

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE STATE OF WYOMING NATURAL RESOURCES CONSERVATION SERVICE

BIOLOGY TECHNICAL NOTE NO. 41

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To: All Field and Area Offices

From: Paul Obert, State Biologist

WATERING FACILITY WILDLIFE ESCAPE STRUCTURES

This technical note provides approved designs for wildlife escape structures in watering facilities.

Because many species of wildlife drown in watering facilities, NRCS Standard 614, Watering Facility, requires installation of a wildlife escape structure in these facilities. The first design included in this technical note was developed by [Rocky Mountain Bird Observatory](#) (RMBO) and Colorado NRCS. This design has a wire ramp on all sides, making it easier for trapped wildlife to find the escape ladder. This design is suitable for facilities with straight sides. A modification to the RMBO design is included for facilities that have an overhanging rim. The final illustration is of a prefabricated fiberglass ramp that is also suitable for meeting the 614 Standard.

Additional information about wildlife-safe watering facilities can be obtained at [Bat Conservation International](#). Their publication [Water for Wildlife](#) includes designs and instructions for the construction of inexpensive and effective wildlife escape structures along with fencing and bracing methods that enhance wildlife access while meeting livestock management objectives. Designs contained in these references can also be used to meet the Wyoming NRCS Watering Facility (614) Standard.

The RMBO design is superior to designs that consist of a flat ramp with open sides. The open-sided design often results in trapped wildlife swimming in circles around the perimeter of the tank, passing underneath the ladder until exhausted, then drowning. **These types of open sided escape structures do not meet the intent of the 614 Standard.** In addition to designs, the Water for Wildlife publication link illustrates structures that work and those which do not.

Websites:

RMBO – www.rmbo.org/

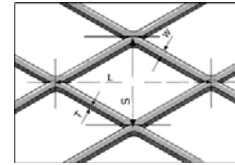
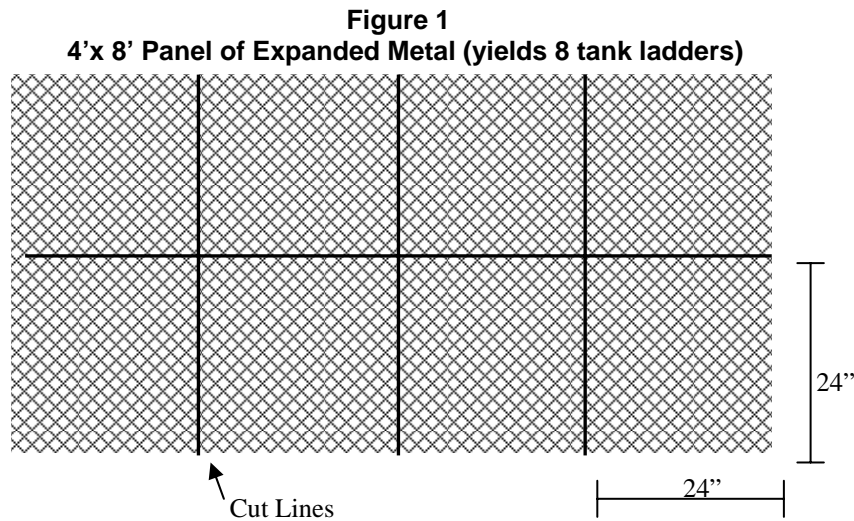
Bat Conservation International – www.batcon.org

Water for Wildlife - A Handbook for Ranchers and Range Managers –
www.batcon.org/news2/pdf/bciwaterforwildlife.pdf

(Depending on your version of Adobe Acrobat, document may not open.
Type address directly into browser to access publication.)

Straight Sided Stock Tank Escape Ladder Design

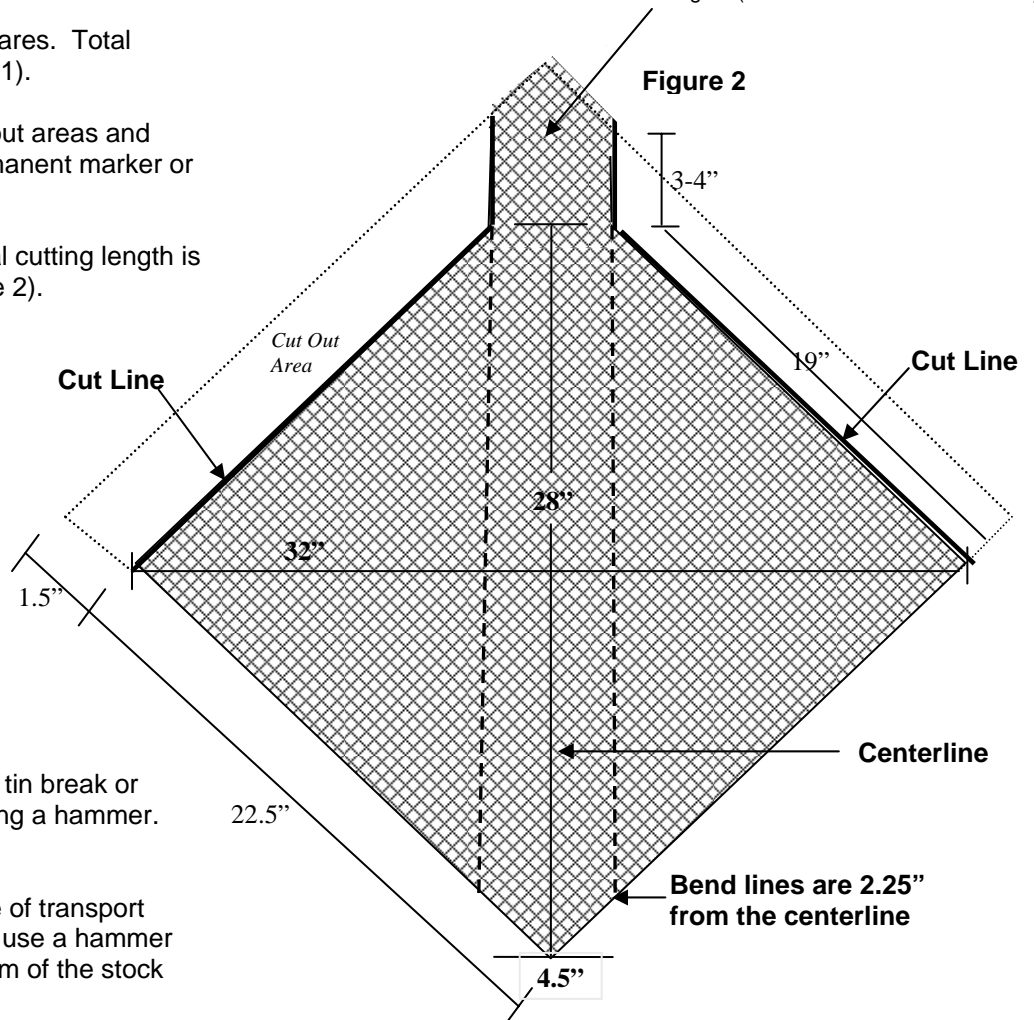
Materials: 10 -14 gauge, flattened or regular, expanded metal. Recommend flattened expanded metal $\frac{3}{4}$ " - #9. The design is somewhat diamond-shaped. The front ramp is 4.5" wide and 28" long which will touch the bottom of a 24" deep stock tank. The wings are bent down to a 45-degree angle and should touch the vertical wall of the tank. The top hook can be bent around the rim of either a metal or tire tank.



This design can be modified to fit under the rim on rubber tire tanks so wildlife won't swim behind and underneath the ladder. See Figure 3 below.

Tank Hook
(Cut straight across or leave for additional hook length)
Hook Alternative Design: use two $\frac{3}{16}$ " rods to form the hangers (as shown in the Photo 1 below)

- 1] Torch cut eight 24"x24" squares. Total cutting length is 20' (Figure 1).
- 2] Make a template of the cutout areas and mark the cut lines with permanent marker or soapstone.
- 3] Torch cut the cut lines. Total cutting length is about 46" per ladder (Figure 2).



- 4] Mark the bend lines. Use a tin break or bend over a metal edge using a hammer. Bend at a 45° angle.
- 5] Leave the hook flat for ease of transport and storage. At installation, use a hammer to bend the hook over the rim of the stock tank.
- 6] Paint with a rust resistant, **non-toxic** neutral color. 2 coats.

Photo 1: Installed Ladder



Figure 3

EXPANDED METAL RAMP MODIFICATION FOR TIRE TANKS WITH RIMS

Notch material to enable top end of ramp to go over tire rim and allow ramp to fit against inside of tire wall.

Bend downward at lines

Flatten top edge of ramp on tire rim and secure with a bolt or screw.

tire

ramp

We expect that the length of the notch should be approximately equal to the depth of the rim.



Need:

- Generator
- Reciprocating saw
- Drill with bit and hex head bit
- 1/4" X 2" hex head screws with
- 1/4" X 1 1/2" fender washers
- Pre-drill and attach with hardware

**Field Application
for
Fiberglass ramps
in
Rubber tire tanks**



Caution for cutting fiberglass:

- Use a respirator
- Eye Protection
- Wear long sleeves
- Wear leather gloves
- more information can be found at www.osha.gov



Close-up of hardware

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Field Application for Expanded metal ramps

Needs for rubber tire tank:

- Generator
- Drill with bit and hex head bit
- $\frac{1}{4}$ " X 2" hex head screws with
- $\frac{1}{4}$ " X 1 $\frac{1}{2}$ " fender washers
- Pre-drill and attach with hardware

Needs for steel tank:

- Generator
- Drill with bit
- two open or box end wrenches
- $\frac{1}{4}$ " X 2" hex head bolts with nuts and
- $\frac{1}{4}$ " X 1 $\frac{1}{2}$ " fender washers
- Pre-drill and attach with hardware

