

# Handling Facilities for Beef Cattle

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*Practical, efficient and safe facilities for handling cattle are a vital part of any Angus operation. Regardless of the operation's size or nature, a carefully designed and properly built corral system can reduce stress on cattle as well as save time, energy and money.*

*Planning and design are important factors in building new facilities or modifying existing ones. A little forethought can ensure that each feature suits its function—and a little cow-psychology never hurts.*

*Donald C. Rains offers some basic points to consider when designing handling facilities in the following article, which was prepared as a talk for the February Combelt Cow/Calf Conference held in Ottumwa, Iowa.*

There are several factors to take into consideration when planning a cattle-sorting pen system. The first thing I like to do is to visit with the client to learn what kind of system he thinks he wants and what he expects it to do for him. Sometimes the personal prejudices and preferences of the client have to be designed into the layout even if they are bad.

First make a scale drawing which shows all of the limitations on the design. This drawing must show existing fences, water

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lines, buildings, etc., which will have an effect on the layout. For example, a processing area may have to be built inside an existing building.

When choosing a location for a cattle handling area, it is best to locate it so that cattle going to the loading chute do not have to walk past the processing area. Cattle remember the unpleasant and painful experiences they have there and will sometimes balk and refuse to walk towards the processing area when being driven to the loading chute.

## How Cattle See

It is much easier to design a good cattle processing area if you understand how the animals see and hear the world around them. Cattle have black and white vision (the world looks like black and white television to them). They also have 360-degree wide-angle

panoramic vision which enables them to see all around themselves without turning their heads. (Prince 1970). A steer standing in a crowding pen can see other cattle and people behind him without turning his head.

Cattle also have little ability to perceive depth and it is difficult for them to judge distances. These facts about the vision of cattle help to explain why they are often balky and skittish.

## Shadows and Bright Spots

The best kind of lighting for a cattle handling facility is even and diffuse. Bright spots and shadows in alleys and crowding pens will spook cattle and cause them to balk. When laying out the work area, make sure cattle moving through the facility will not be looking into the sun when they enter the squeeze. This same rule also applies to loading ramps.

A solid roof over a work area is often better than a sunshade since gaps between panels in the sunshade create bright stripes of sunlight across pens and alleys. Anything which makes a grid or striped pattern that cattle can see should be avoided. Never put a drain in a crowding pen or alley where cat-

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tle will be required to walk over it. The grid pattern of a drain grill will spook cattle and they will refuse to walk across it unless forcefully driven.

When a work area is built inside a building, cattle will sometimes spook as they enter the shadow cast by the roof of the building. To help prevent this problem, solid fence sections should be extended out beyond the roof edge. Use of open pipe or board fencing outside the building is a common mistake. When cattle have to cross a shadow, they need the security of solid walls.

## Visibility of Fencing

Fencing should have enough substance so that cattle will see it and not try to run through it. When they are being driven, cattle will often ram fences made from ca-

**TABLE I**  
**DIMENSIONS FOR BEEF CATTLE CORRALS**  
**AND WORKING FACILITIES**

	Less than 600 lb.	600- 1,200 lb.	Over 1,200 lb.*
<b>Holding Area</b> (square feet per animal)	14	17	20
<b>Working Chute w/Vertical Sides</b>			
Width (inches)	18	22	26
Desirable Length (minimum feet)	20	20	20
<b>Working Chute w/Sloping Sides</b>			
Width at bottom (inches)	15	15	16
Width at top (inches)	20	24	26
Desirable Length (minimum feet)	20	20	20
<b>Working Chute Fence</b>			
Recommended Minimum Height (inches)	45	60	60
Depth of Posts in Ground (inches)	30	30	30
<b>Corral Fence</b>			
Recommended Height (inches)	60	60	60
Depth of Posts in Ground (inches)	30	30	30
<b>Loading Chute</b>			
Width (inches)	26	26	26-30
Length (minimum inches)	12	12	12
Rise (inches per foot)	3½	3½	3½
Ramp Height (inches) for:			
Gooseneck Trailer	15		
Pickup Truck	28		
Van Type Truck	40		
Tractor-Trailer	48		
Double Deck	100		

\*Cow-Calf operations should utilize dimensions for over 1,200 lb.



and other relatively invisible materials; many cattle injure themselves by ramming into fences. Although installing solid fencing in all cattle sorting and working areas is too expensive, the installation of a single row of planks along a fence will help alleviate this problem. The planks enable cattle to see the fence.

#### Visibility Through Gates

Sliding doors should be constructed so that cattle can see through them when they are closed. This will alleviate many balking problems, especially in the crowding pens

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near the leadup alley. Cattle will often balk and refuse to enter the crowding pen when a solid sliding door is closed. The gates, therefore, should be covered with heavy expanded steel mesh or constructed from closely spaced bars.

The tailgate of the squeeze chute should also be constructed so that the cattle can see through it. If an animal is able to see the animal in front of him leaving the squeeze chute, he will enter the chute more easily.

Dodge gates in front of the squeeze chute are useful for sorting cattle, but they will increase the incidence of balking. To minimize balking, animals should have a clear view through the squeeze chute. Long dodge gates are best because they do not restrict the animal's vision as much.

The benefits of being able to sort cattle as they go through the squeeze chute must be weighed against the liability of increased balking. Dodge gates are very useful in hospital areas. However, in high-speed cattle processing areas they are more often a liability than an asset. Only install a dodge gate in a sorting area if you are sure it will be used.

#### The Noise Factor

Loud noises and clanging metal scare cattle—in fact, high frequency noises and the sound of cracking whips actually hurts their ears (McFarland 1973). Any step which the processing area designer can take to reduce noise will help prevent problems with balky, frightened cattle.

Clanging and banging noises can be a serious problem when one-way or anti-backup gates are improperly installed. One-way gates should be counterbalanced so they will not clang after cattle go through them. A one-way gate which closes with a clang will scare the next animal in line, and he will not go through.

Hydraulic pumps and motors should be installed away from the work area if possible. If the hydraulic pump and motor has to be mounted on the chute, use components which will minimize noise.

#### Lead-Up Alley Construction

Alleys leading up to the squeeze chute should have high solid sides. If cattle can see through or over the top of alley sides, they are more likely to become distracted and frightened by people and objects outside the alley. To minimize balking problems, alley sides should be at least five feet high. Animals should only be able to see the place where they are supposed to go—the effect is similar to putting blinders on a horse.

In facilities where many different sizes of cattle must be handled, V-shaped alley sides work well. All interior surfaces of lead-up alleys and crowding pens should be smooth to prevent bruises, hide snagging and other injuries.

In the ideal working area, everything should be designed with gentle curves with no 90 or 180-degree turns. Since often this is not possible, working areas should be designed to minimize the problems associated with sharp turns.

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A straight run of lead-up alley between the crowding pen and the squeeze chute should never exceed 25 feet. Cattle will look down the alley, see the squeeze chute and then bunch up in the rear of the alley because they tend to be afraid of the squeeze. Adding one-way gates and sliding doors will alleviate this problem somewhat in existing facilities, but a long, straight lead-up alley should never be designed into new facilities.

The best lead-up alleys are either curved or have at least a 15-degree bend in them. The bend prevents the cattle from seeing the squeeze chute until they are almost in it.

To reduce balking problems, an animal must have room to straighten its body before entering the squeeze chute. A 10-foot length of straight lead-up alley should be constructed immediately behind the squeeze chute. This straight section of alley allows the animal to enter the chute more easily and helps to prevent injuries.

#### Crowding Pen Design

All crowding pen fences should also be at least five feet high and solid to prevent cattle from seeing out or looking over the top. The solid sections of fence should extend at least eight feet beyond the last crowding gate. In long crowding pens, restrictions are often helpful. Restrictions are narrow areas

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built into the crowding pen which make it easier for the drover to close a crowding gate behind a group of cattle. Since a restriction creates a pocket which prevents a gate from pinning the drover against the side of the pen, it also increases the safety of the processing area.

The area where the crowding pen joins the lead-up alley can be a trouble spot. Cattle will bunch and jam at this point unless the transition between the crowding pen and the alley is gradual.

Compromise will often have to be made in this area due to space and budget limitations. The asset of a larger capacity crowding pen must be balanced against the liability of cattle balking at the entrance to the alley.

### Ratchet Gates

Ratchet gates swing around a central pivot and lock automatically as the gate is advanced. A processing area where the cattle have to make a 180-degree turn should always include a ratchet gate to force them around the corner. Ratchet gates are desirable to facilitate the smooth flow of cattle around 90 and 180-degree turns in processing areas, and to force cattle into lead-up alleys.

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In most instances, ratchet gates less than 12 feet long are seldom useful, except in areas where small calves are handled exclusively. The radius formed by short ratchet gates is too small to form a large enough crowding pen. For instance, a layout made with six-foot ratchet gates allows only three 600-lb. steers in the crowding pen and is not very practical.

The position of a ratchet gate in the processing area is very important. When fully closed, a ratchet gate should not make a pocket for cattle to hide in. Cattle will face with their noses into the pocket and then it is difficult to make them enter the lead-up alley. Sometimes compromises will have to be made on this design as well.

### Holding Pens

Holding pens can make or break the handling facility. If too small, they cause the producer to do a lot of cattle moving. In general, holding pens should be designed to hold the number of cattle to be handled from one pasture, feedlot pen or typical group. For example, a producer with 50 cows per pasture or group should plan one pen to hold 50 cows and 45 calves, at 20 square feet per cow and 14 square feet per calf, or a total of 1,630 feet. This holding pen system should also include a pen of 1,000 square feet to hold cows as they are sorted off and another pen with a minimum of 630 square feet to hold calves. Some producers prefer to have at least four pens so they can have more sorting options.

### Sliding Doors and Mangates

Sliding doors should be designed to open by being pushed away from the person. Otherwise, the drover will have to walk around them constantly while they are open. This is both inconvenient and a safety hazard. Sliding door positioning is largely determined by individual preferences and each

processing area should be examined individually.

Mangates should be located so that a person can enter the crowding pen behind a group of cattle and then exit through another mangate located near the crowding gate. When in doubt, put in an extra mangate. Mangates make it easier for a drover to enter or exit quickly, or escape from charging cattle; they are cheap insurance.

The safest type of mangate consists of a spring-loaded metal flap, 18 inches wide, which opens inward towards the cattle. To exit, a person simply pulls the gate open. There are no latches to fool with. Proper installation of the spring in a mangate is important; it must be tight enough to hold the gate closed, but not so tight that the gate is difficult to open.

### Flooring

Improper flooring in processing areas can be responsible for many cattle injuries. Slick floors in crowding pens are responsible for many cattle falling down and being trampled. Cement floors in crowding pens and alleys must be deeply scored to prevent cattle from slipping. It is also important to have a dry rough surface immediately outside the squeeze chute, to provide good footing for the cattle while they are exiting from the chute.

### Catwalks

A well-designed processing area will be convenient and safe. Designs which encour-

age people to climb over fences are not safe. To enable drovers to reach cattle, catwalks should be constructed along all areas of solid fence where they must have access to the cattle to drive them through crowding pens, lead-up alley and squeeze chute. Catwalks make it easier to work cattle without having to be inside the holding pens with the animals.

The distance between the catwalk platform and the top of the fence should be 42 inches. This height enables one to reach over the top to prod cattle. Reaching through fences to prod cattle is dangerous since an animal can mash a person's arm against the fence. The inner portion of a circle or horse-shoe lead-up alley should be filled with concrete or gravel to provide employees with a raised surface to walk on.

Another safety device is the escape board. This consists of a 2" x 8" board fastened to the crowding pen wall 24 inches off the ground for the entire length of the fence. The board provides a step to help a person over the fence when they are chased or squeezed by cattle. The ends of the board should be beveled to prevent bruises to cattle.

### Summary

Features to perform specific functions should then be incorporated with the overall corral plan. Safety for both the cattlemen and cattle must be considered throughout the planning phase. Finally, the importance of selecting proper dimensions and a good site cannot be overemphasized. 