

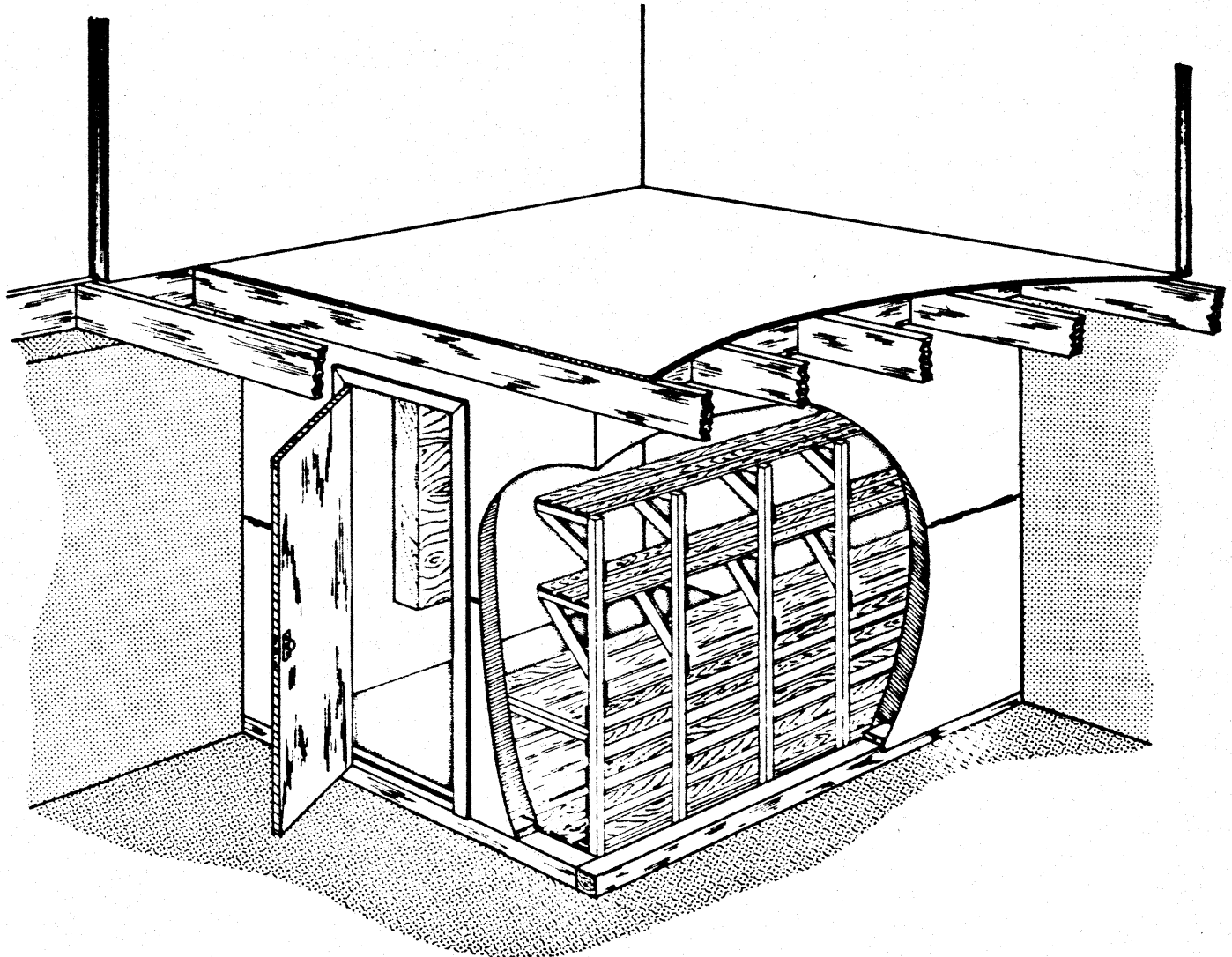
# AGRICULTURAL ENGINEERING

## SERVICES



LEAFLET FOR  
PLAN **S-601**

BASEMENT  
VEGETABLE STORAGE



The Agricultural Engineering Services prepares detailed, large scale building plans for agriculture. This leaflet describes one of these plans.

Please order plan by number at your Department of Agriculture Regional Office or write to:

Agricultural Engineering Services  
Saskatchewan Department of Agriculture,  
Administration Building, Regina, Saskatchewan.

BASEMENT VEGETABLE STORAGE

With food prices rising, families may be considering increasing their garden size. However, without adequate storage facilities much of this increase would be a waste of time and money as vegetables do not keep well in the average warm, dry basement. Therefore, an inexpensive storage room should be considered to prolong the storage life of many vegetables.

STORAGE ROOM IN BASEMENT

To provide satisfactory storage conditions, a basement storage area must be well insulated and equipped with a ventilation system for cooling. A 10 x 10 ft. area gives enough storage to suit most families, however a larger or smaller room can be built to suit individual needs.

The two walls to close off the corner for a storage room are constructed according to Plan S-601. The door is constructed with a 2x2 in. wood framing, covered with 1/4 in. plywood both sides and insulated with fiberglass or styrofoam. If mechanical refrigeration is used, all walls, including outside concrete walls, should be insulated. All joints in the walls and ceiling must be moisture proofed by caulking and taping.

Shelves and bins are all slatted to permit good air circulation. A 4 in. space between the floor and first shelf or bottom bins is used to protect produce from water placed on the floor. Any wood that will be in contact with the floor should be pressure treated.

OPERATION OF VENTILATING SYSTEMS

There are three methods for operating a ventilating system: automatic, semiautomatic, and manual. The main difference between them is the ease of control, and although automatic controls are more expensive they do not need daily adjustments and they reduce losses due to human error.

AUTOMATIC SYSTEM

For an automatic system, a fan and louvers can be set in the upper half of a basement window. They are controlled by a differential thermostat. The lower half of the window opening is equipped with an air duct that extends to within 18 in. of the floor. Light must be excluded from stored vegetables, so cover the remainder of the window with 1/4 in. plywood. Cover the intake and exhaust openings with screening to keep out insects and rodents.

To prevent freezing during excessively cold periods, it is best to include a thermostatically controlled electric heater set to operate when the temperature of the storage room air is at 32°F.

SEMIAUTOMATIC SYSTEM

The semiautomatic system is similar to the automatic one, except that the fan and louver are controlled by only one thermostat and the fan and louver control must be operated manually when the outside air temperature is warmer than the storage air.

MANUALLY OPERATED SYSTEM

The inexpensive method of manual operation can be used, provided you have time to check temperatures and make the necessary adjustments to vents. Instead of the fan, install a sliding vent in the exhaust opening and another one at the intake opening. When these are open, cooler air from the outside enters through the air duct and the warm air goes out through the exhaust opening. This is a less costly means of ventilation, but there is more risk of freezing injury to the stored products. To control temperatures manually in the early fall, when the nights are cool and the days are warm, open the vents during

the night and close them during the day. When the weather becomes cooler, the vents may be left partly open for continuous periods. Some form of heating is needed to prevent freezing.

### MECHANICAL REFRIGERATION

To maintain controlled temperatures at all times, a suitable 1/2 hp mechanical refrigeration cooling unit can be obtained commercially. If mechanical refrigeration is used, ventilation through a window is not required. Cooling by mechanical refrigeration has the distinct advantage that you can use it during the summer months when cherries, raspberries, strawberries, and other products are available.

WARNING: If more than 40 to 50 bushels a day of new produce are to be added to the storage, a heavier unit is necessary. Take advantage of cool night temperatures to cool produce before placing large quantities in the storage room as this reduces the load on the refrigeration unit. When mechanical refrigeration is used, the door must have a safety latch so that it can be opened from the inside. It is also a wise precaution to install a buzzer or warning bell. Fit the door with a lock to keep children out.

The following table indicates the optimum environmental conditions and storage periods for some of the more common vegetables.

<u>Vegetable</u>	<u>°C Temperature</u>	<u>RH% (Relative Humidity)</u>	<u>Approximate Storage Period</u>
Beets (topped)	0	90 - 95	1 - 3 months
Cabbage (late)	0	90 - 95	3 - 4 months
Carrots (topped)	0 to 1	95	4 - 5 months
Garlic (dry)	0	70 - 75	6 - 8 months
Horseradish	-1 to 0	90 - 95	10 - 12 months
Onion sets	0	70 - 75	5 - 7 months
Onions (dry)	0	50 - 70	5 - 9 months
Parsnips	0	95	2 - 4 months
Potatoes (Early)	10	85 - 90	1 - 3 weeks
(Late)	4	85 - 90	4 - 6 months
Pumpkins	7 to 10	70 - 75	2 - 3 months
Radish (Winter)	0	90 - 95	2 - 4 months
Rhubarb	0	90 - 95	2 - 3 weeks
Rutabaga or Turnip	0	90 - 95	6 months
Squash (Winter)	7 to 10	70 - 75	6 months

Recognizing that it is not practical to provide ideal storage conditions for each type of vegetable, it is necessary to compromise and establish conditions which will substantially improve the storage life of your more favoured vegetables.