



GEA Cow Flow Guide

You're free to choose the cow traffic option that fits your herd

- Free-Flow
- Semi-Guided Flow
- Guided-Flow

Free-Flow Cow Traffic

In free-flow traffic barns, cows are able to enter the robots to be milked whenever they choose. There are no sort gates, one-way gates or barriers around the robots or in the barn. Rather, they are “free” to roam. They have free choice to water, free choice to feed, and the free choice to lay down whenever they please. Animals can enter the robot as many times as they desire, but are only milked when they are allowed. Sorting can still be an option in a pass-through or L-type configuration to a separate area if desired.

This cow flow system is generally the least expensive installation in terms of equipment. The free-flow system is also typically the simplest way to set up an existing facility with very little modification to the structure.

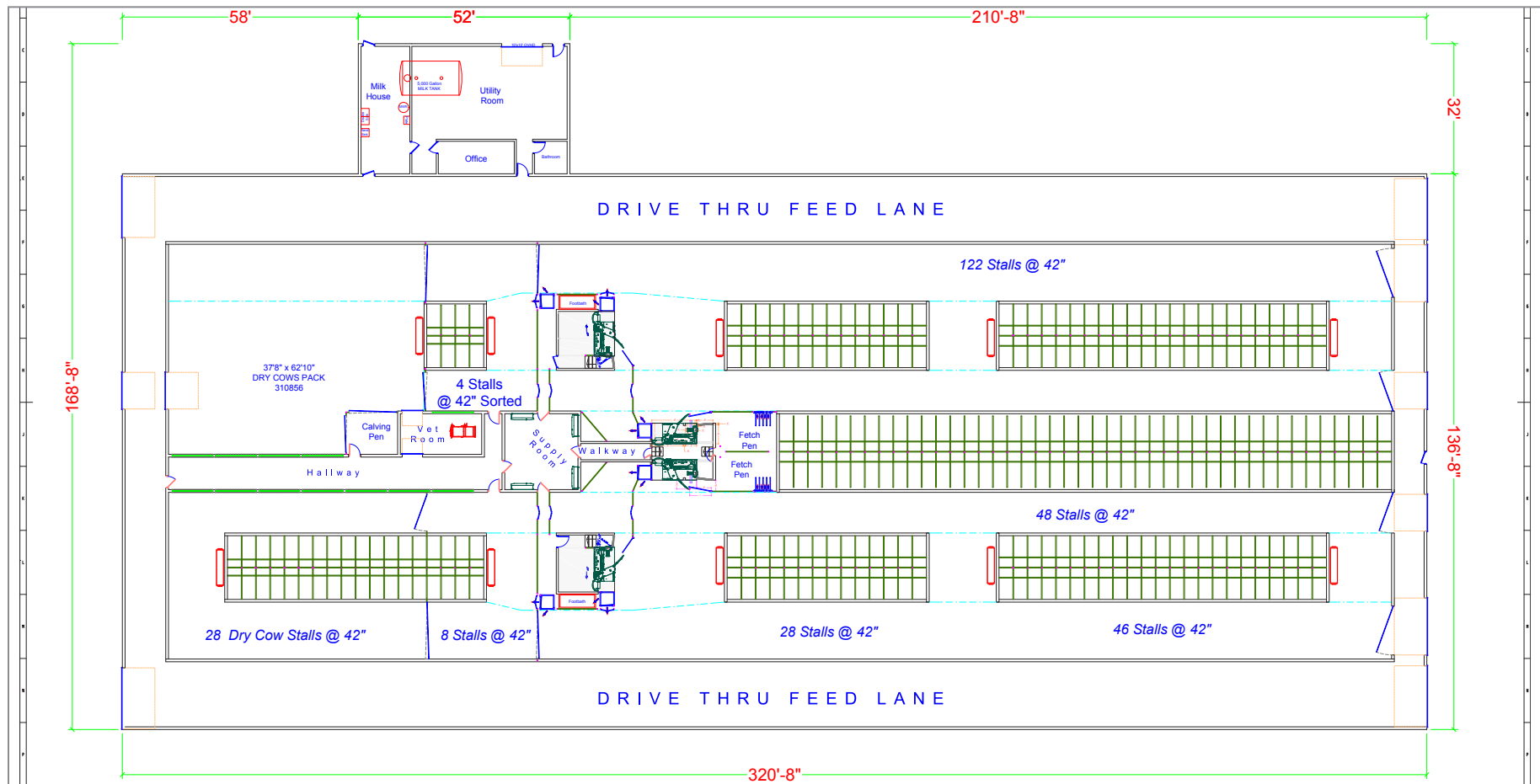
In general, fetch rates on free-flow barns are usually higher, but milk per cow has been shown to be slightly greater than a guided-flow type of barn. Passing visits or refusals

will be higher in these barns, as animals have the opportunity to enter the robot as often as they please (but will not be milked until they are allowed). Cows later in lactation that do not have the drive to enter the robot will not go as often and won't be sorted to the robot, forcing them to be milked. These animals will need to be fetched by the dairyman. Producers will also spend more time out with the cows than on a computer. They will use the herd management software to discover cows that need attention (breed, sick, etc.). Then, the producer will need to physically go find the cow and sort her to the area where he/she can complete the necessary management task.

Nutrition is one of the most important factors regardless of traffic style. With a free-flow system, nutrition is important for the number of visits you can achieve.

When the ration provided is not aligned with your herd, or doesn't contain high quality ingredients, cows won't be “driven” to enter the robot as quickly.

The amount of concentrate fed is usually higher in free-flow systems, to help ensure animals are in fact, “driven” to the robot to be milked. If concentrate is off or the ration is off balance, cows may not enter the robot voluntarily. Visits per day and milk per cow per day can decrease. It should also be noted that cows that become lazy and do not enter the robot won't be forced to enter the robot area as they would in a guided-flow system.



Please note: Every dairy facility design is unique and herd management practices can vary widely, along with herd characteristics and behaviors. The information in this guide is in general terms and based on averages. Always consult with your local GEA representative for guidelines and recommendations regarding your specific operation.

Semi-Guided Flow Cow Traffic

As its name would suggest, semi-guided flow is a mix between a free-flow and a guided-flow barn, taking the best of both types and meshing them into one. A semi-guided barn has one sort gate off the holding area outside the robots. Animals may enter the area around the robots whenever they please, but may only exit the area if they meet one of the following parameters: (1) have been milked completely, (2) have not met expected milk interval and are free to go back to the barn, (3) have not had over 2-3 consecutive incomplete milkings, or (4) are not being sorted into a special needs pen. In the event that a cow has three incomplete milkings in a row, the cow will be sorted to a side pen where she can eat, drink and lay down until the producer can determine the issue as to why she does not milk-out completely.

Cows outside the holding area are free to eat, drink water, and rest whenever they please. The sort gate simply aids in reducing the number of fetch cows, as cows that need to

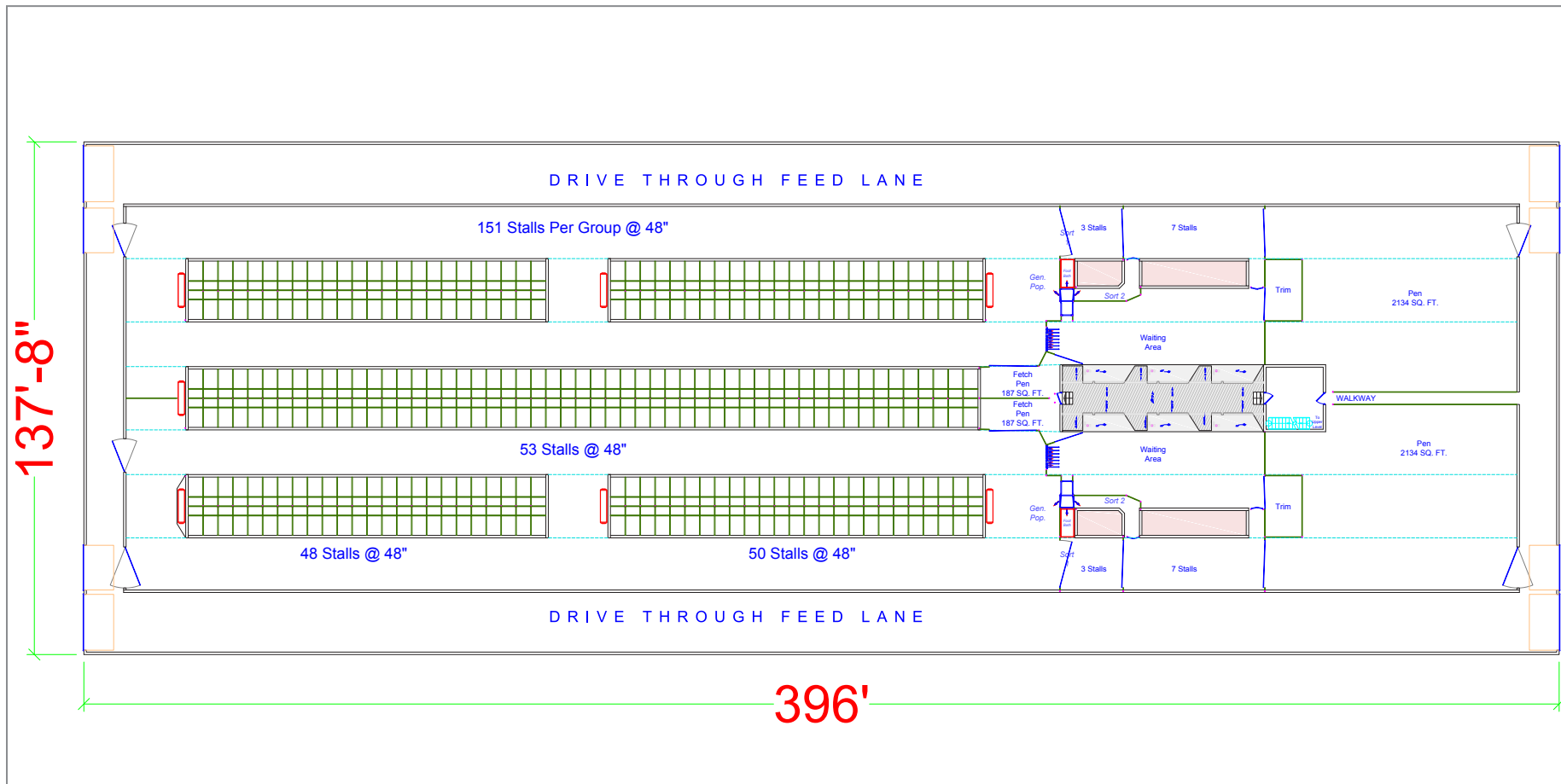
be milked are not allowed out of the waiting area until they get milked completely. Then animals are free to go back to the barn.

These systems include more equipment than a free-flow barn, but typically not as much as a guided-flow barn. One sort gate is required, with gating around the holding area. The biggest advantage of this system is a clearly defined sorting or special needs area for cows to be near the robot, similar to guided-flow barns, but still with the free-flow ability in the cow resting and eating areas.

The amount of fetch cows in a semi-guided barn may vary. Animals that never enter the waiting area will need to be fetched to be milked. However, animals that do enter the waiting area will only be allowed to leave after they have been milked completely or if not allowed to milk. Theoretically, fetch cows will be less than a free-flow but more than a guided flow. Also, a key difference between

a semi-guided flow and a free-flow barn, is that the fetch pen is always in use in a semi-guided, whereas in a free-flow, the fetch pen is only used when the dairyman fetches cows. Cows in the semi-guided system are still able to eat, drink and lay down whenever they please when they are outside the holding area. They do not need to enter the sort gate to eat or be milked each time. It should be noted, that producers need to ensure animals don't enter the holding area, and then don't enter the robot for an extended period of time. Animals shouldn't stand in the waiting area for more than 1-2 hours.

Nutrition is still an important factor in semi-guided barns as you want to drive cows to enter the waiting area to be milked multiple times a day. With the same concept as a free-flow barn, driving the cows to the robot will be essential in lowering the amount of fetch cows. Cows that are lazy and do not enter the robot, won't be required to enter the robot in order to eat at the bunk as they would in a guided-flow barn.



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Guided-Flow Cow Traffic

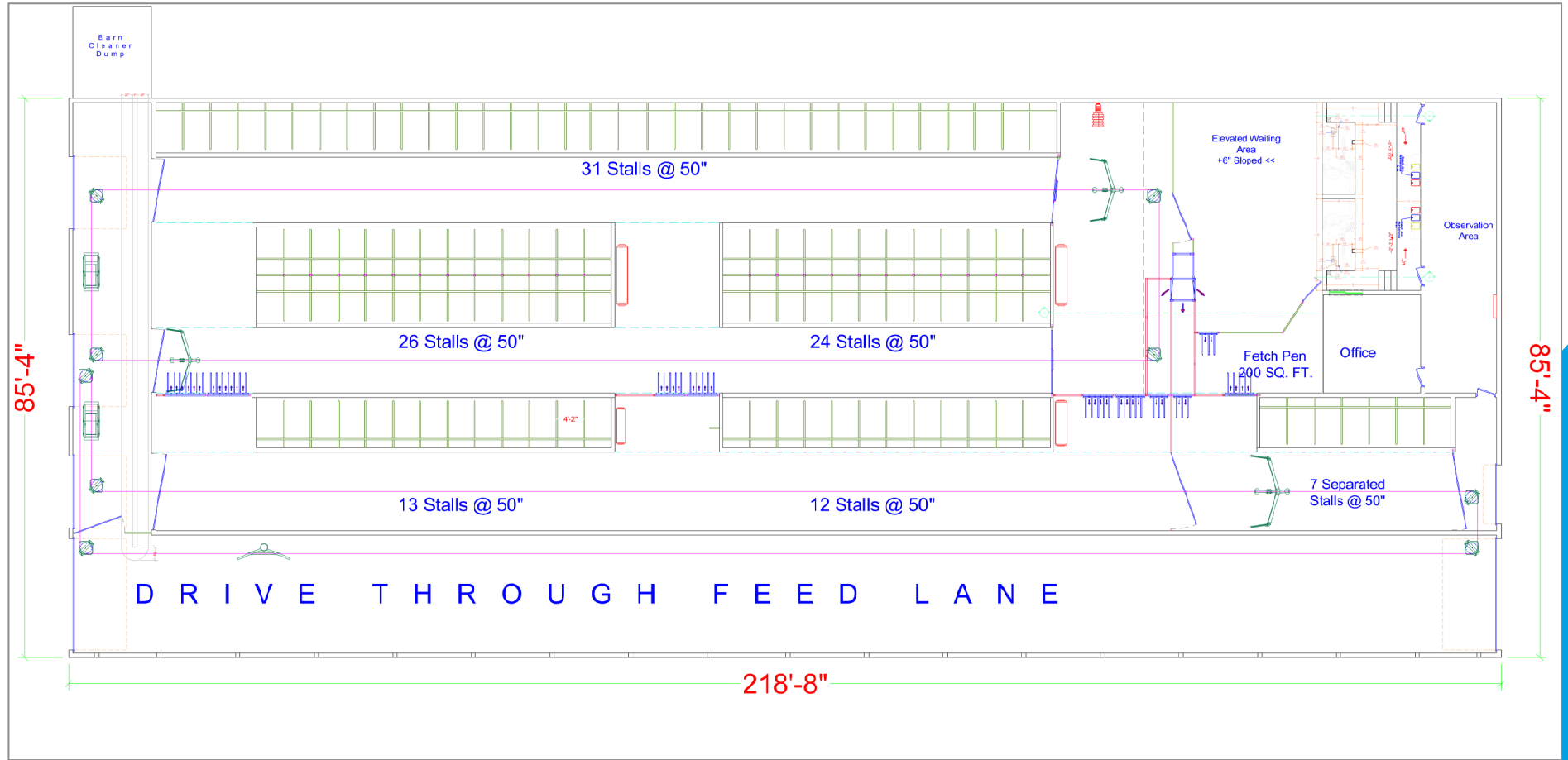
Guided-flow uses the concept of a sort gate to direct cows to the area in which they need to be for the least amount of physical management for the dairy producer and the least amount of theoretical fetch cows as possible. Cows have three defined areas in the barn: (1) the milking area, (2) the eating area and (3) the resting area. These areas have a clear separation with either one way gates or a sort gate with I.D. Cows in the resting or stall area need to travel through a sort gate to get to the feed bunk at any time. When cows are within the interval in which they need to be milked, they are directed to the waiting area. They won't be allowed to exit the waiting area until they have milked completely. In the event that a cow has three incomplete milkings in a row, the cow will be sorted to a special needs pen where she can eat, drink and lay down until the producer can determine the issue as to why she does not milk-out completely. Animals that are not eligible to be milked can be directed to the feeding area where the

cows can eat. When cows want to leave the feeding area, they walk through one way gates to the resting area where the freestalls or bed packs are located. The system creates a circular pattern in the barn to travel from area to area. This system as well as semi-guided also allows the creation of a nice sorting and special needs area to house special needs cows.

Guided-flow barns have the highest start-up cost with more gating/routing than a semi-guided or free-flow system. Cows must also pass through the sort gate multiple times each day, requiring excellent cow movement systems. Cow-flow is key. Cows must be moving through the sort gate at a minimum of 9-14 times each day. Without this flow, animals will not eat enough meals in a day, resulting in slug feeding. Animals must be closely monitored to ensure they are eating at the bunk enough times each day, thus they are entering the sort gate enough times each

day. Cows that only enter the sort gate 2-3 times a day, are theoretically only eating 2-3 times a day. This will result in the slug feeding mentioned previously, and cows will not receive enough feed to support the higher production seen with cows that eat more meals periodically within a day. Thus, herd management is a critical part of the success of these types of barns.

Nutrition and diet in the guided flow barns is still very important but usually more forgiving than in free-flow barns and allows for greater flexibility in feedstuffs. The feeding rates in the robot are also 2-6 lbs. less on average versus the free- or semi-guided type of barns, giving some reduction in purchase feed costs compared to other types of systems.



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