

Michigan 4-H Shooting Sports

Live Fire Range Policy

Addendum 1 – Backstops

Definitions:

Backstop – a structure that will stop and contain a projectile

Projectile – an item propelled from a firearm or bow. Example: BB, Pellet, Bullet, shot or arrow.

Target Backer – a device to hold the target.

The purpose of this addendum is to provide basic information on backstops for live fire ranges for 4-H shooting sports activities. This is not to be considered as a definitive resource for constructing a range. There are several resources that should be referenced for range construction. Some of these resources will be listed at the end of this addendum.

The purpose of a backstop is to prevent the projectile from leaving the shooting range area. Typically the backstop will be a separate structure than the target backer, however in some situations they may be the same device. An example would be an archery target backer / target butt. The target butt is designed to both hold the target and to stop and contain the arrow for scoring.

Backstop construction will depend on the shooting activity. A BB gun backstop would have different design than a backstop for muzzleloading. One thing that should be kept in mind is that many existing shooting ranges may have less than desirable backstops. These ranges may have been built many years ago and have been “grandfathered” as acceptable based on the rules that applied at that time.

As a certified shooting sports instructor it will be your responsibility to decide if the range will meet your requirements. Those requirements will depend on the age

and skill level of your members. An example would be BB gun shooters, new shooters may fire off the target backer, so a backstop must be considered to prevent possible damage if shooting indoors. This should not be a problem for experienced shooters. A similar situation would exist with beginning archers. Provisions should be made for a backstop behind the target butt to contain arrows that miss the target.

Archery Target Butts/Backers

Minimum suggested size would be 48" x 48", depth will depend on the material from which the target butt is made. Commercially available 4" thick closed cell foam target butts are available, but cost may be prohibitive. Compressed cardboard 8" to 16" thick works well (reference Archery and Bowhunter Range Guidelines), however these would need to be protected from weather. Compressed foam insulation board can be used in a similar fashion to cardboard and is weather resistant.

Archery Backstop

A backstop is recommended for new shooters. This will limit the number of lost arrows and will save the time looking for them. A canvas trap hung behind the target butts will typically stop arrows that miss the mark.

Rifle Target Backers

Target backers need to securely hold the paper target. Cardboard and corrugated plastic sheets along with push pins work well. Fact Sheet 22 in the Rifle Training manual shows some different backer designs. An additional plan is included in the Resources Section of this Addendum.

Rifle Backstop (Impact Structure)

Typical outdoor rifle backstops are constructed of dirt. It is important to make sure there are no rocks, stones or other hard objects in the surface toward the firing line.

Minimum height should be at least 12 feet, some resources suggest 26 feet. The depth of the backstop will depend on the type of firearm being used, but height will also determine this dimension. The slope of the backstop is recommended to be 1 to 1, so a constructed backstop depth would be twice the height. Width of the structure should extend at least 5 feet wider than the target line on both ends of the backstop.

It is important to stress to shooters to keep the muzzle below the top of the backstop at all times. If an accidental discharge were to occur, the projectile would be contained by the backstop.

Indoor backstops for BB gun and air rifle may be constructed of compressed cardboard or foam insulation board with ¾" OSB board backing. Commercially available pellet traps would also be acceptable. Special ventilation is not a concern when shooting BB guns or air rifles indoors.

Indoor smallbore backers would be constructed of steel plate with sand in the bottom of the backer to trap the bullets. Ventilation is a serious concern with powder burning firearms on an indoor range. See the Safety Policy and Procedures document December 2014 update for Lead Contamination concerns.

Please refer to the resources below for additional information on range and backstop construction.

RESOURCES

Archery and Bowhunter Range Guidelines

<http://www.texasarchery.org/Documents/AMO/AMORangeLayout.pdf>

Department of Energy – Range Design Criteria

http://energy.gov/sites/prod/files/2013/05/f1/Range_Design_Criteria.pdf

Outdoor Shooting Ranges: Best Practices

http://files.dnr.state.mn.us/destinations/shooting_ranges/outdoor_shooting_best_practices.pdf

National Rifle Association Range Sourcebook 2012

<http://materials.nrahq.org/go/products.aspx?cat=Range%20Source%20Book>



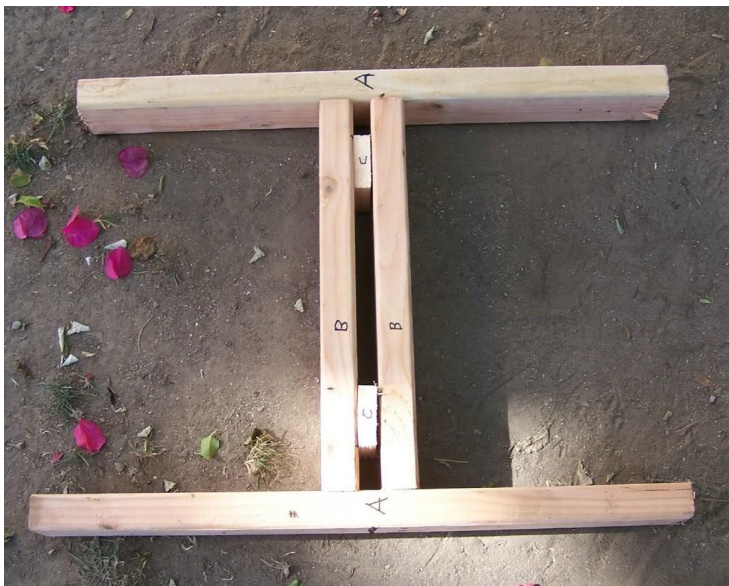
Target Backer Materials:

1 - 2" x 4" x 8 ft board cut in 24" pieces

1 - 1" x 2" x 8 ft board cut in 48" pieces

Cardboard or corrugated plastic

Nails or screws



Assemble 2 x 4 base as shown at left.

Space the "B" pieces 7/8" apart.

This will provide appropriate space for the 1 x 2 uprights to hold the cardboard.

Cardboard can be stapled to the uprights.

Variation for an indoor backer, use OSB sheet 24" x 48" with 2" foam board attached with construction adhesive.