

# 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. If pigs are held until 40 to 50 lb.  
 Sows: Farrowing sows: from pigs at 4 to 6 weeks and to weaning and weaning facilities. Move pigs from the farrowing pens to a nursery at 8 to 9 weeks (40 to 50 lb), pulling 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 pen.  
 Mechanical ventilation is provided in cold weather; ventilation doors are opened for natural ventilation in summer weather. Manual scrapers and gravity drain gutters under slatted flooring. Manual scrapers and gravity drain gutters are shown as alternatives.

**Utilities**

**Height:** Desired room temperature is about 70 F. Provide a 40,000 Btu/h space heater. Provide floor heat in the creep areas: 100 Btu/h ft<sup>2</sup> for hot water or 20 wtu/ft<sup>2</sup> for electric heat. Install heaters over the creep areas. Floors need not be insulated—try tempered hardwood, sheet metal, or exterior plywood. Heavy plastic on a frame allows you to observe the animals.

**Ventilation:**

Select AMCA-rated fans for the slatted 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 amperage on each fan at fan location. Install louvers in the roof free area each fan each gable. Consider circulation fans or zone cooling to cool the sows on hot calm days. Refer to MWPS-5, *Swine Housing and Equipment Handbook*, for more information.

**Lighting and wiring:**

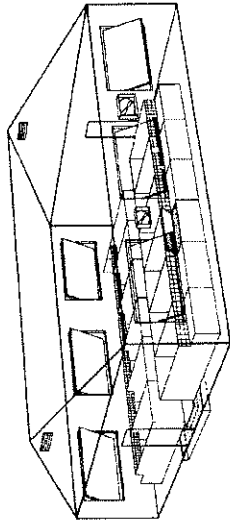
Install 150-watt fluorescent ceiling lights covered over pens, sow wash, and start areas. Use wet, dry, and non-slip light fixtures. Use light fixtures with a heat resistant tubular shade. Use light fixtures with a heat resistant tubular shade. Provide electrical outlets for 250-watt heat lamps at each pen. All wiring devices, boxes, and fittings must be rust- and moisture-resistant and made of corrosion resistant materials.

**Service entrance panel:**

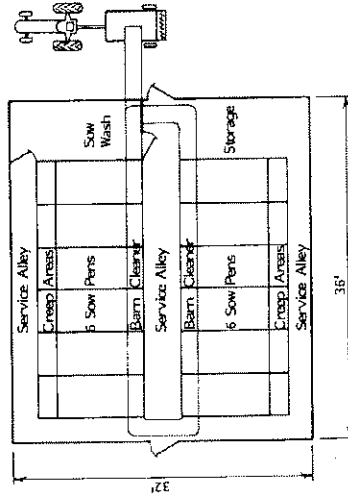
Plastic, watertight, dust-tight type

**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 10 or 15 minutes. If the farmstead is in a stage (a number of newborn litters, for example).  
 • Post instructions on what to do in hot weather, mild weather, cold weather, who to phone for additional advice, etc.  
 • Prepare walk doors and summer ventilation panels to be prepared 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

**Materials**

- Trusses: See Truss page.
- Roof purlins: Construction grade (Doug fir, southern pine, or hem fir) 2x4 purlins, 1 ft.
- Roof sheathing: 40 psf saw load, 24" o.c.
- 45 psf " ", 20" o.c.
- 60 psf " ", 15" o.c.
- Slagger end joints: Fasten purlins at each truss with 2-10d nails.
- Suds: Construction grade (Doug fir, southern pine, or hem fir).
- Flooring 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 1/2) x 235 lb asphalt shingles.
- Siding examples: 1/2" C-C Ext. plywood, stained; MDO plywood, primed; 0.024" aluminum, 28 ga galvanized steel.
- Wall liner examples: 1/2" or 5/8" MDO plywood; 3/8" or 1/2" FRP plywood; 0.024" aluminum.
- Ceiling liner examples: Same as wall liners plus 20 ga galvanized steel and fabric.
- Pen partitions: 1/2" or 5/8" MDO plywood, primed; 0.024" aluminum; 28 ga galvanized steel; 0.25 pcf. and ACA or CCA (Type A or B) - 0.25 pcf. (C. 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 bonded with a resin. It is more resistant to insect and rot damage than plywood. Use vinyl "H" strips and silicone caulk at joints as described under MDO plywood.

**Perimeter insulation**

At least 2"x24" waterproof expanded, extruded polystyrene insulation. Install a protective liner: high density fiberglass reinforced plastic or cement asbestos and perlite panels. Use a protective liner that is not rot resistant. Install flashing from behind siding to cover top of insulation and its protective material.

**Concrete**

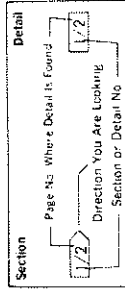
Use 3500 psi concrete with 7% air entrainment. Use steel of at least 40,000 psi yield.

**Slats**

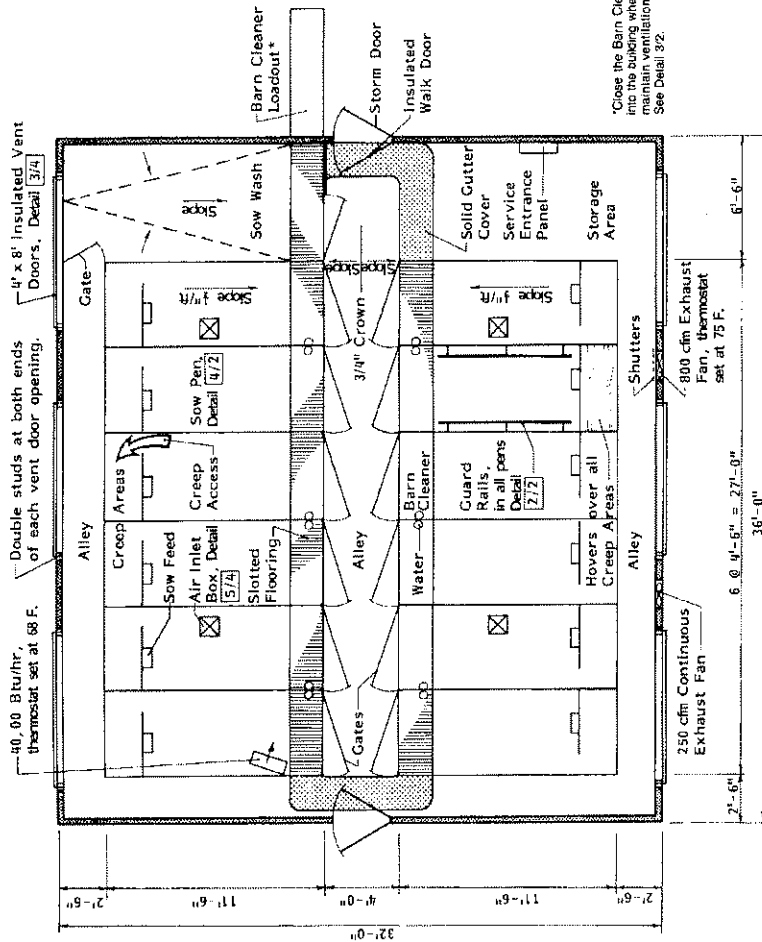
Use woven wire, flat wire mesh, metal, or fibreglass reinforced plastic slats as preferred. Woven wire and wire mesh require supports in a 12" o.c. grid arrangement. Use slats capable of supporting 65 psf. If using concrete slats, obtain 4" or narrower slats and space slats 1/2" apart.

**Related Midwest Plan Service Publications**

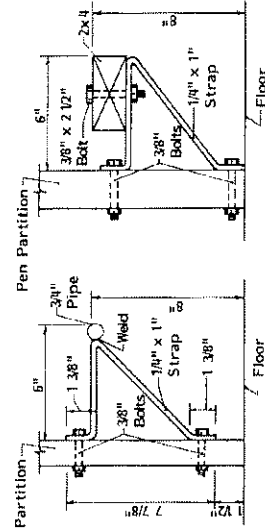
- MWPS-8, *Swine Housing and Equipment Handbook*.
- AED-32, *Tilt-Up Concrete Construction for Agriculture*.



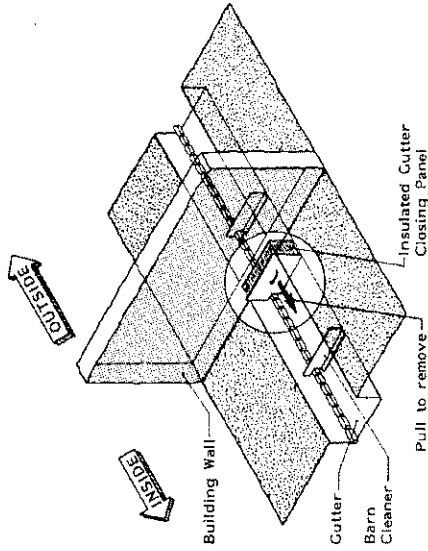
Section & Detail Indicator



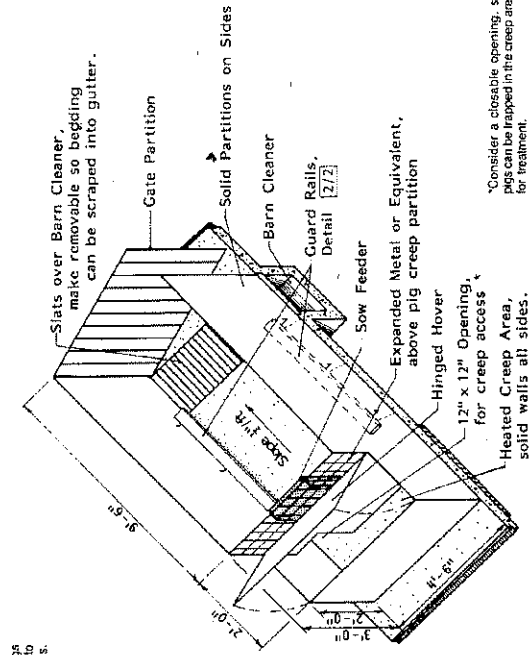
Floor Plan - 1/2



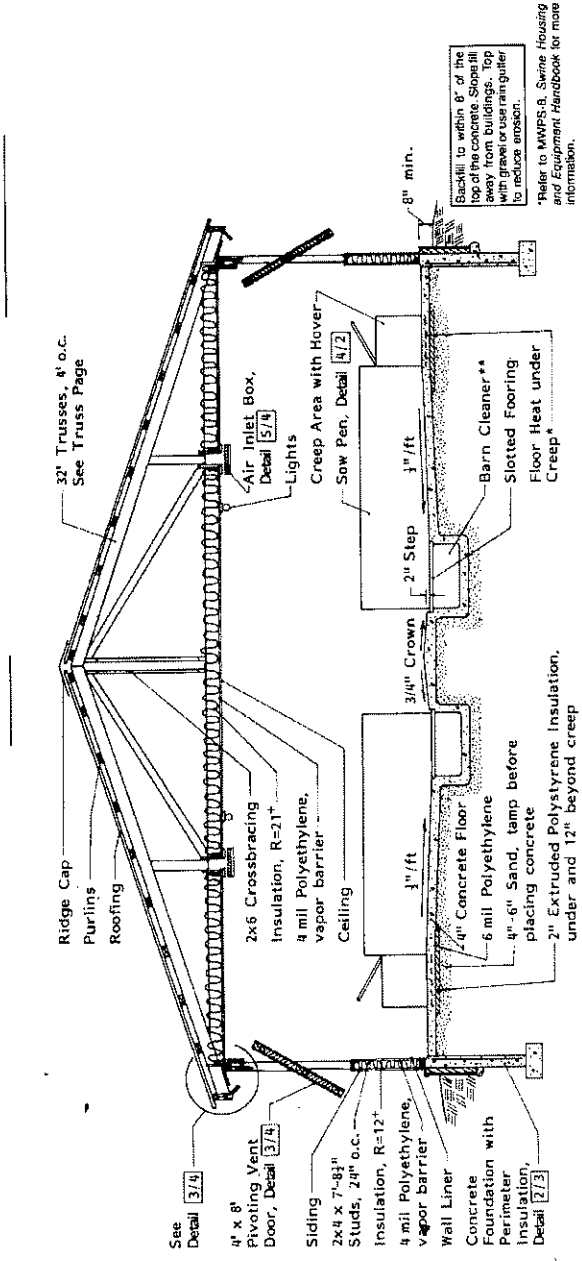
Guard Rail Alternatives - 2/2



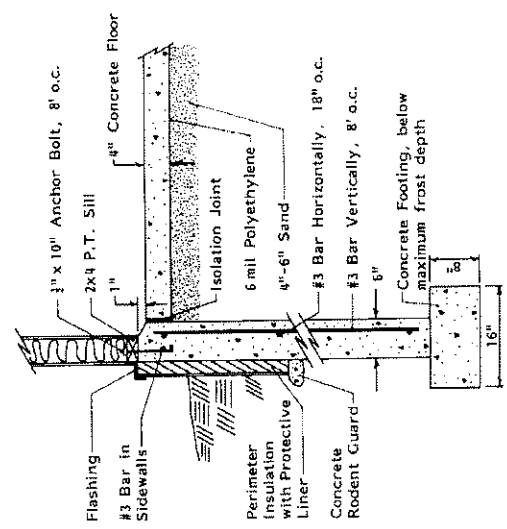
Gutter Block-3/2



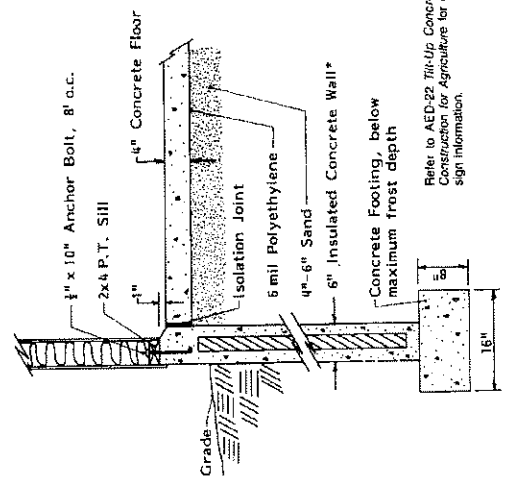
Pen Detail-4/2



Cross Section - 1/3

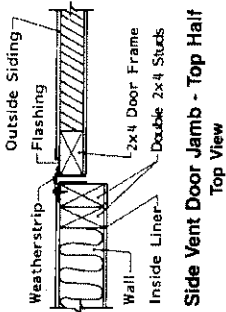


Foundation - 2/3



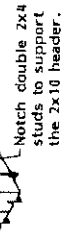
Alternate Foundation - 3/3

Refer to AEO-22, Tilt-Up Concrete Construction for Agriculture for design information.



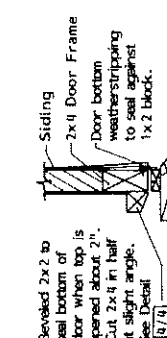
**Side Vent Door Jamb - Top Half**  
Top View

Top View

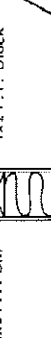


**Notch 2x10 Header into Studs - 2/4**  
Perspective View

Notch double 2x4 studs to support the 2x10 header.



**Vent Door Bottom**



Air-flow at top



Air blocked by beveled 2x2 at 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 1x2 seal between door and jamb with screws when door is opened about 2".

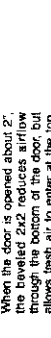
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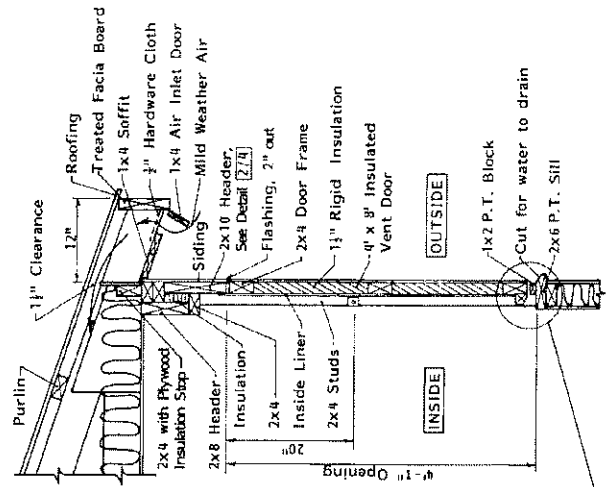
**Vent Door and Framing - 1/4**  
Perspective



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

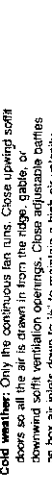


**Pivot Hinge**



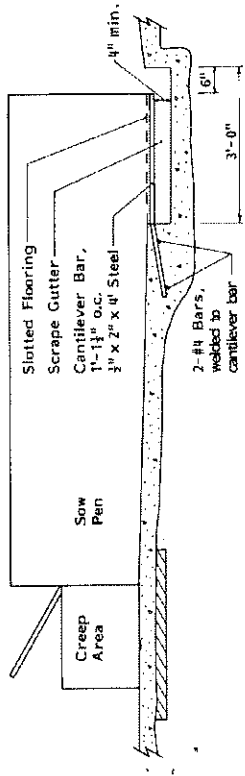
**Eave Inlet and Vent Door - 3/4**  
Cross Section

**Ventilation Management**  
Cold weather: Only the continuous fan runs. Close upward 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 (5-12 ft total opening into attic is needed). Open box inlet baffles to 2".  
Warm weather: Open the 4' x 9' vent doors on both sides. Shut fans off. Leave box air inlets and soffit doors open.

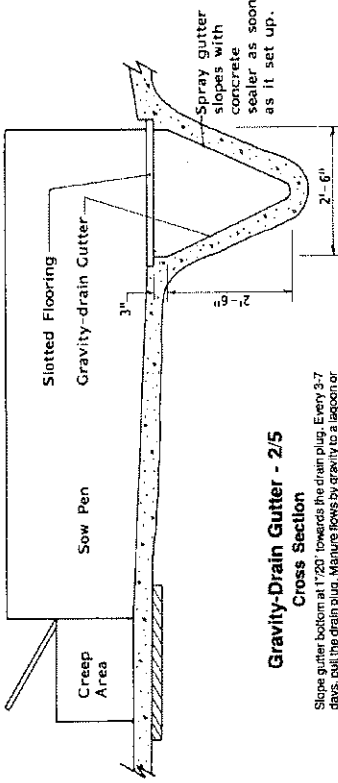


**Box Air Inlet - 5/4**

# Alternative Manure Handling Methods

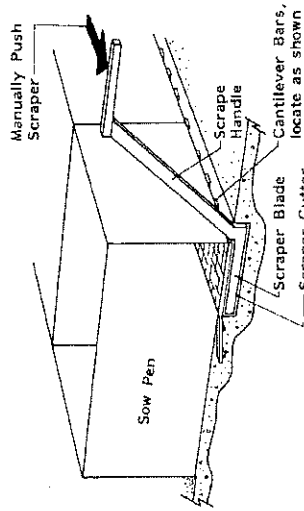


**Manual-Scrape Gutter**  
Cross Section



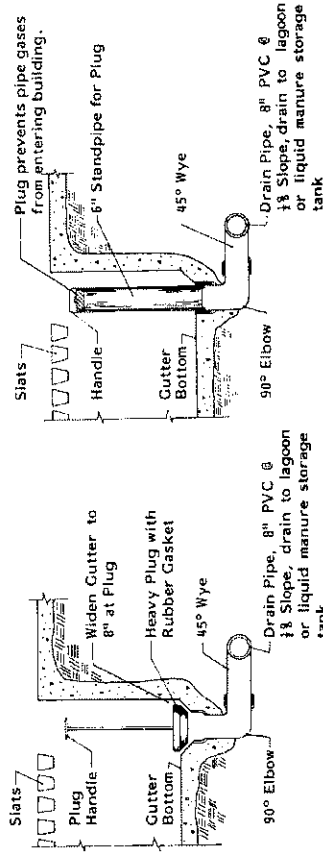
**Gravity-Drain Gutter - 2/5**  
Cross Section

Slope gutter bottom at 1/200 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.



**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 storage tank. When the gutter is scraped, the scraper blade is 2 to 3 inches wide of the gutter to retain liquids and reduce adhesion of solids to the gutter.



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