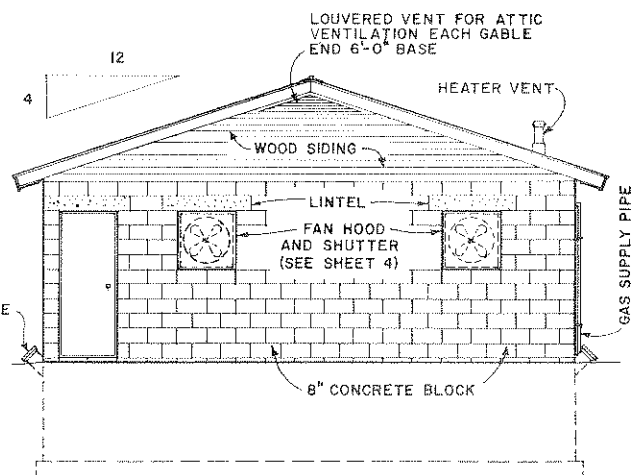
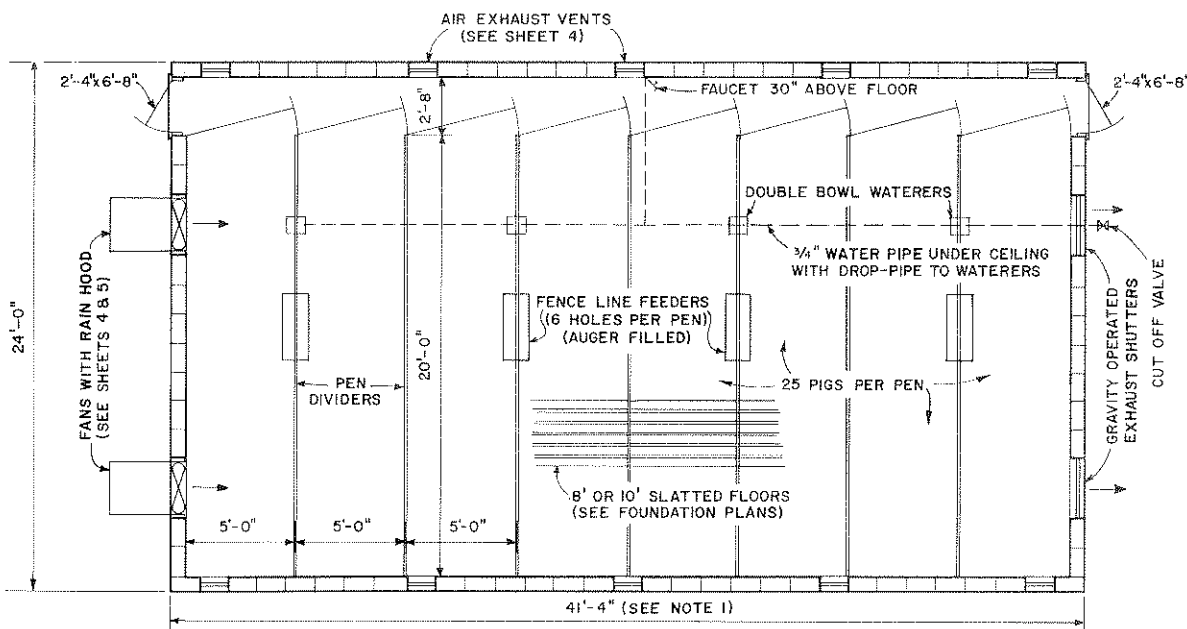


SIDE ELEVATION



END ELEVATION

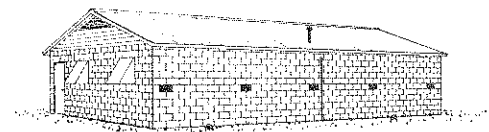
SCALE: 0 2 4 6 FT.



FLOOR PLAN

MECHANICAL AUGER FEEDER MAY BE USED - (NOT SHOWN)

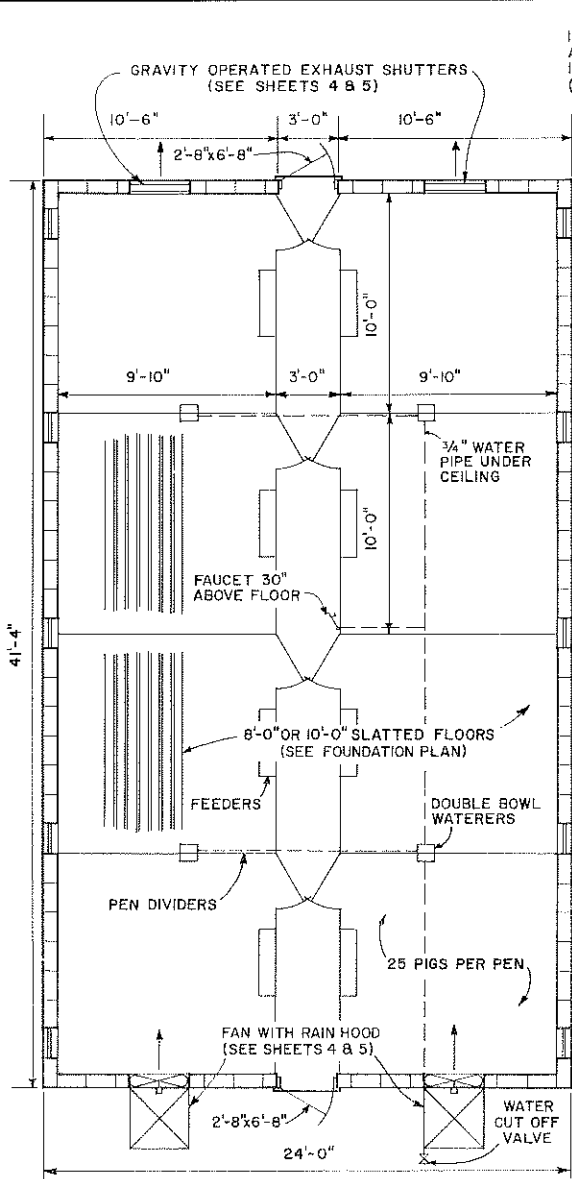
SCALE: 0 2 4 6 FT.



PERSPECTIVE

NOTE 1.
CAPACITY OF BUILDINGS AS SHOWN ON THIS SHEET AND SHEET 2 IS 200 PIGS. CAPACITY MAY BE CHANGED BY INCREASING OR DECREASING THE LENGTH OF BUILDING IN UNITS OF 8'-0" OR 10'-0" DEPENDING ON LENGTH OF SLATS USED.

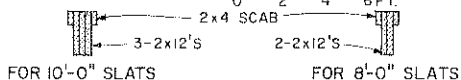
COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS DEPARTMENT OF AGRICULTURAL ENGINEERING UNIVERSITY OF MARYLAND AND UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING		
SWINE NURSERY BLDG. 200 PIG CAPACITY		
KY. '70	6105	SHEET 1 OF 6



ALTERNATE FLOOR PLAN

(SEE NOTE 1 - SHEET 1)
ADAPTED FOR USE OF CART FOR FEED DISTRIBUTION

SCALE: 0 2 4 6 FT.



WOOD BEAMS

SCALE: 0 1 2 3 FT.

INSULATION HAVING VAPOR BARRIER AND VALUE OF "R" = 6.0 TO 8.0 INSTALL AS MANUFACTURER RECOMMENDS (WITH VAPOR BARRIER DOWN)

2 FRAMING ANCHORS (1 EACH SIDE OF TRUSS)

PAIN WALLS WITH WATERPROOF MASONRY PAINT

AIR EXHAUST VENTS (SEE SHEET 4)

SCREEN COVER

2'x24" WATERPROOF RIGID INSULATION AROUND ENTIRE OUTSIDE OF BUILDING

6" STANDARD WEIGHT BLOCK (FIRST 7 COURSES)

RIDGE ROLL METAL ROOF

24" TRUSSES AT 4'-0" O.C. (SEE SHEET NO. 3)

2x4 PURLINS 24" O.C.

2x8 PLATE

1/2"x16" ANCHOR BOLTS 6'-0" O.C.

8" LIGHT WEIGHT BLOCK

CONCRETE SLATS (PRECAST) 7'-4"

8"x8"x16" BLOCK PILASTER

FOOTING AT PILASTER SEE BELOW

FAN & BAFFLE (SEE SHEETS 4 & 5)

1/2" EXTERIOR C-C PLYWOOD, WITH EDGE JOINT CLIPS, WATERPROOF RIGID INSULATION BOARD, OR T & G CEILING

COMMERCIAL PEN DIVIDERS AS PER SHEET 1

BEAM (FOR SIZE SEE FOUNDATION PLAN)

4"x8"x16" SOLID CONCRETE BLOCK CAP

8"x8"x16" CONCRETE BLOCK PIER (FILL ALL CORES WITH CONCRETE)

16"x24" FOOTINGS BELOW PIERS

2'x8" PLATE

1/2"x16" ANCHOR BOLTS 6'-0" O.C.

8" LIGHT WEIGHT BLOCK

CONCRETE SLATS (PRECAST) 7'-4"

8"x8"x16" BLOCK PILASTER

FOOTING AT PILASTER SEE BELOW

FAN & BAFFLE (SEE SHEETS 4 & 5)

1/2" EXTERIOR C-C PLYWOOD, WITH EDGE JOINT CLIPS, WATERPROOF RIGID INSULATION BOARD, OR T & G CEILING

COMMERCIAL PEN DIVIDERS AS PER SHEET 1

BEAM (FOR SIZE SEE FOUNDATION PLAN)

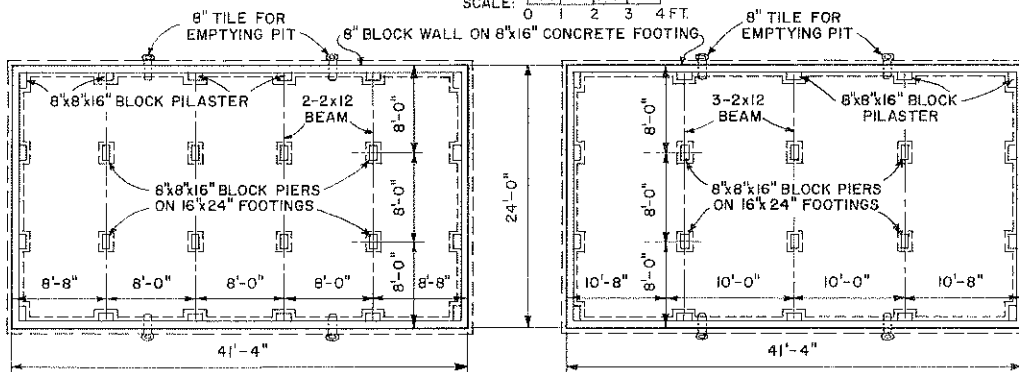
4"x8"x16" SOLID CONCRETE BLOCK CAP

8"x8"x16" CONCRETE BLOCK PIER (FILL ALL CORES WITH CONCRETE)

16"x24" FOOTINGS BELOW PIERS

CROSS SECTION

SCALE: 0 1 2 3 4 FT.



FOR 8'-0" SLATS

FOUNDATION & PIER LAYOUTS

SCALE: 0 4 8 12 FT.

NOTE: 1. USE PRESSURE TREATED LUMBER FOR WOOD BEAMS.

NOTE: 2. IF PRECAST CONCRETE OR STEEL BEAMS ARE USED UNDER THE CONCRETE SLATS, THEY SHOULD BE DESIGNED TO SUPPORT A 125 P.S.F. DEAD-LIVE LOAD. CONSULT A PRECAST CONCRETE OR STEEL BEAM SUPPLIER.

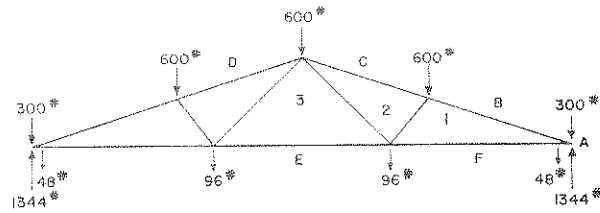
NOTE: 3. STANDARD PRECAST LINTEL MAY BE USED INSTEAD OF BEAM IF ADDITIONAL PIERS ARE USED TO REDUCE LINTEL SPAN TO 6'-0". CONCRETE SUPPLIER SHOULD HAVE STRENGTH TABLE SHOWING PROPER LINTEL SIZE FOR 125 P.S.F. LOAD.

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SWINE NURSERY BUILDING
200 PIG CAPACITY

KY.	'70	6105	SHEET 2 OF 6
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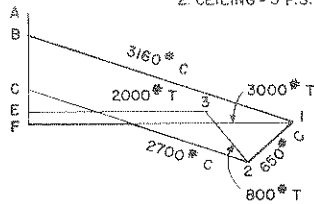


LOADING DIAGRAM

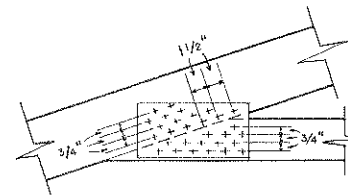
SCALE: 0 2 4 6 FT.

DESIGN LOADS
(FOR 4'-0" O.C. SPACING)

1. ROOF, SNOW, WIND = 25 P.S.F. ON TOP CHORD
2. CEILING = 3 P.S.F. ON BOTTOM CHORD

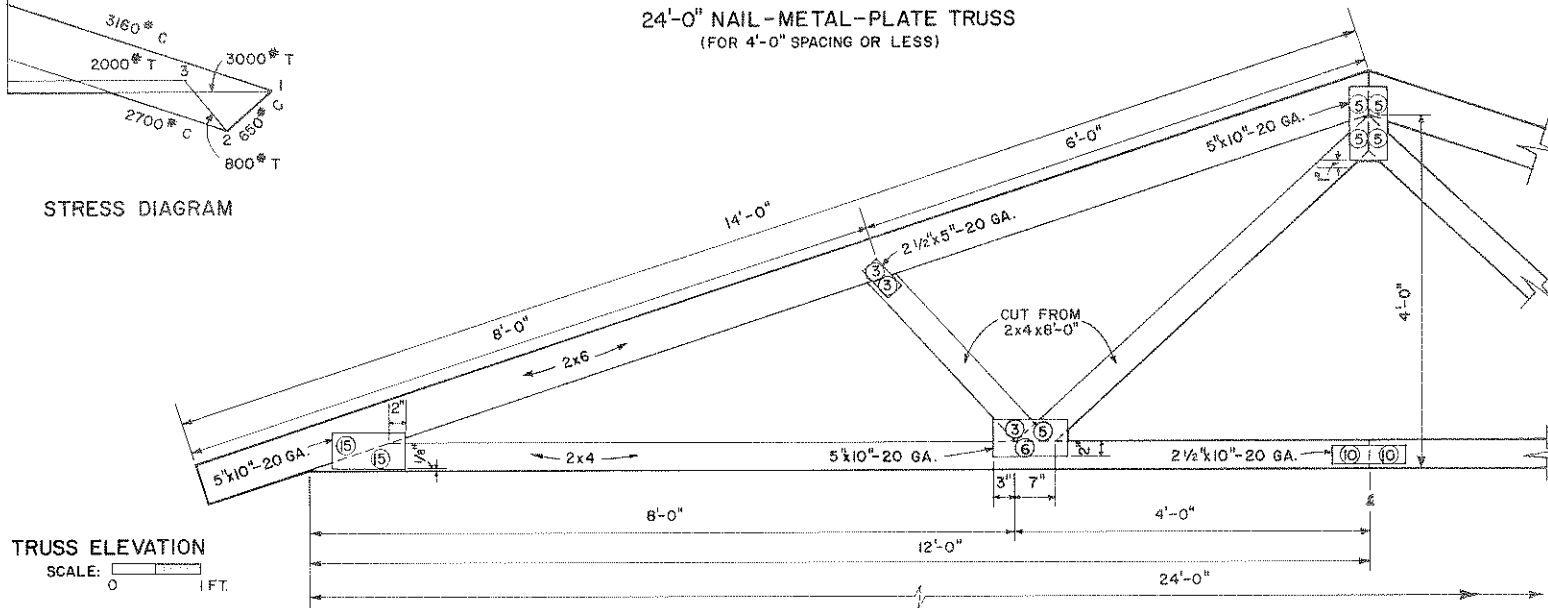


STRESS DIAGRAM



EXAMPLE NAILING PATTERNS
(USE SIMILAR PATTERN FOR OTHER JOINTS)

24'-0" NAIL-METAL-PLATE TRUSS
(FOR 4'-0" SPACING OR LESS)



TRUSS ELEVATION

SCALE: 0 1 FT.

SPECIFICATIONS FOR NAIL-ON METAL-GUSSET-PLATE TRUSS CONSTRUCTION:

1. LUMBER SHALL BE DRESSED, KILN DRY, STANDARD OR CONSTRUCTION GRADE DOUG. FIR, NO. 1 OR 2 SOU. YEL. PINE, OR EQUIV.
2. GUSSET PLATES SHALL BE GALVANIZED STEEL, 18 OR 20 GAUGE AS SPECIFIED, ONE ON EACH SIDE OF EACH JOINT. PLATES MAY BE PRE-PURCHURD OR BLANK (DRIVE NAILS RIGHT THROUGH BLANK PLATE).
3. NAILS SHALL BE 1-1/2", 11 GAUGE, SCREW-SHANK, HARDENED, PALLET-TYPE NAIL.
4. NUMBER OF NAILS DRIVEN THROUGH GUSSET PLATE INTO EACH SIDE OF EACH MEMBER IS SHOWN BY NUMERALS IN CIRCLE AT EACH JOINT. DRIVE ALL NAILS SNUG AGAINST THE METAL PLATE.
5. ALIGN GUSSET PLATE OVER JOINT AS SHOWN ON TRUSS DIAGRAM. BEGIN NAILING IN CENTER OF GUSSET PLATE AND PROGRESS OUTWARD TO ELIMINATE WRINKLES.
6. SPACE NAILS EVENLY OVER GUSSET PLATE ABOUT 1-1/2" APART ALONG GRAIN OF WOOD AND 1/4" APART ACROSS GRAIN IN STAGGERED PATTERN AS SHOWN AT THE RIGHT FOR MAXIMUM STRENGTH AND NO SPLITTING.
7. USE A JIG TO KEEP TRUSS MEMBERS ALIGNED AND PROVIDE FIRM SUPPORT UNDERNEATH FOR NAILING. BUTT ALL JOINTS TOGETHER TIGHTLY. A FEW NAILS IN EACH JOINT SHOULD COME WITHIN 3/8 TO 1/2 INCH OF JOINT BUTT-ENDS AND EDGES TO HOLD METAL PLATE FLAT.
8. DO NOT FABRICATE ANY JOINT HAVING A KNOT OR OTHER WOOD IMPERFECTION UNDER OR ADJACENT TO GUSSET PLATE.
9. HANDLE TRUSS WITH CARE WHEN ROTATING TO ATTACH OPPOSITE-SIDE GUSSET PLATES.

BILL OF MATERIALS (FOR EACH JOINT)

ITEM	NO.	SIZE	QUANTITY
Top Chord	2	2x6x14'	28 bd. ft.
Lower Chord	2	2x4x12'	16 bd. ft.
Diagonals	2	2x4x8'	10 1/2 bd. ft.
Metal Plts.	10	5"x10"-GA.	Note: can use 5"x10" and cut to size
	2	2 1/2"x10"-GA.	
	4	2 1/2"x5"-GA.	
Nails	200	1 1/2" 11GA. Sc. Shnk.	1 1/2 lb.

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SWINE NURSERY BLDG.
200 PIG CAPACITY

KY. '70 6105 SHEET 3 OF 6

SPECIFICATIONS FOR HEATING AND VENTILATING EQUIPMENT

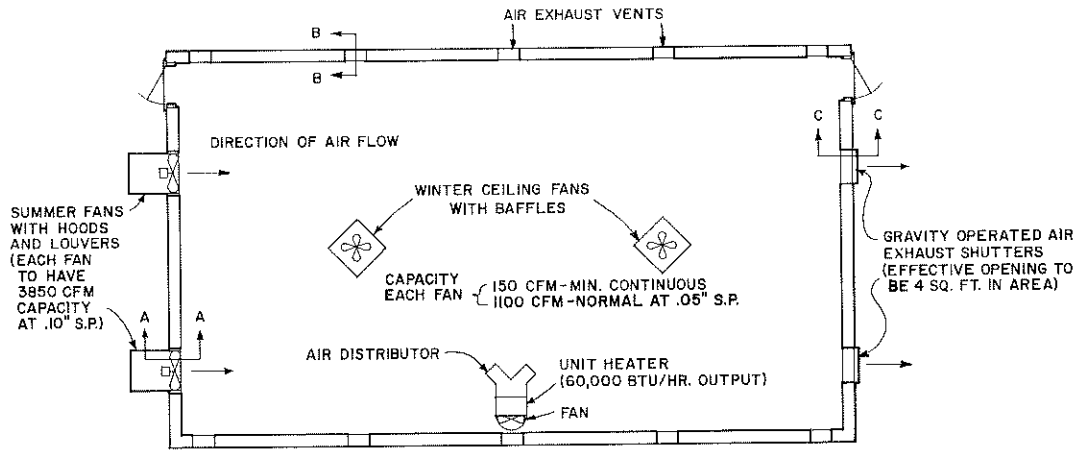
NOTE: Fan and heater capacities are shown on the plan for a 200 pig capacity building. Refer to Sheet 6 for capacities for other building lengths.

WINTER CEILING FANS - Totally enclosed motors with ball bearings, or all-angle permanently lubricated sleeve bearings and thermally protected, shaded-pole or permanent split-capacitor type with proper solid-state speed control, fans AMCA rated, or equivalent, to provide approximately the CFM range specified at .05" static pressure. Provide baffles as shown on plan.

SUMMER FANS - Totally enclosed, ball bearing, thermally protected motors, 115V, 60 cycle, 1 ph. Direct or belt-drive fans AMCA rated to provide the CFM specified at 0.10" S.P. Provide rain hood and shutters as shown on plan and specified below.

UNIT HEATER - A.G.A. approved vented unit heater, aluminum steel heat exchanger, propeller type fan, 115V, 60 cycle, 1 ph, totally enclosed, thermal or impedance protected motor. Pilot with 100% safety shut-off controls. 115/24 V control transformer. LP or Natural Gas as specified by producer. Heater to have BTU per hour output as specified.

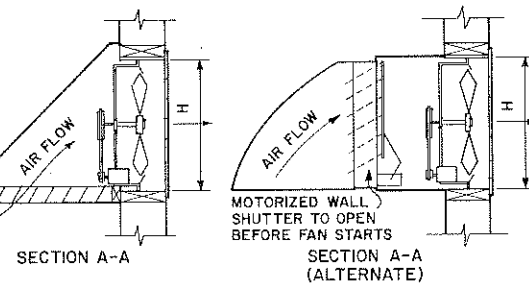
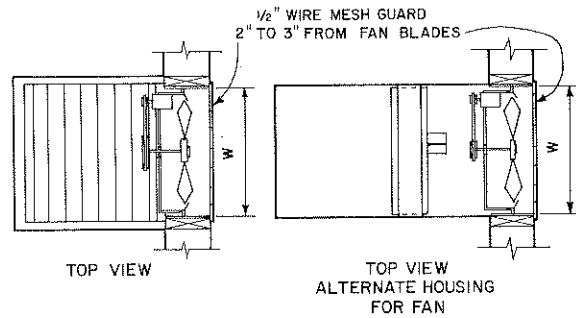
SHUTTERS - Enamel painted steel frame, aluminum vanes, tiered connected, bronze or nylon pivot bearings. Rain hood may be metal or painted plywood sized to cover fan opening and shutter.



HEATING AND VENTILATING PLAN

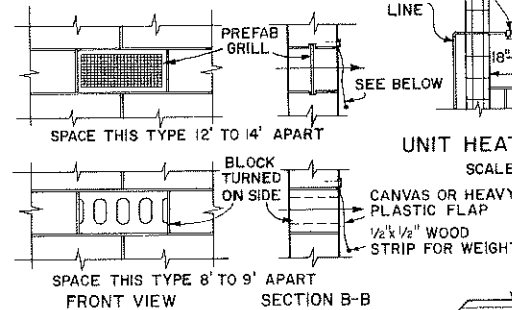
SCALE: 0 2 4 6 8 FT.

- NOTE: 1. ABOVE PLAN FOR 200 PIG CAPACITY BUILDING AS SHOWN ON SHEET 1 OR ALTERNATE PLAN AS SHOWN ON SHEET 2. FOR OTHER LENGTHS OF BUILDING REFER TO INSTRUCTIONS ON SHEET 6.
2. CONSTRUCTION AND DIMENSIONS OF FANS, SHUTTERS, AND HEATER UNITS VARY WITH EACH MANUFACTURER. INSTALL ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

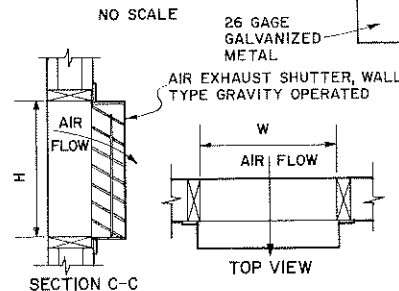


SUMMER FAN, SHUTTER, & HOOD DETAILS
NO SCALE

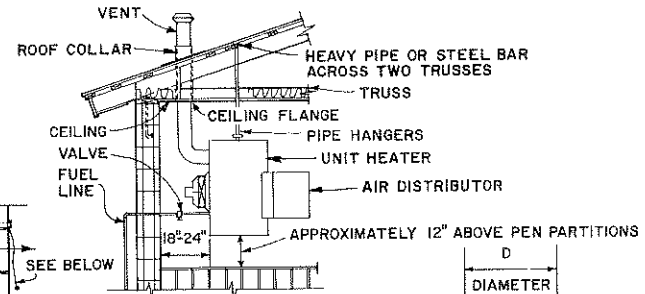
(REFER TO MANUFACTURERS INSTALLATION RECOMMENDATIONS AND DIMENSIONS)



AIR EXHAUST VENT DETAILS
(TWO TYPES SHOWN)
NO SCALE

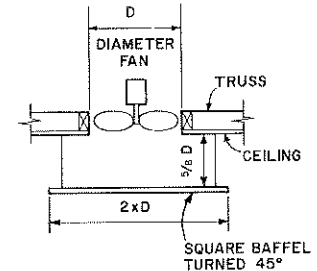


GRAVITY OPERATED AIR EXHAUST SHUTTER
NO SCALE

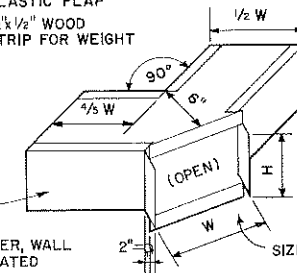


UNIT HEATER LOCATION

SCALE: 0 1 2 3 4 FT.

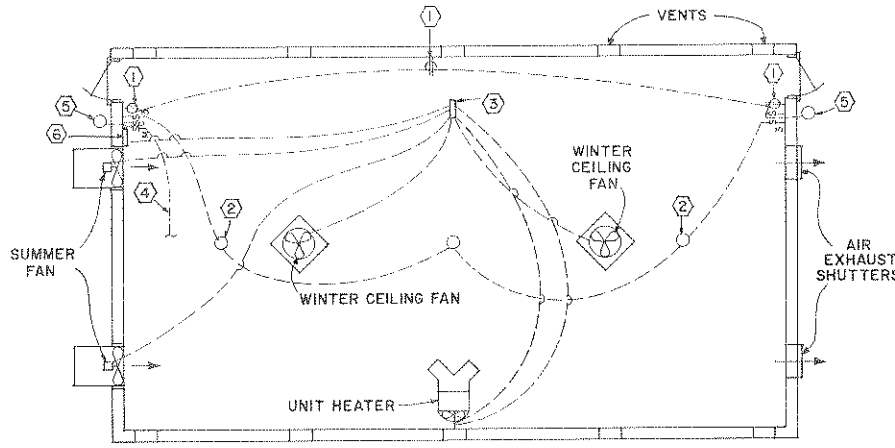


WINTER CEILING FAN & BAFFLE
DETAIL
NO SCALE



AIR DISTRIBUTOR
DETAIL
NO SCALE

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SWINE NURSERY BUILDING 200 PIG CAPACITY		
KY.	'70	6105 SHEET 4 OF 6

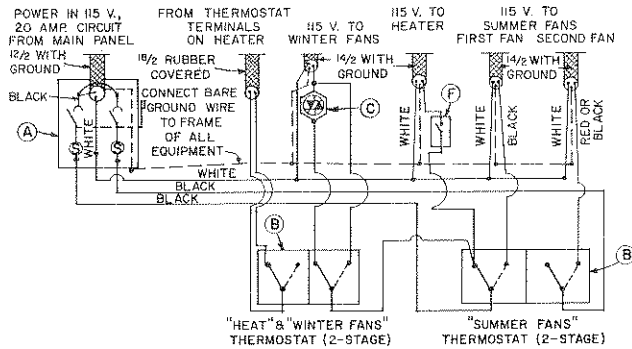


ELECTRICAL FLOOR PLAN

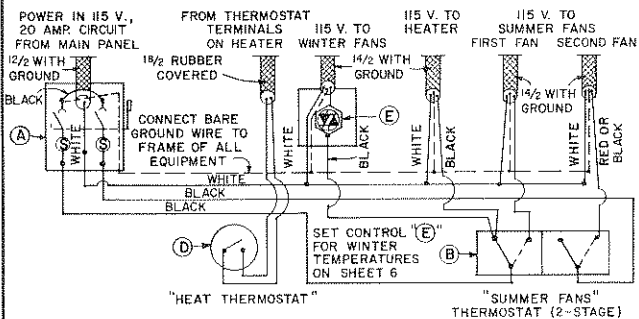
SCALE: 0 2 4 6 8 FT

NOTE: ABOVE PLAN FOR 200 PIG CAPACITY BUILDING AS SHOWN ON SHEET 1. REFER TO ELECTRICAL NOTES IF BUILDING ACCORDING TO SHEET 2. FOR OTHER LENGTHS OF BUILDING REFER TO INSTRUCTIONS ON SHEET 6.

TWO SUGGESTED WIRING DIAGRAMS FOR VENTILATION CONTROL BOARD



PLAN 1. FOR MULTI-SPEED WINTER FANS



PLAN 2. FOR VARIABLE-SPEED WINTER FANS

ELECTRICAL EQUIPMENT FOR CONTROL BOARD DESCRIPTION

ITEM

- (A) Safety switch box - 2 pole, 30 amp, use dual-element, non-tamperable, plug-type fuses. Fuses sized at 125% of full load (amps) of summer fans.
- (B) Thermostat - 2-state, line voltage, dust-proof, farm duty type, rated for inductive load of at least 7 amps at 115 V, or amperage greater than motor rating. NOTE: If fan motor amperage is greater than amperage capacity of thermostat, use a motor relay in circuit and rewire as required.
- (C) Solid-state speed control - "knob set" type for AC motors, adjust for low speed or "minimum continuous" winter ventilation rate. This control device and the motors for the winter fans must be paired to work together.
- (D) Thermostat - low voltage, dust-proof farm duty type for heat control.
- (E) Solid-state variable speed control, thermistor sensor and range adjust type. This control device and the motors for the winter fans must be paired to work together.
- (F) Toggle Switch to disconnect heater power when heater is not needed.

DESCRIPTIONS OF PLAN NO. 1 AND PLAN NO. 2

Plan 1 Shows a fused disconnect box, two two-stage thermostats, and a solid-state speed control wired to provide the following heating-ventilation functions in response to inside temperature: (1) supplemental heat, (2) "minimum continuous" winter ventilation, (3) "High" winter ventilation, (4) first summer ventilation fan, and (5) second summer fan, or maximum summer ventilation.

Plan 2 Shows a fused disconnect box, one 2-stage thermostat, a single-pole "heat" thermostat, and a solid-state variable speed control to provide the following heating-ventilation functions in response to inside temperature: (1) supplemental heat, (2) variable winter ventilation, (3) first summer ventilation fan, and (4) second summer fan, or maximum summer ventilation.

ELECTRICAL NOTES

All electric service, equipment, and appliances should be installed in accordance with local code utility company requirements.

- (1) - Twin convenience outlets, with hinged protective covers.
- (2) - Lighting circuit, 100 to 150 watt lamps, porcelain receptacles, glass jar covers.
- (3) - Ventilation control board. Plan 1 or Plan 2 as shown on this sheet. Install midway of building and near center aisle if alternate floor plan as shown on sheet 2 is used. Mount at eye-level height.
- (4) - Manual motor switch and circuits for feed augers. Size of switches, and circuits as per auger manufacturer's recommendations.
- (5) - Wall bracket with flood light (optional)
- (6) - Main power entrance panel. Install near center doorway if alternate floor plan as shown on sheet 2 is used.

ELECTRICAL SYMBOLS

- ☐ - Main power entrance panel
- ⚡ - Single-pole toggle switch
- ⚡ - 3-way toggle switch
- ⚡ - Motor switch - toggle operated
- ⊕ - Twin-convenience outlet
- ☉ - Ceiling mounted fixture
- ☉ - Wall bracket mounted flood light (optional)
- Ⓝ - Electrical notes on this sheet

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SWINE NURSERY BUILDING		
200 PIG CAPACITY		
KY.	'70	SHEET 9 OF 6

GENERAL DESCRIPTION
OF
THE NURSERY BUILDING

This nursery building is designed as a facility that may be used to fill the production gap between the farrowing house and the finishing floor. Such a building allows for more intensive use of the farrowing house in that the pigs can be moved at an early age to the nursery. In cold weather there is also less stress on young pigs where they can be moved to a nursery rather than an open finishing floor.

The plan shown is for building (24 feet wide and 41 feet 4 inches long) to house 200 pigs from weaning (3 to 4 weeks old) up to 80 or 100 pounds in weight. The building may be increased or decreased in length depending upon the number of pigs to be housed. Two floor plan arrangements of pens are shown. Also shown are foundation plans for either 8-foot or 10-foot slats.

The building features a total slatted floor over a pit 4 feet deep, concrete block walls, trussed rafters, metal roof, insulated ceiling, waterers, feeders, and fans and heaters for environmental control. A bin and mechanized auger system can be used in the pen arrangement shown on Sheet 1. The pen layout shown on Sheet 2 is best adapted to cart feeding from the center aisle.

The ventilation and heating system is designed to provide automatic winter and summer fan ventilation with supplemental heat for winter. The heating unit is sized to maintain 65°F inside the building for the 3 to 4 week old pigs when the outside temperature is 15°F. The inside temperature may be adjusted lower for larger pigs.

CAUTION

Lethal gases are produced from the bacterial action that take place in the manure in the pit of this building. These gases are continually released and the amount of gases produced is increased greatly if the pit is agitated while cleaning. Exercise extreme caution if the pit is agitated prior to removal of manure.

The ventilation system is designed so that at least one fan will be operating at all times to provide fresh air and force the gases from the house. If the ventilation system should fail to function for a period of 4 to 6 hours the accumulation of gases could cause death to pigs or the attendant. In such case all doors should be opened. A power failure alarm system could be a good investment.

THE HEATING AND VENTILATION SYSTEM

A. DESCRIPTION

The heating and ventilation system is of the pressure type in that air is forced into the building by fans and air leaves the building through vents, exhaust shutters, or the tile used for draining the pit.

Parts of the system and their function is as follows:

1. Winter ceiling fans are designed to provide a minimum continuous flow and circulation of fresh air into the building. This air replenishes oxygen burned by the heater and forces odors and dangerous pit gases from the building. These fans also draw warm air from the attic of the building to help warm the house. The baffle below the fans improves the distribution and mixing of the air thus assuring draft-free winter ventilation.
2. Summer ventilation fans force air directly into the building for maximum ventilation and cooling effectiveness. Since the winter fans do not operate while the summer fans are running, the summer fans also force air back through the winter openings to help ventilate the attic. Shutters on the summer fans prevent the flow of air into the building in cold weather.

B. HOW THE SYSTEM WORKS

The system provides automatic year around ventilation and heat control through the use of interwired thermostats and fused motor protection. No periodic adjustments of slots, baffles, or shutters are necessary.

The system operates as follows:

1. When the inside temperature drops below the HEATER thermostat setting, the heater will operate to maintain the desired minimum temperature for baby pigs. Winter fans will be operating at a minimum rate also to remove odors, provide fresh air for the building, and remove dangerous pit gases.
2. As the inside temperature rises, the WINTER FANS thermostat will switch the winter fans from the minimum to the normal winter ventilation rate.
3. For further temperature rises on warm days, the SUMMER FANS thermostat will switch OFF the winter fans and switch ON the first summer fan. With a further temperature increase, the second summer fan will switch ON giving the maximum summer ventilation rate and cooling effectiveness.

C. FAN AND HEATER CAPACITY REQUIREMENTS

Ventilation and heating requirements vary with the size of the nursery building and the number of pigs to be housed. Fan and heater capacities for the nursery building as shown in these plans are indicated on Sheet 4. Where the length of the building is to be varied use the following table for determining the ventilation and heating requirements.

SUGGESTED FAN AND HEATER CAPACITIES
WHERE LENGTH OF NURSERY IS DECREASED OR INCREASED^(a)

Building Size	Winter Fans CFM			Summer Fans Total CFM	Heater BTU/Hr ^(c)
	No. Pigs	Min. Cont.	Normal		
24' x 30' or 32'	150	300	160 ^(b)	5600	40,000
24' x 48' to 50'	250	500	275 ^(b)	9600 ^(b)	80,000

(a) Sizes based on the following design data:

- Floor space = 4 sq. ft. per pig (40-100) lbs.
- Winter ventilation: 1-1/2 to 2 CFM per pig minimum continuous and 10 to 12 CFM per pig normal
- Summer ventilation: 1 air change per minute total for the building
- Supplemental heat: 50° temperature differential

- (b) Use one ceiling fan centered in building
- (c) Use two ceiling fans equally spaced, each sized for one-half of Winter CFM at .15" S.P.
- (d) Use two single-speed fans in end-wall as shown on plans. Each sized for one-half of the total CFM.
- (e) BTU per hour output by unit heater

D. THERMOSTAT SETTINGS

The thermostats are located on a ventilation control board as shown on Sheet 3 of the plans. The table below shows how they should be adjusted depending upon the age of the pigs.

SUGGESTED THERMOSTAT
SETTINGS

Age of Pigs Weeks	Heater Thermostat	Winter Fans (if Used)	Summer Fans Thermostat
4-5	65	70	80
6	60	65	75
7	55	60	70
8 on	Heat Off	60	70

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