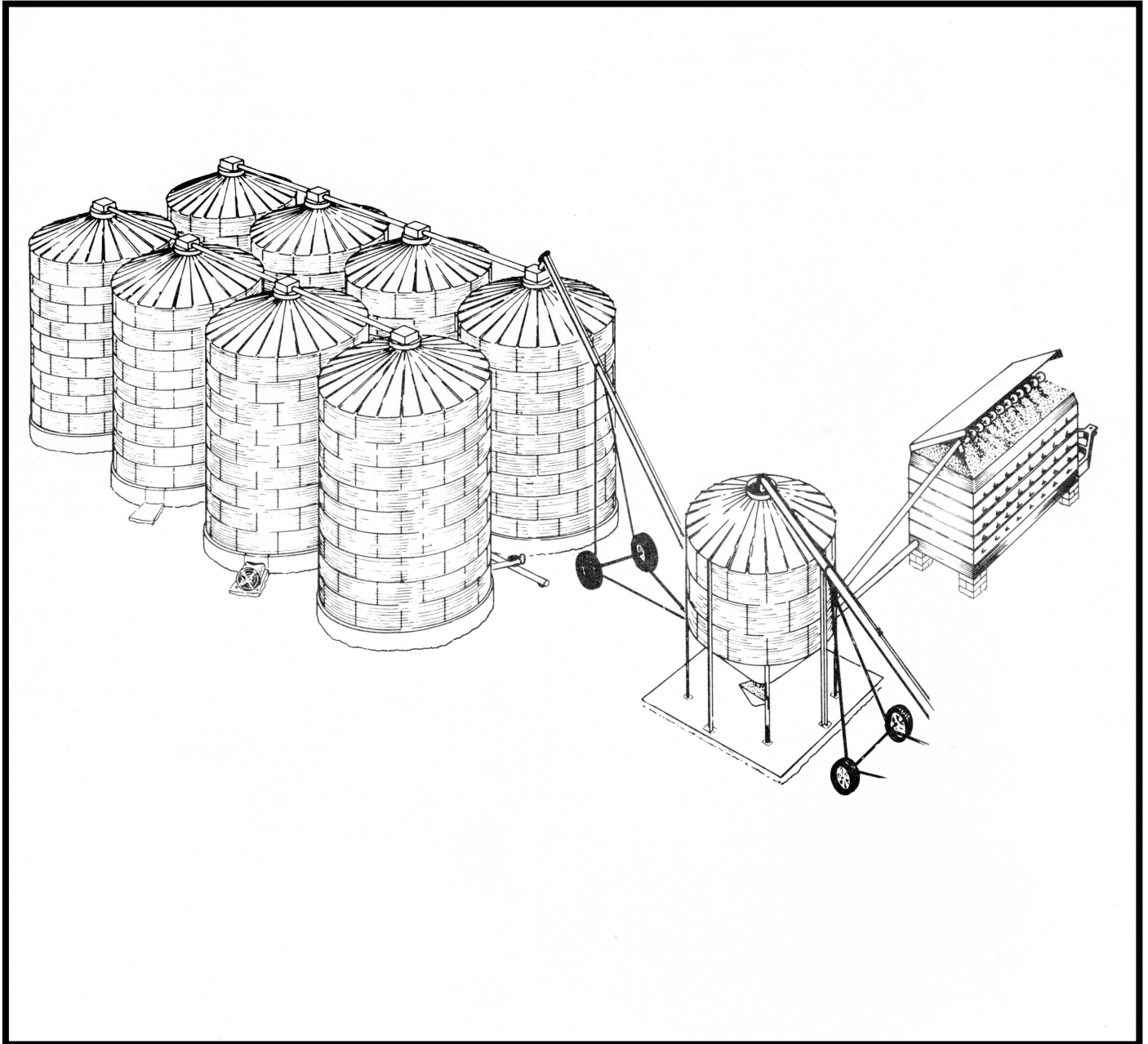




GRAIN BIN ARRANGEMENTS



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CPS

PLAN M-7134 REV. 88:10

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This plan shows several alternatives for grain bin arrangements that allow convenient transfer of grain into and out of storage. The layouts all include a heated-air grain dryer and the necessary surge bins and conveyors. The double in-line system uses a surge bin to receive either wet or dry grain coming from the field. Wet grain is transferred to a dryer and then directly into storage. Dry grain goes directly into storage from the surge bin. The system permits fast unloading of truck and minimizes auger moves.

If further development is desired, any one of four different options shown on sheet 2 may be selected. These all utilize a bucket elevator and incorporate the bins and dryer used in the original system. Either a parallel or perpendicular driveway may be selected. Overhead bins can be used for wet or dry grain surge bins, for blending, and for fast loadout. In options 4 and 5, the dryer remains in its original location and in the other two the dryer needs to be moved.

A feed mill or seed cleaning plant can be easily added to the grain handling and drying system.

Sheet 3 shows three different truck dump methods, all discharging into an above-ground bucket elevator. Layouts for overhead and ground-level surge bins are shown for use with a grain dryer. All layouts are shown with a dry surge bin, which is needed for continuous flow dryers. If a batch dryer is used, the dry surge bin and the second bucket elevator are not required.

The fourth sheet shows several layouts that do not use a bucket elevator. Two circular arrangements use augers for all the grain transfers, and one in-line arrangement uses a chain paddle conveyor. The single circular arrangement can be expanded into the double circle arrangement if sufficient space is available. These layouts are suitable for storage systems where

the bins are filled and emptied once a year. The labor and inconvenience of moving the auger for each bin is a disadvantage, but this is offset by the decreased investment required for conveyors.

The in-line layout for the chain-paddle system eliminates the need for under-floor unloading augers in the storage bins, or for augers to fill or empty the bins. There are limits on the length of chain that can be used in one system so expansion possibilities may be limited with this system.

Obtain design details for bin foundations, overhead surge bin supports, driveway retaining walls, bucket elevator and convey options, grain drying and aeration system specifications and control systems from a qualified professional engineer. Follow bin and equipment manufacturers' requirements carefully.

CPS plan M-7111 contains additional information on bin foundation designs. Plan 7821 provides details for a feed processing center that can be added to the layouts in this plan. Agriculture Canada Publication 1713, *Grain Handling on the Farm*, gives general information on vertical, inclined and horizontal conveyors and other equipment used in grain handling systems. Publication 1700, *Heated Air Grain Dryers*, contains information on various grain dryers as well as operational guidelines for safe and efficient drying. Your local provincial agricultural engineer has information on planning, construction and operation of unheated-air grain drying systems.

Grain should be stored clean and dry, and inspected periodically for hot spots, dampness or other signs of moisture migration or spoilage. Larger bins (over 100 m³) should have perforated floors to permit aeration to redistribute or remove moisture that may cause spoilage.