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EXTENSION SERVICE

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DAIRY BARN PLANS

BY J. LYNN THOMAS

Dairy Specialist, Extension Service



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DAIRY BARN PLANS

BY J. LYNN THOMAS

Dairy Specialist Extension Service

Dairy barns generally found in Texas are not such as are actually needed to make the work of producing dairy products as attractive as it should be. Poorly constructed barns cause difficulties from a sanitation standpoint which are as often neglected as measures used to overcome them.

A well arranged and a well constructed barn will materially reduce the labor of handling milk, greatly reduce the cost of keeping the proper sanitary conditions and make the work attractive to labor. A barn properly constructed should pay good dividends on the investment, in the saving of labor and the quality of product produced. This bulletin of Dairy Barn Plans is intended to give prospective builders information in regard to the construction and arrangement of dairy barns and milk houses.

A careful study of these plans will show that each one brings out some feature not shown in the other plans. It may be that the builder may wish to select features from several different plans and combine them to fit his needs. Blue prints of floor plans, and cross sections of any of these plans will be furnished upon application.

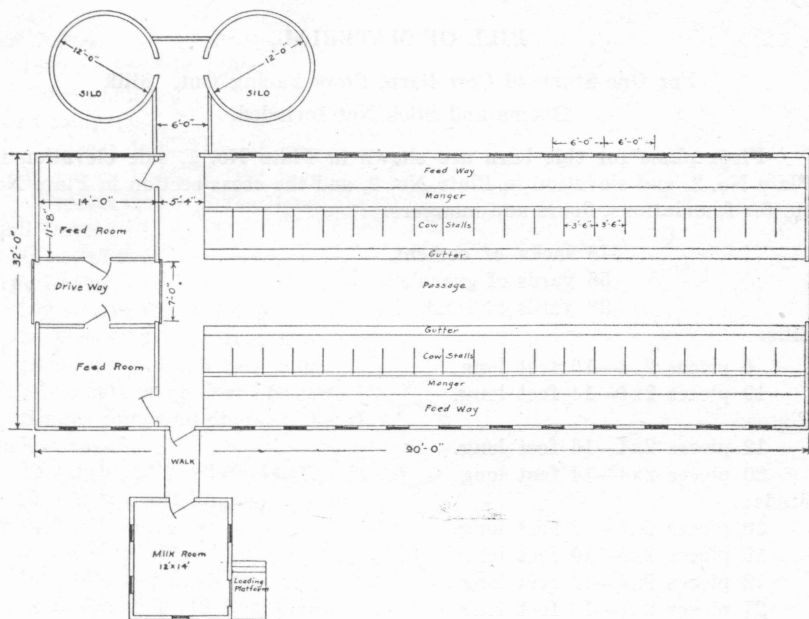


Plate No. 1. Floor plan for 40 cow barn, cows facing out.

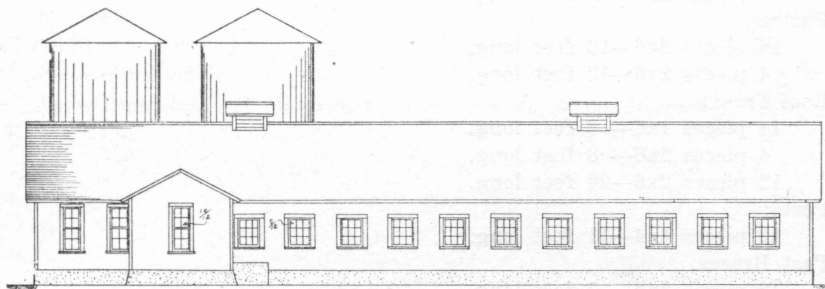


Plate No. 2. Side elevation of barn, floor plan shown in Plate No. 1.

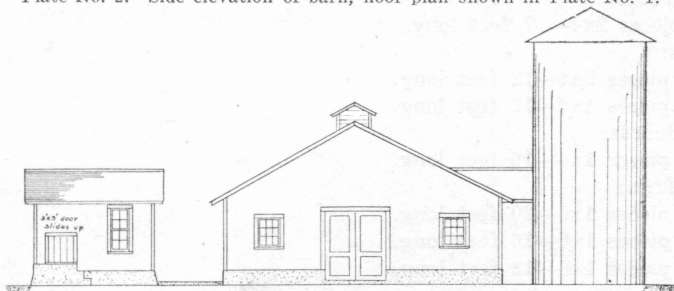


Plate No. 3. End elevation of barn floor plan shown in Plate No. 1.

BILL OF MATERIAL.

For One-Story 40 Cow Barn, Cows Facing Out. Milk Rooms and Silos Not Included.

Floor plans for this barn are shown in Plate No. 1, side elevation in Plate No. 2, end elevation in Plate No. 3, and the cross-section in Plate No. 10, for foundations, floors and mangers.

378 sacks of cement.

56 yards of gravel.

28 yards of sand.

Sills:

6 pieces 2x4—16 feet long.

10 pieces 2x4—14 feet long.

Plates:

12 pieces 2x4—16 feet long.

20 pieces 2x4—14 feet long.

Studs:

90 pieces 2x4— 8 feet long.

15 pieces 2x4—10 feet long.

12 pieces 2x4—12 feet long.

27 pieces 2x4—16 feet long.

Rafters:

92 pieces 2x6—22 feet long.

Purlins:

16 pieces 2x6—16 feet long.

4 pieces 2x6—12 feet long.

Roof Truss:

14 pieces 1x6— 6 feet long.

4 pieces 2x6— 8 feet long.

12 pieces 2x6—20 feet long.

Posts:

12 pieces 4x4—11 feet long.

Post Braces:

12 pieces 2x6— 7 feet long.

Door Headers:

6 pieces 2x4— 7 feet long.

Cupolds:

5 pieces 2x4—12 feet long.

12 pieces 1x4—12 feet long.

Ridge Boards:

12 pieces 1x4—16 feet long.

Eaves Trim:

4 pieces 1x6—20 feet long.

10 pieces 1x6—16 feet long.

2 pieces 1x6—12 feet long.

Walls:

3425 square feet drop siding.

Roof Strips:

1850 square feet 1x4's.
33000 shingles.

Door Casings:

5 pieces 1x4—12 feet long.
36 pieces 1x4— 7 feet long.
3 pieces 1x4— 8 feet long.

Small Doors:

(5) 3x7 feet.

Large Doors:

200 square feet shiplap.
24 pieces 1x6— 8 feet long.
18 pieces 1x6— 6 feet long.
Three sets large door hangers.
Hinges for small doors, (5 sets).

Window Sash:

32 9-light, 2' 7½"x3' 4½".
22 sets window hinges.

Double Sash Windows:

4 4-light, 2'x2' 4".

Window Sills and Casings:

8 pieces 2x6—12 feet long.
82 pieces 1x4—10 feet long.

Window Stop:

360 feet.

Sill Bolts:

24, ½x9 inches.

Approximate cost of material for this barn \$2,300.00, December, 1920.

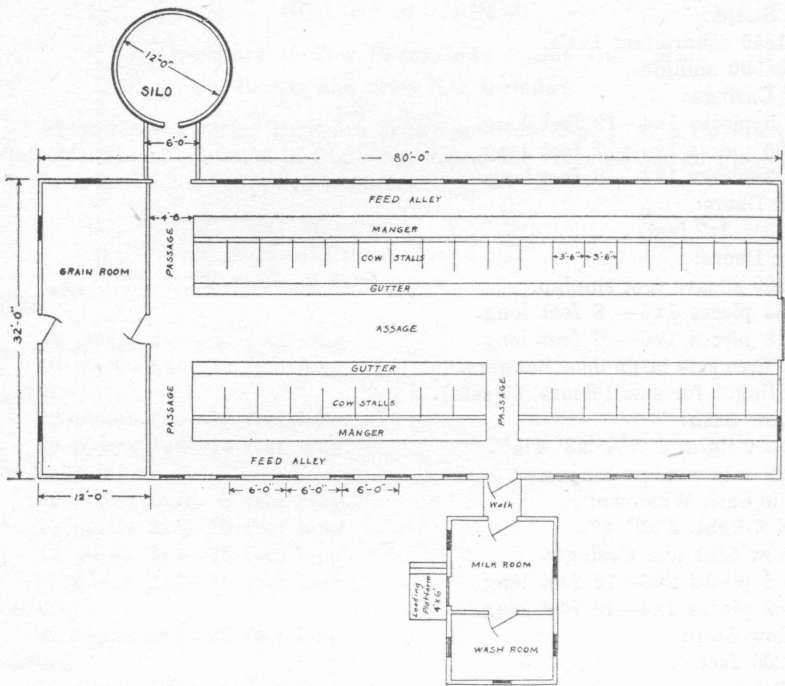


Plate No. 4. Floor plan for 35 cow barn, cows facing out.

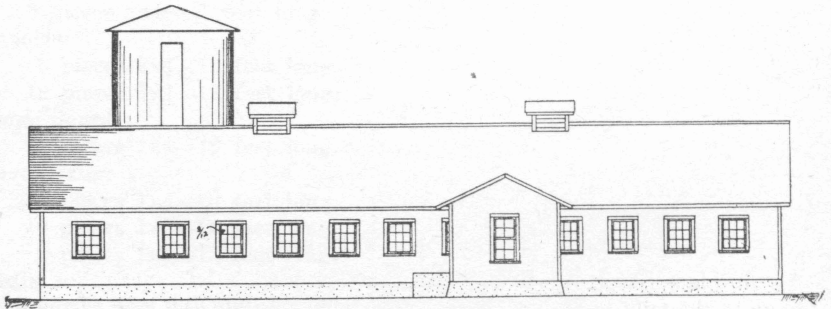


Plate No. 5. Side elevation of barn for floor plans shown in Plate No. 4.

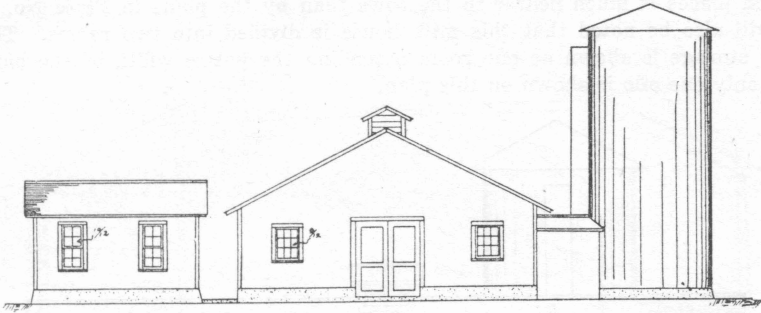


Plate No. 6. End elevation of barn for floor plans shown in Plate No. 4.

A careful study of the floor plans shown in Plate No. 1, will show that the milk house is near the end of the barn, which puts it a considerable distance from a part of the cows. The feed storage space is divided into two rooms with passage between. Two silos are shown on this plan.

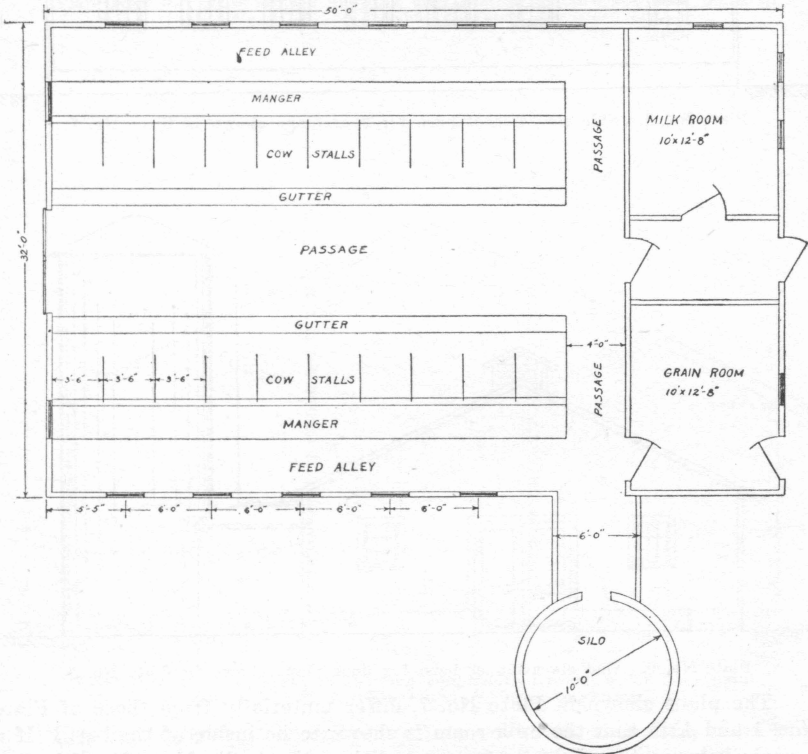


Plate No. 7. Floor plan for a 20 cow barn, cows facing out.

In plate No. 4, it will be noted that one stall is left vacant for a passage to the milk house which is located midway down the side of the barn,

which places it much nearer to the cows than by the plans in Plate No. 1. It will also be noted that this milk house is divided into two rooms. The feed storage is shown as one room extending the entire width of the barn and only one silo is shown on this plan.

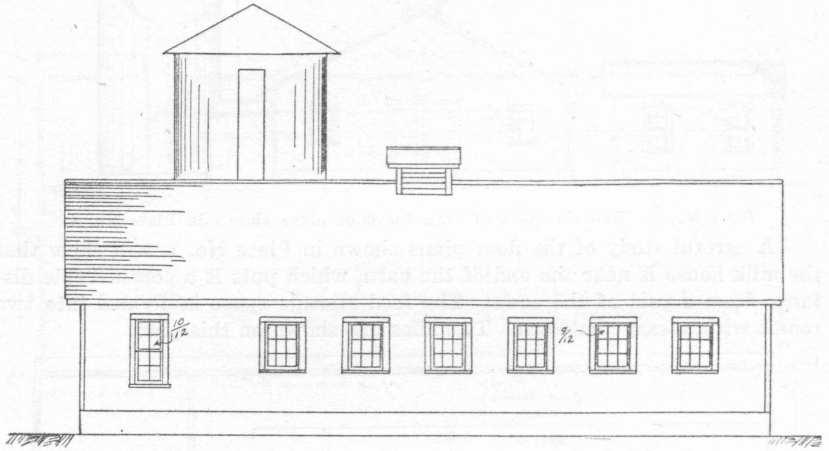


Plate No. 8. Side elevation of barn for floor plans shown in Plate No. 7.

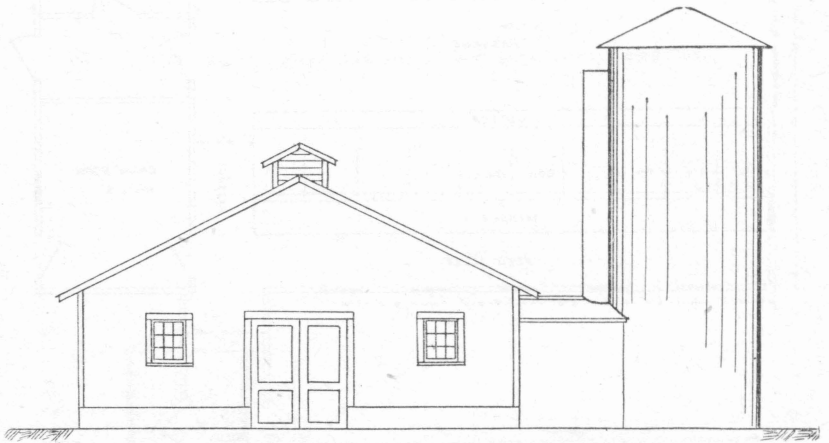


Plate No. 9. End elevation of barn for floor plans shown in Plate No. 7.

The plans shown in Plate No. 7, differ materially from those of Plate Nos. 1 and 4, in that the milk room is shown to be inside of the barn. If a barn is kept in the right sanitary condition, there should be no objection to an arrangement of this kind, though it may be necessary because of some city regulations, to construct the milk room separate from the barn.

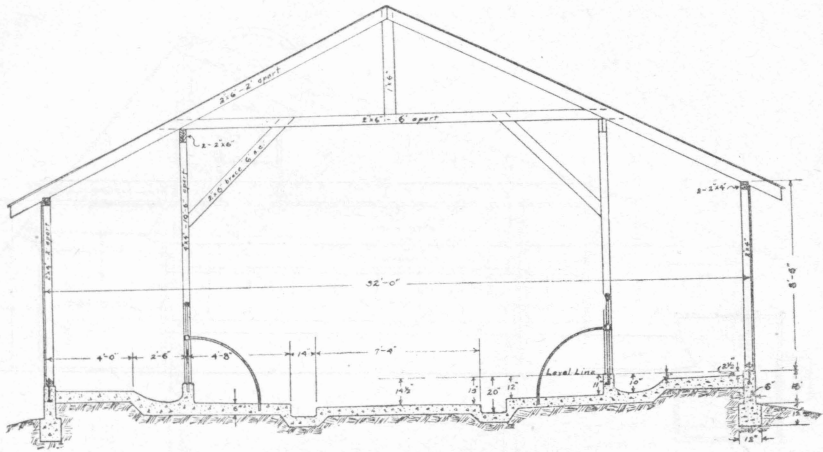


Plate No. 10. Cross-section showing construction of barn for floor plans in Plates No. 1, 4, and 7, when the cows are faced out.

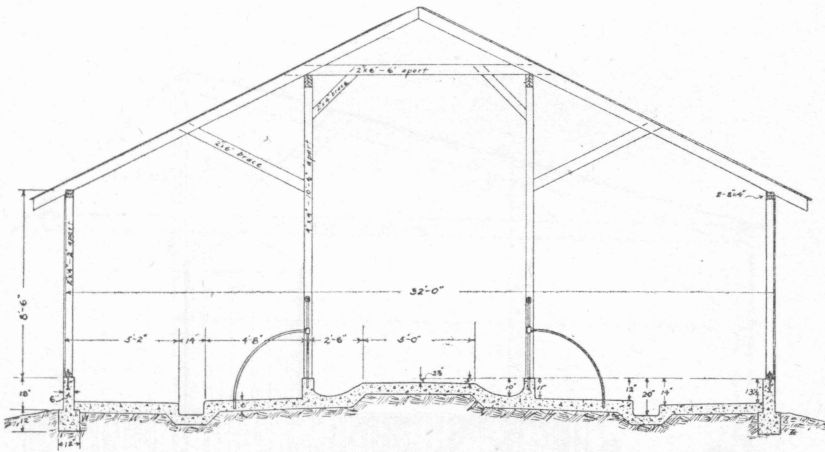


Plate No. 11. Cross-section showing construction of barn for floor plans Nos. 1, 4, and 7, when cows are faced to center.

It is generally considered best to face cows out, therefore, these plans are so drawn, but if it is desired that they face to the center, the barn can be so constructed without materially changing the plans. The width of the barn can be the same in either case.

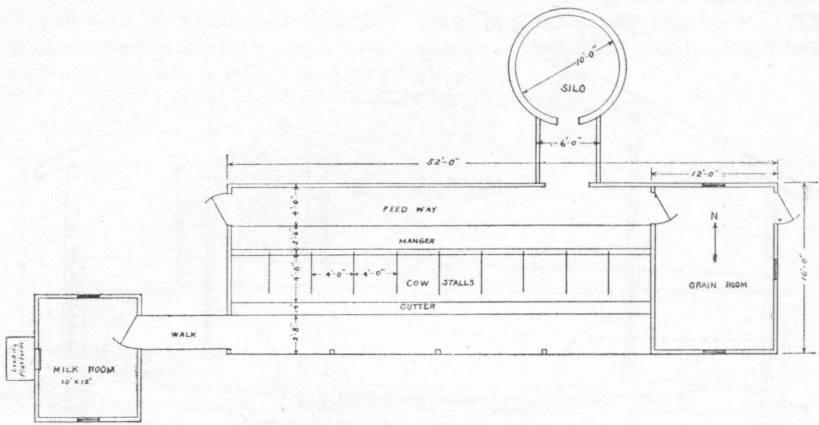


Plate No. 12. Floor plan for milking shed, open on the south.

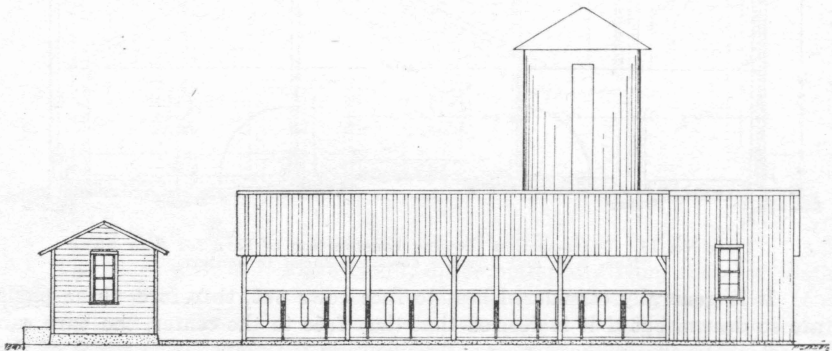


Plate No. 13. South side elevation of milking shed shown in floor plans in Plate No. 12.

BILL OF MATERIAL.

For 10 Cow Open Milking Barn, Milk Room and Silo Not Included.

Floor plans for this barn shown in Plate No. 12, south side elevation in Plate No. 13, and cross-section in Plate No. 14.

For Floors, Piers and Mangers:

125 sacks cement.
18 yards coarse gravel or crushed rock.
9 yards sand.

Sills:

2 pieces 2x6—16 feet long.
2 pieces 2x6—12 feet long.
2 pieces 2x4—14 feet long.
2 pieces 2x4—16 feet long.

Posts:

4 pieces 4x6—14 feet long.
4 pieces 4x4—10 feet long.

Stalls:

2 pieces 4x4—12 feet long.
1 piece 4x4—16 feet long.
3 pieces 4x4—10 feet long.
9 pieces 2x4— 5 feet long.

Studs:

12 pieces 2x4— 7 feet long.

Braces:

5 pieces 2x6— 8 feet long.
8 pieces 2x6— 9 feet long.

Plates:

3 pieces 2x4—12 feet long.
4 pieces 2x4—14 feet long.
4 pieces 2x6—12 feet long.
6 pieces 2x6—14 feet long.

Joists:

11 pieces 2x6—20 feet long.

Rafters:

16 pieces 2x6—18 feet long.

Walls:

27 pieces 1x12—14 feet long.
18 pieces 1x12—12 feet long.
15 pieces 1x12—10 feet long.
52 pieces 1x12— 8 feet long.

Wall Strips:

52 pieces 1x4— 8 feet long.
27 pieces 1x4—14 feet long.
18 pieces 1x4—12 feet long.
15 pieces 1x4—10 feet long.

Roof Girts:

4 pieces 2x4—14 feet long.

4 pieces 2x4—12 feet long.

For Short Roof on Front:

40 pieces 1x12— 8 feet long.

39 pieces 1x4— 8 feet long.

For Roof on Main Shed if Shingles are Used:

460 square feet 1x4.

8,500 shingles.

For Roof on Main Shed:

If roof is made of 1x12 lumber, cracks covered with 1x4 strips.

54 pieces 1x2—18 feet long.

53 pieces 1x4—18 feet long.

Ridge Boards:

4 pieces 1x4—14 feet long.

2 pieces 1x4—12 feet long.

Window Casings:

1 piece 2x6—10 feet long.

12 pieces 2x6—10 feet long.

Window Stop:

108 feet.

Bolts:

16, ½x9 inch bolts.

Windows:

Double Sash, 3 4-light, 2'x2' 4".

Hinges:

Three pair six inch.

Post Straps:

16, ¼ inch x 1½x16 inches.

Approximate cost with shingle roof, \$600.00 for material, Dec. 1920.

Approximate cost with board roof, \$590.00 for material, Dec. 1920.

The open milking shed is the only type of barn in which a dirt floor can be used with any degree of success, being open it will dry quickly and the floor can be kept in good condition.

This open type of barn should appeal to many dairymen in the southern half of the state as it can be easily constructed at a comparatively low cost. The weather in the northern half of the state is a little too severe at times to make the use of such a barn entirely practical.

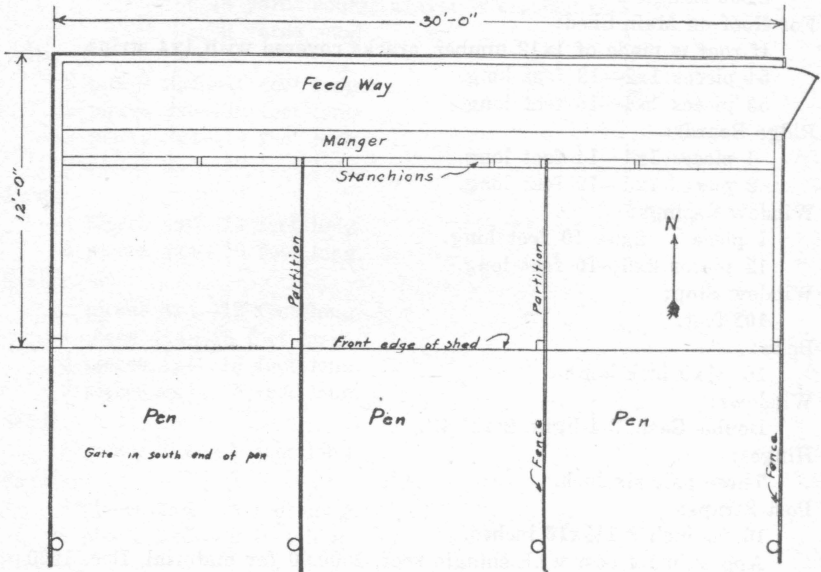


Plate No. 16. Floor plan for a calf barn.

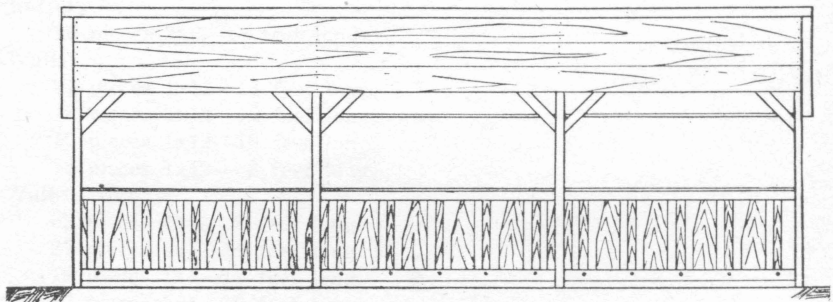


Plate No. 17. South side elevation for calf barn.

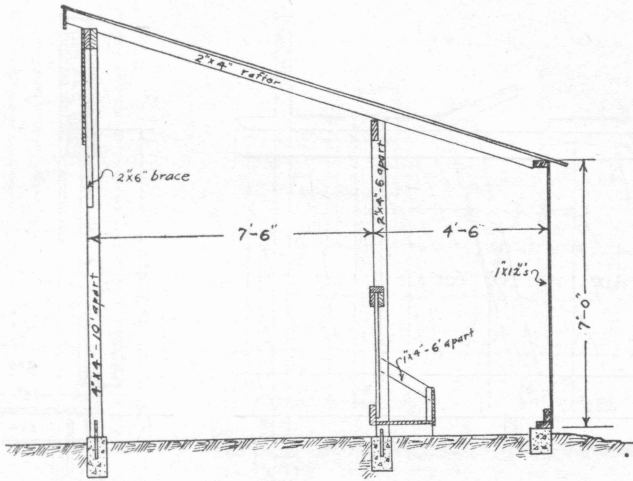


Plate No. 18. Cross-section of calf barn showing manger construction.

The floor plans for calf barn as shown in Plate No. 16, shows outside runs which should be separated from the barn proper by a fence. In the colder sections of the state, it will be necessary to use a tight wall on the south side of the barn in which should be placed sufficient windows for good lighting.

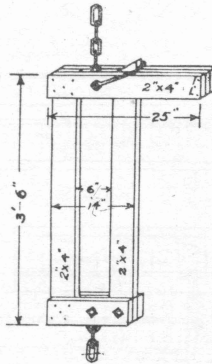


Plate No. 19. Plate showing how to construct swinging wood stanchion.

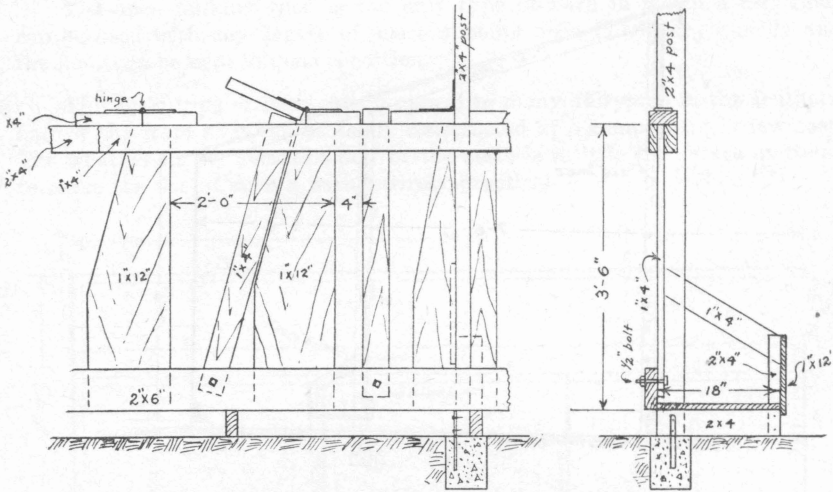


Plate No. 20. Showing how to construct stationary wood stanchion such as are used in calf sheds. Also cross-section of manger for calf barn.

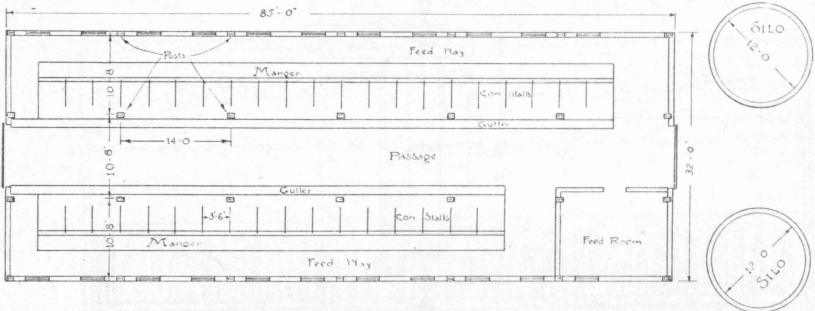


Plate No. 21. Floor plan for two-story dairy barn, showing cows facing out, space being allowed for feed mixing room. Feed storage to be on second floor, immediately over feed room.

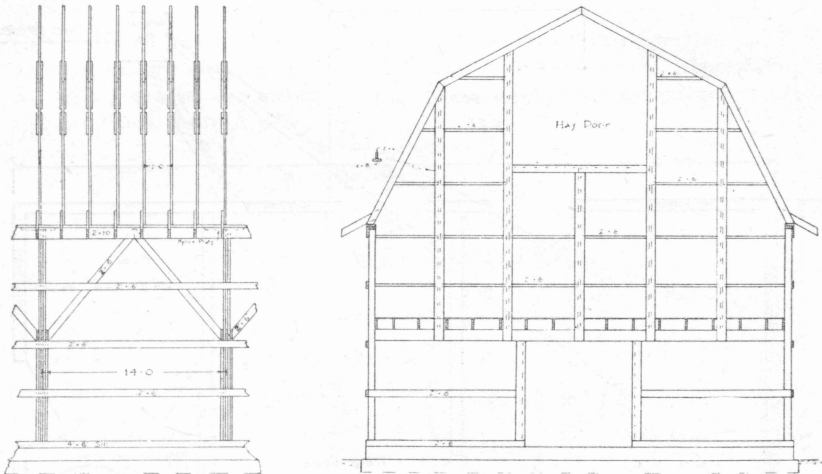


Plate No. 22. Showing side and end frame work for two-story dairy barn.

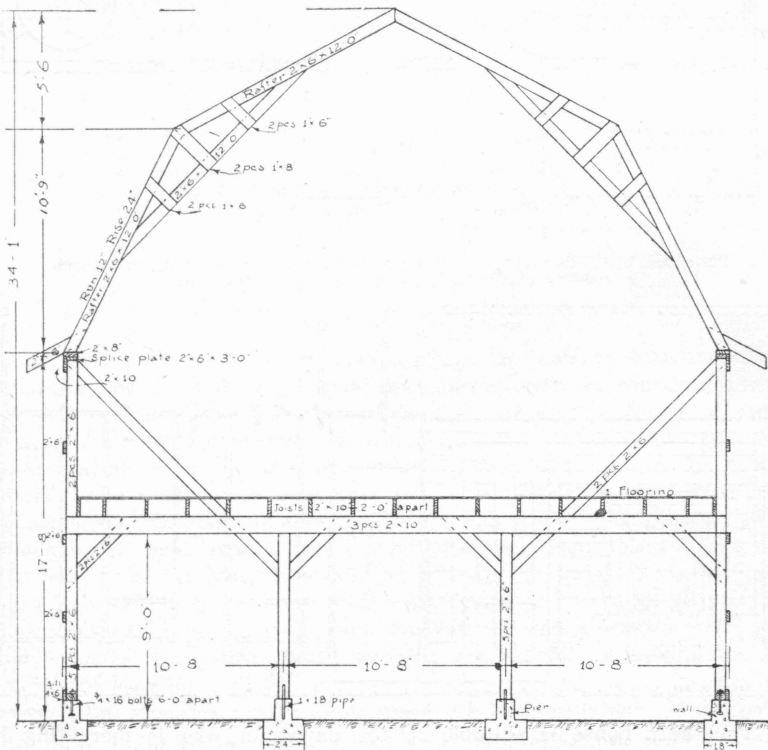


Plate No. 23. Showing cross-section of framing for roof for two-story dairy barn.

FLOOR PLAN FOR MILK HOUSE.

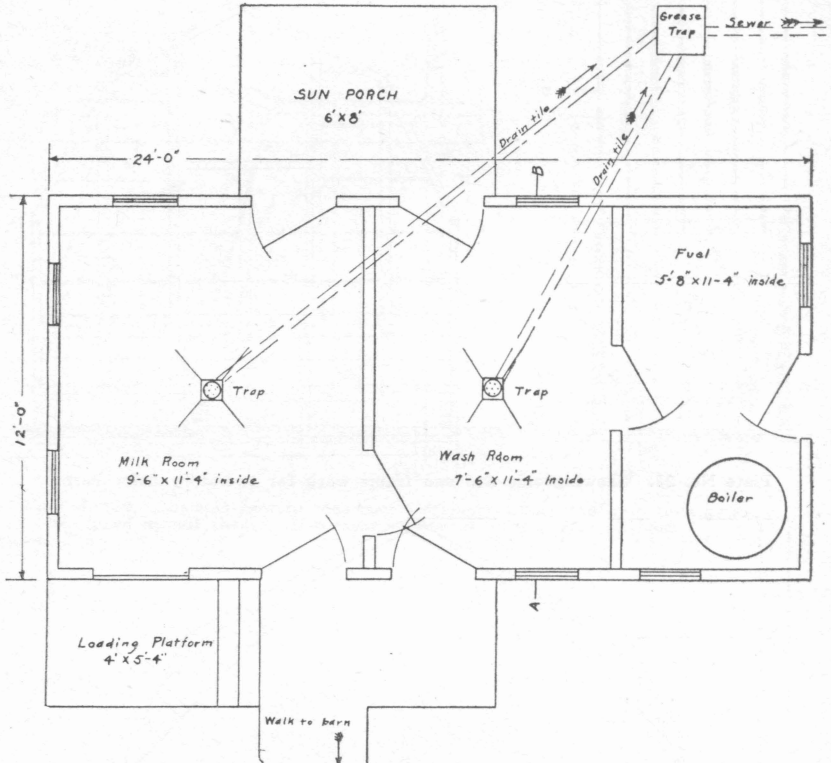


Plate No. 24. Floor plan for three-room milk house, showing sun porch, loading platforms, grease trap, sewer lines, etc.

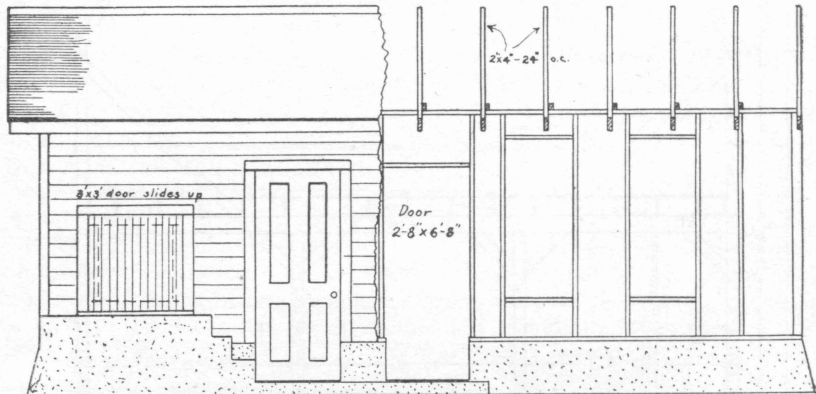


Plate No. 25. Side elevation of milk house, showing frame work over part of house

This milk house is suitable to the dairyman who is marketing his own milk, but for those who deliver milk to the distributor, a house less

elaborate will answer the purpose, and those shown in connection with the barn plans, are one and two room houses. However, it is important that the milk house be constructed so that it can be kept in a sanitary condition and the floors drained perfectly.

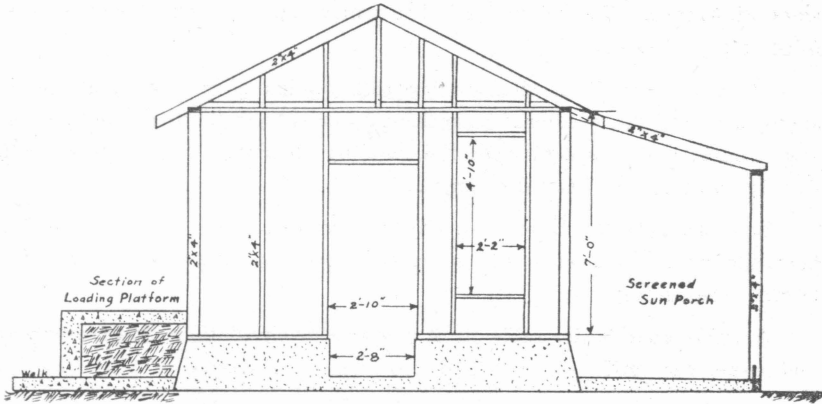


Plate No. 26—End elevation of milk house, showing frame work.

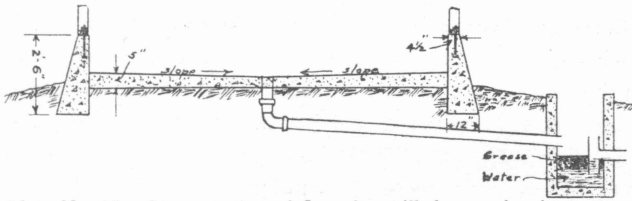


Plate No. 27. Cross-section of floor for milk house showing sewer connection and grease trap.

A milk house should be located where the outside surroundings are clean and free from dust. A good lawn immediately surrounding the milk house is very desirable. The house itself should be constructed of durable material. Concrete or hollow tile being preferable. If wood be used, a concrete wall should stand well above the floor. Wood next to the floor becomes water-soaked and soon rots out. The proportions of the building should be length about double the width. Side walls ten feet high. Building should be of such size as is needed to accommodate the business of the dairy. The interior of the building should be divided into three rooms with partitions from side to side. Three rooms are desirable if a boiler is to be used. Boiler and fuel bin occupying small room in one end, the wash room in the middle and a room where dairy products are handled, occupying the other end of the building.

When the boiler is not used, and gas or oil is used for heating, only two rooms are necessary, the water heater being placed in the wash room. In this case, it is desirable to place the water heating outfit high enough to allow water to be piped directly to the wash vat, thereby eliminating the work of handling the hot water. The water-heating tank should also be filled from a faucet.

If concrete or tile is used for the construction of the building, the inside walls should be plastered smooth with cement plaster that they may be kept sanitary. If wood be used the building should be tightly ceiled with smooth lumber (not beaded ceiling).

It is desirable to have flues passing through the ceiling and roof in both the wash room and milk room to allow the escape of vapors, thus keeping the ceiling dry.

A gable roof is desirable as it allows the circulation of air overhead and makes the building cooler than it would be in the case of a flat roof.

FLOORS.

The floors are a very particular part in the construction of a milk house. They should be made at least $3\frac{1}{2}$ inches thick, of a good rich mixture of concrete and finished with a smooth surface $\frac{1}{2}$ -inch thick. Before placing the concrete the dirt underneath should be thoroughly wet and packed to prevent any settling. The floor should be so laid that it will drain well, about one inch of fall to six feet being required. It is generally best to drain from the walls to a trap near the center of the room which connects to a tight tile drain leading out under the floor. It will be necessary to place this drain before the concrete is put in. All drains should be run in a straight line from the traps to a grease trap outside of the building, that they may be easily cleaned should they become stopped. The grease trap is simply a concrete box two feet square which acts as a trap or settling basin for dirt and sand that may be washed off the floors. It should have a tight cover and can be covered over with dirt to prevent the escape of odors. It will have to be opened and cleaned once or twice each year. One main sewer line should lead from the grease trap to a cess pool or natural drainage system.