

Build the Ideal Barn

Picture your ideal barn. If money were no object and you could have every amenity you desired, what kind of barn and barn amenities would you have?

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If we could throw the budget out the window and either refurbish our old barn or build a new one for which no expense was spared, we would have the most beautiful—and practical—ideal barn (and barn amenities) we could ever hope for. It would be an architectural marvel and a model of efficiency.

It would be cool in the summer, warm in the winter, and clean, airy and comfortable for our animals.

It would be the kind of ideal barn we would enjoy spending a lot of time in and be proud of.

Of course, not everyone shares the same wants and desires in an ideal barn.

The characteristics and barn amenities that comprise the ideal barn depend not only on the type of animals we have, but also on what we do with those animals, plus our personal preferences, location and size of operation.

The wish list of a professional horseperson is going to be very different from that of the hobby farmer raising dairy goats or cows.

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Installed lazy Susan feeders that rotate out and in save time during feeding time. There will be, however, many similar characteristics. Whether your barn is for horses, dairy animals or a variety of other livestock, here are some features and amenities that will define it as "ideal."

An Ideal Barn Needs an Ideal Setting

Where the ideal barn is located is just as important as its size, style and function. If you're considering building a new barn, the site should be chosen carefully.

Consider factors such as ease of access for large and small farm equipment. If you plan on storing enough hay to last you through the winter, you will want to make certain that vehicles can access the barn. You also need to consider drainage, water runoff, exposure to the elements and room for possible future expansion.

If you envision your herd of 10 someday doubling or tripling in size, plan your site so that you can add on to your barn in the future. Situating the structure so that it takes advantage of available light, shade and breezes will aid in year-round temperature control.

Because building a new barn is a major construction project, you will want to enlist the services of an architect, site planner or barn manufacturer that also offers site planning with their services.

Site preparation, including how the foundation is laid and how plumbing, electrical and water lines are installed, directly affects how the building itself will perform over the years.

For this reason, many reputable manufacturers of prefabricated barns are also general contractors who manage the entire project. If the barn will be used for a dairy business, then not only will local building codes need to be met, but state and USDA requirements, as well.

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Enlist the services of an architect or barn manufacturer who also offers site planning for your barn project. The planning stage of a new barn is an ideal time to seriously consider solar power. Though solar power is thought to be more expensive initially, it might be a more viable option than running power lines over long distances. And even if solar energy is more expensive to install, it will pay for itself over time in saved energy costs.

Solar energy can be used to heat both water and your barn during cold winter weather without the substantial heating bills. Active solar heating systems, which utilize heat boxes and fans, warm the air. Passive solar designs, where the barn is designed to take advantage of the sun automatically, are often the most cost-effective approach. Solar collectors can save hundreds of dollars per year if used in place of electric or propane water heaters.

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The Ultimate Barn from the Inside Out

Whether you intend to build a new barn that will house horses, cattle, goats or other animals now or in the future, or if you have an existing barn that you want to upgrade, the best way to “build” a barn is to start with the animals’ accommodations and work your way out from there. For horses, the standard-size box stall is 12 feet by 12 feet.

Stallion and broodmare stalls are typically 12 feet by 24 feet. Although older barns may have smaller stalls or even tie stalls, it’s rare to find them smaller than these dimensions in new construction.

Goats are happiest in loafing sheds. “One of the things we struggle with in the Northwest is moisture,” says Joan Schleh, who raises dairy goats at Garden Home Farm in Mt. Vernon, Wash. “It’s in the air, in the ground, everywhere and goats don’t like being wet. They need an area inside where they can stay dry and move around at will.”

Schleh recommends a large loafing shed. “This is a must because it can rain here for three weeks straight,” she says.

Although dairy cattle are rarely kept indoors, stalls still come in handy for sick or injured animals; tie stalls are handy, as well. However, when constructing any type of confine for cows, it’s important to keep in mind that the accommodations must be strong enough to withstand the stress from an animal that can weigh more than half a ton.

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Natural light, via skylights, is a valuable asset for any barn. Barnmaster, Inc., a manufacturer of free-span buildings and barns based in Lakeside, Calif., utilizes four-foot grids for constructing barn interiors. “Most [of our] cattle barns are designed using our buildings, and then the independent dealers can go in and customize the interior,” says Barnmaster

Vice President of Sales Cheryl Spangler.

“This gives more options; the barn owner can create the barn they want and because the dealers are licensed contractors, they put the whole project together.”

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Options for Stall Walls

Options for stall walls include hand-constructed wood or block. A variety of manufacturers make ready-to-install stall walls made of wood, prefabricated steel or steel-framed with wood. Options range from simple to decorative. The walls dividing the stalls can be either solid so that animals don't have contact with each other or a combination of a solid partition on the lower half of the stall with bars or a grill across the top half.

Barnmaster offers a unique product called a rolling wall, which is popular among owners of small farms who want to maximize the space they have.

“The rolling wall converts two stalls into one,” Spangler explains. “The divider wall between two stalls rolls up against the next divider wall.”

The ideal stall front is one that is an open grill from top to bottom. This greatly increases airflow in the stall and allows urine vapors to dissipate. It also gives the barn owner the ability to see into the stall from any vantage point; the animal inside can be viewed without having to actually look over the top of the stall door. The door should be wide enough to allow large animals to comfortably pass through, as well as allow you to get a utility cart into the stall to clean it.

An important consideration for the barn's surface is the ability to keep it clean. For areas where animals pass, such as aisles, concrete is ideal because it can be hosed off. The best surface for the areas where animals are kept is a compacted surface designed to drain well.

Matt Millerborg, the construction manager at Morton Buildings, Inc., in the McKinney, Texas, office, recommends a base of crushed limestone screening. “It packs tight, but drains well,” he says. “It remains porous and I've had rock specialists tell me that limestone is a natural disinfectant that helps keep odors down.”

Straw or shavings can be put down as bedding, but rubber mats can also be added to protect the surface from pawing and to give your animal's legs added cushioning. Interlocking mats provide maximum protection; the interlocking feature prevents animals from pulling up or shifting the mats.

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More for the List ... from Ventilation to Video

The ideal barn will also have: Ample ventilation for the animals, either in the form of an open ceiling, a Dutch or sliding door that opens out to a paddock, run or pasture, or windows. In hot and humid climates, ceiling or wall-mount fans provide additional airflow.

“A barn should have a high-pitched roof, vented eaves, cupolas or ridges, be well insulated and ‘breathe’ as well as it can,” Millerborg recommends.

Sufficient artificial and natural light via skylights, windows and wide doors. Lights operated on a timer will allow you to regulate them if you are breeding or showing and will save you trips to the barn late at night to turn them off before bed.

Automatic waterers. They will save you hours spent filling empty and spilled buckets, and ensure that your animals always have access to fresh water. If you live in a region where plumbing has the potential to freeze, pipes should be installed below the permafrost layer in the ground and well-insulated above ground. Automatic waterers are also available with convection heaters to prevent freezing. However, some horse owners are reluctant to use automatic waterers as they prevent monitoring the horse's intake of water.

Feeders that you can access from outside the stall. Tim and Cindy Harris of Harris Paint Horses in Federalsburg, Md., installed lazy Susan feeders that rotate out to be filled with hay and grain and then rotated back into the stall. With 45 horses to feed twice a day, this saves the Harrises considerable time at every feeding. After the horses finish their feed, the Harrises turn the feeders back out into the aisle and restock them for the morning feeding; they just rotate them back into the stall in the morning. While you may not need to go to this extreme if you have only a few animals to feed each

day, the bigger your herd, the more these time-saving devices will appeal to you.

A video surveillance system to monitor your animals, including mothers-to-be. With today's technology, it's possible to wire your entire barn with a video, audio or intercom system, or even wireless Internet service, if that's what you want. Being able to monitor your animals from the comfort of your home is convenient and it will spare you many long nights sitting up waiting in the barn for your mare to foal or doe to kid.

Electrical outlets located where they are easily accessible (i.e., outside each stall and tackroom).

A wash bay designed to drain properly without clogging, preferably via French drain, with an overhead rotating arm for the hose. Having the hose mounted overhead will keep your wash bay looking neat and prevent your horse or cow from getting tangled in it. Cross ties will allow you to work around your animal without getting wedged in a corner. A wall-mounted organizer to store shampoos and other bathing supplies, and tack hooks and rods for washing and drying equipment, are convenient additions. If the floor is poured, smooth concrete, install rubber mats. Roughed-out concrete does not require mats.

An on-demand, or "tankless," water heater offers an unlimited supply of hot water without the cost associated with a traditional water heater: it doesn't store hot water. Instead, water is circulated through a series of coils that heat the water as it passes through.

Although tankless heaters cost more than most conventional water heaters, they are less expensive to operate because they don't require energy to maintain a large tank of hot water 24 hours a day. For small operations, such as Schleh's, compact water heaters are handy.

"We have a sink in our milking parlor complete with a water heater that heats up the water for that one sink," she says. "We use this for cleaning the goat's udders and teats before milking."

An automatic insect spray system is something you might want to consider if you have a large number of animals that spend time indoors. Although an automatic insect control system may help protect you and your animals against West Nile virus, there are other, less-invasive options available. High-volume fans work well to not only increase airflow, but also to reduce flies and other insects.

Schleh has found that chickens work well at her farm. "They roam the fields with the goats and they do a great job of breaking down the goat manure looking for grain, so the flies don't have a chance to lay eggs on them," she says. "As a result, we don't have a big fly problem in the parlor that we might otherwise have." Schleh advises against using any spray pesticides around dairy animals. "Any chemical is going to affect your animals and the quality of their milk," she says.

A water misting system will help keep you and your animals cool in hot, dry climates, particularly in the Southwest. The system serves double duty by increasing airflow and reducing flies.

For horse owners, a dedicated grooming area close to your tack room and wide enough to work around your horse, with cross ties, electrical outlets for clippers and vacuums and rubber mats on the floor. A cabinet or shelves to store brushes and grooming equipment within easy reach but out of the way of the horse is a convenient addition.

Barnmaster offers a unique feature called a pivoting wall that rotates 180 degrees. The walls can be fitted with saddle racks, shelves and storage cabinets. When not in use, the wall can be rotated into the tack or storage area, which can be locked. During use, it can be rotated out, thus making access to these items much more convenient.

With any livestock, you will want a tack room or storage area that's well lit and climate-controlled. It should also be insulated to protect your leather goods and equipment from dust and moisture. The ideal equine tack room will be appointed with wall-mounted bridle hooks and saddle racks, plus additional hooks, racks and storage compartments. There are many companies that manufacture fixtures and barn amenities for tack rooms.

The ideal barn for any breed of animal will have a dedicated feed room separate from your tack room, equipment storage area and hay storage area. The feed room should be enclosed to keep critters out and temperature controlled to protect feed from spoilage. Open feed should be stored in secure containers. The ideal feed room will also be brightly lit and include dry storage cabinets for medicines and supplies, a refrigerator, a sink with hot and cold water and ample counter space.

Every great barn is better with a bathroom. Whether you're building new or modifying an existing barn, consider installing a bathroom with a composting or incinerating toilet. Although an incinerating toilet requires electricity, it doesn't require plumbing, water or drains. Composting toilets produce an end-product that can be used as a soil additive in ornamental gardens. They require little or no water and no sewage system. Individuals who want to add the convenience of a bathroom to their barn without the cost and construction of water mains, sewer lines or a septic system should consider these options.

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Ideal Dairy Barn

Schleh describes her ideal dairy barn as one that has everything under one roof. "I would have my animals all on one side and I would be able to walk across the aisleway to my milking parlor, feed room and bottling room," she says. "I would even have a small space for a little farm store." Though her farm was once an ostrich farm and the various facilities are under separate roofs, her milking parlor is ideal for an operation of her size.

"We have cement floors and washable walls," she says. "The goats go in one door to be milked and out another."

One handy feature that Schleh added was a "porch" with a stand and stanchion, where she can wash her goats before bringing them into the parlor, thus helping to keep it clean.

"We wash their feet when they come in from the field so they don't track mud into the parlor," she says, "and we wash their udders before milking. We're milking 11 goats, so we clean one at a time and milk two at a time in rotation."

If her operation were larger, Schleh's wish list would include an inline system that would move the milk directly into the cooling tank. But for a dairy business of her size, her portable milking system works well.

An ideal milking area will include stations that allow for easy movement of the animals in and out of the area, and convenient access to milking equipment and storage containers. For goats, an elevated milking station, such as Schleh's, permits easier milking. The area should be well lit, with concrete floors that can be hosed out after each use. The milking area should be enclosed to protect milk from dust and flies. The milk house should be equipped with a deep, double sink with hot and cold water, a refrigeration area and sufficient counter space.

Kay Craig, who with her husband owns and manages Grassway Family Dairy Farm, a certified organic dairy farm in New Holstein, Wis., opted out of their old dairy barn and built a new milking parlor in 1996.

"The [parlor] concept has really become popular in the last 20 years," says Craig. "The cows move; we stand still." The Craig's parlor is comprised of bays in which they can milk about 15 cows at a time; 100 an hour—their entire herd. The milkers stand about three to four feet below the cows, which come in, are milked and then move out. It's ideal in terms of efficiency.

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Ideal Barn Style

How barn stalls are configured depends primarily on where you live. In the hot, arid states of the Southwest, open-air barns, also called Malibu barns or mare motels, are popular because they offer maximum ventilation and protection from the hot sun. In regions where protecting animals from the elements is important, breezeway barns that can be closed during harsh weather and cold temperatures are preferred.

These barns are typically gable or gambrel style, with or without a raised center aisle for increased ventilation. A 12-foot wide aisleway with double sliding doors at each end provides ample room to move animals around and drive vehicles and other farm equipment into the barn. Other styles of barns, such as the shed row and courtyard style, also have both aesthetic and functional features.

In addition to housing your animals, the ideal barn will also provide ample storage for equipment and utility vehicles, tractors and implements, livestock trailers and even RVs. You will also want a hay storage area that's at least partially enclosed.

Additional amenities to consider including are a dump station that's tapped into your sewer line or septic system for your RV or horse trailer with living quarters, a wash bay for washing farm equipment and vehicles, shavings storage and a workshop.

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Ideal Barn Prices

Regardless of the type of structure you're interested in, building a new barn is a significant investment. Cost varies considerably depending on the size, style, type of construction materials used and amenities added. The most inexpensive type of barn is one that has all-steel construction. While costs vary based on manufacturer and location, all-steel buildings start at a base cost of \$12 to \$18 per square foot. For prefabricated barns that are constructed on-site, prices start at about \$25 per square foot, including labor.

"Because Morton offers so many extras, that price can go up to \$50 to \$70 per square foot for a barn with all the amenities," Millerborg says. "I've worked on horse barns that have exceeded \$100 per square foot when they include living quarters and offices."

Although prices vary slightly across the country, Millerborg says that consumers can expect comparable prices except on the West Coast, where prices are higher. Although the cost of steel has increased nationwide within the past two years, thus increasing the cost of steel barns, they still typically cost less than traditional wood construction. You can expect to pay 20 percent more for a timber barn than you would for a steel barn. Barns that combine wood frames with prefabricated materials are comparable to the cost of standard-construction barns. The cost of remodeling or refurbishing an existing barn depends on the condition of the current barn and how extensive the modifications are.

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You Did It! From Idea ... to Ideal

The sun is just coming up as you make your way to the barn and flick on the lights. Your animals greet you with friendly voices and a clattering of buckets in anticipation of the morning feeding. Your barn smells sweet, clean and new. Circulating fans hum overhead. You put a lot of work into making your barn ideal for both you and your animals. Now it's time to enjoy it.

For even more ideas for the ideal barn, read "Building a Better Barn."

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