



SCALE SCENE

Planking Made Easy

BY: **Mike MacFarland**

Sometimes the wonderful part of the start of a new year is having some extra gift money burning a hole in our pockets. If you're like me and you drool over the beautiful model kits in your local hobby shop or Internet pages, it is often the fear of unknown construction that keeps you from leaving with your "dream ship". Hopefully, I am not only that guy with some extra cash in his pocket this new year but also someone who encourages you to take the plunge into the "Scale Scene" and see how deep the rabbit hole goes. I promise you won't be disappointed. And with that in mind, let's get right into a "how to" discussion of making fuselage surfaces on scale airplanes.

Planking Curving Surfaces

One of the common design

Many planks of balsa wood make up the top, front half of the planking shown glued in place and rough sanded on this large electric scale model. Each plank is roughly 5/8-in. at its widest point and 3/16-in. thick.



Start making the pattern, from side to side, with a strip of paper wrapped on top of the first former. The length is marked on the paper strip and labeled as such, and the process is repeated for the rest of the formers.

traits of high-performance airplanes after the First World War is the use of aerodynamic, streamlined surfaces. These complex, curving shapes not only look great, but are amazingly strong and lightweight when built correctly. Sometimes the prospect of building a scale model of an airplane with tapering, curving skins finds a novice builder outside his comfort zone. In this column, we'll look at how to install curved-wood, fuselage sides and, hopefully, dispel any misgivings or fear along the way. Though the process isn't as quick to build as flat slab balsa sides, it adds beauty, has a high strength-to-weight ratio, and accurately renders the finished surfaces of our flying scale models.

Strip-wood planking, or planking, is the process of gluing narrow strips of balsa wood longitudinally across convex fuselage formers to form and accurately follow the curving sides of a model. In reality, it's a lot like building a boat. Although somewhat tedious, planking is fun, and most seasoned builders will tell you they find it almost



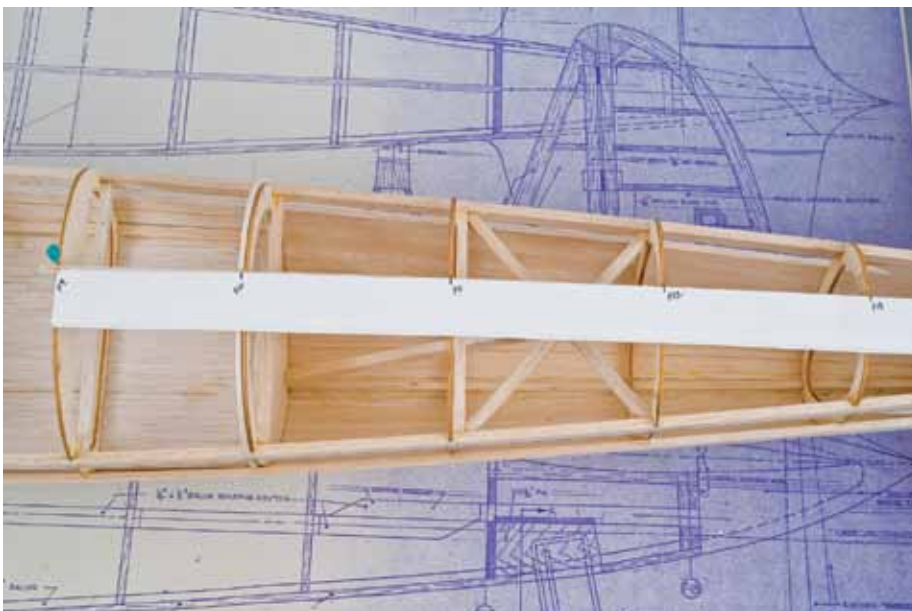
Check to see how the calculated plank width will look with a ruler placed on the former, allowing no more than 1/32-in. of gap from the ruler to the former on each side. The best plank width is likely to be from 1/4- to 5/8-in. for most of our models.

Find a piece of paper that is as long as the planking area and about two inches in width, and fold it in half lengthwise. Lay this folded, one-inch wide strip on top of the bare formers and mark the location of each, identifying the formers accordingly.

therapeutic. I believe all that is required to do it well, is the willingness to perform repetitive tasks and an eye for detail. Using this step-by-step approach and some “rules of thumb”, and you'll soon master planking and take great pride in your results.

The process begins with checking the airplane's plans for notes and studying any fuselage cross-sections and noting the finished skin thickness. For small to medium sized models, 3/32-in. balsa wood will work best to make the planks, since it offers plenty of thickness for shaping. For medium to large models, use 1/8- to 3/16-in. balsa since the span between formers is greater than on smaller models. You should only use 1/16-in. thickness balsa on very small models, since any sanding will greatly compromise the strength of the wood. Remember that it's easier to start thicker and sand some away than it is to add thickness later. The selected wood should have a uniform density of 6 to 8 pounds per cubic foot (soft to medium-soft wood) so that when doing the rough-sanding later on, the material is removed uniformly.

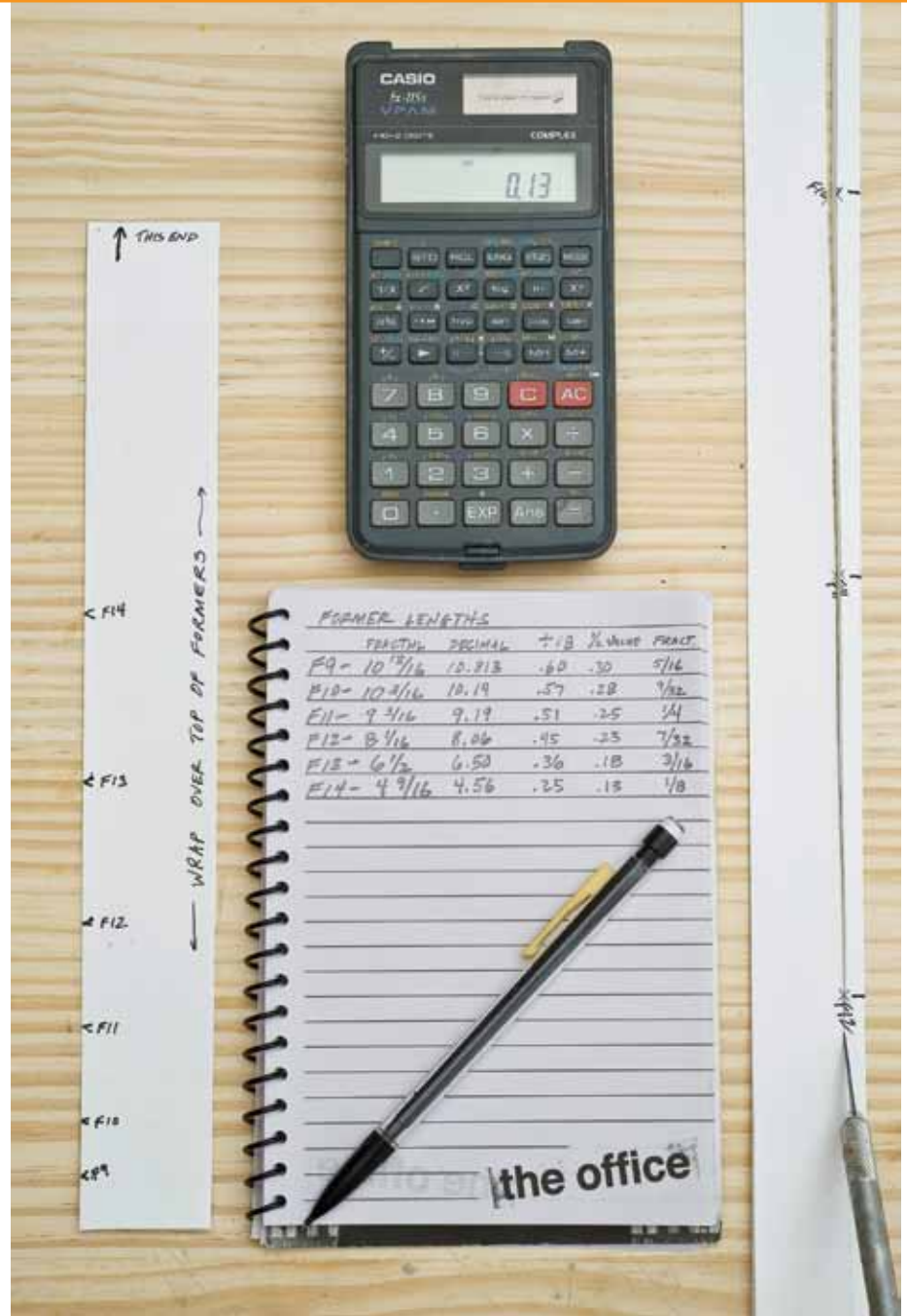
A planking master (and who



The length of each mark is measured and recorded, then divided by the number of planks (18) and finally divided in half (since we are only marking one side of the paper centerline). Mark this distance out from the fold of the paper, connect all the points, and cut to make the paper pattern.

doesn't want to be that guy?) maintains a fairly straight line down the fuselage with each successive board he installs. The technique of doing so starts with making one plank cutting pattern to cut all of the planks from. Begin your measurements with a strip of card-stock or scrap paper that is formed along the perimeter of the starting (largest) former from side to side. The length is marked on the paper strip and labeled by location, and the process is repeated for the rest of the formers, being careful to label each accordingly. Once marked, lay the strip flat on the workbench and measure the total length of the first former and divide the length by the desired number of planks. *Tip: If you are planking 180-degrees of curving surface, initially try using eighteen planks with five-degree bevels on each side of the planking lengths.* Check to see how the calculated plank widths will look with a ruler placed on the former, allowing no more than 1/32 inch of gap from the ruler to the former on each side. If the gap is more than this, divide the distance by a larger number (add planks) until the gap looks acceptable. The best plank width is likely to be from 1/4- to 5/8-in. for most of our models. Finish the math by dividing the other measured, former distances by the same number of planks and record the data. Keep in mind that fewer planks will take less time to install but can leave thin and weak areas at the joints when the shaping is performed later in the process.

The key to ease and speed of this way of planking is in pre-cutting all of the identical pieces



to close the gap. Find a piece of paper that is as long as the planking area and about two inches in width, and fold it in half lengthwise. Lay this folded, one-inch-wide strip on top of the bare formers and mark the location of each, identifying the marks accordingly. Now take your calculated planking widths and divide them in half (since we are only marking one side of the paper centerline). Mark this distance at each of the former

locations, out from the fold of the paper, and connect the points with a line. Cut along this line, unfold the paper and use some spray adhesive or a glue stick to attach the paper pattern to a piece of thin plywood.

With the plywood pattern now in hand, it's a simple job to cut planks from the balsa wood. Since our pattern was created against the formers, we need to lay the pattern down and use a sharp hobby knife to cut along



equally stress the skin and airframe as it is installed, and the airframe will remain straight and true. Be sure to keep your formers secured to the building board until at least 180-degrees of planking is installed, at which time it should be strong enough to resist twisting. As each piece is placed against the previous, minor adjustments will need to be made, and these are typically best done with a sanding block or razor plane. Once the piece has been adjusted to fit, a glue which sands well such as Ambroid® (solvent based) or Aliphatic resin (water based

Titebond®— see last month's column), is liberally applied down the length of the piece and pushed into place allowing a little "ooze" to occur. Using thin CA (cyanoacrylate) and a thin applicator tip, work from the middle of the plank out by "tack welding" to each former from the inside. The main mistake, for those new to planking, is using CA to glue the planks together, which hardens the planks unequally, making shaping and sanding less enjoyable.

Every three (or so) planks, I typically sight down the line to see how I'm doing. A few passes with a sanding block or sharp razor plane down the edge of a "bumpy" plank, before applying glue, keeps the job tight. If the line starts to bow, the piece can be temporarily pinned straight into place, the gap "scribed" on it and then adjusted with the sanding block/plane. In this same way, I adjust the fit of the final piece to finish the planking. Once the planks are all in and the glue has dried overnight, the rough shaping begins with a sheet of 80-grit sandpaper that has been folded over itself. Sand at alternating 45-degree angles across the planking direction

▲ The pattern has been glued to a piece of 1/32-in. plywood which is shown pinned down to a piece of 3/16-in. med-soft balsa. Using a homemade, bevel, cutting fixture, the blade follows along the plywood edge to cut at an outward angle, then repeated on the opposite edge in the same way.

▼ The 3/16-in. thick, balsa planking is held with sharp building pins (see source guide) while the Titebond® III along its length dries. A "tack weld" of thin CA to each former, on the inside, helps to lock the planks in place—be sure to keep the CA off the outside.


the pattern at an outward angle of five degrees. In carpenter's talk, we're cutting the "short points" of the bevel on the backside of the piece. If you have a small table saw or accurate bevel sander, a good trick is to bevel a piece of 1/2- to 3/4-in. thick hardwood and just mount to the hardwood a blade extending the depth of the planking. Then, it's just a matter of running your block against the outside edge of the pattern for accurate and quick beveled edges.

As you start the installation, work your way in from each side in alternating succession until you reach the center plank. By alternating sides, you will





until the individual steps, in each plank, become a consistently curving surface. That's when it is time to switch to finer sandpaper and remove the deep sanding scratches. Then continue to use even finer sandpaper until all the fuzz is gone. I like to finish with a final sanding of 400-grit sandpaper for a covering-ready result.

That's really all there is to doing a nice, quality, planking job on your scale model. I hope this column inspires you to go ahead and buy that Mustang, Spitfire or P-47 kit that you've been hesitant to tackle and get started on it. I hope you, at least, give it some serious thought, and I'm looking forward to hearing about it if you do. If you have any questions or comments along the way, be sure to send me an e-mail or letter, and I'll be sure to reply personally and possibly address it in a future column. Happy New Year! 



- Sight down the line, to see how you're doing, with every three or four planks placed. Extra care taken with accurate measurements during pattern making will pay dividends during this part.
- ✔ Many strips of balsa wood make up this rough-sanded, turtle deck on a Hughes H-1B airframe. The process is made simple by careful pattern-making along with the tips outlined in the column.



Scale Scene

Sources

Ambroid®

Horizon Hobby
 4105 Fieldstone Road
 Champaign, IL 61822
 Phone: (217) 352-1913
 Web Site: horizonhobby.com

Franklin International

2020 Bruck Street
 Columbus, Ohio 43201
 Tech Support: 1-800-347-4583
 titebond.com

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5614 Franklin Pike Cr.
 Brentwood, TN 37027
 1-866-933-5972
 hobby-lobby.com