



CAMELID CAVERN O' CONFIDENCE (CCC)



What is the CCC?

This is a great tool we developed for teaching llamas and alpacas to trust the handler and is lots of fun. The Cavern o' Confidence is a structure made with PVC piping that can be broken down and built up piece by piece. As animals are lead through the increasingly more confining cavern, they amazingly accept the challenge. This builds your animals confidence in himself and trust in you.

Plans

The Camelid Cavern o' Confidence is an adjustable PVC pipe frame with a tarp over it. All of the parts and supplies can be found at your local home improvement store and/or plumbing supply. I used 1 1/2" PVC pipe, but the CCC can also be constructed of 1 1/4" PVC just as easily. Note: If you want to have a collapsable CCC that is easy to move and store, pay attention to those instructions that tell you which joints to leave unglued.

Parts List

PVC compression type fittings:

- 10 - 1 1/2" Tees
- 6 - 1 1/2" Elbows
- 2 - 1 1/2" to 3/4" Tees
- 1 - 1 1/2" Cross
- 2 - 1 1/2" to 3/4" reducers
- 6 - 1 1/2" couplings

PVC Pipe in 10' Lengths:

- 1 piece 3/4" PVC pipe
- 7 pieces 1 1/2" PVC pipe

Other Supplies Needed:

- 8 small cleats or hooks
- 16 small sheet metal screws for attaching the cleats
- 8 bungy-type tarp tie-downs
- 1 8' x 12' plastic tarp
- 1 small can of all purpose PVC glue
- 1 six-pack beer

Tools Needed:

- Drill
- Small drill bit (3/32")
- Screw driver
- Hack saw
- Rubber mallet
- Mitre box (optional for the anal retentive)
- Indelable pen

Instructions

Cut each of three of the 1 1/2" pipe pieces into two four foot long pieces, one 18" long piece, and a bit of scrap. (Save the scrap pieces for later). Then cut each of three 1 1/2" pipe pieces into two four foot long pieces, and one 24" long piece. Cut the last piece of 1 1/2" pipe into three 24" long pieces.

Notes on gluing PVC: Remember, you aren't making water-tight connections. So there is no need for PVC primer and expensive glue. Just get a small can of the cheap stuff. To glue PVC, first swab the socket of the fitting with glue, then swab approximately 1 1/2 inches of the end of the pipe. Quickly insert the pipe into the fitting and give it a 1/4 twist. Make sure that you have jammed the pipe all of the way into the socket of the fitting, or your CCC may end up a little lopsided.

We will build the CCC from the ground up. The first step is to make the four corners. A corner consists of two 1 1/2" tees and one 3 inch scrap of pipe. (see photo of corners below) Glue the 3 inch scrap of pipe into the "base" socket of the first tee, and the "arm" socket of the second tee such that the fittings are rotated 90 degrees from one another. This results in a gizmo that has two "arm" sockets free on one fitting, and one "arm" socket and the "base" socket open on the other fitting. When laid on the ground, the corner should have one open "base" socket that points straight up, and two open "arm" sockets that are horizontal.



After making the four corners, glue one of the four foot long pieces of 1 1/2" pipe into each of the four corners you just made. Be careful to attach the pipe to the one unused "arm" socket of the fitting that points straight up. This should result in four "bottom" pieces of the CCC that look like: A four foot long piece of pipe that is glued to a tee with an unused socket that points straight up, that is glued to a three inch piece of pipe that is glued to another tee that has two horizontal open sockets.

Now take two of these "bottom" pieces and glue a third tee onto the unused end of the four foot long section of pipe in such a manner that the "base" socket of the tee is open and

points straight up like the other open "base" socket at the other end (corner). This should result in two "bottom" pieces that look like: A tee with the open "base" socket pointing straight up, a four foot long section of pipe, a second tee with an unused "base" socket pointing straight up, a 3 inch piece of pipe, and a third tee with two open "arm" sockets that point side-to-side. You now have four "bottom" pieces; two with three tees, and two having only two tees.

Make the bottom sides of the CCC by attaching, without gluing, one of the two tee "bottoms" with one of the three tee "bottoms". Do this for both sides. This results in two pieces (over eight feet long) that have a horizontal tee on either end, with three tees with open "base" sockets pointing straight up. (These three open sockets will later connect to the side pieces, or "ribs" of the CCC). Attach two of the four foot long pipes you cut earlier to the "bottoms" at each end. (Don't glue these if you want a collapsible CCC.) You should now have a big rectangle that measures approximately four feet by approximately eight feet.

Attach six of the four foot pieces of pipe, that you cut earlier, into the six open sockets. They should look like six "ribs" pointing straight up. (Don't glue the "ribs" in place even if you don't want a collapsible CCC, or you won't be able to use your "rib" extensions). Your CCC is now halfway complete!

Before we build the frame for the top, we need to size your CCC to the tarp. We recommend that there should be at least three or four inches of overlap for the tarp at both ends of the CCC. In other words, that portion of the CCC that supports the tarp should be six or eight inches shorter than the tarp itself. The overlap prevents the tarp from slipping off the frame, while you are working with it, and scaring your wooly friends. Measure your tarp along the eight foot dimension. The supposedly 8' x 12' plastic tarp I was able to buy at Home Depot, for example, actually measures something like 8.5' x 11.5'. The eight foot dimension is the most critical one as it corresponds to the length of the CCC. Once you know how long your tarp is, you can now adjust your CCC to fit it perfectly. Measure your CCC from one of the end pipes that is pointing straight up into the air, along the side of the CCC, to the other end pipe that is sticking straight up. It should be something like eight feet long. (Note: We are not measuring the overall length of the base, just the distance between vertical pipes along one side). When I compared the measurements of my tarp to the length of the CCC I was building, my tarp was six inches longer than the CCC. However, as it turned out, this was not enough overlap, and the tarp kept slipping off the frame in the slightest breeze. To correct this problem, I pulled apart the bottom sides of the CCC and cut off an additional two or three inches from the piece with the open end, shortening the CCC by several inches. This provided enough overlap to keep the tarp from slipping off the ends of the CCC. After adjusting your CCC to fit the tarp, you can glue the bottom pieces together if you don't need it to be collapsible.

Once you have adjusted the length of your CCC, you can proceed to building the frame for the top. The top has three "rafters" that measure approximately four feet: One at either end of the structure, and one in the middle. The "rafters" are connected to one another by two small sections of 3/4" pipe, to keep them from spreading apart.

Construct each of the two end "rafters" by gluing two 24" pieces of 1 1/2" pipe into one of the 1 1/2" to 3/4" tees. (After the glue dries, check for proper fit of the "rafter" by attaching, without gluing, an elbow to each end and slipping the "rafter" in place over the corresponding ribs. If the "rafters" need to be shortened, you obviously want to do so before you glue the elbows in place!) After checking the fit, glue the elbows in place such that they are at right angles to the open, 3/4" end of the tee. Similarly create the middle "rafter", except install the cross in the center instead of a tee. Take care to ensure that the cross is at a right angle to the two elbows. After the glue has dried on the middle "rafter", glue the two 3/4" reducers in place in the open sockets of the cross. (Don't glue the "rafters" to the "ribs" if you want a collapsible CCC). With the three "rafters" installed over their corresponding "ribs", you are now ready to finish your CCC. Measure and cut two sections of the 3/4" pipe to fit between the "rafters". These pieces keep the ribs/rafters from spreading apart and gives support to the tarp. (Don't glue the 3/4" pipes in place if you want a collapsible CCC).

After you have assembled the frame of your CCC, drape the tarp over it to aid in positioning the cleats. Locate the cleats near the bottom of each of the "ribs", and about 12" to 18" in from each end on the 3/4" pipe. Drill pilot holes with a small bit (say 3/32") and attach the cleats with a screw driver using the sheet metal screws.

The final step is to create extensions for the "ribs". Simply glue the six couplings to the six 18" pieces of pipe. To create a taller CCC, install the extensions into the "bottoms" and then install the "ribs" on top of the extensions. This makes for a "cavern" that is approximately 5 1/2 feet tall.

Tip: If you choose to leave your CCC unglued for ease of transportation and storage as described above, spray the removable connections with silicon spray to make it easy to assemble and take apart. Also you will want to label the various pieces with the Sharpie, in a way that makes sense to you. The rubber mallet is helpful for assembling and disassembling the CCC. Use light taps with the mallet as the PVC can break, especially in cold weather.

FAQs

- 1) Are you crazy? It will take me forever to build this thing! A: Stop whining, it only takes about an hour and a half to assemble. Longer if you drink the beer...
- 2) Is it hard to cut PVC pipe? A: Use a new hack saw blade and the miter box to make easy, straight cuts.
- 3) What are the extensions for? A: The extensions allow you to create a taller and less challenging "cavern".
- 4) How much does this thing cost? A: The parts and supplies can be bought for under \$90 US.
- 5) Why can't I just use elbows for the bottom corners instead of tees? A: You can use elbows, but if you use tees you can always slip some extra pieces of PVC pipe into the open end of the tee, at the corners, to help stabilize the CCC on windy days.
- 6) What if my critter won't go anywhere near the CCC? A: Start them off with only the rectangular bottom, and once they get used to it, add more pieces as they gain confidence.
- 7) My local hardware store doesn't have compression type tees that go from 1 1/2" to 3/4". A: My hardware store didn't stock them either. I ended up with 1 1/2" tees with a threaded 3/4" fitting. Then purchased additional couplings that convert 3/4" threaded to 3/4" compression.

Questions

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