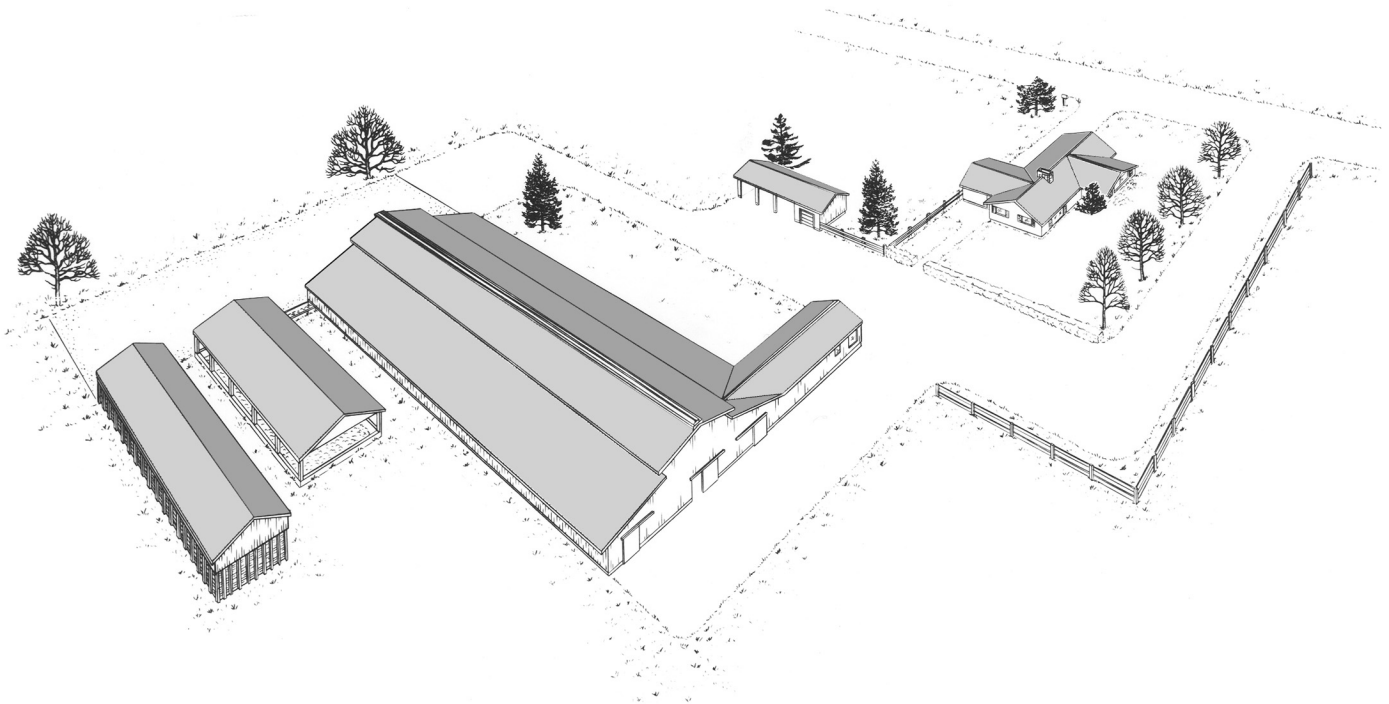


Farm Structures FACTSHEET



Order No. 305.100-1
Revised December 2015

PLAN FARM BUILDINGS AS A SYSTEM



INTRODUCTION

Mechanized confinement livestock housing facilities have played a major role in a farmer's ability to increase the size of his operation and to become more efficient.

Farm buildings are more than inert structures designed merely to shelter animals or store crops. In the true sense of the term they are "food production structures". In many cases, structures are designed to provide a completely controlled environment in terms of regulating light, air temperature, humidity, drafts and sanitation. A simple building shell will no longer do. To meet these requirements, structures must be well-built, properly heated, insulated and ventilated.

SOUND PLANNING

Rapid expansion and the trend to mechanized, confinement rearing of livestock involve large investments of capital. For example, developing milking, housing and feeding facilities for a 100-cow herd and young stock represents expenditures typically in excess of \$1,000,000. This can be one of the largest single expenditures that a producer will ever make in his lifetime.

To protect this investment and to ensure that economic value is maintained, sound long-range planning is essential. This is perhaps more true with buildings and their layouts than it is true for other components of a farming operation. As field equipment wears out or becomes obsolete, it can be readily exchanged. Cropping procedures can be altered. Buildings and their automated equipment are more permanent and difficult to change.

OLD BUILDINGS

Farmyards have tended to grow topsy-turvy as animals and capacity have increased. Over the past 80 years, using the dairy industry as an example, there have been three basic types of building construction. Each was designed to do a specific job during a particular period in time.

The first type was typically a large, rectangular building designed for ground level storage of loose hay. Cow stanchions were located around the outside on two or three sides. Then in the 1940s came the popular hip roof barn 34 to 36 feet wide designed to accommodate two rows of stanchions and storage of loose hay overhead. In the early 1960s, the advent of the free stall as a resting and sleeping area revolutionized dairy housing to the point it is today.

Each time there was a change in technology, questions arose about what to do with the old buildings. The use of existing buildings is one of the most difficult and delicate problems to overcome in the initial phases of any building expansion.

In dealing with the problem, one must appreciate that many old buildings do have useful years left. It is the manner in which they are used that is important. In many cases, if the structure is sound, it can be converted to feeding areas, replacement stock housing or equipment storage. On the other hand, if it becomes an obstacle to proper yard arrangement or traffic flow, it should be torn down. There is a natural tendency for owners to think that an old building is good for something, but sometimes it is truly only good for firewood. Time and time again, a small milk house worth \$10,000 will completely influence a whole expansion layout. The value placed on old buildings is often not as great as the inconvenience they cause.

PIECEMEAL PLANNING

Too much emphasis often gets placed on parts and pieces of a farmstead's infrastructure. A farmer may focus on the kind of loafing barn, the kind of silo, or the kind of mechanical feeder. A building is often put up just to fill an immediate need with little regard as to how it will be integrated with other components of the farmyard. Advising on the location of a silo or a milking parlour is virtually impossible to do until the whole overall plan has been worked out and any expansion plans have been considered. Piecemeal expansion can actually create a false sense of value. A farmer may think a lean-to or a new milking parlour

on the side of a 60-year-old barn is fine but when he tries to sell a potential buyer may feel the building is inflexible and not suited for expansion.

New materials and labour worth many dollars were probably spent but unless the structure and layout produce something that looks attractive and is efficient and flexible, its value may simply not be there.

PLAN SERVICE

The B.C. Ministry of Agriculture offers a limited selection of conceptual farm building plans to BC farmers and ranchers. These may be helpful to private sector engineers, building contractors and equipment suppliers as a backdrop to consulting services provided to owners intending to remodel or build new livestock housing facilities. It is at this time that a site plan and inventory of existing buildings are put together. A preliminary layout plan is usually drawn up and then discussed with the farmer. Changes and improvements are noted and the plan is further developed.

It may be helpful to engage with the applicable local government at this point to determine what additional requirements must be met with respect to permits, setbacks, and the like. Considerations with respect to neighbours should also be addressed. Two helpful factsheets in this regard are Factsheet No. 305.104-1 entitled Siting and Management of Poultry Barns and Factsheet No. 305.104-2 entitled Siting and Management of Dairy Barns and Operations.

WORKING DRAWINGS

A second important step consists of preparing working drawings. The conceptual plans and related factsheets available from the BC Ministry of Agriculture on a wide range of farm structures and accessory equipment may be helpful in carrying this out.

Plans include those on housing facilities and equipment for beef, dairy, fruit and vegetables, poultry, sheep, special structures and swine. Leaflets in catalogue form are used to illustrate and provide a detailed description of the working plans. These catalogues are located in many of the Ministry's offices throughout the province. Master copies of conceptual and working drawings are stocked in the Ministry's Abbotsford office.

100-COW HERD

As shown in Figure 1, Plan 321-20 entitled *Free Stall Dairy System – Drive Through Feed Bunk, 100 Cows and Replacements* outlines the basic concept of an average dairy herd. This is a detailed plan set for a free stall dairy barn to house, feed and milk a herd of 100 cows. Basically the plan consists of a 92-foot by 132-foot semi-clear span building with two rows of free stalls on either side of a center drive through feed alley. Use of this system of housing enables the herd to be divided into cow groups of 50 each (or other size depending on individual operation) according to size and production. Important features of this building are the feeding and manure systems.

FLEXIBILITY

The feeding system consists of a drive-through type feed alley. This allows all types of feed (green chop, silage, hay cubes and concentrates) to be delivered to the cows with a self-unloading power box or robotic feeder in amounts desired. A feed-saving tombstone feeding fence or self-locking steel fence separates the cow passages from the feed alley. A further advantage is the elimination of expensive, often troublesome feed conveyors. Robotic feed pushers are very effective in keeping a fresh supply of nutrients within reach of the animals as consistently as possible. Feed storages can also be located away from the main housing structure providing more flexibility in site selection.

MANURE HANDLING

A tractor-mounted scraper or automatically activated rope or cable driven system is used to scrape manure from cow alleys into a centrally located mechanical cross conveyor or gravity flow slurry channel. The cross conveyor or channel transfers manure from the building and delivers it to a below-ground rectangular storage or small reception pit. A pump, conveyor or elevator lifts manure from the reception pit to an above-ground storage if topographical or water table challenges do not allow for below-ground construction.

The manure storage structure consists of a concrete floor, reinforced concrete side walls and a frame type roof to eliminate snow and rainwater. A bulkhead is provided at the side or end to allow use of a tractor and front-end loader for field spreading. A tractor scrape-out unloading ramp can be installed for rapid spreader loading.

The primary advantage of handling manure in this manner is minimum equipment investment and trouble-free operation. Also, because water is not typically added, storage space requirements are reduced, making longer storage periods more economical.

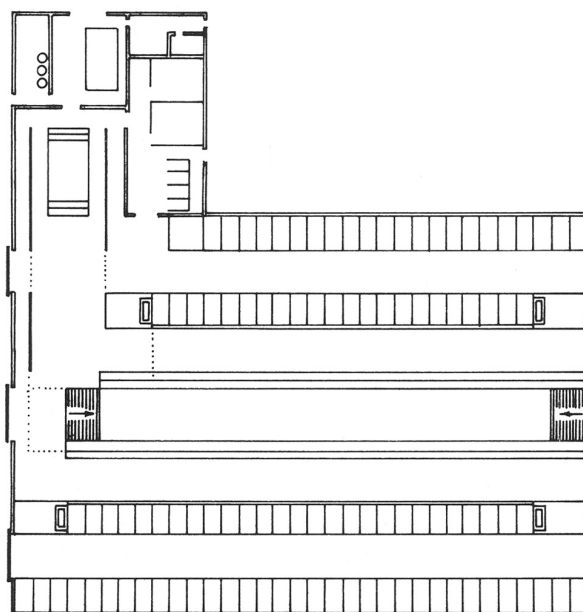


Figure 1

Dairy housing facilities for 100 milking cows and replacement stock.

FOR FURTHER INFORMATION CONTACT

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