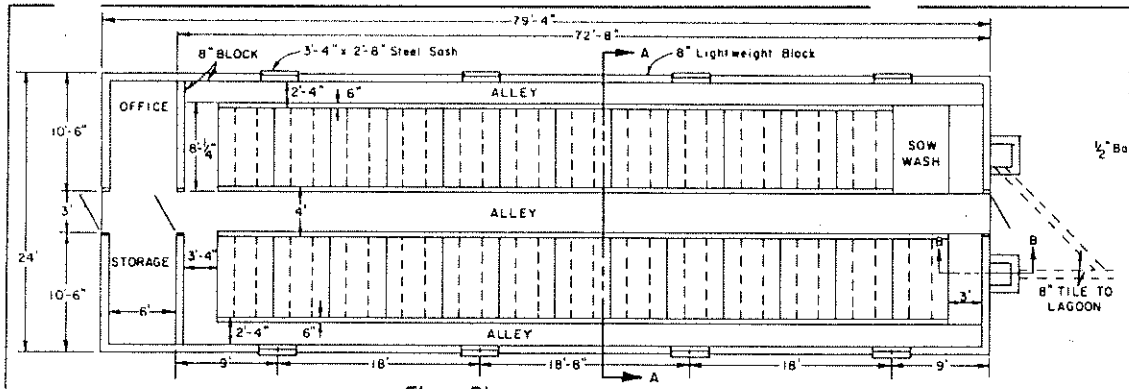
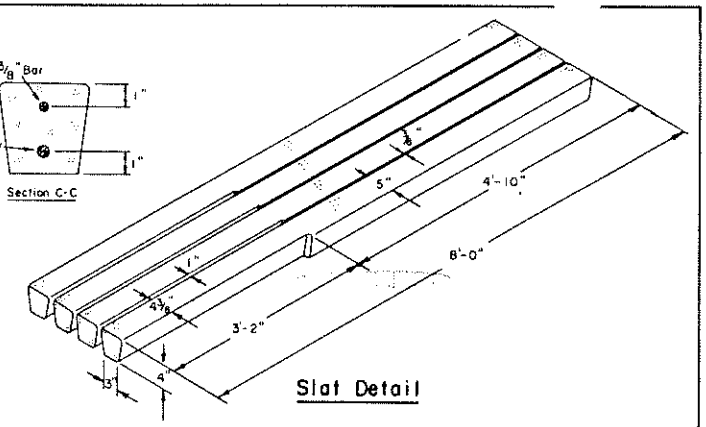
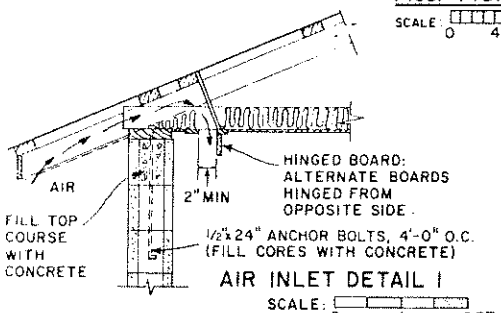


Floor Plan

SCALE: 0 4 8 12FT.

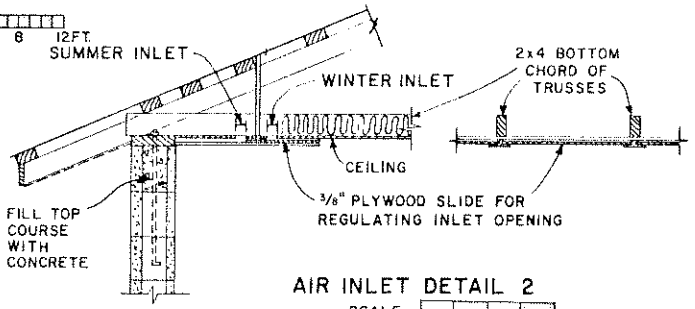


Slat Detail



AIR INLET DETAIL 1

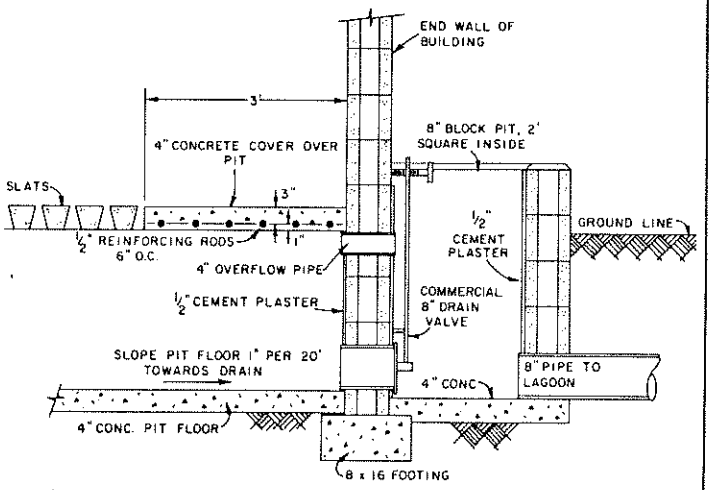
SCALE: 0 1 2FT.



AIR INLET DETAIL 2

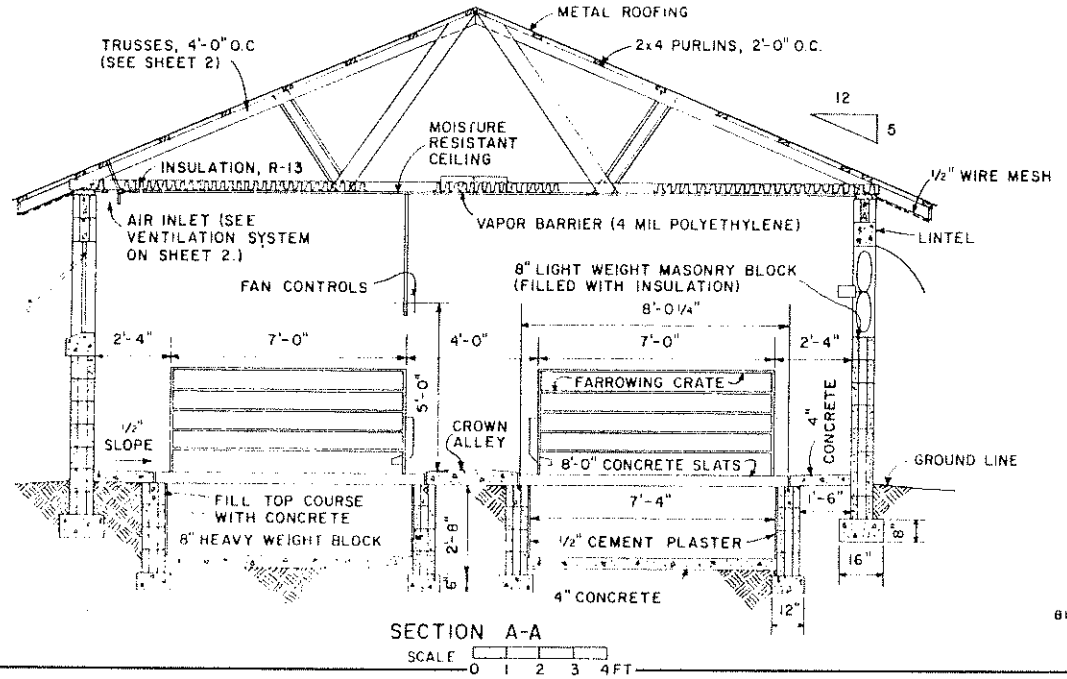
SCALE: 0 1 2FT

SEE OPERATION NOTES ON SHEET 2



Section B-B

SCALE: 0 1 2 FT.



SECTION A-A

SCALE 0 1 2 3 4FT

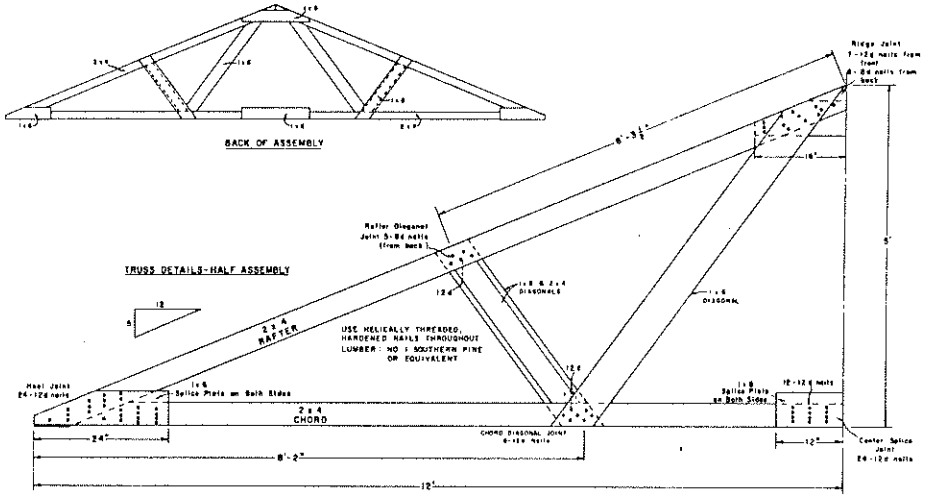
BIOLOGICAL AND AGRICULTURAL ENGINEERING DEPT
N C STATE UNIVERSITY AT RALEIGH

PLAN NO. 527

COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
DEPARTMENT OF AGRICULTURAL ENGINEERING
UNIVERSITY OF MARYLAND
AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

FARROWING HOUSE FOR SOWS
TOTALLY ENCLOSED SLOTTED FLOOR

N.C. '71	6115	SHEET 1 OF 2



OPERATION NOTES

This house is designed to be operated as a totally enclosed house year around. Ventilation is accomplished through mechanical means consisting of fans, controls for the fans, and the air inlet.

Air Inlet

As shown on the ventilation system diagrams, air enters the building through the inlet on both sides of the house. Notice, though, that the air inlet does not extend to the fans on the side of the house with the fans. The inlet should never be closer than 10 ft. to the fan.

The size of the inlet is determined by the volume of air and the velocity of the air entering the building. The entering velocity should be between 500 and 1000 ft. per minute; therefore, on this basis, the inlet is sized allowing 25 sq. in. of opening for each 1000 cfm fan capacity. In this house with the inlet location as shown, a 2 inch wide inlet should be constructed.

There are two ways of constructing the air inlet. When constructed according to Detail 1, the ventilating air always enters directly from the outside. Detail 2 shows a method of constructing the inlet whereby the air can be brought directly from outside during warm seasons of the year, but during the winter it enters the house by way of the attic. The only advantage is that during real cold weather air entering by way of the attic should be warmed some as it passes through the attic before it enters the room.

The hinged board on Detail 1 and the plywood slide on Detail 2 provide a control for regulating the size of the inlet, thereby influencing the velocity of the incoming air.

Large louvers should be installed on both ends of the house in the gables. Each louver should have a free opening area of approximately 8 sq. ft. This is particularly necessary when air inlet Detail 2 is used since all the air would have to enter through the louvers into the attic and then through the inlet to the room. Large louvers will also provide natural ventilation in the attic during the summer to reduce the high temperature there.

Fans

The fan size with its corresponding control is shown on the ventilation system diagrams. Since these fans will operate against pressure, it is important that they be selected at the given capacity at 1/8" static pressure. All fans should be equipped with hoods and shutters and powered with totally enclosed motors.

Fan Controls

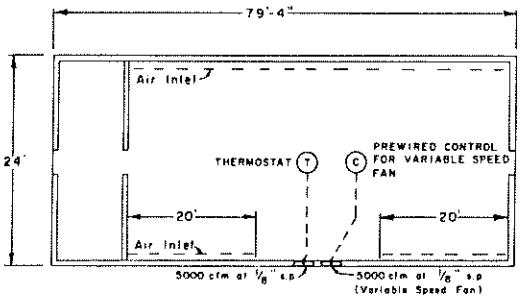
Automatic controls that sense the change in temperature and regulate the air flow accordingly are essential. These will either be one of three types generally, thermostat, interval timer, or a pre-wired control for variable speed fans.

The following would be one setting for the controls for the ventilation system. When using the 5,000 cfm variable speed fan and a regular 5,000 cfm fan, they should be controlled with a thermostat and variable speed fan control as shown on the diagram. At farrowing time the inside temperature should be kept around 70 degrees and therefore the thermostat setting for the variable speed fan would be set accordingly. If the temperature dropped below this level, the fan speed would decrease and give a smaller amount of air movement within the house. If the temperature continued to drop to about 4 degrees below the predetermined setting, 70 degrees, then the fan would cut off until the temperature comm back up. This fan will provide the necessary air for the winter season. For the summer, additional air flow is needed, and therefore the need for the other 5,000 cfm fan. It is controlled by a thermostat only and should be set at 75 to 80 degrees so that when the temperature builds up to this point in the house, this fan too will operate.

The alternate ventilation system features a very small fan with a capacity of 1,000 to 1,500 cfm which should run almost continuously. This fan thermostat should be set to maintain 70 degrees, and the interval timer could be adjusted to operate the fan between one minute and ten minutes out of each ten should the temperature in the building drop below the 70 degrees, as set on the thermostat. The reason for the interval timer would be to guarantee a certain air movement through the house regardless of the outside temperature. This is essential in order to control moisture. The 3,000 cfm fan thermostat should be set on 73 degrees. This fan along with the smaller one will constitute the winter ventilation system. The 5,000 cfm fan with this system is primarily for summer temperature control. It is controlled by a thermostat which should be set between 75 and 80 degrees. Adjustments will probably have to be made in balancing out your system, but they should be in accord with the principles outlined above.

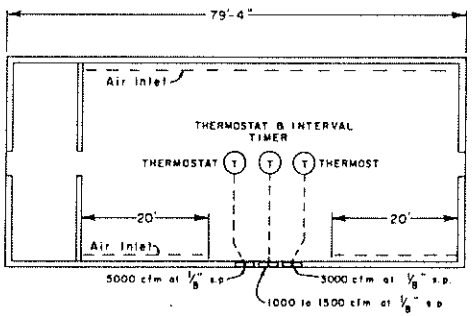
Heat

Heat is essential in a farrowing house during the winter in order to maintain 70 degrees or approximately this temperature during farrowing. A 75,000 BTU heater should be provided for this size house. In addition to this heater, individual brooders such as heat lamps will have to be provided for the pigs. The thermostat setting for the heater should be several degrees lower than the setting on the ventilation fan in winter.



Ventilation System

NO SCALE



Alternate Ventilation System

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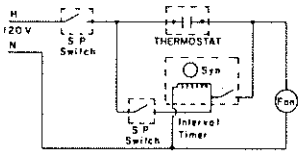
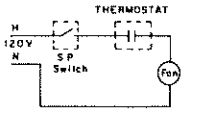


WIRING DIAGRAM FOR FANS CONTROLLED BY THERMOSTAT AND INTERVAL TIMER



WIRING DIAGRAM FOR FANS CONTROLLED BY THERMOSTAT

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