

# Backgrounding Facilities

**John Dhuyvetter**

Area Extension Livestock Specialist

*Backgrounding refers to the confined feeding of calves following weaning to prepare them to be put on a finishing ration in the feedlot.*

*Calves can be and are backgrounded in a variety of facilities depending on situation and numbers, from the seasonal use of existing calving facilities to specifically designed feeding yards for growing calves.*

*Backgrounding facilities should provide for animal comfort (protection from wind, dust, and wetness), ease of handling, and access to feed and water.*

S  
544.3  
.119  
A8  
no. 1153

## Pens

Pens used for starting and backgrounding calves should have ample space, provide protection from wind, be organized to encourage feeding and watering, and be constructed to provide security and safety.

Space requirements vary depending on animal size, season of use, soil type, and drainage. Generally 150 to 300 square feet of space per calf should be provided in open outdoor lots. The larger space allowances are needed when calves will be fed to heavy weights, if lots will be used through the spring thaw, and where drainage is poor. Space can be minimized by providing shed protection and surfacing the lot or traffic areas by bunks and waterers with pavement or concrete.

Generally backgrounded calves will perform best if grouped with similar sized animals in relatively small groups. In most situations two or more feeding pens are needed to allow grouping according to weight, sex and feeding programs and to make handling and observing cattle easier. Even in large operations, 150 head pens and groups is a maximum target.

Cattle adapt to and withstand cold if they are sheltered from the wind and provided rations to meet increased feed needs required at colder temperatures. Winter backgrounding in North Dakota requires calves be protected from wind through the use of shelter belts, windbreak fences, or landscape contours and mounds. Pens should be located about 100 feet away from tree shelter belts so



trapped snow doesn't accumulate in pens. Windbreak fences are often used as pen perimeter fencing on pen sides of prevailing and troublesome winds to protect feeding areas, and offset from buildings to minimize swirling and snow deposits by buildings. Windbreaks placed in pens perpendicular to prevailing winds allow cattle to use both sides for protection of wind from several directions.

Research and experience has shown to be most effective windbreak fences should have 20-25% open space to prevent down drafting, to disperse the snow, and minimize snow piling on the leeward side. In general wind velocities are reduced for a distance of about 10 times the height of the fence. Ten-foot, 6- or 8-inch wide boards spaced 1½ to 2 inches apart is generally more effective than using plywood or roofing sheets spaced 4 to 8 inches apart. Construct fences so boards are next to cattle to prevent pushing boards off, or install a horizontal rub rail. Leave a 4-to 6-inch opening at the bottom to permit drainage.

With good wind protection and the use of bedding, barns and sheds are not essential for growing calves. However, covered housing would certainly be desirable for young, light calves and during severe blizzards as added protection against weather related performance and death losses. Relatively inexpensive pole sheds with open sides oriented to the south or east will generally provide adequate protection in these situations.

Corral line fence for newly weaned and received calves needs to ensure good restraint and safety. A wide variety of materials are used in building corrals. Most typical

would be post and rail or plank fence. It is recommended that fences be 5 feet high and the distances between boards or rails less than 10 inches. Posts should be at least 5 inches top diameter and set a minimum of 3 feet in the ground. Two inch steel pipe posts set 3 inches in concrete with welded pipe, rod, pipe and cable, or attached continuous metal fence provide excellent security, long life and low maintenance but is more costly and difficult to construct. Welded cattle panels stapled on wood posts set on 8 foot centers with a top and middle rail can be a lower cost, less durable alternative. Four or five stand high tensile smooth wire electric fences with alternate energized and grounded wires is used in some cases after cattle have been weaned and on feed, been trained in a conditioning pen, and where additional fence around the feeding yard provides further security in case of escapes.

## Feed and Water

A variety of feeds and feeding methods are used when backgrounding calves. Bunk space, particularly when first starting and receiving calves and when calves will be limit fed, is a primary concern. Depending on calf size, 18-26 inches of bunk space per calf should be provided when starting calves, for calves limit fed or fed just once a day. Started calves being fed twice a day to appetite should have 8 to 11 inches of bunk per calf. If grain is self fed, allow 3 to 4 inches of feeder trough or bunk per calf. Generally 10 inches of bunk per calf is required for self fed roughage.

Feed bunks should be located to encourage calves to eat and provide convenience in feed delivery.

Considerations include drainage and wind protection. Calves prefer to eat downwind. Drainage should be away from bunks. Preference (depending on site) is generally for bunks or for the bunk line to be oriented north to south for sun exposure and minimizing frozen manure pack build up in the winter.

For small backgrounding enterprises where grain is delivered to calves by hand, bunks are often placed in the pen to provide utilize of both sides and can be moved as needed. In larger operations using feed mixing and delivery wagons or trucks, bunks typically are placed permanently on the fence line. Fence line feeding may use precast concrete bunks, wood plank bunks, or through the fence feeding on the ground or a concrete slab. Lumber used for feeding bunklines should be CCA pressure preservative treated. Concrete used for feeding slabs or bunks needs to be high quality to resist corrosive effects of salts and minerals in feed. A concrete mix of 6 bags of air entrained cement per yard of concrete with a strength of 4500 psi is generally recommended. Bunk design should minimize areas for accumulation of waste and spilled feed which contributes to summer odor, fly and rodent problems. Generally, bunk height for calves should be less than 30 inches from the ground.

With feeding programs where all calves eat at once and a totally mixed high forage ration is delivered once a day, bunks need a capacity of about 2 cubic feet per foot of bunk. If calves will be fed a high roughage ration during the winter, feeding on the ground or a slab through the fence line provides a lower cost alternative with ease in cleaning after a snow fall. If feeding will be done primary on frozen

ground, a feeding apron may not be necessary. Facilities which will be used year round and through spring thaw and breakup should include a 10- to 12-foot concrete apron adjacent to the bunkline. Similarly, self-feeders used through spring should be set on concrete slabs to provide a hard surface around the feeder.

When grain and forage are fed separately, hay can be self-fed in bale racks or through a fence line. Bale racks provide a relatively low cost feeding method, are portable, and can be moved to minimize manure buildup in a particular spot, but they may contribute to greater hay waste, particularly with low quality forage. Hay and silage can also be self-fed using an electric wire or portable feeding fence.

Water is an important consideration in backgrounding facilities. Backgrounding weight calves will consume less than 5 gallons per head per day during cold weather and up to 15 gallons per head per day in hot summer conditions. It is recommended a foot of tank be provided for every 20 head or one waterer or drinking bowl space provided for every 25 to 30 head in the lot. To minimize mud around the waterer it is desirable to set it on a concrete slab extending 6 feet beyond the tank or waterer. Waterers or tanks placed in the fence line allow new arrivals to quickly find the water as they travel the fence line acquainting themselves with the pen. However, waters located in the pen provide more opportunity for timid animals to drink. Of the many waterer choices commercially available, considerations in addition to cost include durability, ease of cleaning, energy cost, and protection from freezing.

Other feed related concerns include equipment and facilities for storing, processing, and delivering feed. Need for investments in feed equipment and facilities will vary by scale of operation and labor availability and cost. The extra costs of grinding hay often offset increases in intake and rate of gain. Grinding is primarily done to facilitate mechanical mixing, and feeding and to reduce waste. Processing most available feed grains fed in moderate amounts in backgrounding rations improves digestibility. However greater digestive problems also occur, particularly if processing creates many fines.

Portable tractor-powered grinder mixers and rollers are economical and popular choices for processing grains and mixing in supplements on most farms. Larger operations often make additional investments in stationary mills in which grain is auger fed from and stored in hoppers storage and commodity bins to accommodate larger grain handling volumes with less labor input.

## Handling

Some animal equipment and facilities to handle and work cattle are essential in managing backgrounded calves. A squeeze chute with head catch is necessary for vaccinating, implanting, treating, and a variety of other procedures which may need to be performed. A wide variety of head gates and squeeze chutes for restraining cattle are commercially available. Factors to consider in selecting a head catch and chute include ability to free an animal that collapses, adjustments for differing size animals, the probability an animal

may get through without being caught, and amount of labor that is available.

To facilitate efficient working of a group of calves, the squeeze chute should be fed from a working chute, crowding pen, and holding pen to which cattle can be moved with ease to and from feeding pens. The diagram illustrates basic components and their arrangement in a handling facility. Some alleys may be needed to distant pens. Fourteen foot wide alleys are desirable for sorting and moving large groups and can accommodate some equipment movements. Recommended dimensions for working facilities are provided in the table on the following page.

The lower portion of the working alley should be enclosed to prevent leg injuries. The upper portion can be spaced plank to provide openings to see the animals in the chute. Sloping the sides of the working chute allows its use with animals of various sizes without the problem of small animals turning around. It is desirable to build the working chute in a curve as animals move more readily through a curved chute than a straight one.

Sliding blocking gates at the end of the working chute and at various intervals keep animals from backing out. Either a circular pen and crowding gate or crowding pen with one side as a straight continuation of the working chute and the other side at a 35° angle makes it easier to get cattle to move up the chute.

A scale placed in the working chute or under the squeeze chute is useful in monitoring performance, marketing, and managing cattle in the feeding program. Some additional holding pens for cattle leaving

**Recommended dimensions for handling facilities.**

	To 600 lb	600- 1200 lb
Holding area (sq ft/hd)	14	17
Crowding pen (sq ft/hd)	6	10

**Working chute with vertical sides**

Width (in)	18	20-24
Minimum length (ft)	20	20

**Working chute with sloping sides**

Width at inside bottom (in)	13	15
Width at 4' inside (in)	20	24
Minimum length (ft)	20	20

**Working chute fence**

Height – solid wall (in)	45	50
Depth of posts in ground (in)	36	36
Overall height (in)	68	72

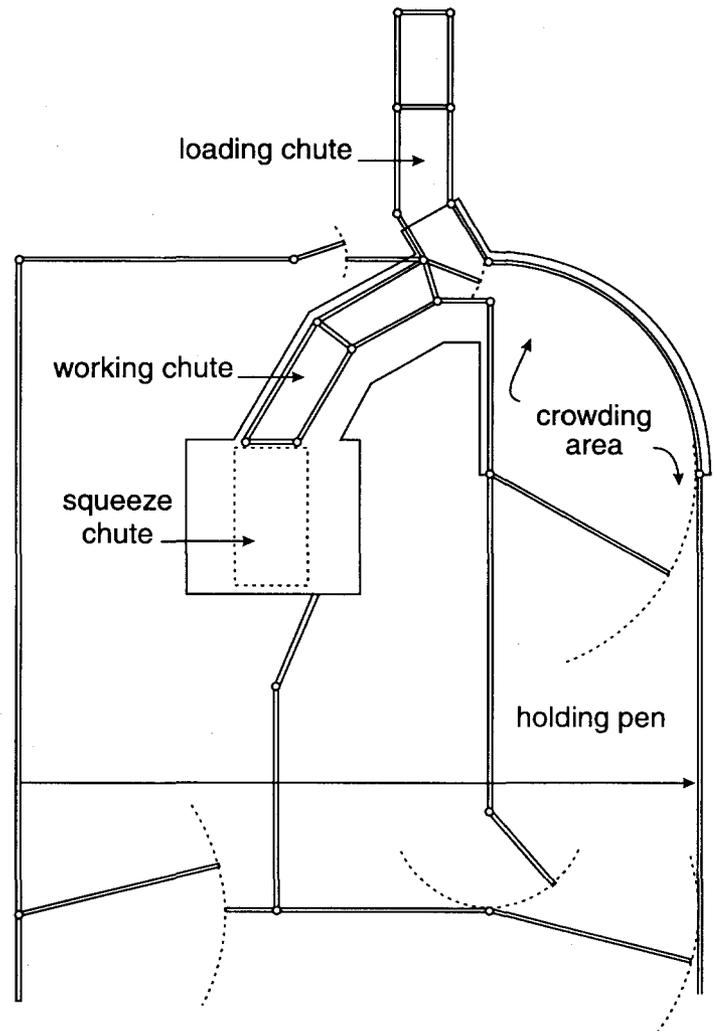
**Loading chute**

Width (in)	26	26
Length (ft)	12	12
Rise (inches/ft)	3½	3½

**Ramp height**

Pickup truck	28
Van type truck	40
Tractor trailer	48
Stock trailer	15

**Basic handling facility layout.**



the chute provides opportunity for sorting at processing. Handling facilities need to also include provisions for receiving and loading out cattle. Where cattle will be moved by trailers simply a loadout alley and gates offset from working facilities will be needed. For loading trucks a gradual cleated or step ramp, preferably adjustable in height, is necessary.

Placing the chute and squeeze in a shed permits ease of handling cattle in inclement weather. An electrical supply is desirable for lights, clippers, branders, heater, and other equipment. Including a covered pen in the working or a separate building is desirable for housing sick animals requiring treatment and special care. Hospital pen space to accommodate 2 to 5% of the total feeding pen capacity is generally sufficient.

**Additional References**

1. MWPS-6, Beef Housing and Equipment Handbook.
2. Alberta, Corrals for Handling Beef Cattle, Agdex 420/723-1.
3. Modern Corral Design, E-938, Oklahoma.

*All available from Extension Agricultural and Biosystems Engineering.*

