



## **Constructing Dairy Facilities:**

*Tips for producers as they look for and work with a contractor*

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Construction of a new dairy facility or expansion of an existing one requires a tremendous amount of time and effort. Many considerations need to be made long before construction ever begins. Dairy producers should consult with several individuals during the planning stage with the goal of making the actual construction progress as smooth as possible. But what exactly needs to be considered when producers are in the process of hiring a contractor? We'll look at a few of the issues here.

### **Structural Design**

First, who is designing the structure? New dairy facilities are integrated, complex structures that can be massive in size. Consequently, they need to be adequate both functionally and structurally. Functional design is the process of designing the facility so it will function effectively and efficiently. For the most part, this is being accomplished at an acceptable level.

Structural design, the process of engineering a building so it will withstand the loads imposed on it, is not always performed correctly, and many times not at all in agricultural construction. Producers are continuously designing feed rations for their cows but seldom insist that their facilities be properly designed. If the feed ration fails, their cows fall short of target production levels. If their barn fails, people and cows can be injured or killed and their cows have no place to consume a well balanced and mixed feed ration.

Does the contractor you are hiring have the means to accomplish design in-house or will it be obtained through services provided by a consulting engineer? Are the basic snow, wind, and live loads that are used during the design correct for your area? Are they being applied correctly during design? Did you make the designer aware of all possible dead loads (loads that are always present) that you intend to add to the building after it is constructed and did he/she account for them? Hanging an auger or conveyor system from the center of the truss substantially increases the stresses in the truss system and needs to be accounted for during design.



### **Apples to Apples Bidding**

Are the bids you are receiving based on the same identical building? Are they based on structural designs suitable to your geographic area? Are the same quality lumber, fasteners, concrete, tile, lights, wiring, and plumbing fixtures being used? Are the freestalls constructed to the same dimensions, using the same materials, and employing the same resting surface? How about the curtain walls? Are they the same? The list goes on and on and on... If the answer is no to any of these or other questions, then you aren't getting apples to apples bids. Small discrepancies probably will not effect pricing significantly but large variations can cause major price swings.

What is the best way to overcome this? Provide a set of engineered plans and specifications to potential bidders. While this may not be entirely reasonable for a small project, it makes total sense when constructing large barns, milking centers, etc. Costs to have this accomplished vary, but can be usually be had for 1 to 4 percent of the job (as the size of the project increases, the cost decreases). This expenditure can be easily recovered down the road by limiting the amount of contractual change orders (yes, each job should have a signed contract). Changes in the scope of work after a contract is signed is the best way for contractors to increase their profits. It is in the producer's best interest to minimize the number of contractual changes, which should never exceed 10% of the job. Don't decide to change the number of light fixtures to be mounted in the milking center after the electrician has partially wired them and is unhappy because he just found out that he is losing money on the project.

### **General Contractor**

Who is going to act as the general contractor? For any construction project that requires the services of more than one construction trade, there needs to be an individual in charge of the entire project. This person in charge is called the general contractor (GC). The GC is responsible for hiring (and firing), coordinating, scheduling, and sometimes inspecting work performed. So, the producer needs to determine whether he/she wants to act as the GC or hire someone else to perform this service. A producer can save considerably if he/she acts as the GC, but there is also a potential to loose substantial amounts of money if he/she doesn't know the first thing about construction contracting. For larger, highly involved projects, the producer is usually better off paying for this service and sticking to what dairy producers do best, unless they happen to have the experience, time, and resources to perform this task.

I talked to a managing partner of a large dairy facility in Michigan recently. He was at the tail end of constructing a new 1,000 cow dairy facility, and had acted as his own GC. I asked him what he thought about performing this role and how much time it took from his day. He responded that it took a lot more time than he



had anticipated, and that he would have gone under if his wife hadn't quit her off-the-farm job and taken over some of his responsibilities.

A hired GC may perform some of the construction with his/her own crews or subcontract the entire job. In the case of a hired GC, this person is the sole contact point with the producer. The GC represents all of the trades that are hired for the project.

### **Insurance**

Insurance is always a question that needs to be addressed before construction begins. Does the contractor have liability insurance? During construction of a milking center in Maryland, a new 2,500 gallon bulk tank was damaged when workers were constructing the bulk head wall around the tank. In this case, the contractor had the proper insurance to cover replacement of the tank.

Are all employees covered by accidental insurance? Unfortunately, permanent injury or loss of life of a worker is a possibility during any construction project, and everyone needs adequate coverage.

Who has insurance on the building before it is completed? Last year, a freestall barn under construction in the northeast failed during a windstorm before it was finished. Neither the contractor, the pre-engineered building supplier, nor the owner had any insurance coverage. This opens up a whole can of worms. Who should have been insuring the building? Why did the building fail? Was construction bracing properly used during construction?

Complete information on obtaining bid document preparation services, dealing with contractors, and managing construction projects can be obtained from the publications developed by the Natural Resource, Agriculture, and Engineering Service. They can be reached by phone at (607) 255-7654 or by the world wide web at [www.nraes.org](http://www.nraes.org). A list of qualified individuals to assist in many of the areas discussed in this paper can be obtained from the Dairy Practices Council. They can be reached by phone at (802) 476-3092 or by the world wide web at [www.dairyperc.org](http://www.dairyperc.org). Ask for guide number 5.