

The Bark's DIY First Place Winner—Advanced Level

Shasta-Style Puppy Camper Playhouse

By Michael Blunt

The Shasta-style puppy camper started out as a labor of love and a personal challenge. I've been a woodworker for many years and I earn a living making musical instruments (well... banjos...). A few years ago, just for fun, I started making birdhouses inspired by the old Shasta and Teardrop camper trailers of the '40s and '50s. At a friend's urging I opened an Etsy shop, and now I can barely keep them in stock. Almost since the very beginning of the birdhouse project, my wife has been encouraging me to try to scale one up for a dog playhouse. Finally, for her birthday this year, I came up with a design and built one.

I designed the Puppy Camper for indoor use only, and for a dog of up to 30 pounds—three of our five rescued dogs fit that size. It took a while for our dogs to explore the camper, despite mining it with treats at first—they're suspicious by nature. It took so long it almost hurt my feelings. But now Cocoa Rae Bean eats all her meals in there. At meal times she sprints from the kitchen and runs into her personal "diner," wagging and dancing in anticipation of another great dinner "on the road." On nice days, we sometimes pull it outside so they can play in it on the patio, but it wasn't built to withstand weather. Plus, we believe dogs should be sleeping under the covers with their humans, not outside in doghouses.

It's gratifying to see the dogs enjoy their playhouse, and it attracts a lot of attention from our friends. So much so that I've made a couple more and plan to sell these in my Etsy store in the future, too. [Etsy.com/shop/jumahl](https://www.etsy.com/shop/jumahl)

Shasta-Style Puppy Camper - Instructions

The camper is constructed of ½" Baltic Birch plywood, sometimes called cabinet plywood, because it is very high quality, has multiple plies for stability and has no voids. It comes in 5' by 5' sheets rather than the more normal 4' by 8' plywood. My design is of such dimension that both sides and the bottom will come from a single sheet of Baltic Birch. Another size factor is that I wanted to add a layer of aluminum flashing to the top, for that metallic look, and the widest I could find at a builders supply is 20 inches, so that determined the maximum width of the top.

The top is curved by bending a special plywood called, oddly enough, bending plywood, available on special order from a hardwood supplier (who should also have or be able to order the Baltic Birch). This comes in 4' by 8' sheets, 1/8" thick. The grain runs in one direction only, which is why it can bend - this also makes it just a bit fragile. It can be ordered with the grain running either direction - lengthwise or across grain, so it's important to specify that the grain run crossways, since the bend will be along the length. The top is comprised of two layers of bending plywood, laminated with yellow glue for strength. The Puppy Camper is for a dog of up to 30 pounds, and has a 2" thick memory foam bed (20" x 28") that fits the bottom snugly. This size is available online.

Tools and Materials:

Materials List:

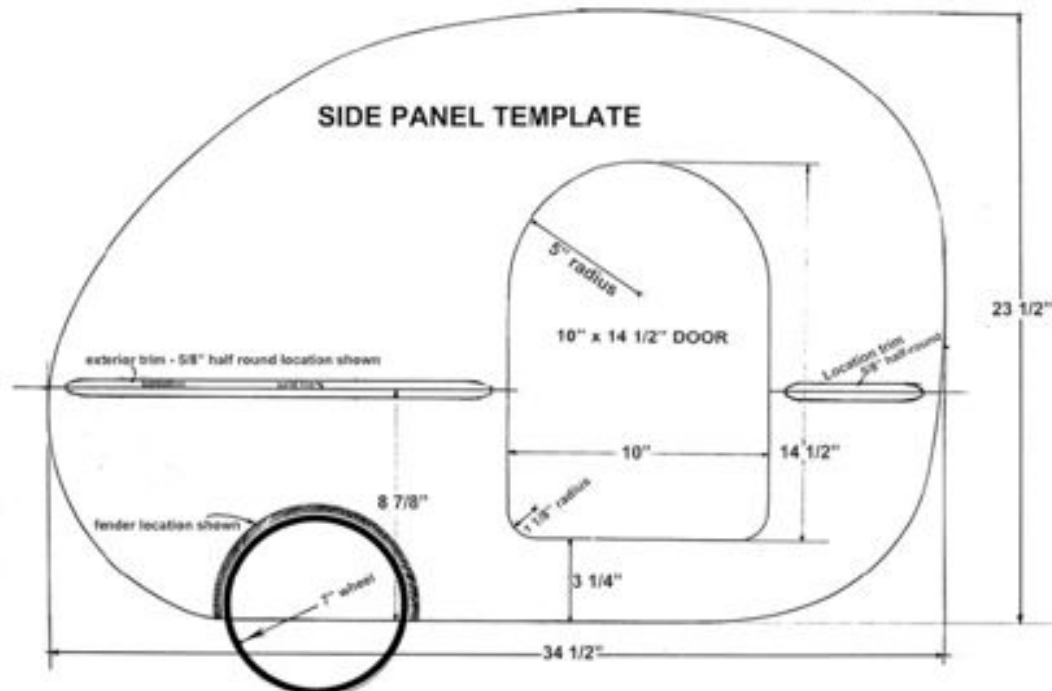
- 1 sheet 1/2" Baltic Birch plywood
- 1 pc 2'x4' x 1/2" AC ply (side template)

1 pc 2' x 4' 3/4" project plywood (gluing blocks)
2 pc 2' x 4' 1/4" luan plywood (routing templates)
1 sheet bending plywood, cross grain
2 pcs pine/spruce milled to 1 1/8" x 1" x 20" - bottom cross braces
2 pcs pine/spruce milled to 1 1/8" x 1" x 20" - top cross braces
2 pcs pine/spruce milled to 1' x 7/8" x 24" - bottom support cleats
2 pcs pine 1/2" x 8' quarter round - kerfing
2 pcs pine 5/8" x 8' half round - exterior trim
1 pc 1/2 x 36" hollow round steel stock - axle
2 7" lawn mower wheels
1 small roll 20" aluminum flashing
1 qt primer (Zinsser cover stain exterior-interior)
1 qt finish coat white
1 qt top color finish
1 qt bottom color finish
1/2 pt aluminum paint - trim
foam brushes
masking tape
small tube pure silicone
1 tube acrylic caulk
finish nails
24 3/4" by #4 wood screws
Titebond II glue

Tools Required:

table saw
band saw
jig saw
drill, 1/2" bit
router, top bearing bit, 1/4" and 1/8" round over bits
3 ratchet tie downs (to be used as strap clamps)
Many clamps 16 -20 C clamps, 3" capacity, 40-50 spring clamps, 1 1/2 " capacity - you can't have too many
mat knife
metal straight edge 24"
caulk gun
putty knife
chisel(s)
hammer

pneumatic brad nailer and small compressor (not absolutely required but highly recommended)



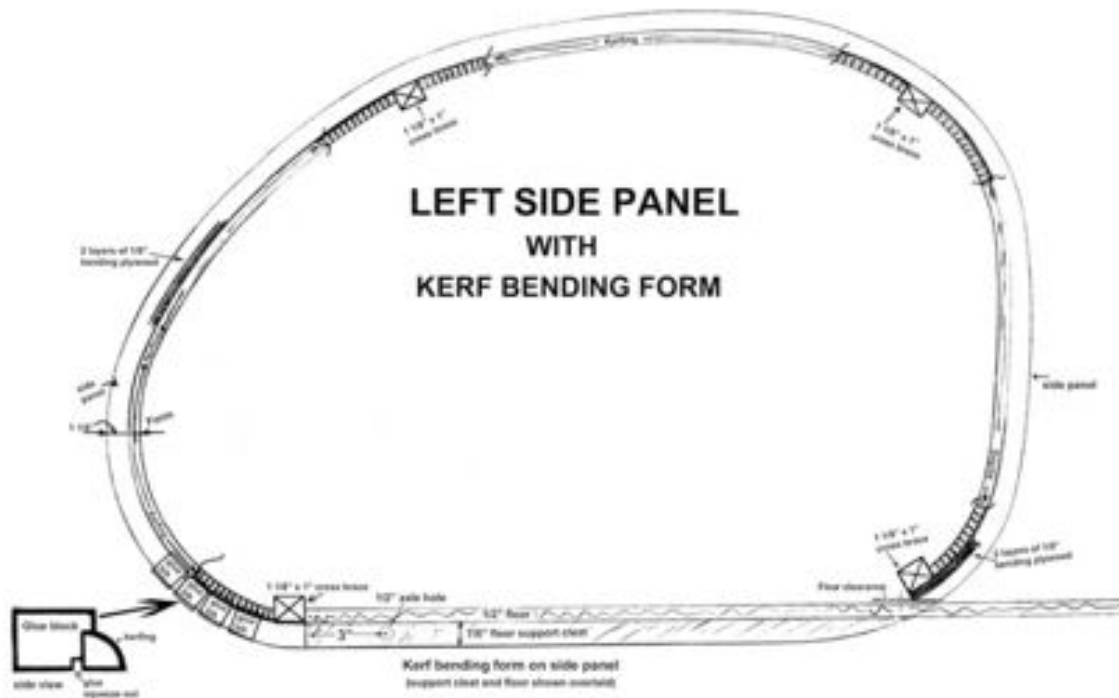
Making the side template:

See the drawing for the shape, which measures $34\frac{1}{4}$ "L x $23\frac{1}{2}$ "H. The bottom measures $19\frac{7}{8}$ "W by 36"L, including the integrated tongue. It is important in bending the plywood top that the sides are matched exactly or the top will tend to run off one side or the other and be frustrating and cause much cursing. To avoid this, make a pattern from a lesser grade of $\frac{1}{2}$ inch plywood, which should be carefully shaped. I drew the shape freehand, then adjusted with straight edges and a French curve until it was "eye sweet", as boat builders say, then I used the band saw to carefully cut out the shape, trying to split the pencil line, and then filed and sanded it fair. It is important for the finished edge to be perpendicular to the face because this will be the guide for the bearing on the pattern router bit when making the two sides. This is also a good time to figure in the door. From the bottom of the side, measure up $3\frac{1}{4}$ " to the bottom of the door. The door measures 10"W by $14\frac{1}{2}$ "H. Draw the dimensions on a piece of $\frac{1}{4}$ " plywood (for a cutting pattern) then use a compass to arch the top and round the lower corners. Drill a hole to start the jig saw, cut out the door shape, then sand and file carefully to the line to make a smooth-edged pattern. Lay this on the side pattern (see drawing for location), scribe with a pencil (I prefer a 7mm mechanical pencil because it's always the same diameter and doesn't need frequent sharpening), remove the $\frac{1}{4}$ " pattern and rough out the door in the side pattern with the drill and jig saw. Clamp or tack the $\frac{1}{4}$ " ply door pattern onto the side pattern and, using a router with a top bearing pattern bit, rout the door opening. Now you're set to make two sides, one with a door and one without.

Laying out and cutting the sides:

Use the pattern to lay out the sides on the sheet of Baltic Birch, keeping in mind the bottom needs to also come from this sheet. Lay out one side and the bottom parallel to the grain and one side perpendicular to the grain to fit it all in. Scribe the sides against the pattern with a pencil and rough out with the jig saw. Use the side pattern to locate the door on the "front" side panel, scribe, then rough out with the jig saw. Clamp the side pattern in place, using at least three clamps so

there are always two holding it in place while moving the third out of the way of the router. Rout all the edges, including the door opening. Remove the pattern and make another side, but without cutting the door opening. Place these sides together to check that they match exactly. Using a router and $\frac{1}{8}$ " round-over bit, rout all inside edges of both sides and the door. Then use a $\frac{1}{4}$ " round-over bit to rout all outside edges. The reason for two different sizes of router bits is that the plywood is only $\frac{1}{2}$ " thick and if the $\frac{1}{4}$ " round-over bit has routed a side there is little bearing guide surface left for the other side and a center ridge will be left which must be hand sanded smooth. For the inside, $\frac{1}{8}$ " is enough edge relief, but the outside needs a smoother, more rounded look.



Making the kerfing pattern:

Now to make a pattern for gluing the kerfing (which we will make soon) to the side panels. Start with another cut out and routed panel like the left side panel without the door, cut from $\frac{1}{2}$ " plywood of a lesser grade. From this pattern we'll mark and remove a strip around the edge where the top goes, allowing for a reveal of $\frac{5}{8}$ ", $\frac{1}{4}$ " for two layers of the top, and $\frac{1}{2}$ " for the width of the kerfing (for a total of $1\frac{3}{8}$ "). With a compass set to $1\frac{3}{8}$ ", scribe a line around the edge - this represents the inside edge of the kerfing and the outside edge of our pattern to be. Locate and mark the two lower $1\frac{1}{8}$ " by 1" braces. The rear brace begins at the point the curve of the top begins to straighten out and become parallel to the bottom edge. Draw a line perpendicular to the bottom edge in line with the front of the rear bottom brace - this marks the end of the kerfing in the rear. Measure up from the bottom edge 1" and mark and mark again at $1\frac{1}{2}$ ". Draw two lines parallel to the bottom edge across to the curved front edge - the space between these lines represents the floor of the puppy camper. In the lower front quadrant, scribe a line $\frac{5}{8}$ " from the edge (this represents the outside of the top) to find the point where it intersects the top line of the floor. Add $\frac{1}{16}$ " above the floor to allow for paint so the floor will slide in without binding. This point, $\frac{1}{16}$ " above the top of the floor and on the scribed line representing the outside edge of the top, determines the location of the front lower brace. This point is the bottom left corner of the brace. Draw a line from the edge through this point. Since the edge here is curved it will not be perpendicular to this edge, but will bisect the angle formed by the curve.

Carefully cut the scribed strip on the bandsaw, starting with the two short terminal cuts then around the perimeter. File and sand to the line. Since this is merely the form for bending the kerfing it need not be as perfect as the edge of the templates for routing, but it should be close. When you clamp this pattern to the inside of a side there should remain a space that is even and follows the shape of the side closely. The drawings are made from the actual patterns I used, both the side pattern and the kerf pattern, with details filled in, and reduced in size to fit a normal page.

Making the kerfing and gluing blocks:

Now to make some kerfing. Kerfing is used to provide a gluing surface - such as in guitar construction, where the sides meet the top. The material is so thin that there is very little surface area to hold glue to make a joint between sides and top/bottom. Kerfing is a piece of material with many closely spaced cuts that don't quite go all the way through so that the piece can be bent in a smooth curve without breaking. The closer the cuts, the smoother the curve. You will make this on the band saw. I made two pieces of kerfing from two 8-foot lengths of ordinary pine trim, $\frac{1}{2}$ " quarter round. The setup includes a piece of wood with a partial saw cut through the edge. Then this is placed on the back side of the bandsaw blade, with the blade in the slot and clamped in place with just enough of the blade exposed so that a piece of $\frac{1}{2}$ " quarter round will be almost, but not quite, completely cut through. The curved part of the quarter round is cut almost through to the back, flat side - it's good to leave about $\frac{1}{16}$ ". Too much, and it will be hard to bend in a tight curve, too little and it could break. Try a short sample piece first. Put a pencil mark to the left of the blade at $\frac{1}{4}$ " - this is your guide for the cuts. Push the quarter round into the blade to the wood stop, pull back, move to the left until the cut lines up with the pencil mark and cut again... repeat many, many, many times. Don't space out during this repetitive task and add your fingers to the off cuts. Once you've cut a bit you'll find the cut portion of the quarter round will bump into the support arm of the band saw, so you will need to clamp a piece of wood to the table to gently guide it just past this point. Moving the left side of the kerfing so it will miss the support arm will require some counteracting pressure to push the quarter round into the blade, so minimize this by having the clamped guide steer the quarter round just barely past the arm - your sore, aching, fingers will thank you. When the quarter round is uncut it's fairly stiff and easy to hold and guide into the blade for each successive cut of the many, many cuts. As you accumulate cut quarter round on the left, however, it will become more flimsy and bendy and you will need to jerry rig a long board (I used a piece of aluminum angle I had handy) to the left to support the cut side for the full 8 feet.

Finish one piece of kerfing. Take a break, count your fingers. Massage any remaining fingers - they may be cramping. When you're ready, take a deep breath and make another piece of kerfing. Now you know why luthiers' suppliers sell short sections of kerfing for such a high price.

Now you will need to make gluing blocks, many of them, about 9-10 per foot. The idea is to cut strips of $\frac{3}{4}$ " plywood (again from lessor grade plywood) about 1" wide, then cut a shoulder $\frac{1}{8}$ " wide and just under $\frac{1}{2}$ " high along the $\frac{3}{4}$ " edge - this is to hold down the $\frac{1}{2}$ " kerfing when it's glued up - which is why it's just barely under $\frac{1}{2}$ " - so it will apply some pressure when clamped down. (see drawing for a detail). Now cut another shoulder, $\frac{1}{8}$ " high and $\frac{1}{8}$ " from the edge of the shoulder you just cut - this is to give some space for glue squeeze out, so you won't be gluing the blocks down hard at the same time as the kerfing. Some of the blocks may stick, even stubbornly so, but this relief cut will allow you to tap them and they'll come off. Now cut this strip with the two shoulders into pieces about $\frac{3}{4}$ " - $\frac{7}{8}$ " wide - you will need a bucket full, and clamps to go with each one. A woodworker once said - you can NEVER have too many clamps - and this is one of those nevers. If you don't have enough clamps to go the whole way round at once, you'll need to glue a section at a time. It will need to dry overnight for full strength, but yellow glue will set up enough in an hour or so to allow gluing the next section.

Gluing the kerfing:

Do a dry run. Clamp the kerf pattern to a side pattern (INSIDE of the side, please!) using the blocks, start at the rear end (where the curve is tighter - easier to bend it now when it's long) Place the kerfing against the form, cuts to the inside and flat bottom against the side surface, firmly secure the bitter end by placing a block and clamp, press the glue block tightly while clamping - you want pressure downward and also tightly against the form. Bend the kerfing around partway, support it so it will stay on the side and not fall off (and possibly break) but not bound tightly yet. Go around and place glue blocks, leaving a small space between them. You want points of pressure against the form close, especially here at the tight curved end. Work your way around until you get near the front end and can overlap the kerfing on the form itself, mark and cut the kerfing to length so it's a decent fit but not too tight at the end. The ends will be trimmed later, to allow for the cross braces, so it's not critical to get the length perfect now. It's easier to bend a tight curve past the point and trim back later than to try to get the length exact now and glue it precisely in place.

When you think you have the hang of it, Remove everything and place the blocks and clamps where you can get to them quickly. I like Titebond II glue. It's an inexpensive yellow glue, tacks quickly, spreads easily and holds very well, plus it's waterproof when dry. When gluing the kerfing, it's important to get glue mostly on the outer edge of the kerfing, where it's not quite cut through, and some on the bottom, but you don't want to slather it on over everything. You will have to carefully pry the bending form out after the glue has set and too much glue will cause much cursing and frustration. To this end it's a good idea to apply a good coat of wax, a hard finishing wax, to the edge of the form to help keep the kerfing from sticking, before gluing up. When you think you're ready, spread a bead of glue along the outside edge of where the kerfing will go (use the scribed line on the side as a guide) and start clamping the blocks in place, working your way around. You won't be able to bend the kerfing all the way around at once, you'll have to work it along a foot or so at a time, so support the kerfing above the side with long thin sticks across the form, under the kerfing, to avoid smearing glue where you don't want it. This will also allow you to apply glue a foot or so at a time as you go. The first part is the hardest because it's the tightest curve. Clamp along, being sure to press it tightly against the form as you go and make sure the blocks press it down to the side. Move the kerf support along as you go. You'll be able to bend longer stretches as you go over the gentler curve along the top, but still be careful to press each block tightly to the form. The very end may need some coaxing with a piece of wood to get it tight to the form around the last curve. You can go back and make some minor adjustments, but the glue will begin to set up rather quickly so work fast! Let this set up overnight.

Next day remove all clamps and blocks (again, some may need some persuasion with a small hammer and stick of wood). Hopefully, none of the blocks have so much glue under them that they bring part of the side veneer with them (which would require filling and sanding). Now use a putty knife to pry the kerf pattern up from the side itself, starting at the middle of the bottom, where marks won't show - if there should be any. Usually once the putty knife has (gently!) started movement the form will pry right out. Clean up the joint surface where the flat kerfing edge meets the side. Since the inside will be painted and all these small kerf cuts will act like the nib of a pen to hold paint and produce runs and drips and much cursing and frustration, run a bead of cheap acrylic chalk along the cuts and wipe it with a finger to make a smooth surface. Let the caulk dry completely. Clean any chalk that runs over onto the inside edge. Repeat for the other side. Place one side on top of the other to check that the kerfing edges match.

Making cross braces and assembling carcass:

Place one of the sides on the worktable, inside up. Remember the mark on the side for the end of the kerfing? Now we'll mark and cut it to allow for the cross braces. The four main cross braces are milled to 1 $\frac{1}{8}$ " x 1". Measure accurately the actual width of the flashing and add 1/16" - 3/32"

for the length of the braces. There is paint thickness to consider and you don't want to face trying to trim a sliver from the edge of a 6-foot length of flashing, so give a little leeway. A snug fit, rather than tight is what we're shooting for for the top. Cut the four braces at the same time with a block clamped to the cross cut guide on the table saw to ensure they are exactly the same length, with perfectly square ends. The square ends are important because they will help you to get the carcass together accurately so the bending ply and aluminum will go around with a minimum of fuss.

Measure back along the kerfing from the starting points for the ends, both front and rear, to allow for the braces width and cut the kerfing completely through (but only the kerfing) carefully with a dovetail or small back saw. Use a small hammer and block of wood to pop the short piece of kerf off and clean the surface with a chisel. Choose two points on the top of the side, roughly spaced across from the bottom braces. You basically want four supports spread somewhat evenly. The placement of these two top braces is somewhat arbitrary. The four braces are to support the two sides parallel to each other, with the sides lined up. The bottom braces spread the sides exactly and also provide an attachment for the ends of the bending plywood (which will be under some pressure) and the locations of which are critical, while the top two braces merely spread the sides exactly. It may be easier to locate these top two by first choosing spots on one side, marking the width of the braces and cutting the kerf and removing those sections, then place the sides together and line everything up, and mark the uncut kerf using the cut kerf on the other side as a location guide. The outer edge of the braces line up with the edge of the kerfing so there is a continuous gluing surface all around when the braces are in place.

Set up the table saw to cut the bending plywood. Set it up slightly under the width you cut the braces, again to allow some leeway, say 1/16". Cut two strips of bending plywood. Lay a side on the work table, overhanging enough to reach to the bottom braces, inside facing up. Place a brace in position and nail in place. I use a brad air nailer. I suppose it's possible to hold the brace in place with one hand while using a hammer in the other and a nail in the third hand to do this, but an air nailer will be most accurate and easy to single hand. Think of it as an excuse to run out and buy one if you haven't already...oh, AND a compressor too, you'll probably find the nailer works much better with a compressor. I am used to working alone on complex projects and figuring out ways to replace a helper with inanimate objects clamped together, so my approach is as a lone woodworker in the wilderness. If you have assistance, more power to you.

Attach the rest of the braces in the slots you've cut in the kerfing, one at a time, lining up the edges carefully. Place the other side on top of the braces and locate and attach each one carefully - now you have the skeleton of a carcass.

Fitting and assembling the top:

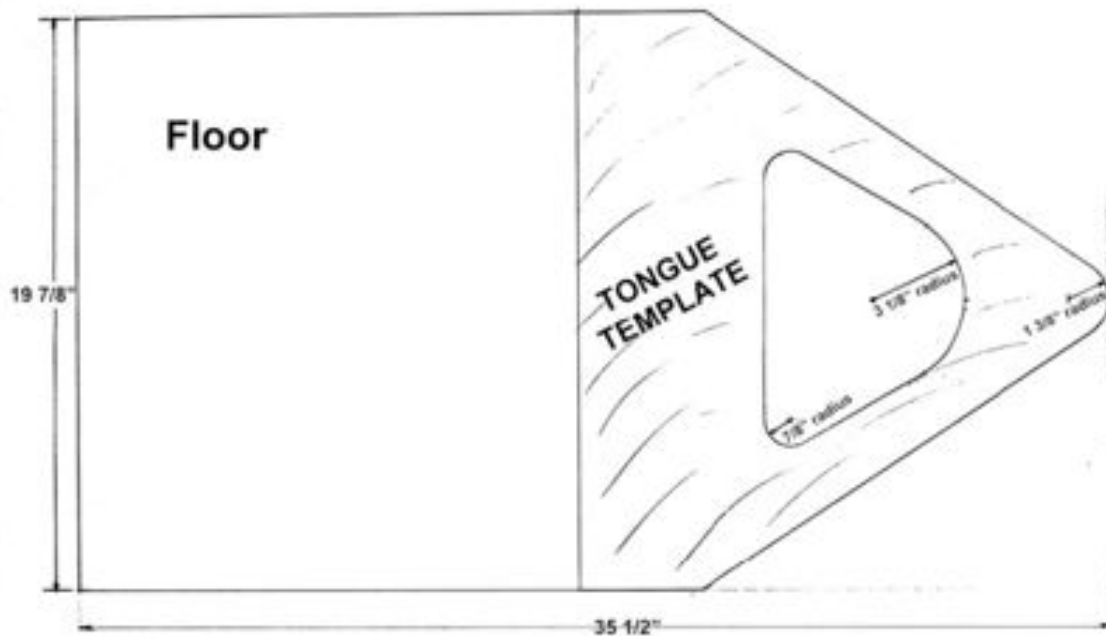
With the carcass on its side still, place a piece of bending plywood, again starting at the rear where the curve is tighter. Allow a bit of overhang that will be trimmed later, and clamp the end of the ply to the rear brace. It's good to use C clamps here - the ply will be under some pressure and the end needs to be very secure when glued. You can use a backing strip of wood to help. Spring clamps are appropriate for the rest of the perimeter. Carefully bend the ply around the form as tightly as you can and mark the other end, again allowing some extra which will be trimmed later. Remove and cut the end you marked. Now for a dry run. Again clamp the rear end to the brace, bend the ply around tightly and clamp it to the front brace. Use just a few clamps of the spring variety in front because we are going to snug the ply more tightly with strap clamps and so the

clamps now are just to hold the ply in rough position and will be loosened to allow movement as the straps are tightened.

Place three strap clamps (cargo ratchet tie downs) around the ply starting at the top. Hook the ends together to make a loop, with the hooks and ratchet in the space where the bottom will go and snug it down - just snug, don't crank, yet. Place the top strap and snug, then one in the middle. Check inside to see that the ply is pulled up tight to the form all around as you tighten the clamps. You'll have to place the clamps that hold the end to the braces leaving space for the straps. Crank the straps and recheck the fit inside. When you're satisfied, remove everything, place within easy reach, run a bead of glue around the kerfing, both sides. Too much and it will start to drip all over everything. You want enough for a good joint but not an excess. You can't do this gradually, a foot at a time like the kerfing because you're doing both sides at once. Be quick! Get the kerfing glue applied, then run glue along the rear brace - be more liberal here, as it will be under more pressure. Slap the ply on, clamp the end with a few to three clamps and get to bending around while that glue is displaying its obedience to the law of gravity. Glue up the other brace, throw on a clamp or two to hold it temporarily, get those straps in place! Don't get right next to the edge of the ply or you'll glue the straps in place too - allow ½ inch or so from the inside edge. Snug the straps - you'll have to release the clamps on the front once the straps start holding the ply to allow it to move as you crank the ratchets down (don't test the breaking strength of everything, but crank it down and check inside to see that the ply is seated to the kerfing all the way around, especially along the flatter top section). Now go back and add C clamps to those ends, at the outermost edge of the braces, where the pressure will be greatest. Check to see that the ply is seated completely at both ends. Now relax, breathe, the excitement is over - until the next layer of ply. Let this set up overnight.

In the morning, remove the straps and clamps, clean the joint between the side and top with a scraper. You can trim the ply overhanging at the braces with a mat knife, making repeated light to medium cuts against the brace as a guide until you cut through. You may want to support the edge as you do this so you don't pull the ply loose at the edge as you cut with the mat knife, just don't support it with a slashable body part like a finger. Clean the face of the braces with the scraper. Test fit the second layer of ply to see that it'll go around without binding. If it does bind, check for glue on the inside of the side you may have missed. As a last resort, sand the edge of the ply where it's sticking. Clamp the rear end in place, bend around to the front and mark the length, allowing some extra to trim later. It will be a bit longer than the first, because of geometry involving circles and pies. Remove and trim the front end to the newly marked line.

Apply liberal amounts of glue all over the first layer of ply. I used a small medium nap paint roller and pan of glue to apply a lot quickly, then went over it with a serrated putty knife to be sure it was spread evenly. You have to be quick! Do this later in the morning, after you've had your coffee. As soon as the glue is spread, apply the second layer of bending ply, again starting at the rear, lots of clamps to hold in place, allowing space for the straps top, middle and bottom, straps slightly away from the edge (deja vu yet?) Snug the straps lightly, massage the ply, back to front, to make sure it's seating all around, especially the flatter sections, as the straps can't apply as much pressure there - the straps can actually apply lots of pressure where the bends are tightest in rear and front and prevent the flatter section on top from sliding around forward to seat fully if you just crank the straps tight. Crank the straps down, check the outside edge to see if there's an equal reveal all around indicating the ply is seated. Wipe the glue joint on each side with your finger or a small putty knife to clean up some now and have less scraping later. Breathe, relax. Let everything set up overnight. In the morning, remove all clamps and straps. Clean up the joint between top and sides with the scraper. Now is the time to prime the interior - almost.



Making and installing floor supports:

First we must make the two strips that support the bottom. They measure $\frac{7}{8}$ " x $\frac{3}{4}$ " x 24", and are attached to the inside bottom edges of the sides, just above the tangent point of the $\frac{1}{8}$ " routed edge (on the flat part, not to put too fine a point on it). They are cut long and held in place, tight against the rear brace, and scribed to the curve of the front edge. Cut this curve on the band saw, sand smooth, rout the inside top and bottom edges with the $\frac{1}{8}$ " round-over bit, glue in place and clamp till dry.

Set the carcass upright and, having figured your paint scheme already mark it with a pencil line, which is extended across the front and back of the now two-layered top. Many trim variations are possible, but the simplest is a straight line dividing the top and bottom colors. I made a rough measurement and cut a piece of flashing a bit long, placed the cut piece on the top and taped it to the line in front, marked the rear line on the flashing and removed it and cut it to length. Note: you can use a backing board and a straightedge to sandwich the flashing, then cut with a mat knife (it'll take five or six strokes to get through it), then file the edge smooth.

Making the fenders:

Now at last it's time to prime - almost. First we have to drill for the axle, test fit the wheels and make some fenders. We'll start with the fenders. Clamp the axle in a vice (gently, strongly enough to hold upright but not to warp it out of round), and slide both wheels on. I used 7" lawn mower wheels, I found some online that even had a small hub cap for a cool, finished look. The axle is a three foot piece of $\frac{1}{2}$ " hollow round stock from a builder's supply (Lowe's, Home Depot, etc). Cut four strips of the leftover bending ply, wide enough to reach from one edge of a wheel to the other. Wrap a ply around the wheels and mark a length shy of overlap and cut all four to length. Wrap two of the plys tightly around the wheels and secure with masking tape wrapped around several times. This will be the form for bending the fenders. The reason for these two spacer plys is to have a small $\frac{1}{4}$ " gap between the fender and wheel when mounted on the side. Apply glue liberally to the third sheet of ply, add the next, last layer and wrap these tightly around the wheels

and first two spacer plys and tape tightly in place. It is important to have the edges lined up closely because this will be the edge held against the table saw fence when cutting out the fenders. Let this set up overnight. In the morning remove the cylinder with a gap you've made and very carefully cut two 2" strips from this curved piece. It's not a bad idea to cut the first strip a bit wide, so as to create a uniform edge, in case the edges weren't lined up perfectly when glued. Then cut another strip and reset the fence to cut the two fenders. Use the first cut edge against the fence when re-cutting. This is a dangerous operation, cutting a relatively narrow strip from a curved piece of stock, so be sure to hold it securely against the fence all the way through and go slowly and carefully, with the blade raised just enough to cut through plus some tooth clearance.

Now lay the carcass on its side, locate the axle hole, 3" from the rear brace and centered in the $\frac{7}{8}$ " piece that supports the bottom. Drill a $\frac{1}{2}$ " hole in each side and test fit the axle - You may need to work on the holes with a rat tail file to get the axle to slide in. It's a snug fit and it will be hard to line both holes up exactly, so some file fudging may be required. When the axle slides in with a minimum of force, pop a wheel on the top. If the axle is a loose fit now due to overzealous filing, clamp a vice grip gently on it inside, next to the bottom to keep it from sliding through as you work on the fender. Slide the axle into position, pop on a wheel then move the fender strip around until you like the even reveal around the tire and mark its location with a pencil around the outside edge. Also, mark the ends of the fender, right where it meets the tangent point of the routed bottom edge.

Remove the tire and axle, cut the fender ends to length, and use the $\frac{1}{8}$ " round-over bit and some sandpaper to shape the exterior edges of the fender, leaving the inside flat for gluing. Run a bead of glue along the inside edge, place the fender on the side up to the line you marked. Press down to squeeze out the glue and clamp lightly with a couple of deep reach clamps until dry. Adding a board across the fender will assist in getting the clamps to hold the whole fender down, as the $\frac{7}{8}$ " strip inside can interfere with the positioning of the clamps. When dry, run a bead of caulk around the seam, inside and out, and wipe into a fillet with a finger to make painting easier. Repeat on the other side. You can let the bottom side overhang the table, keeping the fender clear, or prop the whole thing up on a pair of sufficiently thick blocks to keep the newly glued fender out of harm's way.

Priming and painting:

Now finally, it's time to prime. Remove the wheels and axle. I prefer Zinsser cover stain oil based interior-exterior primer for priming because it dries very quickly and covers well, though it does have a bit of an odor. Because of the odor and the enclosed space (your head will be inside the carcass unless you can paint well by Braille) it's not a bad idea to have a fan going for ventilation. Woodworkers in general have few enough brain cells, let alone any to spare to paint fumes – something even more apparent now that I'm older and no longer enjoy the invincibility of youth.

Lay the carcass on its back side so the door allows some extra light to enter from above. (I propped the whole thing up on blocks) I use a disposable chip brush for priming. Sometimes cheap chip brushes drop bristles but it's easy enough to pick them out now, and it is just a prime coat. Prime the back side and top as far as you can comfortably see/reach, then flip it over to prime the opposite side. A work light may prove useful since the door no longer lets in light. Once this is dry enough to sand, usually a few hours, I sand it lightly to remove any ridges and flatten any drips I missed, then paint the interior with a good grade of enamel paint. Rustoleum gloss white oil based enamel was my choice. This will have to dry overnight.

Now it's time to prime the exterior. For the top, you won't have to prime under the aluminum flashing, just the vertical inside edges of the sides with a bit of overlap onto the top along the edge, but you do need to prime the bottom below the flashing. It's not a bad idea to run a thin bead of caulk along this joint and wipe it down with a putty knife to fill any unsightly gaps before

priming. You don't want to wipe this into a fillet with your finger or you may run into trouble when the aluminum has to fit (the last thing, to keep it safer from scratches and dings).

Take care around the fenders to get a nice even layer of primer. After this prime coat is dry, touch up with light sandpaper. Layout the paint scheme and mask off, then paint the bottom (again taking even more care with the fenders, especially if it's a dark color) When you get to the door, paint around to the inside edge, where the 1/8" round-over ends, you should be able to do this neatly without masking it off. Remember when running masking tape around the side edges to the top to keep them lined up with the original line and don't let the tape lie flat and wander off around the curve of the edge. This is an important detail to remember (to have remembered) back when you were marking the line for the flashing along the top. It's rather like marking a waterline on a boat - it stays the same height all the way across the sides, around the edges, and across the front and back. Remove the tape as soon as you are satisfied with the finish coat (another boat-oriented reminder is to always work with a wet edge when painting a large area for a smooth coat). If you leave the tape on while the paint dries it will leave an edge and may even pull some paint with it when removed later. By removing it now, when the paint is starting to set but not yet dry, you will allow it to settle and taper to that edge. Let this dry overnight.

Next day, mask and paint the top, remembering the portion under the flashing won't need this coat either. Remove the tape when satisfied and let dry overnight. Install the axle and wheels, remembering to get an accurate length for the axle which includes enough for the end caps. Don't make it too tight a fit. Fashion the bottom by cutting it to width so it will slide, remembering to allow for several coats of primer/paint, and be sure to leave enough for the tongue. Slide into position, mark across where the top lines up, also measure the distance from surface to tongue when the bottom is level and make a note of this measurement for the little front support that will be added later. Remove the bottom, lay out the tongue (again, I made a pattern first out of 1/4" ply to mark the tongue on the bottom and then to be a guide for the router). Make a note of the measurement from the back edge of the bottom to the pencil line, prime the bottom all over. You can prime one side at a time and let dry between, or hang it and prime both sides at once.

Lightly sand the primer, mark, mask off, and paint the interior portion gloss white, both sides. Make a piece to act as a jack stand for the front of the tongue. You can use some closet rod or make something of your own (I made a piece that followed the shape of the tongue itself) and cut to length according to the measurement you made and noted. Attach to the tongue with that brand new air brad nailer. Mask off the white painted section and paint the tongue and jack stand gloss black. Each of these gloss finish coats will have to dry overnight, being oil-based enamel. When dry, insert into the body, lay that on its side, drill and countersink six screws, three on each side, through the 7/8" support piece and into the bottom, and secure with screws. Turn the whole thing back upright and take a step back and admire - you're almost done!

Installing the aluminum top:

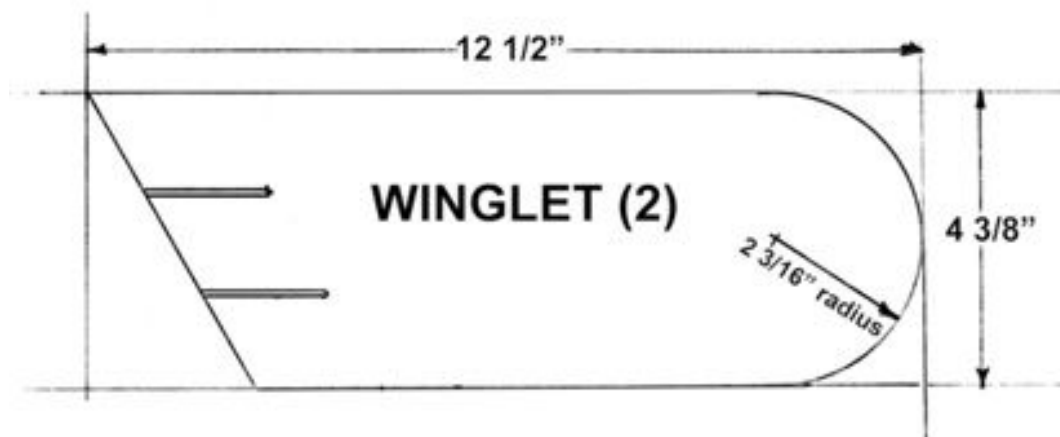
Now it's time to install the aluminum top (flashing). The laminated bending plywood top is not perfectly smooth, even when clamped and massaged into place when glued up. This would cause wrinkling in the aluminum flashing and I didn't want to go to the length of fairing the top completely smooth and even, so I don't glue the aluminum flashing down - I only secure the ends. If the front end is secure and the flashing is stretched tight for the rear end to be secured, the flashing will find its own level and lie flat, bridging over any unevenness or slight undulations in the top. It's not like the puppy camper is going to be hauled down the road behind a small doggy car or have to be wind and waterproof like a real camper.

Glue the front edge of the flashing with a bead of silicone and tape it in place with a wide piece of masking tape across the joint and also with three or four long strips vertically, so you can pull against it to stretch the material tight without worry that it would let go. Then stretch it as tightly as

you can, using tape strips for handles, massaging from front to back, and secure the other end in the same manner with silicone and wide tape. Use enough silicone to glue securely but not so much that you have a lot of squeeze out to clean up. Let this set up overnight.

Making the trim:

The paint line between top and bottom colors is the center-line for the trim. Measure the various lengths of the side trim, subtract $\frac{3}{4}$ " from each end, and cut each piece of trim to length (one for the left side, two for the right side). Taper or round each tip of the half round to suit your taste. A stationary belt sander will make quick work of this, but a hand belt sander clamped to the table will do, or just shape it by hand with rasp, file, and sandpaper. The two pieces for the front and rear are cut to be a snug fit between the sides and the ends stay square. Paint the trim aluminum, a can of metallic spray is easiest. Locate the paint lines (trim center-line) on the inside by drilling small holes on the line from the outside (being careful to move in from the edge to clear the kerfing inside), counter sink from the inside. Install the trim with small wood screws from the inside.



Making and installing winglets:

Make and install the two "winglets". These are a signature feature of the old 50's Shasta campers (Google vintage Shasta camp trailers to find some photos). The winglets are purely for show, which is why I like them. There is a pattern for them on the drawing. I routed the edges of both sides of these with the $\frac{1}{8}$ " round-over bit. Position each winglet and mount them from the inside with small finish screws like the trim.

All that is left is to install the memory foam pad you ordered in time for the grand finale and coax your lucky doggy inside with treats.