The Atlatl
Volume 17 No 1
Target Backings for the ISAC

By Lloyd Pine

The purpose of this document is to discuss several different types of target backing currently being used for the ISAC. It is hoped that this information will help contest organizers to provide suitable backings for their events. I have had a lot of help in developing this information. This is not an exhaustive list and is in no way to be considered a list of "approved" backings. There is no perfect system and any system can at times bounce a well-thrown dart for no apparent reason. Contest organizers are encouraged to come up with new and better ways of providing suitable targets for their contests.

HAY BALES

This is the traditional way of supporting targets for atlatl contests and is well liked by many. The small square bales can often be borrowed or rented rather than purchased for a contest and they do not require any equipment to handle them. Unless enough bales are available to make a self supporting pile, the bales themselves must be supported in some way. The rules require that the center of the target be between 80 and 110 cm. above ground level. This in turn requires a stack that is at least four bales high, depending on whether the bales are laid flat or on edge. Posts driven into the ground behind the bales with the bales tied to them is the usual way of supporting this stack. With 12 bales they can be stacked using two bales forming the face with a third bale perpendicular to those two to provide support.

Any target backing should be stacked to provide as smooth a face as possible for the cardboard target. Bounces are more apt to happen when the target does not fit tightly against the backing.

There is no consensus as to which part of the bale should face the throwing line. Some say that it makes no difference. Others believe that the ends are the most likely to give problems with the darts sticking. Most seem to believe that when a dart bounces off of a bale setting on edge it is due to the dart hitting one of the strings that bind the bale so they prefer laying the bales flat.

The ends of the large round bales make excellent target backing. However, these bales are so heavy that they require special equipment to handle them. For a permanent set up they can be put on a wood frame to keep them off of the ground and covered with a tarp when not in use. Under these conditions they have a very long life and could be worth the initial expense. The same can be said for the very large square bales.

THROW THROUGH TARGETS

This target system is cheap, simple, and can be quite portable. The main requirement is that the target backing be of at least two layers of cardboard glued together with the grain, or corrugations, in each layer perpendicular to each other. A single layer of cardboard is not sufficient to prevent a poorly thrown dart from passing through the target partially sideways making an elongated hole that can cut across several scoring rings. Since corrugated cardboard is not of standard strength, it may at times take three layers to prevent this problem. Four layers is usually too much and will start bouncing weakly thrown darts. The actual target can be drawn on the cardboard or the commercial cardboard target can be one of the layers.

The glued layers of cardboard need some type of support. A frame made of wood (I like 1" by 4" with edges facing the throwing line) can be designed that is portable and reasonably durable. Plastic plumbing pipe is totally unsuitable. I made a target frame of 2" pipe and it did not survive the first hit. To improve durability, the front edges of the wood frame can be covered with pieces of old garden hose.

This system has an undeserved reputation for being hard on fletching. I used a throw through target for about six years for practice and threw at it thousands of times. The two things that are hardest on darts with this system are hitting the frame and the darts hitting the ground behind the target where there are lots of rocks. At that time I was using both cane and willow darts with either plastic or goose feather fletching. I also threw a lot with some of Bill Tate's darts with plastic fletching. My theory is that the natural flexing, or yawing, of the dart makes the hole oversize enough that the fletching is not stressed very much. I don't know if turkey fletching would wear as well as goose with this target. However, a day of competition on this target should not significantly affect dart life.

SEMI-RIGID FOAM

This is a very popular backing. It is relatively cheap, portable, and wears well. The Voltec Company in Coldwater, Michigan manufactures all of the semi-rigid foam presently being used by WAA members. It is intended for use either as insulation or packing. The pieces being purchased from Dancing Bear Archery, also in Coldwater, for target backing are all seconds and vary widely in their properties. I have been told that there can even be a wide range of properties within a single piece. This poses some real problems for the purchaser. At present we have no good information to use as a guide to selecting suitable pieces. Color is definitely not a good guide. Most of the backing in use that has been acceptable has been white. However, Mark Bracken bought some white foam pieces in early 2001 that were totally unsatisfactory. Intuitively it seems like density would be a useful guide. However, there is no agreement as to whether higher or lower density is the better. This lack of consensus may be due to people basing their conclusions on experiences with backings having totally different properties.

Once the backing has been purchased and tested and found to be suitable, it needs to be cared for properly. The main thing is to store it flat and out of the light. This means either inside storage or covering it to prevent UV degradation.

The major problem with this backing is that, with wear, it can start bouncing even well thrown darts. Because the wear is centered in the middle of the target, it is mostly nines and tens that are bounced. My own personal practice target started doing this after about a year of heavy use. Changing the way the backing was supported in the target frame did not help. The bouncing started after the foam backing started to become convex toward the throwing line. Turning the backing over and throwing at the other side has relieved this problem. It is not certain that all of the different backings in use will have this problem. However, it is recommended that if a piece of foam starts to become convex from use on one side that it be turned in order to help prevent any lost throws due to the darts not sticking. A complete report of the tests that I made with my target backing can be mailed a copy to those interested.

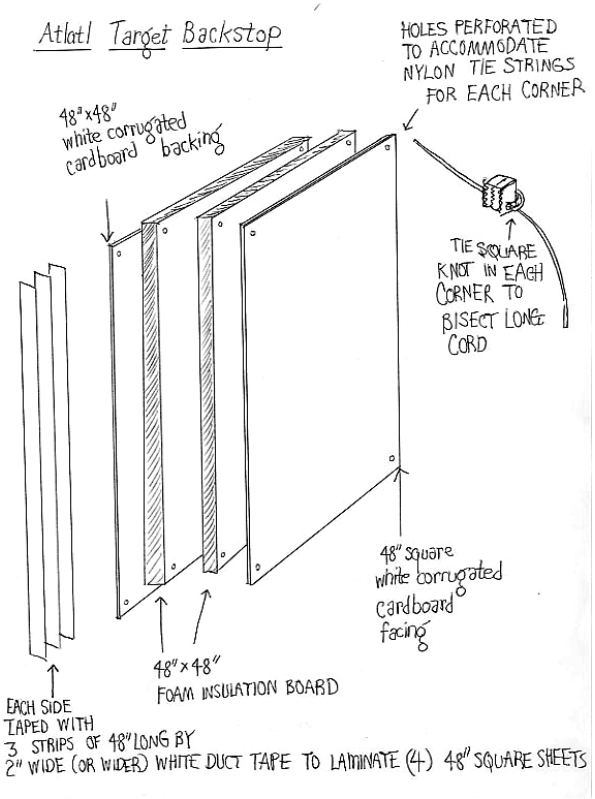
It should be emphasized that although a target drawn on the foam backing is great for practice, a target drawn or printed on cardboard must me used in formal competition. This target needs to fit tightly against the backing to minimize bounces.

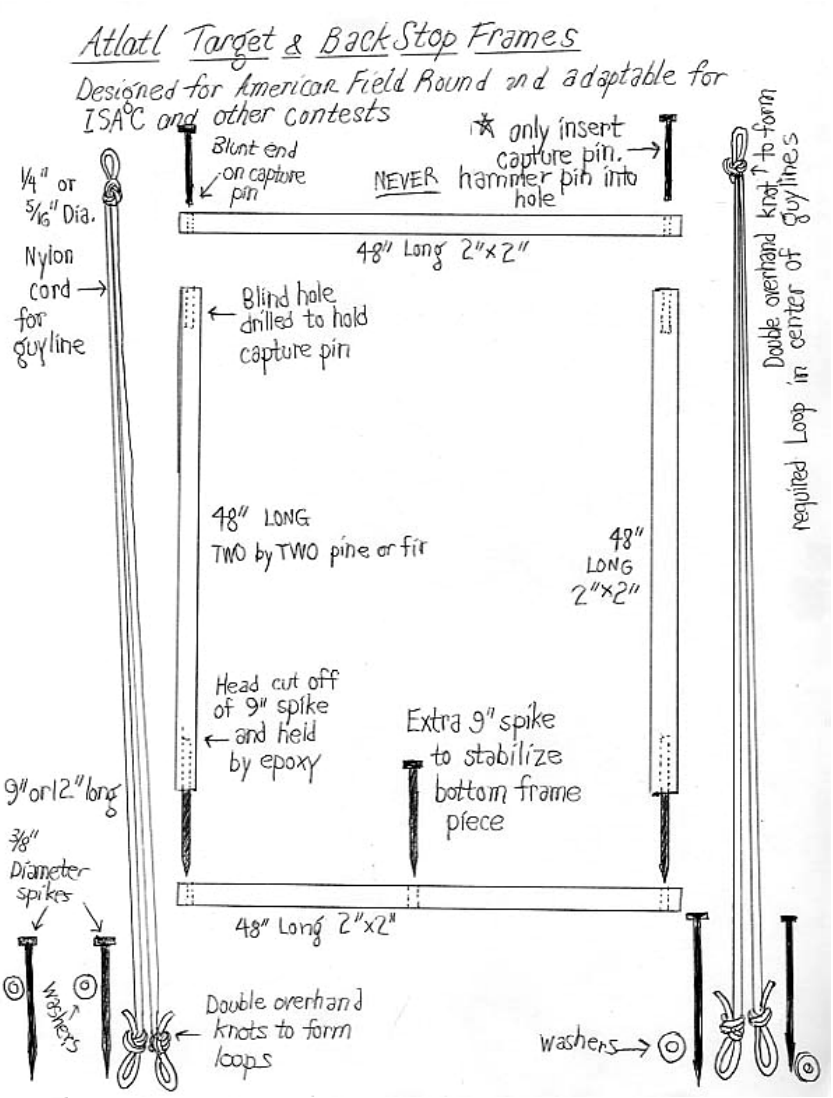
The Michigan group has a neat way of supporting this semi-rigid backing. Half inch round stock is sharpened on one end. A 1 x 4-inch piece of flat stock is welded to the round stock 12 inches above the sharpened end to form a tee. The flat stock is used to push the support into the ground by just stepping on it. The flat stock is pointed toward the throwing line and holds the foam backing off of the ground. Two three and one half-inch eyebolts are screwed into the back of the foam and slipped over the two supports to hold it firmly in place. This system is durable, easy to set up, and very portable.

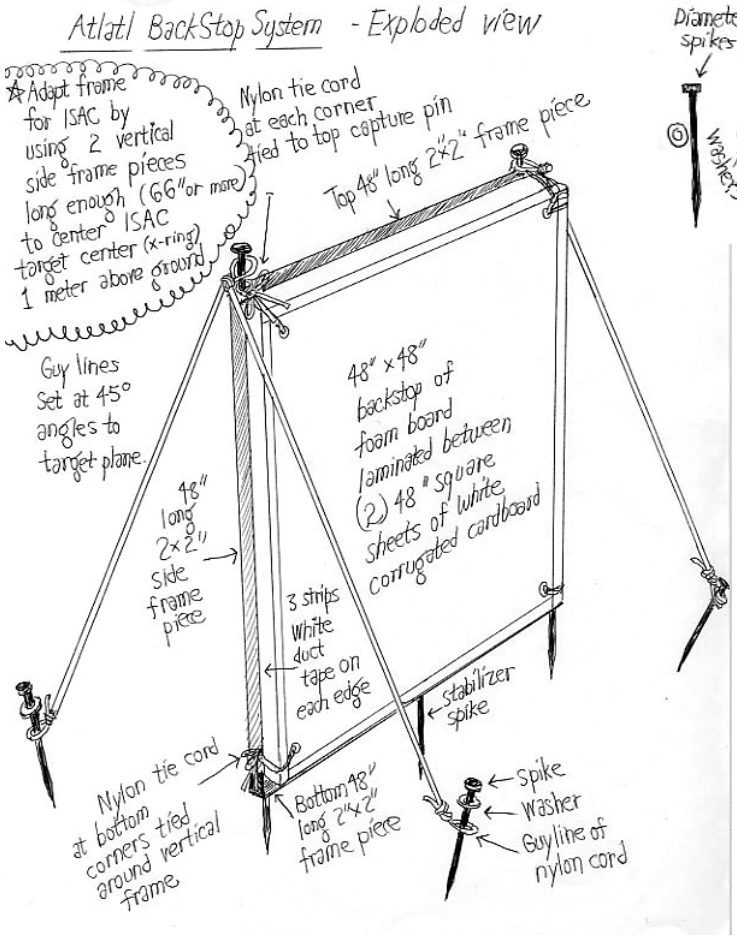
RIGID FOAM/CARDBOARD SANDWICH

This system is used by both Kim Wee and Jim Dickson and is cheap, portable, and reasonably durable. The heart of the target is 2" thick foam insulation that is sold in 4X8 ft. sheets at local building supply houses. The soft white foam made from small foam particles of polystyrene bonded together will work but is not as durable as the sealed cell foam sheets that are usually pink or blue in color. The rigid foam is glued between two pieces of cardboard with water based glue. Jim uses a water based vinyl floor glue. It is necessary to have cardboard on both front and back of the foam for the target to be durable. Jim also takes an additional step of sealing the cardboard with a clear product called Varithane to protect the target against rain. I can only buy 1" thick foam in Louisiana. I have glued two 1" pieces together to make the 2" thickness but I don't know that this is necessary. I have found that a 1" piece between two pieces of cardboard is quite durable. The key to making a good target from this material is to make sure that there is complete coverage of the glue on the foam before laying on the cardboard.

Since this is a rigid target backing it is easy to support. Ken ties the sandwich tightly between two posts driven into the ground. Jim uses a light wood frame with 16-inch legs and support braces from the top of the frame to the ground behind the target. Since there is a lot of wind in Alaska, they have eyebolts in both the legs and support braces so the target can by pinned to the ground.







Target Backings
Ken Wee, who designed the targets they use out in Colorado, drew these schematics.