ENVIRONMENT CONTROL
Cold Weather: Maintain inside temperature at 50°F, and relative humidity at 70%. Supplementary heat maintenance is required, 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 can 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°F, hogs start experiencing severe heat stress. If hog's do not pant, they eliminate body heat only through respiration in their lungs. By adding external water, and surface evaporating, greater comfort can be obtained. When temperatures are high:

1. Provide water sprinklers (for fog nozzles) to deliver about 3 gph per hog, to 10-12 hogs. The sprinklers should be thermostatically controlled to start at temperature above 85°F. All fans should be on to provide adequate air movement. As temperatures drop, sprinklers should stop at 85°F, to prevent chilling and pneumonia.

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

If electric power fails:
1. A battery operated alarm should sound, and
2. A wire down door, or lower, at each end of the building should open to provide some ventilation. An electro-augmented carbon or similar device will hold the door shut during normal operation.

VENTILATION REQUIREMENTS
Wintry: Provide 2000 cfm fan capacity per 100 head. Cool fans with a timer clock, set to run 2-3 hours at 10 in severe weather, or constant operation above about 40°F. The clock will have to be reset with weather changes.

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

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

HEATERS
Heaters should be non-back drafts to prevent fire starts 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. Thermostatic maintain inside temperatures of 50°F.

<table>
<thead>
<tr>
<th>OUTSIDE TEMP.</th>
<th>HEAT REQ'D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>BTU/H for 100 HEAD</td>
</tr>
<tr>
<td>-40</td>
<td>75,000</td>
</tr>
<tr>
<td>-30</td>
<td>50,000</td>
</tr>
<tr>
<td>0</td>
<td>30,000</td>
</tr>
<tr>
<td>20</td>
<td>1,000</td>
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</tbody>
</table>

CONFINED FINISHING UNITS FOR SWINE
PLAN NO. 72675

SIX LAYOUTS FOR FINISHING HOGS ON PARTIALLY SLOTTED FLOORS, 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 office if you have any questions.

SLOTTED FLOOR SECTIONS
Slots 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.

CONCRETE OR ANGLE OR CHANNEL HARDWOOD

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 resistance to 10 and 15. Place a vapor barrier on the wall inside of the walls and ceiling.

BUILDING CAPACITY
Per length and width, variables, and depend on:
1. Number of pigs desired per pen.
2. Size and capacity of feeding equipment.

CONCRETE FLOORS
Finish with wood float and light steel traveling.

SANITATION
Provide disinfecting pans for all building entrances. Clean and disinfect pans between each batch of pigs. Periodically clean gutters thoroughly. Filtration of dampers.

MIDWEST PLAN SERVICE
Cooperative Extension Work in Agriculture and Home Economics
North Central Region - USDA Cooperating
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Midwest Plan Service
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DRAINAGE TOWARD CENTER

Four alternate arrangements for units with floor slopes toward the center of the building. These units are adaptable to remodeling or palen-type construction because gutters do not interfere with building foundations. Several feeding systems will work.

CROSS SECTION

Storage gutter assumes liquid manure handling. Slatted floor over gutter permits using central alley as a service alley. Waters located over slats attract dunging to this area.

FLOOR PLAN

DRAINAGE TOWARD OUTSIDE

A central working alley at the high end of the floor suggests possible limited floor feedings. Hose cleaning does not require entering the pens. If outside grade is at or above inside floor level, freezing in gutters will be reduced. In northern climates 0° to 3° insulation around outside of foundation will reduce freezing.

CROSS SECTION

The central gutter and grated guard form the barrier between pens. Animals won't cross or walk on the guard unless it is covered. Side alleys permit good access.

FLOOR PLAN

The deep storage gutter, with slatted floor, suggests liquid manure handling. Use pump or gravity to remove contents. Discharge to lagoon, storage tank, or transport vehicle.

CROSS SECTION

Central working alley and gutter cleaner assumes bedding will be used, and manure will be handled as a solid. If bedding is used, limit floor slopes to 3° per foot. This double gutter, if the gutter cleaner and bedding are discontinued, will serve to move liquids to a holding tank or lagoon.

FLOOR PLAN

The shallow gutter assumes hose cleaning, with liquids and solids flushed to a holding tank or lagoon. Some producers flush the lower two feet of feeding floor to attract dunging and simplify cleaning.

CROSS SECTION

The shallow gutter will discharge into a lagoon or storage tank for liquid spreading. It may be flooded.

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CONFINED FINISHING UNITS FOR SWINE

Fig. 63

MIDWEST PLAN NO. 72675

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GRATED FLOOR SECTIONS (Hog Guards) 1/32" x 1" x 48" steel strap on edges, spaced 2 1/2" apart and welded to 3/8" square box 9" apart. These floor sections will replace partitions and gutters. Hogs cannot be driven over grates unless they are covered with solid panels.

DRAINAGE GUTTERS