



Texas Agricultural Extension Service

The Texas A&M University System

Design of Ranch Corrals and Squeeze Chutes for Cattle

Corrals

A corral constructed with round holding pens, diagonal sorting pens, and curved drive lanes will enable you to handle cattle more efficiently because there is a minimum of square corners in which the cattle can bunch up in. The principle of the corral layout in Figure 1 is that the animals are gathered into the big round pen and then directed to the curved sorting reservoir lane for sorting and handling. The curved sorting reservoir lane serves two functions: 1) It holds cattle which will be sorted back into the diagonal pens, and 2) It also holds cattle waiting to go to the squeeze chute, AI chute, or calf table.

Large Corral

The corral shown in Figure 1 is a general-purpose system for shipping calves, working calves, sorting, pregnancy checking, and AI. It can handle 300 cow-calf pairs or 400 mature cows. It is equipped with a two-way sorting gate in front of the squeeze chute for separating the cows that are pregnant from cows that are open. Depending upon your needs, you can position either the squeeze chute, AI chute, or calf table at the sorting gate. If the cattle are watered in the large gathering pen, they will become accustomed to coming in and out of the trap gate. When you need to catch an animal, you shut the trap gate.

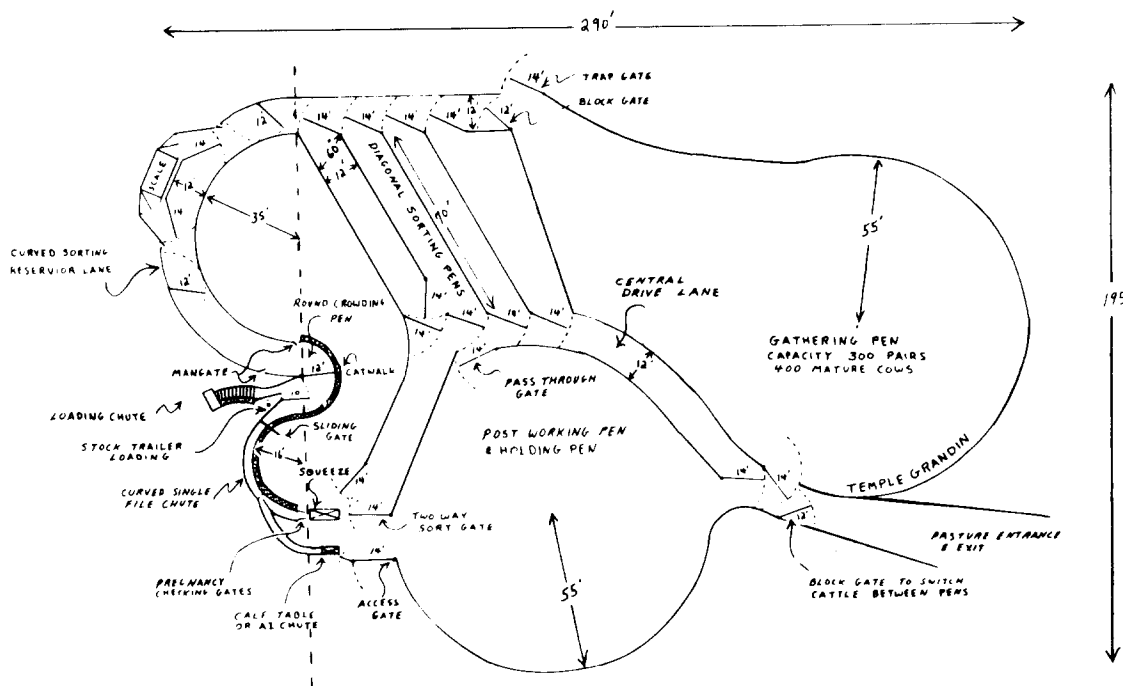


Figure 1. General purpose corral system for shipping, branding, sorting, and AI. It can handle 300 cow and calf pairs or 400 mature cows. Capacity can be increased by adding more diagonal pens and holding pen space.

gate and direct her up the curved reservoir lane to the chutes. This is an especially handy feature for AI.

The curved sorting reservoir terminates in a round crowding pen and curved single-file chute. The crowding gate has a ratchet latch that locks automatically as the gate is advanced behind the cattle. To load low stock trailers, open an eight foot gate that is alongside the regular loading chute. This provides you with the advantage of the round crowding pen for stock trailers. All fences in the curved single-file chute and the round crowding pen are solid. The ratchet crowd gate also should be covered with sheet metal or plywood.

Figure 1 can also be adapted for use with a prefabricated steel circle crowding pen and curved single-file chute. Since the prefabricated units have a 12 foot radius instead of the 16 foot radius shown in the drawing, you will have to move the sorting gate. If you plan to build the entire setup yourself, out of either wood or steel, keep the 16 foot radius, especially if you have large cows. Figure 1 is designed so that a building can be constructed over the squeeze chute area. A 40x20 foot building constructed in two 20 foot clear span bays will cover both the squeeze chute and the AI chute or calf table.

Diagonal Sorting pens

When cows and calves are being separated, the calves are held in the diagonal pens and the central drive lane, and the cows are allowed to pass through one of the diagonal pens into the large post working pen. The diagonal pens and the central drive lane in Figure 1 can hold 300 weaned calves overnight or 500 weaned calves crowded together. Each 70 x 12 foot diagonal pen holds 60 weaned calves overnight or 85 weaned calves crowded together. If the mother cows are put in the diagonal pens, each pen holds 40 cows overnight or 50 cows crowded. These capacities may vary depending on the size of your cattle.

To expand the corral system to handle more cattle, you can add more diagonal pens. Do **not** increase the length of the diagonal pens! If they are too long, the cattle will bunch up. You can increase the diagonal pen capacity to 1,000 calves. It is **not** recommended to increase the size of the round gathering pen beyond the 55 feet radius shown. If the round gathering pen is too large, you may have difficulty getting the cattle into the curved reservoir lane.

In order to increase the gathering area, you can build an additional round gathering pen at the pasture entrance. After the first 300 pairs are worked or sorted, you can bring in 300 more pairs. The post working pen can be enlarged to hold cows after sorting or handling in the squeeze or AI chute.

Small Corral

The layout in Figure 2 is designed for smaller ranches as a main working corral or a pasture corral on larger operations. It is economical to build, but still retains many

of the features of the larger corral. It can handle 200 cow-calf pairs or 250 mature cows. By increasing the radius of the gathering pen to 55 feet and lengthening the central drive lane, it can be expanded to 300 pairs or 400 cows

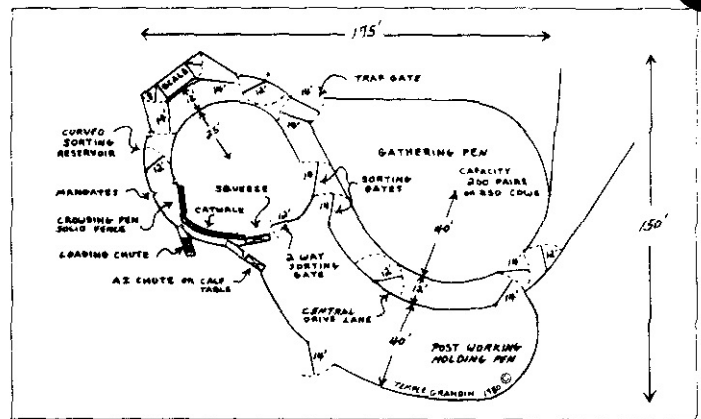


Figure 2. This is an economical corral system for a smaller operation or a pasture corral on a ranch. It can handle 200 cow and calf pairs or 250 mature cows. It can be expanded to handle 300 cow and calf pairs.

In Figure 2 you can sort two ways out of the squeeze chute and three ways from the curved reservoir lane. Groups of cattle held in the curved reservoir lane can be sorted back into the post working pen, the central drive lane, or the round pen that is formed by the inner radius of the curved reservoir lane. When calves are being separated from the cows, the cows can be sorted into the post working pen and the calves into the central drive lane.

Corral Construction Tips

Five-foot-high fences are usually sufficient for cattle such as Hereford and Angus. For Brahman cross and exotics a 5½ feet to 6 foot fence is recommended. Solid fencing should be used in the crowding pen, single-file chute, and loading chute. If your budget permits, solid fencing should be used in the curved reservoir lane. If solid fencing is too expensive, then a wide belly rail should be installed. This is especially important if the corral is constructed from sucker rod. Curved corrals can be easily constructed from wood (Figure 3).

A V-shaped chute can be built that will accommodate both cows and calves. It should be 16 to 18 inches wide at the bottom and 32 inches wide at the top (Figure 5). The 32 inch measurement is taken at the 5-foot level. The V-chute can be extended to 6 feet high for large exotic cattle. If the single-file chute has straight sides, it should be 26 inches wide for the cows and 18 to 20 inches wide for calves.

To prevent animals from slipping in areas paved with concrete, the concrete should be scored with deep grooves. The grooves should be one inch to 1½ inches deep in an 8 inch diamond pattern. A diamond pattern should be used because it is easier to wash. If cattle are falling down when they exit from the squeeze chute in an existing facility, a

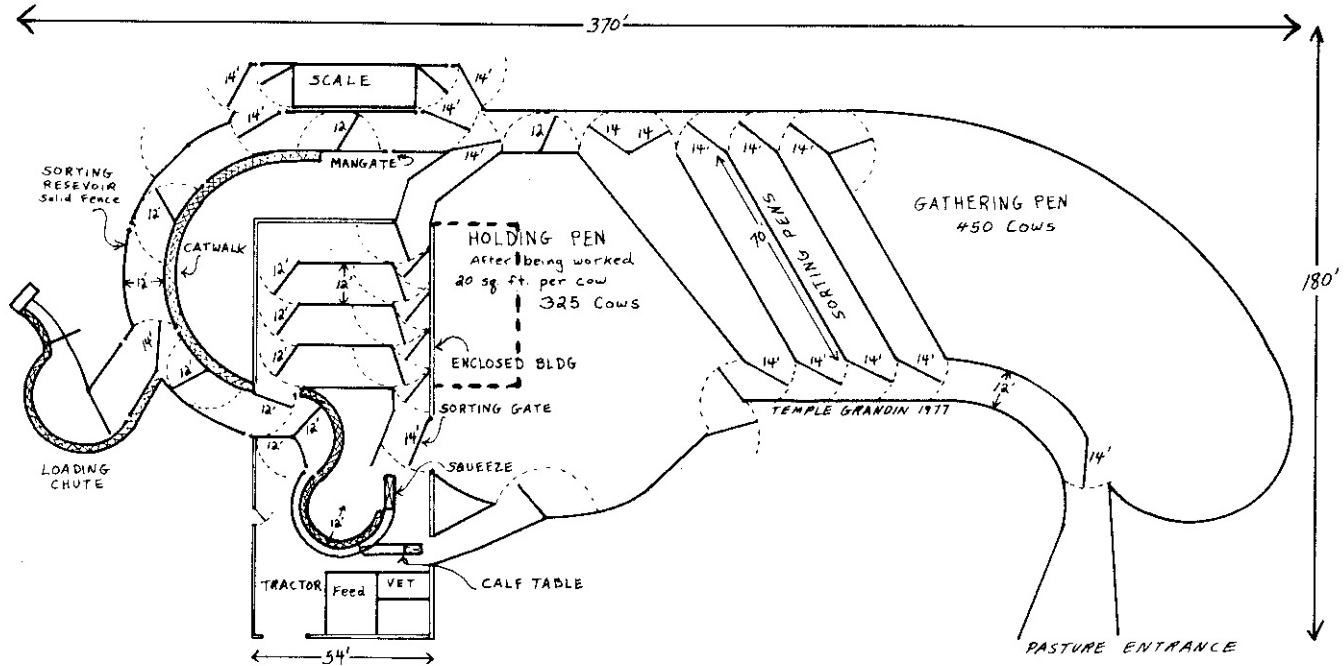


Figure 3. Illustrates a general purpose system for a cow-calf operation in a cold climate. The entire squeeze chute area is covered and it contains pens for calving or sick animals. If a loafing shed is desired, the building can be extended into the holding pen (dotted line).

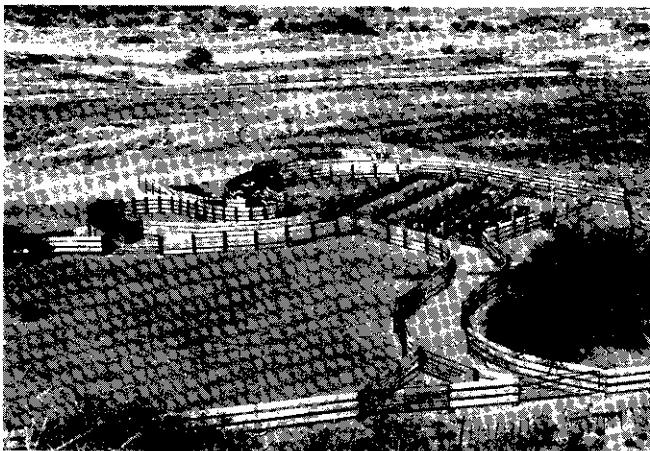


Figure 4. Curved corral system shown in figure 1 constructed from wood. Posts are placed 4 ft. on center in the curved single file chute and round crowd pen. They are placed 8 ft. on center in all other areas.

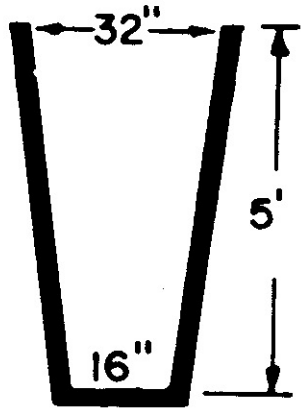


Figure 5. When a funnel-type crowding pen is built, make one side straight and the other side on a 30 degree angle. This design will prevent bunching and jamming. The crowding pen should be 10 to 12 feet wide (Figure 6).

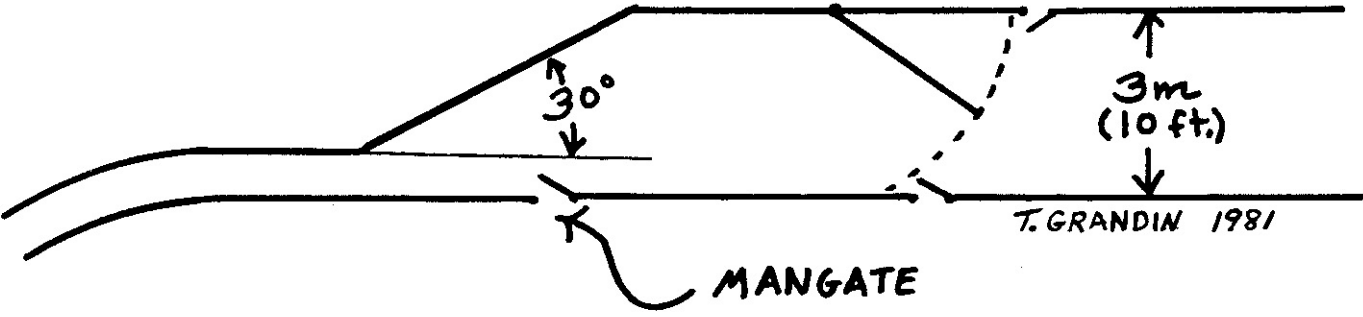


Figure 6. A funnel crowd pen should have one straight side, and the other side on a 30 degree angle. Jamming will occur if both sides are angled.

grid constructed from bars will prevent falls. Construct the grid from one inch steel rods in 12 inch squares. Each intersection must be welded and the grid securely fastened to the concrete floor, but removable for cleaning out frozen build up.

In areas with solid fence, install small man-gates so that drovers can get away from charging cattle. One type of man-gate is an 18 inch wide, spring-loaded steep flap. The gate opens inward towards the cattle and is held shut by a spring. A person can quickly escape because there is no latch to fool with. The man-gates can be constructed from 10 gauge steel with a rim of ½ inch rod (Figure 7). Some drovers prefer footholds and leap overs.

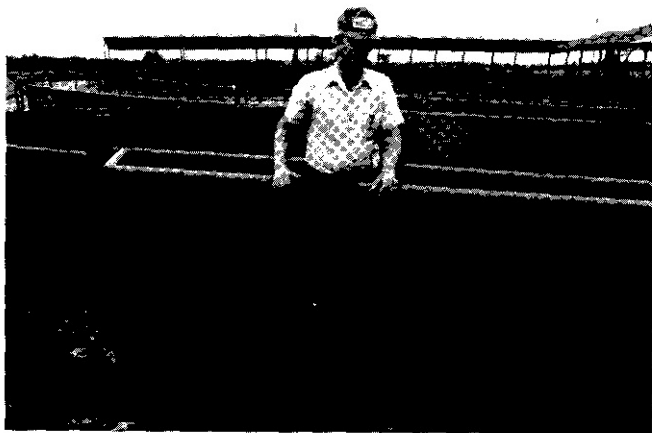


Figure 7. Laying out a curved corral system is simple. In figure 1 the curved single-file chute, round crowding pen, and curved reservoir lane are laid out along the dotted line. The first step is to place a string on the site in the position of the dotted line. The radius points of the curved single-file chute, round crowding pen, and curved reservoir lane are all located along the string.

Layout steps for Figure 1 (To be done in order.)

- Make a 16-foot 180 degree half circle for the single-file chute.
- Make a 12-foot 180 degree half circle for the round crowding pen.
- Make a 35-foot 180 degree half circle for the curved reservoir lane.
- Lay out the diagonal pens on a 60 degree angle by placing a transit over the string.
- Lay out gathering pen with a 55-foot radius. The radius point for the gathering pen is located 95-feet from the strike post of the last gate in the row of diagonal pens. The row of diagonal pen gates and the gathering pen radius point should be at a 90 degree angle relative to your string (dotted line).
- Lay out the post working pen. The 55-foot radius point is found by measuring 55 feet from the hinge of the 14 feet sorting gate in front of the squeeze chute. The exact location of the hinge may vary depending on the length of the squeeze chute. Leave a three feet to 4 feet space between the end

of the sorting gate and the headgate on the squeeze. This provides enough room so you can swing the sorting gate in front of the headgate without hitting the cows head.

After laying out the basics, finish laying out both sides of the lanes. The pasture entrance gates and the central drive lane will have to be laid out by eye.

Lay out everything in lime before constructing. This will help prevent mistakes. Walk through the layout. *If it looks like the drawing, then you have got it right.* If there is a hill next to the site, look at the lime layout from there. If an aircraft is available, use it to check your layout.

There are two methods for constructing the round crowd pen and curved single file chute from wood. The best method is to align the planks vertically and attach them to steel rods. A simpler method is to space the posts four feet apart and attach the planks horizontally. You don't have to bend them. In all other parts of the corral the posts are spaced eight feet apart.

Squeeze Chutes

Herd health care is virtually impossible without a headgate or a squeeze chute for restraining animals. There are many headgates on the market and each type is especially suited for certain handling procedures. There are four basic types of headgates: scissors stanchion, full-opening stanchion, positive control, and self-catcher.

Scissors-stanchion headgates consist of two biparting halves that pivot at the bottom (Figure 8). The full-opening stanchion consists of two biparting halves that work like a pair of sliding doors. A positive-control headgate locks firmly around the animal's neck. This type of gate completely restricts up and down movement. The self-catcher headgate can be set like a trap. When the animal enters, its forward movement will close the gate automatically



Figure 8. Scissors stanchion headgate with curved neck bars. The gate opens like a pair of scissors and has pivots at the bottom. The curved neck bars provide a good combination of head control and protection against choking.

around its neck. The advantages and disadvantages of the four types of headgates are summarized in Table 1.

A curved-bar stanchion is a good compromise between control of the animal's head and protection from choking. It is more likely to choke than a straight-bar stanchion, but it is safer than a positive type gate. A nose bar is not needed for ear implanting or tagging, if the animal is backed up in a stanchion headgate.

The problem of choking in a curved-bar stanchion or positive type headgate can be reduced by adjusting the squeeze sides of the chute. The V-shape of the chute should support the animal. The proper spacing at the bottom of the squeeze sides is 6 inches for 250 to 400 lb. calves, eight inches for 600 to 800 pound animals, and 12 inches for cows and most fed steers. The space should be 14 to 16 inches for large bulls. The measurements are taken on the

inside of the chute at the floor level. The best type of chutes have two squeeze sides that fold in evenly when the squeeze is applied.

Operator Skill Important

Results of a survey conducted by the author in feedlots indicated that the main cause of handling accidents in hydraulic squeeze chutes was a careless operator handling cattle too fast. The skill of the operator affected the incidence of choking and escape from the squeeze chute (Tables 2 and 3). Problems such as balking and falling while exiting from the squeeze chute were largely determined by conditions such as slick floors or shadows in the handling facility. You should be able to do a better job of operating your squeeze chute than that indicated by the percentages on Tables 2 and 3.

TABLE 1—Types of Manually-Operated Headgates Compared

	Self-Catcher	Scissors Stanchion	Positive	Full-Opening Stanchion
Recommended for	Hornless cattle, gentle cattle, one-man AI	General purpose, big feedlots, wild cattle, minimum maintenance, cattle of mixed sizes (adjustment)	Dehorning, wild cattle, horned cattle, good head control, big feedlots. Requires less strength to operate than stanchion gates.	General purpose, vet clinics, mixed cattle sizes (because the gate seldom needs adjustment). Large bulls can exit easily.
Not recommended for	Wild cattle, big feedlots, horned cattle, groups of mixed-size cattle (because the gate has to be readjusted to catch animals of different sizes)	Very large bulls (because they may have trouble exiting due to the narrow space between the two bottom pivots)	Vet clinics where the animal is held in the headgate for a prolonged time. When AI and pregnancy testing are the primary uses of the headgate.	Big wild cattle, big feedlots (because many full-opening stanchion headgates are not sturdy enough to withstand constant heavy usage)
Warnings	Mechanism requires careful maintenance. Head and shoulder injuries may result if the animals are allowed to slam into the gate.	Be careful not to catch the animal's legs or knees between the two halves of the gate or the animal may be injured.	More likely to choke than a self-catcher, scissors, or full-opening stanchion.	Mechanism requires careful maintenance to prevent jamming. Animal may trip over the lower gate track if it becomes excited.

Self-catcher, scissors-stanchion, and full-opening stanchion headgates are available in models with either a straight or curved stanchion. Refer to the text for discussion on choking hazard *versus* head control.

T. Grandin, 1980. *Vet. Med. & Small Animal Clinician* 75:1291.

TABLE 2—Effect of Cattle Breed and Operator's Skill on the Frequency of Handling Accidents in Hydraulic Squeeze Chutes

	Average for All 22 Groups (2150 Head)	Average for 12 Brahman Groups (1210 Head)	Average for 10 Non-Brahman Groups (940 Head)	Number of Groups with a Perfect Score	Single Worst Group Score	Observed Cause of the Worst Score
Mild choke	0.40%	0.17%	0.77%	17	3.00%	Rushing and carelessness*
Severe choke	0.30%	0.17%	0.40%	18	2.00%	Inexperienced operator
Entry balk	11.25%	10.30%	12.40%	0**	30.00%	Electric pole in front of the chute
Exit balk	15.20%	17.90%	12.00%	0	25.00%	Brahman cattle backed up after release
Partial escape	2.30%	3.90%	0.55%	10	11.00%	Long horns
Total escape	0.74%	1.00%	0.20%	14	5.00%	Carelessness
Falling	4.90%	7.30%	2.00%	5	15.00%	Slick, smooth concrete floor in front of chute
Headgate leg	2.50%	2.20%	3.00%	7	12.00%	Rushing

*All occurred in the same feedlot.

**Best balking score: entry balk 1.00%, exit balk 3.00%.

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