Modern Poultry Housing

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Modern Poultry Housing

With Plans for the New South Dakota Laying House

AGRICULTURAL EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE, BROOKINGS
UNITED STATES DEPARTMENT OF AGRICULTURE

PUBLISHED UNDER ACTS OF CONGRESS, MAY 8 AND JUNE 30, 1914. GEORGE I. GILBERTSON, DIRECTOR
The new South Dakota poultry house (24’ X 34’) is designed for 300 pullets, a practical size poultry project for the average South Dakota farmer. Those who desire to build for a larger flock can do so by using this plan and extending the length. It may be practical to widen the house to 30’ when building for 500 or more pullets.

A house that only shelters the birds from sun, wind and rain is only part of a house. In addition to shelter, this house provides insulated wall and ceiling and labor saving devices such as a dropping pit, laying room and feed bins. Deep litter can be used when adequate ventilation is provided.

**Insulation of the House**

Insulation aids effective ventilation and the use of deep litter.

An insulation job need not be expensive. A vaporproof paper (such as Sisal Kraft) or an asphalt impregnated paper should be placed on the "in" side of the studding. A rigid insulation board in sheets can be used for sheathing, on the inside wall. Where insulation board is used for sheathing, it should be protected by screen or boards where the birds might pick at it.

Two or three coats of aluminum paint on the inside surface will add to the appearance of the house and preserve the material.

A blanket type insulation can be used in place of the loose fill in the wall. Vapor proof paper and sheathing are still required.

Fan ventilation requires a solid ceiling. This can be insulated much the same as the walls. Put a vaporproof paper on the underside of the joists and sheath with lumber, asbestos cement board, pressed wood or other rigid material. Cover the loft floor with 4 to 6 inches of insulation material and lime. Heat has a tendency to rise, so at least 4 to 6 inches of fill is needed above the ceiling, a four-inch fill is sufficient on the wall surfaces.

A door into the loft is handy for installing the insulation. The loft area also may be used for storing brooder equipment or other things.

An insulation job is not complete unless some form of storm windows are installed. Five percent window area, compared with floor area, is sufficient. Excessive window area contributes to wide temperature variations within the house and increases construction costs.

More information on insulation can be found in South Dakota Extension mimeographed Circular No. 383.

**Ventilation of the Poultry House**

During cold weather an insulated house will maintain higher temperatures than one which is not insulated. The moisture-carrying capacity of air increases as the temperature rises. Insulation of the walls and ceiling aid in the removal of moisture because it helps hold higher house temperatures during cold weather.

Fan ventilation* is rapidly coming into use where farms have electricity. There are many types of fan ventilating systems. An automatic control is used to start and stop the fan or open and close louvers. Cold air is admitted through regulated intakes. Ventilating equipment which is adapted to the size and type of building should be installed according to manufacturer's directions.

Louvers in the gables of the house allow circulation through the loft to carry away any moisture that might accumulate due to a leaky roof or moisture escaping through the ceiling.

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*For alternative plans for ventilation see South Dakota Extension mimeographed Circular No. 383.
One type of fan ventilator. Many such ventilators are made of three parts: (1) the fan that blows warm air from the house; (2) inlets to admit fresh air; and (3) a thermostat to control the fan.

Labor Saving Equipment

Dropping pits, nesting room, feed bins and deep litter will save a lot of steps for the person doing the poultry chores.

Dropping Pits

A dropping pit, properly constructed, will catch about 65% of the droppings and is a great help in keeping the house clean and dry. It need be cleaned only 2 or 3 times yearly. A properly ventilated house will not have a smelly dropping pit. An ammonia odor, if objectionable, can be overcome by sprinkling hydrated lime or super phosphate fertilizer on the droppings. More information on dropping pits can be found in South Dakota Extension Circular No. 427.

Feed Bins in the House

Many steps will be saved by having a supply of feed in the house. The two large bins shown on the plan will hold about 55 bushels of grain each.

Automatic Water Fountains

Six to eight gallons of fresh clean water should be provided for each 100 pullets everyday. Automatic water fountains are labor savers when water can be piped into the house. Provide at least one fountain for each 100 to 125 pullets in a convenient place near the feed.
fountains connected to a pressure system are labor savers.

Many poultrymen use some device to collect or carry away water that is spilled when the birds drink. This helps control the problem of moisture in the house.

**Nesting Room**

A nesting room is a labor saver for the person gathering eggs and has many advantages. All the nests may be located in one place near the door and away from the heavy traffic around the feeders and water fountains. The litter can be kept cleaner in the nesting room area, resulting in cleaner eggs. The room can be darkened if the birds start cannibalism or egg eating.

**Deep Litter**

Deep litter is a labor saver. Such litter works best in a house that is insulated, ventilated and not crowded. Most poultrymen change deep litter only once a year. It works on the principle of bacterial action breaking down the droppings into humus and releasing the moisture into the air to be carried off by a ventilating system.

More detailed information about deep litter can be found in South Dakota Extension mimeographed Circular No. 373.

**Floor Space Requirements**

This house is designed with 816 square feet of floor space. This allows about 2½ square feet per bird in the early fall when the birds are housed. Rigid culling of the flock and mortality will cut down the flock size by the time extreme cold weather sets in. This will give the birds some additional floor space.

**Lights**

Install one 60 watt bulb for each 200 square feet of floor space. This would be four 60 watt bulbs spaced so they light the feeding area and roosting section. Six 40 watt bulbs may give a more even distribution of light in the house.

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The South Dakota Poultry House

The new South Dakota laying house has many labor saving conveniences. Dropping pits in the rear of the house; a laying room for all the nests in one corner of the house and feed bins for a convenient supply of feed. The house is fully insulated and can use deep litter with a minimum of care. The house is 24' X 34' for 300 pullets. It can be constructed longer or wider for more birds.

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Drawings on pages 5, 6, and 7 of this circular are reductions of the actual blueprints for building the poultry house similar to that pictured above and on the front cover. Working blueprints, drawn to scale, may be ordered from: Extension Agricultural Engineer, South Dakota State College, Brookings, S. Dak. (Price 30 cents).
PLAN VIEW

RODSTS IN 4 SECTIONS

1'10"x4'6" CLEANING DOOR

NESTS

NEST SUPPORTS

11 - 4"x4" POSTS

8'6" 8'6" 8'6" 8'6"

6"x8" PIER

ALL WINDOWS PLACED BETWEEN STUDS 2' o.c. AND SAME HEIGHT

EXPANSION JOINT

ALL STUDS 2"x4" - 2'0" o.c.

34' 0"

END "D"

END "C"

2'6"x6'2" DOORS

4"x4" SLIDE DOORS FOR REMOVING FEED

B

B
CLOSED
LONG JOIST
INSULATION
TO THERMOSTAT

POSTS-6'5"LONG
SECTION A-A

INSULATION STOP
CONTINUOUS SLOT INTAKE

4'4" POST
SIDING
VAPOR BARRIER
SHLAP
2'1" SHOED
ROOST SUPPORT LET INTO POST
SILL
ROOST IN RAISED POSITION FOR CLEANING
SCREEN UNDER ROOSTS
ROOST SPACED 1'4" APART
12'x4' ROOST SUPPORTS
SCREEN

GABLE STUDS
PLATE
ROOF

PLATE
SHEATHING
WALL INSULATION

VAPOR BARRIER 12'-3/8" DETAIL
SILL
FOUNDATION

SANDING
BLANKET INSULATION
SHEATHING
FOUNDATION

DETAIL FOR ALTERNATE WALL INSULATION

SECTION A-A

2'4" DOUBLE PLATE
2'4" HEADER FOR CLEANING DOOR
ROOSTS
2'4" ROOST SUPPORT
2'4" ROOST SUPPORT LET INTO POSTS
THEMATIC JOINT
2'4" ROOST FRAME

EXPANSION JOINT
CONCRETE FLOOR
6" GRAVEL FILL
PRIM SOIL
3/8"-1/8" LONG ANCHOR BOLT

2'4"-8'3" LONG JOIST
2'4"-10'2" LONG JOIST
2'4"-15'6" LONG JOIST

2'4"-6" PURLIN SUPPORTS SPACED 60" o.c.
PURLIN SUPPORTS SET ON TOP OF GIRDERS

2'4" PURLIN 2'4" Rafter
COLLAR BOARD

1'6"
20" RAFTER
8'0"
### Estimate of Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>No.</th>
<th>Size</th>
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<tr>
<td>Gravel fill</td>
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<tr>
<td>Cement</td>
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<td>Sand</td>
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<td>Anchor bolts</td>
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<td>Sills</td>
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<td>Plate</td>
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<td>4-2” x 4” x 10’</td>
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<td>Studs</td>
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<td>Rafters</td>
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<td>Joists</td>
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<td>Girders</td>
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<td>Purlins</td>
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<td>Purlin Supports</td>
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<td>Sheathing (roof)</td>
<td>1120</td>
<td>bd. ft.—1” x 8” R. L.</td>
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<td>940</td>
<td>bd. ft.—1” x 8” shiplap</td>
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<td>Siding</td>
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<td>Ceiling</td>
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<td>Vapor proof paper</td>
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<td>Insulation (fill)</td>
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<td>Barn sash</td>
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<td>Roofing and roofing nails</td>
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<td>sq.</td>
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<td>G. I. Ridge roll</td>
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<td>ft.</td>
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<tr>
<td>Gable louvres</td>
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<tr>
<td>Paint (3 coats)</td>
<td>5</td>
<td>gallons</td>
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<tr>
<td>Roosts</td>
<td>27-2” x 4” x 16’</td>
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<td></td>
<td>8-2” x 4” x 14’</td>
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<td>Feed room</td>
<td>120</td>
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<td>16d–30 lbs.</td>
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<tr>
<td>Nails</td>
<td>8d–120 lbs.</td>
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<tr>
<td>Trim</td>
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<td>lin. ft.—1” x 4”</td>
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<td>Doors</td>
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<td>bd. ft.—Car siding</td>
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<td></td>
<td>80</td>
<td>bd. ft.—Shiplap</td>
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<td>Hardware</td>
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<td>Hinges, door locks, screen under roosts, nests, wiring, etc., should be estimated locally.</td>
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</table>

### Other Poultry Information

(Available from local county extension agent)

- Ext. Circ. 400—Chick Care
- Ext. Circ. 411—Cull Regularly
- Ext. Circ. 423—Range Shelters, Feeders and Waterers
- Ext. Circ. 427—Dropping Fills
- Ext. Circ. 452—Egg Coolers
- Ext. Circ. 471—4-H Poultry Project Guide
- Mimeo. Circ. 373—Deep Litter
- Mimeo. Circ. 383—Insulation and Ventilation of Poultry Houses
- Midwest States Plan on Range Shelters
- Midwest States Plan on Range Feeders
- Blueprints for S. Dak. Poultry House (30 cents for 3 sheets).

Agricultural Extension Service