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 2000 cfm fan capacity per 100 head. 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 head, or 40 to 60 air changes per hour (1 air change = volume of building in cubic feet).

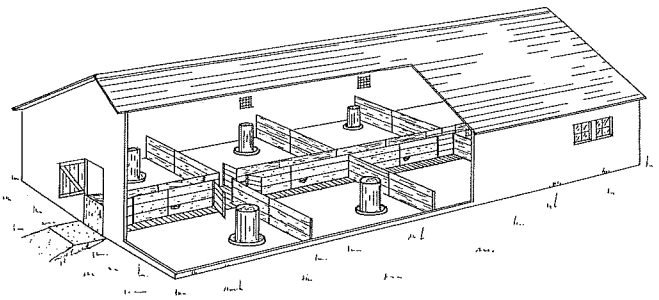
HEATERS

Heaters should be non-back drafting to prevent flue gasses 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.

OUTSIDE TEMP. °F.	HEAT REQ'D. BTU/HR for 100 HEAD
-40	75,000
-20	50,000
0	30,000
20	9,000



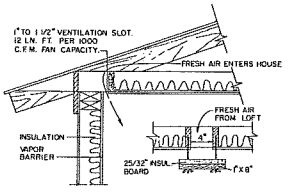
CONFINED FINISHING UNITS FOR SWINE

PLAN NO. 72675

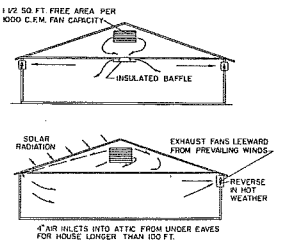
SIX LAYOUTS FOR FINISHING HOGS ON PARTIALLY SLOTTED FLOORS.
FLOOR SLOPES, EQUIPMENT LOCATION, PEN ARRANGEMENTS.
ALTERNATE MANURE HANDLING SYSTEMS.
HEATING AND VENTILATING REQUIREMENTS.

BUILDINGS REQUIRED

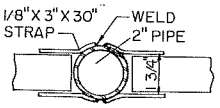
These layouts and recommendations can be used in new or remodeled buildings. Contact manufacturers and contractors for commercial units. Contact your County Extension Agricultural Representative for building plans available through your state's Extension Agricultural Engineer.



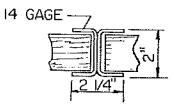
SLOT INLETS



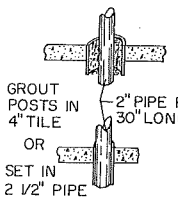
EXHAUST FANS & SLOT INLETS

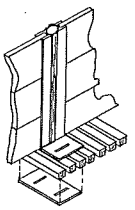


PIPE POST

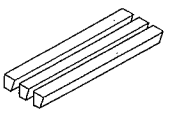


2 CHANNELS BACK TO BACK

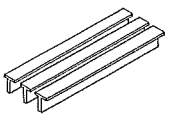




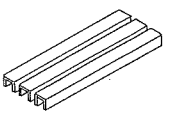
2" PIPE POSTS UP TO 16' APART WITH CLAMP FOR SLOTTED FLOORS



CONCRETE OR HARDWOOD



ANGLE OR T



CHANNEL

SLOTTED FLOOR SECTIONS

Slat 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

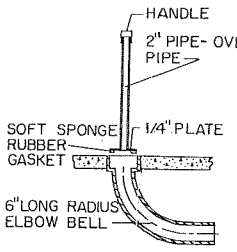
Solid partitions reduce winter drafts, but may also reduce cooling summer breezes and floor drying. Spaced boards are more apt to be chewed by the pigs.

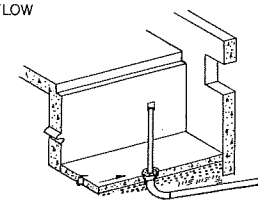
INSULATION REQUIREMENTS

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.

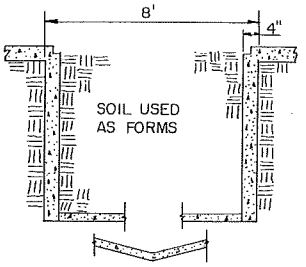
BUILDING CAPACITY

Pen length and width are variable and depend on:
Number of pigs desired per pen.
Sq. ft. floor area allowed per pig.
Size and capacity of feeding equipment.





SLOPE (6"/100') 4" TILE TO STORAGE TANK OR OVERFLOW DRAINAGE WAY



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.

SANITATION

Provide disinfecting pans 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.

GUTTERS

Mechanical cleaners - build gutter to manufacturer's specifications.
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.
Drainage gutters - are shallow gutters frequently cleaned. Slope bottom 1/8" per foot to drain outlet. Provide outlet to storage tank or lagoon.

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.

MIDWEST PLAN SERVICE

Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating

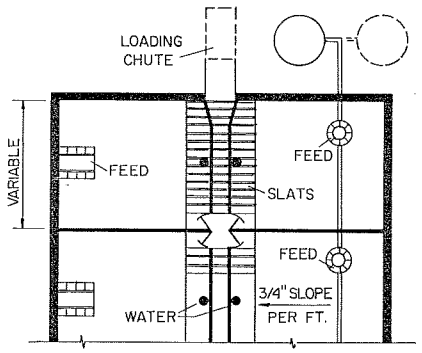
CONFINED FINISHING UNITS FOR SWINE

Feb '63 Sheet 1 of 2 Sheets

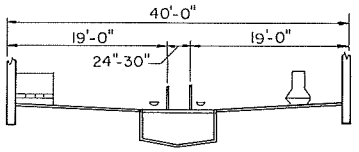
MIDWEST PLAN NO. 72675

DRAINAGE TOWARD CENTER

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

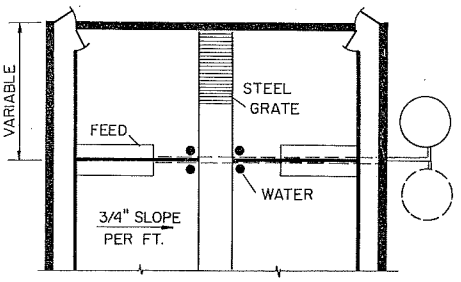


FLOOR PLAN

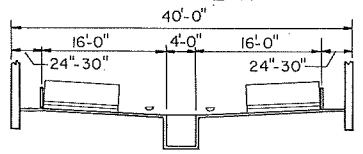


CROSS SECTION

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



FLOOR PLAN

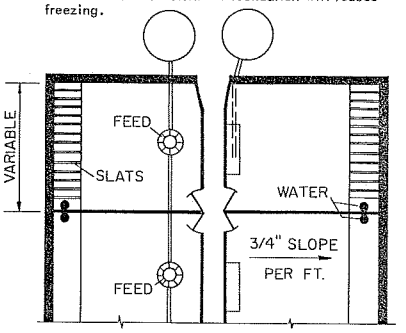


CROSS SECTION

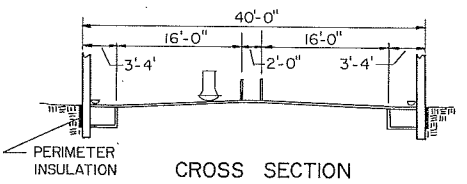
The central gutter and grated guard form the barrier between pens. Animals won't cross or walk on the guard unless it is covered. Side alleys permit good access.

DRAINAGE TOWARD OUTSIDE

A central working alley at the high end of the floor suggests possible limited floor feeding. 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, 1" to 2" insulation around outside of foundation will reduce freezing.

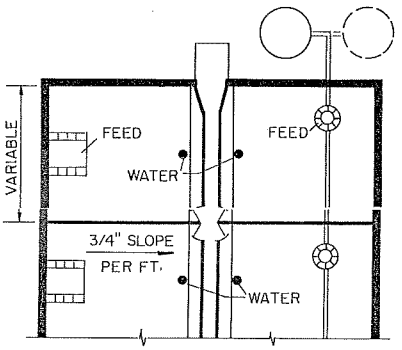


FLOOR PLAN

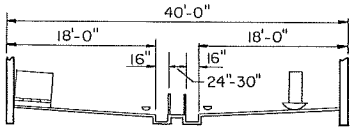


CROSS SECTION

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

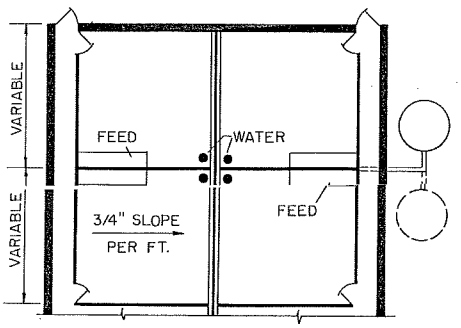


FLOOR PLAN

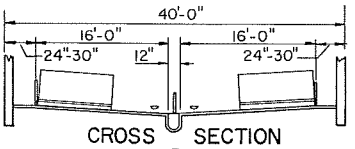


CROSS SECTION

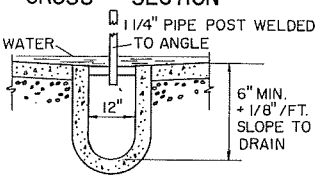
Central working alley and gutter cleaner assumes bedding will be used, and manure will be handled as a solid. If bedding is used, limit floor slopes to ¼" per foot. This double gutter, if the gutter cleaner and bedding are discontinued, will serve to move liquids to a holding tank or lagoon.



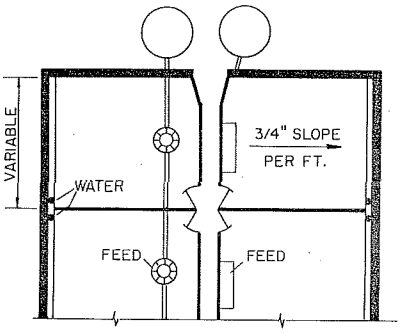
FLOOR PLAN



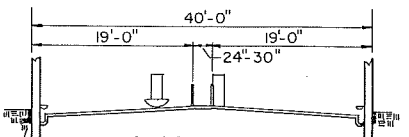
CROSS SECTION



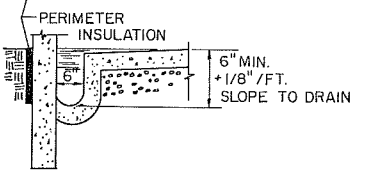
The shallow gutter assumes hose cleaning, with liquids and solids flushed to a holding tank or lagoon. Some producers flood the lower two feet of feeding floor to attract dunging and simplify cleaning.



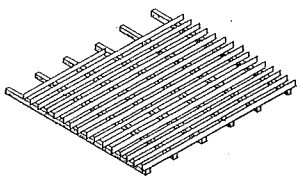
FLOOR PLAN



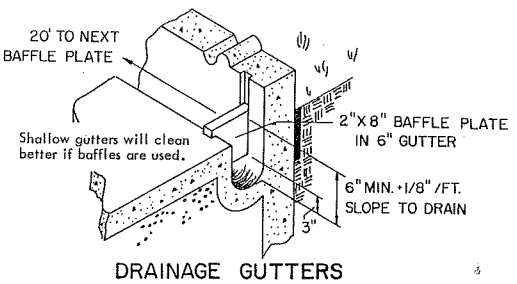
CROSS SECTION



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



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



DRAINAGE GUTTERS

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