



Construction and use of Electric Fencing to Deter Black Bears

Companion video can be viewed at <http://myfwc.com/wildlifehabitats/managed/bear/brochures/>

Electric fencing is a highly effective way to prevent bears from accessing your property and can reduce or eliminate human-bear conflicts. Farmers and ranchers have used electric fences for decades to contain livestock, and what keeps livestock in also will keep bears out. Fences are relatively easy and cost-effective to construct and are especially effective at protecting large outdoor areas that are difficult to secure otherwise, such as orchards, gardens, and livestock pens.

Electric fences are not designed to injure or kill a person or pet, but to cause momentary pain by delivering a brief electrical shock. A pulse of electricity is sent through the wire every 1 to 2 seconds, which gives the animal an opportunity to get away from the fence after the initial shock.

The following directions, specifications, and diagram (Figure 1) are modified from a design developed by L.E. Meadows and W.F. Andelt with the Colorado State University Cooperative Extension Service (MAAREC Publication 4.10 March 2004). These instructions are only to be used as a guide; be sure to follow the instructions provided with your electric fence materials. The example we use is for a 6 ft. x 6 ft. fence, so please modify the fence design to meet your needs. For example, you can replace the AC electric-powered fence charger with a solar-powered charger for areas without a power source. You can also increase from 3 to 4 strands (increasing the length of wire, number of insulators, and gate handles needed), or the size of the area you are enclosing. Keep in mind you will need to have a T-post at each corner and one T-post every 8 ft.

Tools you will need to build your fence include a wire cutter, fence post driver, and pliers.

Plan your fence carefully. Ensure that you have the correct materials in adequate amounts to protect your property (Table 1). The materials and tools you will need are typically available at your local hardware store. Be sure there are no electrical wires or pipes under the locations you intend to install your T-posts. Remember to call 811 before you dig. You will want to make the fence large enough so the items you want protected are at least 3 ft. from the electric fence.

Drive T-posts a minimum of 18 inches into the ground. If the soil is sandy or soft and wet, substitute the corner T-posts with wooden posts. Attach insulator clips and run the three strands of wire, spaced at approximately 8, 20, and 32 inches above the ground. Keep the lines tight along the T-posts as you string them to each insulator. Attach your last strand to the last insulator,

measure out an additional 2 ft. of wiring before cutting the wire. You will use this extra length of wire to connect to the fence charger. Select a corner to use as your entrance into and out of the fenced area. Cut the electric wires at this corner about 1 ft. away from the T-post.

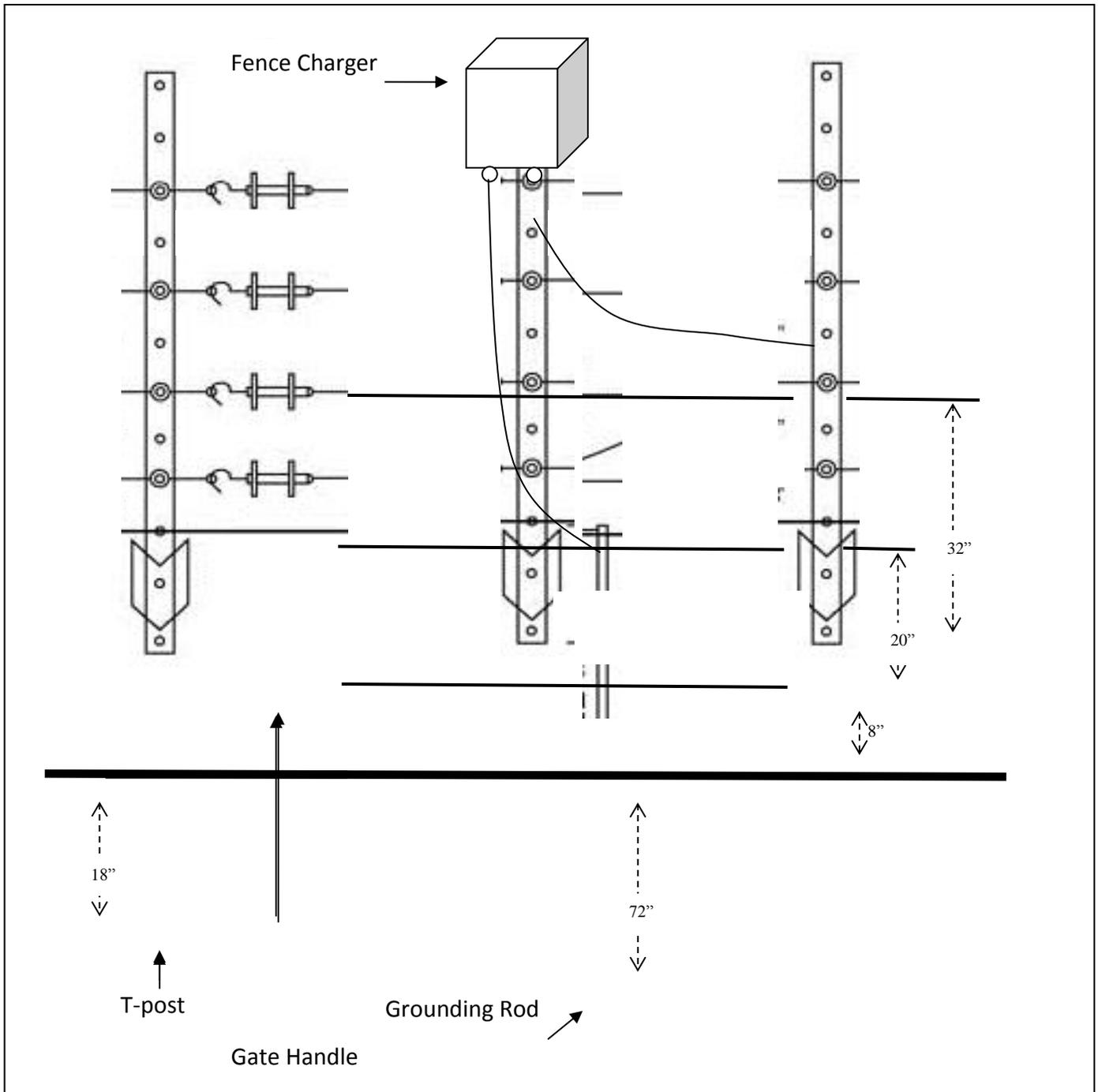


Figure 1. Diagram of a 3 strand electric fence system, modified design from MAAREC Publication 4.10 March 2004.

Loop one part of the wire to the back of the gate handle and then twist to secure. Now take the other end of the cut wire and make a loop and twist the wire to secure the loop. You will hook your gate handle into this loop.

To protect the energizer and battery from theft or damage, place them inside the fence. Drive your final T-post within the protected area near the location where you cut the additional 2 ft. of fence wire. Hang your fence charger on this T-post and attach the additional fence wire to the positive terminal on the charger. Put a 5 to 10 gallon bucket over the top of the charger to shield it from the weather. Drive the grounding rod 5.5 ft. into the ground, and connect a new length of fence wire to the ground or negative terminal of the charger to the grounding rod using the grounding clamp.

Attach warning signs and flagging on each side of the fence to make it more visible to both people and animals. In order to maintain the appropriate level of shock, keep vegetation clipped low in an 18 inch wide strip centered under the fence line and monitor the fence with a volt meter regularly. To increase the chances of a bear contacting the fence with their nose or mouth, which would deliver an optimum shock, you can bait the wire with peanut butter on aluminum foil or bacon wrapped on the wire.

Table 1. Materials and quantities necessary to construct a 6 ft x 6ft electric fence.

Material Description	Qty
AC- or solar powered fence charger (5 mile range delivering 4,000 to 5,000 volts)	1
Volt meter	1
Insulated gate handles (One per strand)	3
Feet of 14 gauge galvanized steel wire (Perimeter multiplied by # of strands)	108
5 ft steel T-posts (One per corner and every 8 ft of fence)	5
T-post insulators (One per post multiplied by # of strands)	12
6 ft x 5/8 in grounding rod	1
Grounding rod clamp	1
Warning signs	4

If using an AC-powered fence charger, run an outdoor-rated extension cord from your power source and turn the charger on. If using a solar-powered fence charger, simply turn the charger on. Check the fence with the volt meter before leaving the area. Regular maintenance to ensure the electric fence is operating properly is absolutely crucial for it to be effective.

You may need to make some changes from the electric fencing system described above if you are operating it on dry sites or during periods with little or no rain.

- One way to ensure your fence carries the appropriate level of charge on dry sites is to keep the soil around and under the grounding rod as wet as possible. This can be accomplished by watering the area regularly or by placing a 5 gallon bucket of water with a small hole in the bottom next to the grounding rod. Water will slowly leak out of the bucket into the soil, keeping it moist. Ensure the bucket has a lid to prevent attracting insects or a potential drowning hazard.
- Another option is to add at least two additional grounding rods, located 6 to 10 ft. apart from each other. Position the nearest grounding rod no more than 20 ft. from the charger.
- Finally, you can change the design above, where all wires are electrified, to an alternating system of electrified and non-electrified wires. To accomplish this, add an additional upper strand of fencing at 44 inches above the ground. Cut the wires so that each of the four wire strands are separate from one another. Connect a wire from the fence charger to the wire strands that are 8 and 32 inches above the ground. The wires at 22 and 44 inches above the ground will not be electrified, and therefore act as a ground when the animal comes in contact with them and the 'hot' wire will carry the electric charge.

This prescription for electric fence construction was developed by the Florida Wildlife Commission. More information can be found at myFWC.com.