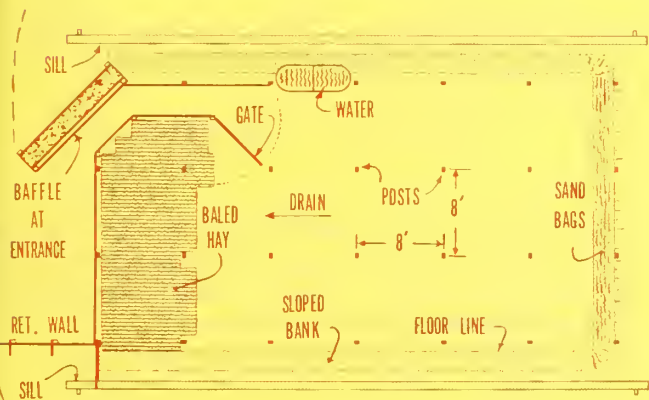
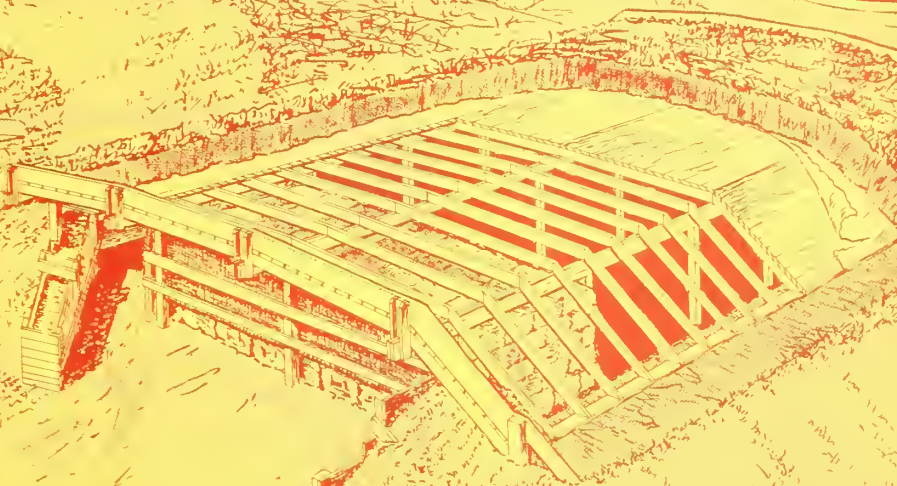


Bunker-type Fallout Shelter

... FOR BEEF CATTLE

COOPERATIVE
FARM BUILDING
Plan No. 5950
(2-SHEETS)
PLAN EXCHANGE



This shelter provides low-cost and adequate radiation protection for unattended farm animals. Although designed primarily for beef cattle, the shelter could be modified for use by sheep, hogs, or poultry. The basic structural system with modification could be used for a rural community shelter for people. If used for people,

the ends should be shielded and a ventilating system installed.

The most desirable site for the shelter is sloping ground adjacent to the pasture or lot where the cattle are normally kept. A hillside facilitates disposal of surface water, and closeness to pastures or lots expedites herding animals into the shelter in an emergency. The shelter may be built on a level site, with due consideration for drainage and height of the water table.

This shelter was designed specifically for emergency use. During this period of use by livestock it most likely will be crowded, damp, and difficult to clean.

The shelter has a protection factor of about 90.

All nonessential items have been omitted, but the operator may wish to spread a layer of bedding over the floor.

If time permits, the operator should cut the ties on the hay bales on the inner face of the stack before driving the cattle into the shelter.

Washington, D.C.

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Miscellaneous Publication No. 947



Section (LONGITUDINAL)

VENTILATION: Natural airflow through horizontal openings under the rafters ventilates the shelter. Burlap sacking may be draped over the opening if dust tends to sweep into the ventilation slot.

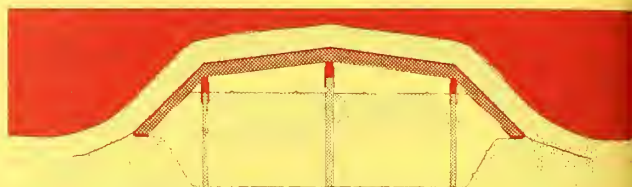
FOOD AND WATER: The stack of baled hay serves as a radiation shield at the lower end of the shelter and provides a limited amount of feed for about 2 weeks. An adequate supply of uncontaminated water is more important than feed. For 2 weeks, 110 to 250 gallons should be stored for each beef animal housed. The plan shows only the correct location for the watering tank. Since conditions vary, supply and storage of water will have to be worked out for each specific installation.

CONSTRUCTION: The working drawings show construction details for three widths of shelters. The shelter 48 feet long has a maximum capacity of 30, 45, and 60 cattle for the three widths shown at the right. This allows 21 square feet per animal. Width may be varied in units of 8 feet, length in units of 16 feet.

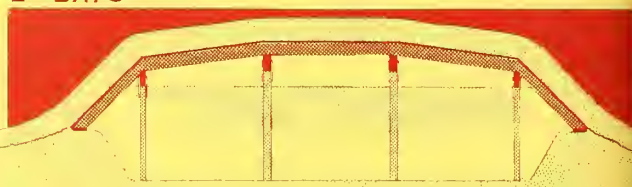
The structure is built of rough, pressure-treated lumber. Because of the very heavy roof loading (175 pounds per square foot) careful workmanship is strongly recommended. Posts are cut from 12- and 14-foot lengths at a slight angle to suit the longitudinal slope of the shelter.

Construction costs vary widely in different localities. However, the lumber required—from about 170 board feet per animal housed in the 30-head shelter, down to 130 board feet in the shelter for 60 head—gives a rough idea of the materials involved.

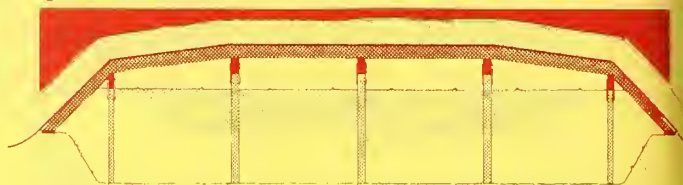
Unsurfaced roll roofing or 6-mil polyethylene film placed over the preservative-treated board covering prevents seepage of rainwater through the roof. This protection should extend beyond the structure to the drainageways along each side of the shelter. Since water will percolate through the soil covering, the bottom 2 inches of the covering should be sand topped with 3 inches of pea gravel to provide a lateral drainageway for the percolating water. Drainageways at the sides of the bunker should have a minimum slope of 2 percent (2 feet drop in 100 feet of run).



2 BAYS



3 BAYS



4 BAYS

Cross Sections

Framing is not strong enough to hold a tractor on the roof. Therefore, the covering earth will have to be moved in place with a wheel barrow, a cable-drawn scoop, or similar lightweight equipment.

Complete working drawings may be obtained through your county agent or from the extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 5950, BUNKER-TYPE FALLOUT SHELTER FOR BEEF CATTLE

If the working drawings are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.