40401	1:45 Calcareous tufts summer

Reeds

LT62000	Sisal natural 125mm long bunch
AP00031	PVA glue
	Yellow & Green Acrylic Paint

River bed

AP00031	PVA glue
LG30072	Texture light green
LG40401	1:45 Calcareous tufts summer

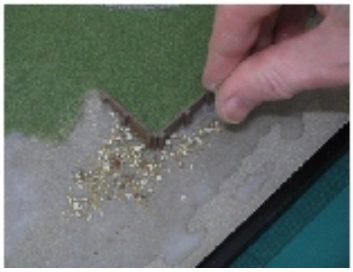
Water

FT30004	Solid water 2-part resin 90gm
	Green Acrylic Paint

RIVERSIDE PATH

On a base sprayed grey, paint on a watered down coat of PVA glue and sprinkle over with dark grey ballast completely covering the glue. After 3 hours, knock off the excess & allow to dry overnight.

RIVERS EDGE AND BED

On a base speckled with white, beige and black paint to look like fine gravel paint with watered down PVA glue. Then sparingly sprinkle on beige mix ballast to represent small stones around the edges of the river. Follow this by covering with a mixture of fine dark grey ballast and light brown ballast. Allow to dry for a few hours and then knock off the excess. Then using PVA glue add some larger stones to the waters edge then leave to completely dry overnight.

ADDING ROUGH AND LONG GRASS AND OVER HANGING PLANTS




Glue mid and dark green texture in clumps with PVA to create the rough grassed areas. Then for overhanging plants tease out small pieces of the light and mid green texture mats and stick down with PVA glue. Remove a calcareous tuft from the backing sheets and using a blob of PVA glue place along the waters edge to create some extra variety in height giving a more realistic look.


REEDS








Take a small clump of sisal cut to the correct length and paint the end with a blob of PVA. Roll the glued end between fingers and thumb to stick together in a fan shape and allow to dry. Then paint with acrylic beige paint and when dry paint the ends with a green beige colour. Repeat this process until there are enough clumps to create the reed bed then glue in place with PVA glue.

RIVER BED

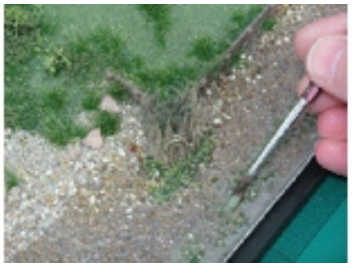



Paint watered down PVA glue onto the river bed and sparingly sprinkle on light green texture to create the plants growing at the bottom of the river. Using PVA glue stick a few tufts on their sides to the river bed to represent longer underwater plants.

ADDING THE WATER




Carefully mix the resin and hardener together making sure you do not introduce bubbles when syringing it into the mixing pot or when stirring the resin and hardener together. When mixed tap the pot to release any small bubbles.

Pour the enough resin onto the river bed to cover it and fill up to about half way. Allow 24 hours to dry and then with acrylic paint apply a greeny brown wash over the deeper areas of the river to create a murky look. Then mix more resin and pour over to give the river more depth.


If you wish to create a rippled surface after about 10 hours when the resin has become jelly like gently brush the surface to create the ripples.

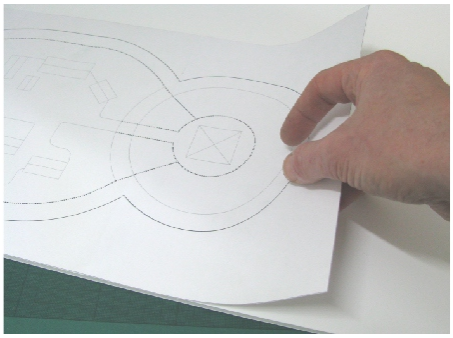
HOW TO MAKE A MOTTE AND BAILEY CASTLE

TOOLS AND MATERIALS USED

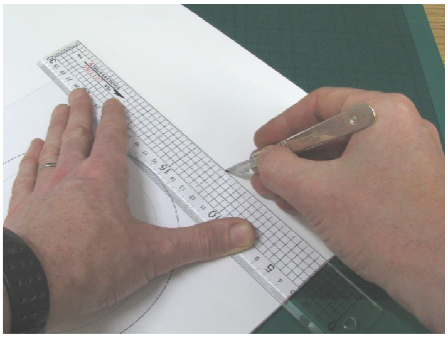
The base board	RF50034	White A2 foamboard 5mm thick
	RW11003	MDF sheet, 250 x 500 x 3mm thick
	RF10003	Expanded polystyrene foam 300 x 300 x 50mm thick
	AG00051	UHU Glue stick, 40g
	AC00009	UHU all purpose glue, tube 20ml
	AP00036	PVA glue, 170ml
	FB10008	Fine hair 5 paint brush
	TR10009	Steel safety Rule, 304mm long
	TK10080	Retractable Swann Morton craft knife with 5 x 10A blades we recommend a craft knife with a retractable blade for safety reasons but other craft knives are available
The path and moat		Brown acrylic paint
		White acrylic paint
		Black acrylic paint
	FO30009	Brunswick green Humbrol gloss paint
	AG00015	Flock adhesive 250ml (green)
The grass and foliage	LG20022	Flock grass mix, 100cc
	LG30059	Mid green coarse texture, 230cc
	LT20002	9-11mm green deciduous green trees, packet of 10

MAKING THE MOTTE MOUND

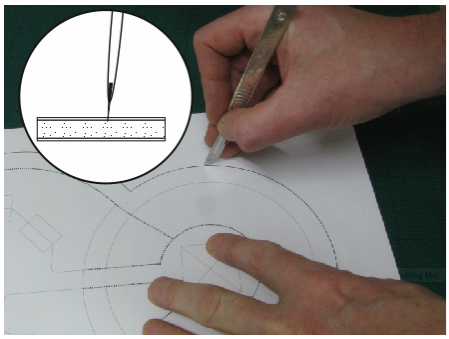
1. Glue the three A4 sheets of the plan together using the glue stick as indicated on the plan.



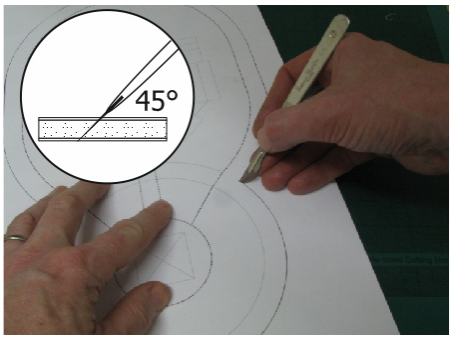
2. Glue the plan to the foamboard using the glue stick putting enough glue on the back of the drawing so the it is held in place to cut out the moat but can be removed later.



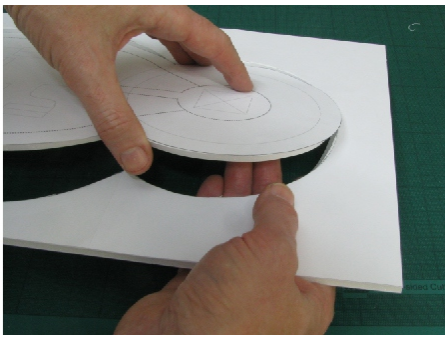
3. On a cutting mat or thick card using a craft knife with a new blade cut through the foamboard around the outside of the plan.



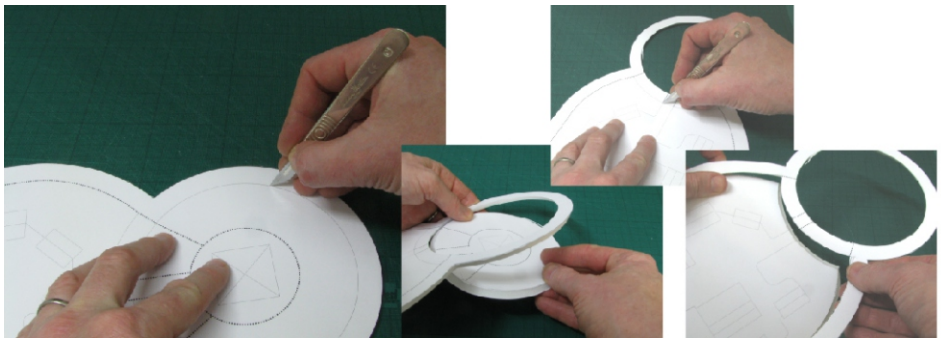
4. Cut through the card on the top layer of the foamboard only, not cutting through the foam, following the outline of the outside of the moat.



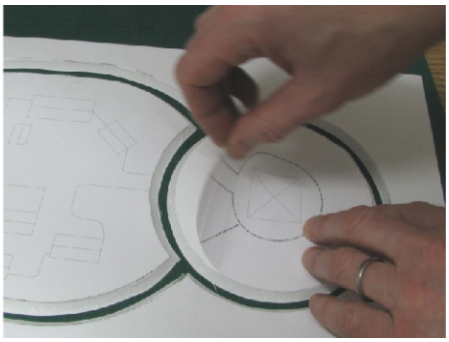
5. Then holding the knife at about a 45° angle and following the cut just made, cut all the way through the foamboard to create the sloping bank of the moat.



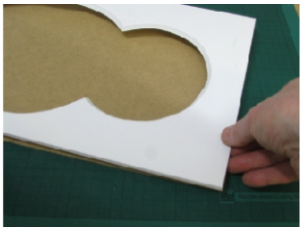
6. Looking on the back of the board check you have cut all the way through and making extra cuts where needed. Then separate the parts.

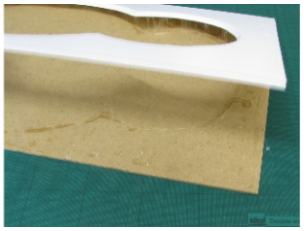


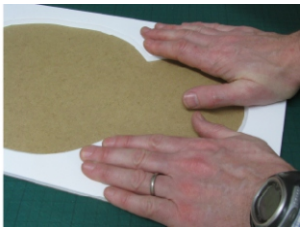
7. Repeat the process to cut out the Motte and the Bailey



8. Remove the plan from the foamboard

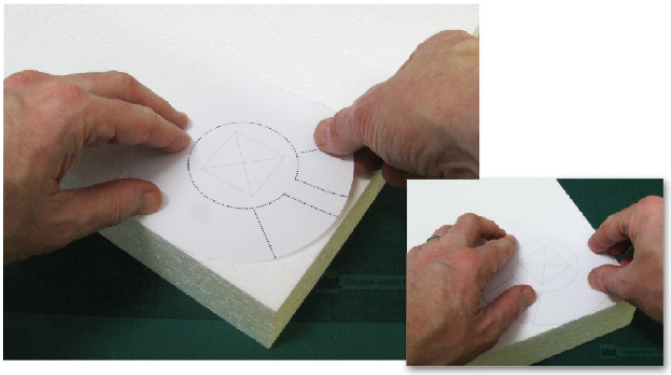




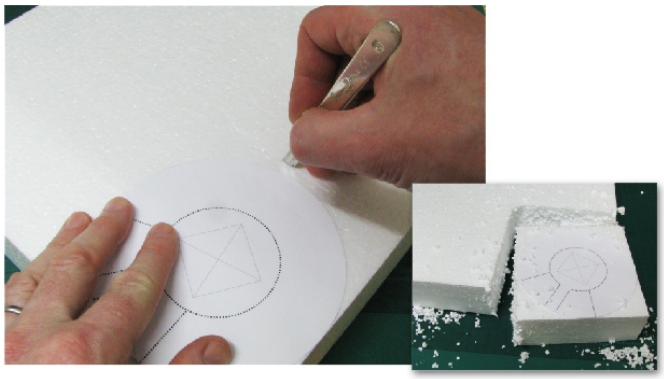


9. Stick the foamboard to the mdf base using UHU glue as a contact adhesive gluing down the outside first. Run UHU all over the back of the foam board, put the foam board and the base together so the glue is on the base as well then pull apart. Allow the glue to become touch dry and then put the two pieces together again pushing down on the foam board so the two pieces are firmly stuck together. This method will stick the two pieces together very firmly. PVA glue can be used instead but the glue will need to be left for a few hours to dry with something heavy on top, such as some books, to hold the pieces together.

MAKING THE MOTTE MOUND



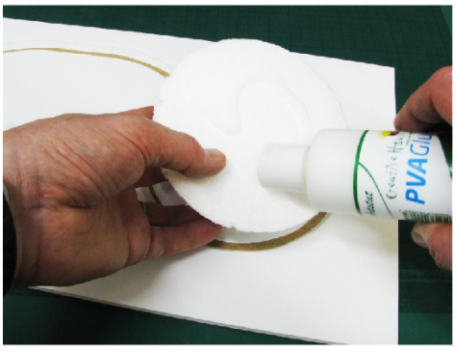
11. Glue two plans of the Bailey onto the top and bottom of the expanded polystyrene foam using the glue stick.



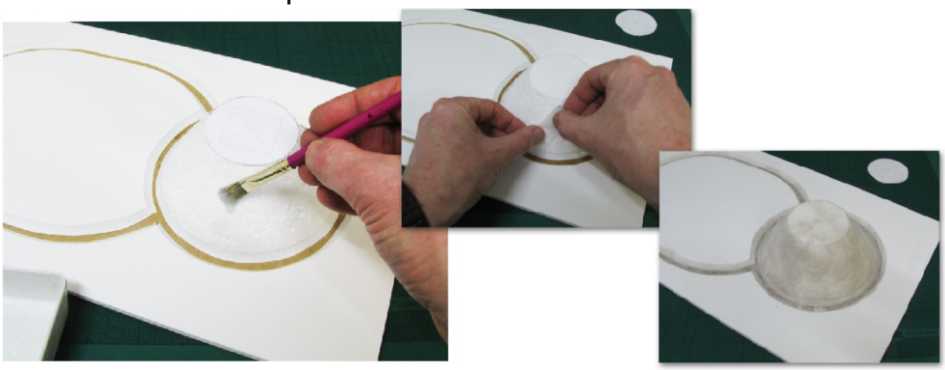
12. Roughly cut through the foam, close to the plan but not trying to cut out exactly making lots of cuts slowly working your way through the foam.

14. Cut round the smaller circle in the centre of the Motte removing the outside paper leaving the inner circle.

15. Then repeat the cutting process removing small pieces of foam working towards the centre until you have formed the cone shape.

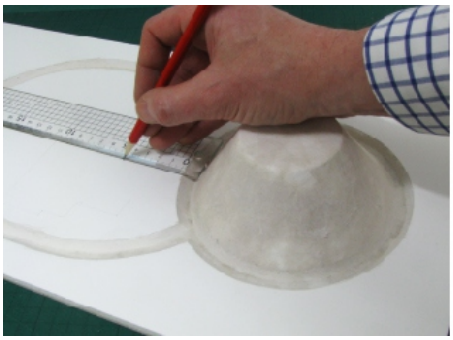


15. Remove the paper from the cone then stick the cone to the foamboard base using PVA glue.

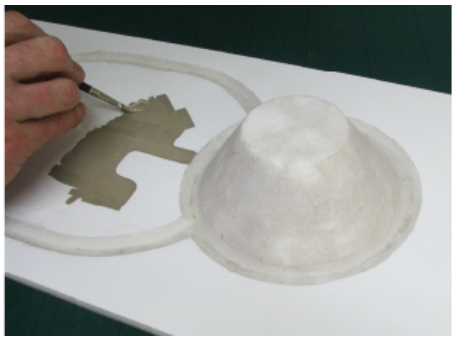


16. To form a smooth surface on the foam and the moat paint watered down PVA glue onto the cone and cover with strips of tissue paper or news paper until fully covered. Allow to dry fully for approximately 3 hours.

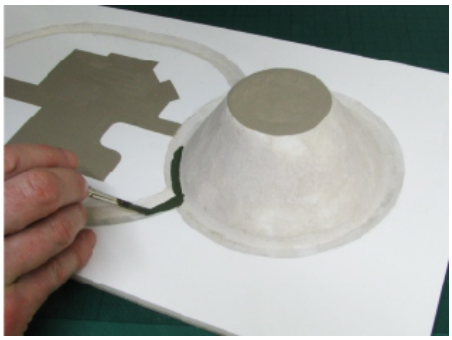
COLOURING THE MODEL



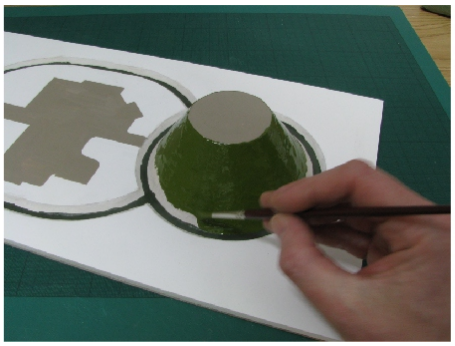
17. Using the plan as a guide mark on the roads and paths with a pencil.



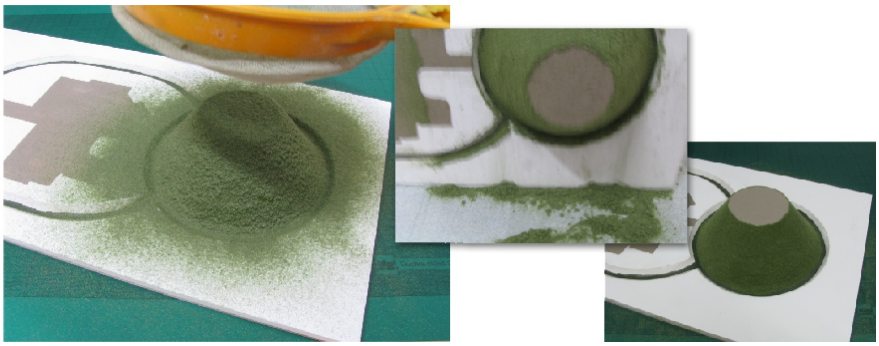
18. Then paint on the roads and paths in a light brown grey colour.
(mixture of Baneblade Brown and Ceramite White)



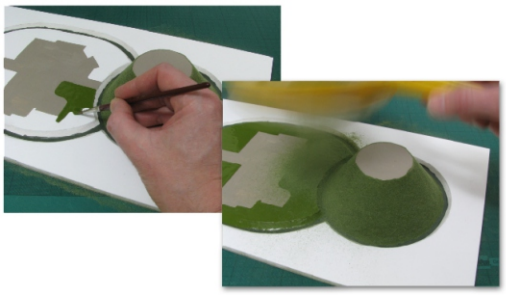
19. Paint the bottom of the moat with a browny green colour to represent water, preferably with a gloss paint.
(Brunswick green)

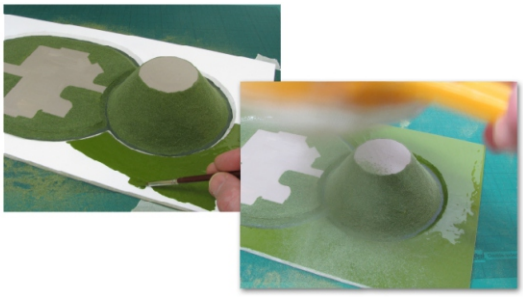


20. Using a matt green paint, paint the grass areas in the following sections, the Motte, the Bailey then the surrounding area letting each dry before beginning the next.



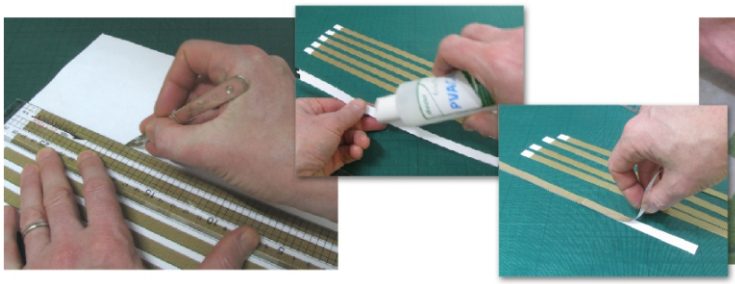
OR for a more realistic model use 4D modelshop flock adhesive and while still wet sprinkle on grass flock through a flour sieve. Allow to dry for a couple of hours then knock off the excess flock onto some paper, before beginning the next section.



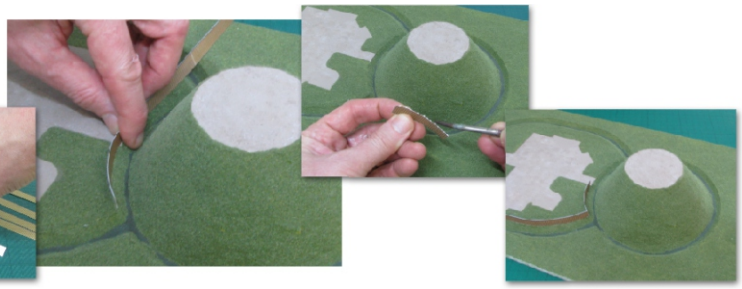


21. For an extra realistic look and to break up the flat look of the road areas stipple on white and brown paint.

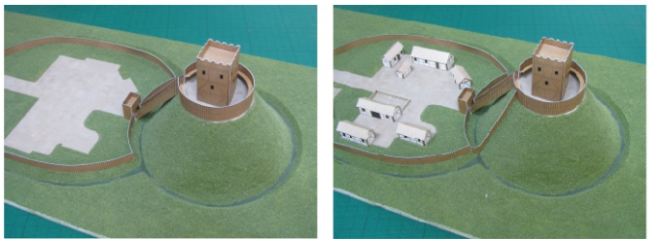
This is done by using a stiff brush with a flat end dipping the end of the brush in the paint and removing excess paint on a piece of paper until only a small amount of paint comes off the brush. Then using a gentle stabbing motion applying the paint all over the road areas repeating until the whole area is covered with small dots of paint.



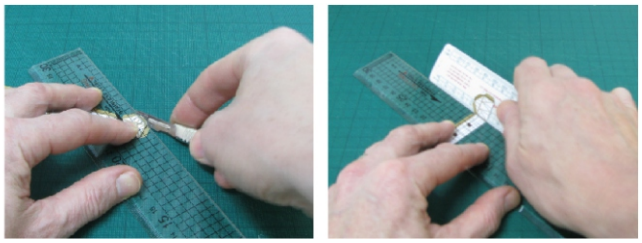
22. Cut out the perimeter walls and glue them back to back with PVA glue.



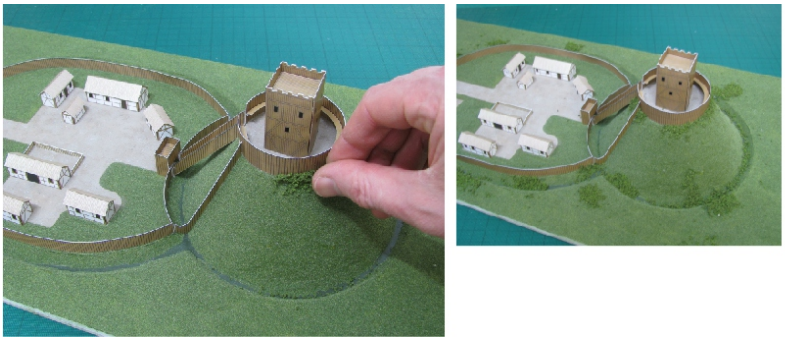
23. Shape the wall to the curve of the moat, cut to size and glue in place with PVA glue. Work round model until all the walls are complete.



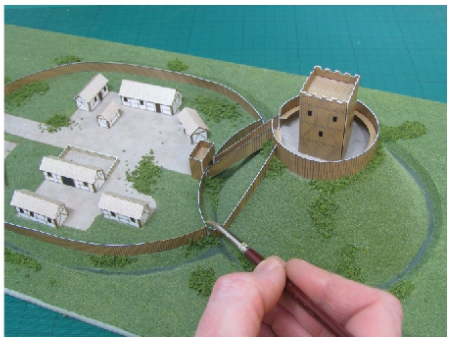
24. Then cut out the buildings, glue together and stick to the model using PVA glue.



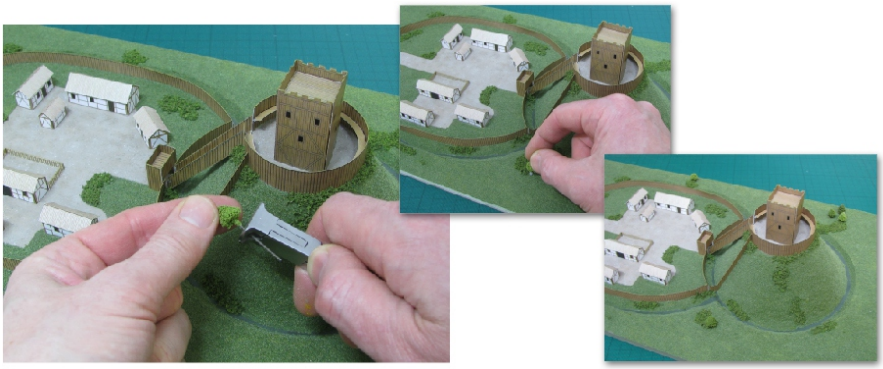
25. A tip to get a clean fold is to use a ruler placed along the tab or fold line then make the fold by pushing the paper up with a knife blade or another ruler.



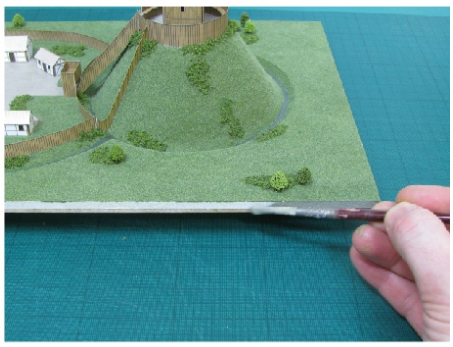
26. Using PVA glue, stick mid green texture in clumps on the grass to represent longer foliage.



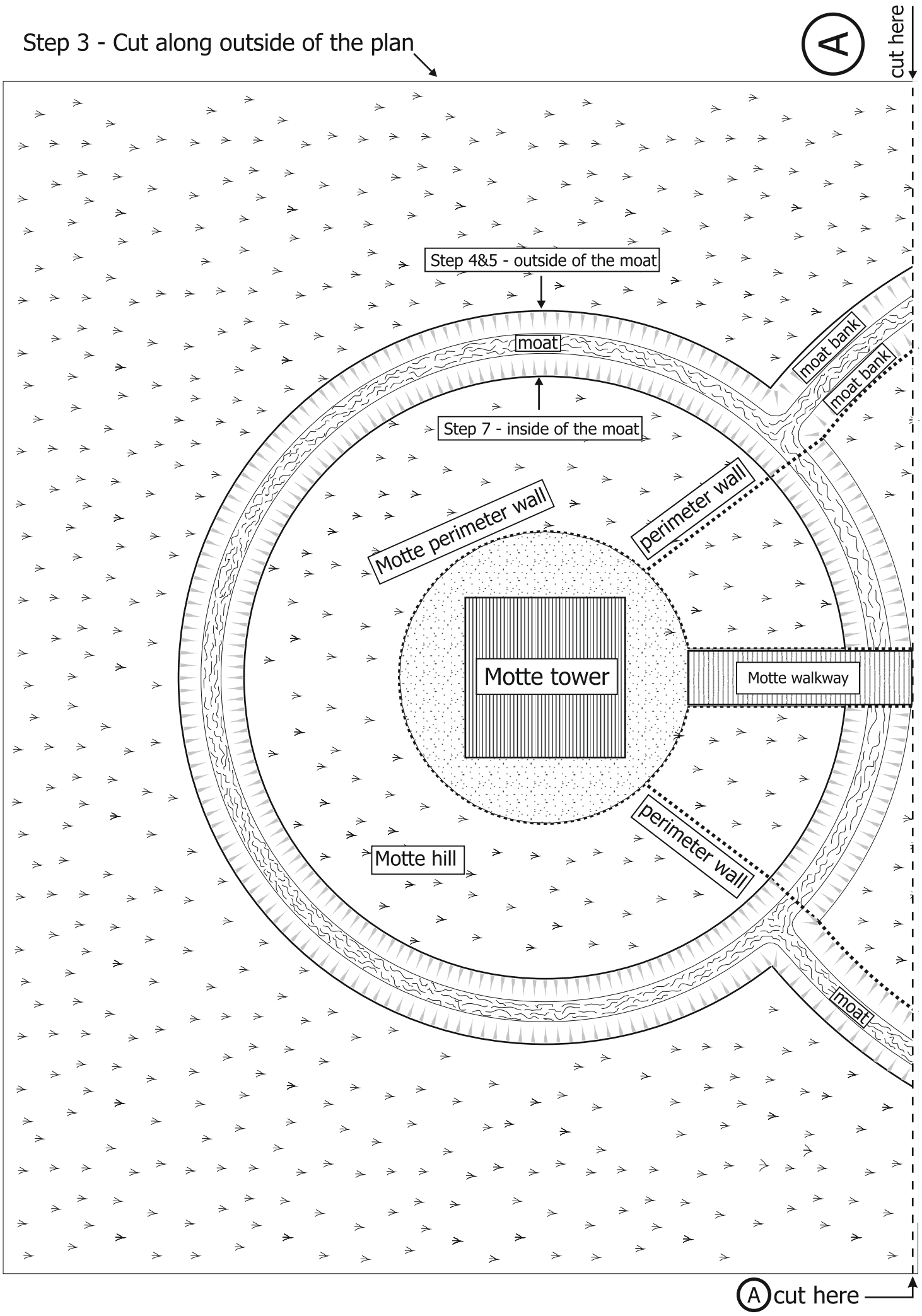
27. To cover the white edges of the fences carefully paint them with a mid brown paint.

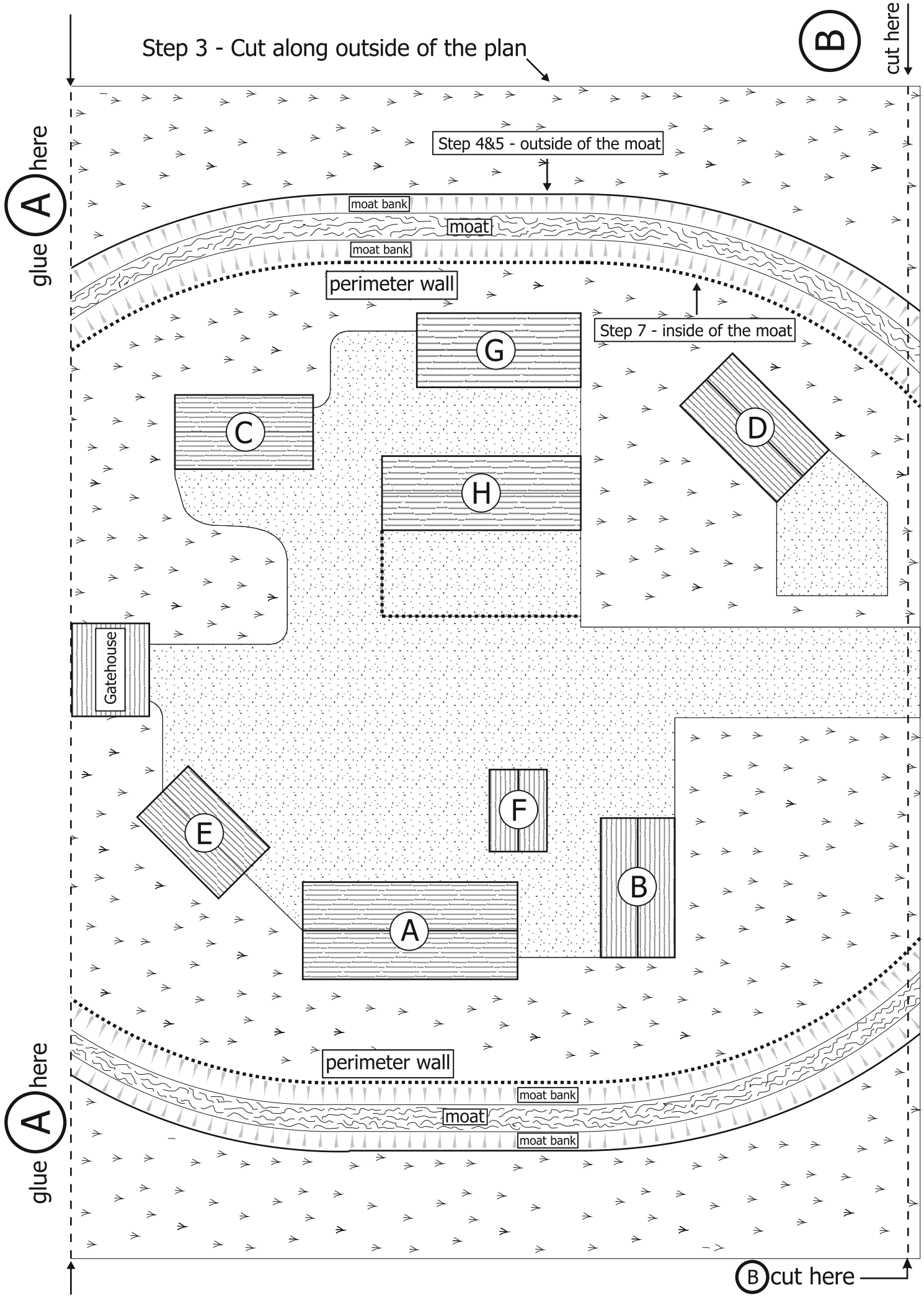


28. Add extra detail by sticking small trees around the model. Cut them to length and glue in place with PVA glue pushing the tree through the card of the foam board base



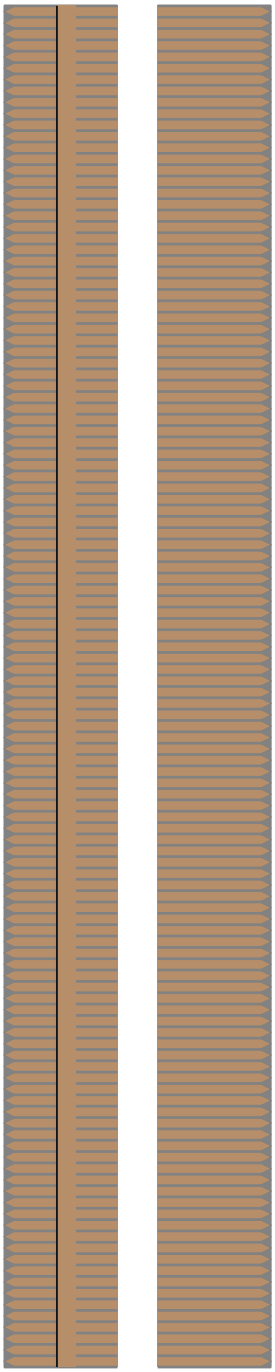
29. Finally paint the edge of the model with a neutral colour such as grey.


Step 3 - Cut along outside of the plan
A
cut here
Step 4&5 - outside of the moat
moat
moat bank
moat bank
Step 7 - inside of the moat
Motte perimeter wall
perimeter wall
Motte tower
Motte walkway
Motte hill
perimeter wall
moat
A cut here


Step 3 - Cut along outside of the plan
B
cut here
glue A here
Step 4&5 - outside of the moat
moat bank
moat
moat bank
perimeter wall
Step 7 - inside of the moat
G
C
D
H
Gatehouse
E
F
B
A
perimeter wall
moat bank
moat
moat bank
glue A here
B cut here

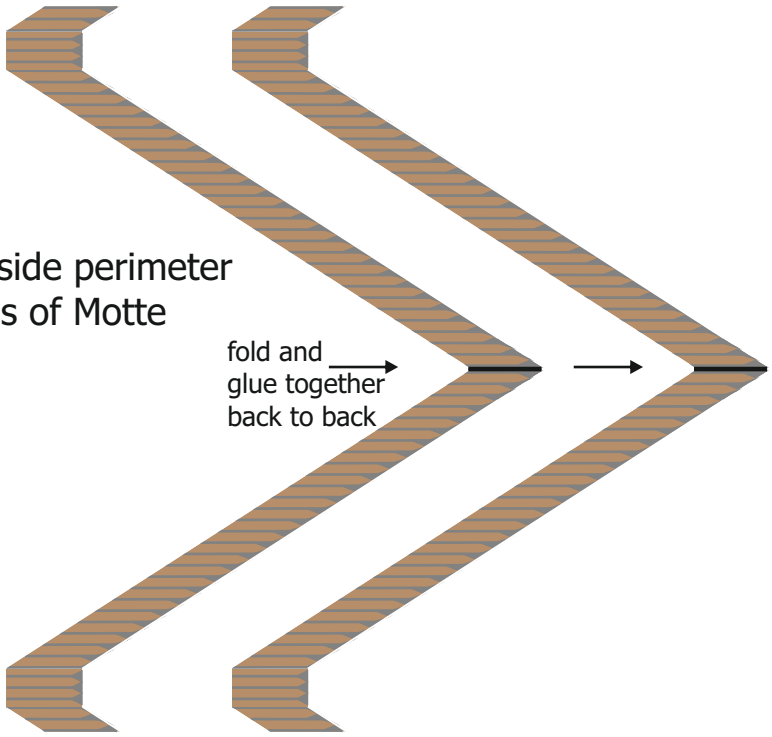
glue B here
glue B here
Step 485 - outside of the moat
moat
Step 7 - inside of the moat
Gatehouse
Drawbridge
Step 3 - Cut along outside of the plan

inside wall outside wall



Glue the front and back walls together then glue the tabs on the walkway here, trimming the wall to fit

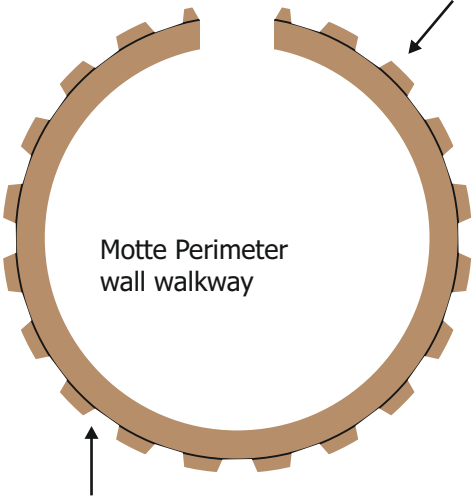
Motte Perimeter Walls



Outside perimeter walls of Motte hill

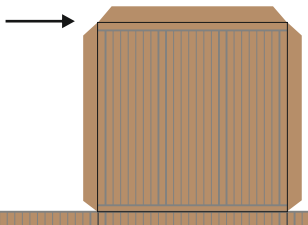
fold and glue together back to back

cut out using a craft knife



Motte Perimeter wall walkway

fold all down the tabs

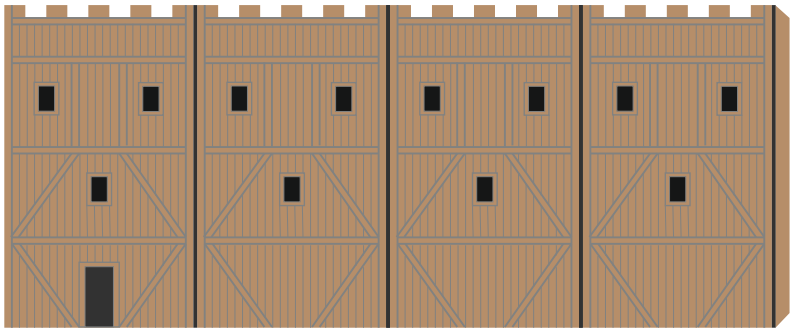


fold tabs up and glue to back of walls

inside tower walls

fold

cut out using a craft knife



outside tower walls

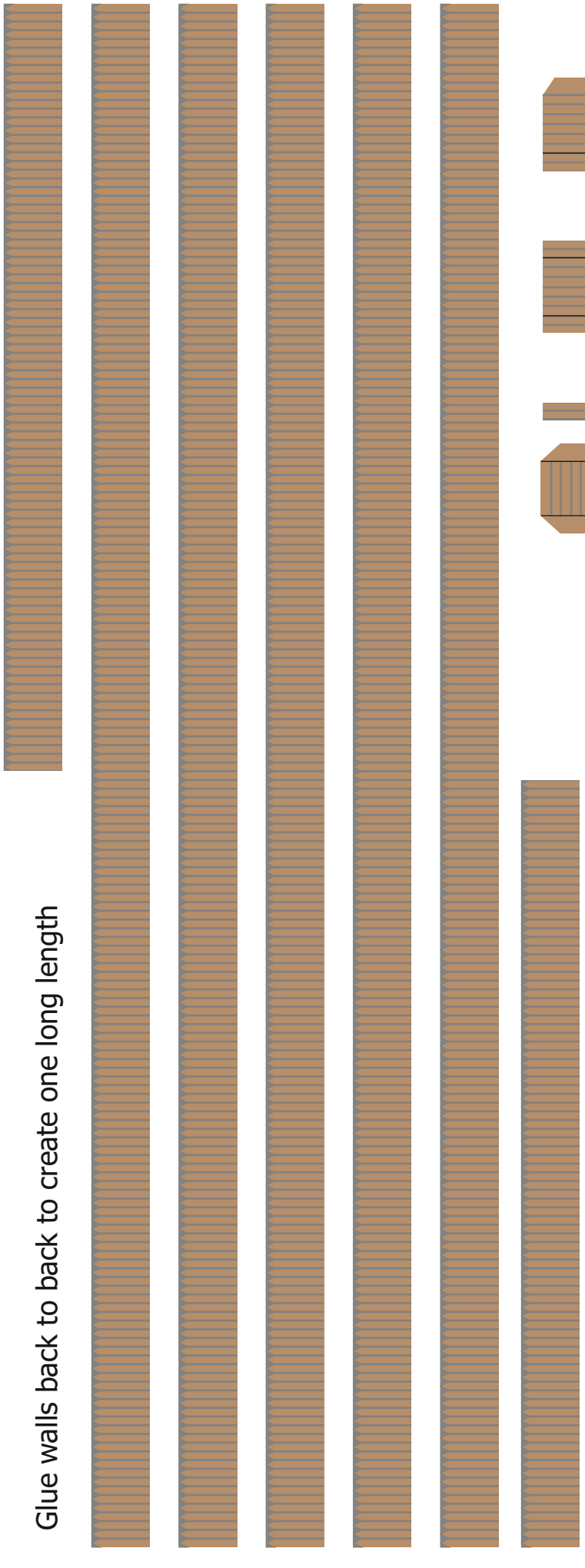
Motte Tower

fold

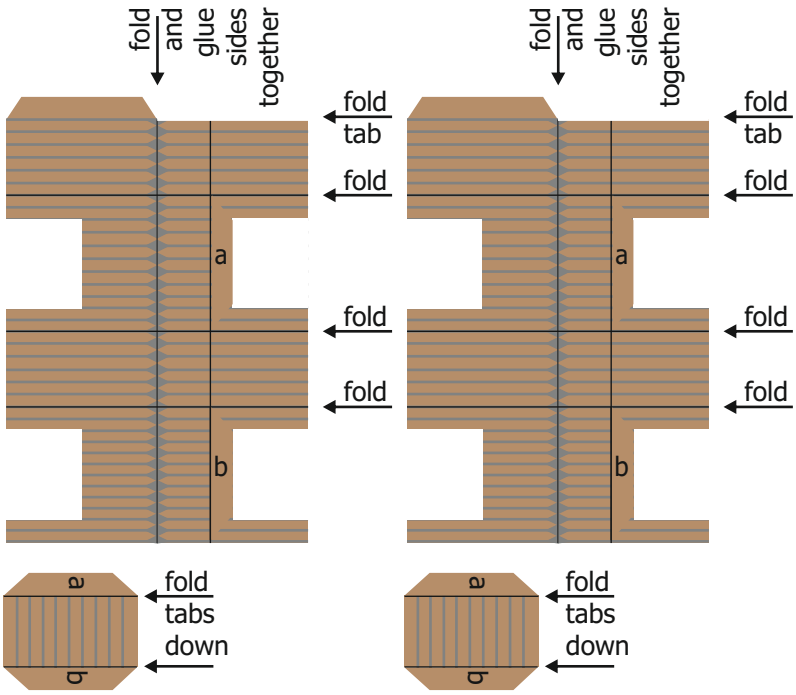
fold

fold

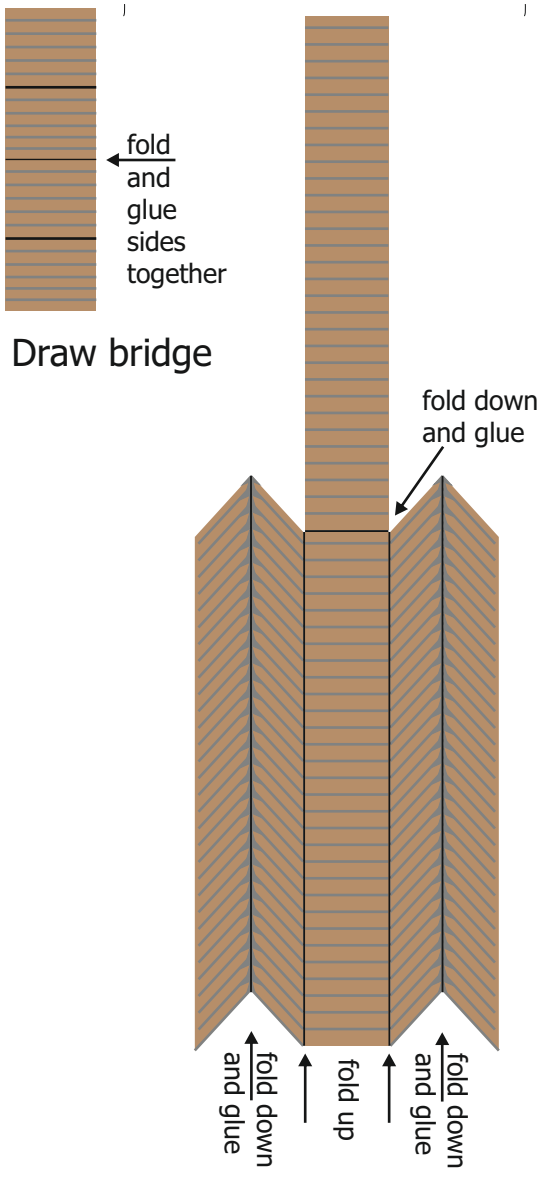
fold tabs



Perimeter Wall



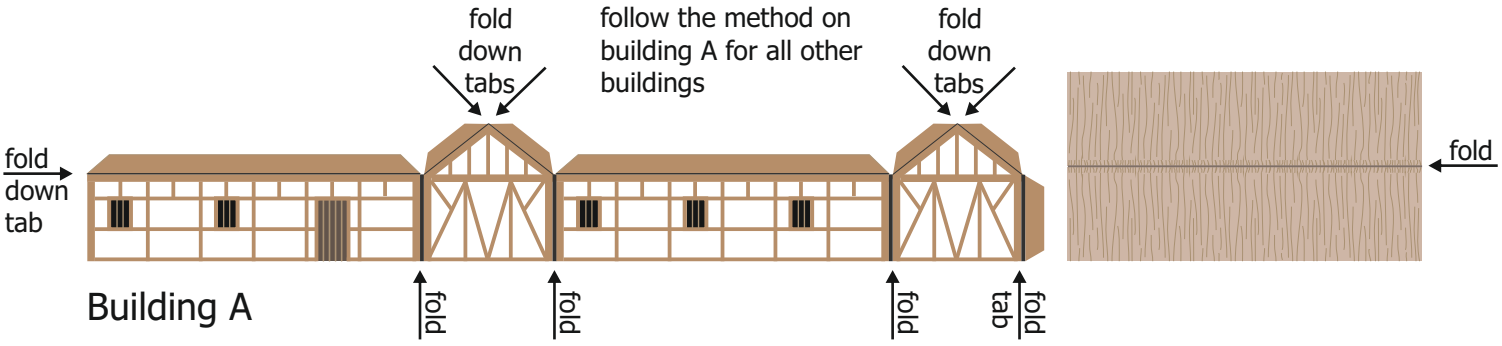
Gate houses

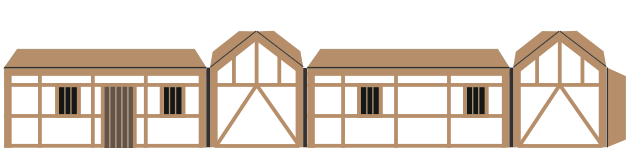
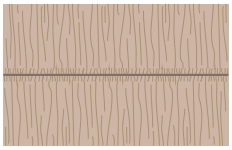


Draw bridge

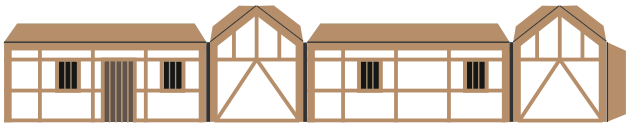
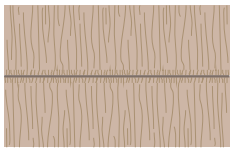
Walkway from Bailey to Motte

Buildings in the Bailey

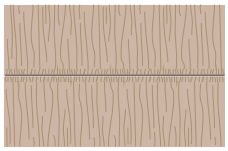


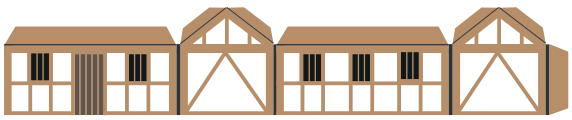
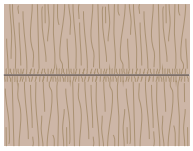

Building B

Building C

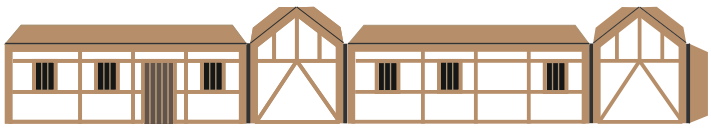
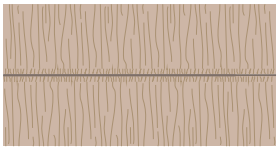



Building D

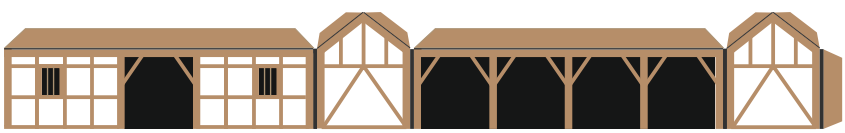
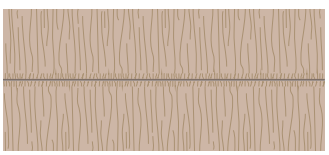



Building E


Building F

Building G

Building H

MODELMAKING PRODUCTS

ADHESIVES

- Contact
- General
- Hot Glue
- Methane Based
- Sprays
- Super Glues
- Tapes
- Two Part Epoxy
- Water Based

MODEL DETAIL

- Figures & Animals
- Vehicles
- Boats
- Planes
- Fencing & Railing
- Furniture & Accessories
- Surface Detail
- Ladders & Stairs
- Mouldings

RAW MATERIALS

- Card
- Cork
- Styrofoam
- Foamboard
- Mesh
- Metal
- Paper
- Plastic Sheets
- Reflective Sheets
- Wooden Sheets

FINISHES

- Ageing Treatments
- Brushes
- Brush-on Paint
- Fabric Treatments
- Fillers
- Laminating
- Metal Leaf and Foils
- Painting Accessories
- Primers
- Snow Effects
- Spray Paint
- Textured Finishes
- Thinners
- Transfers
- Treatments
- Varnishes
- Water Effects

STRIP & SHAPE

- Angles
- Balls, Cubes & Eggs
- Channels
- Circular Rod
- Domes
- H Columns
- Half Rod
- I Beams
- Open Web Truss
- Quarter Rod
- Square & Rectangular Strip
- T Sections
- Triangular Rod
- Tubes
- Wire

LANDSCAPING

- Etched Trees
- String & Wire Trees
- Palm Trees
- Plant & Tree Materials
- Grass
- Ground Cover
- Hedges
- Lichen
- Plants

TOOLS

- 3D printing
- Abrasive Items
- Airbrushes
- Anvils
- Carving & Sculpting
- Electric Tools
- Flock Application
- Hammers & Chisels
- Hand Drills
- Hot Wire Cutters
- Knives & Cutters
- Lamps & Magnifiers
- Liquid Applicators
- Mats
- Measuring Tools
- Mixing
- Pliers, Wrenches & Spanners
- Safety & Cleaning
- Saws
- Screwdrivers
- Soldering
- Stationery
- Squares
- Tweezers
- Vices, Clamps & Grips

MODELMAKERS TOOLKIT

There is no definitive list of tools that a modelmaker uses, but a basic list might include:

SCALPEL HANDLE - Swan Morton is recommended

10A & 11 BLADES - replace them regularly especially when cutting foamboard. Dispose using a sharps bin

METAL RULE - for measuring and cutting against.

VERNIER CALIPERS - for accurate measuring in many situations. Sharpening one side of the jaw enables it to be used for marking out.

ENGINEERS SQUARE - for marking right angles.

SOLVENT POT - for storage & dispensing solvent. Much safer than a glass bottle as a little solvent can be used at a time without evaporation.

BRUSHES - small, soft brushes are a clean way to apply solvent when joining plastic.

PALETTE KNIFE - for mixing and applying polyester filler, cellulose putty and fine surface filler.

TAPE - masking, double sided & parcel tape are very useful.

SANDING BLOCKS - only curved surfaces should be sanded with 'unsupported' paper. All other sanding should be done with a hard, flat, sanding block.

PVA GLUE - traditional white wood glue for joining both natural timber or manufactured boards. Ideally, materials should be taped or clamped into position.

PLASTIC WELD SOLVENT - a thin, clear, liquid chemical that dissolves plastic. It is used to soften plastics on each side of a joint, allowing them to be 'welded' together before evaporating to form a strong joint.

CONTACT ADHESIVE - a thick spreadable adhesive well suited to joining & laminating flat surfaces.

SUPERGLUE (CYANACRYLATE) - a liquid adhesive that sets almost instantly. Only suited for non porous materials.

POLYESTER (CAR BODY) FILLER - easy to mix and sets quickly. Once set, can be sanded to a smooth finish.