The Builders' Forum

By Dan Starck, Co-Chairman of the USEA Eventing Course Designers/Builders Committee, Member of the USEA Safety Committee, and an active professional course builder since 1985.

Back in the Stone Age, when I first started building jumps, there wasn't anything known as a "portable cross-country jump". We had built some jumps partly in the shop during bad weather, or that could, technically, be moved, but never intentionally to be portable. I distinctly remember around 1992, Pete Costello telling Jon Wells and I about a course he built (Galway, I think) where all the jumps had to be portable because it was in the infield of a track. The course had to be removed and restored after each competition. We thought it was an amazing concept. We soon began building portables when we realized we could avoid the major hassles of adjusting the distances between permanent jumps when the striding didn't work out the way the designer pictured. Of course, now, the advantages of portable jumps are well known and there are probably more jumps built portable than permanent.

When we started building portables, our approach to construction was the same as with permanent jumps: we hung wood on posts. Or more specifically, we built the jumps by setting posts on skids and then attaching skin boards to the posts. The idea of building on a foundation made up of two skids was good. It provided a good level base and made the jump easy to be dragged around. But the idea of using posts as the structure proved problematic. We started off building ramps, tables, benches; basically boxes of differing shapes. We were framing these jumps with 4x6's, 4x4's, 6x6's, like they were posts set in the ground. The first problem was that the space between the "posts" was too much. If we used stock lumber for the skin it would be too weak to hold up to a horse kick and would warp. To alleviate these problems, the structural members should be no more than two feet apart. Using heavy timbers this close together works fine, but is an incredible waste of material and money. Even a 2x4 is very strong in compression (up and down, as a post) and 2x6's, 8's, etc. are strong enough (when sized correctly) to be used horizontally (as "beams"). We

figured out that we could build this kind of jump that was superior, more durable, cheaper, and from material readily available at any lumber yard. I'll illustrate the system that we developed here. Use your imagination and you may be able to improve on it even more.

One limitation to this system is that it is really only appropriate for jumps that are enclosed box-like shapes. But that includes a huge variety of jumps: tables, ramps, coops, roll-tops, benches, cabins, steps, etc. OK, so where do we start?

I usually start with a sketch on graph paper. This way I can work out the angles or curves, the dimensions, the general look. I can make a material list from this plan, as well. My next step is to make a full scale drawing of the cross section of the jump on a piece of plywood (or the shop floor). At this step I can fine tune the exact dimensions, angles, curves, whatever. This also provides a pattern for making frames. The frames will be like ribs supporting the skin of the jump. I like to use polyurethane glue (like gorilla glue) when assembling frame pieces. A glued joint is infinitely stronger than one that relies totally on mechanical fasteners alone (nails, screws). I'm lucky enough to own an air nailer. It makes frame assembly really easy and fast.

I build this type of portable on a base made of two 4x6's or 6x6's used as skids (like a sled). They are cut on an angle on the bottoms of the ends to facilitate sliding. I also glue and bolt 4x6's across the skids near the ends to provide a strong member where the jump can be pulled from. Timber-locks are an easy way to bolt these cross members. If the ends of the jump will be open, or if you will provide a hole in closed ends to grab the cross member with a chain, move on to the next step. If the ends will be closed, it's a good idea to bolt pairs of short pieces of chain to the cross members to provide something to grab for dragging.

I toe-nail the frames to the base with nails (air gun, again, incredibly handy); usually two nails from each side into each skid. The spacing of the frames depends on the strength of the skin material. For deck boards, I recommend a maximum spacing of 16 inches; for 2x4's or 2x6's, etc. 24 inches max. The skin boards should be attached being careful to keep the frames vertical and square. They can be nailed, but deck screws are a better fastener in this case.

This is just the basic idea of this technique. There are many, many possible variations. Good planning is the secret to a successful design. Think of the jump in cross section. It simply becomes a series of frames in this shape lined up and covered with a skin of material strong enough to resist the forces of a horse hoof. This cross section shape can be anything from a box to a bench shape to a curve (roll top) to a series of curves. We have also used variations of this technique to build tapered jumps and snaking curves.

PREVIOUS PAGE AND BELOW: A roll top is born! The great thing about this design, says Starck, is it's more durable and cheaper than other types of fences, and can be made from materials readily available at any lumber yard. **RIGHT:** The end result is an exciting and well-built roll top that will surely catch the competitor's eye.

Finally, here are a few tips:

• Use treated lumber. Some of the new treated lumber brands look untreated, lacking that green color. At any rate, you want these things to last so always use treated lumber in your jump construction. If you want to use a more decorative wood where it shows, use a rot resistant species like cedar, locust, or white oak. Stick with pressure treated wood for all the interior structural members.

• Set the end frames a few inches short of your skin board length. An overhang usually looks better and hides slight out of squareness.

• Set the end frames first. Pull a string from end to end at the widest point and set the other frames to the string. That way even if the base isn't exactly straight, the jump face will be and the skin boards will land on all the frames evenly.

• Add vertical diagonal bracing where necessary. A couple of braces each way near the center resist racking forces.

• Before you start to attach the skin boards, temporarily attach a board across the tops of the frames holding each frame plumb and spaced correctly.

• Set one end of all the skin boards even to each other. Then trim a straight line off the wild end. Boards are seldom the same length.

• Think about leaving a narrow board at the top that can be easily removed. Maybe attach it with screws so it could be taken off and the space stuffed with brush.

• Build the jump a couple of inches below max. height. Ground is never level and if a jump is built at max height and is slightly up hill from the take off point, it will measure illegally high. It is easy to raise a portable jump if it is too low. A few blocks of wood set under the skids can bring it easily to the right height. Of course, always stake portables appropriately. See last month's column for staking tips.

This isn't the only way to build. Some jump designs lend themselves better to heavy timber construction. The point is, this is an efficient way to build many designs. I see way too many jumps out there built with unnecessarily large timbers, wasting material and money. And I see way, way too many jumps built with structure spaced too far apart. 2x6's supported on four foot centers is just wrong. And I've seen much worse. But don't get me started.

Until next time, always do your best, have fun, and keep your chain sharp.

Check out a video on cross-country design in the next issue of **EventingUSA 2.0**.