

## BRUCE'S FIGHTER KITE CONSTRUCTION NOTES:

These notes apply to each of my "Dog" series of fighter kite designs.

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 the bow. I use contact cement, but any glue that will work with the skin material 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 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. I have no proof however ;o)

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. Some builders only secure the spine at the nose and the tail. Either method works.

An alternative spine material is carbon fiber. I occasionally use a 0.06" diameter carbon fiber rod for the spine.

After it is installed in the kite, a bend is created in the spine 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.

The optional battens can be made of small diameter plastic straw, bamboo or carbon fiber rod. I use a 0.03" 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 because 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....try whatever seems right at the time!! 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. I put the center of that wingtip line on the vertical, spine, line at the measured distance toward the tail from the nose. Then I just connect the tail of the spine with the wingtip ends to form the trailing edges. Then I measure the various distances needed for locating the point where the curved leading edge and the straight portion of the leading edge meet and draw a straight line from there to the nose.

To get the curved leading edge shape, I tape the bow to the wingtip locations. Then I hold it from moving around and use it as a template to draw the curved leading edges. Afterwards, I draw in the hems along the leading edge, usually I do that freehand along the curved portion and use a straightedge for the straight portion.

I usually draw my kite plan on some sort of pattern material, I usually use formica. It is very durable and can stand the heat of a hot knife. After I draw the pattern on the formica, I cut it out with a pair of large (12" I think) tin snips, it cuts quite easily, you could use a router, saw or utility knife. Other pattern materials I have used, and each works fine, are heavy paper, posterboard & masonite. Actually, any material that will hold an edge and is easy to work with will do the job.

The bridle that I use most often is a 3 point bridle. It uses 3 separate pieces of bridle line. The first is 12" long. One end is tied to the left side of the bow at a point 1" from the center of the spine, the other end is tied to the other side of the bow 1" from the centerline of the spine. 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.

For the next piece of bridle line, I start with a piece about 24" long. I then fold about 3" 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 that loop, I tie this piece of line to the center of the bridle line that was just tied to the bow ( the loop ). I use a larkshead knot to do it. Then I 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 I tie it, insert it through the holes I made in the skin at the lower bridle point and I wrap it around the spine and hold it loosely with one hand. Then with the other hand, I pull the loop of that line toward a wingtip and stop when it is about 1" inboard of the wingtip. Then I tie it and cut off the excess. I don't want the bridle to extend beyond the wingtip because it can easily get caught around the wingtip during flight.

The 3rd piece of bridle line is about 6" long. I fold it in half and tie an overhand knot so I end up with a loop that is about 2.5" long. I larkshead that loop to the second bridle piece and it becomes the tow point, the point where you attach your flying line. The larkshead knot is used to connect the bridle parts together because it is an adjustable knot. And in 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.

I hope flying this or any other fighter kite brings you as many ear-to-ear grins as it brings me! And, if you have any questions about these kites, please email me at

<mailto:kitefighter@yvn.com>

Bruce

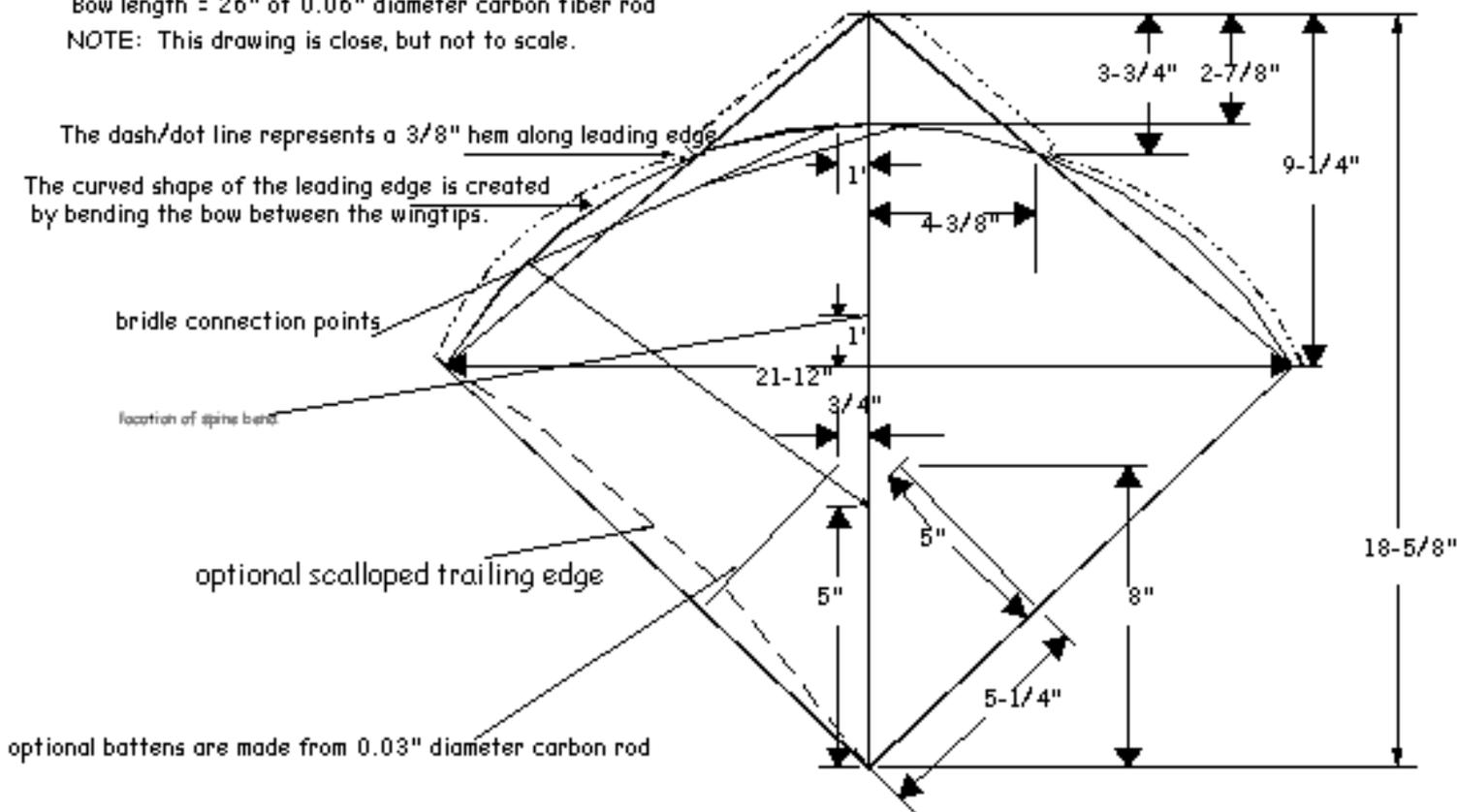
## "BIG SLOW DOG"

A fighter kite designed by Bruce Lambert in August 2000. [kitefighter@yahoo.com](mailto:kitefighter@yahoo.com)

This kite flies 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  $\times$   $3/32"$  D  $\times$   $18-5/8"$  L

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

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



## "SLOW DOG 25"

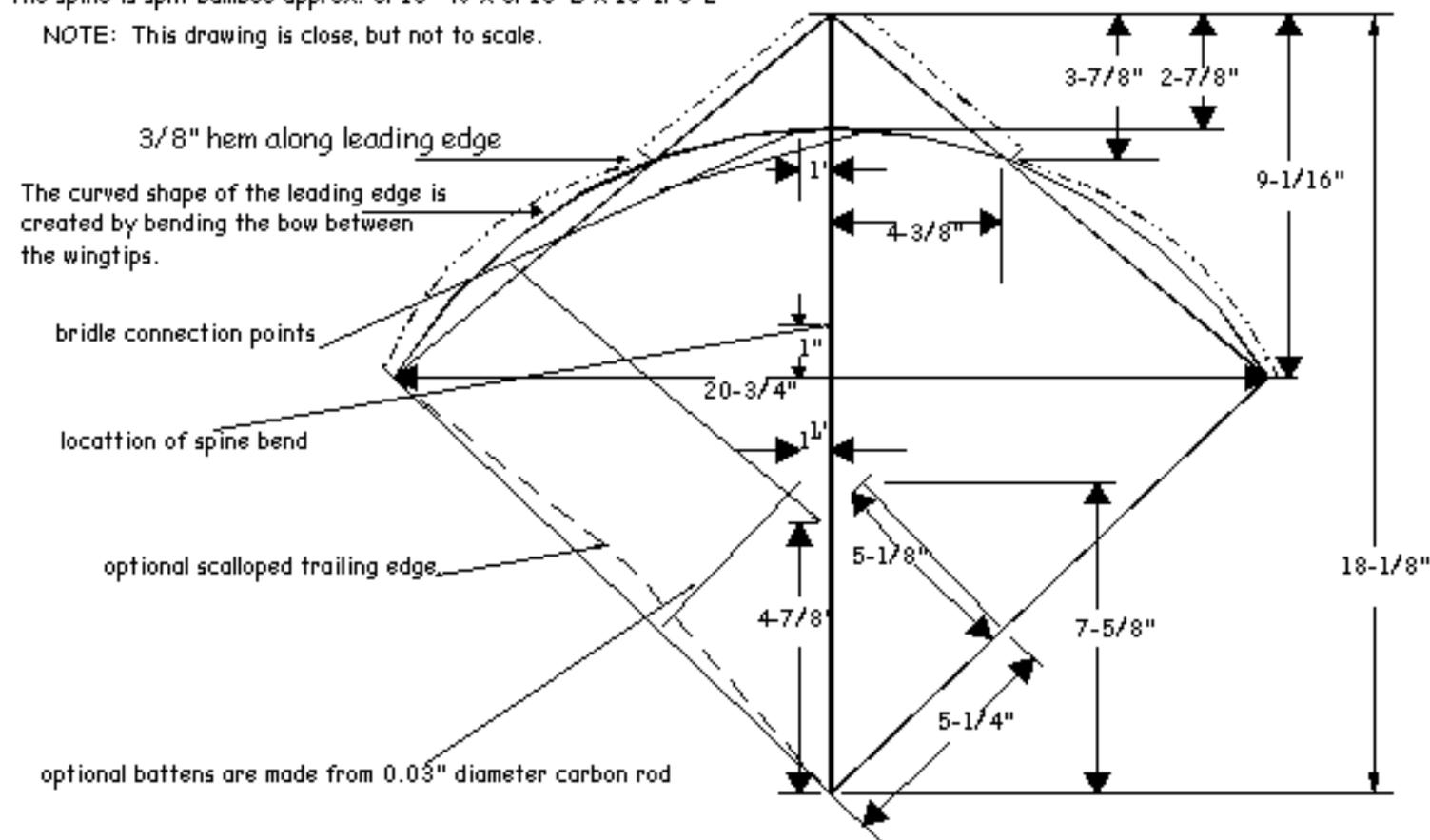
A fighter kite designed by Bruce Lambert in March 1998 [kitefighter@yahoo.com](mailto:kitefighter@yahoo.com)

This kite flies well in 3mph - 9mph winds, I usually make the skin of either Orcon or 0.7 mil plastic film gift wrap.

Bow length = 25" of 0.06" diameter carbon fiber rod

The spine is split bamboo approx.  $3/16"$  W  $\times$   $3/16"$  D  $\times$   $18-1/8"$  L

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



## "HUNTIN' DOG"

A fighter kite designed by Bruce Lambert in July 1999

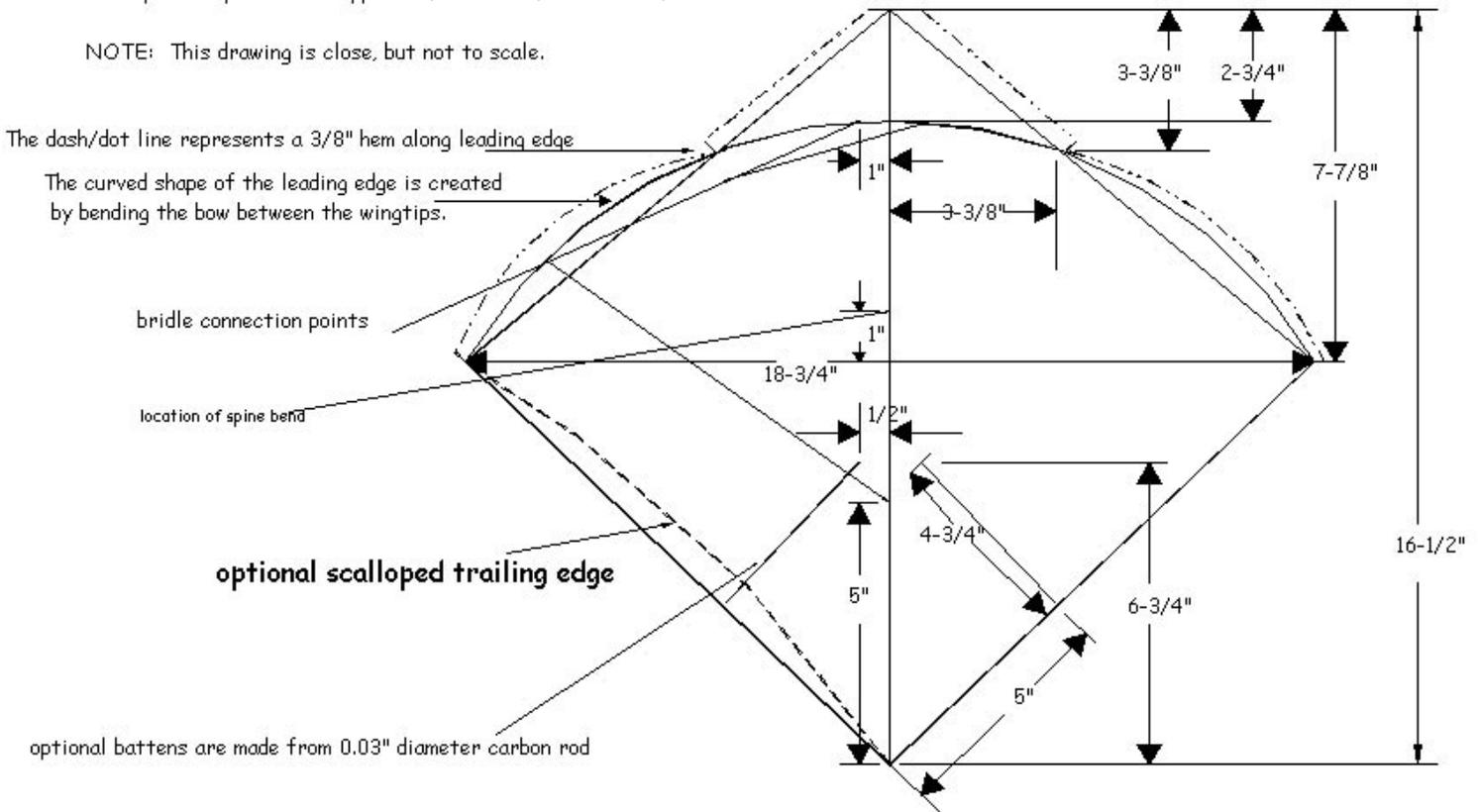
kitefighter@yahoo.com

This kite flies well in 2mph - 8mph winds. I usually 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.



## "SMALL SLY DOG"

A fighter kite designed by Bruce Lambert in April 1998

kitefighter@yahoo.com

This kite flies well in 3mph to 12mph winds, I usually make the skin of either Orcon or 0.7mil plastic film gift wrap.

Bow length = 20-1/8" of 0.05" diameter carbon fiber rod

The spine is split bamboo approx. 3/16"W x 3/32"D x 14-7/8"L.

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

