Treatment, Maternity and Handling Facilities

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Handling of cows requiring individual attention such as treatment, hoof trimming, pregnancy checking, and calving can be labour intensive unless adequate facilities are provided. Well planned facilities that are safe and convenient for the cows and the people will be used in a timely fashion.

Close Ups and Calving

Since frequent group changes are stressful and since management during transition has been shown to have a big impact on health and production after calving, housing for the close up cow is getting a lot of attention. In herds of 200 cows and less where the number of cows entering and leaving a close up dry cow group is small the traditional approach of keeping all cows and heifers within 3 weeks of calving in one group with cows added weekly remains the most practical choice. This pen should have either 100 sq ft of bedding pack, or one big comfortable freestall and at least 30 inches of manger space per cow, to minimize stress during this critical period. In larger herds where cows would come and go daily, stress can be reduced by three or four smaller pens that can be managed so they are filled with close up cows once every three weeks and not refilled till all cows have calved. Assuming cows prefer to be handled in a way that reflects their voluntary behaviour, it makes sense to leave close ups in the group pen until they start calving, and then move them into a calving pen. Separating them from the group more than 24 hours before is probably more stressful than calving them in the group, so having one calving pen per 50 to 60 cows in the herd and using it when you see signs of calving may be the most practical option. Ideally the close ups, calving pen and fresh cow group should be in the same area of the barn forming a stress free calving line, where all of these cows enjoy the same environment and movement from pen to pen is simple. Particularly the move from the close up group to the calving pen should be a single gate swing since it may occur anytime day or night and must be convenient. Include a simple squeeze between the pens in this area with strategic gating so it is easy to lock up a cow in either the close up or calving pen for examination and treatment.

If it is deemed important to have all cows in individual pens at calving then plan for 1 maternity pen per 40 cows in the herd and use rumination tags read at the water trough, or core temperature boluses to predict the time of calving. Once cows have calved move them to a fresh cow group preferably also on a straw pack for a few days to ensure they are cleaned,

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For presentation at
Dairy Facility Design for Improved Cow Comfort, Health and Longevity,
Ramada Plaza, Abbotsford, BC
November 14 & 15, 2012

eating and have a normal temperature before moving the into the man herd. This group should also include lame cows and the total area provided should be 100 sq ft per cow for 1/2 or 1 full turn of the milking parlour.
The calving area should have facilities for storing drugs and equipment, hot and cold water, and a place to access herd records etc.. the fresh cow pack should be close to the parlour, and ideally also close to the close up pens. Because this is near a centre of activity it also encourages regular observation of the calving area. But if this area is too close to the parlour and holding area it can have negative consequences. For example a cow calving beside a return lane disrupts cow flow, and major changes in air temperature and humidity caused by the presence or absence of cows in the holding area can be harmful to the health of cows and calves housed nearby. Hence the best location for these areas may be in a corner of the barn nearest the parlour, or in an extension of the parlour building behind the link to the main barn, rather than directly beside the holding area.

Handling Facilities

Although from a function stand point, short term handling has no connection to close up and maternity care, for most herds it is ideal to do this by sorting cows from the parlour return lane(s), holding them in a temporary pen until they can be dealt with and then returning them to their milking group. This area also requires a storage for drugs and equipment, so combining the maternity and handling functions into a common area is a practical solution.
Handling facilities should be designed based on function so your planning process needs to begin by listing every form of handling you will need to do. Handling can involve dealing with an individual animal, such as for breeding or examination and treatment for mastitis, or with a group of cows as with the veterinary herd health visit or flaming udders to remove excess hair. On any dairy, an ideal handling system is one that minimizes operator labour, minimizes the disruption and stress for the cows and provides a safe and stress free place to perform the handling activity. handling in the parlour is frowned upon because this should be a place cows can rely on to be free of additional stress or pain. Self locking head gates throughout the barn are a very popular handling option, but the same argument can apply here, that the cows place to eat should not be a place she associates with getting needles and rectal exams. Secondly, headlocks require restraining and thereby stressing all the cows in order to handle just a few. They also result in more labour because the handler still has to identify the cows he or she needs and has to take equipment, drugs and record keeping tools to the cow. Since handling systems only work well when there is room to lock u all the cows, 3 and 6 row barns or barns that are overcrowded do not work well with headlocks.
Automatic sorting systems that direct cows for handling into a short term separation area offer a lower stress and lower labour option than headlocks. Making these works requires that cows return to the barn through a single return lane from the parlour. This is easiest with a rotary and with a gang exit parlour with front cross over, but cows can also be directed to a single lane for sorting behind the holding area. Sorted cows can be handled individually in a chute or handled in groups in a palpation rail. Although specifications for management rails are readily available on the internet, they seem to be surprisingly variable in dimensions. For Holstein cows, an ideal rail will have bars at that back of the cow 21 and 42 inches above the floor, and front bars at 18, 36 and 62 inches with a loop that extends 18 inches forward so cows van easily swing their

head when exiting. The front and back pipes should be 48 inches apart and the offset on the gates at each end should be 36 inches. Plan on about 34 inches of length per cow.
An alternative to this would be headlocks along a manger in a handling area. This option has none of the drawbacks of headlocks in the barn, but experience suggests that when cows don't use headlocks regularly they are not eager to do so in a separation pen.

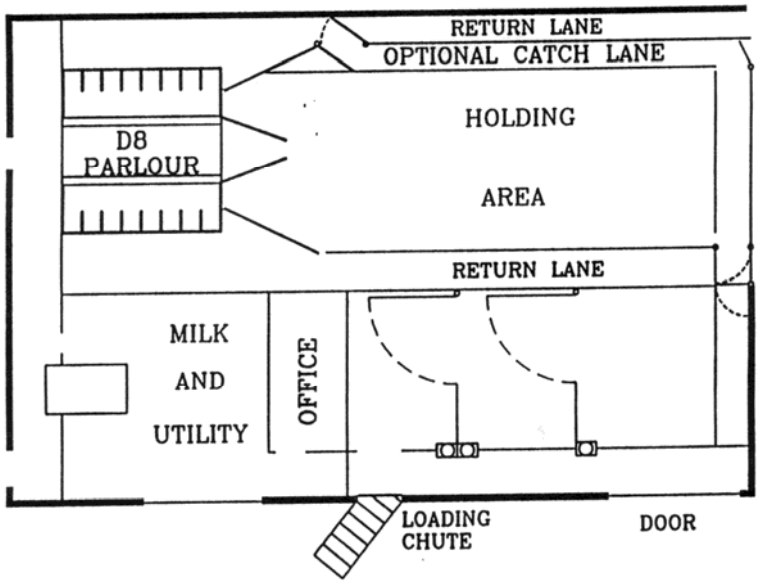

Fig. 1 A simple sort pen beside a holding area. This is fine for holding cows short term for handling, but not a good spot for housing special needs cows because of changing temperature and humidity from the holding area.

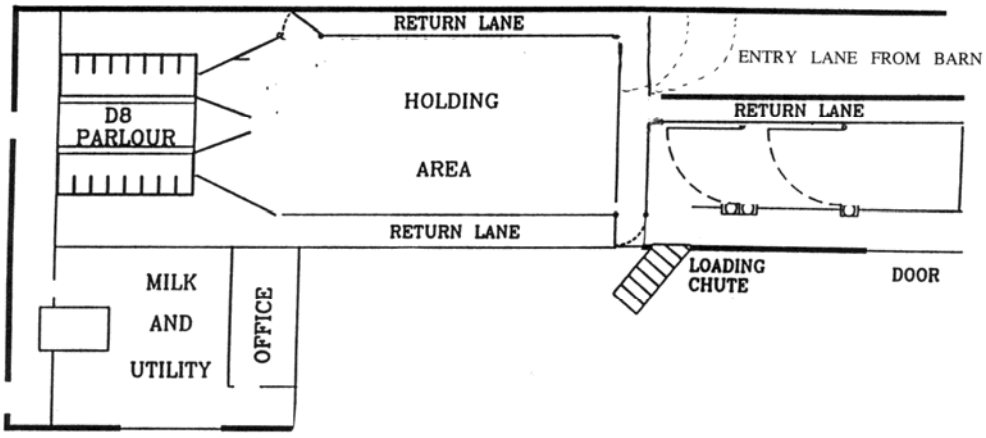

Fig. 2 A sort pen behind the holding area. ventilation is better here but feeding is difficult.

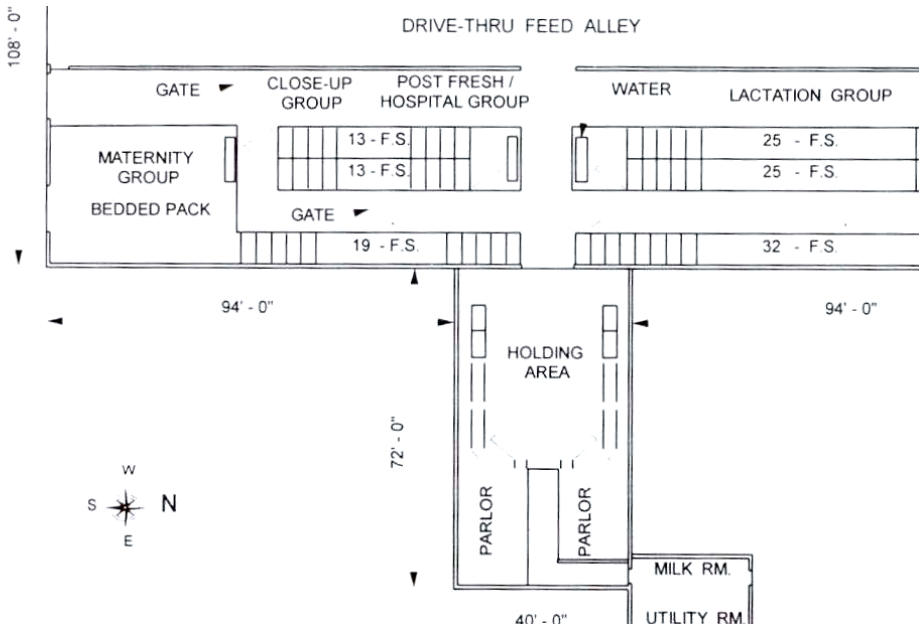

Fig 3. A handling area in a corner of the barn. Combining this with housing special needs cows here will work well for ventilation, clean out, feeding and parlor access. This is a good location for barns with two or three milking groups.

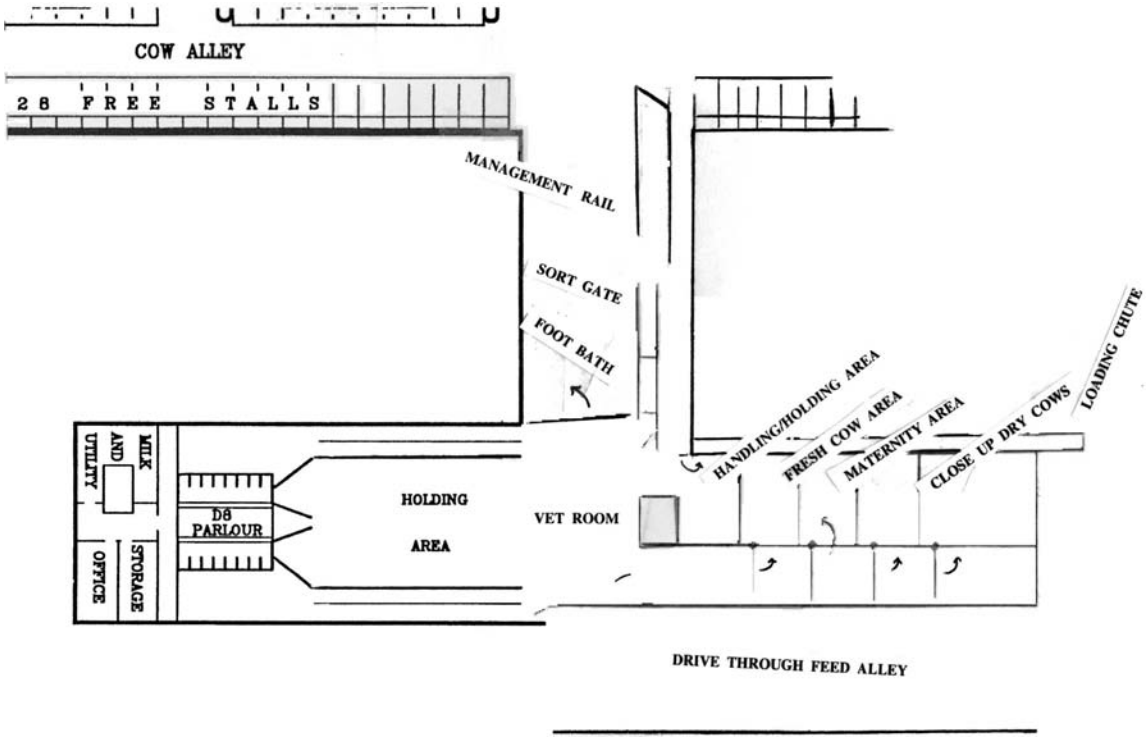

Fig. 4 A handling and special needs area behind the parlor using the link for a chute and management rail. This layout is ideal for larger herds. Far off dry cows could be housed on the opposite side of the drive through as well.

Handling in the Robotic Milking Herd

In a robotic herd, milking times are spread out, so sorting a cow or group of cows at milking for handling at a specified time will require up to 15 hours of lead time. Hence a good sort pen must provide the sorted cow with feed, water, a place to rest, and the opportunity to return for additional milking. If your preferred handling system is headlocks, parlor milked cows are hungry after milking, and when they return to the barn nearly all go to the manger and willingly lock themselves in. Headlocks for robot barns are problematic because without a period away from feed many cows are not interested in going to the manger when fresh feed is delivered. Because both sort pens and headlocks are problematic, many robotic milking herds do treatment work by crowding cows into freestalls, chasing them into headlocks, or fetching them into the holding area strictly for timely separation. It is ironic that while robotic milking is intended to save labour, on many robotic farms today, cow handling is a bigger chore than in parlor dairies.

With robotic milking, cows flagged for sorting by the herdsman or by the management software, can be separated automatically as they leave the milking stall. But because milking takes place continuously, you will need to start sorting cows for tomorrow morning's herd health visit by suppertime today, and the barn layout must include a separation area large enough for all the cows needed on herd health day. The separation pen must be located so it is accessible from all robots, and designed so cows housed in it for up to 15 hours have access to feed, water, a place to rest, and access to a robot for additional milking. In barns with several robots they need to be clustered close together so that separated cows can be sorted to a common separation pen. If this pen is behind one of the robot rooms, the separated cows can be given access to the fetch pen beside that robot so they can be milked again and returned to the pen. These requirements are most easily met if cows do not have to cross a feed alley. Hence robotic milking barns lend themselves well to layouts with perimeter feeding and all cows and robots located centrally. Perimeter feeding also keeps rain, sun and frost out of the cow areas further enhancing cow comfort.

Determining the right size for the separation pen is a difficult decision. On most typical days the number of cows being separated will vary from none to one or two cows separated by the software, to 4 or 5 cows separated by the herdsman. But on herd health day the vet may want to look at as much as 25 to 30% of the milking herd. In a 120 cow 2 robot herd, providing space for 30 cows in a separation area that is only used two nights per month before herd health days, is not practical. But if the dry cows are also housed behind the robot a freestall area with flexible gating that can be moved can offer a practical solution. As an example, a barn for 120 milking cows could include 24 stalls for dry cows and close up heifers, plus 6 stalls for separated milking cows behind one of the robots. On the days that no cows are being separated the dry cows and heifers have lots of room, and the robot access could be used to put close up heifers in the fetch pen and train them to go through the robot voluntarily. This introduces them to the feed, and makes them familiar with the milking stall and the noise of the robot arm. Most heifers trained this way need no further help after calving resulting in less stress and less labour for the operator.

On days when a few cows are being separated the gates are set so that dry cows have adequate space but no robot access, and separated cows have the 6 stalls immediately behind the robot. While these cows wait for handling they can access the robot for additional milking. If 30 cows are being separated for herd health day, set the gates so that the 24 dry cows are crowded into an area with 16 stalls, 12 hours before the time of the herd health visit. Since the overcrowding is only for one 12 hour periods every two weeks it should not be a big concern. This makes 14 stalls available for separated milking cows, and since they are being sorted throughout the night, overcrowding will not become an issue until 4 or 5 hours before the vet's arrival. If instead of freestalls, the dry cow housing area was a bedding pack, the stress of crowding on herd health days would be even less. Alternatively doing herd health weekly with fewer cows is another option. With strategic gating, a section of headlocks in the dry cow area could be used to restrain cows during the pregnancy exam, or they can be examined in the handling chute.

In a two robot barn, the area behind the other robot can be used as a bedding pack for fresh cows and cows with mobility issues. Giving these cows the freedom of a straw pen provides additional comfort for them and having them close to the robot, means less walking for the cow. Often weak and lame cows need to be fetched and fresh cows require some assistance, so housing them close to the robot means less labour for the operator as well.

With milking groups in front of the robot rooms and separation, dry cow and fresh cow groups behind them, the area between the robots becomes the ideal location for the handling facility itself. Depending on herd size, the dairy might choose for a single handling chute that incorporates restraints for hoof trimming or separate chutes for trimming and other handling and on very large farms it could include a management rail. Gating should be designed to direct cows into the devices and the area should also incorporate excellent lighting, equipment storage, hot and cold water, and a desk and computer for dealing with treatment records.

The goals of new barn construction should always include reducing labour, improving cow comfort and reducing stress on both the cows and the farmer, but when handling facilities are inadequate results can be disappointing. Paying attention to handling considerations will pay big dividends.