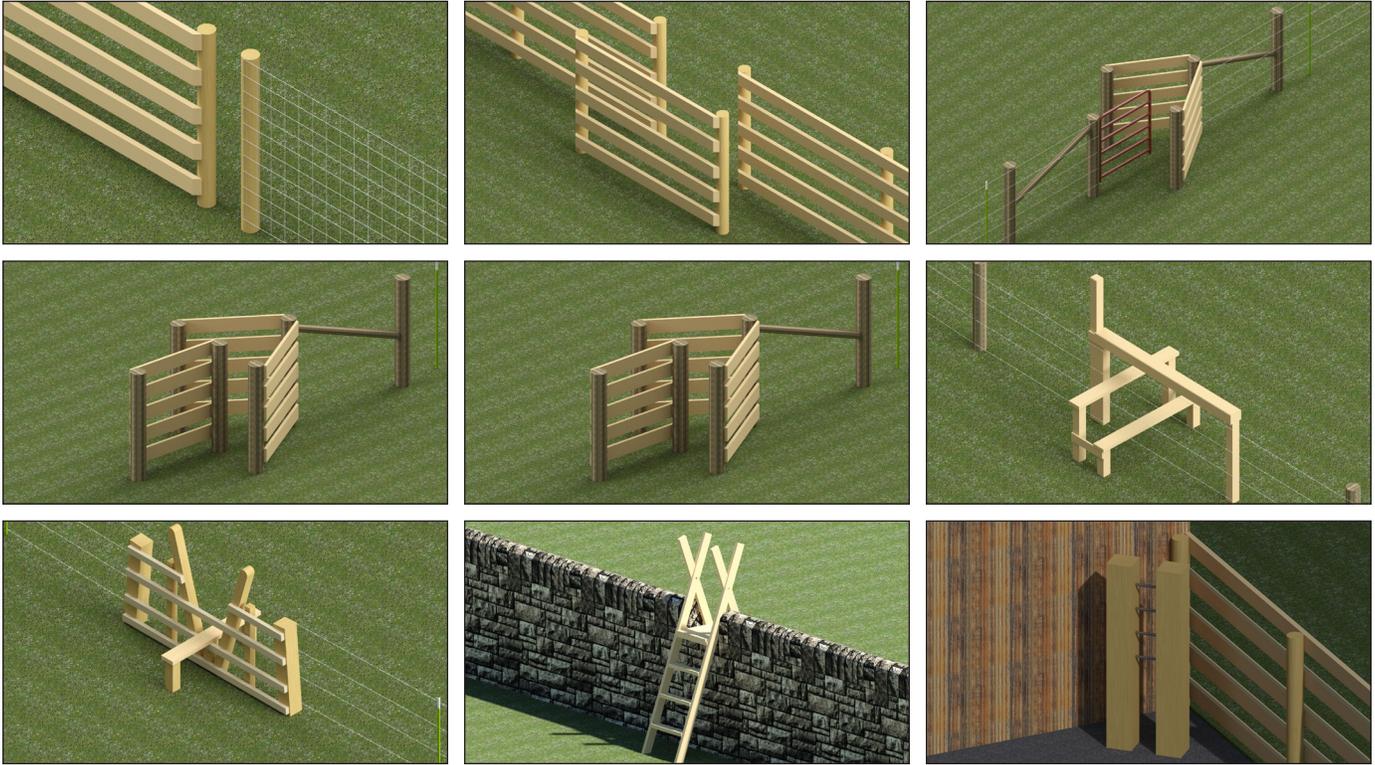


# Fence Line Stiles, Escapes, and Refuges

Steve Higgins, Lee Moser, and Michele McHugh, Biosystems and Agricultural Engineering



**Figure 1.** Stiles, escapes, and refuges aid in improving the functionality and safety of fence line crossings and livestock working, feeding, and handling areas.

Stiles, escapes, and refuges are useful tools to save steps and provide safety when working with livestock. Opening farm gates for trucks, tractors, equipment, and livestock is unavoidable. However, opening a large gate, or a set of gates, is extremely inefficient for a person on foot, especially if the entrance does not put the producer where they need to be. An inconveniently located gate can lead to additional steps and unnecessary movements. Opening gates may require dealing with clasps, chains, or ropes just to get the gate unfastened. The gate may then have to be lifted or dragged open and closed. The bottom-line is that entering a poorly installed and unmaintained gateway can make the experience of opening and closing gates a time-consuming nuisance.

The shortest distance between two points is a straight line. This is demonstrated by individuals that climb fences to cross where they need to. However, climbing a fence or gate can lead to injuries, and it will eventually compromise the integrity of the structure. Gates or openings are the most practical method of creating access from one side of an enclosure to another. A well thought out gateway, for a person, should incorporate a simple design and sturdy hardware.

Alternatives to a traditional farm gate include stiles, escapes, and refuges (Figure 1). A stile is a structure that is used to provide an individual passage through or over a fence via steps, ladders, or narrow gaps, while preventing livestock passage. These structures are invaluable time-saving tools for humans while providing protection from the animals on the other

side. For example, consider the job of feeding concentrated diets to cattle. A large stile could be placed where the producer needs to enter a feeding area with two full five-gallon buckets. At the end of the feeding trough, the producer could exit the area through a smaller stile with the empty buckets. This approach creates a natural flow of an operator and supplies to perform a routine or daily task.

When making the decision to install a stile, consider accessibility and ease of use, as stiles require a certain amount of flexibility and agility. This publication was developed to provide producers with ideas and concepts for implementing stiles to increase efficiency. The overall advantages and disadvantages are listed below along with common design examples. The drawings provided are for information purposes only.

### Advantages

- Save steps
- Save movements
- Save time
- Reduce fatigue
- Improve safety of producer

### Disadvantages

- Installation required
- Possibility of unsupervised children entering
- Possible escape of calves, smaller animals
- Periodic maintenance necessary

The most common stile design for a livestock operation is a **squeeze-through escape** (Figure 2). It consists of a narrow opening (approximately 12 to 14 inches wide) that allows a producer to squeeze through the opening by entering it sideways. This arrangement is useful for handling facilities, bull pens, feeding areas, crossing lanes, etc. This type of opening could potentially allow calves to pass, if they notice it.

An alternative escape design (the **offset escape**) is shown in Figure 3. This option is often used on horse operations to allow individuals or groups of people to pass across lanes and alleyways or into paddock areas without opening a gate or climbing a fence. It creates the appearance of a continuous fence when viewed from a distance and a functional design for producers. The offset panel's posts should be spaced an appropriate distance from the fence line to allow human passage while restricting the confined livestock's passage. The offset escape can allow many individuals the option of moving through the structure as it provides exits to the left and right; however, livestock cannot make the transition through the opening or the turn. A modification of the dimensions and the materials to solid walls creates a bull escape, which can be found in livestock arenas.

Figure 4 shows a **kissing gate**, which is a popular model. Options for this design include the ability to latch the gate on either post or swing freely between them. A spinoff from this is the **livestock exclusion escape** shown in Figure 5, which does not utilize a swinging gate but rather incorporates the concept of animals not being able to make the turn, while still allowing the producer to pass.

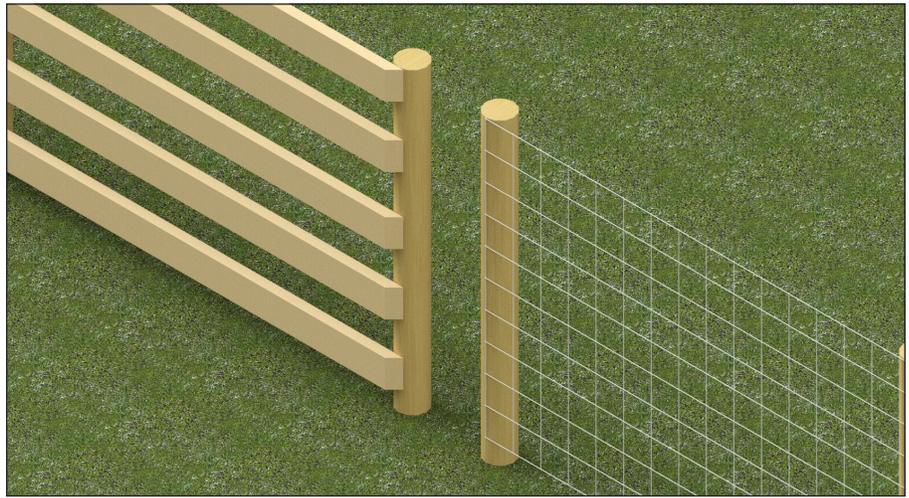


Figure 2. Squeeze-through escape.



Figure 3. An offset escape allows human passage while restricting livestock.



Figure 4. A kissing gate stile, which can be modified to make it handicap accessible.

Some stile designs require climbing or stepping up but include handrails to provide support for individuals. The first option is a **three-step post stile** (Figure 6). This simple design is three steps that cross over the fence with a hand post for balance. Steps can be placed squarely (as shown) or in a cross pattern forming an x through the fence. Steps that are parallel to each other and perpendicular to the fence are preferred. This design option has a crossbeam to provide a seat on top of the fence line, which allows the individual to sit as they transition over the fence and pass their legs over the fence while pivoting.

Another option for crossing a fence is to install a **stepladder stile**. These stiles can be either a V-shape (Figure 7) or an A-shape stepladder that straddles the fence (Figure 8). The stepladder design eliminates the need to swing your leg over the fence, making crossing easier for those who are less agile. The ladder is relatively simple; it consists of two posts that reach above the top of the fence with beams connecting the two to form a ladder. Ladders are positioned on both sides of the fence to allow for climbing up and down both sides. These stiles can be either permanent or portable structures.

A **corner of pen refuge** is a defensive structure used in a bullpen or similar livestock confinement area to protect people from injury (Figure 9) by allowing them to retreat behind it in case of an emergency. It uses dimensions and design concepts similar to a stile, but its designed purpose is to create a safe spot for a producer in the event of an injury or during an interaction with an out-of-control animal.

Stiles, escapes, and refuges are tools for creating functional designs and efficient operations. Any implemented project should accomplish the purpose for which it was built. The design should include functionality, reliability, usability, and proficiency. Location and access, as well as shapes and dimensions, will play a critical role in whether a structure meets its desired purpose.

Variables such as the size of what needs to pass through the gate versus the size of what needs to be contained plays a critical role in determining stile choice and design. Several additional design elements should be considered. If there



**Figure 5.** Livestock exclusion escape. Humans can make the sharp turn to enter and exit an area, but livestock cannot.



**Figure 6.** A three-step post stile can be useful for crossing wire fence lines mid-run.



**Figure 7.** A V-shape step stile offers an easier option for mobility limited producers to cross a fence line.

is an electric fence where the stile is being installed, place insulated tubing around the wire for at least one meter from the stile in order to prevent electric shock. Barbed wire can also create a hazard. Straining posts may have wire that can catch clothing. These problems can be avoided by enclosing the wire around the stile or adding a new post. During wet conditions, slipping may be an issue. To prevent this, some have suggested inserting staples into the wood steps for added grip. The addition of a coarsely textured surface within the design may be beneficial to prevent slip and fall injuries. Livestock that are capable of climbing may present an issue with ladder stiles. Dog gates may be replaced with ladder and step stiles to allow dogs to cross as well. This is usually a paddle held in place with brackets between posts that can be lifted when the animal needs to get through. This will eliminate the need to lift and carry the dog across the fence, thus removing any additional risks.

Stiles, escapes, and refuges should be considered to improve access, efficiency, and safety. Several designs and drawings have been presented in this document for your consideration. Contact your local Cooperative Extension or conservation district office for more information on integrating stiles, escapes, and refuges into the design of your farm.

*Illustrations created by James Ash*



**Figure 8.** An A-shape ladder stile can be added to existing runs of stone fence to preserve the integrity of the stonework and improve access to adjacent areas.



**Figure 9.** A corner of pen refuge can serve as a defensive structure for a producer in a livestock confinement area in the case of an emergency.