Double A-Frame Monkey Bridge

The following text is by Adolph E. Peschke as presented in the 1998 printing of the 1993 edition of the Pioneering Merit Badge Pamphlet:

Using a double A-frame to build a monkey bridge is a departure from the usual X-frame that supports the foot rope and hand ropes. This new method has two distinct advantages over the X- frame version.

First, the double A-frame provides a wider base making it less likely to tip over. The second advantage is that the positions of the A-frames can be adjusted so the span between the hand ropes can be narrowed for better balance as you make the crossing.

Building the A-frames. The first step in building the monkey bridge is to build four A-frames using the 8′ spars for the two legs, and 6′ spars for the ledger.

Lay out the first set of three spars (two legs and one ledger) on the ground in position for lashing. Before lashing, drive three stakes, as follows, to help you make all four A-frames the same size: Drive a stake at the top to mark where the leg spars cross. Then drive stakes to mark the positions of where the bottom ledger crosses the legs. This will also indicate how far the the legs are spread apart.

Now you can lash the four A-frames together, laying them out one at a time using the stakes. Remember that all three lashings on the A-frames are square lashings, even thought the spars cross at less than 90˚ angle.

Double A-frame. When you have four A-frames, you can lash two of them together to form a double A-frame. (see figure 140). Lay one A-frame on the ground and then put another on top of it so that the bottom ledgers overlap one-half their length (approximately 3′).

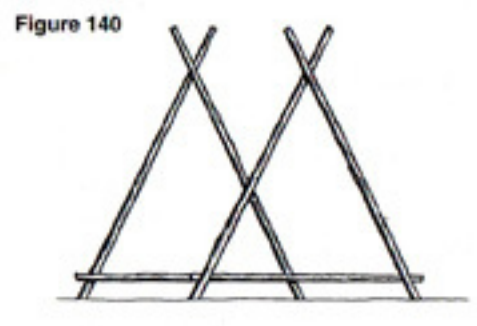


Figure 140

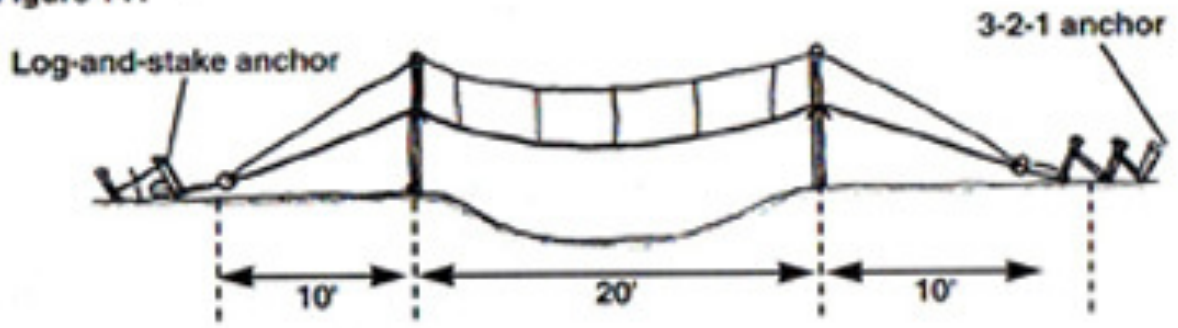
The first step in lashing the A-frames together is to go up where the two legs cross (the X formed by one leg from each A-frame). Then with a good tight square lashing, lash the two legs together.

Note: The point where these two legs are lashed together is where the foot rope will rest. You can adjust the overlap of the two A-frames to adjust how high the foot rope will be off the ground. Also note where the tops of the A-frames are, because this is where the hand ropes will be.

To complete the double A-frame, stand it up so the butt ends of all four legs rest solidly on level ground. Lash the two bottom ledgers together where they overlap with three strop lashings.

Now repeat the entire process to build the second double A-frame.

Figure 141



Site preparation. Before you can erect the double A-frames, you need to prepare the site. Begin by stretching a length of binder twine along the center line of where the monkey bridge is to be built. Working from the center, measure 10′ toward each end to mark where the A-frames are to be placed. They should be 20′ apart. Then mark out another 10′ from each A-frame to where the anchors are to be built.

Note: These dimensions are for building a bridge with a 20′ span. This is the maximum span for a bridge using a 50′ rope. The extra 30′ of rope is needed to have 15′ of rope at each end for the proper distance from the A-frames to the anchors (10′) and for the knots at the anchors (5′).

Build the anchors. The foot rope will be attached to anchors at both ends. Before erecting the double A-frames, build a 3-2-1 anchor, or a log and stake anchor, 10′ from where the A-frames will be erected (see figure 141).

Rope grommet. After the anchors are built, attach a rope grommet with a ring or shackle in it. (You can make the rope grommet with a 10′ length of 1/2″ diameter polypropylene rope. *Tie the ends together using a carrick bend, and permanently secure the ends with some strong twine*).

Position the A-frames. Prepare to erect the monkey bridge by moving the A-frames into position no more than 20′ apart. Lay them down on the binder twine that marks the center line of the bridge.

Hand and foot ropes. Now you can prepare the foot and hand ropes for the monkey bridge. Lay the foot rope in a straight line off to the side of where the A-frames are laying. Then lay the two hand ropes on the ground next to each other so they’re parallel to the foot rope and 42″ away.

Stringer ropes. Now you can add the stringer ropes that will go from the foot rope to the hand ropes. Start by tying the center of an 8′ long stringer rope (use 1/4″ manila rope) at the center of the foot rope, using a clove hitch. The stringer rope is tied around the foot rope so that both ends are 4′ long. Add two more stringer ropes on both sides of the center stringer rope (so there are five stringer ropes in all), tying them about 4′ apart.

Tie one end of each stringer rope to one of the hand ropes, again using a clove hitch. Then do the same with the other ends of the stringer ropes, attaching them to the other hand rope.

Assemble the bridge. You're just about ready to assemble the bridge. First place a piece of heavy canvas (called a "saddle") in the V formed by both double A-frames. This will protect the foot rope and allow it to slide a little in the V without interfering with the lashing rope.

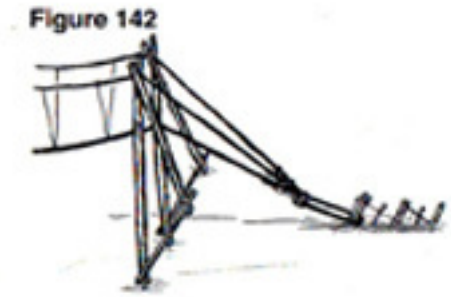


Figure 142

Now get the crew together to erect the bridge. You will need a safety officer to watch for any problems that might occur, and a signal caller to tell the crew members what to do.

You will need two Scouts to lift and hold each double A-frame in place, two more Scouts to lift the foot rope into the V of the double A-frames, and two more Scouts to lift the two hand ropes into place at the tops of the A-frames.

Lift everything into place. Then, holding the A-frames steady, temporarily tie the hand and foot ropes into the rings of the grommets using a roundturn and two half hitches (see figure 142).

Tighten the foot rope. Now you can put a strain on the foot rope. It's not necessary to use block and tackle since this will put too much strain on the lashings, anchors, and the foot rope itself when there is a load on the bridge.*

Whatever strain three or four Scouts can put on the foot rope by pulling it by hand will be enough. As soon as the bridge is used a few times, there will be a sag in the rope. This is fine because it means that you are working with reduced strain on the foot rope as a safety measure.

Tighten the hand ropes. Next, tie the hand ropes to the top ends of the A-frames. First, loosen one end at a time from the anchors. Then, use a clove hitch to tie the hand rope to the top end of the leg of the double A-frame. As you're tying these clove hitches, adjust the strain on the sections of the hand ropes between the double A-frames to match the sag of the foot rope. Also, adjust the length of the stringer ropes so there is even strain between the foot rope and both hand ropes.

After the hand ropes are tied to the tops of the A-frames, move down and retie the ends of the hand ropes to the rings in the grommets using a roundturn and two half hitches.

Final testing. With caution, one crew member can get on the bridge as all lashings, anchors, and knots are observed by the safety officer and all other crew members. Make adjustments as required. Then secure the running ends of the hand ropes and foot rope with a piece of cord.

Safe operation calls for only one Scout to be on the foot rope of the monkey bridge at a time.

LIST OF MATERIALS FOR DOUBLE A-FRAME MONKEY BRIDGE

- 8 4″ x 8′ A-frame legs
- 4 3″ x 6′ ledgers
- 14 1/4″ x 15′ lashing ropes for square lashings
- 1 1/2″ or 3/4″ x 50′ foot rope
- 2 1/2″ x 50′ hand ropes
- 5 1/4″ x 8′ stringer ropes
- 6 1/4″ x 10′ lashing ropes for strop lashings
- 6 pioneering stakes for each 3-2-1 anchor
- 8 pioneering stakes for each log-and-stake anchor
- 1 5″ x 4′ spar for log-and-stake anchor
- 2 1/2″ x 10′ polypropylene ropes for rope grommets
- 2 pieces of scrap canvas for foot rope saddle
- binder twine for anchor tieback straps