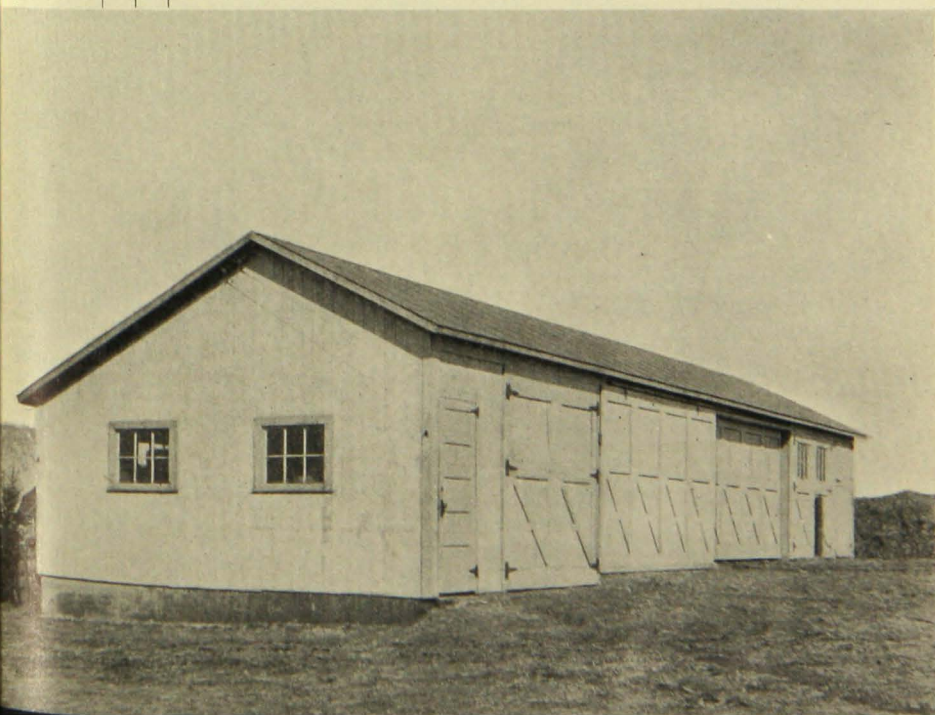


MACHINE SHEDS

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Machine Sheds

IMPLEMENTS and machines on Minnesota farms are valued at about \$1,000 per farm, according to the Federal Census. The cost, when new, would be at least double this amount, and since many small farms have very inexpensive equipment, it is evident that a large number of farms have \$3,000 or more invested in implements and machinery.

The more complicated a mechanism, the more important it is that it be protected. A harrow or a plow may not depreciate very rapidly when left exposed to the weather, but a grain binder or a combine-harvester will not last long nor give satisfactory service after being exposed to the weather, used as a rubbing post for stock, or as a roost for poultry.

Many a farm machine is used for only a few days each year and should remain in good condition for many years if it is properly oiled, repaired, and sheltered. The first two items require less attention if shelter is furnished. Surveys show that farm machines are seldom actually worn out. A binder used six days each year for 16 years is not giving a very great amount of service; yet many binders last only seven or eight years. Altho housing may be second in importance to systematic repairs in lengthening the life of farm machinery, it usually has a very important part in getting the repairing done at the proper time and with the least inconvenience. Properly housed binders have about half the annual repair cost of binders standing unsheltered.

Exposure to the weather destroys paint and causes wood to warp and the iron to rust. More power is required to operate a warped and rusted machine, and as a result less work is accomplished and it is of poorer quality. Good management in the housing of machinery will add to the net income, as "a penny saved is a penny earned." It is also an advantage to have the farmstead appearance improved by putting the machines under shelter instead of leaving them standing in an unsightly patch of weeds. The operator will do better work with a machine that looks well and one that he can take pride in operating.

The care of a farm machine will be neglected unless there is a suitable building where the oil, wrenches, etc., may be kept and easily replaced after the servicing of the machine is completed. If the hand tools of the farm can be kept in a part of the machine shed nearest the house, they will generally be most convenient for all kinds of repair jobs. The location of the machine shed should be given considerable attention, as a work bench in this building may be one of the most frequently used places on the farmstead.

Good Shelter Pays

In considering the shelter cost for farm machinery, the farmer should not be discouraged by the first cost of the building but should rather

consider the annual cost. This annual cost should be low enough so that the advantages of long-lived, better machinery resulting from shelter, the efficiency that comes from having "a place for everything and everything in its place," and the satisfaction of having a neat farm home will be sufficient reward for the investment.

The cost of a machine shed will vary considerably. A building 18 feet wide can usually be built for less than \$10 per foot of length. A building 60 feet long will shelter most of the implements on a quarter-section farm. Such a building costing \$600 or less should have an annual cost not in excess of \$60. This includes not only interest on the investment, but also insurance, taxes, repairs, and painting. Farm machinery depreciates from 5 to 12 per cent each year. On a farm with \$3,000 invested in farm machinery, the average yearly depreciation is 8 per cent, or \$240. If this depreciation can be cut only one-fourth by shelter, there would be a great advantage in having a \$60 annual cost for a machine shed. Not only would it be possible to repair the equipment on rainy days and see that proper adjustments and repairs were made before the rush season opened, but there would also be the advantage of raising the operating efficiency of the machines.

Location

Study the farmstead and locate the shed where it will be most convenient and where it will look the best. Put it where the teams will pass it in going to and from the barn and where it will be easy to leave the tractor between jobs. If it can be put on well-drained ground, repair jobs can be done outside the shed after a rain when the fields are still wet. The machine shed may serve as a windbreak to protect the farmyard.

Type

There are several types of machine sheds. The open shed is very common, but does not protect the machinery from livestock and poultry, gives only partial protection from the weather, and is unsightly. A long narrow building with many doors seems to be most satisfactory on the average farm. On a large farm, a wide building with a driveway through it lengthwise is convenient, as the machines can be taken in with the team.

Size

A list should be made of implements and machines that are to be sheltered and the space needed for each. The total area thus obtained will serve as a guide in deciding the size of building to erect. Some space for additional equipment and the replacement of old machines by larger ones is desirable.

The length of lumber available also influences the width of building that can be economically constructed. It has been found that widths of 18, 24, and 26 feet are very satisfactory. It is a good idea to consider

the arrangement of the doors, as the building can be made stronger and built more economically if extra doors can be omitted. Make the building large enough so the various machines can be put in and taken out without too much moving of other machines.

The following table shows the amount of floor space to allow for common farm machines:

Floor Space Necessary for Farm Machines

| Machine | Width-Length feet | Machine | Width-Length feet |
|-------------------------------|----------------------|-----------------------------|----------------------|
| Automobiles | 7 x 18 | Pickers, corn— | |
| Binders— | | One-row, pull-type | 8 x 12 |
| Grain, 7-ft. | 15 x 18 | Two-row, pull-type | 16 x 17 |
| Grain, 10-ft., tractor | 19 x 12 | Planters— | |
| Corn, one-row | 7 x 10 | Corn, two-row | 10 x 6 |
| Corn, two-row | 9 x 16 | Corn, four-row | 15 x 6 |
| Bob-sleds | 6 x 6 | Potato | 6 x 8 |
| Cultivators— | | Plows— | |
| Corn, one-row | 5 x 6 | Walking | 2 x 8 |
| Corn, two-row | 10 x 6 | Sulky | 5 x 7 |
| Corn, four-row, tractor | 15 x 8 | Two-bottom, horse | 5 x 8 |
| Rotary hoe | 10 x 6 | Two-bottom, tractor | 5 x 11 |
| Diggers, potato | 5 x 8 | Three-bottom, tractor | 6 x 13 |
| Drills, grain | 12 x 6 | Racks, hay | 8 x 16 |
| Harrows— | | Rakes— | |
| Spike-tooth | 4 x 6 | Dump, 10 ft. | 12 x 6 |
| Spring-tooth | 3 x 6 | Dump, 12 ft. | 14 x 6 |
| Disk, horse | 8 x 6 | Side-delivery | 8 x 12 |
| Disk, tractor | 9 x 9 | Seeders | 12 x 6 |
| Harvesters— | | Silo fillers | 5 x 10 |
| Combine, 5-ft. | 12 x 16 | Sprayers, potato | 8 x 6 |
| Combine, 16-ft. | 20 x 24 | Spreaders, manure | 6 x 15 |
| Loaders, hay | 10 x 12 | Threshers | 8 x 29 |
| Mowers | 5 x 8 | Tractors | 7 x 12 |
| | | Wagons | 7 x 14 |

Arrangement

The most common arrangement is with one row of machines placed in a long narrow building so that each can be removed easily. Just as the barn shelters two rows of animals, so there has been adopted for automobile and machinery storage the double-width garage and machine shed. The machines are brought in at the middle of one or both ends and placed in rows along the two sides. During the winter the middle is also used for storage.

This type of building with its floor free from posts has a surprising storage capacity, but one of the commonest difficulties experienced is not making it long enough. Usually more equipment is brought to such a building than is foreseen when planning. Oil drums, feed, and movable

pieces of equipment and supplies are quite sure to arrive here. Seed corn is frequently stored on racks on the trusses and conveyers and elevators not in use find this their natural stopping place.

Convenience

A bench, some shelves, and plenty of strong hooks and hangers add greatly to the convenience of repair and storage of small articles. Keeping small pieces of equipment hung up and the floor clear adds to the value of storage space.

Lighting

The sheds 24 feet wide or less seldom require windows unless part of the shed is used for a shop. The driveway type requires one square foot of window to every 20 square feet of floor. Where electricity is available, a ceiling lamp every 20 feet is a great advantage on many occasions.

Good Construction Pays

The machine shed should be strong and durable. The foundation is usually extended about 18 inches below the surface of the ground, or to uniform clay soil so that it will not be heaved by the action of frost. A permanent foundation wall may be 6 inches thick at the top and 8 to 12 inches at the bottom. It should extend 6 inches or more above the level of the ground. Reinforcing rods in the foundation are important, especially at the corners. Where the foundation does not extend below frost, two $\frac{3}{8}$ -inch rods near the top imbedded in the concrete will lengthen the life of the building many years.

The floor may be of earth, gravel, or concrete. It is important that the floor remain dry; hence it should be a little higher than the surrounding ground.

The walls may be boarded with vertical boards and battens or with matched lumber put on vertically; or they may be of galvanized sheet iron, drop siding, stucco, hollow building tile, or concrete blocks.

The roof should be strong enough not to sag, or to be blown off if the doors are left open. It may be covered with prepared roofing, galvanized iron, or wood shingles. It pays to lap the prepared roofing 4 to 4½ inches to make sure that it does not leak in driving rain if the cement cracks from exposure to heat and cold.

Doors are likely to be damaged by wind or machines. Two 7-foot doors are more satisfactory than one 14-foot door. It is important that they open and close easily and do not warp and bind. Barn-door hangers with continuous track both inside and outside permit the removal of machines at any 14-foot doorway. A door 2 feet 8 inches wide should be provided to avoid opening the large doors when it is only necessary for a person to enter.

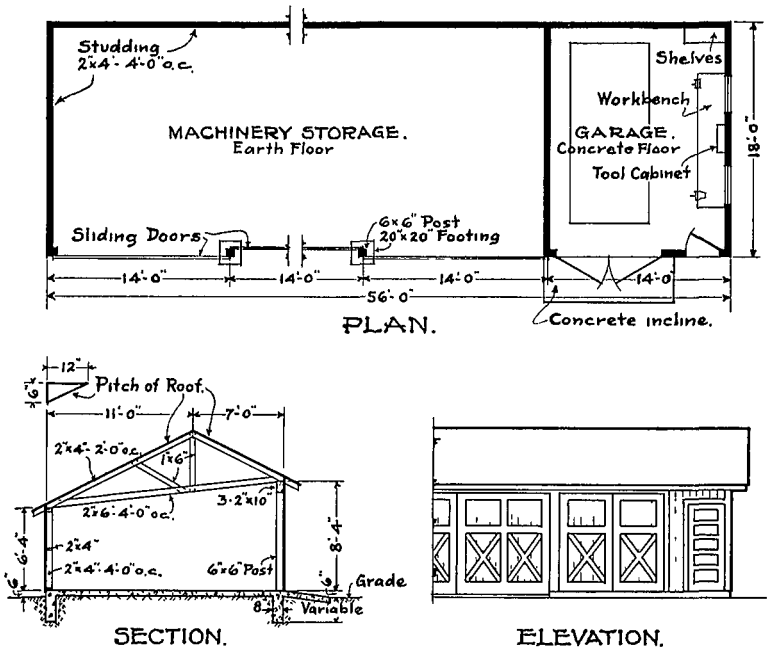


FIG. 1. MACHINE SHED 18X56 FEET, PLAN 253

Machine Shed Plans for Minnesota

A machine shed that will fit into most farmsteads is Plan No. 253, shown in Figure 1. The garage may be placed at the end nearest the house. The garage shown has a concrete floor and is equipped with workbench and tool cabinet. The machinery storage space has an earth floor. The front wall as shown is 8 feet high, the rear wall 6 feet. This gives a long slope of roof to the rear and a short slope to the front; 2x4 rafters are used. It is more attractive than a shed roof. A shed roof will sag unless 2x6 rafters are used. Under ordinary conditions, the doors should be half the width of the doorways, as they are more easily handled than larger ones and are not so liable to warp and become difficult to operate. A building of the width shown is easily constructed and is not expensive when the value of machinery that can be sheltered is taken into consideration. A cost of about \$10 per foot of length is all that is necessary for a well-built shed of this type.

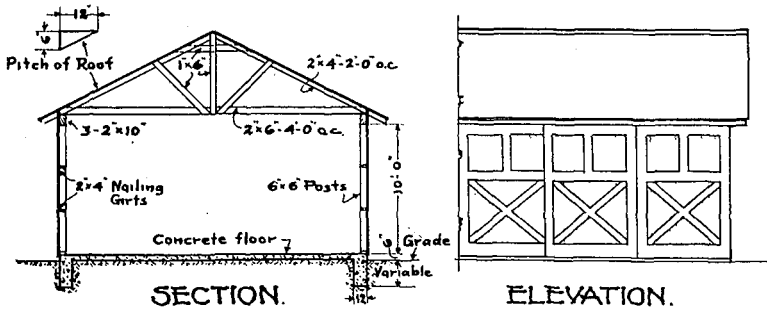
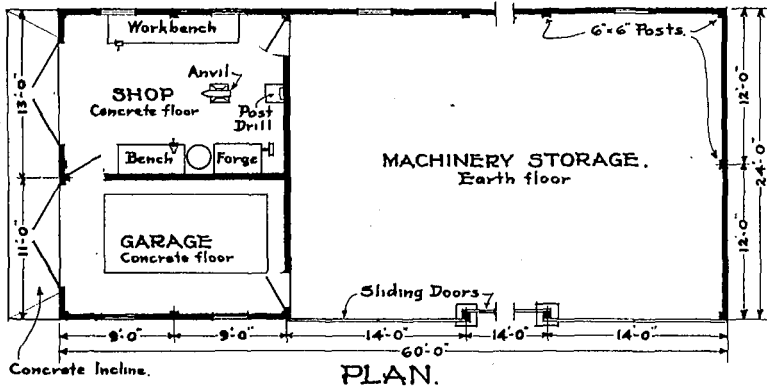


FIG. 2. MACHINE SHED 24x60 FEET, PLAN 208

Sometimes the garage doors are put in the end of the machine shed. Figure 2, Plan No. 208, shows such an arrangement. The shop occupies the end of the building with the garage. The building is 24x60 feet and has 10-foot walls, so the shelter is big and roomy with large doors and without posts or complicated framing. The garage and shop may have ceilings to keep dust from the car and make it possible to put in a stove to heat the shop. The garage and shop must be at the end nearest the farmhouse.

A machine shed with 10-foot walls must be carefully braced to withstand side winds if they are not partly broken by a grove or another building.

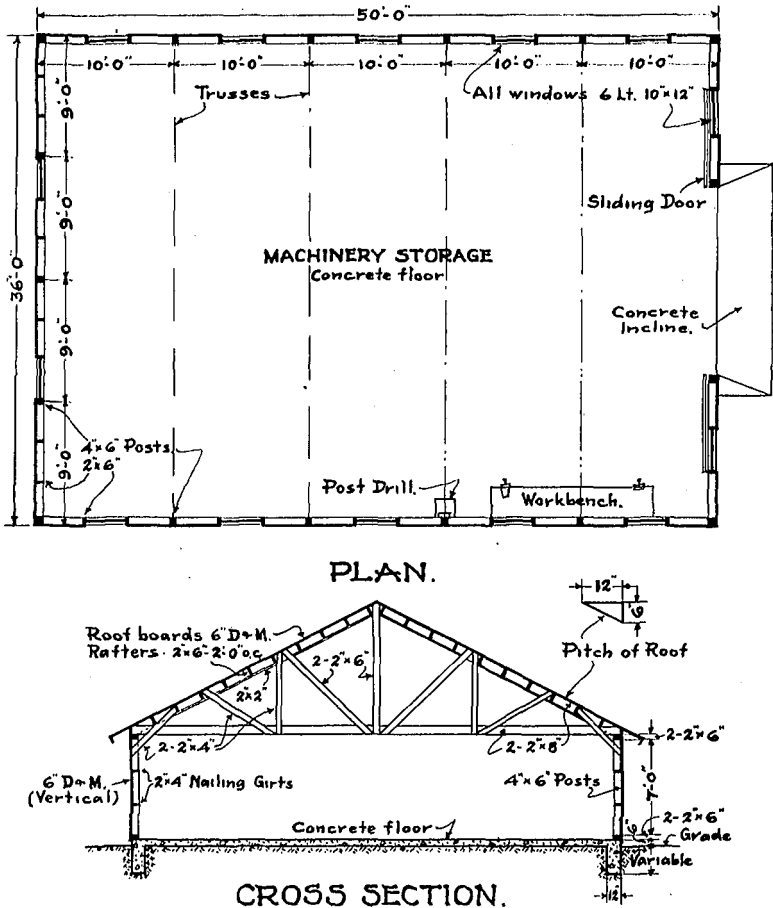


FIG. 3. MACHINE SHED 36×50 FEET, PLAN 270

Figure 3, Plan No. 270, shows a shed 36x50 feet with full concrete floor free from posts. The roof is supported by simple trusses, which are easily constructed, and is strong and durable. A large doorway is an important feature and should be made even wider than 14 feet if large machines are used. The windows will admit sufficient light for ordinary jobs of assembly and repair. A workbench may be built at one side of the doorway. The machines can be compactly stored, as with a concrete floor it is not difficult to remove the one that is needed. By a little care in placing the machines, the necessary moving will be reduced to a minimum. A space just inside the doorway opposite the bench may be used for the auto if a separate garage has not already been built.

Write for Special Bulletin 111 which lists over 230 plans of farmsteads, buildings, and equipment.