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Dairy Facilities Newsletter

Planning A Dairy Expansion? Avoid These Common Mistakes

By Ted Gribble

When building a new dairy there are numerous mistakes we have witnessed in over 40 years of experience. Surprisingly the most common, and difficult to remedy, are made before the first yard of dirt is moved. These can be summarized as poor preparation. There are three key areas to consider when preparing to build a new dairy: Good adequate planning, developing a suitable knowledge base, and siting considerations. As a dairyman, you can set out to solve each of these on your own, or you can hire good consultants. Either way you choose, each must be properly addressed to have an efficient construction process and end up with the facility you desire. Now let's discuss these issues further:

INADEQUATE PLANNING

When designing a dairy a planner performs a variety of tasks for the dairyman—everything from calculating elevations and slopes to making recommendations on design features like ventilation, alley locations, cow traffic flow and stall dimensions. Working with a good planner should also streamline things while working through the permitting process.

Dairy planning and permitting are actually two separate tasks. You want to design your ideal dairy with permitting issues in mind. Once the overall design is settled, then set out to obtain a permit for this facility. When permitting is allowed to dictate the design the operational results are usually poor.

Ideally you should provide the planner's basic drawings and elevations to the permitting people who take it from there and work on getting your design approved (these may be the same firm, but work order should follow this course).



New parlor at Wilson Farms, Dansville, NY. The result of almost two years of planning and information development.

The cost of hiring a planner varies by firm, type of project and tasks carried out. Generally the cost of hiring a good professional planning service should be estimated at between 2% and 11% of total the project costs. On the low end of that range, you get basic layouts and designs. On the high end, you get plans, permitting, and an on-site manager for the life of the construction project.

This cost is offset in several ways. Professional planning helps you avoid poor construction decisions and oversights that can eat away at the bottom line. It also leads to more efficient use of resources. In many instances we have found that the money saved on grading costs alone, by having the new facilities tailored to the topographic conditions of the site, paid these fees.



Parlor under construction at Wilson Farms, Dansville, NY. The contractor had a complete set of plans with all major decisions made before preceeding with construction.

That was definitely the case with a recent expansion project. I was working on a large project where the owners had selected a site and had an estimate of \$1,600,000 for grading. On looking at their location I suggested moving to an alternate site nearby, the final grading expense was \$900,000 due to a more efficient configuration of the land.

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Dairymen don't always have to agree with all their planners' recommendations. One example: I advised to utilize a flush system for manure handling at a new dairy in Wisconsin. The owners, however, opted for a gravity-flow, daily-scrape system instead.

"We were concerned that it would take too much water to flush," according to the owner, Dave Meissner. "But from what we've seen now that we're up and running, it probably would have worked out. We use a lot more water to keep the parlor as clean as we want it kept. And that could have been used for flushing. It is something that we can eventually change as we go along, since Five-G designed proper slopes into our facilities." This is fine with me to have dairymen making the ultimate decisions. As a planner it is my job to ensure the dairyman understands the background information and are making choices based on sufficient knowledge of the issues.



Joe Gribble installing an Agpro Separator in Florida

Another problem can be rushing the planning process. Good planning takes, time, period. A major part of the planner's job early on is to solicit input from all interested parties—family members, prospective equipment suppliers, lenders, regulatory agencies, and so



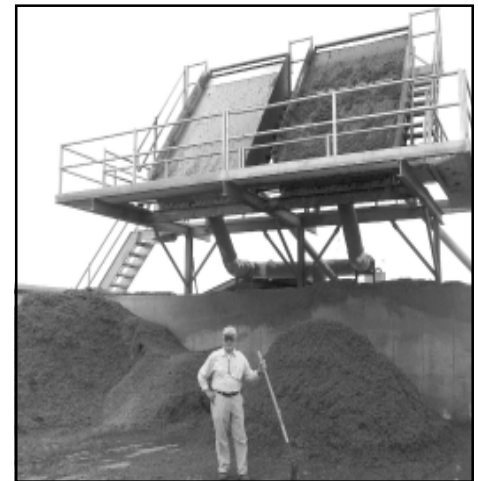
on. With that input, the planner and the producer can start piecing together current and future requirements for facilities, equipment, cattle and labor. It's not like building a house where you can operate off a standard plan. It's an ongoing process of going over ideas and mixing and matching until you come up with a layout and design that's right for that particular producer location, and the operation.

New manure pumps being installed. Owner toured at least 10 dairies before deciding on the new freestall barn and waste system layouts

MAKING DESIGNS WITH INADEQUATE KNOWLEDGE

This is also referred to as making decisions based on a "snap shot". Touring other dairies to gather design ideas for an expansion or remodeling project is certainly a worthwhile use of management time and an excellent way to gain knowledge. But you should always be a little skeptical of what you see while visiting.

For example, you might see a big settling basin for manure handling and think it's a great idea. But maybe you only looked at it for a few hours when the manure was going in. You didn't see all the weeks of work that goes into cleaning out that basin. That's not to say a settling basin won't work. But you need to look at all the angles of a particular feature and then consider how it will fit into your overall plan.



New manure Separators installed at a dairy in Georgia

With this in mind you should always be researching why something is done and how it achieves that goal. Certainly ask the farmer why he chose a system and how has it met those expectations. This goes hand-in-hand with adequate up front planning, as it is difficult to gather sufficient information to make a good decision when the cement truck is waiting to unload.

CHOOSING A DESIGN BEFORE A SITE

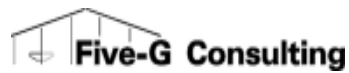
The third common problem are producers who fall in love with what they think is the “perfect” dairy layout right off the bat and then want to duplicate it on their site. Frequently they haven’t considered all the location specific issues such as terrain or climate. They end up trying to make their site into something it’s not. Often the net result is a big earth-moving bill or facility features—a steep bank on one end of the barn, for example—that they end up having to fight for the next 20 years.

A far better strategy would be to pick the right site first (i.e., a site with a good working slope, access to services and a water supply) and then develop a specific layout and design features that capitalize on what the site has to offer as well as the owner’s desires. Hand-in-hand with this mistake is dismissing an idea because “It’ll never work in our climate.” An example of this occurred recently when visiting Northern Europe to design a dairy. They had never considered flushing their parlor as an option, believing the climate too cold. It was pointed out that there is no difference between a rapid release of water with flush and using a hose for clean up in regards to freezing. A number of new dairies in the region are now flushing without freezing issues, using the same water volumes as a high volume hose, with less labor.

Each of these three issues can be readily addressed with adequate preparation before construction. Remember, the planner mentioned here may be the dairyman themselves or a hired consultant. The key is to progress through this process at a measured pace to end with the perfect dairy facility to fit all your site conditions as well as your own desires. Most dairymen have one opportunity to get this right. With a little preparation you can be certain of all your choices.

Ted Gribble of Five-G Consulting is a **Registered Agricultural Engineer** and has a **Bachelor of Architecture Structures Degree** from Texas Tech University and a **Masters Degree in Engineering Management** from Portland State University. Recently he has worked on designing dairies up to 13,000 cows, University facilities and in all climates from Saudi Arabia to Maine.

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Finishing Cow Friendly Floors

By Donald Gribble

What is the most common mistake made during construction of a dairy? Floors. Without a doubt the construction error I see most often is improper cow floor finishing. Almost always this takes the form of an excessively rough surface finish.

There are many myths and misperceptions about concrete work and floor finishes for dairies. The most common is that “fresh” concrete causes hoof problems, due to chemicals associated with hydration (or curing). While this could be true for just poured floors, after a few days this issue is gone. Most floors are weeks or months old by the time cows are present making this a non-issue.

Next comes “we will just run a steel blade or concrete block over it a few times.” This is not a good solution; there is no way to fix all the bad areas adequately before cows enter. Or worse is when I hear “after a few weeks of scraping it will be smooth anyway”. Yes, but how many hoof problems occur in that time?

Let’s face it; the best solution is to finish your floors properly in the first

Let’s face it; the best solution is to finish your floors properly in the first place. When the concrete floor finish is done you should be able to comfortably walk across it barefoot. If you can’t do this, something is wrong. Generally the best floor has a uniform, level surface (excluding entire floor slope) with a “light broom” finish for traction. For slippage protection there should be grooves ½” or less wide in this surface. There should be no protrusions or rocks above the surface. How to get this finish:

Machine: The most certain way to achieve the desired finish is with a grooving machine. In this process the floors are finished flat, without grooves providing a uniform floor with a “light broom” surface texture; this texture is also sometimes called a “wood float” finish. Shortly after pouring, 14 days or so, a specialized machine is used with diamond blades to cut grooves into the surface. These are usually ¼” wide by 3/8” deep and 4” o.c. The one problem with this process is cost, on a large facility it can become quite expensive.



Float: The second method is to use a float to form the grooves into the concrete surface while it is still wet. This can be done much cheaper than the machine method; however, care must be taken to avoid protrusions or too rough a surface. The first key here is a “V” shaped groove, this shape avoids rocks rolling up behind the float. Second is to be ready to spend some time ensuring the surface is suitable, don’t be in too big a hurry. The float method can be a cost effective solution, with proper care taken. For float grooving I recommend the

Pro-Vee grooving tool sold by Agpro, Inc. (www.agprousa.com). This is the only specialized “V” shaped grooving tool specifically for cow floors I have found.

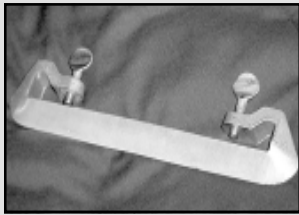


Pro-Vee Floor Groover

The Pro-Vee Groover is specially designed to quickly groove dairy cattle floors during placement in one pass

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Highlight Project



**High Plains Dairy
Harry & Margaret
DeWitt
Friona, TX**

Harry Dewitt is building a new 2,000 head freestall barn and waste processing at his High Plains Dairy. This will bring the facility up to 4500 head total. The new freestall barn has eight groups utilizing a cross ventilated configuration and sand bedding.

Waste removal is with Agpro 16" valves to flush each alley. All waste slurry is routed through a sand settling lane to a collection tank. Agpro B-Series Pumps and agitators deliver the slurry to twin Agpro S90135 MKIV Separators augmented with a movable stacker. Liquids then drain to a series of ponds to be recycled thru the flush system and ultimately applied to nearby cropland. Five-G Consulting assisted with the waste system design and Delta Livestock Construction installed all Agpro equipment



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