

MWPS-72697

Swine Gestation Building

Four rows of stalls, 192 sows. This plan is for a 42' x 108' (or 110') stud-frame building housing 192 gestation sows in individual stalls. Mechanical ventilation is provided in cold weather, ventilation doors are opened for natural ventilation in warm weather. Plan A shows a totally slotted floor with pit manure storage. Plan B shows 30' slats over flush gutters at the rear of each row of stalls.

CAUTION!

Additional professional services will be required to tailor this plan to your situation, including but not limited to: assurance of compliance with codes and regulations; review of specifications for materials and equipment; supervision of site selection, bid letting and construction; and provision for utilities, waste management, roads or other access. **Furthermore, any deviation from the given specifications may result in structural failure, property damage, and personal injury including loss of life.**

WARRANTY DISCLAIMER

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MIDWEST PLAN SERVICE
Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating
Title of plans
Title Page
MIDWEST PLAN NO. 72604

**Plan MWPS - 72697
SWINE GESTATION BUILDING
Four Rows of Stalls, 192 Sows**

This plan is for a 42' x 108' (or 110') structure building housing 192 gestation sows in individual stalls. Mechanical ventilation is provided. Cold weather weathering doors are provided. Plan A shows a totally slotted floor, with 24 manure storage. Plan B shows 30' slats over flush gutters at the rear of each row of stalls.

General Specifications

Fans: Select exhaust fans for the stated capacity at 1/2" static pressure, especially pit fans, to prevent backdrafting when larger fans turn on. Air movement in summer can be increased with untrated fans mounted over the pens near the ends of the building and blowing parallel to the sidewalls.

Pits: Use 3500 psi concrete with 7% air entrainment. Use steel of at least 40,000 psi yield. Install steel and concrete carefully and accurately.

Pump pits to within 6" of the bottom at least once a year. Check for solids buildup. Increase agitation and pump from port nearest to solids buildup at next pumping.

Heat: Provide two 50,000 Btu/hr space heaters (500 Btu/hr stall).

Protecting swine from fan failure

We know of no device that will successfully ventilate a hog house automatically in the case of failure of one or more fans or the whole electric supply system.

- Install a loud automatic warning system to alert anyone at or near the farmstead
- Have someone baby-sit your animals if you are going to be away for more than a few hours; if there are storm warnings out, or if your herd is in an especially sensitive stage (a newborn or a farrowing sow).
- Consider the possibility of what to do in bad weather: mild weather cold weather, who to phone for additional help, etc.
- Prepare walk doors and perhaps summer ventilation panels to be propped open part way or fully.
- Consider a stand-by generator to augment hand-operated doors; operate pit fans and, in hot weather, circulation fans.
- Consider automatic telephone that dials selected numbers when power fails.

Manure storage pit

Pit depth is based on 0.15 cu ft/day manure per stall, 6" left in pit after pumping, 8" of freeboard, and 12" additional clearance to improve underfloor ventilation.

Slat designs

Dimensions in these plans assume concrete slats as listed below and may need to be adjusted for other design or materials. Allow about 1/2" at each end of a slat for construction variation and grouting.

Space slats 3/4" apart in farrowing stalls, with the slot widened to 1" behind the sows. For other swine buildings use 1" slots

Slat span	Pig nursery	Finishing	Farrowing, Sow-pig nursery, Gestation (stalls)**	Farrowing, Sow-pig nursery, Gestation (pens)	Boar (pens)
4	4 X 4 #3	4 X 4 #3	4 X 4 #3	4 X 4 #3	4 X 4 #3
6	4 X 4 #3	4 X 4 #4	4 X 4 #4	4 X 4 #4	4 X 4 #4
8	4 X 5 #3	5 X 5 #4	4 X 6 #4	6 X 5 #5	6 X 5 #5
10	4 X 5 #4	5 X 5 #5	4 X 6 #5	6 X 6 #5	6 X 6 #5

Design Loads

Slats: Per foot of slat
50 pit
100 pit

Beams: Per sq ft floor area
35 psf
50 psf

65 psf
65 psf

**Concrete slats are not recommended for pigs under 40 lb.

**For sows in stalls, use a maximum of 4 wide slats.

TYPICAL HOUSING CYCLES

Farrowing Sow-Pig Nursery: 0-7 weeks

Farrowing House: 0-3 weeks

Pig Nursery: 7-10 weeks

Smaller Pens: 10-12 weeks

Larger Pens: 12-20 weeks

Gestating Unit: 20-28 weeks

Farrowing House: 20-24 weeks

Farrowing House: 24-28 weeks

PIGS:

- Wean pigs at 3-4 weeks (12-15 lb) to a nursery, putting 1-2 litters per pen at 6-8 weeks to a nursery, putting 2-3 litters per pen. Return sows to breeding and pigs to finishing unit at 10-12 weeks (60-75 lb). Move pigs to larger pens, or reduce number of pigs per pen, at about 20 weeks (150 lb).
- As they approach market weight, and if the finishing unit is crowded, larger hogs may have to be marketed early.
- Sows are rebred during the first or second heat period after weaning. They farrow about 16 weeks later.

SOWS:

- Wean pigs at 4-6 weeks (20-25 lb). Move pigs to nursery, putting 2-3 litters per pen. Return sows to breeding and gestation facilities.
- Or: Wean pigs at 3-4 weeks (12-15 lb) to a nursery, putting 1-2 litters per pen at 6-8 weeks to a nursery, putting 2-3 litters per pen. Return sows to breeding and pigs to finishing unit at 10-12 weeks (60-75 lb). Move pigs to larger pens, or reduce number of pigs per pen, at about 20 weeks (150 lb).
- As they approach market weight, and if the finishing unit is crowded, larger hogs may have to be marketed early.
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Slats	Per foot of slat
50 pit	100 pit
35 psf	50 psf
65 psf	65 psf

SWINE GESTATION BUILDING

Four Rows of Stalls, 192 Sows

8 Pages plus Plan No. Page
42 Truss Sheet mwps-72697 1 of 10

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Pages 6, 7&8 similar to pages 6, 7&8 of 72601

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SWINE GESTATION BUILDING
Four Rows of Stalls, 192 Sows

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42 Truss Sheet mwps-72697 1 of 10

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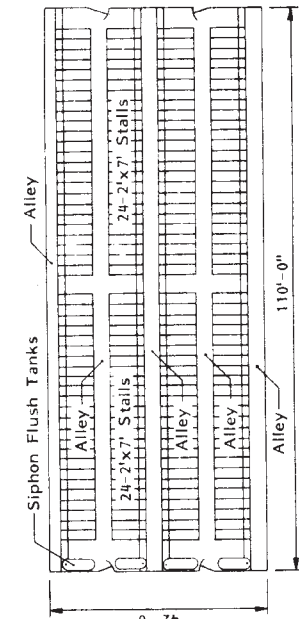
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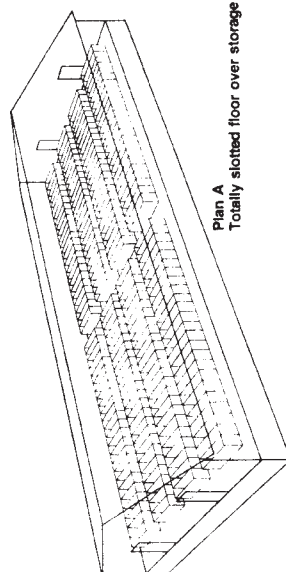
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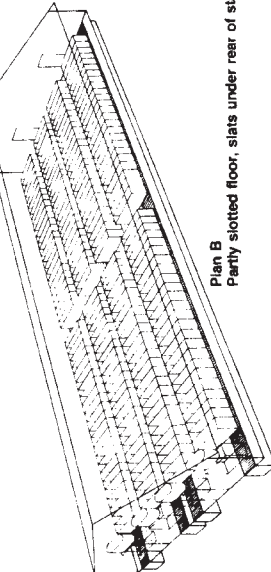
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Floor Plan A
108'-0"



Plan A
Totally slotted floor over storage pit.



Plan B
Partly slotted floor, slats under rear of stalls.

Building space and production cycles

Although many variations are successful, the following are typical meat hog production systems. Plan building capacity for some extra animals to allow for large litter size or slow growth rate.

Elmer:

- Move sows and litters to sow-pig nursing pens at 1-3 weeks, depending on how soon the farrowing stalls are needed for the next sows. Wean sows at 3-6 weeks, putting 2-3 litters per pen. Return sows to breeding and gestation facilities.
- Or: Wean pigs at 4-6 weeks (20-25 lb). Move pigs to nursery, putting 2-3 litters per pen. Return sows to breeding and gestation facilities.
- Or: Wean pigs at 3-4 weeks (12-15 lb) to a nursery, putting 1-2 litters per pen at 6-8 weeks to a nursery, putting 2-3 litters per pen. Return sows to breeding and pigs to finishing unit at 10-12 weeks (60-75 lb). Move pigs to larger pens, or reduce number of pigs per pen, at about 20 weeks (150 lb).

As they approach market weight, and if the finishing unit is crowded, larger hogs may have to be marketed early.

Sows are rebred during the first or second heat period after weaning. They farrow about 16 weeks later.

LUMBER SPECIFICATIONS

Roof Purlins and Studs
Construction Grade (Doug Fir, Southern Pine or Hem Fir)

Trusses
See Truss Page

Headers
No. 1, or 1500f machine rated (Doug Fir or Southern Pine)

Floor
No. 1, or 1500f machine rated (Doug Fir or Southern Pine)

Shoals
No. 1, or 1500f machine rated (Doug Fir or Southern Pine)

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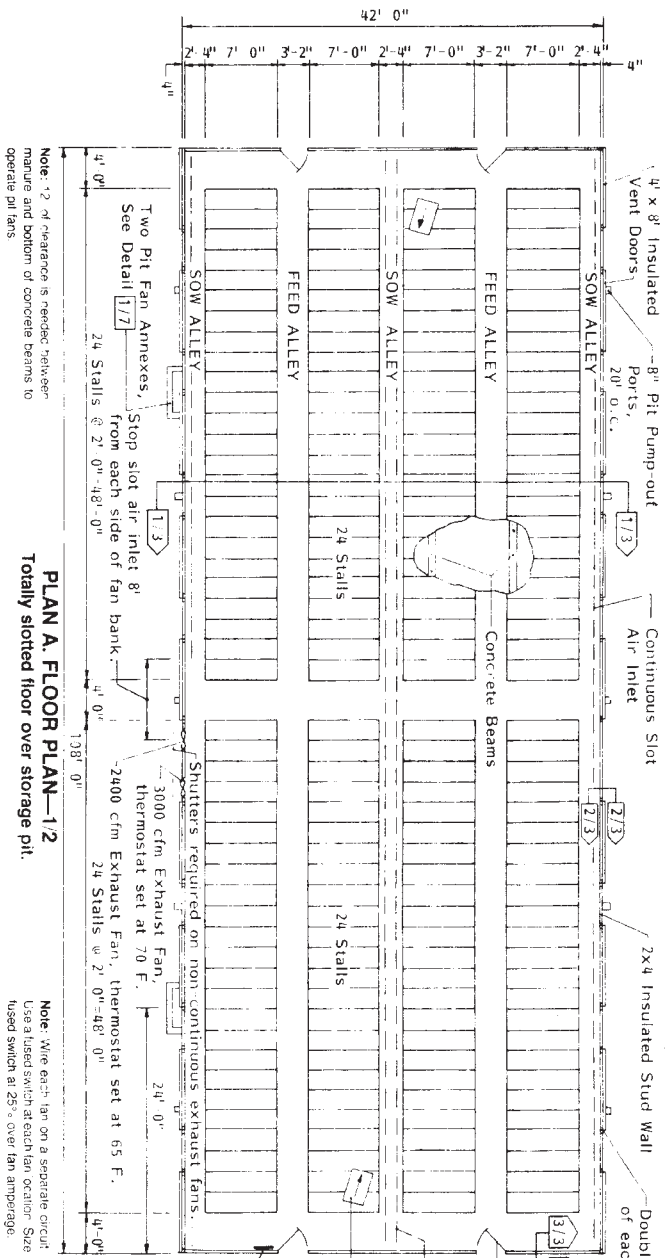
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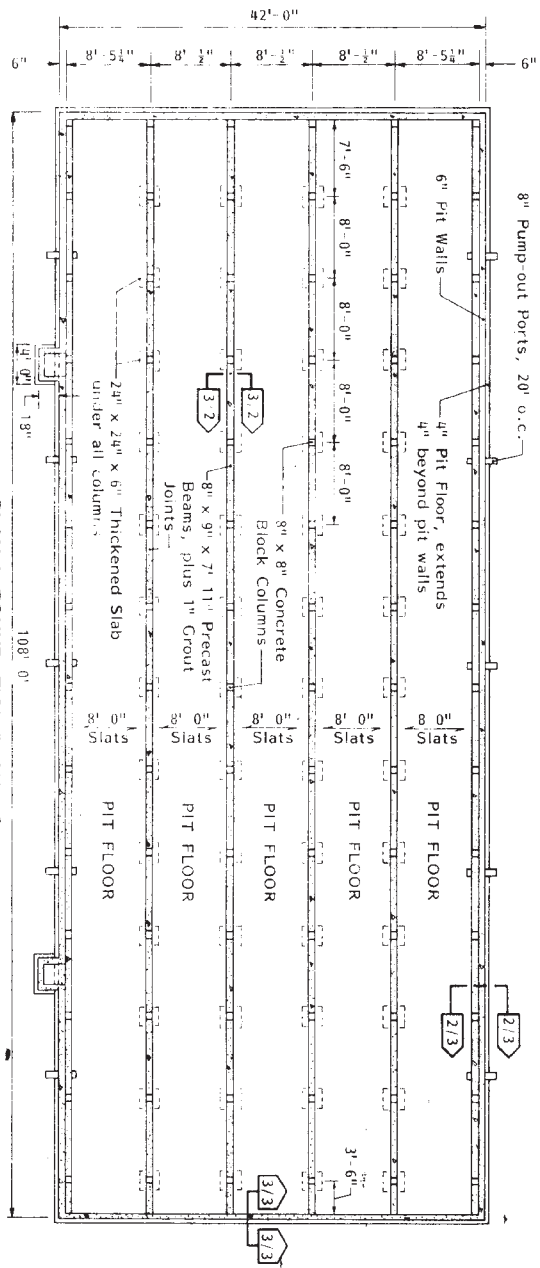
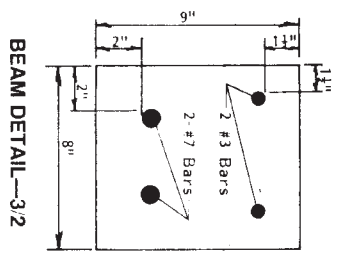
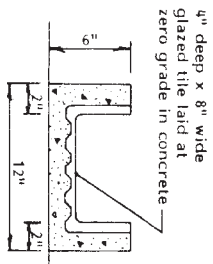
Note: 12" of clearance is needed between manure and bottom of concrete beams to operate pit fans.

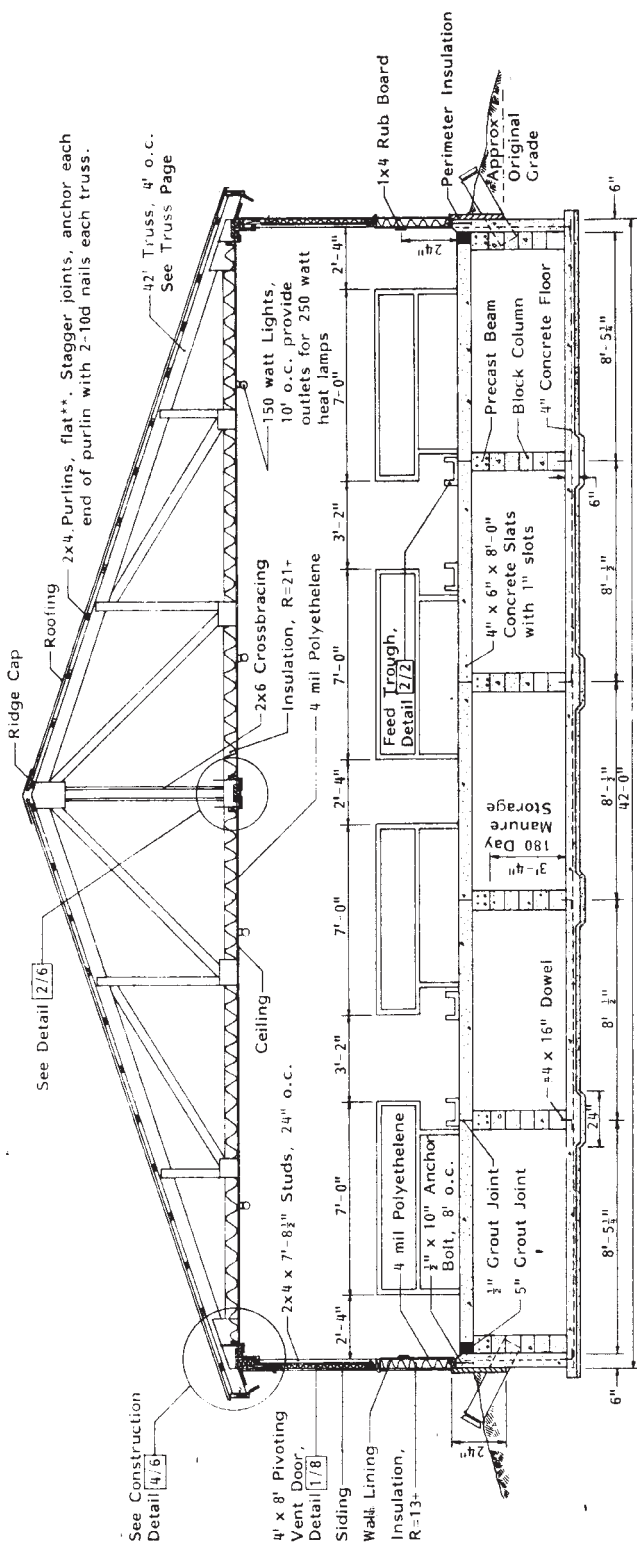
PLAN A FLOOR PLAN-12
Totally slotted floor over storage pit.

Note: Wire each fan on a separate circuit. Use a fused switch at each fan location. Size fused switch at 25% over fan amperage.

Plastic, watertight and dust-tight.

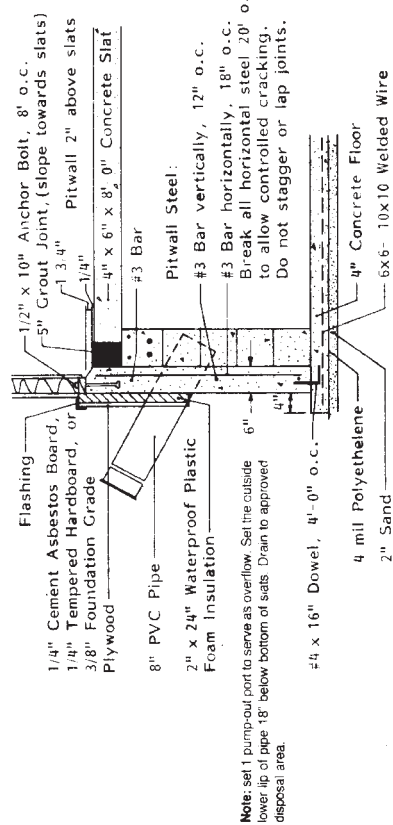
SOW FEED TROUGH DETAIL-22
Note: Provide a level trough, manual or float controlled water delivery, and add lead to the water. An alternative (Plan B only) is to hand feed a dry ration on the floor and provide a nipple/waterer to each stall.





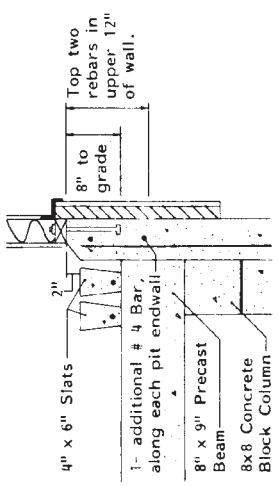
PLAN A. CROSS SECTION—1/3
Totally slotted floor over storage pit.

**Maximum purlin spacing
40 psf snowload: 24' o.c.
45 psf snowload: 20' o.c.
60 psf snowload: 16' o.c.



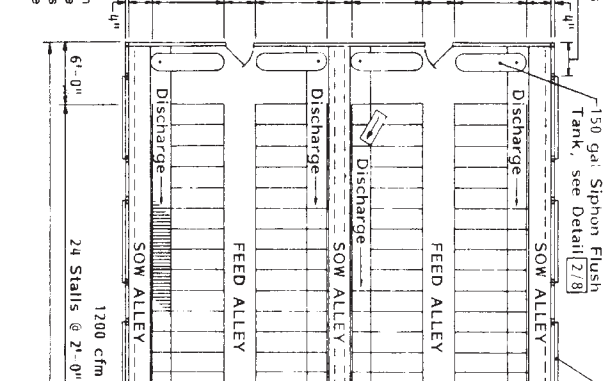
PIT DETAIL—2/3

Note: set 1 pump-out port to serve as overflow. Set the outside lower lip of pipe 18" below bottom of slats. Drain to approved disposal area.



PIT ENDWALL DETAIL—3/3

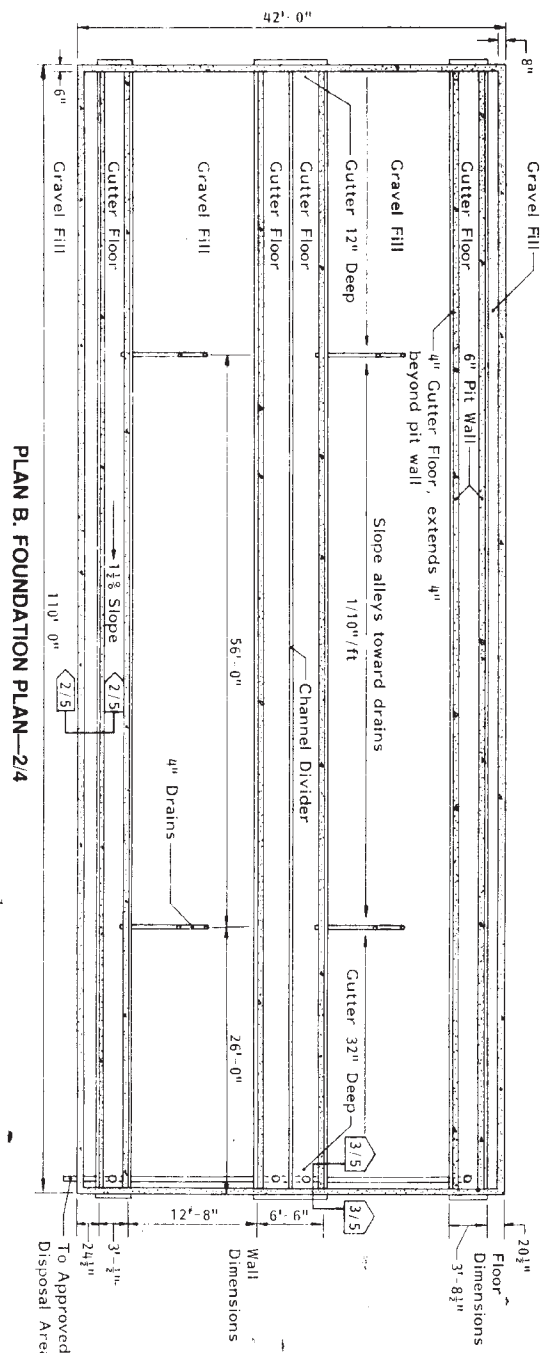
Note: Mechanical scrapers could be used in gutters in place of the flush system. Slope gutter floors at 1/8" for mechanical scrapers system. Contact scraper supplier for more details on gutter design.



PLAN B. FLOOR PLAN—1/4
 Partly slotted floor, slats under rear of stalls.
 Plastic, watertight, and dust-tight

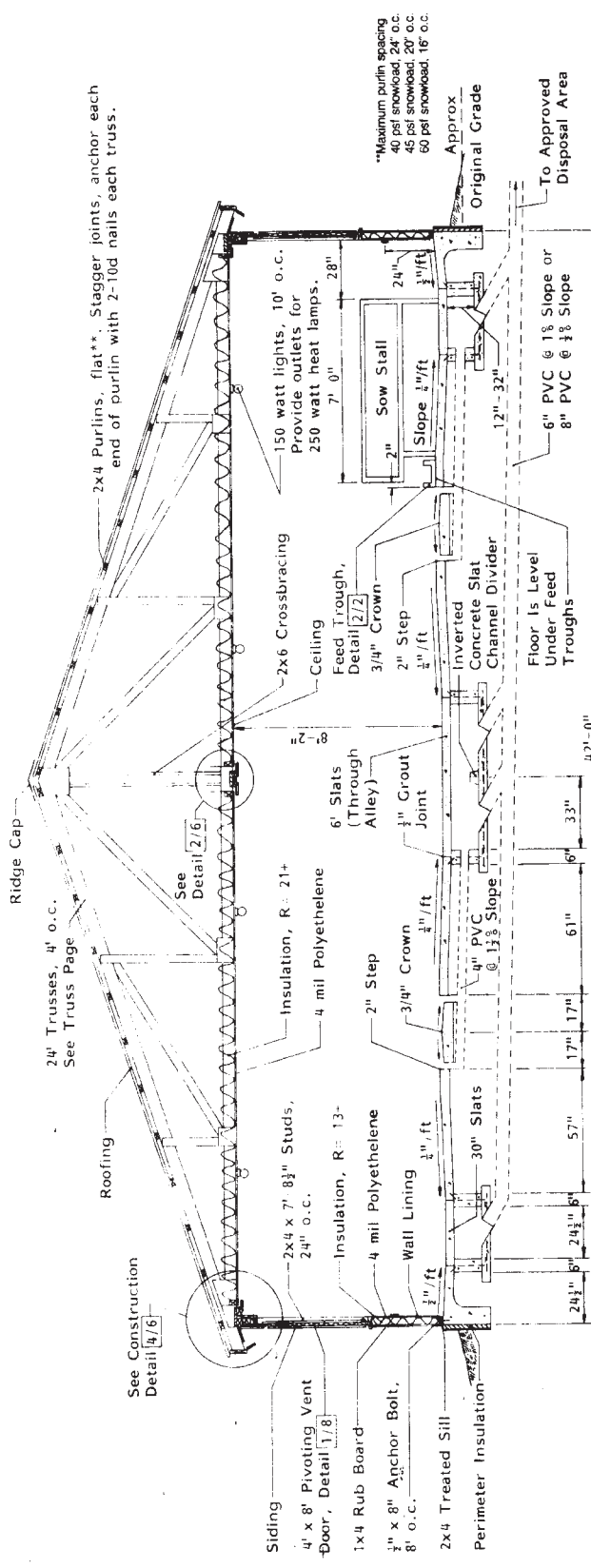
150 gal. Siphon Flush Tank, see Detail 2/8
 4" x 8" Insulated Vent Door
 Continuous Slot Air Inlet
 2x4 Insulated Stud Wall
 Double studs at both ends of each vent door opening
 3'-0" x 6'-4" Walk Doors, Detail 3/6
 Double Slot Air Inlet, Full length of building, Detail 2/6
 Two 50,000 Btu/hr Space Heaters, thermostats set at 58 F
 Service Entrance Panel*
 Stop slot air inlet 8' from each side of fan bank.
 Manure Discharge
 24 Stalls @ 2'-0" = 48'-0"
 1200 cfm Continuous Fan
 Shutters required
 24 Stalls @ 2'-0" = 48'-0"
 1200 cfm Continuous Fan
 24 Stalls @ 2'-0" = 48'-0"
 3000 cfm Exhaust Fan, set thermostat at 70 F
 2400 cfm Exhaust Fan, set thermostat at 65 F
 3000 cfm Exhaust Fan, set thermostat at 70 F
 2400 cfm Exhaust Fan, set thermostat at 65 F
 FEED ALLEY
 SOW ALLEY
 SOW ALLEY
 FEED ALLEY
 24 Stalls
 24 Stalls
 24 Stalls
 24 Stalls
 42'-0"

*NOTE: Wire each fan on a separate circuit. Use a fused switch at each fan location. Size fused switch at 25% over fan amp draw.



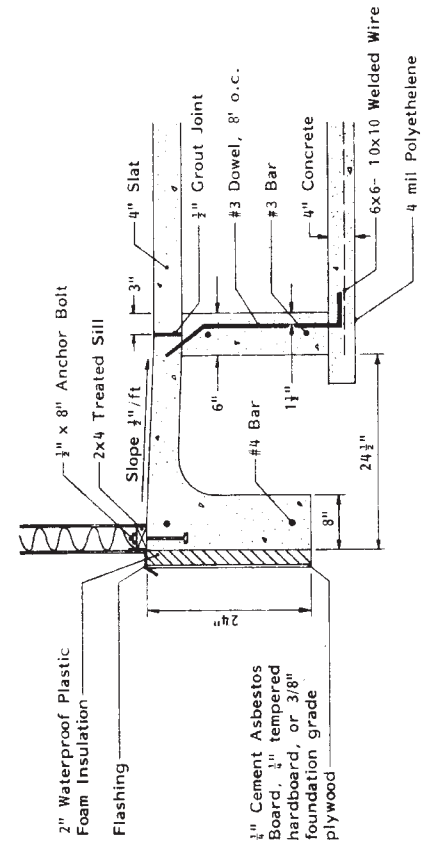
PLAN B. FOUNDATION PLAN—2/4

To Approved Disposal Area
 24 1/2"
 3'-2 1/2"
 12'-8"
 15'
 9'
 20 3/4"
 Floor Dimensions
 3'-8 1/2"
 Wall Dimensions

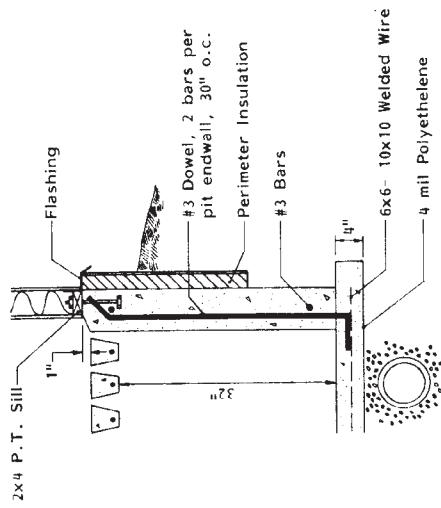


PLAN B. CROSS SECTION—1/5
Partly slotted floor, slats under rear of stalls.

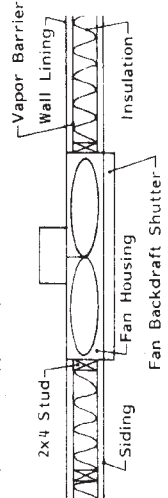
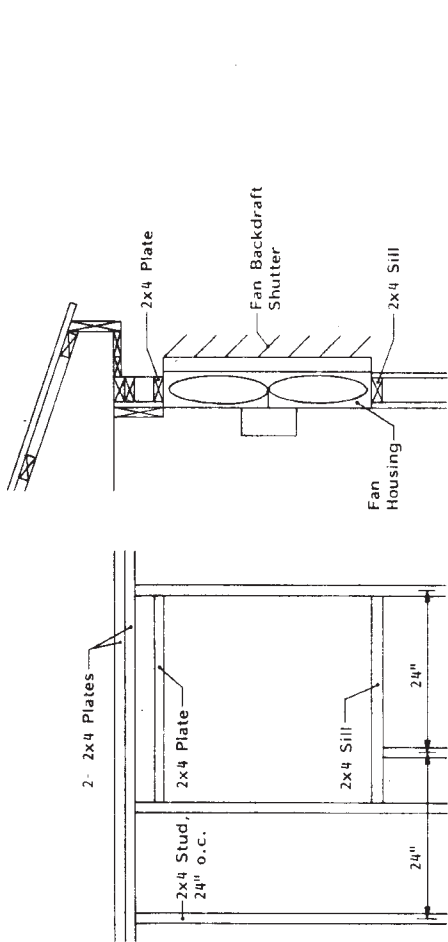
Backfill to within 8" of the top of the concrete. Slope fill away from building, top with gravel to prevent erosion.



SIDEWALL DETAIL—2/5

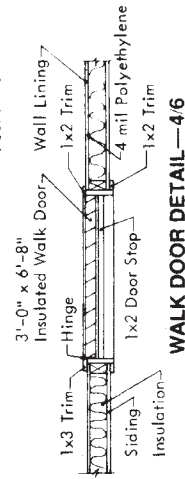
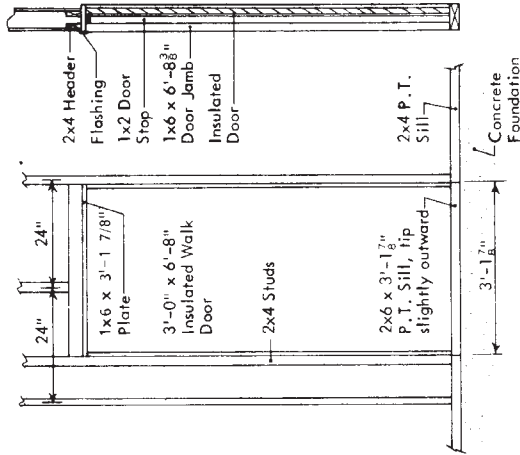


PIT ENDWALL DETAIL—3/5



FAN HOUSING—26

Install according to manufacturer's instructions. Position fan to allow for hood air flow.



WALK DOOR DETAIL—4/6

Roofing Options:
28 ga Galv Steel, 100 nails/100 sq ft
0.024" Alum, 120 nails, 100 sq ft
3/8" Sheathing and 235 lb Asphalt Shingles

Treated Fascia
1-1/2" Clearance
Winter air from gable, ridge, or downwind soffit openings.
3/8" Plywood Insulation Stop
Truss
Insulation, R-21+
4 mil Polyethylene
Ceiling Options:
3/8" MDO Plywood
3/8" FRP Plywood
0.024" Aluminum
28 ga Steel

1x4 Air Inlet Door
1-2" Hardware Cloth
Hook and Chain
Slot Inlet
1-2" Insulation
2x4 Block
Offset Hinge
Summer Position
2x4 Stud

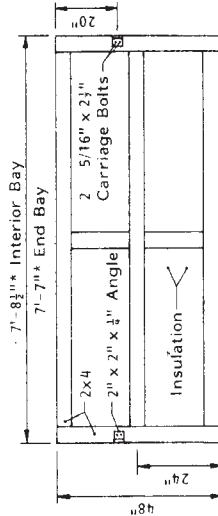
Lining Options:
3/8" MDO Plywood
3/8" FRP Plywood
0.024 Aluminum
Insulation

**EAVE INLET
CONSTRUCTION DETAIL—1/6**

Install eave inlet and slot inlet along both long walls. Install fans in the long wall opposite winter prevailing winds. Do not install slot inlet at fans or from fans.

Winter: Close upwind soffit doors so all the air is drawn in from the ridge. Gable or downwind soffit openings (18 sq ft total opening into attic needed).
Fallen: All the slot inlet baffles in up position to force cold air across the ceiling. Keep vent doors closed and tightly sealed.
Minimum Slot Openings: 1/8"

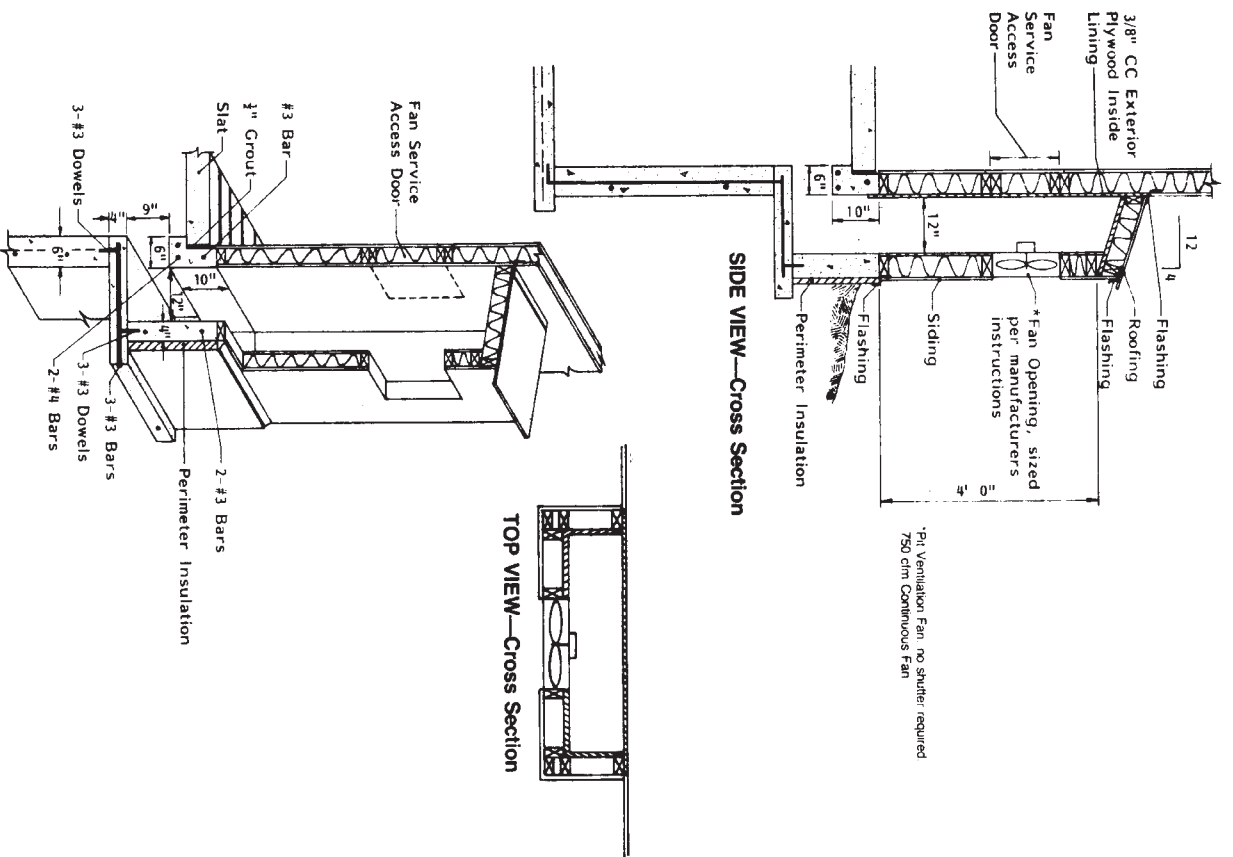
Mild Weather: Open 3/4 eave inlets. Open slot inlet baffles to 3/8".
Summer: Open 1/4 x 8 vent doors—both sides. Shut fans off.



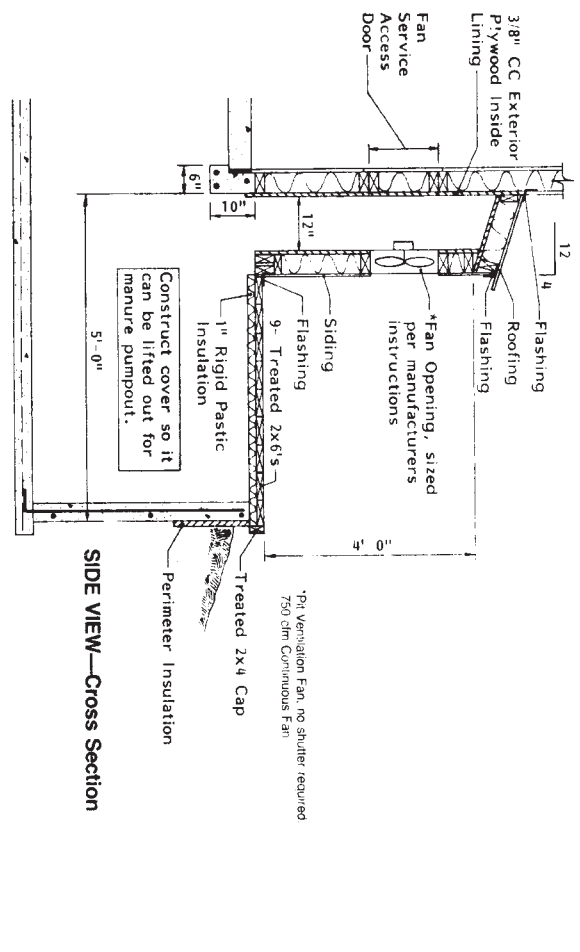
VENTILATION DOOR—3/6

Consider commercial automatic door openers.

Give and 3/4" 1" DC Exterior Plywood on the inside. Insulate insulation. 3/8" metal siding on the outside. Alter this dimension for other than 8' x 6'.



PIT FAN ANNEX DETAIL—1/7
Annex is about 4' wide inside.

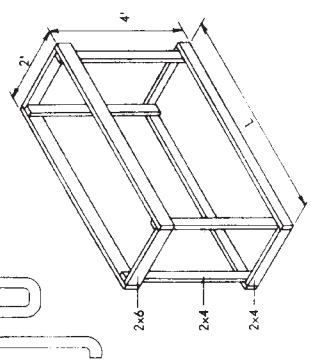
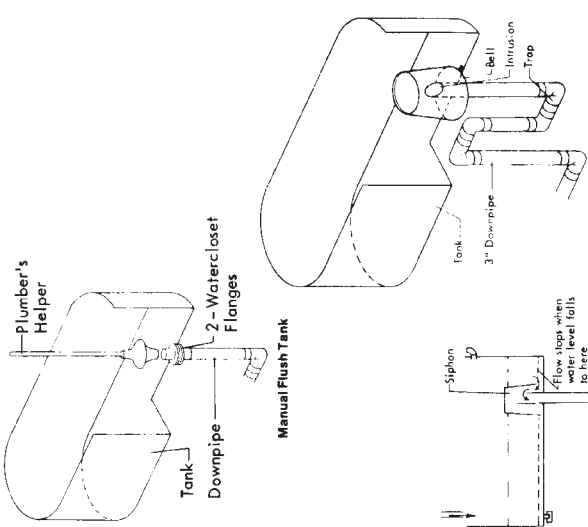


OPTIONAL PIT FAN AND CHOPPER PUMP ANNEX—2/7
Annex is about 4' wide inside.

MIDWEST PLAN SERVICE
SWINE GESTATION BUILDING
Three Rows of Stalls, 120 Sows

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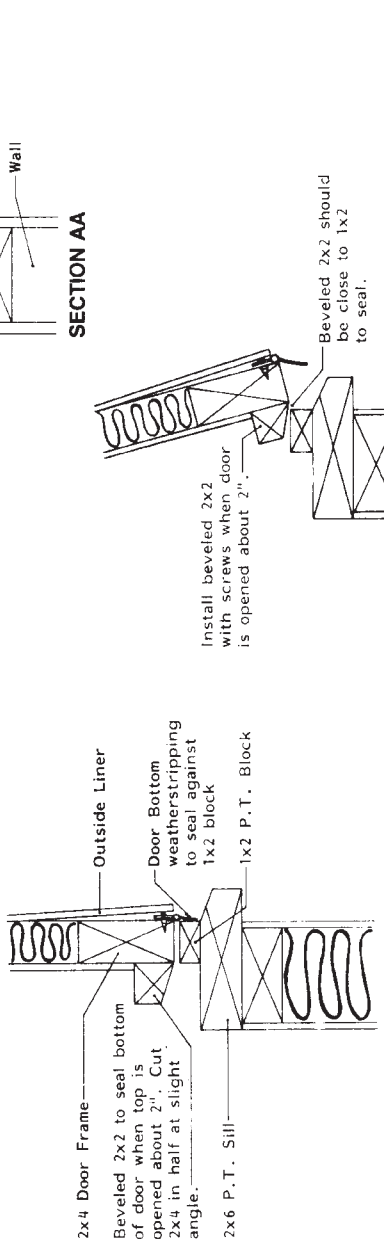
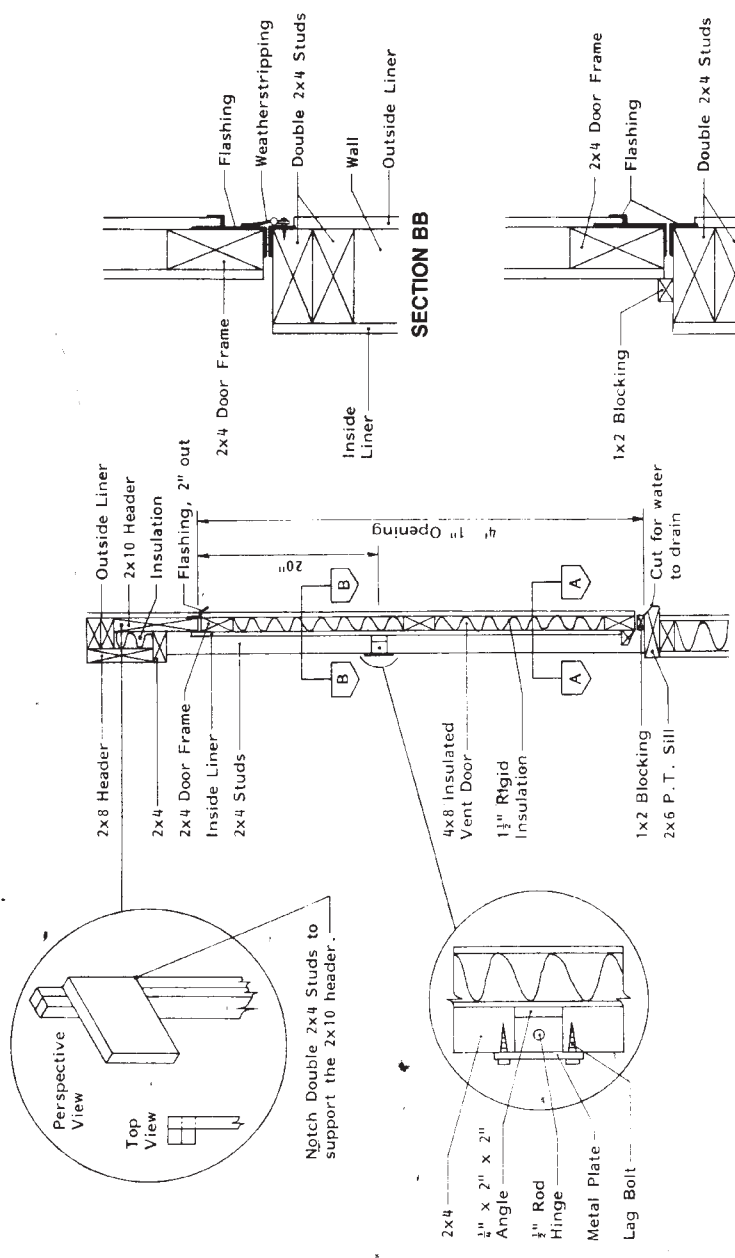
Siphon Tank Support Frame
 L = Tank length - 1'. If L is greater than 6', install 2x4 post near center of span. Provide crossbracing if frame not attached to wall. Cover top with 1" plank.

SIPHON FLUSH TANK—2/8
 See MWPS AED-17

Flush Frequency—minimum flushes per day

	Under slats	Open gutter
Farrow	2	4
Nursery	4	6
Finish	6	12
Gestation	4	6

More flushes per day tend to decrease odors



VENT DOORS—Not Continuous—1/8

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