

## FARROWING PENS

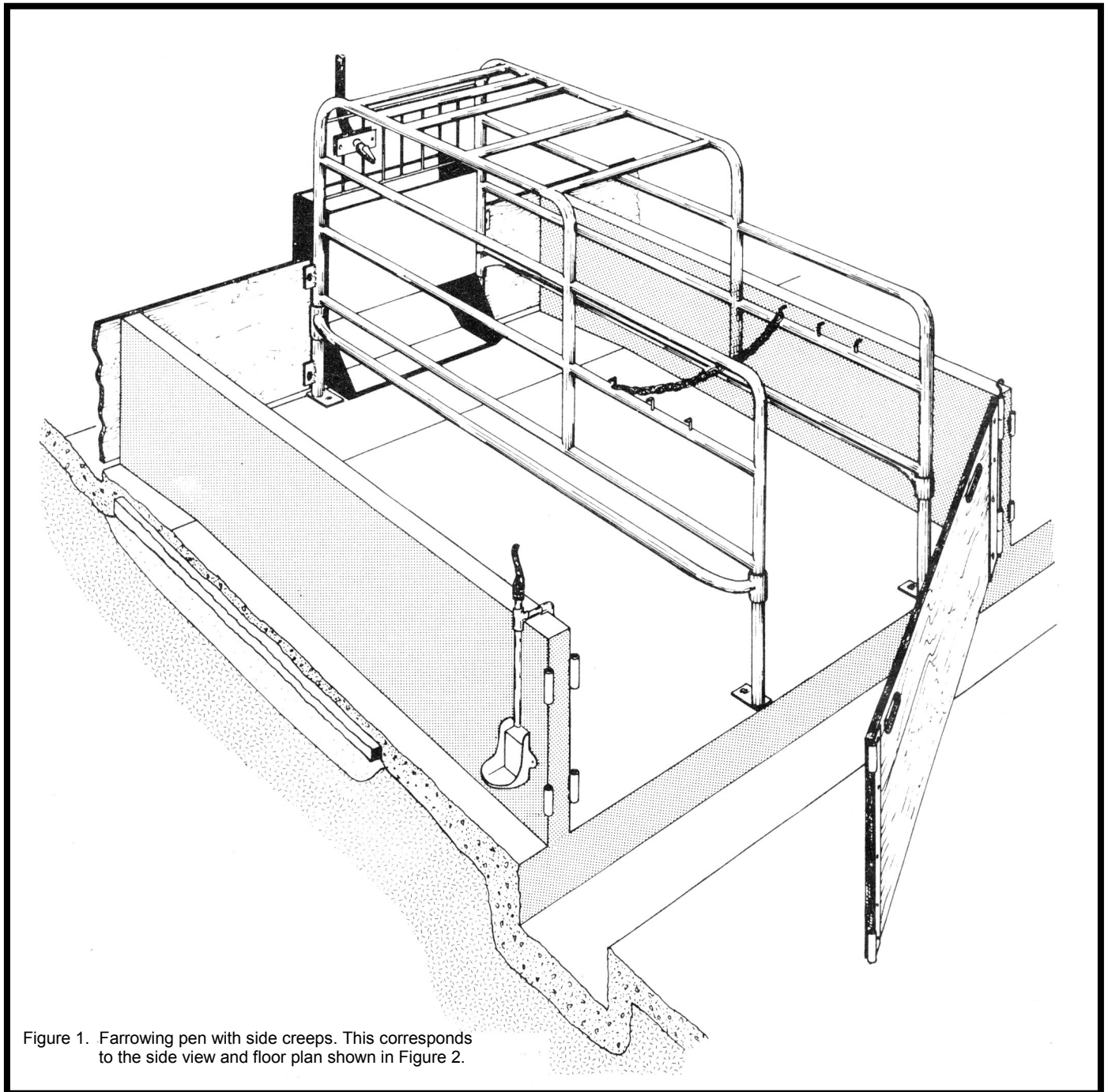


Figure 1. Farrowing pen with side creeps. This corresponds to the side view and floor plan shown in Figure 2.

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## FARROWING PENS

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 PLAN M-3800 NEW 80:07

This leaflet outlines design information and alternatives needed to select and build new farrowing pens. Several manure-handling options are shown for farrowing pens with either side creeps or front creeps.

### SIDE VERSUS FRONT CREEPS

Pens with side creeps require the least amount of floor space. For early weaning (4 weeks of age, or less) pens 1.5 x 2.1 m are adequate; for later weaning increase pens to 1.8 m wide to give the growing piglets more room.

With side creeps (Figures 1 to 5 inclusive) the farrowing crate may be set off center to provide a wider heated creep area to one side and a narrower unheated nursing area on the opposite side. Alternating the wider heated creep area from one side to the other in a row of pens allows the use of one radiant strip heater (500 or 750 W) for two adjacent pens.

Farrowing pens with front creeps (Figures 6 to 9) are about 600 mm longer, therefore they require about 1 m<sup>2</sup> more floor space than pens with side creeps. This could add considerably to the cost of a new building. Other slight disadvantages for front creeps are that the sow is usually backed out of the crate, and the herdsman must reach over the creep to scoop feed into the sow's feed hopper. However, with a good steel measuring scoop this is a very minor inconvenience.

Front creeps offer a number of important advantages. They occupy a continuous straight strip of floor area, which greatly simplifies installation of under-floor heating (see Figures 8 and 9). The herdsman can box the piglets into the front of the pen and away from the sow when they require iron injections, teeth clipping, etc. Higher creep temperatures can be maintained without overheating the sow. Bedding can be used in the creep, and yet a liquid manure system without bedding can be used in the sow area. And finally, with little pigs nesting well away from the sow there is less chance of smothering and crushing.

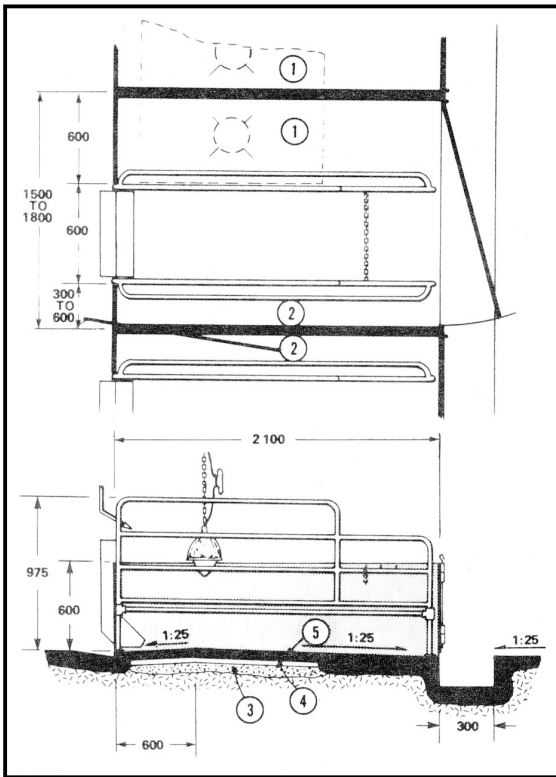


Figure 2. Farrowing pen with side creeps ① and ②. At ① insulated floor consists of ③ sand bed compacted flat, ④ 50 mm extruded polystyrene insulation board, and ⑤ 25 mm high-strength concrete topping.

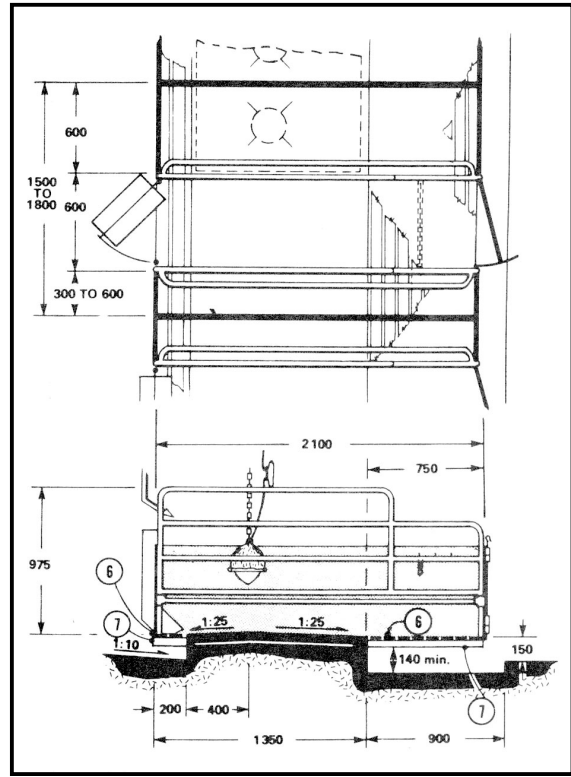


Figure 3. Side creep farrowing pen with cantilever slotted floors ⑥, supported on ⑦ 2, 18 x 50 mm steel bars embedded in floor at each side of crate. For insulated creep floor under heat lamp, see Figure 2.

## FLOOR INSULATION AND HEATING IN CREEP AREAS

All figures except Figures 5 and 7 show an insulated creep floor. Do not waste money insulating the concrete floor under the sow – she is more comfortable at normal concrete floor temperatures, and furthermore the crate is easier to lag down if the concrete floor is a full 100 mm deep under the attachment lugs.

To insulate the creep floor, tamp dampened sand fill to make a hard, flat surface exactly 75 mm below the final floor surface. Lay out extruded (blue) polystyrene insulation board 50 mm thick, then top with 25 mm of high-strength concrete mix. It is essential to minimize the mass of this topping coat of concrete mortar; if too thick, it will take too long for the concrete to approach the skin temperature of the baby pigs and any benefits of the insulation will be lost. The mortar mix must be 'dry' enough to achieve high strength during the wet-curing period. Also, if the concrete mix is too sloppy, the polystyrene board will try to 'float' and a very poor job will result.

For creep floor heating (Figures 8 and 9), either hot water piping or electric heating cable may be used. Hot water circulated through high-density polyethylene piping is most popular; see Agriculture Canada Publication 1451, *Confinement Swine Housing* for design information.

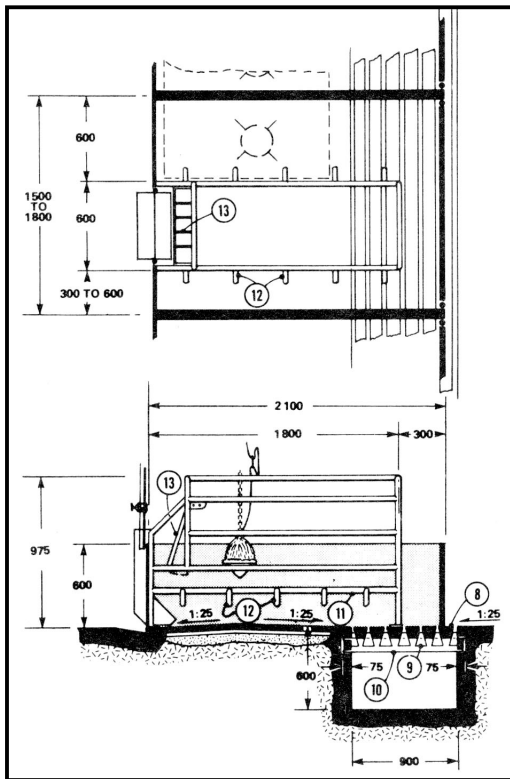


Figure 4. Side creep farrowing pen with part-slotted floor. Reinforced concrete slats (8) spaced 25 mm apart with plywood spacer cleats (9) nailed to (10) 38 x 140 mm pressure treated wood beams set 75 mm into concrete. Sow retainer bar (11) has welded pipe fingers (12) at 45°. Steel pipe crate has adjustable swinging front head gate (13) to help sow keep manure to rear of stall.

## MANURE HANDLING SYSTEMS

A *shallow gutter* (Figures 1, 2 and 6) just outside the pens is used frequently where the pens are bedded. The gutter can be cleaned with a shovel or by mechanical gutter cleaner.

Floors inside the pens should slope at 1:25 towards the gutter for drainage. Figures 1 and 2 show a second slope to a small front gutter; this prevents water drinker spillage from wetting the full length of the pen.

*Cantilever slotted floors* (Figures 3 and 7) at the back of the pens (and sometimes at the front as well) provide cleaner, drier pens with minimum labor. To clean under the cantilever floors, a special offset scraper is pushed along the gutter using a handle which extends out into the alley. This system is very useful for small farrowing rooms or short rows of pens where mechanical or flushing systems become too complicated and costly. The slotted floor is supported on 18 x 50 mm steel bars embedded in the concrete floor part. Suitable slotted floor materials include perforated steel channels, flat steel bars, reinforced plastic T-slats, etc. Front creeps can also be cantilevered from the pen front (Figure 7) to drain off spillage from the sow drinker and feeder.

*Part-slotted floors over deep gutter* (Figures 4 and 8) provide manure storage for a period of time before it is flushed to long-term storage. To remove manure, use

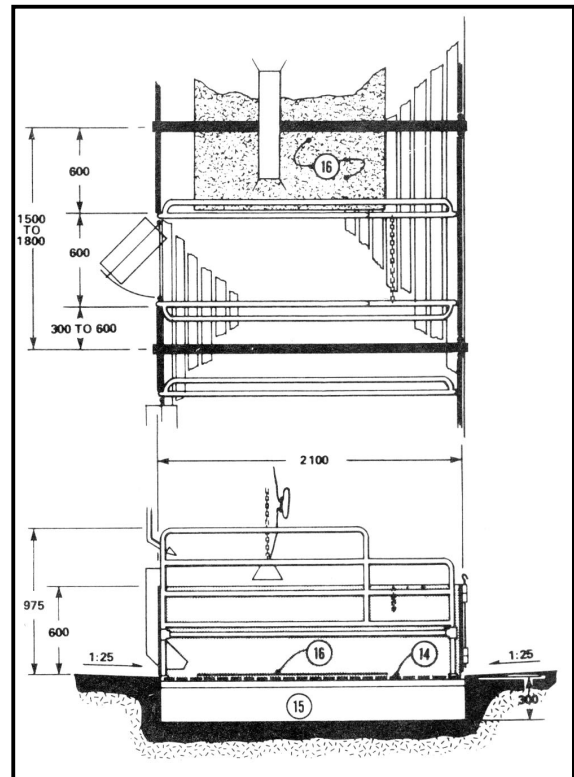


Figure 5. Side creep farrowing pen with totally-slotted floor (14) over liquid manure pit (15). Removable pig mat (16) of rubber belting reduces drafts in creep area.

gravity flow, mechanical flushing or mechanical scraping. For gravity flushing, be sure to provide a watertight drain valve, otherwise liquids will slowly seep through the valve leaving the manure solids in place. The most popular slotted floor material here is reinforced concrete slats spaced 25 mm apart. Support the slats on pressure-treated wood cross-beams and space the slats with plywood cleats soaked in preservative. For newborn pigs, add a steel grate of 12 mm rods spaced to fit into the slots and welded to strap steel spacers which rest across the tops of the slats.

*Totally-slotted floors* (Figures 5 and 9) may be elevated on legs or curbs above floor level (remodelling) or set level with the alley floors as illustrated (new construction). Manure is removed from under the slotted floors by flushing or mechanical scraping. Floor materials include the perforated steel channels, flat steel bars or reinforced plastic T-slats mentioned previously, plus precast reinforced concrete slat grids.

Slotted floors shown in Figures 3, 4, 5, 7 and 8 are shown with slots running perpendicular to the stall length; this is not exclusive and many good slotted-floor designs have slots running parallel to the length.

### THE FARROWING CRATE

A large variety of commercial crates are available. Actual crate lengths may range 450 to 600 mm in width but all drawings show 600 mm width to simplify dimensioning the floor plans. The exact dimensions of the desired crate should be checked before installing gutters, etc. The example crates in this plan show a number of good ideas.

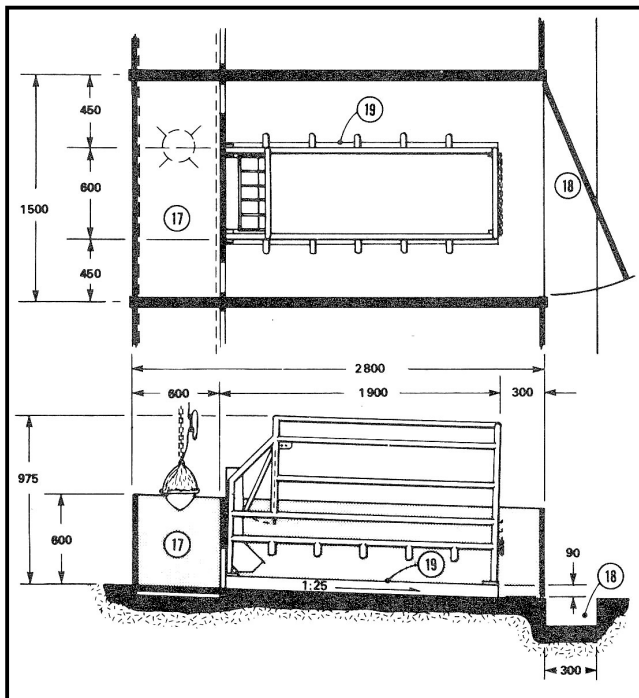


Figure 6. Farrowing pen with front creep (17), shallow gutter (18) for bedded manure, and raised sow pad (19). For insulated floor in creep (17), see Figure 2.

The guard-fingers installed at 45° in the crate in Figures 4, 6, 7 and 8 allow the bottom rail of the crate to be set higher, giving the sow more room when lying down. This also gives the piglets better access to the sow and prevents her from getting caught under the bottom rail. This plan also shows a free-swinging gate hanging at the sow's forehead. This gate is adjustable fore-and-aft to accommodate long or short sows; it keeps the sow standing back in the pen so that manure falls nearer the gutter. The sow can still push forward on the gate to obtain access to feed or water.

The second type of crate is similar to many commercial designs and is shown in Figures 1, 2, 3, 5 and 9. This type offers an adjustable bottom rail that bows out into the creep area. This idea gives the sow more width for lying and provides easy access to her udder. Adjustment for sow length is done by moving a short chain or crossbar near the rear of the crate.

### CREEP PARTITIONS

The creep partitions should be 600 mm high, solid and constructed of precast or cast-in-place concrete, plywood, lumber or galvanized steel sheet, or a combination of materials such as concrete and plywood (Figure 1). Concrete and steel creep partitions are easier to sanitize. Plywood or lumber partitions are easier to clean if they are made removable.

For easy cleanout in solid floor pens, the entire rear partition should open out or be removable as shown in Figures 1 and 2. For slotted floors, a small rear gate hinged on the crate itself is satisfactory.

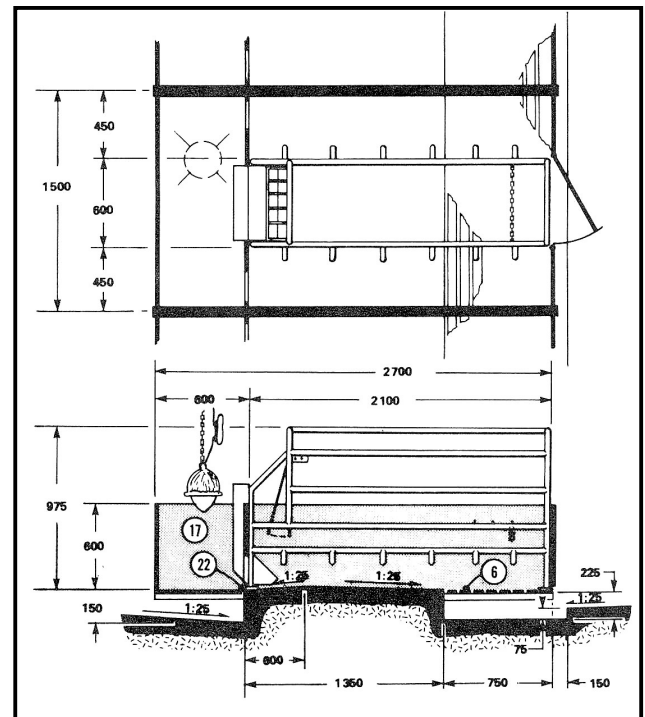


Figure 7. Farrowing pen with cantilever slotted floor (6) and cantilever front creep (17). Supported by (7) 18 x 50 x 2700 mm steel bars. Note 25 mm drainage slot (22) at edge of creep.

## PEN MANAGEMENT

Farrowing pens should be thoroughly cleaned and disinfected between litters. Part of the cleaning process includes a drying period after pen cleaning.

In pens with front creeps and solid floors there should be a raised concrete pad under the sow to keep her dry (Figures 6 and 8).

Rough floors cause feet and knee abrasions to the piglets. Care should be taken to eliminate any sharp projections on concrete or perforated steel floors. An alternative is to install rubber mats in the creep area. Epoxy, porcelain or plastic coatings can also be used on steel slats to reduce knee abrasions.

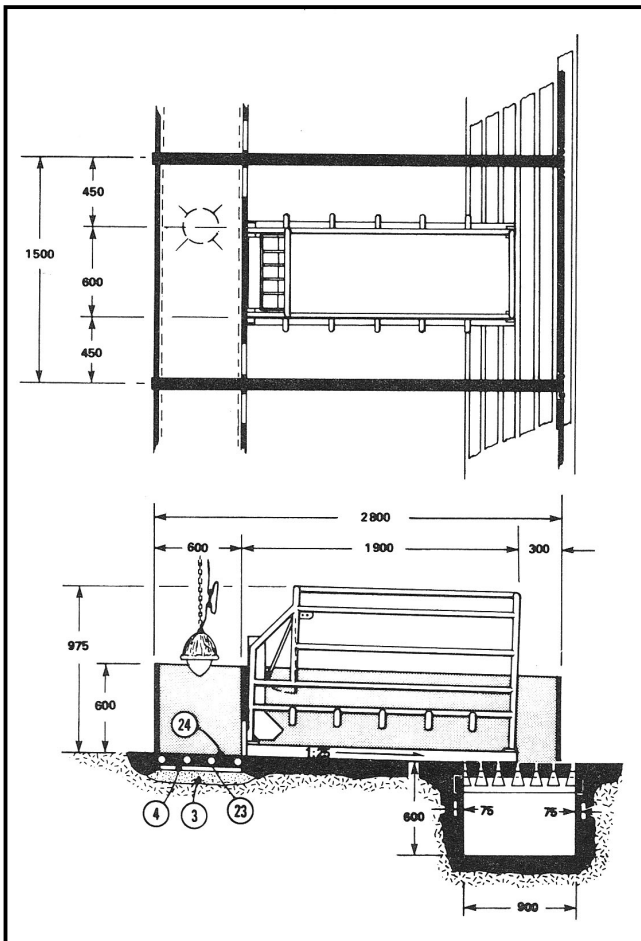


Figure 8. Front-creep farrowing pen with part-slotted concrete floors. Strip floor heating under the creep area is compacted sand fill (3), 38 mm extruded polystyrene insulation (4), hot water piping (23) embedded in 75 mm concrete floor (24), or use suspended radiant heating.

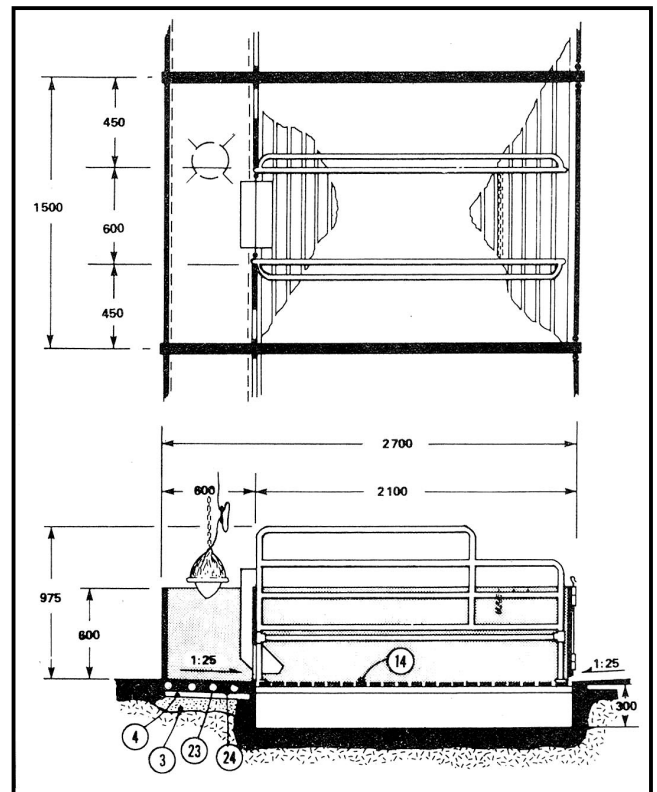


Figure 9. Front-creep farrowing pen with totally-slotted floor (14). Use either strip floor heating (23), or suspended radiant heating. (3) sand fill compacted flat. (4) 50 mm extruded polystyrene insulation board.