

AMAZING BARN

This page: Riverlands, a dressage-training facility in Pemberton, British Columbia, has two constantly flowing streams on the property. Riverlands uses hydroelectricity to power the entire facility and sells the excess to the local power company.

Opposite: Three barns in (top to bottom) Kentucky, South Carolina, and Montana.



Let There Be Light

BARN DESIGN IS BOTH AN ART AND A SCIENCE. AMERICA'S TOP EQUESTRIAN ARCHITECTS AND DESIGNERS SHARE THEIR SECRETS.

At EQ magazine, we regularly visit some amazing equestrian facilities. They range from traditional New England farms to over-the-top luxury structures that would be called mansions if they were homes for people rather than horses.

But looking at barn design beyond the impressive beauty, quality finishes, solar panels, and brass ball finials, there is science as well as art in designing a successful equestrian facility.

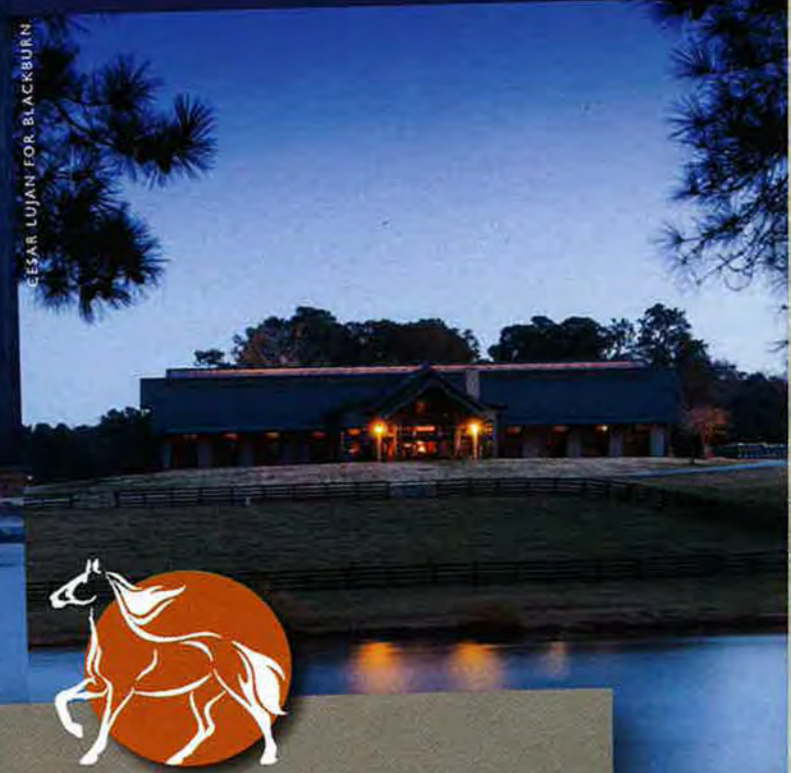
PHOTO: IVAN HUNTER FOR GH2-GRALLA



CMW INC.



CÉSAR LUJÁN FOR BLACKBURN



**BY FAR THE BIGGEST PRIORITY IN
BARN DESIGN
IS MAXIMIZING NATURAL LIGHT AND
VENTILATION.**

EQ assembled a group of some of America's premier equestrian architects and builders to find out what separates a well-conceived facility from simply a beautiful building. Meet the panel on the next page.

We began researching this feature by focusing on "green barns"; however, it quickly became apparent that a "green" facility is much, much more than simply adding solar panels and recycling water. A well-designed barn uses less energy because it doesn't need supplemental lighting or ventilation.

CÉSAR LUJÁN FOR BLACKBURN





MASTER PLAN IS PARAMOUNT

As our experts explained, good design begins well before the buildings are even "napkin sketches." The important first step is visualizing the facility as a whole. According to architect John Blackburn, "Proper planning can reduce costs—fewer roads, less fencing, better drainage—and ensure that the whole farm, not just the horse barn but the entire collection of structures on the site, operates efficiently and safely."

Joe Martinolich, principal and director of equine facilities design at CMW, says, "People tell me, 'I need a six-stall barn.' I ask, what about your tractors, manure, tools, and hay?" He tells them, "First locate your turnout, hay, equipment, and vehicle storage, access for manure pickup, large-truck deliveries, and maybe guests and visitors. These all have inter-relationships, and they need to be planned for in the beginning. Only then can you focus on the actual buildings."

"At most farms, the biggest expense is the labor," adds Lachlan Oldaker of GH2 Gralla in Oklahoma. "So, efficient planning saves time, and therefore money. Good design means that

Barns can pay tribute to the traditional architectural styles of their locations. A curved driveway at Iron Rose Farm, near Aspen, Colo., references old local mining structures and uses a wooden roadway like those in old bridges.

The owner can personally tune the "clackety-clack" sound vehicles make while crossing. The cupola on a private barn on Long Island also reflects local design tradition.



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it requires fewer steps to do the daily routine, turnout, cleaning, and mucking, and therefore saves labor costs."

Blackburn explains the importance of the orientation of the buildings in the landscape. "A good barn is not just a building, it's an engine. We design the building to create its own ventilation. We feel the key is to place the building perpendicular to the prevailing summer breeze for the location. Then, a properly pitched roof uses the Bernoulli effect, like the lift of an airplane wing, and creates areas of high and low pressure around the barn. On the backside of the roof, it creates a low-pressure area which, when properly designed, pulls air up and through the barn. Bring air in low near the floor and vent at the top to let the air exit. You want the air to move vertically. Horizontally transfers bacteria and pathogens from one horse to another."

Creating a master plan does not mean that every part of it needs be built at once. The plan may end up taking years to implement, but as each new structure or paddock is added, it isn't done in the usual haphazard way. How many of

OUR EXPERTS

**JOHN BLACKBURN**

grew up in with horses in eastern Tennessee. "I played in the barn as a youngster and rode bareback because I didn't want to fool with tack. Basically I rode until I fell off," he told EQ. His architectural firm was established in Washington, D.C., in 1983 and has become one of America's best known, specializing in equestrian projects, from site planning through design and construction management. A book on John's work is coming out in late summer. (See page 82)

**JOE MARTINOLICH**

principal of CMW Equine Architects, has horses at his home. CMW, based in Lexington, Ky., was formed about 50 years ago and has had over 30 years of equine design experience. CMW began its equine practice with the original master plan and structures for the Kentucky Horse Park and has designed numerous horse facilities locally, nationally and internationally.

**HOLLY MATT**

has competed and judged in various disciplines for the past 30 years and is an active competitor in USEF national and FEI international levels of eventing competitions. She began her architectural career in Denver and now leads Pegasus Design Group, in Southern Pines, NC. Holly travels extensively to research planning and construction methods, materials, and new technology, to adequately advise her clients.

**LACHLAN OLDAKER**

began working with architect Stan Gralla in 1987 and leads up GH2 Gralla's equine practice, located in Oklahoma. Lachlan has been an avid equestrian for 40 years. She is directly involved in the planning, design, and production of all equine facility projects, with experience ranging from Class I racetracks and equine event centers to personal training, breeding, boarding, and recreational facilities.

**LAUREL ROBERTS**

daughter of Monty and Pat Roberts, has trained horses her entire life. While managing and working at Flag Is Up Farms in the Santa Ynez Valley, Laurel not only learned to be a champion rider but gained a lifetime of experience building and running equine facilities. She works with some of the best builders and suppliers available. (See "What I Learned" on page 84)

**DAVE ZUBLIN**

founded Old Town Barns in 1982 to preserve the traditions of craftsmanship and durability that are representative of the American landscape. From his base in Pawling, New York, Dave has the reputation as one of the best builders of equestrian facilities in the Northeast.

For contact information for these designers, see **EQ** PAGE 97



TAE DUNHAM FOR BLACKBURN ARCHITECTS



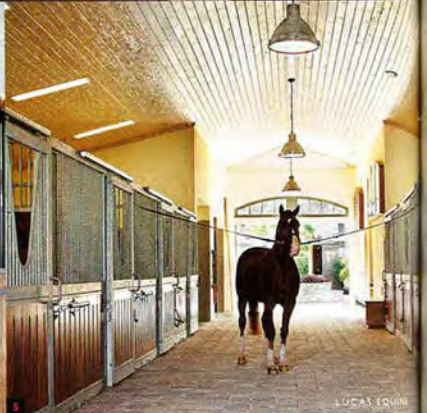
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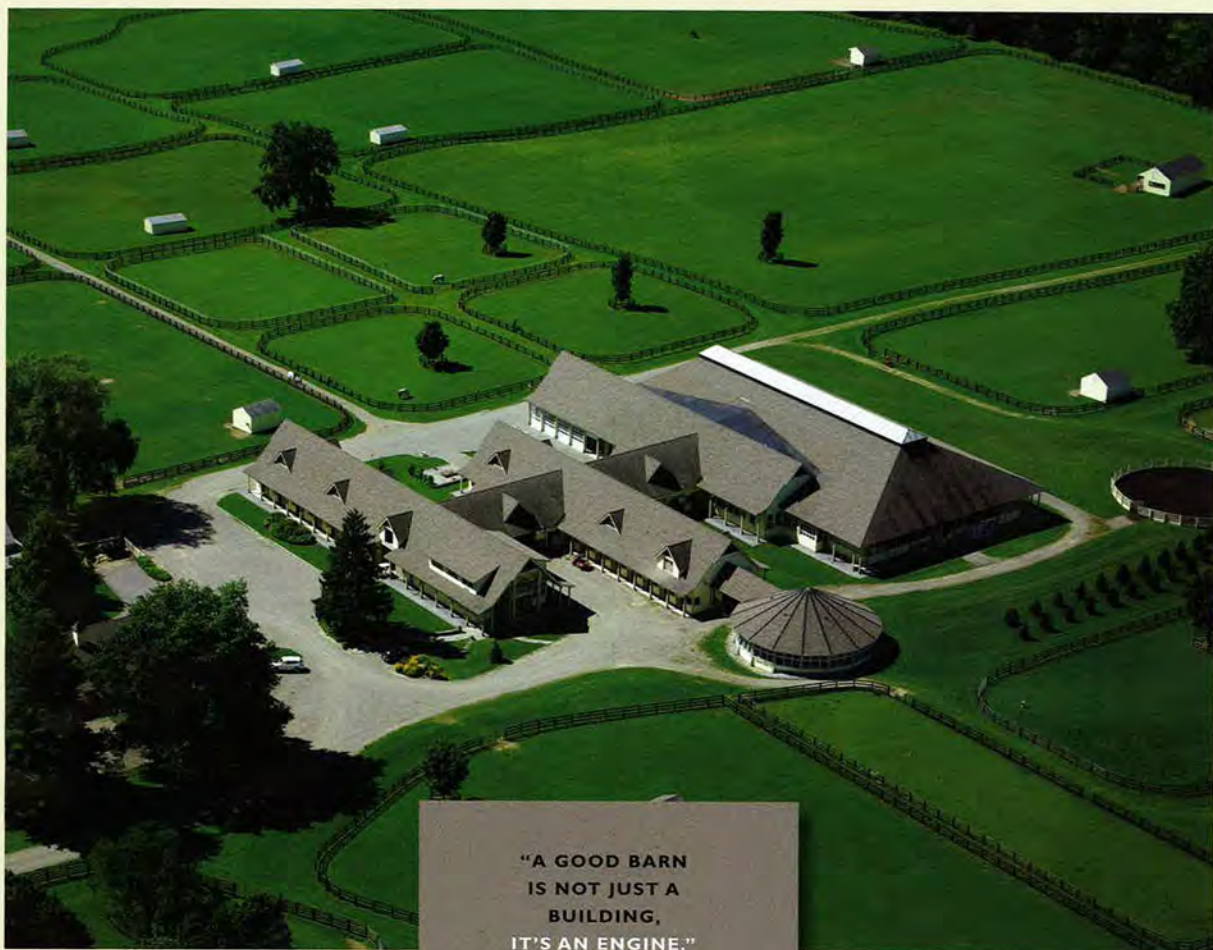
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**"A GOOD BARN
IS NOT JUST A
BUILDING,
IT'S AN ENGINE."
—JOHN BLACKBURN**

AMAZING BARN

Opposite: 1. Oakhaven, a 90-acre ranch in Austin, Texas, uses local stone. **2,9.** The barn and indoor arena at All's Well Farm in Virginia are bright and spacious. **3.** Tim Singer and Nick Thornton of Lucas Equine. **4.** Bamboo composite is an environmentally friendly material that is seeing wider use in barns, as in these stall fronts from Lucas. **5.** Galvanized metal is virtually indestructible but has had a "low-end" reputation. Lucas combines galvanized trim and finials to achieve a "high-end" look. **6.** A hilltop Virginia farm, designed to work with the climate. **7.** The foaling barn at Tenlane Farm in Versailles, Ky., features much natural light. **8.** Shade is provided in paddocks in steamy Wellington, Fla., with stainless-steel structures that don't drip rainwater and are hurricane proof.



STEVE ROE FOR BLACKBURN ARCHITECTS

In addition to generous skylights, virtually all the glass walls of the indoor arena open wide in the summer at Winley Farm, a private hunter jumper facility in Millbrook, N.Y.

us have said years later, "You know, I could use a tractor shed somewhere?"

Even those with very limited budgets should consider getting the advice of an expert at the planning stage, given the importance of the optimum farm layout.

NEXT, THE BUILDINGS

Geographic location is unquestionably the overriding influence on building style and materials. Obviously Colorado or Vermont climates require vastly different priorities from those of Florida or Texas. Age-old indigenous architectural styles of different regions were driven by climate. Think of the steeply roofed New England barn, built to shed snow. Pegasus Equine Design's Holly Matt notes, "Old barns were built by farmers who knew what they



"PEOPLE SAY, 'IF I'M GOING TO INVEST ALL THIS MONEY, I WANT TO DO IT PROPERLY.'"
—JOE MARTINOLICH

were doing; they knew what their animals needed. Now many owners and builders don't really know horse care. They just go for the flash."

In many areas, residential building requirements are creeping into farm design. Horse barns may no longer be considered "agricultural" and may not be exempt from residential building codes. They may require fire sprinklers and other safety features. In Wellington, Fla., for example, building codes require barns to be built to strict standards to withstand hurricanes. Matt recalled that on one project, she wanted to use high-quality galvanized doors and windows from Germany, "They were perfect for climates like Wellington, because even powder-coated metal will eventually rust if not galvanized underneath." But they first needed



The aisle of the foaling barn of Tenlane Farm in Versailles, Ky., dramatically shows how natural light can be brought into a barn.

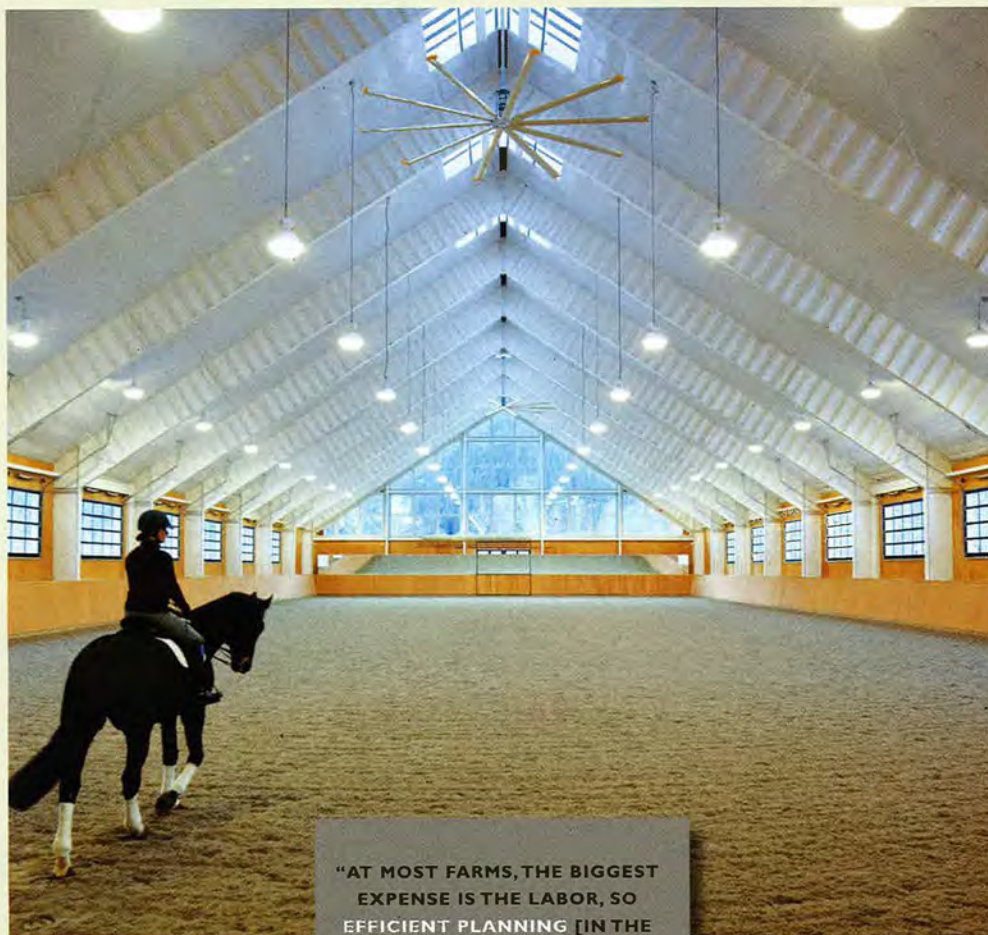
to be officially approved for storm resistance by Florida before they could be installed. "That took a lot of extra work," she says.

"People are recognizing that all barns are different," says Martinolich, "and they need to be customized for different functions—breeding, stallions, drafts, etc.—and for different locations, and different owner's preferences. People say, 'If I'm going to invest all this money, I want to do it properly.'"

"Like in homes, people are also asking for convenience and function: wash stalls, radiant floor heat that's just enough to take the chill off, vet facilities, automation, fire protection," Oldaker says. But returning to the idea of the building as a machine, she adds, "Haylofts may be romantic, but they just don't make sense any more." Blackburn agrees. "Lofts and a ceil-

R. LEPPINGWELL FOR CHW INC.

WALT KOYCAFF FOR CHW INC.



**"AT MOST FARMS, THE BIGGEST
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— LACHLAN OLDAKER



IVAN HUNTER FOR EQUUS GALLA

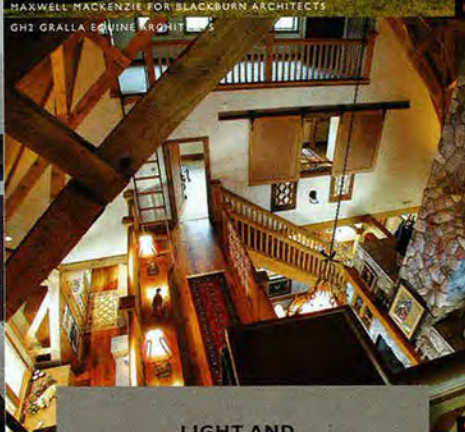
The indoor arena at Riverlands, a dressage-training facility in Pemberton, British Columbia, has rows of glass overhead garage doors raised eight feet to allow views of the mountain ranges on both sides.

PHOTOS NEXT PAGE:

1,2. New River Bank barn, on the Potomac in Leesburg Virginia, features floor-to-ceiling glass on one side and is used for family festivities. **3.** The covered arena at Glenwood Farm in Ridgeway, South Carolina. **4, 9.** A private farm on Long Island uses curved beams in its construction. **5.** The barn aisle at Ali's Well Farm in Virginia. **6.** Chocoma Farm in Michigan is both a family retreat and cutting horse operation. The Lodge is a three-story space used as a family getaway. **7.** The doors, stall-fronts, and accessories in this California farm are custom-made of galvanized metal. **8.** Holly Matt's personal barn in Colorado was her design "laboratory." **10.** An interesting cutting-horse ranch in Texas uses wood, pipe, zinc, and metal mesh to create a facility at one with its environment. **11.** Heronwood in Upperville, Virginia.

ing can stop a building from being a machine," he says. "People ask me, why skylights in Florida or Texas? It will just get hot. Well you want it to get hot, because you create a huge temperature difference at the ridge, and that creates the chimney effect. Heat rises. When you combine that with the Bernoulli effect that pulls the rising air out, you get a breeze even on a still day. It ventilates, cools and gets the bacteria out. A good barn doesn't need lights (in the daytime) or fans."

Matt says, "Most barns do not have adequate ventilation. Horses need 5 to 10 times more fresh air than humans because their lungs are bigger. What may seem fine to us is not to the horse. Horses depend on clean, fresh air to keep them healthy throughout the year. Their respiratory systems are fragile and to keep them

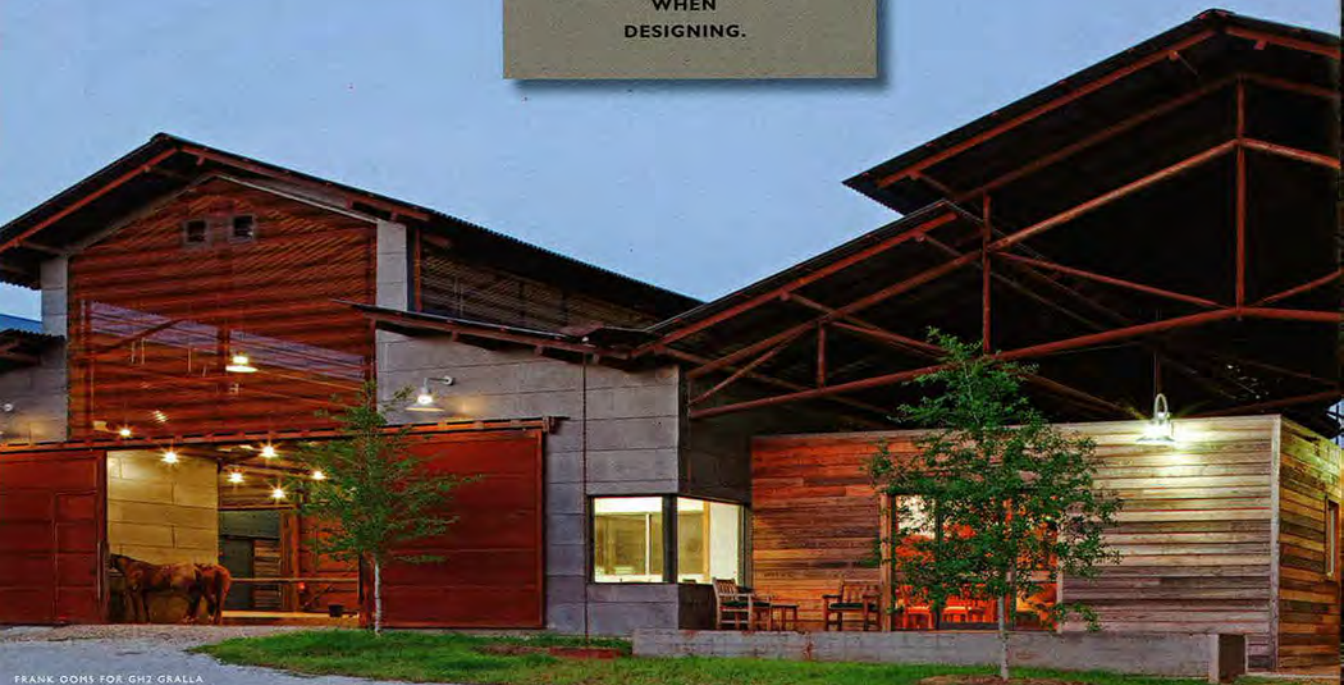


MAXWELL MACKENZIE FOR BLACKBURN ARCHITECTS
GH2 GRALLA EQUINE ARCHITECTS

KENNETH H. WYNER FOR BLACKBURN ARCHITECTS

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LIGHT AND
VENTILATION ARE
THE BIGGEST "GREEN
THINGS" TO CONSIDER
WHEN
DESIGNING.



FRANK OOMS FOR GH2 GRALLA



CESAR LUJAN FOR BLACKBURN ARCHITECTS



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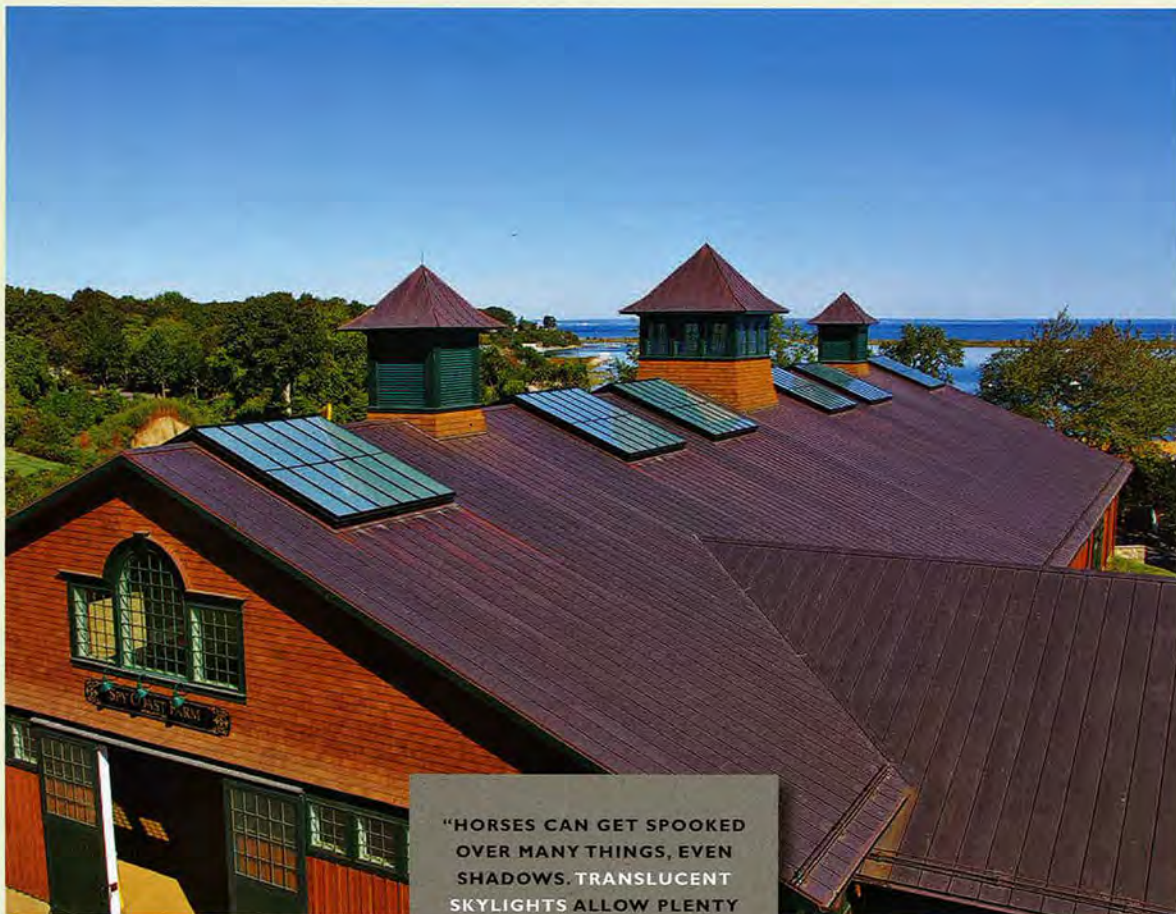
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CESAR LUJAN FOR BLACKBURN ARCHITECTS



"HORSES CAN GET SPOOKED OVER MANY THINGS, EVEN SHADOWS. TRANSLUCENT SKYLIGHTS ALLOW PLENTY OF LIGHT WITHOUT CASTING SHADOWS." —DAVE ZUBLIN

feeling their best they must be provided with three levels of ventilation. Starting at the top level, roof ridge vents, vented skylights, eaves, and cupolas allow stale air to escape, while the main level windows and doors provide fresh air intake. Stall floor-level ventilation allows heavy ammonia gas and dust to escape the stalls. All three levels of ventilation must be provided in order to create an optimal environment for your performance horse."

Apparently, the designers agree that incorporating numerous skylights into the design seems to be the biggest single change in barn architecture. It has become the norm.

And why not? Skylights provide the double benefit of both natural light and natural ventilation. "Light and ventilation are the biggest 'green things' to consider when designing,"



Venting cupolas, clerestory windows, skylights, and sliding barn doors in a riding ring make for a pleasurable indoor riding experience in Long Island, New York.

Martinolich adds. "Plus they just make a barn so much more pleasant. You want to leave a dark, cave-like barn as quickly as you can. But a bright, well-ventilated barn or arena has a whole different feeling. You don't want to leave."

This feeling of brightness can be enhanced even more with some simple ideas. An indoor arena, painted white or a light color, fitted with adequate skylights, would never need electric lighting during the day, and it would feel as bright as the outdoors. Using translucent rather than clear skylights helps to eliminate shadows that may alarm horses.

Just as location determines barn design, it also affects the choice of materials. Many people naturally gravitate to wood. It is warm, traditional, and may be the most economical,



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especially if it is locally sourced—for example Southern Yellow pine in Georgia, or Douglas fir in the Pacific Northwest. Martinolich notes, "People like the look of wood barns, but then there are issues of fire, maintenance, and horse chewing. And once it's painted, it has to be repainted over and over. In the end, everything is a compromise. We try to help owners make informed decisions."

Martinolich often recommends concrete block construction. It is durable, tighter for cold climates, cooler for warm climates, and fire resistant, and it can be styled in finishes that range from classic to modern. Although it may be initially more expensive, it is often cheaper in the long run.

Steel construction has its place as well, especially in large clear-span structures like indoor arenas. As these photos show, standard prefab

steel components can be used and customized in many ways to achieve light, bright spaces that are attractive both inside and out.

STALLS AND FIXTURES

Stalls are your horses' homes, and should be considered carefully. Stallions have different needs from mares, or warmbloods from thoroughbreds. But all are strong and clever animals that can get into a lot of trouble if they have the opportunity. They can be injured and prone to illness from their stalls, bedding, and other sources. Whether you have one special horse that is a member of the family or an entire stable of horses, you have a large emotional and financial investment in their health and well-being.

Martinolich is a strong believer in installing exterior stall doors whenever possible to "allow



A hurricane-proof farm in Wellington, Florida, boasts solar panels sufficient to power the entire property, with extra electricity to sell. The cupola offers ventilation as well as natural light.

AMAZING BARNs

Healthy Stables By Design, a beautiful coffee-table book highlighting the work and philosophy of John Blackburn is being released in late summer 2013.

All profits from the sale of the book will be donated to horse charities.



WHEN YOU TAKE A HORSE OUT OF ITS COMFORT ZONE—THE WILD—IT'S YOUR OBLIGATION TO CREATE AN ENVIRONMENT THAT PROTECTS ITS HEALTH AND SAFETY. A POORLY DESIGNED BARN CAN BE WORSE THAN NO BARN AT ALL.

horses to see the outdoors to have natural air and light. Outside doors greatly help their well-being."

As Matt said earlier, "Sometimes the most simple things are overlooked. For example, always build stalls with lower-level ventilation in the doors to let air in. Ammonia is heavier than air and sinks, and solid-wall stalls hold it in. Horses have their noses down to eat hay and they are breathing it in even if you may not smell it. Lucas Equine is one firm that is building low-ventilation into their doors. For existing barns, remedying this can be as simple as drilling a row of two-inch holes in the bottom of the stall doors."

Lucas's Nick Thornton says that some of the other emerging trends in stalls include using galvanized metal. "Galvanized may be maintenance-free," he says, "but you think 'cheap' when you picture it. But nothing lasts longer. It's become our quest at Lucas to make galvanized look good. For example, including galvanized finials and trim adds a high-end look."

Many of the architects agreed that an emerging "green" stall-building material is bamboo composite. Thornton noted that bamboo is one of the most sustainable woods.

"It only takes a three-year growing cycle from planting to harvesting mature bamboo," he says, "versus many years for other woods. Plus you aren't cutting down rain forests to harvest exotic woods."

Another trend is incorporating automatic feed and water directly in the stalls. There are other luxuries such as manure disposal systems, where the bedding is mucked directly into a hatch in the stall and conveniently taken by a conveyor belt outside to the manure pile.

Thornton enjoys the challenges thrown at him by architects and customers. For example, "Iron Rose Ranch (see page 78, bottom) went against everything I was taught," he laughs. "They actually wanted all the hardware to rust, to become one with the landscape, and still hold up for the long term. It turns out that the rust encapsulates and protects the metal. If the architects can dream it, we can build it.

Most of our innovations come from customers' requests."

There was also a consensus among the designers on the importance of soft footing surfaces in stalls, aisles, walkways, and riding rings. Laurel Roberts weighs in on page 84.

"I WISH I KNEW THIS"

After reviewing the designers' interviews and photographs for this article, *EQ*'s publisher said, "I wish I knew half of this when I built our dark barns. We need the lights on all day. If only I could do them over!"

We've learned much in creating this portfolio. So much in fact, that *EQ* plans to continue this feature in future issues. We will visit exceptionally well-designed equestrian facilities together with the architects who designed them, and they will explain why and how they created their innovative farms.

Whether you are purchasing and modifying a prefab barn, or custom building a barn from the ground up, the ideas presented here should shed new light. **EQ** PAGE 97.

More on barn design: Laurel Roberts' thoughts on "What I've Learned," on page 84.