BRUCE'S 'Dog' SERIES FIGHTER KITE CONSTRUCTION DETAILS

Since the length of the bow is longer than the distance between the wingtips, when the bow ends are attached to the wingtip locations, a bend is created in the bow. This is how the curved leading edge is created. When secured at the wingtips, the bow will bend and cross the spine according to the plan, and will also contact the straight portion of the leading edges coming from the nose of the kite, as indicated on the plan.

In order to secure the skin material of the kite to the bow along this curved leading edge, use the 3/8" hem to wrap around the bow. I use contact cement, but any glue that will bond well to the skin material you are using is fine. I usually use the 3/8" hem along the straight portion of the leading edge, between the nose and the point where the leading edge begins to curve, to enclose some stiffening material such as a thin strip of plastic or Mylar. Some kite builders place a 0.03" diameter carbon rod along the fold line of the hem and secure the rod with the hem. However, I have found using the hem alone along the straight portion of the leading edge adds enough additional strength to add to significant durability to the kite. The reason I bother with stiffening the straight portion of the leading edge is that I am of the belief stiffening that portion of the leading edge helps the kite penetrate the wind. You can also use no hem for the nose portion of the leading edge and use tape instead.

For the spine of the kite, I typically use a piece of bamboo that I split and shape so it is about 3/16" wide and between 3/32" and 3/16" thick and as long as is needed by the plan. The spine should be straight and true. I glue the spine along its entire length to the skin of the kite.

After the spine is installed in the kite, a bend is created in it at a point approximately 1" toward the nose from the cross of the wingtip line and spine (see the plan). I bend the spine sufficiently enough so that when the tail is held flat on a table, the nose is about 1/2" to 3/4" above the surface of the table.

An alternative spine material is carbon fiber. I occasionally use a 0.07" or 0.08" diameter carbon fiber rod for the spine or flat carbon. If you use carbon fiber, you need to attach a tensioning mechanism to the spine to allow you to put a bend in the spine.

The optional battens can be made of small diameter plastic straw, bamboo or carbon fiber rod. I use a 0.03" or 0.04" diameter carbon fiber rod for mine. I glue and/or tape them to the back side of the kite skin. The reason I use battens, is they seem to lessen the trailing edge flutter and as a result may add a small amount of speed.

An alternate to a straight trailing edge shape, is a scalloped or curved one. A scalloped edge has a slight continuous curve inward toward the spine as it goes from the wingtip to the tail of the kite. Usually, I locate a point 1/4" to 3/4" inward from the straight trailing edge along the batten line. That is the point where I place the maximum amount of scallop or cut out. Any continuous curved shape will work but they don't all work the same; you may want to experiment with it. If you do use a scalloped trailing edge and plan to use battens, either reposition the battens slightly to work with the new trailing edge, or shorten them, either adjustment seems to work fine.

In drawing the plan, I start with a straight vertical line, the spine, and mark the spine length. Then I draw a perpendicular line through the point on the spine where the wingtips will be. This I call the wingtip line. I put the center of the wingtip line on the vertical spine line, at the measured distance toward the tail from the nose. Then I connect the tail of the spine with the wingtips to form the trailing edges. Then measure 3/8", 9.5mm, along the trailing edge line from the wingtip toward the tail and make a mark. Draw a line from the nose of the kite to the mark you made on the trailing edge. Where this line intersects with the curved bow shape determines the change in shape of the nose portion of the leading edge.

To draw the curved leading edge shape of the bow, I tape the pre-cut bow to the wingtip locations of my plan. Then I hold it from moving around and use it as a template to draw the curved leading edges. Afterwards, I draw in the 3/8", 9.5mm, hems freehand along the curved leading edge.

I usually draw my kite plan on some sort of pattern material. I usually use countertop plastic laminate such as Formica or poster board. They are durable and can stand the heat of a hot knife, especially the plastic laminate. After I draw the pattern on the Formica, I cut it out with a pair of large 12" tin snips, it cuts quite easily, you could use a router, saw or utility knife. Cutting poster board can be done with a utility knife.

The bridle arrangement I use most often is a 3 point bridle. It uses 3 separate pieces of bridle line. First cut a 12" long piece of bridle line. Tie one end to the left side of the bow at a point 1-1/4", 32mm, from the center of the spine, the other end is tied to the other side of the bow 1-1/4" from the centerline of the spine. CA glue, Superglue, will hold the bridle knots in place on the bow after you tie it. Or you can glue small pieces of shrink wrap or other small tubing on the bow and use them as stops for the bridle lines. When installed, this piece of bridle line lays in a loop on the front side of the kite, I call this the upper bridle yoke.

The second piece of bridle line, I call the lower bridle line, use a piece about 30" long. Fold about 6" of one end over and tie an overhand knot to form a loop in one end so that the finished loop is about 2" to 3" long. With this loop, tie this piece of line to the center of the upper bridle yoke that was just tied to the bow. Use a larkshead knot to tie it. Then tie the other end of this second piece of bridle line to the spine at the lower bridle connection point as marked on the plan. However, before you tie it, pull the loop of that lower bridle line toward a wingtip and stop when it is about 1", 25mm, inboard of the wingtip. Then tie it to the spine and cut off the excess. You don't want the bridle to extend beyond the wingtip because it can easily get caught around the wingtip during flight and will most likely cause a crash.

The third piece of bridle line is about 6" long. Fold it in half and tie an overhand knot so you end up with a loop that is about 2"-3", 50-75mm, long. Larkshead that loop to the lower bridle line; it becomes the tow point, the point where you attach your flying line. The larkshead knot is used to connect the bridle line parts together because it is an adjustable knot. When tuning the kite, you will need to adjust both parts of the bridle to get the kite to fly the way you want it to.

If you have any questions about these kites, please email me at kitefighter@nwinfo.net

BigFighterKiteGrins, Bruce

"HUNTIN' DOG"

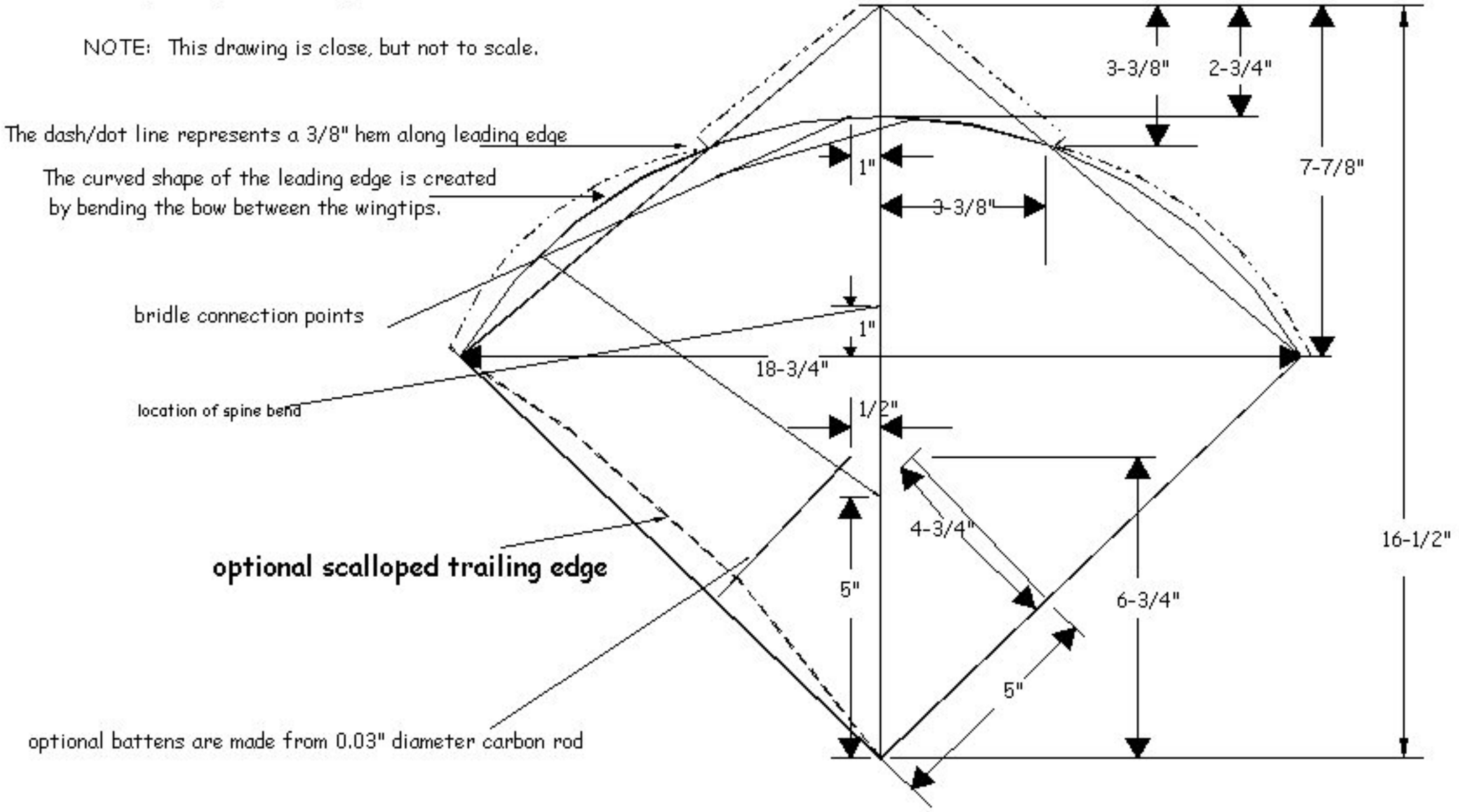
A fighter kite designed by Bruce Lambert in July 1999 kitefighter@yahoo.com

This kite flys well in 2mph - 8mph winds, I usuually make the skin of either Orcon or 0.7 mil plastic flim gift wrap.

Bow length = 22", bow material is 0.05" diameter carbon fiber rod

The spine is split bamboo approx. 3/16" W x 3/32"D x 16-1/2"L

NOTE: This drawing is close, but not to scale.

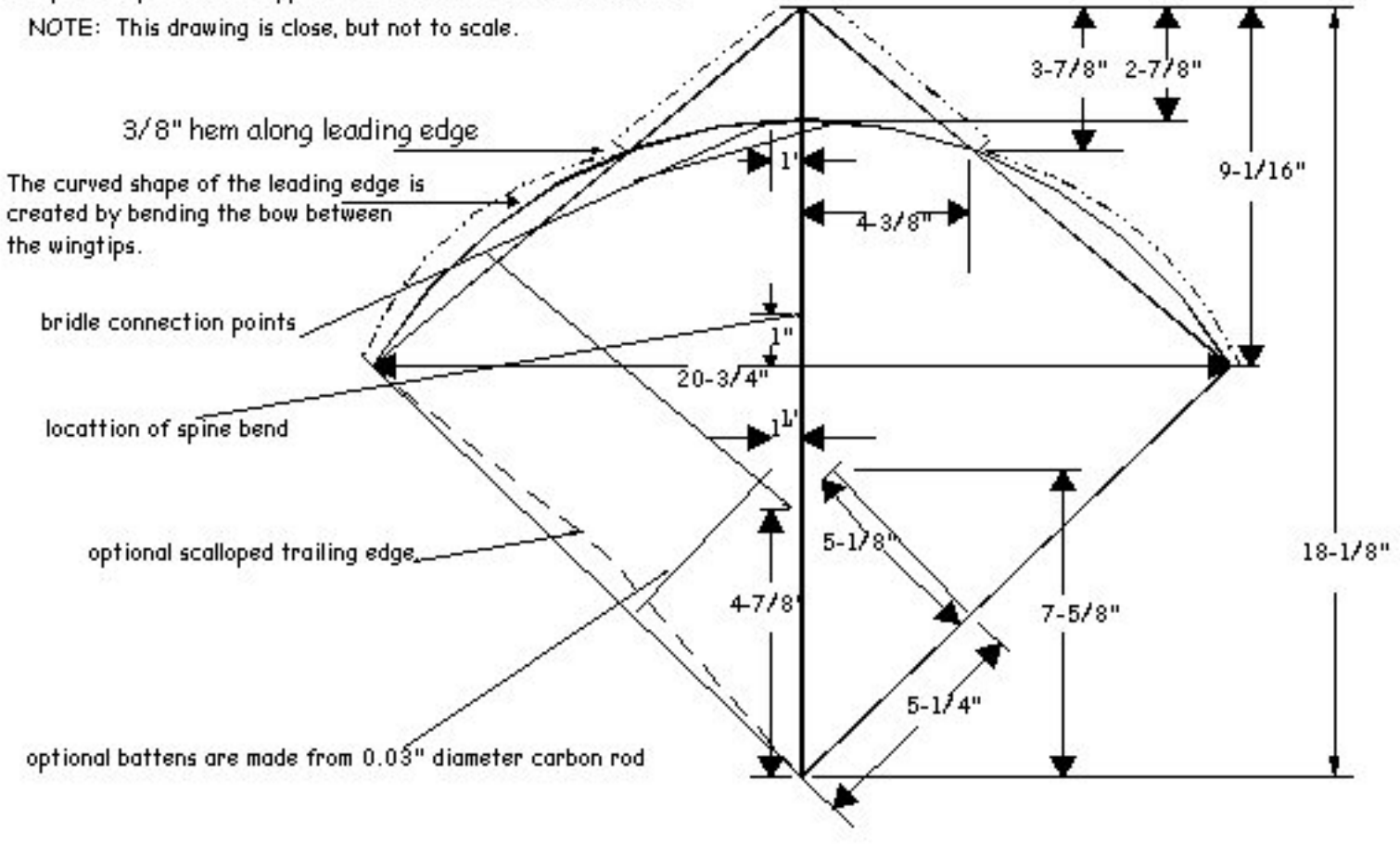


"SLOW DOG 25"

A figher kite designed by Bruce Lambert in March 1998 kitefighter@yahoo.com

This kite flys well in 3mph - 9mph winds, I usuually make the skin of either Orcon or 0.7 mil plastic flim gift wrap.
Bow length = 25" of 0.06" diameter carbon fiber rod
The spine is split bamboo approx. 3/16" W x 3/16"D x 18-1/8"L

NOTE: This drawing is close, but not to scale.



"BIG SLOW DOG"

A fighter kite designed by Bruce Lambert in August 2000. kitefighter@yahoo.com

This kite flys well in 1 mph to 5 mph winds, I usually make the skin of either Orcon or 0.7mil plastic film gift wrap.
The spine is split bamboo approx. 3/16" W x 3/32"D x 18-5/8"L

Bow length = 26" of 0.06" diameter carbon fiber rod

NOTE: This drawing is close, but not to scale.