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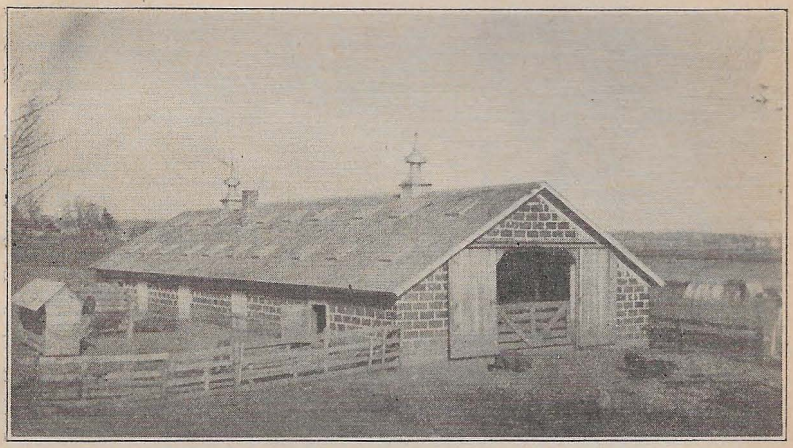
DEPARTMENT OF AGRICULTURAL ENGINEERING



A NORTH AND SOUTH TYPE OF HOG HOUSE.
Plan No. 10.72-51.

AGRICULTURAL EXPERIMENT STATION
THE UNIVERSITY OF NEBRASKA
LINCOLN

CONTENTS

HOG HOUSES FOR NEBRASKA

O. W. SJOGREN AND I. D. WOOD

The material contained in this bulletin is a culmination of several years' study and investigation of the different types of hog houses used in Nebraska. It is realized that the plans given will not suit all conditions that may arise, but an effort has been made to bring out the essential factors so that the plans may serve as a guide in planning a house suited to particular conditions.

THE ESSENTIALS OF AN IDEAL HOG HOUSE

The following is a brief summary of a discussion of the important factors of a well-designed hog house given in the Iowa Agricultural Experiment Station Bulletin No. 152:

1. **Warmth.**—Newly farrowed pigs as well as stock hogs and sows demand reasonably warm shelter. Avoid sudden wide range of temperature.

2. **Dryness.**—It is not logical to expect thrift in damp, musty quarters.

3. **Abundance of light and direct sunlight.**—Sunlight is necessary as a germ destroyer and to better hygienic conditions. Pens should be well sunned during the farrowing months of February, March, and April.

4. **Shade.**—The hog should be protected from the heat of summer as well as from the cold of winter.

5. **Ventilation.**—The hog demands an abundance of fresh, pure air if he is to thrive.

6. **Sanitation.**—Buildings should have smooth walls and floors free from cracks and openings to permit of perfect disinfecting, also enabling them to be kept sanitary. Avoid dusty quarters.

7. **Safety and comfort.**—Care should be taken in the construction of buildings to prevent discomfort to the sow at all times. Avoid high doorsills, low doorways and rough, uneven floors.

8. **"Convenience.**—House details may be arranged to lessen the time and labor required to care for the swine herd. What is considered as one man's convenience, however, may be an inconvenience for his neighbor. Yet the following suggestive features are all more or less valuable in hog house building:

"Roof doors in small houses and alleys in large houses for quick and easy feeding, removal of litter or manures, and handling of herd.

"Bins for storage of feeds.

"Doors and windows which open or close easily and quickly.

"Room for supplies and appliances, such as veterinary medicines and instruments, feed cooker, water heater, stove, sleeping cot, and so on.

"Abundant water supply for drinking and flushing.

"Ventilators, readily adjustable.

"Litter carriers for removing manure.

"Shade devices, handily managed.

"Attached runners, for quick moving of small houses.

"Dipping tank, in or near house.

"Troughs arranged so as to be filled and cleaned with dispatch without interference from hogs.

"Feeding floor, located in or near by the house.

"Breeding crate and ringing chute under cover and near at hand, for winter service especially.

"Tile drainage for flush water which may be conserved by running into farm liquid manure tank.

"Minor equipment, such as hurdles, automatic waterers, self-feeders, barrels or other storage for slops, and other devices."

9. **Serviceability.**—To be considered economical at all times, hog houses must be suitable for farrowing time, for summer shade, and for winter protection. They should be so built that in case of necessity they can be used for housing other stock.

10. **Sufficient size to shelter advantageously.**—Avoid overcrowding by having plenty of floor and overhead space.

11. **Durability.**—A house should be built to give the longest continuous service.

12. **Reasonably low first cost.**—This should be consistent with the service rendered.

13. **Minimum cost of maintenance.**—A maximum of service for a minimum of upkeep charges is the ideal to work toward.

14. **Pleasing appearance.**—A neat appearing structure which will add to, rather than detract from, the appearance of the farmstead should be the builder's ambition.

The following is the full discussion on the different factors to be considered in the location of the hog house, as taken from the above mentioned bulletin.

THE LOCATION OF THE HOG HOUSE

"The prospective site for the hog house should be carefully studied. Some of the more important considerations to be emphasized are:

"1. **Economy of labor and time in management.**—To save time and energy, feed, water, and bedding should be near at hand. Locate so the house will fit in with the general scheme for doing farm chores. Unnecessary steps are profitably dispensed with.

"2. **Sufficient drainage.**—Rolling ground is unquestionably best for drainage, while low, level land is usually damp and unfit for swine. Sandy soils furnish a desirable base because water drains readily from them. Heavy clay or gumbo waterholding soils are to be avoided. Drain tile may often be used to advantage.

"3. **Sunny exposure.**—Select an open, well-sunned space, because the direct sunlight must reach all portions of the house. Avoid the heavy shade of trees and other buildings.

"4. **Southern slope.**—The southern slope is preferable because of its warmth, which means much to the successful raising of suckling pigs. Warmth, dryness, and natural air drainage, all conducive to the best results with pigs, are promoted by the southern slope.

"5. **Protective windbreaks.**—The extreme cold winds in Iowa and Nebraska come from the northwest. The most efficient site, therefore, should be to the southeast of a good, substantial windbreak of hills, trees, buildings, fences, or their happy combination.

"6. **Nearness to pasture and summer shade.**—Convenient pasture and shade are both indispensable for economical pork production.

"7. **Suitable elevation.**—The high situation is apt to be bleak, cold, and difficult of approach; the low, damp and unhealthy. The happy

medium of elevation is indispensable for the good of both man and beast.

"8. **Prevention of odors reaching dwelling.**—Inasmuch as somewhat unpleasant odors may possibly be carried to the farm dwelling, the piggery should be a reasonable distance therefrom, and preferably not in the direction from whence the prevailing winds come.

"9. **Lessened risk from disease infection.**—Location in close proximity to public highways, railroads, and open waterways, unless free from possible infection, are to be avoided. The neighbor's herd may carry infection; and that source of danger should be considered. A reasonably complete isolation of the swine herd may be advantageous."

FOUNDATIONS

Colony hog houses should be provided with rigid concrete foundations extending from 2'-0" to 3'-0" beneath the surface. The top width need not be greater than 6" in most cases while a 9" bottom width will be sufficient. Figure 2 shows a well-designed foundation for a masonry house. The sill of the frame house is ordinarily bolted to the foundation at intervals of 8'-0" with ⅝" x 10" bolts. A mixture of one part cement, two parts of clean, coarse sand and four parts crushed rock makes a dense concrete; or, if rock is not available, one part cement and four parts sand may be used.

FLOORS

Clay building tile laid flat and covered with an inch of concrete makes a very satisfactory floor for farrowing pens. Solid concrete is too cold and damp for use in the pens, but makes a very good alley floor. Plank is often used in cheap construction and makes a fairly satisfactory floor if placed upon a layer of sand. The sand prevents the working of rats and cuts off the circulation of cold air currents.

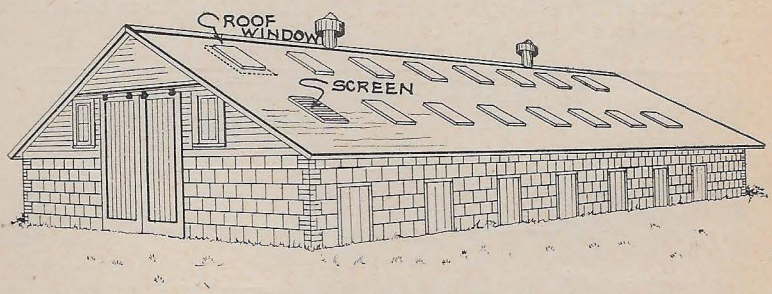


FIG. 1.—Perspective view of north and south colony hog house No. 10.72-51, showing hollow tile construction and roof windows.

Several of the large clay products companies are manufacturing a tile for use in hog house floors. These tile are 4" x 12" x 12" or 4" x 8" x 12" in size. They are laid flat on a 2- or 3-inch layer of sand and covered with 1 inch of concrete made from a mixture of one part Portland cement to three parts sand. For best results the surface is not troweled smooth. It should slope to the alley for drainage as shown in figure 2.

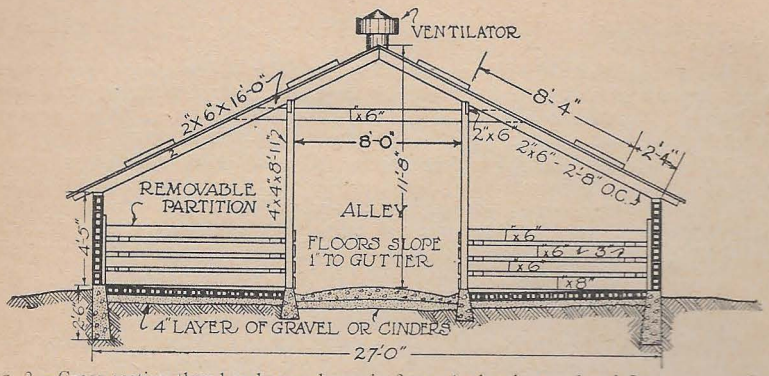


FIG. 2.—Cross section thru hog house shown in figure 1, showing roof and floor construction.

PARTITIONS AND FASTENINGS

Figure 13 shows a good form of partition to be used between pens. All partitions and pen fronts should be made removable if possible. This permits the use of the entire house for a feeding floor, or as sleeping quarters for stock hogs. The 4" x 4" roof supports form firm corners for pens, if frame construction is used. The patent steel equipment is very satisfactory. It is extensively used in the more expensive houses.

Partitions may be fastened in place by means of cleats. This method is used in most of the cheaper houses. Heavy gate hinges are sometimes used, since this permits of swinging the partition or pen front in one direction. Pen fronts and partitions are sometimes fastened to the posts by means of eyebolts and rods as shown at "X" in figure 13. Figure 7 shows how the cleat on the pen front holds the partition in place. The use of light hooks is very satisfactory.

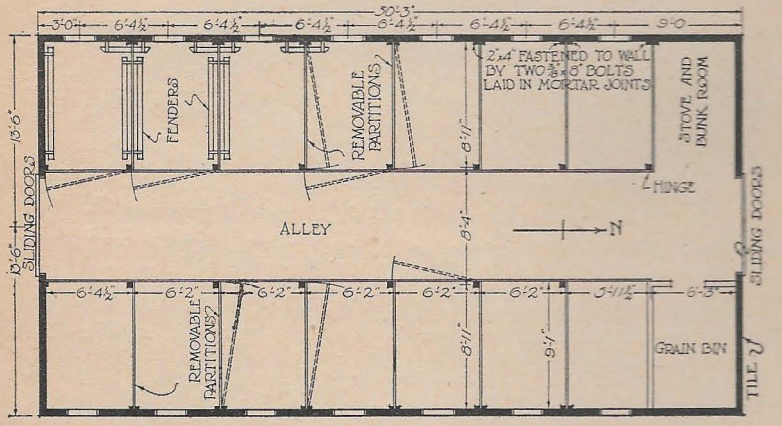


FIG. 3.—Floor plan of north and south hog house No. 10.72-51, showing pen arrangement.

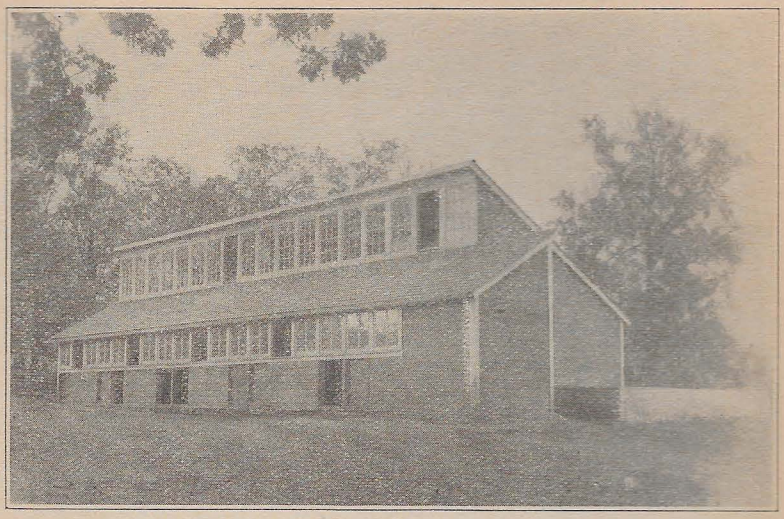


FIG. 4.—South facing, half-monitor type of hog house. Plan No. 10.72-53.

GUARD RAIL

A well-constructed guard rail prevents a sow from killing young pigs by squeezing them against the walls as she lies down. It should be placed 8 inches above the floor for small sows. For larger sows, this height may be increased to 10 inches. It should extend at least 8 inches out from the wall. Figure 12 shows a good method of construction.

OUTSIDE DOORS

The small outside door leading from the house to the outside pen should be high enough to permit a sow to pass thru without striking her back. This will be 32 inches for young sows and 40 inches for aged sows. The frame is held in position by means of bolts extending back into the mortar joints as shown in figure 16. Spikes driven into the frame and extending back into the mortar joints will serve the same purpose. The construction of a door for the frame house is shown in figure 14. All outside doors thru which sows pass should be free from obstruction at the bottom.

ROOF WINDOWS

The patent roof window has come into extensive use. The frame is ordinarily made from heavy galvanized iron and heavy flashing runs back under the shingles as is shown in figure 1. The glass is covered with heavy screen to prevent breakage from hail. These windows may be used on roofs of any pitch. The ventilating type of roof window hinges at the top and may be partially raised or is provided with openings which may be opened or closed.

HEATING OF HOG HOUSES

In case of February or early March pigs, it is often desirable and necessary to heat the house by some means. Steam or hot water heat may be used, but these will require a money outlay which will not be justified except in very large houses which could not be satisfactorily

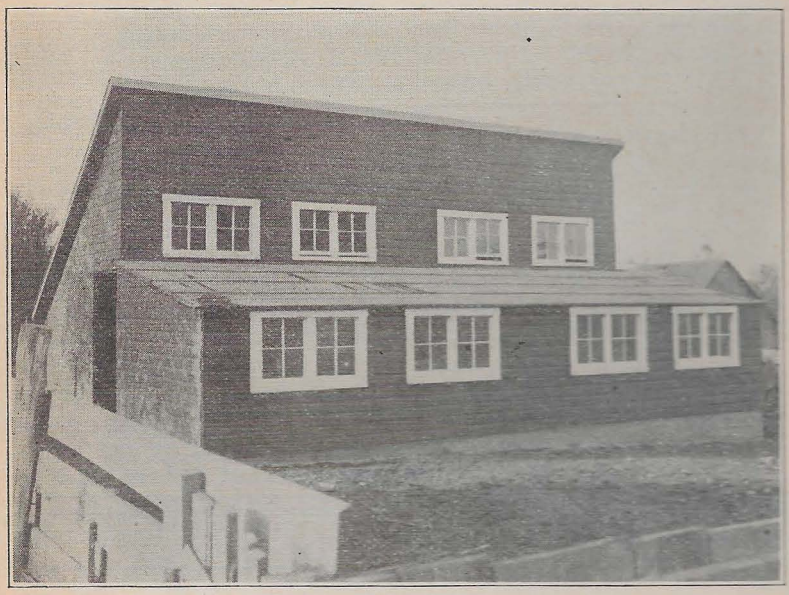


FIG. 5.—South facing, half-monitor house showing poor placing of upper windows.

heated in other ways, or in the production of high-priced purebred stock. An effective and cheap method of heating used by some breeders consists of a modified hot air furnace system. A pit is constructed beneath the center of the house large enough to give room to an ordinary heating stove and a small amount of fuel. This stove is surrounded by a sheet iron jacket, above which is an opening in the hog house floor thru which the heated air is admitted. Cold air returns are located at the extreme ends of the house so that a circulation of the air is effected when the heat is used.

A heating stove may be used in the house with a fair degree of satisfaction.

INDIVIDUAL HOUSE VERSUS COLONY HOUSE

The breeder is always confronted with the problem of choosing between the use of the colony hog house and the individual type. Success may be had with either kind of house. A great deal will depend upon the individual needs of the owner.

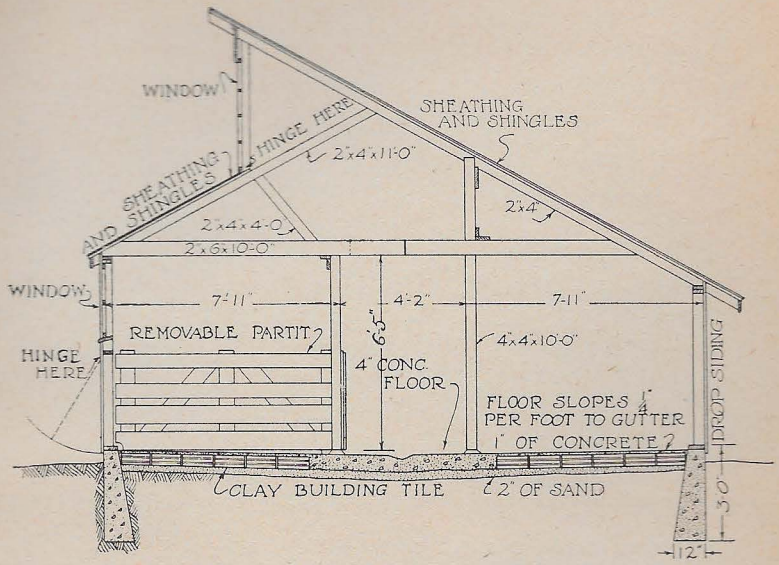


FIG. 6.—A cross section of south facing, half-monitor hog house No. 10.72-53, showing roof and floor construction.

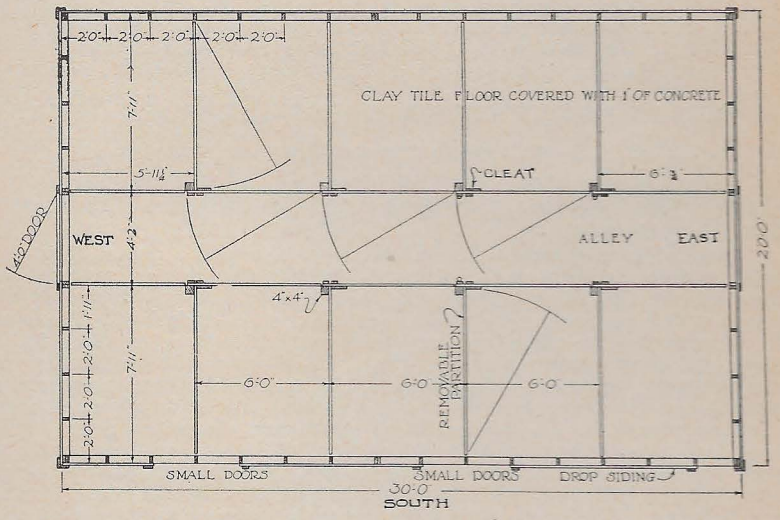


FIG. 7.—Floor plan of hog house No. 10.72-53, shown in figure 6.

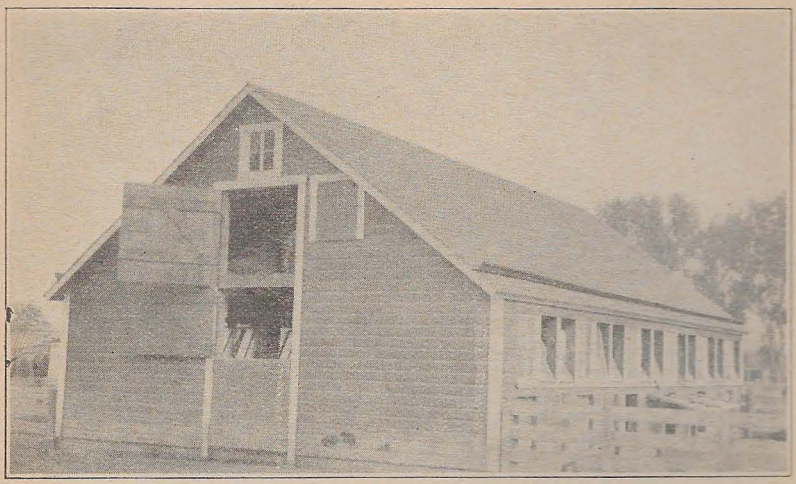


FIG. 8.—North and south type hog house with loft and side windows. Plan No. 10.72-14.

Advantages of the colony house:

1. Convenience.
2. Better adapted to early litters.
3. Good buildings advertise the business.
4. Low upkeep cost.

Advantages of the individual house:

1. Low initial cost.
2. Low fire risk.
3. Easy to clean and disinfect in case of disease.
4. Allows maximum use of forage crop for sow and pigs.

NORTH AND SOUTH COLONY HOUSE—HOG HOUSE 10.72-14

22′-0″ x 32′-0″, 9 pens, 2 grain bins, and stove space

Several houses of this type have been built in Nebraska during the last few years and have given good satisfaction. Figure 8 shows this type of construction.

General arrangement.—A central alley 4′ in width passes thru the building from north to south. Pens 6′-5″ x 9′-0″ in size are arranged on each side of this alley. Two grain bins are located in the northwest corner. This space may be used for one bin only, if desired. The bins do not run clear to the alley, but are shortened to provide space for a stove and feed mixing utensils. The partitions should be of the removable type, permitting the use of the house as sleeping quarters for stock hogs when not used for housing sows. Light is admitted thru windows placed in the side walls of the house above the pens. Two barn sash containing four 9″ x 12″ or 9″ x 14″ lights each are used for each pen and eight are placed in the south end wall. A mow floor is placed above the pens, which provides a storage space for hay, grain, and bedding. This mow floor also serves to reduce the height of the ceiling, materially reducing the radiation of heat thru the roof, thus

making the building warmer than would be the case without the mow. If it is desired, the mow may be omitted, in which case the pitch of the roof should be reduced, one-fourth pitch being sufficient.

Ventilation.—When the doors cannot be left open, air may be admitted thru some of the windows, which should swing in at the top. Some means of admitting outside air should be provided at all times. Air outlets should be provided at the sides of the house into flues leading up into ventilators at the peak of the roof. For the house without the loft the flues may be dispensed with.

Materials of construction.—The house may be built of frame or of hollow tile and frame. The floor is constructed in the same manner as recommended for other houses described herein.

NORTH AND SOUTH COLONY HOUSE—HOG HOUSE 10.72-51

27′-0″ x 50′-3″, 14 pens, grain bin, and stove room

This type of house and its modifications has proved very popular in Nebraska during the last few years. It has been found thoroly practical for conditions on the average farm. The frontispiece and figure 1 give an idea of the external appearance.

General arrangement.—A central alleyway, 8′-0″ in width, passes thru the structure from north to south. Pens 6′-2″ x 9′-0″ in size are arranged on either side of the alley. In the northeast corner is located a grain bin and directly opposite across the alley is a stove room. It is recommended that the grain bin be more centrally located in houses of greater length than the one shown in figure 3. The width of the central alley may be varied to suit conditions. In houses containing twelve pens or more, the 8′-0″ width will permit of a team being driven thru to scatter bedding, to clean out manure, or to fill the feed bins. In small houses containing few pens, the 4′-0″ alley will be found entirely satisfactory. All partitions may be removed and placed overhead on the crossties of the roof. The house may then be used as sleeping quarters for stock hogs.

Ventilation.—At seasons when the doors cannot be opened, ventilation for a 14-pen house is provided by means of two 15-inch galvanized iron roof ventilators and sixteen ventilating windows. One-half of all roof windows should be ventilating windows. Enough of the windows should be open at all times to prevent the collection of frost or moisture on the side walls or ceiling. During the warmer days the large end doors may be opened. Since the alleyway runs north and south, a current of air will be passing thru it most of the time. Users of this type of house report that by removing the partitions and opening the end doors in summer, cool, shady sleeping quarters are provided for stock hogs.

Lighting.—Two roof windows to each pen placed between rafters and arranged as shown in figure 1 complete the lighting arrangements for this house. Greater efficiency may be secured at some additional cost by adding enough windows to make a solid row near the comb of the roof. Sunlight should sweep all parts of the floor each day. One-half of the windows should be ventilating windows as before described.

Materials of construction.—Due to low walls, this house is a very economical type of construction. Six courses of 5″ x 8″ x 12″ hollow tile set on edge form a strong wall 5 inches thick and slightly more than 4′-0″ high on the sides. All door frames are made from 2″ x 6″ material held in place by bolts extending back into the mortar joints. The gable

ends may be constructed of frame material above the plate. The roof may be shingled or covered with any of the good patent roofing materials.

Hollow tile 4″ x 8″ x 12″ in size or the regular hog house floor tile covered with 1 inch of cement is used in the pens, while the alley floor is made of concrete 5 inches thick. Concrete may be used successfully for the grain bin floor if 3 inches of gravel is placed beneath. The 2″ x 6″ plates are bolted to the top of the wall, and all other connections to the tile wall are made by means of bolts or irons laid in the mortar joints.

BILL OF MATERIAL FOR NORTH AND SOUTH COLONY HOUSE

27′-0″ x 50′-3″—14 pens.

MASONRY

590	5″ x 8″ x 12″ hollow tile for walls
75	5″ x 8″ x 8″ hollow tile for walls
1300	4″ x 8″ x 12″ hollow tile for walls
75	common brick for corners
18.6	yards of sand (1:4 mix.) for foundation, etc.
1.1	yards of sand (1:3 mix.) for mortar
143	sacks of cement

FRAME LUMBER

3	2″ x 4″ x 12′-0″	7	4″ x 4″ x 18′-0″
35	2″ x 4″ x 14′-0″	113	1″ x 8″ x 16′-0″ sheathing for roof
11	2″ x 6″ x 12′-0″	15	1″ x 8″ x 16′-0″ ship-lap
12	2″ x 6″ x 14′-0″	7	1″ x 8″ x 14′-0″ ship-lap
52	2″ x 6″ x 16′-0″	11	1″ x 8″ x 10′-0″ ship-lap

OTHER MATERIAL

49	1″ x 6″ x 12′-0″	7	1″ x 8″ x 18′-0″
7	1″ x 6″ x 14′-0″	35	1″ x 6″ x 12′-0″ drop siding
20	1″ x 6″ x 18′-0″	8	1″ x 6″ x 14′-0″ ridge board
3	1″ x 8″ x 12′-0″	120	lineal feet 1″ x 4″ finish
5	1″ x 8″ x 14′-0″		Shingles, 16M laid 4½ to weather

HARDWARE

60 lbs.	3d galvanized shingle nails
45 lbs.	8d nails
10 lbs.	16d nails
14	½″ x 10″ iron pins for piers
10	½″ x 8″ bolts for grain bin foundation
24	½″ x 11″ bolts for plate
70	¼″ x 10″ bolts for door frames
56	⅜″ x 8″ bolts for partition cleats
160	⅜″ x 3″ machine bolts for fenders
200 foot	¼″ x 2″ strap iron for fenders
18	pairs 8″ T hinges
16	pairs 6″ T hinges
46	5″ wrought hooks and staples.
5	8″ hasps and staples
2	9″ x 12″ 4-light barn sash
16	patent roof windows—plain
16	patent roof windows—ventilating
2	12″ metal ventilators.

SOUTH FACING COLONY HOUSE—HOG HOUSE No. 10.72-53

20′ x 30′—10 pens

The half monitor type hog house is not extensively used at the present time. Some breeders still favor this type of construction, however, and the arrangement of some farmsteads renders the use of any other type almost impossible. A section and a floor plan, figures 4, 6, and 7, serve to give an idea of the construction.

General arrangement.—An alleyway 4′-0″ wide runs thru the house from east to west. On either side of the alley are 6′-0″ x 8′-0″ pens with removable partitions and fronts. Four by four posts, spaced 6′-0″ apart along either side of the alley, serve to support the roof and provide a solid corner for the pens. The northwest pen may be conveniently converted into a grain bin, which may be filled thru a hatch door in the roof. Outside pens are not provided on the north, since they would be too much exposed in this location to be of any use in the early spring.

Ventilation.—Ventilation for this hog house may be provided by hinging every other one of the upper windows at the bottom and opening it inward. At a slight added expense, an 18-inch galvanized iron ventilator can be placed in the roof. This will insure sufficient ventilation on days when the upper windows cannot be opened. During the late spring and summer, some of the lower tier of windows may be removed by taking out the parting stop.

Lighting.—The placing of the windows in this type of house is very important. If the upper windows are not set in the right position, the sunlight will not strike the floor of the pens at the desired time of the year. The placing of the windows must be varied, also, according to the location of the hog house. A window placing which would admit sunlight in the pens about noon March 1 in southern Nebraska would not be right for northern Nebraska or South Dakota. Figure 6 shows the proper location of windows for placing sunlight in the pens on March 1 in central Nebraska. This design can be used for any location in Nebraska.

Materials of construction.—This house is of frame construction thruout with the exception of the floor, which is made from hollow tile covered with one inch of concrete. The alley floor is made of solid concrete. Drop siding or ship-lap should be used over the frame. In exposed positions or in the northern part of the State a double side wall on the ends and north side is recommended. This double wall is made by first applying ship-lap, a layer of building paper, and then drop siding.

BILL OF MATERIAL FOR SOUTH FACING COLONY HOUSE

20′ x 30′—10 pens

MASONRY

550 hard burned 4″ x 8″ x 12″ clay tile for floor	
Sand	10 yards
Cement	45 sacks

FRAME LUMBER

18	2″ x 4″ x 10′-0″	14	2″ x 6″ x 10′-0″
34	2″ x 4″ x 12′-0″	2	2″ x 6″ x 14′-0″
4	2″ x 4″ x 14′-0″	6	2″ x 6″ x 16′-0″

13	2″ x 4″ x 16′-0″	2	2″ x 8″ x 16′-0″
2	2″ x 4″ x 18′-0″	2	4″ x 4″ x 14′-0″
13	2″ x 4″ x 20′-0″	4	4″ x 4″ x 10′-0″
800	board feet of 6″ drop siding	150	lineal feet 1″ x 4″ finish
3	1″ x 8″ x 12′-0″ ship-lap	150	lineal feet 1″ x 6″ finish
1	1″ x 10″ x 16′-0″ ship-lap	70	lineal feet of window stop

MATERIALS FOR PARTITIONS, ETC.

5	1″ x 4″ x 14′-0″	11	1″ x 8″ x 10′-0″
46	1″ x 6″ x 10′-0″	10	1″ x 8″ x 12′-0″
92	1″ x 6″ x 12′-0″	8	1″ x 8″ x 16′-0″
16	1″ x 6″ x 16′-0″		

SHINGLES

8000 Laid 4½ to weather

WINDOWS

11	8 x 10—12 light storm sash	1	7 x 10—12 light storm sash
14	9 x 12—4 light sash		

HARDWARE

32 ⅝″ nuts and washers for hinges. (See detail, Plate 6.)
8 ⅝″ x 9″ bolts for post piers
128 ⅜″ x 2″ bolts for hinges
18 ⅝″ x 10″ bolts for bolting sill
34 Lineal feet of ⅜″ x 2″ strap iron or mild steel for hinges on front gate and partitions. (See detail at top of Plate 6 of plan.)
34 Lineal feet of ⅝″ mild steel bar for making gate hinge hooks as shown in detail of Plates 3 and 6 of plan.
8 Pieces of ⅜″ mild steel bar. 4 long for rods marked "X", Plate 6 of plan.
55 lbs. of 8d nails
15 lbs. of 16d nails
30 lbs. of 3d shingle nails
9 pairs of 8″ strap hinges.

LARGE COLONY HOUSE FOR PURE BRED BREEDER—HOG HOUSE No. 10.72-50

32′-6″ x 64′-0″, 16 pens and sales pavilion

This house was designed to meet the needs of the pure bred breeder. The size of the structure and class of interior equipment used renders it too expensive for conditions on the average farm.

General arrangement.—The structure contains sixteen farrowing

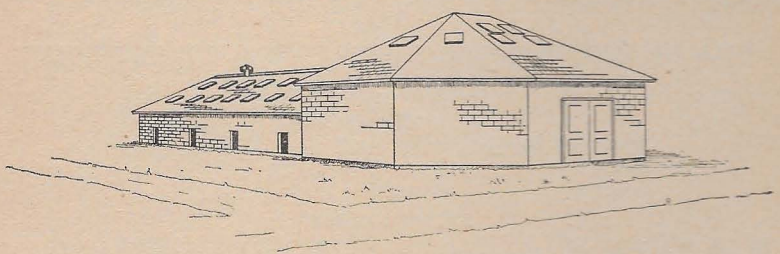


FIG. 9.—Perspective view of combined colony hog house and sales pavilion. Plan No. 10.72-50.

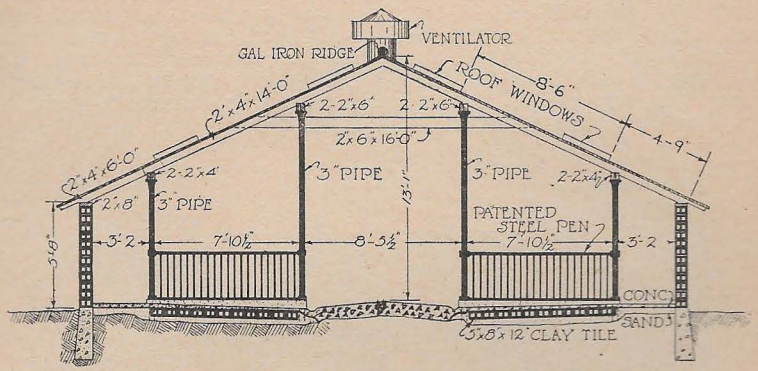


FIG. 10.—Cross section of hog house No. 10.72-50, showing steel pen equipment, floor and pen construction.

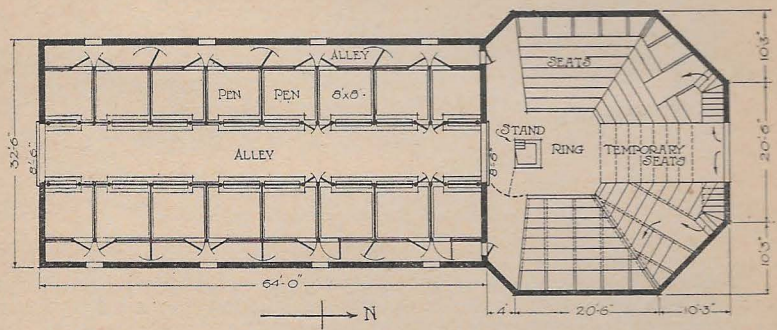


FIG. 11.—Floor plan of hog house No. 10.72-50, shown in figure 9. A sales pavilion is shown at north end.

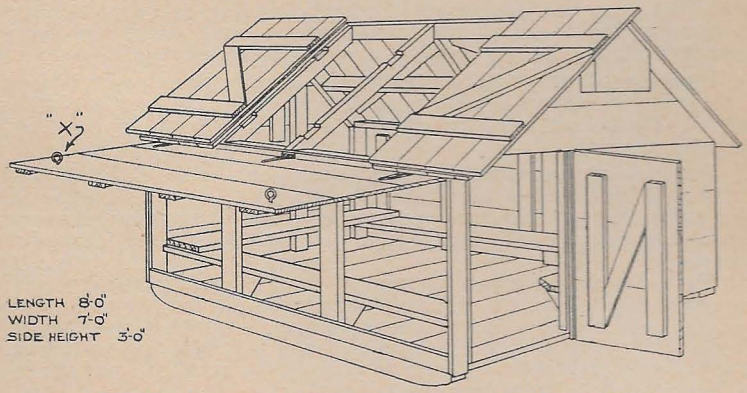


FIG. 12.—A good type of individual house. Plan No. 10.72-49.

pens, each approximately 8′-0″ square, arranged on either side of a wide central alley which runs north and south entirely thru the house and sales pavilion. Between the farrowing pens and outer wall is an alley approximately 3′-0″ wide. This alley is convenient for changing a sow from one pen to another and for driving animals to and from the sales ring. See figure 11.

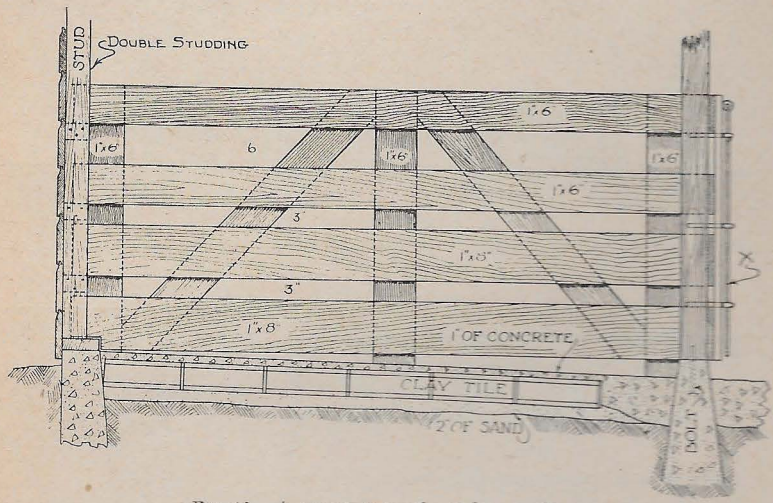


FIG. 13.—A strong type of wooden partition.

During the sale, temporary seats are placed in the alley at the north end of the pavilion and the crowd is conducted to their seats thru the stairways on either side. Under the permanent seats is room for storage of temporary seats, grain, and bedding.

Ventilation.—Ventilation is provided by means of three 15-inch galvanized iron ventilators and 16 ventilating hog house roof windows. By opening the doors at the ends of the central alley, the house is made cool enough for comfort in very hot weather.

Lighting.—Light reaches that part of the house containing the farrowing pens thru 32 roof windows, placed as shown in figures 9 and 10. Eight roof windows provide a subdued light for the ring of the sales pavilion.

Material of construction.—The walls are built of hard burned 5″ x 8″ x 12″ hollow tile laid flat so as to make an 8-inch wall thickness. The floor of the farrowing pens is of the regular hollow tile construction covered with 1-inch of cement. The alleys are floored with concrete.

The rafters and crossties are of frame construction, while the posts are made of 3-inch outside diameter pipe, to which the standard steel pens are bolted. The roof may be shingled with a good grade of shingle laid 4 inches to the weather, or covered with any of the good patent roofing materials. The seats in the sales pavilion are built from 2-inch material and rigidly braced.

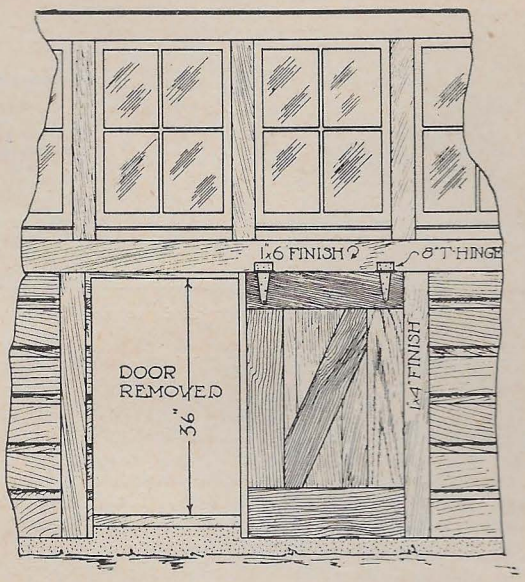


FIG. 14.—Door and door frame for frame hog house.

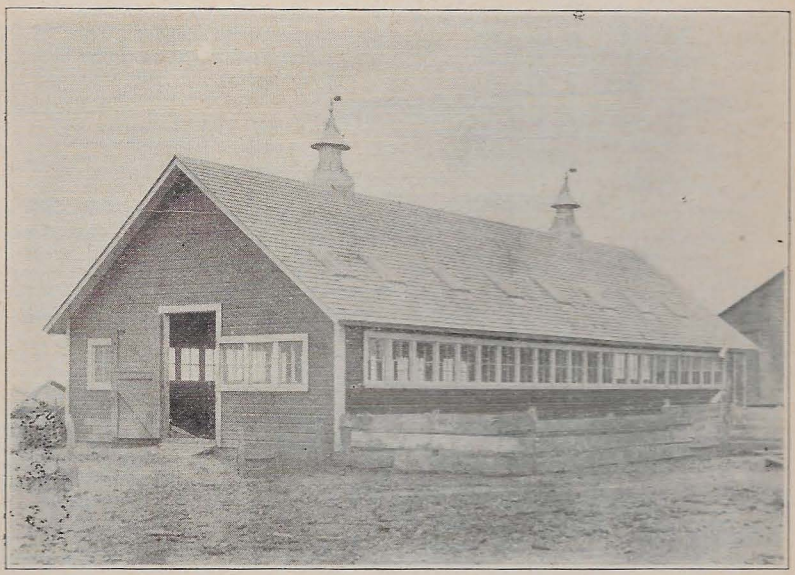


FIG. 15.—A north and south type hog house similar to one shown in figure 8, only loft is omitted.

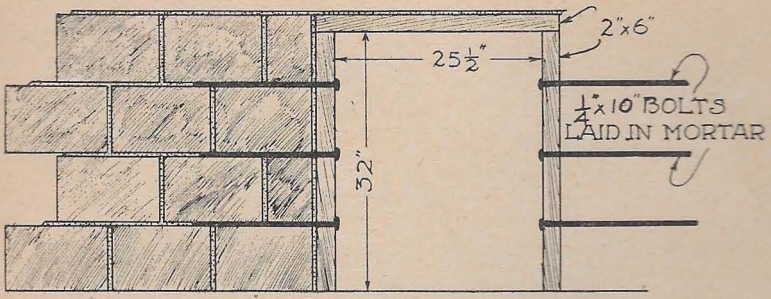


FIG. 16.—Method of attaching door frame in masonry hog house.

INDIVIDUAL HOG HOUSE—No. 10.72-49

6′-0″ x 8′-0″

Some breeders prefer the individual hog house to any other type, since it can be moved from field to field as the pigs are changed from one grazing crop to another. It may be moved and cleaned easily in case of disease. This particular type of individual house has some advantages over the A-type in that it is more easily cleaned, gives better ventilation, and allows more sunlight to enter.

Details of construction.—The frame is built upon two 4″ x 4″ skids each 8′-0″ in length. The studding, rafters, and plate are of 2″ x 4″ material. The sides are hinged at the plate, while a part of the south slope of the roof is hinged and may be opened for sunshine and ventilation. The door in the east end is 2′-6″ wide and not less than 3′-0″ high. In the west end, a small opening 1′-0″ wide and 1′-6″ long should

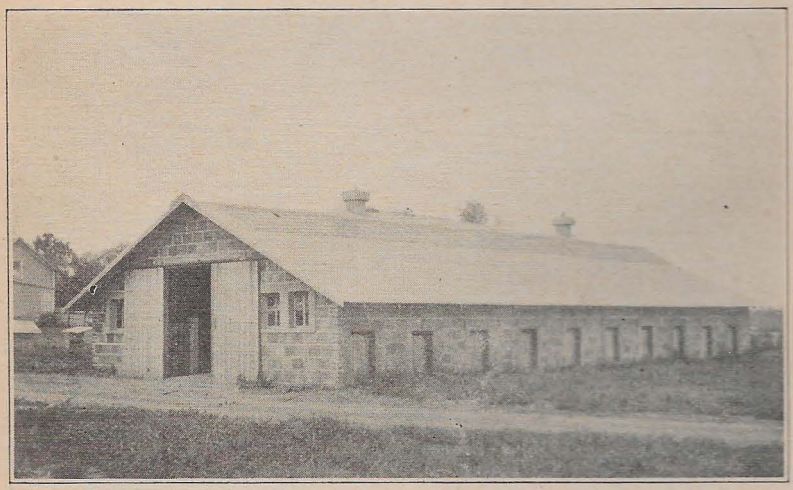


FIG. 17.—The Iowa type hog house. Stands north and south.

be cut for ventilation purposes. It may be fitted with a hinged door held closed with a hook.

The roof and sides are covered with 1″ x 8″ ship-lap while the floor is of 2-inch material. A strong guard rail of 2″ x 8″ material extends around the house at a distance of 8 inches from the floor. When the doors are all closed in severe spring weather, ventilation is provided by openings in the gable as shown in figure 12. These openings are protected as shown, to keep out rain and snow.

The sides are held in a raised position by long hooks made of ⅜ round iron attached to the roof and hooking into the eye shown at "X," figure 12.

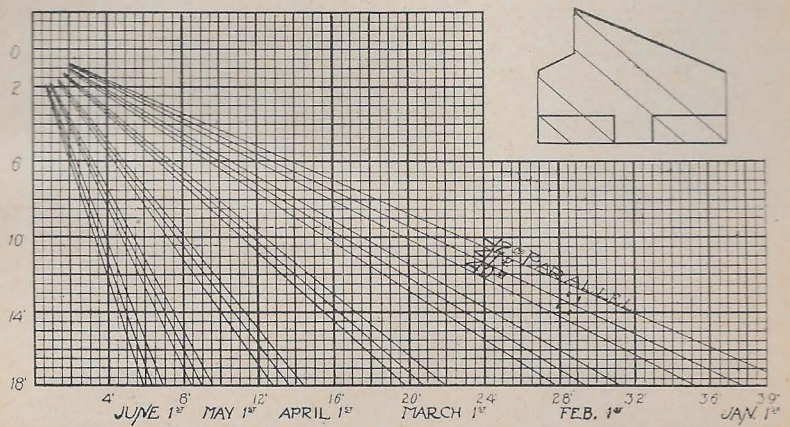


FIG. 18.—Sunlight chart showing the slope of the sun's rays at noon at various times of the year for Parallels 40, 41, and 42. The figures on the left side of the chart represent the height of the windows above the floor. The figures at the bottom represent the distance from the windows which the sun strikes at noon for a given date and latitude.

BILL OF MATERIAL FOR INDIVIDUAL HOUSE

6′-0″ x 8′-0″

FRAME MATERIAL

1	4″ x 4″ x 16′-0″ skids	3	2″ x 4″ x 16′-0″ rafters and ridge
3	2″ x 4″ x 12′-0″ studs	2	2″ x 8″ x 14′-0″ guard rail
1	2″ x 4″ x 16′-0″ plate	7	2″ x 8″ x 12′-0″ flooring material

SIDES AND ROOF

10	1″ x 8″ x 12′-0″ ship-lap	13	1″ x 8″ x 16′-0″ ship-lap roof
2	1″ x 6″ x 16′-0″ for cleats		

HARDWARE

6	8″ "T" hinges (sides)
8	6″ strap hinges (roof and door)
2	4″ strap hinges (small opening in rear)
	Nails
30	lineal feet of ⅜″ round iron for long hooks

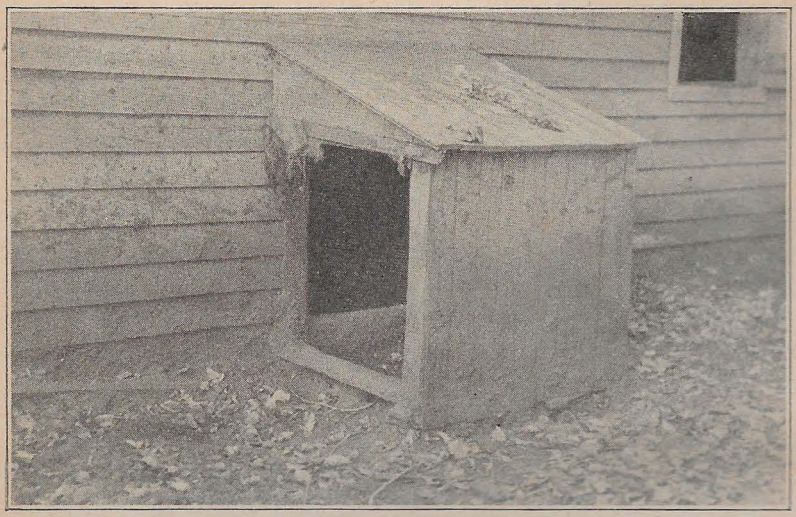


FIG. 19.—Vestibule for use on outside doors for north and south type houses.

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