What about extras in the barn?

What about rubber flooring, headlocks, cooling, and calving pen design?
Whatever choice you make, be sure it cash flows.

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COOLING transition cows in hot climates is essential to maintain cow health, calf birth weights, and milk production in early lactation. By maintaining reproductive performance, it will also ensure a more even calving cycle and throughput through the facility. Kansas State researchers recommend two rows of fans — one over the feed bunk and another over head-to-head stalls. To obtain the desired airflow of 800 to 1,000 cfm (cubic feet per minute) per cow, they suggest that 36-inch diameter fans be spaced every 30 feet, angled down 15 to 25 degrees, and hung 8 feet above the stall surface. If 48-inch fans are used, they should be spaced every 40 feet and mounted higher at 9 to 10 feet above the stall. The fans should be activated above 68° F.

First article: Less pens, less stress
Second article: Special design for special needs
This issue: What about extras in the barn?

For additional cooling, low-pressure sprinklers (10 to 25 psi) may be used along the feed bunk, set to provide 0.11 liters or 0.03 gallons of water per square foot of wetted area per sprinkler per cycle above temperatures of 75° F. The wetted area should be set to cover the area 6 to 8 feet behind the feed line, and the water supply sized to supply the necessary flow rate of water. A standard cycle would be to have sprinklers on for 1 to 1.5 minutes and off for 10 minutes. However, soaking frequency may need to be raised to every 5 minutes during periods of severe heat stress.

The nozzles on the water line are typically suspended at least 7 feet above the alley and 12 to 18 inches behind the feed line. The nozzles used in the barn should spray water in a 180-degree arc, and they should be spaced according to their spray diameter — usually 6 to 8 feet.

Cows may calve in individual calving pens or on a bedded pack maternity pen with the group. We have argued against the use of long-stay maternity pens in the article in the March 25, 2006, issue, page 198. However, group of dry cows may be kept on a bedded pack for the duration of the dry period and calve there, provided that they are managed as one stable group. Such areas are difficult to manage, but designs should be based on the following principles:

1. The surface below the bedded pack area should drain well. Sand at least 12 to 18 inches deep is one possibility with deep, clean, dry straw maintained above this.
2. The area should provide calving cows 120 square feet lying area per cow with a 12-foot wide feed alley against the bunk.
3. The short side of the bed should be no more than 30 feet. Long narrow beds should be avoided, as cows will tend to walk to the back of the bed and lie down close to a wall as they leave the feed area. A short bed reduces the damage caused by this movement on and off the bedded area.
4. The bed should be separated from the concrete feed alley using a raised retainer made of concrete or wood.
5. Water access should never be from the bedded area. Water troughs may be cut into the bedded area, enclosed with a three-sided wall, with access only from the feed alley side.
6. Clean, dry fresh bedding, such as straw, must be added daily at a rate of approximately 25 pounds per cow per day and the whole bed removed every 3 to 4 weeks.

WHEN IT COMES TO RUBBER FLOORING, the sloped return alleys from the parlor and in the holding pen for the parlor are most important.

Calving pens, typically 12 feet by 12 feet, should provide ample room for the cow to lie down and allow room for the use of a calving aid if assisted delivery is required. It is useful to have a quick-release headlock in one corner of the bedded area and wrap-around gate to help direct the cow into it. Gates should be mobile so that they can be lifted out of the floor when the pen is cleaned. If organic bedding is to be used, the cow and calf must only come into contact with clean, dry bedding.

A concrete floor is a poor option, especially for compromised individuals weakened from a prolonged calving or milk fever. A surface that provides good traction is therefore preferred — such as deep sand with clean, dry straw on top. Some newer facilities have mattress surfaces with organic bedding material on top which provides cushion, traction, and is easily cleaned between cows.

Rubber for long travel distances . . .

In large facilities with long travel routes where hoof wear may be an issue, rubber flooring material is a logical choice over concrete. Various materials exist. But the final product must provide cushion, while being resilient and nonslip. At the moment, the value of rubber surfaces in pen alleys is not clear. If stalls are poorly designed, rubber may increase standing times in the alley and may even lead to some cows lying in the alley.

Two studies have documented a negative behavioral influence of rubber alleys, and one study found only a small benefit to claw health and only in a pen with sand stalls rather than mattress stalls. In order of importance, rubber flooring is most valuable in:

1. the sloped return alleys from the parlor
2. in the holding area for the parlor
3. along return alleys between the pens and the milking center
4. finally, along the feed alley in the pen, only if the free stalls are comfortable and well-designed

Self-locking stanchions or "headlocks" at the feeding fence are a useful way to manage and handle groups that require intensive monitoring. They are probably essential for the post-fresh group. This is obviously not the most appropriate time for a first-lactation heifer to be introduced to headlocks, and a period of training is beneficial. Therefore, even the far-dry pens may need to have some headlocks. It is wise to provide an additional area in each pen where the feed-bunk has only a post and rail so that wary heifers can maintain DMI in a new situation.

Building must have a payback . . .

The building of a special needs facility which provides for housing, milking, diagnosis, and treatment is costly and must be supported by improvements in health, milk yield, and reduced herd turnover rate. Kansas researchers assembled costs for such a facility for cows from the closeup period through 14 days in milk for a 2,400-lactating-cow dairy herd. Total annual expense per cow, including bedding costs, interest on the loan, and a depreciation period of 10 years, ranged from $23 to $83.25 per cow, depending on the number of groups and whether a treatment parlor was included.

Such an investment would require an extra 1 to 7.5 pounds of milk per cow per day for break-even at typical milk prices. Improvements in health would also be expected, but cost savings are difficult to quantify. However, for the high-end facility, with the average cost of a fresh cow health event (including milk fever, ketosis, retained placenta, and metritis) of $320, a 2,400-cow dairy herd would have to reduce the number of events by 625, or 26 per 100 cows. Such reductions are very achievable.

Improved building designs come from a better understanding of the behavioral needs of the dairy cow. The costs to provide for these needs in the facility must be offset by improved milk production, health, and longevity. Research is still required to more fully understand the health implications of many building design considerations and their impact on disease.

Perhaps the most important end result of an improved environment for the transition cow, however, is an improvement in animal well-being. Better buildings that accommodate the behavioral needs of cows present "win-win" situations where dairy cattle thrive and work is more enjoyable. This results in an improved image for the industry, greater consumer confidence in the quality and safety of the final food product, and a prosperous dairy industry.

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