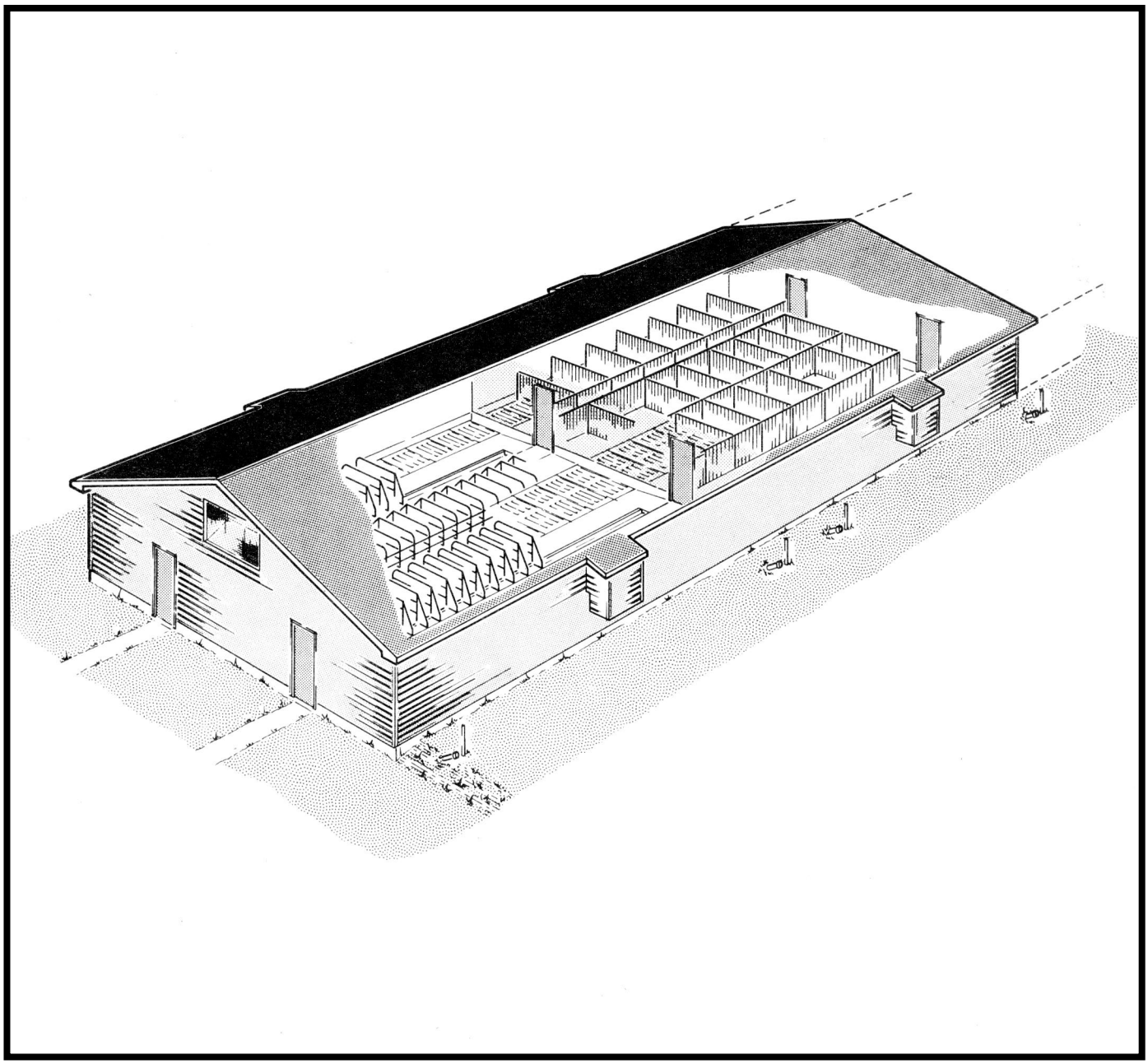
BRITISH COLUMBIA Ministry of Agriculture, Food and Fisheries
Agricultural Building Systems Handbook
PLAN
362-22

TWO-ROOM BREEDING AND GESTATION UNIT



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TWO-ROOM BREEDING AND GESTATION UNIT

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PLAN M-3241 NEW 84:06

This was developed from Alberta plan A-3051. The barn is sized for a breeding herd of about 200 sows and gilts plus 10 boars, and is divided into two rooms, one for boars and breeding and the other for gestation. Overall building dimensions are 12.6 m x 30.6 m, but the length could be adjusted for other herd sizes.

BUILDING CONSTRUCTION The building is made with insulated stud-frame walls on a perimeter concrete foundation that also serves as the outside wall for the liquid manure trenches. An important feature of this construction (detailed in Plan 306-52) is the insulation that is cast into the concrete as the foundation is poured. This rigid polystyrene reduces heat loss through the concrete and prevents manure from freezing along the foundation.

Wall plan 306-52 shows plywood interior-wall cladding. In the pen areas this must be protected from chewing, so the lower part should be covered with a hard, smooth-finished and washable cladding. High-density recompressed cement-asbestos board has been used, but the new fiberglass-reinforced plastic (FRP) boards may be a better choice. With either product, seal all the edges with silicone caulking, fasten with rust-proof screws or nails driven into pre-drilled holes, and protect the vulnerable bottom edge with a good setback at the concrete curb.

BREEDING ROOM The special feature of this plan is a separate breeding area to house the boars in individual pens, intermixed with group pens for the unbred sows and replacement gilts. For herds over 100 sows, there are important advantages to separating the busy breeding area from the relatively quiet gestation area.

A controlled-light program for the breeding room improves conception rates. Recommended lighting is about 80 lux (7.5 foot-candles) measured in the breeding room feed passages. A 14 h ‘day’ is recommended, and is easiest to control using a 24 h timer that controls the lighting circuits. This is better than relying on the herdsman to remember to switch lights on and off. A clean white or near-white finish on walls and ceilings is more important than the number and wattage of lights used. In milder parts of Canada, well-insulated windows can provide additional natural light and make the breeding room a more pleasant place to work.

Group pens for the sows and gilts are two sizes. The smaller 1.8 x 2.4 m pens can handle four gilts @ 1.08 m^2/gilt, and the larger 1.8 x 2.8 m pens are adequate for up to four sow @ 1.26 m^2/sow. These same pens are also suitable for one boar. As older boars tend to produce more stimulating pheromones (sex odors), they should be dispersed throughout the room.

A special feature of this plan is a pair of pens dedicated only to breeding. In these, the slotted floor part is paved over, giving an entire floor that is rough-textured concrete and sloped slightly for wash-down to a pair of drain holes at the back corners. In addition to the steel dividers, a low concrete curb surrounds and isolates each breeding pen. A flat clay floor is another non-skid choice preferred by some breeders.

Sows and gilts at breeding stage are often unsettled and cantankerous, and the group pen floors are usually messy. Under these conditions floor feeding is not too practical, so feed hoppers are frequently hung on the front access gates or clamped to the pen partitions, near the front gates. Pairs of nozzle drinkers or water bowls, clamped to the pen partitions over the slotted floor, supply drinking water to pairs of boar or gilt pens.

GESTATION ROOM After the females are confirmed pregnant, they are transferred to the gestation room and confined to pen stalls (plan 306-51). Gestation pen stalls eliminate fighting and competition, ensuring that the ‘boss’ sows don’t get too fat or injure the more timid ones. Limit-feeding the pregnant sow herd then becomes practical, and you can control overweight sows and dramatically improve the number of piglets weaned per sow.

The pen stalls can be any of several types shown in Plan 306-51. Those with continuous raised concrete feed troughs in front and concrete slotted floor grids at the rear are shown. Most of the stalls are 600 mm wide, with 12 in one row 650 mm wide for larger sows.

Sows in stalls are usually hand-fed individually, using a calibrated or weighing feed scoop to dip feed from a rubber-tired feed cart. Very large producers can buy automatic feed-dispensing equipment, but most good herdsmen seem to prefer the opportunity to check on each sow at feeding time. With either feed auger or

cart feeding there is much less squealing and stress if all sows can be fed at the same moment. This can be done with feed hoppers over each feeder, all dumped simultaneously by a single cable release.

Drinker nozzles, centered over the steel feed hopper to catch the dribbles, bring water to each sow. With the continuous concrete feed trough, a less expensive alternative is a water line of galvanized steel pipe clamped along the stall fronts. A hole drilled in the bottom at each stall trickles water into the trough whenever the tap is opened. Each drop pipe and supply tap can serve a row of up to 20 stalls if the drop pipe is located mid-length in the row.

Where the stall fronts are used as exit gates, this water line must be high enough to clear the sow's back. One alternate location is the foremost top pipe of the stall row; a pipe (with valve) is dropped to the midpoint of each 10 stalls, and the valves are 'balanced' to supply enough water to all stall groups whenever a main valve is opened. Once the balancing valves are adjusted, remove the handles to prevent tampering.

MANURE SYSTEMS The plan shows slotted floors and a liquid manure system minimizes the manure storage time inside the barn. To simplify concrete formwork and minimize errors, the four long gutters under the floor are aligned to correctly fit boar and group female pens in the breeding room and gestation pen stalls in the gestation room.

The gutters collect liquid manure for up to a week, then plug-valves made from matched plastic pails are pulled open, flushing the accumulated slurry into a sewer pipe leading to long-term storage outside. This is the simplest possible liquid manure removal system, but it must be carefully watched to make sure that settled manure solids do not accumulate. Vacuum-tanker pipe connections are provided (at the ends of the gutters farthest from the outlet) for emergency flushing in case the gutters accumulate solids.

Another idea to improve flushing in the paired gutters along the midline of the barn is to open alternate valves at each flushing. This reverses the direction of flow with each flush.

An important feature is the simple manure gas trap in the collector tank outside the barn wall, made from a 250 mm plastic pipe elbow. This prevents manure gas and freezing cold air from being drawn into the barn by the negative-pressure ventilation system. The entire system depends on having a long-term, manure-tight liquid storage separate from the barn. A storage big enough for at least 6 months production lets you avoid spreading manure when the ground is frozen in the winter or when crops are growing in the summer.

VENTILATION AND HEATING Fresh air may be supplied from the attic (with center air inlets, plan 305-11). Precisely-adjustable baffles of rigid polystyrene foam board are easily controlled from one convenient point in each room by a boat winch and cable system. This lets you quickly adjust slot openings from the summer maximum (40 mm) to the winter minimum (about 1.5 mm).

A system of exhaust fans powers the ventilation; these are step-controlled by four thermostats, all mounted on a board at eye-level directly under the inlet at the center of each room. A small two-speed fan runs continuously in each room to handle Step 1 and Step 2 cold weather ventilation rates. Other fans (Step 3 and 4) of increasing capacity are stepped into operation as room temperature rises. The operator should anticipate which fan is going to be cycling on and off for the next 12 h or so, and preset the air inlets accordingly. In winter, a manometer reading of about 12 Pa across the air inlets indicates the critical minimum velocity of 4 m/s that promotes good air mixing and minimizes drafts. Some operators may want to automate the inlet adjustment by purchasing pressure-controlled automatic inlets; others don't feel this extra cost is justified.

In extremely cold weather some supplementary heating will be required to prevent excessive dampness, especially in the warmer gestation room where sows in individual stalls produce less body heat. This heating should be electrically interlocked with the Step 2 ventilation so that heating is **ON** only when Step 2 ventilation is switched **OFF**. The best type of heating will depend on energy pricing in your particular region.