

Electric Fence

How it works

- An electric fence is a **psychological** barrier
 - keeps farm animals in
 - wild animals out - even over long distances.
- A pulsed electric current (one pulse per second)
- Animal completes the circuit between the fence and the ground
- Short, sharp but safe shock
- Sufficiently memorable shock
- Because the electric fence is a psychological barrier, it does not require great strength to be effective.

Electric Fence

Advantages

- 50% less expensive to build
- Easily constructed
- Low maintenance (not always)
- Lightweight and portable
- Durable – due to low physical contact
- Easily modified or expanded
- Keeps animals in and predators out

Electric Fence

Uses and benefits

- Separating different groups of animals
- Allowing rationing of crops and pasture
- Fencing animals off from eroding areas, trees, rivers and roads
- Less animal hide and pelt damage
- Deterrent to trespassers and predators

Electric Fence

- Line post spacing – 50' minimum
- Don't over-tighten the wires
 - You want a **flexible system** that allows for wildlife impacts, snow loading, etc.
- Do not energize barbed wire –
 - Animals can become entangled and trapped in the barbed wire
 - If using a combination use the barbed wire as a ground

Electric Fence

- The more energized wires in a fence the less resistance to current flow and less voltage loss
- Domestic stock will take less power to control than fencing wildlife out of an area
- Voltage increases as you get farther from the energizer
This is due to what is called the "bounce effect."
 - This means that the pulse the energizer has sent down the fence reached the end and is returning back up the fence. It then meets the next pulse coming from the energizer creating a voltage spike or "bounce."
 - This means that your energizer joule rating is more than adequate for your fence load and has a surplus of energy, exactly what you want

Electric Fence

Voltage (Volts):

- Unit of measurement used to describe an amount of electrical potential, or "pressure".
- The higher the voltage, the higher the pressure.
- Required for electrical charge can find its way through the hair on the animals
- Optimal voltage range 2000 and 6000 volts.

Electric Fence

Amperage (Amps):

- Amps are a measure of the "amount" of electricity that flows through the circuit
- It is amperage, not voltage that causes the greatest amount of numbing pain when anything receives a shock.
 - High amperage melts wires when more electricity is being carried than the wire is intended to handle.
 - circuit breakers and fuses prevent excessive flow of energy (Amps)

Electric Fence

- Voltage is like cleaning your teeth with a “water pick” although uncomfortable, not life threatening.
 - Volts are high in an electric fence system
- Amps would be like cleaning your teeth with a fire hose - uncomfortable, and life threatening.
 - Amps are low in an electric fence system

Electric Fence

Watts:

- A measure of the electrical rate of doing work.
- Similar to horsepower and is calculated by the equation:
- $\text{amps} \times \text{volts} = \text{watts}$
- The term watt is not used much in discussions about energizers, but the definition of a watt is very important in understanding the next unit of measure that is often used when comparing energizers, the joule.

Electric Fence

Joule

- A measurement of energy. A joule is a unit of work equal to product one watt for one second. It is the measure of the pop, snap, shock, or kick or the pain/discomfort of the output pulse felt by the animal.
- The Joule rating is a true measure of an energizers stored energy or true power.
- Energizers recommended for predators have
> 18 Joules

Electric Fence

- Many power fence problems can be traced to inadequate grounding.
 - Grounding is $\frac{1}{2}$ of the system
- All-hot (wires) systems only in areas $>35''$ annual rainfall
- Hot/ground system
 - Every other wire hot, including top wire
 - Connect ground wires together and to ground rod(s)

Cost Comparison

Iowa State University - July 2005 (based on 1,320 ft. fence)

- **Construction costs**

- **Woven wire fence**

- TOTAL \$ 1,987
 - TOTAL PER FOOT \$ 1.51

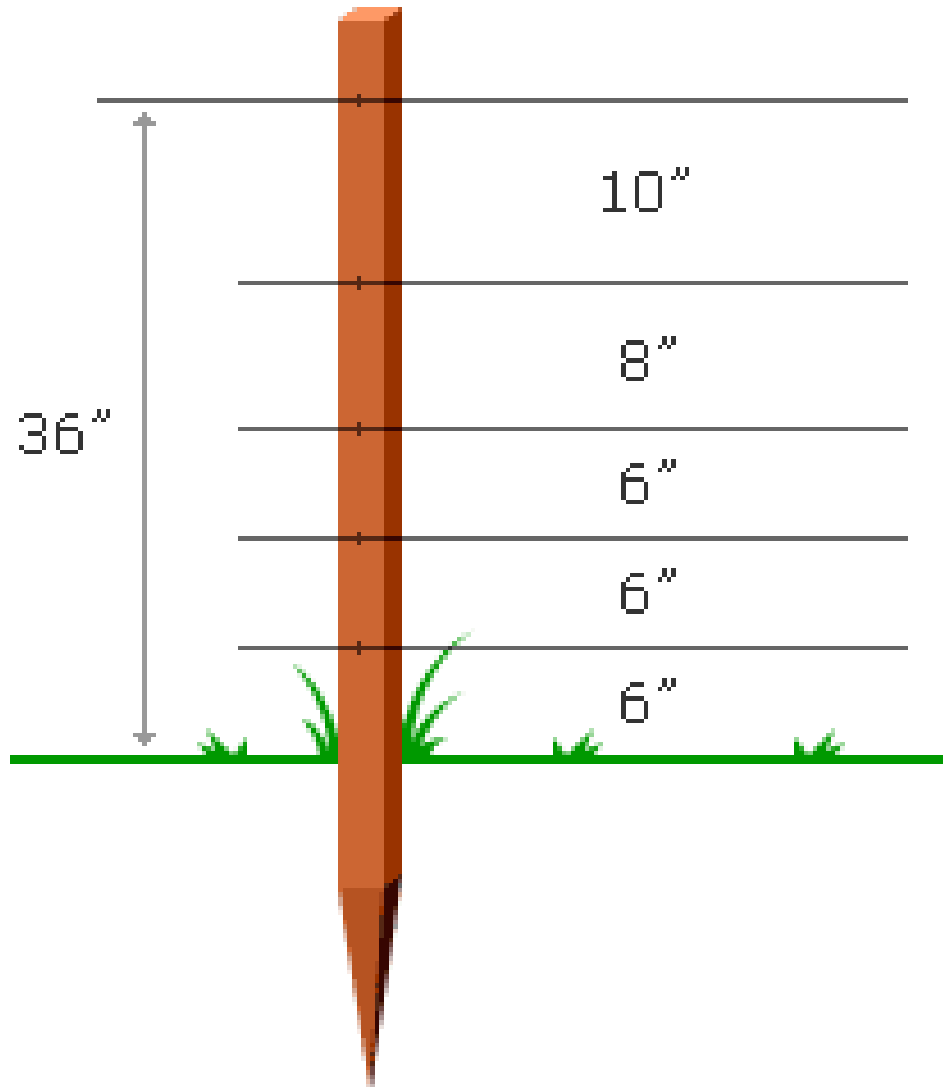
- **Barbed wire fence 5 wire**

- TOTAL \$ 1,614
 - TOTAL PER FOOT \$1.23

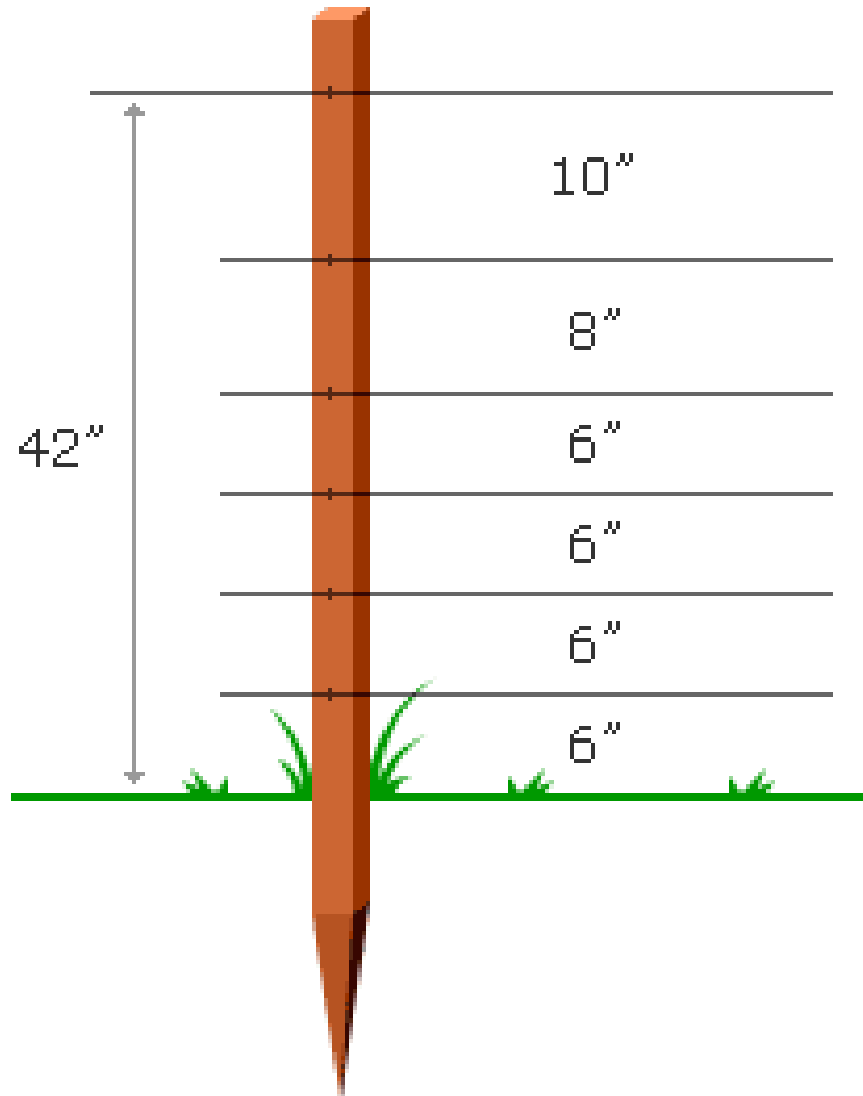
- **High-tensile electrified wire fence -5 wire**

- TOTAL \$ 927
 - TOTAL PER FOOT 0.70

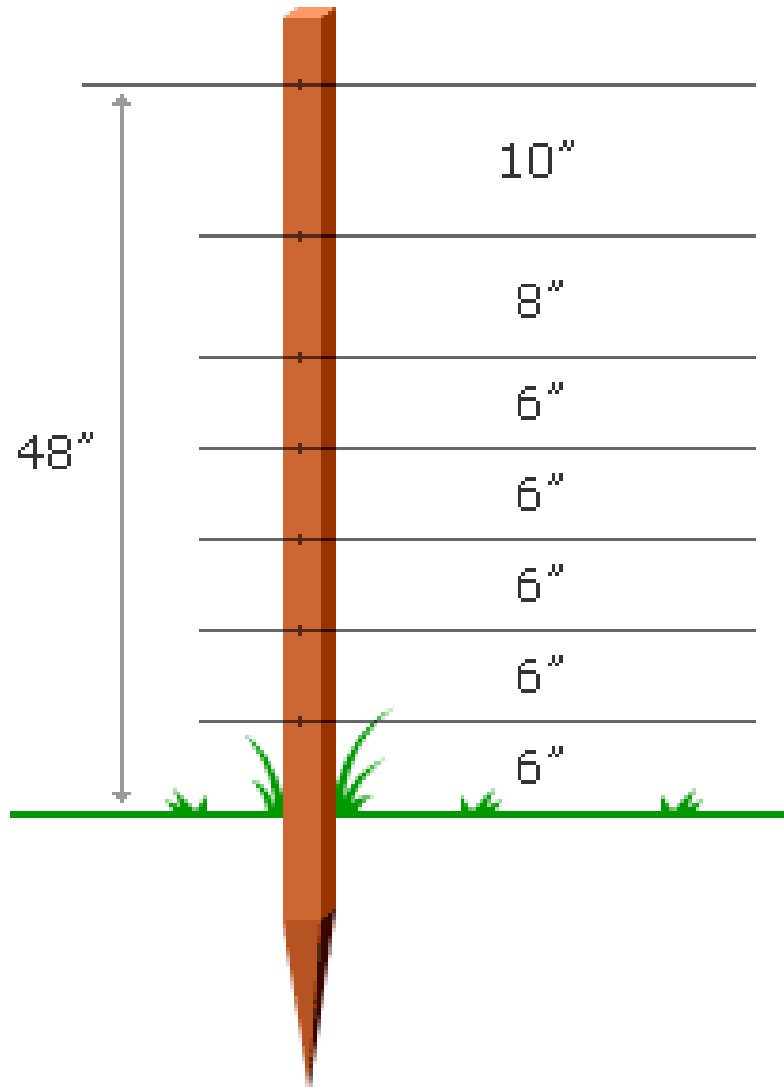
5 wire sheep and goat fence



6 wire sheep and goat fence

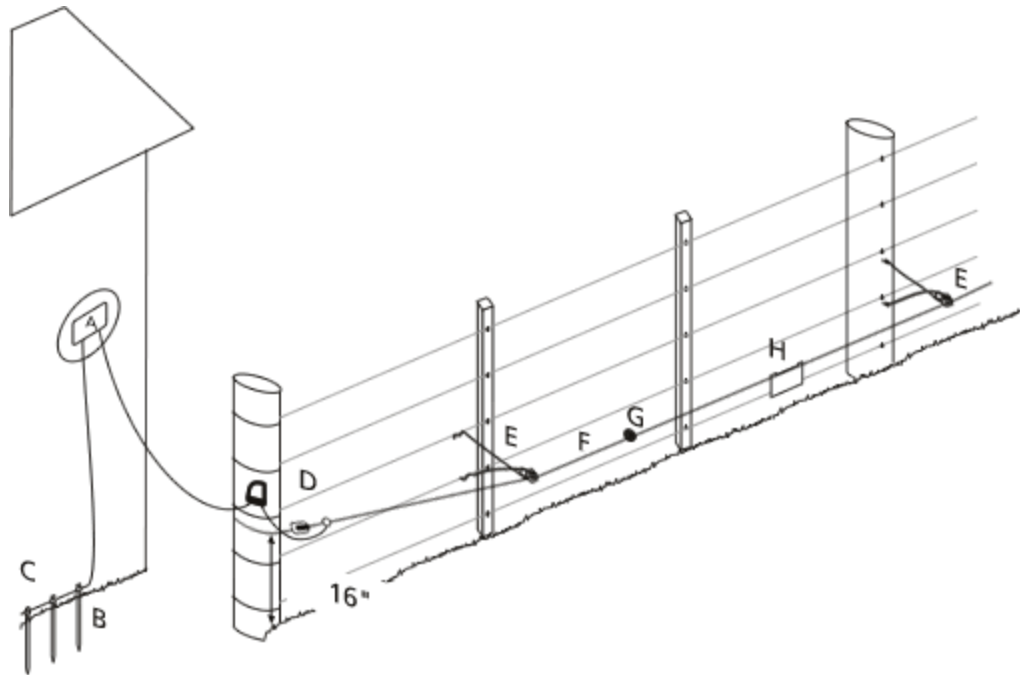


7 wire sheep and goat fence



Offset

- Height = two-thirds the height of the animal being contained

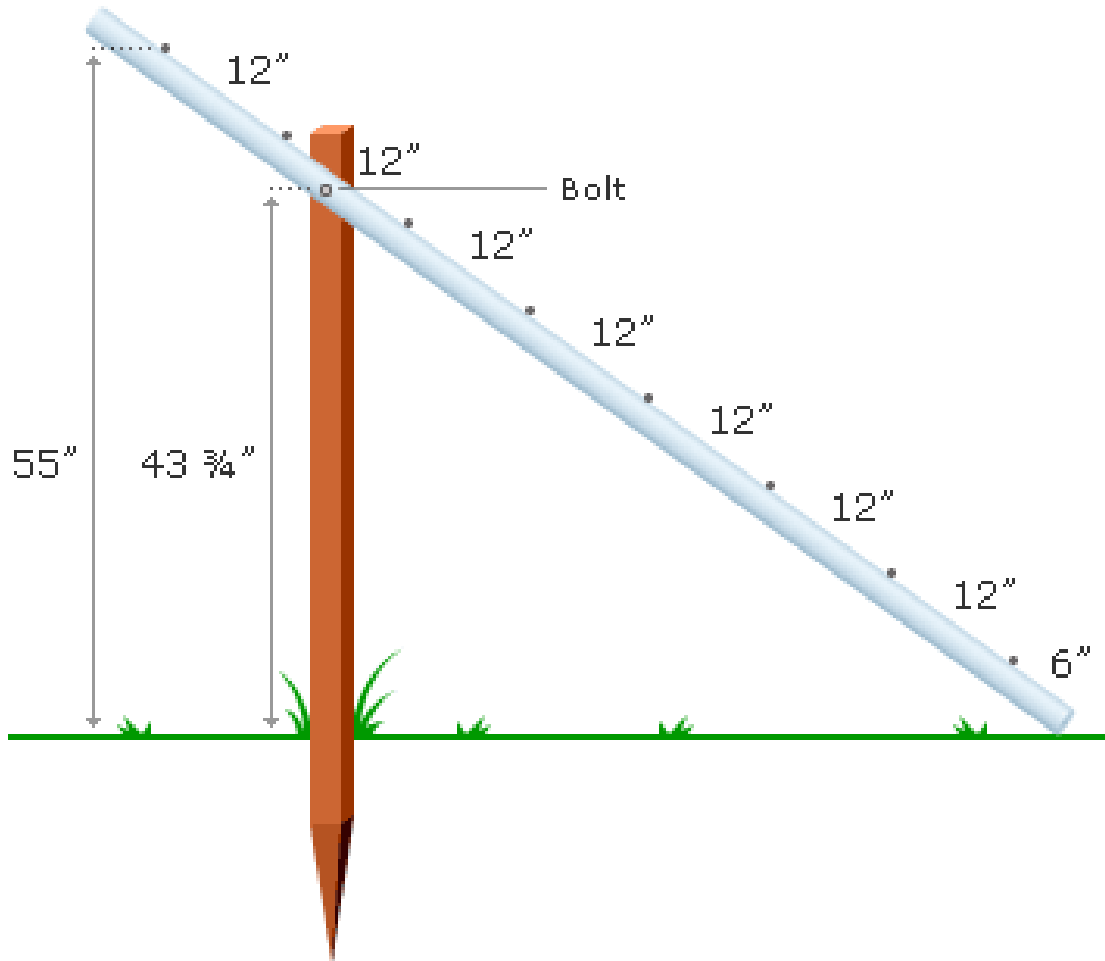


For Predators, coyotes and bobcats – 8" high and 12" out on outside of fence

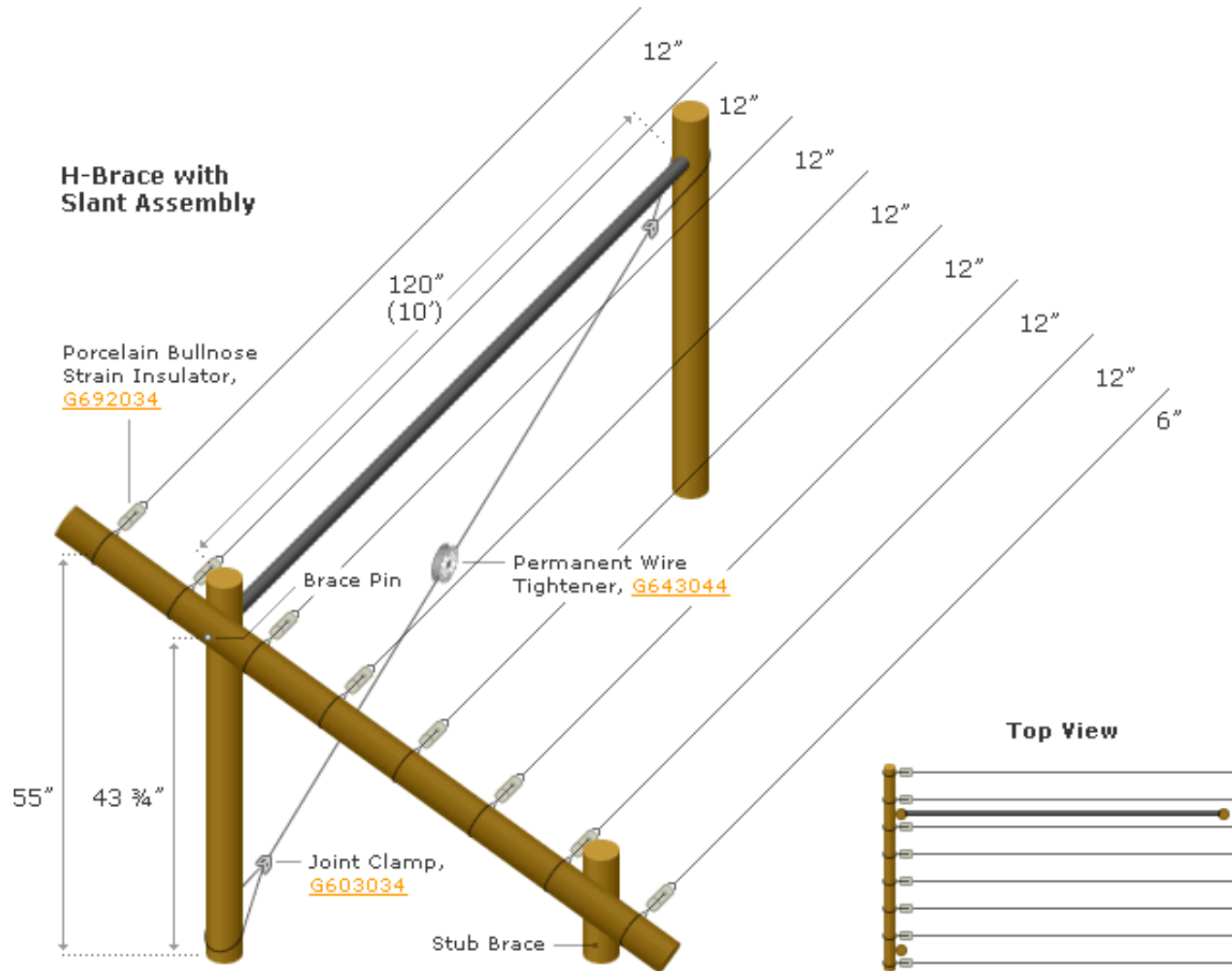
Slant Deer/Predator fence

Side View

(Deer on this side)



Slant Deer/Predator fence



Electric & Barb Wire Perimeter



11 wire high tensile elect fence

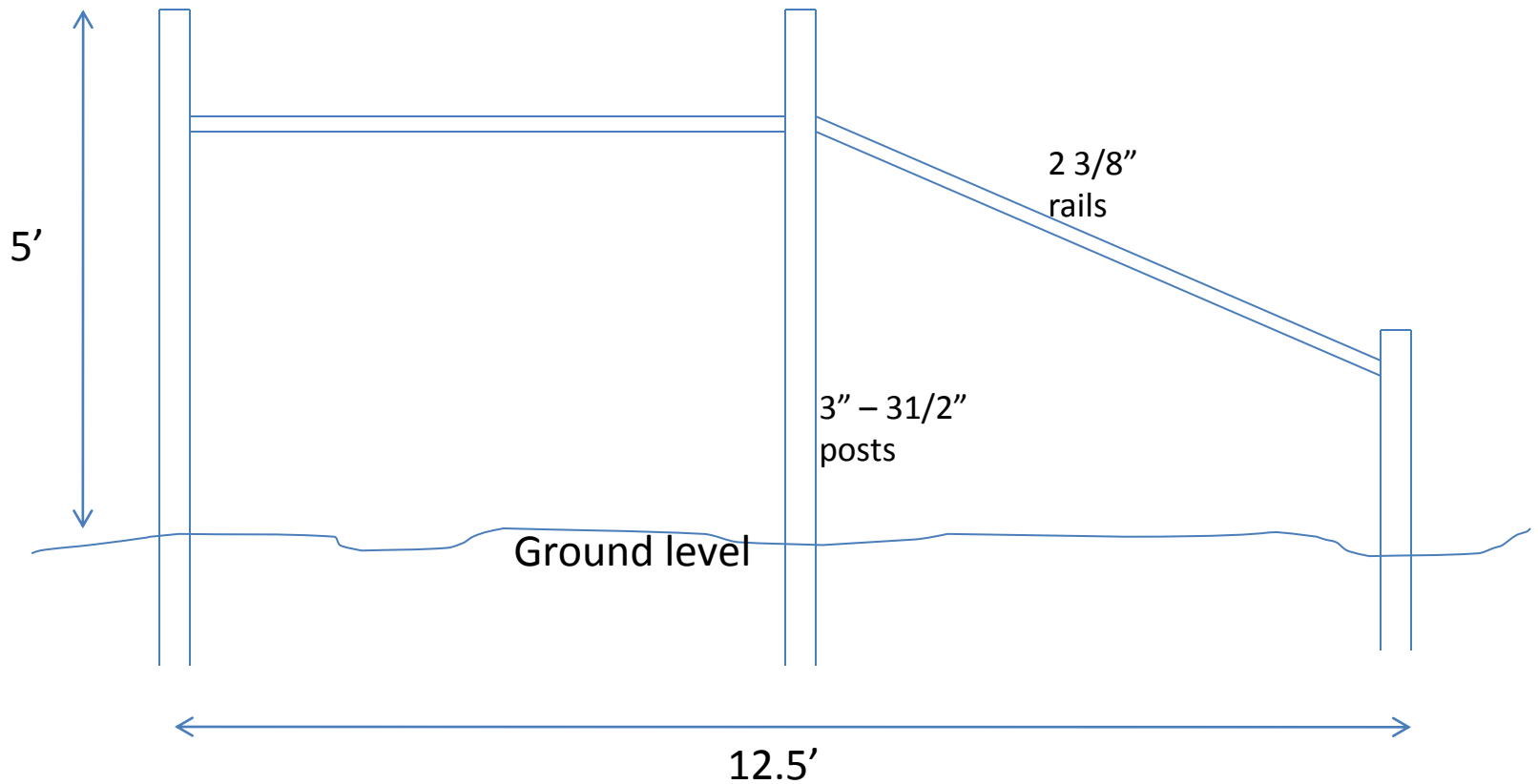


Fencing

Bracing

“Rule of thumb”

2.5 x longer than the height of the fence



Fencing

- Making a stand alone Square or Rectangular pen

$$W^2 + L^2 = \sqrt{\text{sum}}$$

Example:

$$96^2 + 105^2 = \sqrt{\text{sum}}$$

$$9216 + 11025 = \sqrt{20,241} = 142.27 \text{ diagonal length}$$

Fencing

