

ENVIRONMENT CONTROL

Cold Weather:

Maintain inside temperature at 50°F. and inside relative humidity at 75%. Supplemental heat maintains inside temperature, and permits adequate ventilation.

Mild Weather:

As outside temperatures exceed about 40°F, permit inside temperatures to increase to 70°F.

Hot Weather:

As outside temperatures approach 80°F., optimum conditions for swine cannot be maintained without air conditioning. Most units are designed to maintain inside temperatures no more than 3° to 5° above outside temperatures. High level ventilation is required.

HIGH TEMPERATURE CONDITIONS

At about 90°, hogs start experiencing severe heat stress. Because hogs do not perspire, they eliminate body heat only through evaporation in their lungs. By adding external water, and surface evaporation, greater comfort can be created when temperatures are high.

Provide water sprinklers (not fog nozzles) to deliver about 2 gal./hr. to 10-12 hogs. The sprinkler should be thermostatically controlled to start at temperatures above about 83°F. All fans should be on to provide adequate air movement. As temperatures drop, sprinklers stop at 83°F. to prevent chilling and pneumonia.

EMERGENCY CONDITIONS

Should power to ventilation fans fail, conditions within a tight building may soon become fatal to hogs.

If electric power fails:

1. A battery operated alarm should sound, and
2. A swing down door, or louver, at each end of the building should open to provide some ventilation. An electro-magnet catch or similar device will hold the doors shut during normal operation.

VENTILATION REQUIREMENTS

Winter:

Provide 150 cfm fan capacity per pen. Control fans with a time clock, set to run 2 to 3 minutes out of 10 in severe weather, up to constant operation above about 40°F. The clock will have to be reset with major weather changes.

Summer:

During mild and summer weather, control fans with a thermostat. Summer fan capacity should provide 80 to 120 cfm per market hog, or 40 to 60 air changes per hour (1 air change = volume of building in cubic feet).

HEATERS

Heaters should be non-back drafting to prevent flue gases from entering the unit, and to prevent heater fires from blowing out.

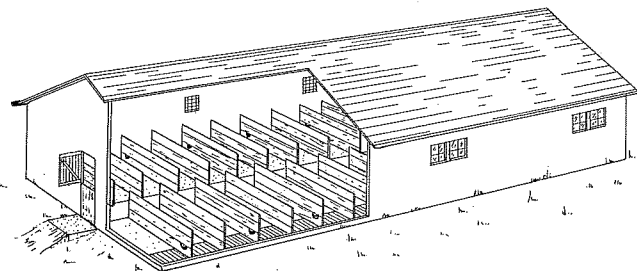
HEAT REQUIREMENTS

The table indicates the capacity needed for anticipated continuous outside temperatures. Thermostats maintain inside temperatures at 50°F.

Supplemental heat and ventilation requirements are greater for finishing hogs than for either farrowing or growing. Heating capacities given below will be required for finishing. Lamps or floor heat are assumed for creep areas.

Floor heat: Provide about 30 watts per square foot with electrical heating tape, or 50 btu per hour per foot of hot water (120° to 130°F.) pipe.

OUTSIDE TEMP. °F.	HEAT REQ'D. BTU/HR per PEN
-40	6000
-20	4000
0	2400
20	1000



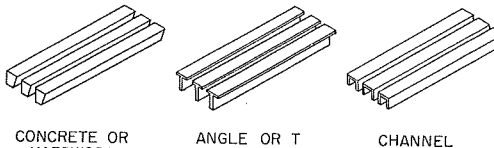
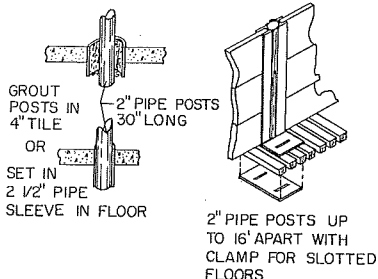
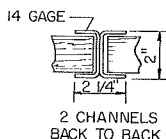
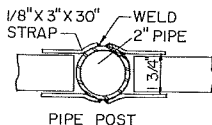
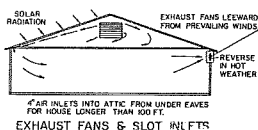
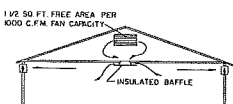
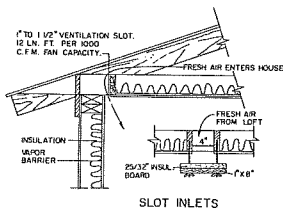
FARROW-TO-FINISH FOR SWINE

PLAN NO. 72676

FIVE LAYOUTS SHOWING PARTIALLY SLOTTED FLOORS. THREE FOR FARROW-TO-FINISH. TWO FOR WEANED-TO-FINISH. FLOOR SLOPES, EQUIPMENT LOCATION, PEN ARRANGEMENTS. ALTERNATE MANURE HANDLING SYSTEMS. HEATING AND VENTILATING REQUIREMENTS.

BUILDINGS REQUIRED

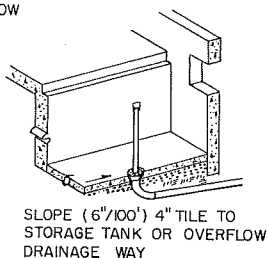
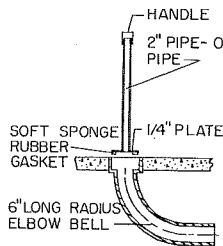
These layouts and recommendations can be used in new or remodeled buildings. Contact manufacturers and contractors for commercial units. Contact your County Extension Agricultural Representative for building plans available through your state's Extension Agricultural Engineer.



SLOTTED FLOOR SECTIONS
Slot spacing is a compromise between wide slots for good self-cleaning and economy, and narrow slots for a more continuous floor. The best spacing seems to be 3/4\" to 1\". Smaller slots may catch the legs of young pigs and be less self-cleaning.

SOLID PARTITIONS

Solid partitions reduce winter drafts, but may also reduce cooling summer breezes and floor drying. Spaced boards are more apt to be chewed by the pigs.



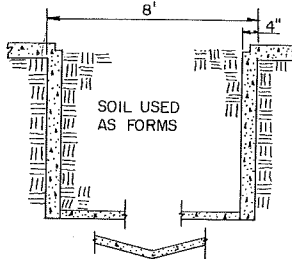
GUTTERS

Storage gutters - are deep gutters for storage of liquid manure before discharge into a lagoon, storage tank, or transport vehicle by gravity or a pump.

Slope bottom no more than 1 inch per 25 ft. to outlet. Size depends upon required capacity. Allow at least 1/2 cu. ft. per day per hog storage capacity.

INSULATION REQUIREMENTS

Average Resistance (R) should be at least 7 1/2 for the walls (1 1/2\" to 2\" insulation), and 12 for the ceiling (about 3\" insulation). In severe climates, increase resistances to 10 and 15. Place a vapor barrier on the warm (inside) side of the walls and ceiling.



1. Trench for vertical walls.
2. Pour walls and floor.
3. Remove soil from gutter.
4. Pour 2\" to 4\" gutter floor.

If gutters are cleaned frequently, trough the bottom to increase velocity to remove solids. If gutters are cleaned weekly, wastes will be fluid enough to flow, and a flat floor is satisfactory.

BUILDING CAPACITY

These layouts assume one litter per pen.

FARROWING

Some managers farrow in separate facilities, and move the sow and pigs into the pens within a few days. Existing facilities for farrowing can serve a large herd.

Others farrow and wean in existing facilities, then move the pigs into the pens. The two weaned-to-finish layouts are suitable for this type of management.

SANITATION

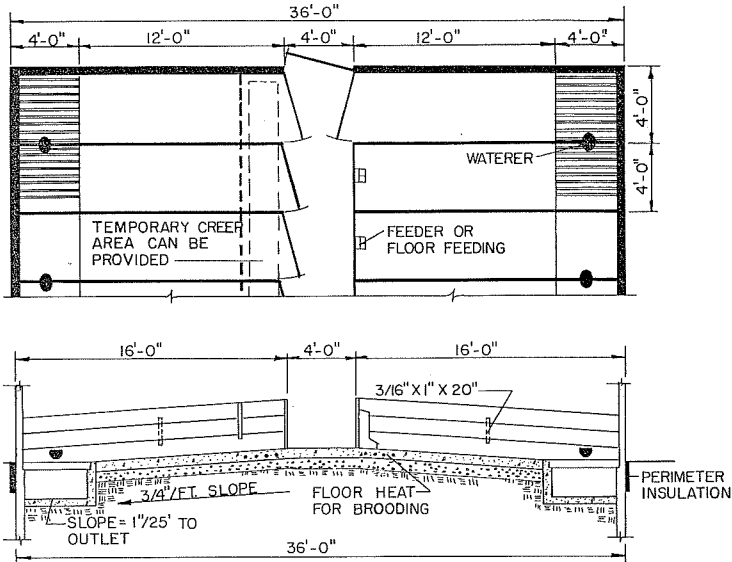
Provide disinfecting pens for boots at all building entrances. Clean and disinfect pens between each batch of pigs. Periodically clean gutters thoroughly. Flies may breed in piles of dry manure.

CONCRETE FLOORS

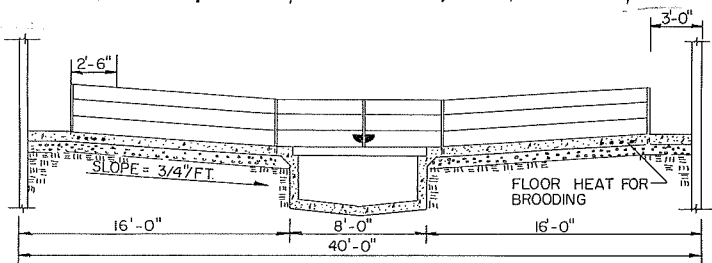
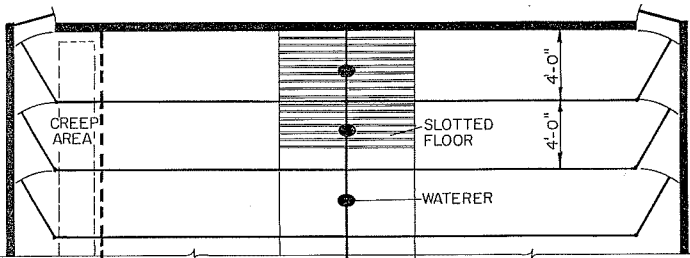
Finish with wood float and light steel troweling. Slope 3/4\" per foot to gutters. If bedding is used, slope floors 1/4\" per foot and handle manure as a solid rather than a liquid.

MIDWEST PLAN SERVICE	
Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating	
FARROW-TO-FINISH SWINE UNITS	
Feb '63	Sheet 1 of 2 Sheets
MIDWEST PLAN NO. 72676	

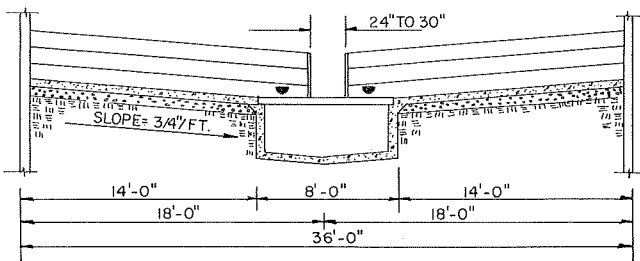
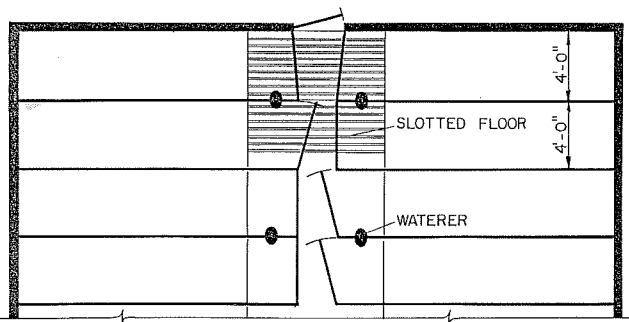
4' WIDE PENS



FARROW-TO-FINISH, CENTER CREEP AREA AND ACCESS ALLEY

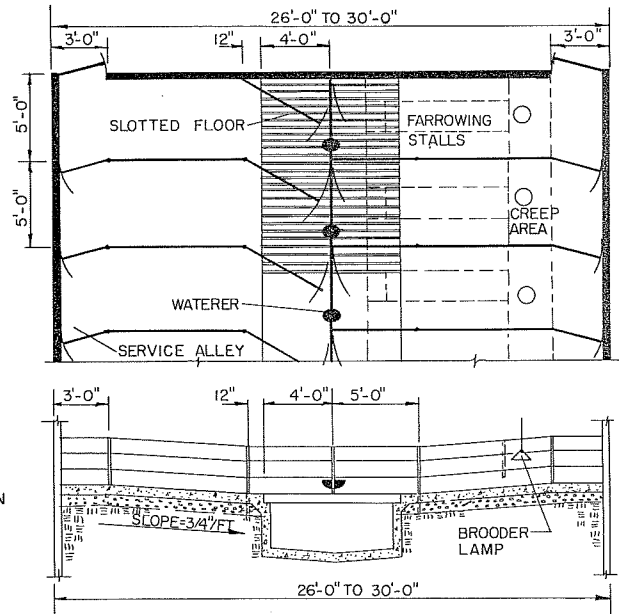


FARROW-TO-FINISH, SIDE CREEP ALLEY



WEANED-TO-FINISH, CENTER ALLEY

5' WIDE PENS



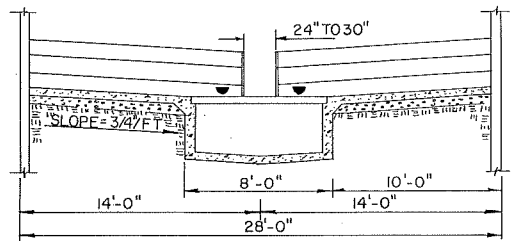
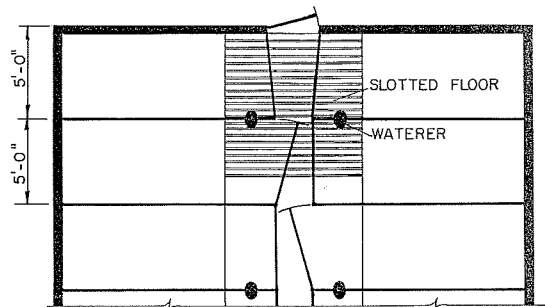
FARROW-TO-FINISH, SIDE CREEP ALLEY AND CENTER ALLEY

Use 5' wide pens in remodeling an existing 26' to 30' building, or if farrowing stalls will be used and later removed from pens.

This layout is more difficult to manage than the wider farrow-to-finish layouts to the left.

GUTTER CAPACITY
With 4' width of gutter per pen, as shown, the following table indicates required depths.

GUTTER DEPTHS IN FEET	Cleaning Interval		
	1 Wk.	2 Wks.	3 Wks.
Sow & Litter	1/3	2/3	1
100 lb. Pigs	1	2	3
Market Hogs	2	4	6



WEANED-TO-FINISH, CENTER ALLEY

These WEANED-TO-FINISH layouts do not have convenient access to creep areas, and therefore are not recommended for very young pigs.

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FARROW-TO-FINISH SWINE UNITS	
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