K-STATE
Research and Extension
Biological and
Agricultural Engineering

Guidelines for Planning Cattle Feedlots

W. Boyer, J. Davidson, H. George, R. Graber, J.P. Murphy, and J. Harner
Kansas State University

Construction of a new feedlot or modification of an existing feedlot requires adequate planning. The goals of planning cattle feedlots are to:

- minimize animal and worker stress during cattle handling;
- utilize feed sources to deliver rations to cattle in an efficient manner;
- provide cattle pen design — fencing, feed access, water supply, and lot drainage;
- maintain efficiency and profitability of feeding operations;
- plan method of pen maintenance and manure removal; and
- protect the surrounding environment.

Guidelines for Site Selection

- A land slope of 2 to 5 percent is recommended.
- Soil with 25 percent or more clay is preferred to sand or fractured rock structures.
- Allow approximately 1 acre of land per 100 head for pen space, alleys, and feed roads. The distance from the bunk to back side of the pen will vary between 150 feet to 250 feet.
- Initial planning requires a minimum distance from the bunks to the water channel of 400 feet. Area needed for runoff treatment varies depending on the geographic location, degree of use, and type of treatment system.
- All extraneous runoff should be diverted away from the feedlots and roads.
- Working facilities require ½ to 2 acres of land for corrals and sick/receiving pens.

Guidelines for Pen Layout and Sizing

- Bunks orientated in the north-south direction with east-west sloping lots are preferred.
- Generally, 200 to 500 square feet per head is adequate pen space, depending on geographical location, animal size, and topography. (300 square feet per head is average).
- Number of cattle in a pen varies from 60 to 150 head. Most pens are sized to handle the number of head per one or two semitrailers.
- Receiving pens should be sized to handle one truckload to help manage/identify sick and stressed animals.
- Consider lighting requirements in the receiving and corral/processing area.

Guidelines for Feed Roads

- Most feed roads are 12 to 16 feet wide for single row arrangements. The feed road is sloped away from the feed bunks and pens into a diversion channel. Feed road with bunks on both sides can vary from 16 to 30 feet width. Width depends on length of feed lines, rain drainage, and snow stockpiling space.

Guidelines for Feed Bunks and Concrete Apron

- Recommended bunk space for backgrounding feedlots (average weights of 500 to 700 pounds per head) is 18 inches per head and 24 inches per head in starter/receiving pens. Bunk space may be reduced depending on environment and feeding schedule.
- A 12-foot-wide concrete apron is recommended on the cattle side of the bunk.
- If the feed bunks are resting on the apron, then total apron width needs to be at least 15 feet.
- Along the lower edge of the apron, it is recommended to place a 10- to 20-foot-wide section, 8 to 12 inches thick, of gravel screening to provide additional hard surfaces during wet weather. Geotextile road fabric or woven stabilization fabric under gravel helps support a 6- to 8-inch thick gravel pack.
- Allow ⅛ to ¼ inch of apron slope per foot width of concrete apron.
- Plan a bunk drain opening every 16 to 20 feet.

Guidelines for Water

- Water consumption varies from 8 to 20 gallons per 1,000 pounds of cattle, depending on the weather.
- Waterers can be located in fence lines near the bunk or in the middle of the fence line. A 10- to 15-foot concrete apron around the waterer and a 10- to 20-foot-wide concrete lane from the feeding apron to the waterer allows cattle access to water in muddy conditions.
- Water troughs near the back of the pen may be difficult to access during extreme weather conditions unless hard surface is provided.
- Waterers should be designed for ease of cleaning/drainage and for water shutoff in case of waterer malfunction.

Guidelines for Mounds

- Mounds are places for cattle to rest during muddy conditions and promote pen drainage, not a place to stack manure.
- Proper mound construction requires 20 to 30 square feet of mound space per head on each side of the mound. The entire pen of cattle should be able to rest on one side of the mound.
- The height of a mound ranges from 3 to 5 feet and side slopes are 5:1 or 4:1 ratio. Mounds should be constructed to allow cattle to lay on the sides rather than the top. Mounds should extend to the concrete apron to enable cattle easier access to bunks and water during wet weather.
- If mounds are oriented east-west, cattle will use the mound as a windbreak by laying on the south side.
- Mounds should be constructed so that manure cleaning equipment can travel over the mounds.

Guidelines for Environmental Compliance

- Feedlots and runoff control structures should be a minimum of 100 feet from property lines, 50 feet from rural water lines, and 100 feet from the nearest water conveyance channels.
- The lowest point of the facilities (normally the bottom of the sediment basin or lagoon) must be at least 10 feet above groundwater.
- Feedlots with 300 to 999 animal units (300 head at 1,000 pounds or 600 head weighing less than 700 pounds) must register with the Kansas Department of Health and Environment (KDHE).
- Feedlots with capacity of more than 999 head (regardless of weight) and above require a Federal EPA permit administered through KDHE.
- Separation distance between feedlot footprint and a habitable structure is 1,320 feet for 300 to 999 animal units and 4,000 feet for 1,000 or greater head.
- KDHE has authority to approve or disapprove the required runoff control systems, depending on rainfall, land slope, proximity to ground and surface water, soil type, feedlot capacity, flood plain, sensitive groundwater, annual usage, and other considerations.
- Feedlots with a capacity less than 999 head may receive KDHE approval to use a natural or man-made grass buffer, depending on ratio of feedlot drainage area to buffer area, land slope, topography, rainfall, annual usage, and other factors.
- Feedlots with a capacity more than 999 head will have to meet the total containment requirements set by federal regulations.

This handout has been adapted from Kansas State University Publication MF2316: Planning Cattle Feedlots, published in August 1998.

Date shown is that of publication or last revision.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF3392 **December 2017**