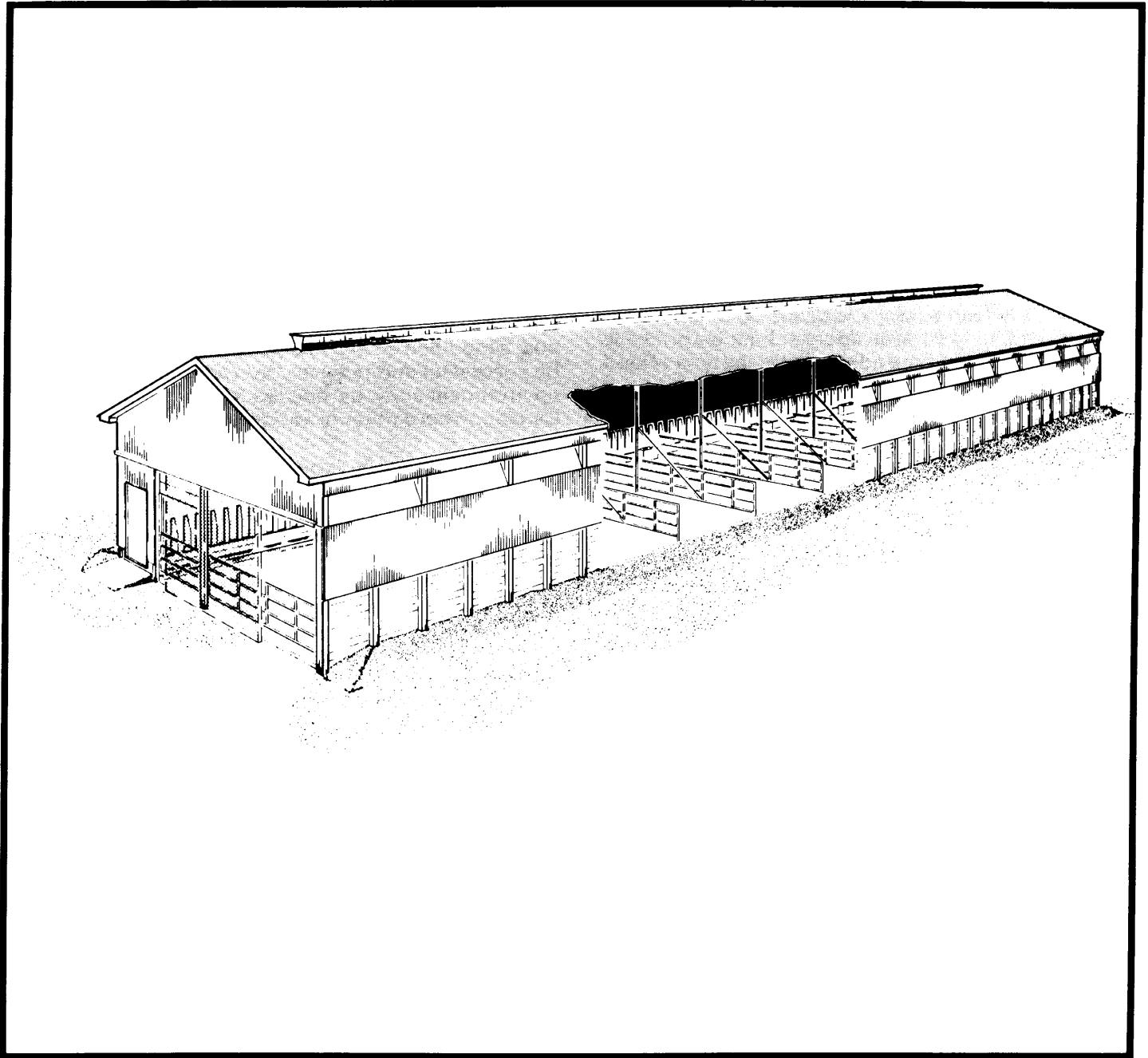




BEDDED PACK HEIFER BARN



The Canada Plan Service prepares detailed plans showing how to construct modern farm buildings, livestock housing systems, storages and equipment for Canadian agriculture.

This leaflet gives management information and describes one of these detailed plans. To obtain a copy of the Canada Plan Service detailed plan, contact your local provincial agricultural engineer or extension advisor.

BEDDED PACK HEIFER BARN

PLAN M-2403

NEW 88:11

This leaflet describes detailed plans for a 9.6 m (32 ft) wide barn to house older calves, open and bred heifers and dry cows in a row of group pens. Facilities for feed storage and preparation are not included.

LAYOUT A feed passage runs full length along one side of the barn. A tombstone feed fence (Plan M-2658) is suggested along the feed passage, however other commercial feed fences may be used. The feed fence serves as the pen front for a row of 3.6 m (12 ft) wide pens. A 150 mm (6 in.) high step at the feed fence and a 2.4 m (8 ft) wide scrape alley run through the front of the pens leaving a 4.8 m (16 ft) long bedded area at the back. For 8 heifers per pen, this allows approximately 3.4 m² (36 ft²) of floor area and 0.45 m (18 in.) feed fence space per head. For larger heifers and dry cows, fewer animals are kept in each pen thus giving each animal more floor and feed fence space.

As shown, the feed passage is about 1.6 m (5 ft) clear width with 1.2 m (4 ft) wide doors at both ends. Check that these dimensions are adequate for the type of feed cart or system you are going to use.

No provision is made for a separate area for individual animal treatment or handling. A locking headgate feed fence could be used for this, instead of the tombstone feed fence as shown.

Although not shown, the same basic layout can be used on both sides of a centre 1.8 m (6 ft) feed passage in a 16.8 m (56 ft) wide barn. In this case, the width of the open ridge must be increased to approximately 250 mm (10 in.).

CONSTRUCTION Simple pole construction with poles spaced at 2400 mm (8 ft), and clear span trusses are shown in this plan. Additional short posts are placed midway between the poles to help support the back wall where the manure pack may build up. The poles, as indicated in a selection chart given in the plan, provide adequate wind resistance for the building without using knee braces. In some building situations knee braces could be used to avoid going to larger poles, however details for such a structural change must be provided by a qualified engineer.

The barn can be built fully insulated and operated with exhaust fans as a controlled environment barn, or built with minimum insulation and operated as a naturally ventilated modified environment barn. With the latter, some insulation is recommended in the roof even in milder climates to reduce condensation and dripping.

PEN GATES AND PARTITIONS Pipe gates that telescope can be used for the portion of pen partition that crosses the scrape alley. By telescoping from 2.4 to 3.6 m (8 to 12 ft) the gate can be swung to close the

heifers in the bedded area of the pens while cleaning the alley. Alternatively, a permanent 1.2 m (4 ft) section of fence can be built along the front of the bedded area in each pen, with a 2.4 m (8 ft) gate used to close off the remainder or swung across the scrape alley as required. To function well, telescoping gates must be built sturdy enough to resist bending and twisting caused by the cattle pushing against them.

For a bedded pack system, the long pen partitions should be adjustable vertically so that they will swing clear of the pack as it builds up. Also, hinge them so that they can swing 90° to clear the bedded pack area for cleaning with a tractor. The partitions at each end of the barn, that is in front of the large sliding doors, should go to floor level to protect the doors from the bedded manure pack. Pen partitions the full length of the bedded pack require strong hinges and supports; alternatively, this partition can be split in two with the back section being supported at the wall. Various styles of commercial penning are available. Before selecting, check for strong hinges and construction, as well as for adequate support for the bases of any gate posts.

VENTILATION In most of the dairy regions of Canada, a modified environment, as shown in the plan can be successful and relatively inexpensive. A controlled environment may be needed in the colder parts of Canada, where manure can freeze in the passages.

With the modified environment system, a series of tilt-in window panels, a continuous 25 mm (1 in.) slot at the outer edge of the soffit, and a continuous slot at the roof ridge provide natural ventilation. Alternatively, a cable controlled plastic curtain that moves vertically can be used to open or close a continuous wall opening. This curtain system is easily adjusted from zero to full open, and gives very good control of incoming air as compared to tilt-in panels. The costs of either system installed are estimated to be about the same. For more details on the plastic curtain system see Canada Plan Service (CPS) leaflet M-9351.

Flash the ridge baffles, made of rigid insulation, with metal on the top and outside, not the inside. This reduces condensation and dripping in cold weather. If dripping is a problem, install a narrow strip of roofing or translucent fiberglass panels in the truss space about 1 m (3 ft) below the ridge to catch the drip, and slope to drain. Without fans, thermostats and full insulation there is no precise control of temperature. The window panels can be regulated with a cable and winch control to keep out snow and maintain an inside temperature between 5 and 20°C above outside, nevertheless heated waterers are needed.

BEDDED PACK AND MANURE HANDLING A bedded pack should be started by sloping a pile of bedding from the floor at the front of the bedded area to about 0.6 m (2 ft) deep at the wall. A coarser material such as dry corn cobs makes the best base material for this pack. Fresh bedding is then added to the pack as required. With normal cattle traffic, more manure tends

to be dropped towards the scrape alley. This alley is then cleaned every few days as required. The manure is normally scraped with a small tractor to nearby storage. For ease of cleaning, large access doors are provided both at the ends of the scrape alley, as well as at each end of the row of bedded areas.

Plans of storages suitable for the wet manure from free stalls are available from the Canada Plan Service; contact your local extension engineer or specialist.

To control water pollution, manure storages should be manure tight and sized to provide sufficient storage to eliminate the need to spread manure on snow, frozen ground or sensitive crops. For most situations in Canada, spring and fall applications are best, requiring 6 months or more of storage. Obtain approval of your plans from local authorities before you start construction.