

# MWPS-72672

## Farrow and Start

### **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.**

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<b>MIDWEST PLAN SERVICE</b>
Cooperative Extension Work in Agriculture and Home Economics and Agricultural Experiment Stations of North Central Region - USDA Cooperating
Farrow and Start
Title Page
MIDWEST PLAN NO. 72672

## Plan MWPS-72672 Farrow and Start

This plan is for a 32 x 35' stud-frame building housing 12 farrowing sows in pens. Capacity: Four farrowings per year with two 12-sow herds, yields 48 litters per year. (Pigs are held until 40 to 50 lb.)

Farrow in pens. Remove sows from pigs at 4 to 6 weeks and return to breeding and gestation facilities. Move pigs from the farrowing pens to a nursery at 8 to 9 weeks (40 to 50 lb), putting 2 to 3 litters per pen.

Sows are fed and watered in the pens. The rectangular pens permit sow movement but prevent the sow from lying across the pens.

Mechanical ventilation is provided in cold weather; ventilation doors are opened for natural ventilation in summer.

Manure is removed from the building with a barn cleaner under slotted flooring. Manual-scrape and gravity drain gutters are shown as alternatives.

### Utilities

**Heat:** Desired room temperature is about 70 F. Provide a 40,000 Btu/hr space heater. Provide floor heat in the creep areas; 100 Btu/hr ft<sup>2</sup> for hot water or 30 watts ft<sup>2</sup> for electric heat. Install hovers over the creep areas. Hovers need not be insulated—try tempered hardboard, sheet metal, or exterior plywood. Heavy clear plastic on a frame allows you to observe the animals.

### Ventilation:

Select AMICA-rated fans for the stated capacity at 1/2" static pressure. Obtain fans with inside safety grills that protect workers from fan blades. Wire each fan on a separate circuit. Use a fused switch (sized at 125% of fan ampereage) on each fan at fan location. Install louvers (1/2 ft<sup>2</sup> net free area each) in each gable. Consider circulation fans or zone cooling to cool the sows on hot calm days. Refer to MWPS-8, *Swine Housing and Equipment Handbook*, for more information.

### Lighting and wiring:

Install 150-watt incandescent ceiling lights centered over pens, sow wash, and storage area. Use dust- and moisture-resistant light fixtures with a heat resistant globe to cover the lightbulb. Provide electrical outlets for 250-watt heat lamps at each pen. All wiring devices, boxes, and fittings must be dust- and moisture-tight and made of corrosion-resistant materials.

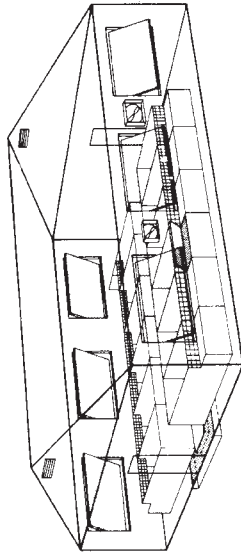
### Service entrance panel:

Plastic, watertight, dust-tight type.

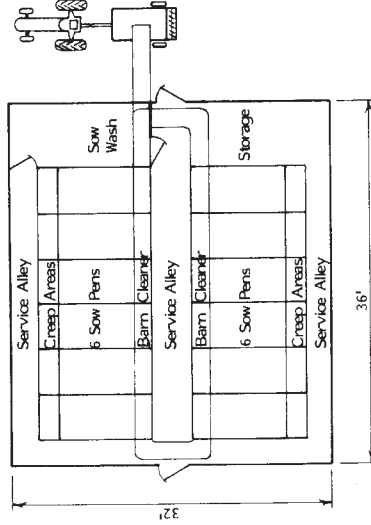
### Protect swine from fan failure

Fans and electrical supply systems occasionally fail, possibly leading to swine death by asphyxiation or toxic gas poisoning. Consider the following:

- 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 number of newborn piglets), have someone baby-sit your animals in the event of a fan failure, mild weather, cold weather, who to phone for additional advice, etc.
- Prepare walk doors and summer-ventilation panels to be propped partly or fully open.
- Consider an automatic start, standby generator. Run the generator once a month to ensure it will work when needed.
- Consider an automatic telephone to dial selected numbers when power fails.



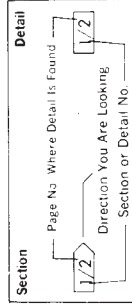
Perspective



Floor Plan

## Related Midwest Plan Service Publications

- MWPS-8, *Swine Housing and Equipment Handbook*.
- AED-22, *Tilt-Up Concrete Construction for Agriculture*.



Section & Detail Indicator

## Materials

### Tusses:

See Truss page.

### Roof purlins:

Construction grade (Doug fir, southern pine, or hem fir) 2x4 purlins, flat  
Maximum spacing:  
40 psf snow load, 24" o.c.  
60 psf " " , 20" o.c.  
60 psf " " , 16" o.c.

### Stagger end joints:

Fasten purlins at each truss with 2-10d nails.

### Studs:

Construction grade (Doug fir, southern pine, or hem fir) 2x4 studs, flat

### Roofing examples:

28 ga galvanized steel, 100 nails/100 ft<sup>2</sup>  
0.024" aluminum, 120 nails/100 ft<sup>2</sup>  
1/2" C-C Ext. plywood (Identification Index - 2%) + 235 lb asphalt shingles

### Siding examples:

3/8" C-C Ext. plywood, stained  
0.024" aluminum or 28 ga galvanized steel  
Wall liner examples:  
3/8" or 1/2" MDO plywood  
0.024" or 1/4" FRP plywood

### Ceiling liner examples:

Same as wall liners plus 28 ga galvanized steel  
Sills and fascia  
Pressure preservative treated (southern yellow pine or equivalent) creosote—8 pct; pentachlorophenol—0.40 pct; ACC—0.25 pct; and ACA or CCA (Type A or B)—0.25 pct.  
(P. T. means lumber, pressure preservative, treated against insect and fungus attack.)

MDO plywood is C-C exterior with medium density overlay. It is an excellent base for paint. Paint with two coats of good quality oil base enamel. Use vinyl "H" strips and silicone caulk to seal joints between inside wall liners to prevent moisture migration through joints.

FRP plywood is a composite material using plywood overlaid with a layer of plastic. It is moisture resistant and more durable and easier to clean than plywood. Use vinyl "H" strips and silicone caulk at joints as described under MDO plywood.

### Perimeter insulation:

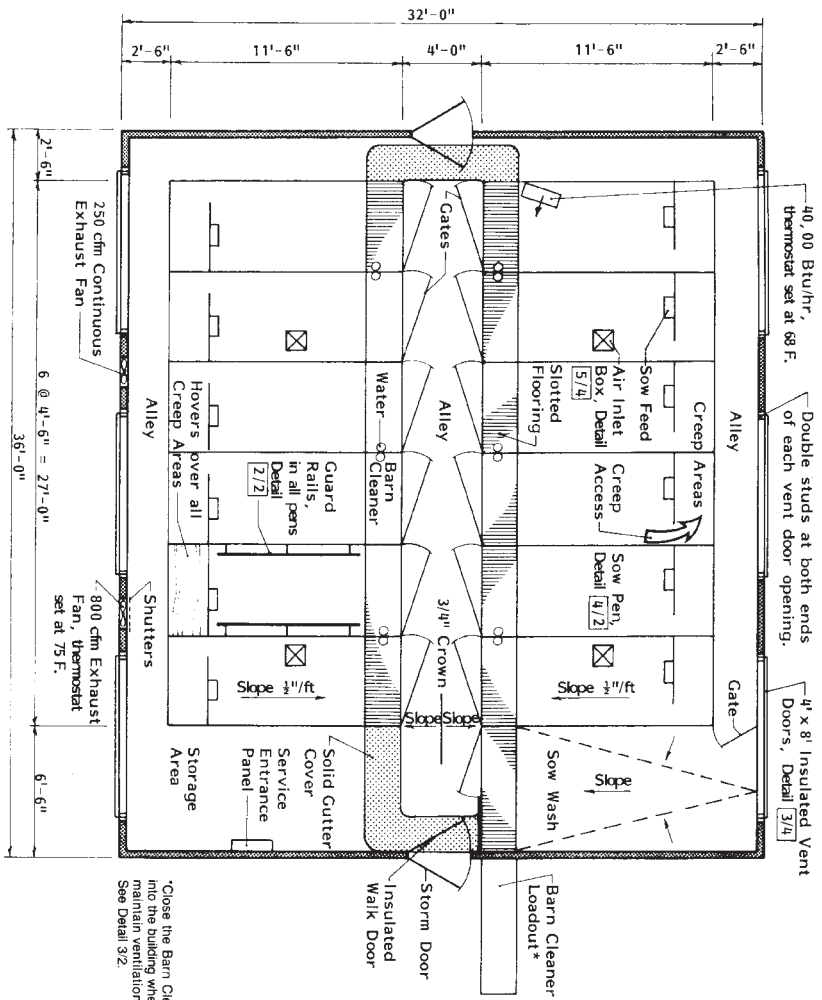
At least 2" x 24" waterproof expanded, extruded polystyrene insulation. Install a protective liner: high density fiberglass reinforced plastic or 1/4" cement asbestos board preferred. Use a vapor barrier behind but avoid contact with wood. Seal all joints with a weatherstripping material. Install flashing from behind siding to cover top of insulation and its protective material.

### Concrete:

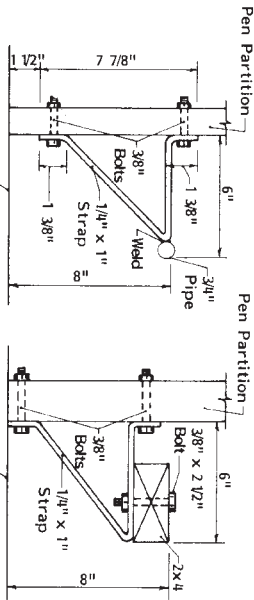
Use 3500 psi concrete with 7% air entrainment. Use steel of at least 40,000 psi yield.

### Slats:

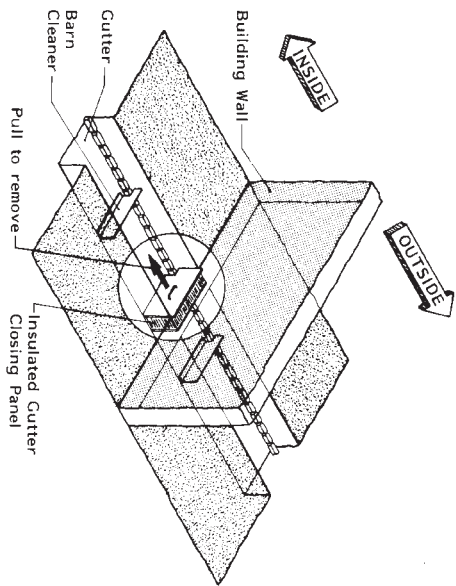
Woven wire, flat wire mesh, metal, or fiberglass reinforced plastic slats are preferred. Woven wire and wire mesh require supports in a 12" o.c. grid arrangement. Use slats capable of supporting 65 psf. If using concrete slats, obtain 4" or narrower slats and space slats 3/4" apart.



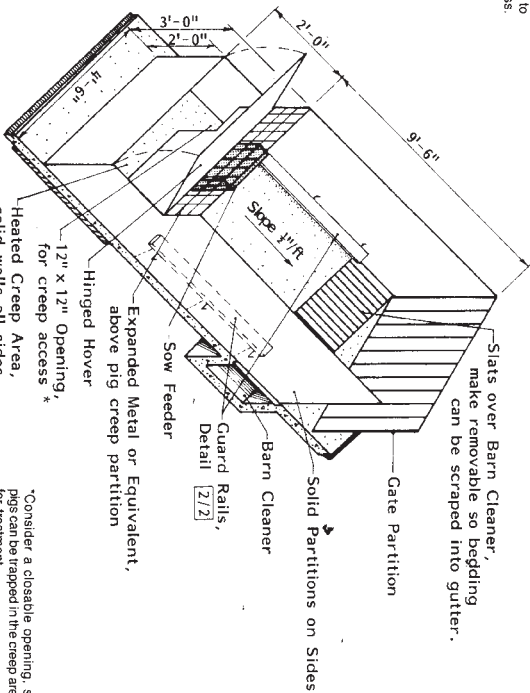
Floor Plan - 1/2



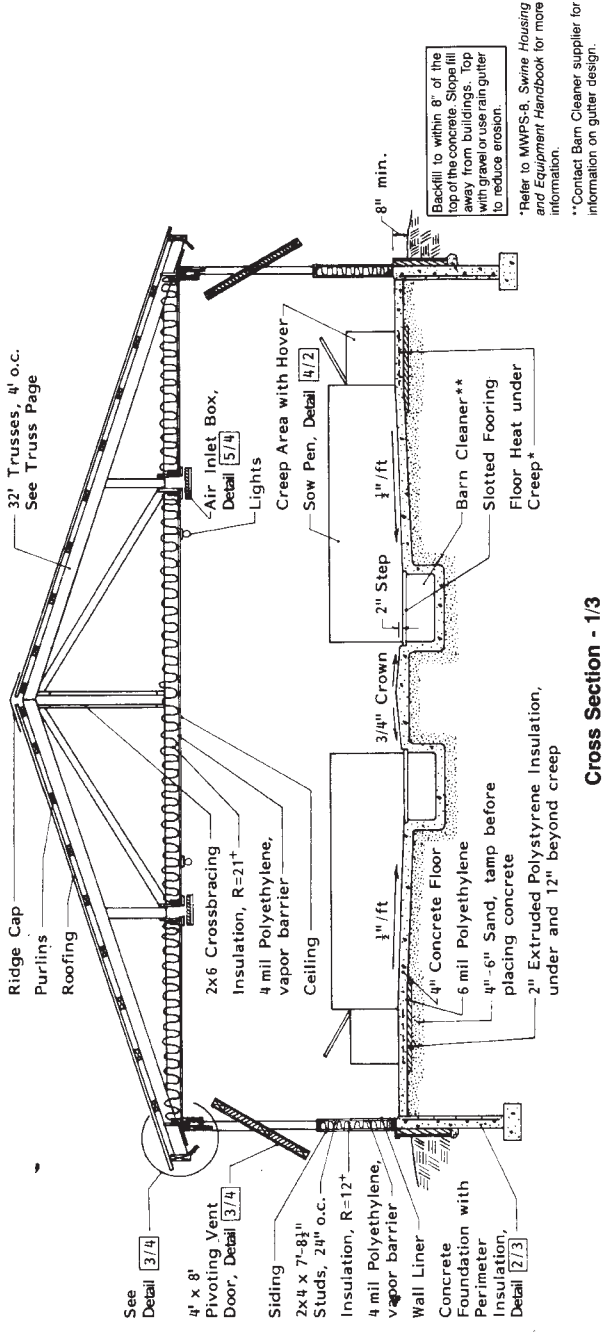
Guard Rail Alternatives - 2/2



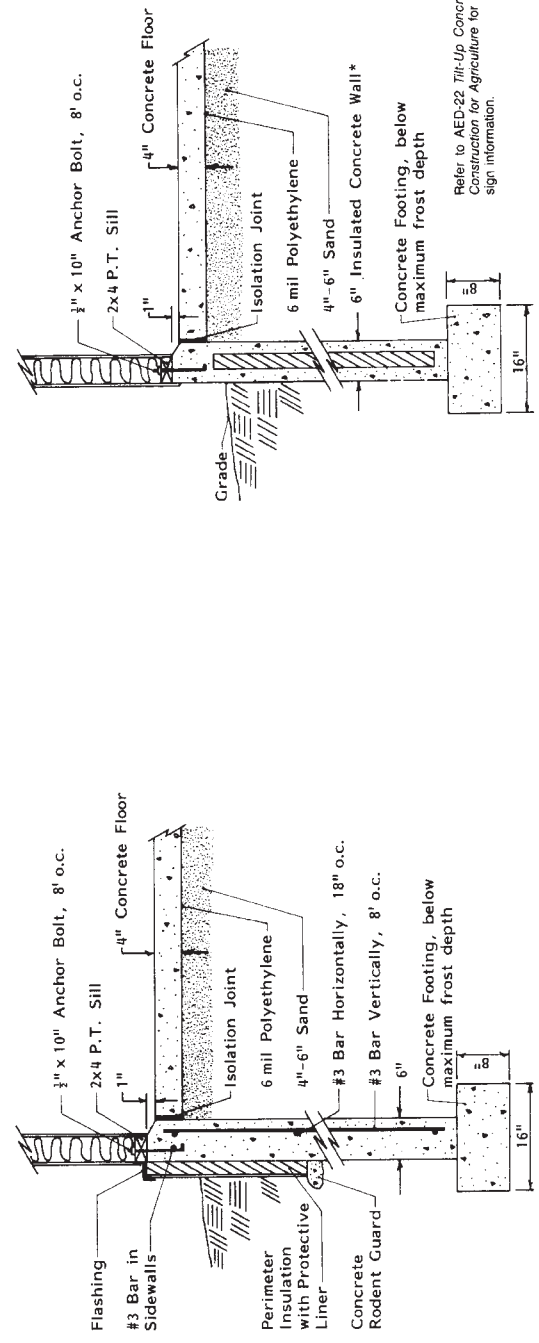
Gutter Block-3/2



Pen Detail-4/2

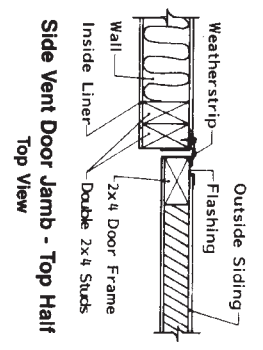


Cross Section - 1/3

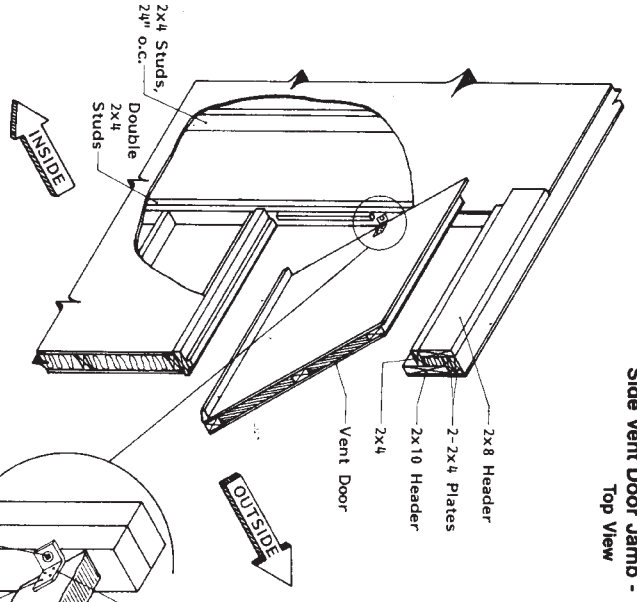


Foundation - 2/3

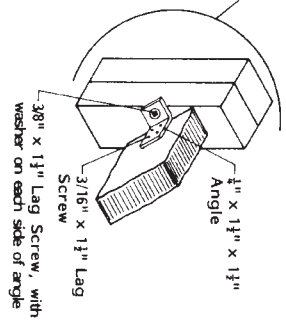
Alternate Foundation - 3/3



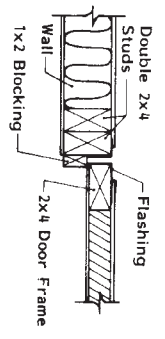
**Side Vent Door Jamb - Top Half**  
Top View



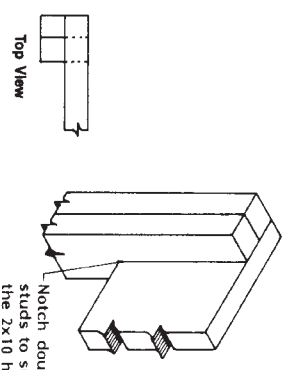
**Vent Door and Framing - 1/4**  
Perspective



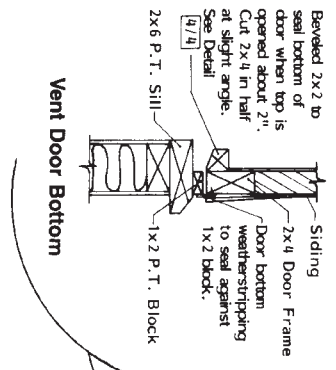
**Pivot Hinge**



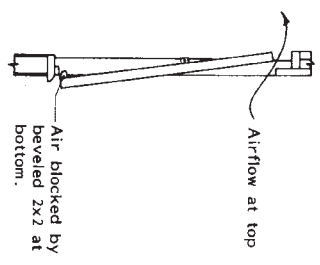
**Side Vent Door Jamb - Bottom Half**  
Top View



**Notch 2x10 Header Into Studs - 2/4**  
Perspective View

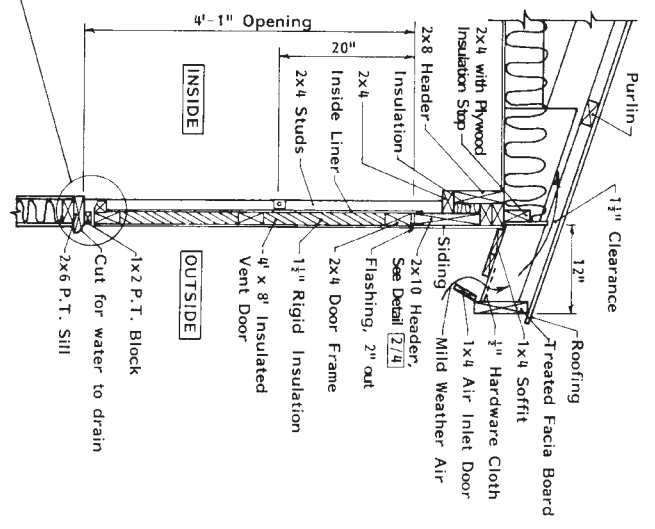


**Vent Door Bottom**



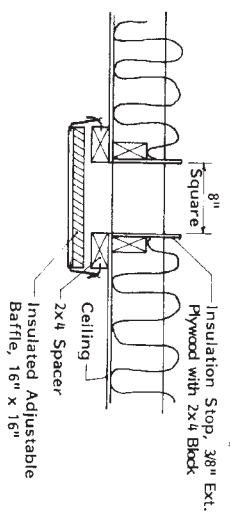
**Partially Opened Vent Door - 4/4**

When the door is opened about 2", the beveled 2x2 reduces airflow through the bottom of the door, but allows fresh air to enter at the top. The beveled 2x2 should be close to the 1x2 to seal bottom of door, install with screws when door is opened about 2".



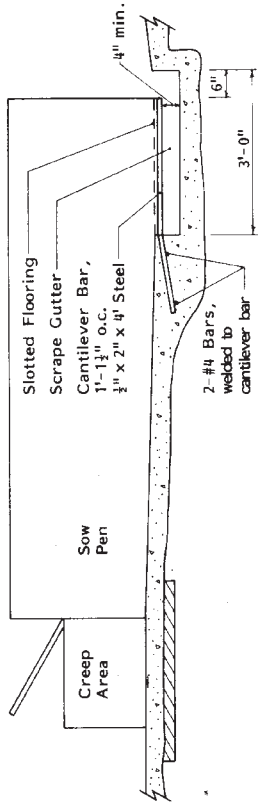
**Eave Inlet and Vent Door - 3/4**  
Cross Section

**Ventilation Management**  
**Cold weather:** Only the continuous fan runs. Close upwind soffit doors so all the air is drawn in from the ridge, gable, or downwind soffit ventilation openings. Close adjustable baffles on box air inlets down to 1/2" to maintain a high air velocity (700 to 1000 ft/min) from the inlets.  
**Mild weather:** Both fans run. Open all eave inlets (5-1/2 ft total opening into attic is needed). Open box inlet baffles to 2".  
**Warm weather:** Open the 4x8" vent doors on both sides. Shut fans off. Leave box air inlets and soffit doors open.

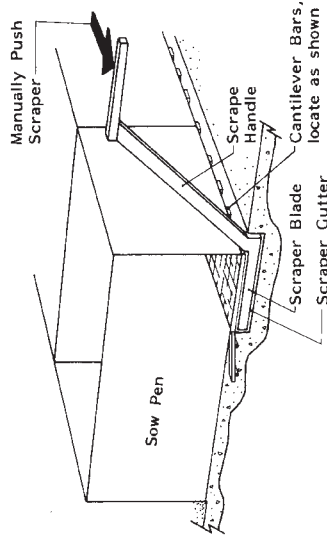


**Box Air Inlet - 5/4**

# Alternative Manure Handling Methods

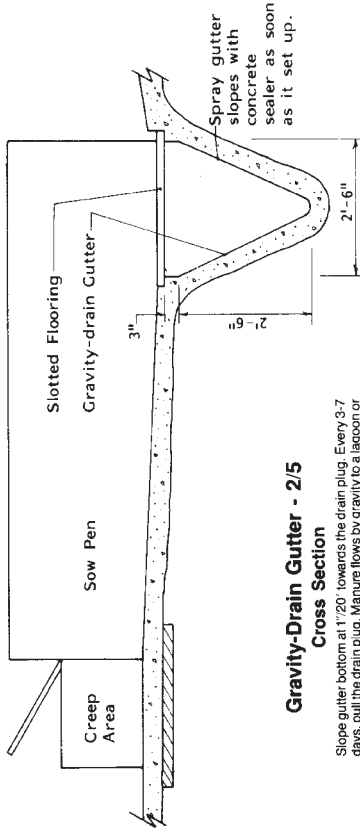


**Manual-Scrape Gutter**  
Cross Section



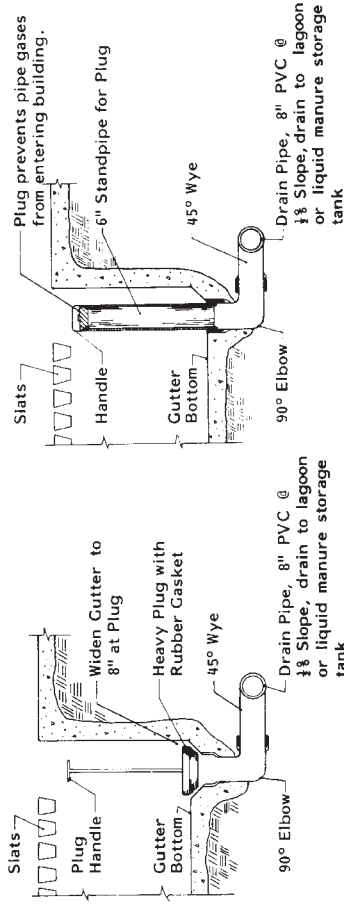
**Manual-Scrape Gutter - 1/5**  
Perspective

Slats are supported by cantilever bars over the gutter. The cantilever floor allows frequent removal of manure. Hand scrape manure from the gutter directly outside or into a deep collection gutter. Make the bottom of the gutter level and place a 1" to 2" lip at the end of the gutter to retain liquids and reduce adhesion of solids to the gutter.



**Gravity-Drain Gutter - 2/5**  
Cross Section

Slope gutter bottom at 1" / 20' towards the drain plug. Every 3-7 days, pull the drain plug. Manure flows by gravity to a lagoon or storage tank. Agitation is usually not needed before draining.



**Gravity-Drain Plug - 3/5**  
Cross Section of Gutter End