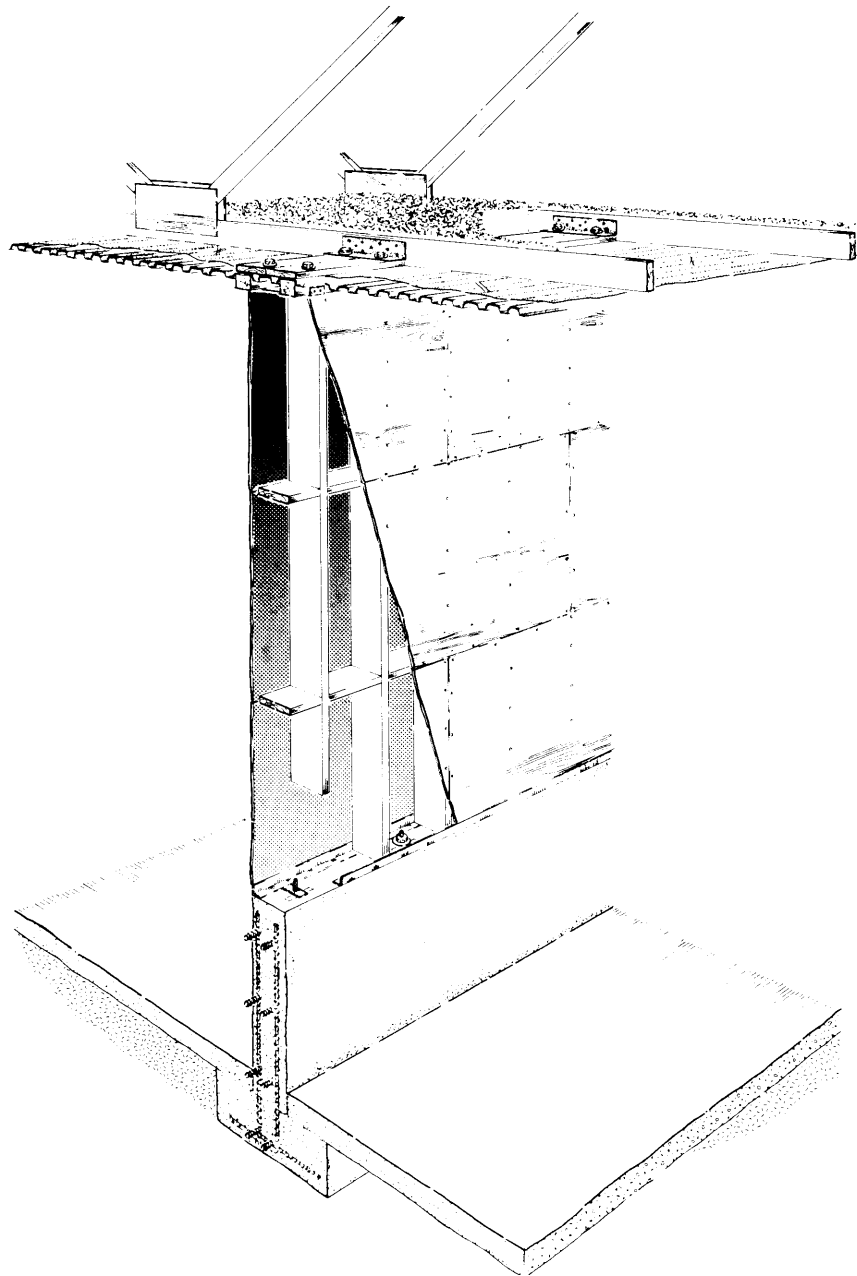


PLAN
M-6115

BULK VEGETABLE STORAGE INTERIOR WALL



The Canada Plan Service prepares detailed plans showing how to construct modern farm buildings, livestock housing systems, storages and equipment for Canadian Agriculture.

This leaflet gives management information and describes one of these detailed plans. To obtain a copy of the Canada Plan Service detailed plan, contact your local provincial agricultural engineer or extension advisor.

BULK VEGETABLE STORAGE INTERIOR WALL

PLAN M -6115 NEW 83:04

This plan gives design details for an interior wall designed to withstand loads due to the bulk storage of vegetables on either or both sides. Wood stud sizes and spacings are based on vegetables having an equivalent fluid density of 2.0 KN/m³ (typical for potatoes in wide bins). As options, the wall may support roof loads or not, but in either case it must be connected for horizontal support at the top, to either a steel or plywood diaphragm ceiling. A non-load bearing wall is one not designed to carry vertical loads from the ceiling and roof above; an example would be an interior wall in a clear-span building. A load bearing wall, however, would be required if the interior wall had to support, for example, the interior ends of half-trusses or single-slope trusses.

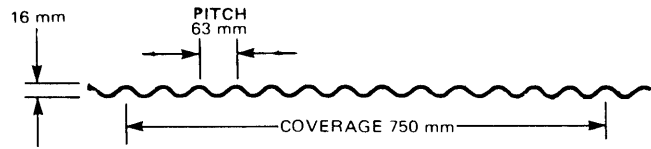
This wall consists of a wood-framed wall on top of a reinforced concrete stub wall. Vertical reinforcing in the stub wall extends into a concrete footing under the reinforced floor to resist lateral loads and prevent overturning. A welded steel anchor, continuous along the top of the stub wall, prevents the bottom of the studs from sliding off the stub wall due to storage pressures.

Galvanized steel straps (0.91 mm, or 20 gauge) are used to transfer the lateral potato pressure loads from the top of the interior wall to the bottom chords of the trusses. The strap design varies depending upon whether the wall supports the trusses or not, and upon the type of ceiling used. In the case of non-load bearing walls the top of the wall rides a slot between two timbers strapped and bolted through the ceiling and into the roof trusses. This lets the ceiling structure support the wall horizontally without allowing the wall to cause unpredicted bending in truss lower chords that were not designed for bending.

The height of the stub wall above the floor is 1075 mm (or 1.075 m), and stud sizes and spacings are given for up to 5.4 m above this. Assuming 0.6 m clear space between top of the vegetables and the ceiling, this would allow for a pile depth of almost 6 m at the wall.

The wall studs may be lined on both sides with plywood sheathing or corrugated galvanized steel. For typical corrugated roofing steel the following table gives safe storage depths and stud spacings for potatoes:

* Sheet steel thickness before galvanizing corrugated profile like this:



It is usual practice to pile potatoes and other vegetables to within 0.6 m of the ceiling. For example, from the above table, 0.38 mm (28 g.) steel could be safely used as cladding on studs spaced at 0.6 m up to a stud height of 3.2 + 0.6 = 3.8 m. from concrete stub wall to ceiling. Total design depth of potatoes for this example, including the stub wall height (as shown in plan) is about 4.3 m.

Corrugated sheet steel thickness*	Safe potato storage depth at stud spacings of	
	600 mm	400 mm
0.45 mm (26 ga.)	3.8 m	8.6 m
0.38 mm (28 ga.)	3.2 m	7.2 m