Two-Story
Poultry House

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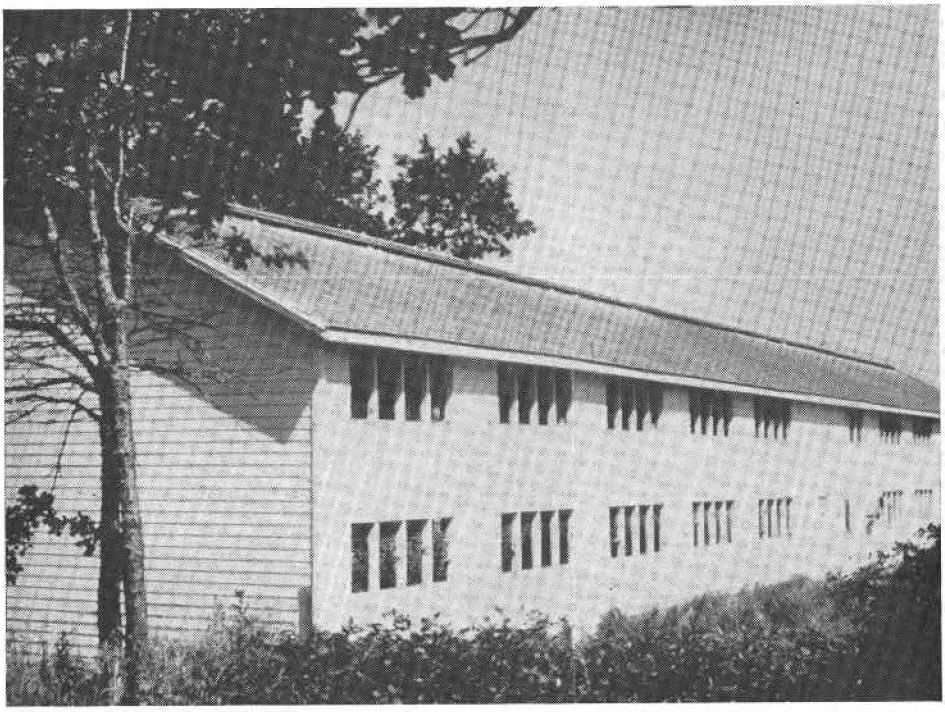

Oregon Agricultural Experiment Station
Oregon State College, Corvallis

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OREGON STATE COLLEGE

Two-Story Poultry House

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THIS circular has been prepared in answer to many requests for plans and recommendations for a two-story poultry house designed to house flocks of 1,000 to 2,000 birds.

This two-story poultry house was designed with four 500-bird pens. If desired, one half the length of the structure can be built to provide space for 1,000 birds and the second half added at some future time.

Foundation

The building is supported on a concrete footing 12 inches wide and 6 inches thick. In western Oregon the bottom of the foundation (footing) should be 12 inches below the outside ground line (finish grade line) at the shallowest point. Lay a line of 4-inch agricultural tile around the outside of the footing and slope it to a drain. This tile should be laid slightly higher than the bottom of the footing. A gravel backfill over the tile will aid in carrying away surface water. Connect downspouts from the roof gutters to the tile drainage system.

On top of the concrete footings pour a 4-inch concrete foundation wall 2 feet high. This wall may be of reinforced poured concrete, or 6- or 8-inch concrete block or tile. Place anchor bolts for fastening the wood sill at the time the concrete is poured. Bolts $\frac{1}{2}$ x 12 inches spaced 8 feet apart along the wall are satisfactory. Place a 4-inch strip of asphalt roofing between the concrete and the wood sill. The roofing paper will prevent the wood sills from absorbing moisture from the concrete.

Locate and pour the concrete pier forms at the same time you pour the foundation walls. Place a $\frac{5}{8}$ x 12 inch anchor rod so it projects out of the pier and fits into a hole in the post. It will keep the post aligned on the pier. A square of asphalt paper between the top of the pier and the wood post will keep the post from absorbing moisture. Notice that the piers are not located on the center line of the building. This offset provides a drive-through aisle for cleaning out with a manure spreader or truck.

Concrete floor

To prevent settling of the floor or foundation, remove tree roots, vegetation and all top soil over the area to be occupied by the concrete floor. After the foundation walls are in place, spread gravel to a depth of 5½ inches over the area within the walls except under partitions, where the gravel should be 3 inches deep. This allows a thicker concrete floor under the partitions. Tamp and level the gravel fill.

Expansion joints must be placed before the floor is poured. To make these, first set a piece of asphalt treated insulation board ½ inch thick and 4 inches wide on edge along the foundation wall and pour the concrete floor slab against it.

It is also desirable to place a layer of asphalt water-proofing paper over the gravel before concrete is poured to retard moisture penetration from below. Pour approximately 3½ inches of concrete over the paper and gravel fill. To facilitate hosing and cleaning, the floor should slope 4 inches toward the dropping pit side of the house. Put 1½-inch pipe drains through the foundation wall to the outside every 16 feet along the pit side as shown on the cross section plan.

Wall construction

The walls of this building are "balloon framing," which means that the 2 x 4 studding extends continuously from the sill to the rafter plates. The studs are all 2 feet on centers to allow stock barn sash to be set between studs without special framing or the cutting of studs. Support the second floor joists on a 2 x 4 ribbon (Ledger) spiked securely to each stud.

Windward wall

Set 1 foot-10 inch (wide) x 3 foot-5 inch (high) barn sash between the studding and above the dropping pits on the side of the building that is toward the prevailing storm winds. Tilt these windows in at the top for summer ventilation. Cover the outside of the opening with 1-inch mesh poultry netting.

Leeward wall

The plans show screened openings on the side away from the storm winds. The openings are planned so that the stock 1 foot-10 inch x 3 foot-5 inch barn sash may be set into the openings at any time desired. Note that a window pocket is designed in this wall so the glass is protected when the sash is not being used.

Second floor construction

Use 2 x 8 inch joists spaced 2 feet on centers for second floor joists. Support the joists near the center (see plan) of the building on a girder built up of four 2 x 8's. Rest the girder on 8 x 8 inch posts located every 8 feet in the length of the building. Notice that the plans indicate two 2 x 8 inch joists every 2 feet in the feed and litter storage area. It is necessary to double these joists to support the increased floor load in this area.

You may use conventional construction of diagonal shiplap subfloor, building paper, and finish flooring. Or you may build with flooring laid across the joists and covered with ½ inch of asphalt paving material rolled smooth.

Removable 3 x 4 foot floor sections, to make it possible to drop the litter into a truck or manure spreader on the first floor, are shown on the plan for the second floor. Do not cut joists at these openings.

Roof construction

The roof has simple trusses spaced 2 feet on centers to eliminate posts on the second floor and to provide ceiling joists for a finish ceiling. The building is too wide to use conventional rafters and the truss design should be followed very carefully to insure a permanent, tight, straight roof and ceiling. The critical part of the truss construction is in the bolt connections. Follow the cross section plans closely and use the size and spacing of bolts and nails specified. The plans show the use of spaced nailing strips or "roofers" and red cedar shingles with an exposure of 5 inches. Asphalt roofing (bituminous roll roofing), galvanized iron and aluminum are all satisfactory roofing materials and may be substituted for shingles. (For discussion of specifications see O.S.C. Extension Bulletin 540 and U. S. Department of Agriculture Farmers' Bulletin 1751).

Inside finish

It is desirable to construct poultry houses with inside finish material on the walls and ceilings. Such houses are easier to clean, warmer in winter and cooler in summer than houses with only an exterior finish. Interior finish can be added at any time.

Nests

Placement of nests is shown on the floor plan. Individual single type nests arranged in 4 tiers are at both ends of each 500-hen pen. There is space for 56 nests at the feed room end of each pen if you wish to shorten the egg-gathering route.

The nests may be placed in two rows facing inward with a 2-foot alleyway between them. These nests should be supported from the ceiling for ease of cleaning and located at the feed-room end of the pens. Eggs are gathered from the outside through the back of the nests as the operator circles the nests.

The community nest, preferred by many producers, is a large nest that can be used by several hens at the same time. The interior is dark so the hens cannot see to fight or pick each other.

The community nest is 2 feet wide, 3 feet high at the back, and 12 inches high in front. It has a hinged, sloping top which can be opened to gather the eggs. Each nest can have one or two 8 x 8 inch openings for the hens to enter and leave. These openings should be covered with strips of burlap to keep the nests darkened.

The nests are placed against the wall and the upper half of the back side is left open to provide ventilation. Four to six inches of rice hulls or wood shavings make good litter. A nest 2 feet wide and 5 feet long will accommodate 50 laying hens.

Roosts

Roosts shown in the plans are 2 x 3 inches with the 3-inch surface laid flat. Such an arrangement will be less likely to produce crooked keels on birds naturally weak in this respect or on those that are not in proper mineral balance.

Construct the roosts in 8-foot sections and hinge them to the wall so they can be hooked up when cleaning the dropping pit. An alternate arrangement is to rest the wall side of the roosts on a bracket, short lengths of pipe, or railroad spikes driven into the studding. The operator is then able to pull the roosts completely out of the way when cleaning, or use them to pen the birds out of the way while droppings are being removed.

Second floor storage

There are several ways to get feed and litter to the second floor storage. A portable conveyor-elevator is very convenient and it can be used for other jobs around the farm. If the building is located on a side hill, a road on the upper side of the building with a short ramp can serve for delivery to the second floor. If the building is located on level ground, you may desire to build up an earth ramp as "dotted in" on the elevation view of the poultry house. Details for a concrete retaining wall for this type of ramp are shown on the cross section drawing.

Electric wiring

Electric outlets and switches are shown on the drawings. Vapor-proof fixtures and conduit are required where the walls and ceilings are to be hosed down. Nonmetallic sheathed cable may be used if care is taken when the house is cleaned and washed. For complete information on regulations for poultry house electrical wiring, confer with a licensed electrician or the State Electrical Inspector, Bureau of Labor, Salem.

A master control switch to control all the lights in the house should be provided in the feed room area on the first floor. Ordinarily, lights are used on laying hens for either a few hours in the morning or a few hours in the evening. Such lighting may be accomplished by use of an automatic time switch in conjunction with the master switch.

Evening lights should be dimmed in some way in order to warn the hens to go to roost before the lights are turned off completely. In general, dimming is accomplished by placing special resistance in the lighting circuit. Many dimming devices are on the market.

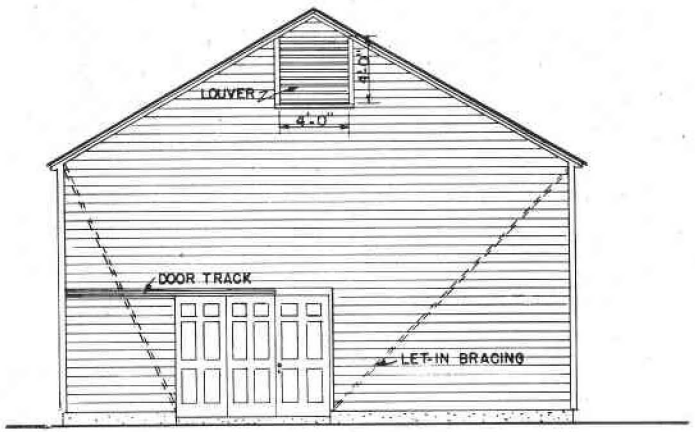
Space the lights as indicated in the drawing and use the watt size specified with reflectors. Reflectors should be adjusted to provide direct light on the hens.

Control of wet litter

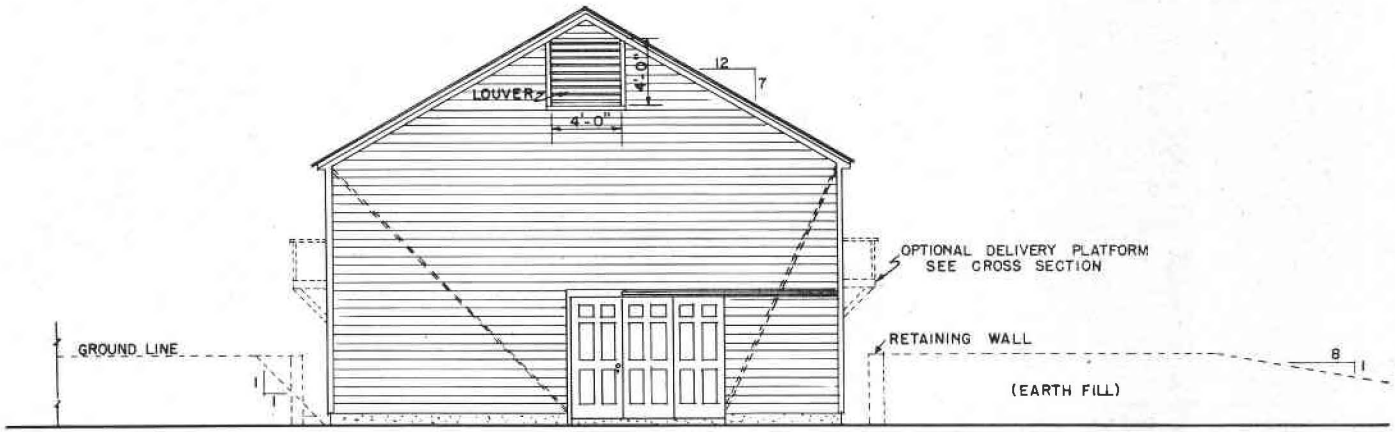
Litter moisture in well constructed houses comes mainly from the droppings and from condensation of water vapor. When drinking fountains are placed over the dropping pits near the back of the nests as shown in the plan, one major source of moisture is eliminated. Whenever the temperature of a poultry house floor falls below the air temperature in the house and the air is damp (high relative humidity) water condenses on the litter. Many methods of control through floor heating have been used but each has its limitations. Fire and rodent control are both difficult problems especially in frame houses. Special equipment and proper design are required for each type. Hot air circulated between double floors or under a house between the ground and the floor or in tile or ducts under the floor have been used. Hot water circulated through pipes or copper tubing in concrete or with wooden floors is satisfactory but more costly to install and difficult to obtain. Heating by means of special electric cable placed in the floor is now in the experimental stage.

WINDWARD ELEVATION
(NORMALLY NORTHWEST)

SCALE
0 5' 10' 15'



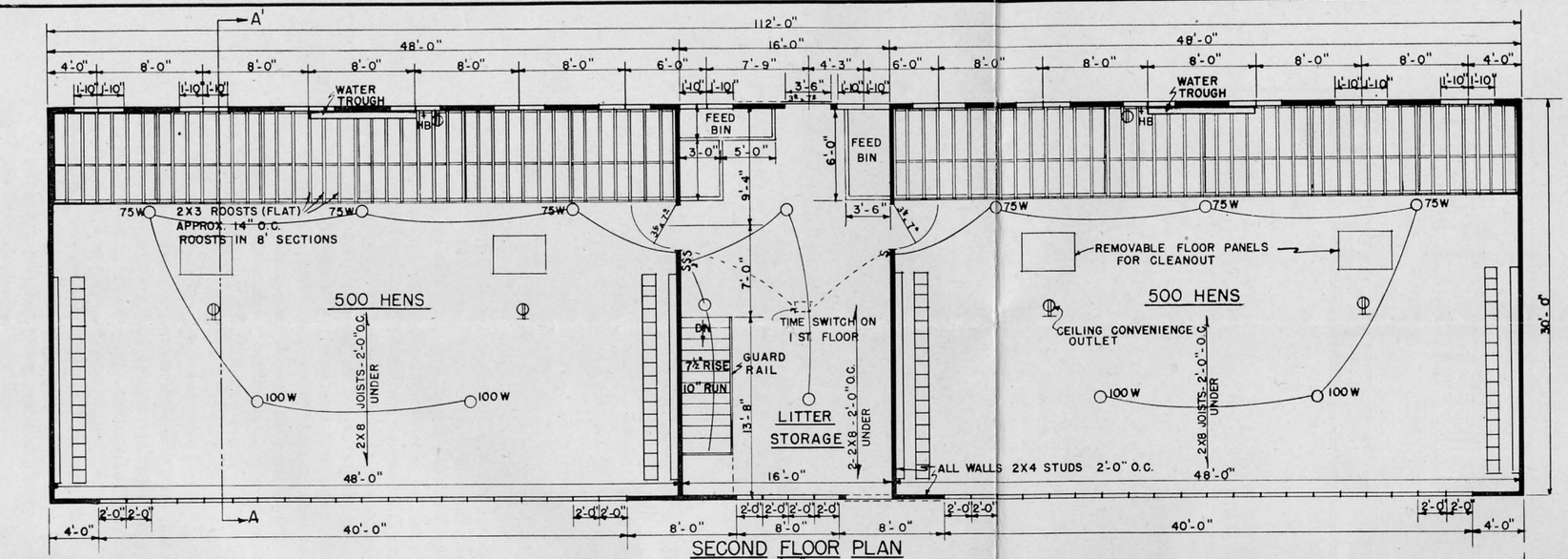
SOUTHWEST ELEVATION



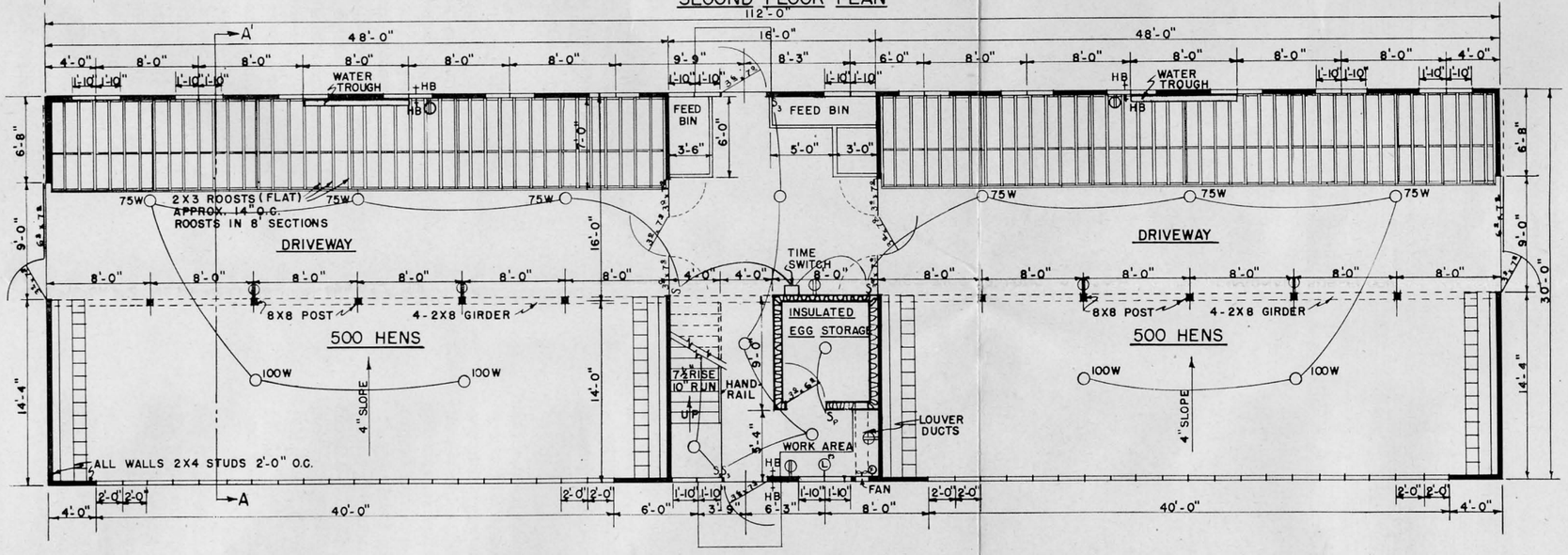
(OPTIONAL SIDEHILL LOCATION)

NORTHEAST ELEVATION

(OPTIONAL RAMP FOR LEVEL SITE)



SECOND FLOOR PLAN



FIRST FLOOR PLAN

SCALE 0 5' 10' 15'

ALTERNATE STORAGE (FIRST FLOOR)

LEEWARD ELEVATION
(NORMALLY SOUTHEAST)

COOPERATIVE RESEARCH & EXTENSION WORK IN AGRICULTURE & HOME ECONOMICS

OREGON STATE COLLEGE
CORVALLIS, OREGON

DEPTS. OF AGRI. ENG. & POULTRY HUSBANDRY
U. S. DEPT. OF AGRICULTURE COOPERATING

TWO STORY POULTRY HOUSE

OREGON | PLAN NO. 2.89 | SHEET 1 OF 3

DESIGNED BY: H. R. SINNARD, R.A., W. L. GRIEBELER
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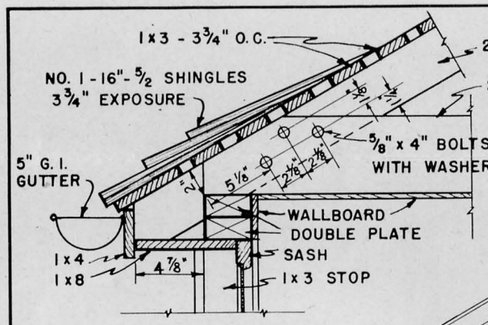
W.L.G.



CORNICE DETAIL

0 6" 12"

CROSS SECTION A-A'

(BALLOON FRAMING)

SCALE:

12" 6" 0 1' 2' 3' 4' 5' 6'

OPTIONAL VENTILATING SYSTEMS

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TWO STORY POULTRY HOUSE

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