

Rural Builder

Serving The Construction Trade Since 1967
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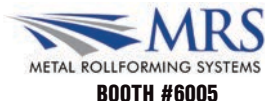
METALCON 2025

- Show Features
- Exhibitor Spotlights
- Products at the Show

HORSE BARN DESIGN FEATURES

COMMERCIAL GREENHOUSE VENTILATION

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BIFOLD DOORS**
ENGINEERING FOR
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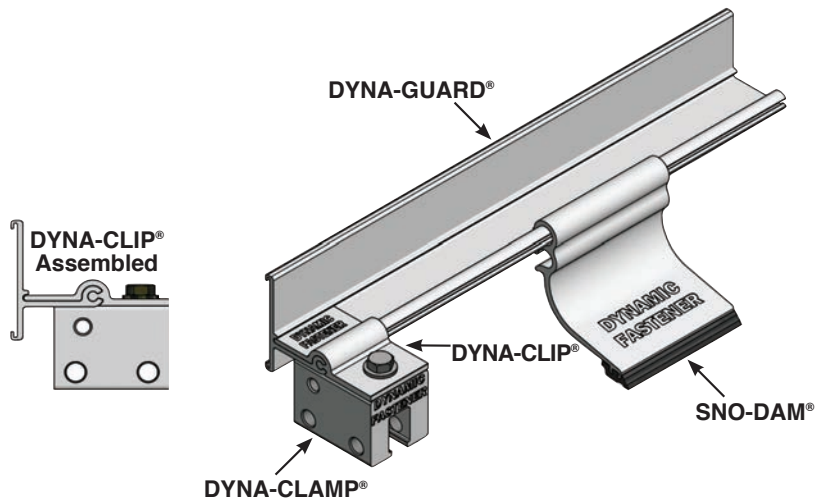
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SEE US AT METALCON IN BOOTH 7106

BY GARY REICHERT

Meet Max

Office Mascot Aims To Help the Next Generation Value Skilled Trades

I would like to introduce you to Max. Our office dog became our mascot about a year ago and his avatar found his way into ads, swag and a few other places. His most recent sighting is in the first of a series of children's books we are publishing, Max Builds a Metal Roof.

The idea is for our readers, and others, to spend time with their children and grandchildren teaching them about the construction trades. We use correct terminology and try to get the details right. Little things like being tied off on a roof or having underlayment run horizontally rather than vertically.

Part of learning to love the trades is having a positive emotional connection to them. We hope spending time with Dad, Mom or grandparents and learning what they do will create these emotional bonds. Then when grown, the kids might see the trades as a viable career option for building a life and a family.

In future issues we will announce how you can purchase them and they will be available at the 2025 Construction Rollforming Show in Dayton, Ohio. **RB**



EDITOR'S NOTE

BY DAN BROWNELL

No Horsing Around

Designing a Horse Barn Is Serious Business

According to the 2023 American Horse Council economic impact study (horsecouncil.org/economic-impact-study), the equine industry in the United States is immense, much bigger than I expected. It may be bigger than most people realize. I suppose that might be because equestrian activities are largely rural, whereas the media's focus is heavily focused on urban areas, so they tend to get less attention.

The summary bullet points listed at the bottom of the landing page of the study indicate that, in 2023, there were 6.65 million horses in the U.S., the equine industry added \$177 billion to the economy and impacted 2.2 million jobs. With that many horses, it's no wonder horse barns are in such demand. They range from simple, utilitarian buildings to high-end structures, but regardless of their budget, they share some things in common.

In the "Design Features for Horse Barns" article in this issue, we take a look at some of the special features that need to be considered to keep horses safe and healthy, as they're social creatures

and are sensitive to their environment.

The same thoughtful process applies to many specialty rural structures, such as commercial greenhouses, which we also cover in this issue. Plants are sensitive to their surroundings too. They're susceptible to heat, cold, sunlight, humidity, mold, and plant diseases, so greenhouses must be designed to manage their environment effectively.

In any case, there are many types of structures that, with proper planning and design, rural builders can take on to increase their business. **RB**

Shield Wall Media extends its thanks to Dan Brownell for his service as editor of Rural Builder. We would like to wish him the best as he starts his new phase in life.

Karen Knapstein has taken on the role of managing editor and can be reached at karen@shieldwallmedia.com or 715-952-1633. Feel free to reach out with feedback and suggestions for future editions.



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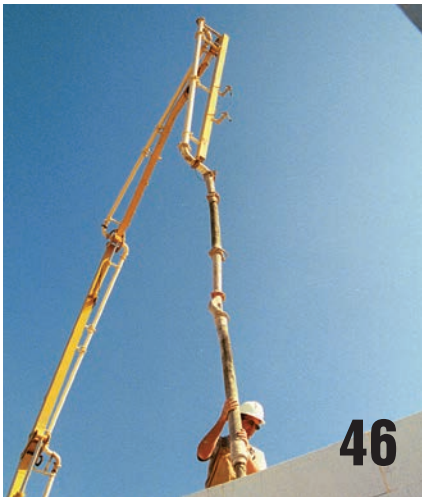
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ON THE COVER:

A stable with many design features that please the owners and occupants.
 COURTESY OF J&E GRILL MFG.

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Gary Reichert,
 Publisher, Shield Wall Media



WORK ETHIC SCHOLARSHIP

One Year of Training, No Debt

“I make more than others who graduated from a 4-year college!”

BY LINDA SCHMID

T Tyler Lee liked school. Track, baseball, football, basketball...he was involved in nearly every sport available in Milbank, South Dakota. He had lots of friends and great teachers, he earned good grades, and he really liked math, yet he knew he didn't want to sign up for four more years of school. He wanted to get started on something.

Initially he thought he would follow in his father's footsteps and do SCADA programming at the local cheese plant, controlling the robots that keep the plant productive. This type of programming can entail some schooling, anywhere from six months to four years, but often companies will take someone with little formal training and teach them on the job.

However, Tyler visited an uncle in Arizona and he brought him a furnace and air conditioner in a trailer all the way from South Dakota and installed them including doing the ductwork. He got the systems up and running as a thank-you to his uncle for his stay. During the process, Tyler found that he really liked the work.

Tyler started thinking about HVAC as a career. He realized that everyone needs these services, and providing them is a way to help people. Plus, it's work that will always be needed

GETTING STARTED

Tyler researched this pathway and discovered he needed to be EPA certified. He found a one-year program at Southeast Tech where he majored in mechanical systems.



Mike Rowe with Tyler Lee.

The daily program entails learning the fundamentals of heating and cooling with lecture for about an hour, then working hands-on in the lab, troubleshooting air conditioning and furnaces. Tyler had already completed the basic requirements in math, English, and computer skills. In the afternoon he went on service calls.

While attending tech school, Tyler began working with Central Heating and Air in Sioux Falls. The first few months, he worked with experienced HVAC professionals learning how to install furnaces, air conditioners, and ductwork.

“The best part of the learning experience in the beginning,” Tyler said, “was setting a foundation, getting all the fundamentals and then putting them to work in real-life situations.”

Eventually Tyler began going on calls with Luke Volden, the service manager, trying to soak up every bit of knowledge he could.

TUITION

Tyler's mom found the mikeroweWORKS Foundation Work Ethic Scholarship online and told him about it. She advised him that he needed to apply. Tyler followed her advice, filling out the application, creating a video about himself, and answering essay questions, including: “What would you add to the S.W.E.A.T. Pledge?” (The Skill and Work Ethic Aren't Taboo Pledge is taken by every scholarship winner.) Tyler's response was to tell people to ask themselves what they think is the best use of a day.



As a result of a collaboration with mikeroweWORKS Foundation (www.mikeroweworks.org), *Rural Builder* is featuring profiles of Work Ethic Scholarship recipients in each of its issues. Over 2,600 scholarships have been awarded to trade-school students who value hard work and taking personal responsibility. *Rural Builder* applauds these students and wants to acknowledge their choice to apply their talents to skilled trades. Thank you, mikeroweWORKS Foundation, for your continuing efforts to close the skills gap and “reconnect the average American with the value of a skilled workforce.”



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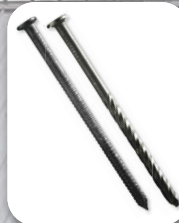
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“Everyone has the same 24 hours in each day; how do you want to spend it?” Tyler said.

The \$8,000 that Tyler won paid his entire tuition so he could learn worry-free.

To put this in perspective, the average cost of four years of college for tuition alone at an in-state university is approximately \$46,000, according to an annual survey of colleges conducted by CollegeBoard.

THE JOB

Tyler finished his tech school program in spring of 2024 and he has now worked at Central Heating and Air for two years. A typical day includes 5-7 pre-scheduled stops for troubleshooting and replacements of heating or air conditioning units. He has graduated from working and learning from more experienced workers to taking his own service calls in his own work van. He works residential, commercial, and industrial jobs and he loves it.

“My favorite part of the job is problem solving. For example, when the rooftop cooling unit of a church was not working and tech support couldn’t help, I figured out what the problem was. I got the part and got the A/C up and running,” Tyler said.

It made his day because he knew that otherwise, 300-400 people would have been suffering in the stiflingly hot church.

JOB REQUIREMENTS

Tyler believes there are three main qualities that are crucial to success in his line of work.

1. Ambition. A person has to be a self-starter and have a determination to resolve the problem.

2. Work Ethic. Caring about the job you do and getting the job done so you can move on to help the next customer is paramount.

3. Critical Thinking. Problem solving is a big part of the job. A person needs to be able to think about the different reasons a system may not be working and how to resolve the problem.

If you join the HVAC industry, always be ready and willing to learn from anyone, and pick the brains of those with more experience. You can never know everything, especially because things change. For example, refrigerants are undergoing alterations now to make them more environmentally friendly and less flammable. The more you know the better off you are.

ADVICE

If you are looking for an opportunity but you don’t have much money or experience, there are so many opportunities in the trades! Tyler said his company is looking for workers and so are others in the area.

“Both the work and pay are satisfying,” Tyler said. “One year after graduating from one year of college, I am making more money than others who went to college for four years.” **RB**

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METALCON 2025 Product Spotlight



ASC MACHINE TOOLS F&J TRIM ROLLFORMER

Booth #4123

www.ascmt.com

The ASC F&J Trim Rollformer is engineered for precision and versatility, featuring 14 or 16 roll-forming stations, depending on the profile shape and size.

The tooling is designed to accommodate soffit panel profile openings of either 1/2" or 7/8", offering flexibility to meet various project requirements.

For operator safety, the machine is equipped with OSHA-compliant swing safety guarding and enhanced by an Allen Bradley GuardMaster light curtain system, providing an added layer of protection during operation.

COMBILIFT MULTIDIRECTIONAL FORKLIFT

Booth #1002

Combilift.com

At METALCON 2025, Combilift will showcase its innovative multidirectional CB forklift range, engineered for superior maneuverability in tight spaces. With the ability to travel sideways, these forklifts are ideal for handling long, bulky steel products such as steel beams, columns, coils, metal roofing, and insulated panels. This unique sideways movement eliminates the need for overhead carrying, allowing for safe navigation in narrow aisles and confined areas, reducing both the risk of injury and the likelihood of collisions. As a result, safety is greatly enhanced, and operational space is optimized. Additionally, the Combi-CB range features a low center of gravity, promoting stable, low-to-the-ground load movement for added security. With lifting capacities ranging from 6,000 to 15,500 lbs, the CB forklifts are more compact than traditional models, making them ideal for long-load transport. Their versatile design allows them



to operate as both a front-mode pallet handler and a side-mode long-load handler, suitable for both indoor and outdoor use, as well as racking systems.



DYNAMIC FASTENER DYNA-GUARD

Booth #7106

www.DynamicFastener.com

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MALCO TURBOSHEAR® ROTARY PANEL CUTTER

Booth #707

www.malcotools.com

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**MFM BUILDING PRODUCTS
ULTRA HT WIND & WATER SEAL®**

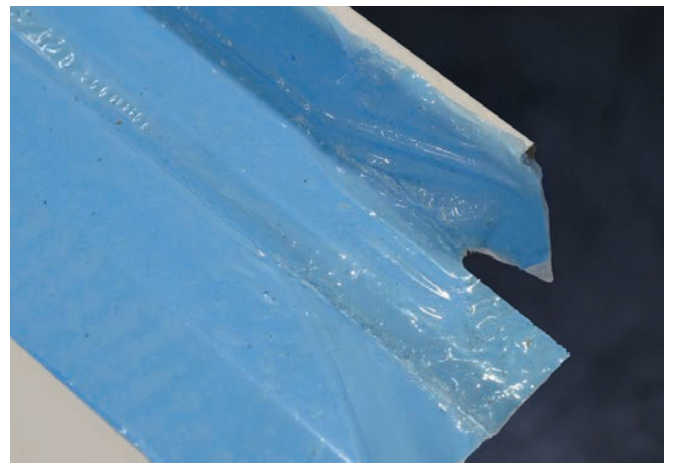
Booth #1101

www.mfmbp.com

Ultra HT Wind & Water Seal® is a High Temperature Rated self-adhering underlayment composed of a cross-laminated, non-slip polymer film laminated to a high temperature rubberized asphalt adhesive rated to 250°F. It is engineered for use with



metal roofing system where extreme heat is generated. Ultra HT is a Class A Fire Rated membrane for use with 24 GA steel UL classified roofing panels, as well as 3-tab and laminated Class A fire rated asphalt shingles. This 45-mil underlayment is 45 mils and comes in a roll size of 36" x 67' (200 sqft). The product comes with a 10-year warranty and is Made in USA.



**METAL ROLLFORMING SYSTEMS SNAP LOCK
WITH NOTCHER MACHINE**

Booth #6005

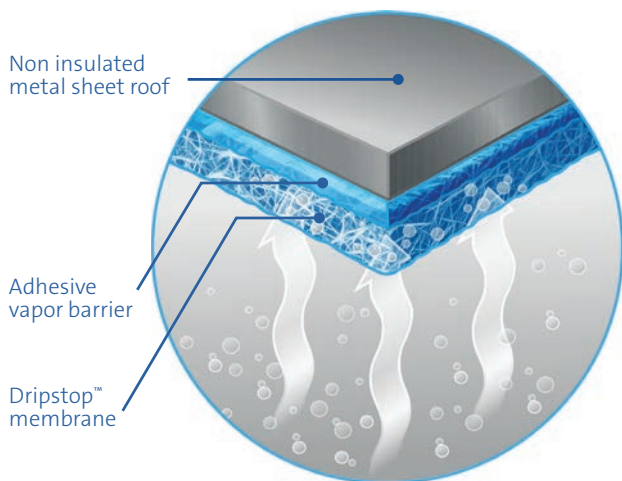
www.mrsrollform.com

The Snap Lock with Notcher roll former is powered by an electric gear reduction motor and chain drive. It features dual 3" polished steel shafts and hardened tool steel blades. It supports multiple rib profiles, with optional side-by-side tooling and rib notching for cleaner cuts. Notching is selector switch-operated and can notch both edges while cutting to length. It handles 24-29 gauge Grade 50/80 steel, with 12" or 16" coverage. The machine includes tooling for single profiles, with adjustable width for multi-profile use. Variable speed control allows up to 120 feet per minute line speed.

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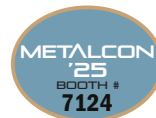
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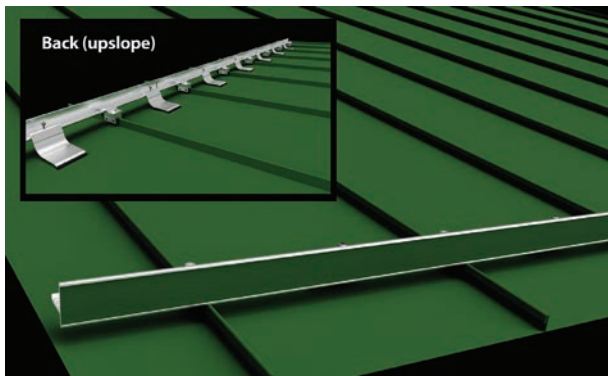


ROPER WHITNEY AUTOKUT

Booth #2015

www.roperswhitney.com

Roper Whitney will feature the AutoKut at METALCON 2025. The AutoKut is a compact coil processing machine designed to uncoil, straighten, slit, and cut coiled metal to length and width. The integrated straightening rollers ensure flat, consistent material, while the slitting unit allows multiple strips to be produced in one pass. Length measurement is controlled by a precision encoder, delivering accurate cut-to-length capability at feed rates up to 115 feet per minute. With its combination of straightening, slitting, and cutting functions in one system, the AutoKut simplifies metal preparation and improves efficiency in metal panel/trim production environments.



S-5! COLORGARD® 2.0

Booth #4081

www.S-5.com

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ColorGard 2.0 incorporates an innovative internal splice that

can be made directly over S-5! clamps and brackets. The new design streamlines installation, eliminating the need for field cutting, except at the end or at thermal breaks.

Extensively tested for load-to-failure, ColorGard 2.0 dramatically reduces the risk of rooftop avalanches, offering peace of mind and superior performance. Its sleek, seamless appearance not only perfectly matches the color of the roof but also elevates the overall aesthetic with a visually appealing look.

TITANIUM® FR UNDERLAYMENT

Booth #3054

www.eavetopeak.com

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UNITED STEEL SUPPLY TRU-STEEL HD®

Booth #5124

www.unitedsteelsupply.com

United Steel Supply™ offers Tru-Steel HD® digitally printed steel products in a variety of woodgrain, stone, and camouflage patterns. This innovative coil product uses a large-format digital printer to transfer high-resolution images of natural materials onto sustainable, USA-made steel sheet. The result is a photorealistic appearance with no pattern repeats for up to 32 feet, allowing for the inclusion of fine details such as knots, intricate grain patterns, and cracked stone. Available with a galvanized or Galvalume® base coat and featuring a solvent-free, UV-protective clear coat, Tru-Steel HD® is designed for long-term durability and low maintenance. Tru-Steel HD® can be slit and roll formed into any siding, soffit, or trim profile imaginable. Now available in over 20 unique patterns. **RB**





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BY DAN BROWNELL

Design Features for Horse Barns

Accommodating Horses' Unique Needs

(ABOVE) This is a rafter-style stall barn. It features 10' sidewall clearance with plenty of center aisle clearance. This barn has a 18' center aisle at the owner's request. PHOTO COURTESY OF STOCKADE BUILDINGS

Horses are large, powerful animals, which can create the impression that they're invincible, but they're actually socially and emotionally sensitive, as well as susceptible to injury, disease, and other health issues. This means horse barns need special design elements to accommodate the horses' needs. When working with a client to design a horse barn, builders should consider a number of factors in the plans.

"I have always said to my clients that horses are like 1,200-pound, two-year-old kids," said Daniel Glick, co-founder and owner of B&D Builders, building experts for barns and equestrian facilities. "A two-year-old horse is curious, easily distracted, lacks impulse control and still learning boundaries and social cues. Like a human toddler, they explore the world with their mouth, feet, and by testing limits."

BUILDING STRUCTURE

A horse barn frame can be constructed with either interior columns and rafters or clear span trusses. With interior columns, stall walls are generally attached to the columns. With clear span trusses, stalls are freestanding but get their support from being attached to each other.

"Clear span trusses allow for more options in stall layout,

present and future," said Daniel Stoltzfus of J&E Grill Mfg. "On the other hand, with column structures throughout the floor, it is important to plan ahead for stall size and design of stall front that will be installed, as posts can dictate some of those decisions."

If trusses are to be used, "the truss design is an important consideration in maintaining horse health. Promoting proper ventilation and limiting bird nesting help prevent disease and other illnesses. Proper truss design can take care of that," said Steve



Promoting proper ventilation and limiting bird nesting help prevent disease and other illnesses. Starwood Rafters builds trusses with a hanger system to keep roof purlins flush with the top of the truss, so there are no open webs, which eliminates nesting areas for birds. Also, the raised bottom chord design improves ventilation in livestock facilities versus a conventional "web" truss. PHOTO COURTESY OF STARWOOD RAFTERS



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Wozney, owner of Starwood Rafter. His company, for example, builds trusses with a hanger system to keep roof purlins flush with the top of the truss, so there are no open webs, which eliminates nesting areas for birds. Also, the raised bottom chord design improves ventilation in livestock facilities versus a conventional “web” truss.

The classic horse barn design features a center aisle with stalls facing inward toward the aisle. This allows efficient movement and workflow, while optimizing space and airflow. With this design, a minimum center aisle width of 12’ is recommended, with 14’ or more considered ideal to allow adequate room for horses to pass each other in the aisle and for easy access of vehicles, such as veterinary trucks and feed wagons.

Ceiling height should be at least 10’, with 12’ to 14’ preferred to allow maximum airflow, space for installing ceiling fans and lights, and enough overhead clearance to prevent mounted riders from hitting their heads.

BUILDING LAYOUT

Good horse barn design prioritizes the horses’ unique needs, which impacts every aspect of the layout. The most important area is the horse stall, since the horse spends so much of its time there.

While horses are housed in separate stalls for their health and safety because of the risk of bites and kicks from other horses, they’re social creatures and usually need to be able to see and interact with other horses. The recommended minimum stall size is 12’ x 12’ to allow adequate room for horses to move and prevent claustrophobia.

Stalls with wood partitions on the lower half provide the confinement needed. The partitions should be at least 7-1/2’ high to prevent the horse from getting a leg over the top and should extend all the way to the floor with no gap that could cause a horse to get a hoof trapped between the wall and floor. “While extremely intelligent, they don’t always register certain things in their surroundings that could pose a danger,” said Glick. “They’ll walk into sharp objects, get stuck in fences, or spook and run into things.”

The upper half of a stall can be open, gridded, or solid. An open stall allows more interaction between horses, while a gridded stall still allows airflow, but reduces possible aggressive interactions between horses. Grills will also cover the tops of the partitions and keep horses from chewing on them. “You can also incorporate a yoke opening within the top half of the stall, which allows horses to interact, but they can also be closed when needed,” said Molly Freund of Classic Equine Equipment.

“If the owners don’t want the horses to see each other, however, they could have a solid dividing wall kit option,” explained Kelsey Martin of Stallworks Equine Stall & Door Systems.

“If you’re planning to raise foals, pregnant mares and mares with babies are more satisfied with a solid stall divider,” said Gary Lambright, president of Silvercraft LLC. “Mare mothers



This open Dutch door window on the exterior of the building allows the horse fresh air and the opportunity to interact with other horses and feel less confined. PHOTO COURTESY OF J&E GRILL MFG.



Exterior Dutch doors not only provide horses fresh air but also both horses and their human caretakers an alternate way to escape in case of a barn fire. Given a barn’s wood construction and the hay and other flammable materials they contain, the risk of a rapidly spreading fire is a real concern. PHOTO COURTESY OF WINTERFELL FARMS AND CLASSIC EQUINE EQUIPMENT

are protective of their young foals and typically don’t appreciate a horse in the neighboring stall watching over them. A solid stall divider is a better option in this case.”

Clients could have a mixture of open, gridded, or solid stalls to allow flexibility, matching the horses’ temperaments to the type of stall.

An important consideration in stall construction — throughout the entire barn — is preventing sharp edges and surfaces that can cause cuts, as horses are known for pushing and leaning against walls, partitions, doors, and other structures. All hardware, such as latches, should be smooth and free of rough welds. Powder coating prevents horses from ingesting flaking paint. Additionally, curiosity or even boredom can sometimes get the best of them. Horses use their lips like fingers — opening gates, untying ropes,



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Good lighting and ventilation, such as these shown in the Fair Hill Training Center, are key to horse health and wellbeing. The thoroughbred training facility and vet facility are what B&D Builders consider a proving ground for horse barns. PHOTO COURTESY OF JANA BANNAN PHOTOGRAPHY, KENNETT SQUARE, PENNSYLVANIA AND B&D BUILDERS



Adding HoofGrids or similar plastic footing control in high traffic areas such as paddocks, feed lots, etc. will help prevent horses from tearing up the turf and creating mud. PHOTO COURTESY OF J&E GRILL MFG.

and chewing on anything.

“Horse are accident-prone,” said Glick. “Their thin skin and long legs make them vulnerable meaning they can injure themselves on buckets, fences or event while lying down. Their massive size makes even small accidents potentially serious.”

Stall doors can be either sliding or swinging. “Hinged, swinging doors open into the aisleway, taking up extra space, while sliding doors easily slide open, providing a major space-saving advantage,” said Freund. Sliding doors can also be safer. A stable hand working between a swinging door and a stall wall can be injured if the horse pushes or leans against it. Also, a sliding door can provide more security, as a horse can open an unlatched swinging door by pushing against it, whereas a sliding door will

stay in place.

Horses are intelligent animals and need stimulation from their environment and benefit from having a bale door or Dutch door in the back of the stall. “A bale door or Dutch door provides access to fresh air and also gives the horse some freedom to hang their head out and see what is going on around them,” said Lambright. “Typically, a horse that can see out and around is calmer, quieter, and less stressed.” If only a window is provided, a grill can be added in front of the window to prevent the horse from breaking the glass.

A Dutch door also creates a second passageway to the stall and can be a fire escape for both horses and people. Horse barns are vulnerable to fires because of their wood frames and walls as well as the hay, feed and straw bedding stored in the barn. If a fire breaks out, the center aisle may be filled with smoke and flames and prevent escape. Exterior stall doors solve that problem.

VENTILATION

Ensuring adequate ventilation is one of the most important aspects of horse barn design. Horses are very susceptible to respiratory problems and need a steady flow of fresh air circulating to keep them healthy. Fresh air flow can be achieved by incorporating functioning cupolas, ridge vents, eave vents, exhaust fans, ceiling fans, and an adequate number of properly sized windows and doors.

Having high ceilings in a horse barn is an advantage because warm air rises, creating a vertical airflow, which moves stale, humid air, dust, ammonia, manure smells, bacteria, and viruses up and out through cupolas and other vents to keep air fresh.

Exhaust fans are designed to move hot air out of the barn, while ceiling fans circulate air within the building. Both should be specifically made for outdoor use and mounted high to maximize their effect and to keep them out of reach of the horses and mounted riders from bumping into them.

LIGHTING

Abundant, even lighting is crucial throughout all areas of a horse barn for both horses and humans. Barn workers need adequate lighting to do their jobs properly. In addition, horses are naturally skittish and can be spooked by flickering shadows caused by insufficient lighting.

Using natural versus artificial lighting as much as possible is ideal, and electric lights should be color balanced to mimic natural light. Clerestory or eave windows are narrow windows that run along the top of walls below the eaves. They’re designed to add additional natural lighting along the length of the building and are a very helpful design feature.

FLOORING

For horse stall flooring, crushed stone covered with nonslip rubber mats is recommended. This allows the best combination

of cleanup and drainage, while providing a softer, more cushioned surface than concrete for the horses' health and comfort.

For the center aisle of the barn, concrete floors that slope slightly toward the center help aid washing and drainage. The concrete should be textured to help prevent horses' hooves from slipping, especially when the concrete is wet. "Rubber pavers are also recommended for a safe, non-slip aisleway," said Freund.

UTILITIES

Electricity and water access should be carefully planned for efficiency and safety. Placing outlets and spigots at close intervals will reduce the amount of time workers spend walking back and forth. Also, having enough electrical outlets to avoid using extension cords is highly recommended, as using extension cords in a horse barn presents a number of risks, such as being overloaded, tripped over, or chewed by horses or rodents. Electrical lines should be run through conduit to protect them from these hazards.

Electrically powered automatic waterers can be added to stalls. Although they reduce the labor needed to fill watering buckets



Typical wash bay. 12' x 12'. PHOTO COURTESY OF STOCKADE BUILDINGS

manually, they have some disadvantages. For instance, they make it difficult to track the amount of water horses are drinking, which can be important for monitoring their health. Some waterers can be difficult to clean and lead to bacterial growth. Waterers can

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Freestanding stalls don't rely on interior building columns for support, so they allow more flexibility in layout. PHOTO COURTESY OF J&E GRILL MFG.

also flood a stall, become clogged, or stop working if electrical power is lost.

OTHER ROOMS AND AREAS

Other specialized rooms and areas are common in horse barns. Their placement should be planned for efficiency and convenience. For example, in a large horse barn with long aisles, it may be best to place some rooms near the center of the building to reduce worker walking time.

Washing and Grooming Bay

Washing and grooming bays should have hot and cold water, cement floors sloped to the center to help them drain thoroughly, and a drain system. Like the concrete floors in the center aisles, they should be textured to prevent the horses from slipping. For emotionally reactive horses, including a window in the wash bay or positioning it near a door can help them not feel enclosed.

Laundry Room

Keeping horses clean is essential for their health, but all the washing and grooming will generate a significant amount of laundry. Having a laundry room in the horse barn eliminates the need to transport all the laundry back and forth from an offsite laundry.

Tack Room

A climate-controlled tack room will help keep expensive leather saddles and

other equipment from becoming moldy.

Equipment Storage

It's helpful to have a dedicated storage room for miscellaneous equipment such as tools, buckets, hoses, wheelbarrows, and other equipment. This will help keep these items out of the way, as well as organized and more easily accessible.

Feed Storage

It's often recommended that hay not be stored in a loft above the stalls because falling dust from the hay can cause respiratory issues in the horses. A feed room on the ground floor is better but the room needs a concrete floor to keep hay dry to prevent spoilage. Grain should be stored in rodent-proof containers. The feed room door should be equipped with a latch so a loose horse can't get into the room and gorge, which can be potentially catastrophic.

The storage room should be large enough to store a week's worth of feed. The remaining feed should be stored in a different building to reduce the amount of flammable material in the barn in case of fire.

Bedding Storage

Straw bedding should be kept in separate area, ideally in a separate room, as straw can contain dust, mold, and other substances that could contaminate the hay.

PADDOCK

Fenced-in paddocks are commonly attached to horse barns to allow horses space to exercise but not enough to run and potentially cause an injury. Some are L-shaped to prevent running.

"These paddocks and your barn lot can be kept in excellent condition with regards to drainage by following these steps," said Stoltzfus: 1. The grade should be sloped down a minimum 5% in the first 20 feet surrounding the barn and 1-2% the remainder of 100 feet on all sides. 2. Add HoofGrids or similar plastic footing control in all high-traffic areas such as paddocks, feed lots, etc. Proper installation is important for effective drainage. When installed correctly with a stone base beneath and filled with pea gravel, HoofGrids will provide a lifetime of sure footing that won't inconvenience with erosion and mud."

WASTE MANAGEMENT

Horse barns will likely be subject to local regulations for manure storage and disposal. They'll typically include preventing water contamination and controlling odor. This can include controlling drainage and rainwater runoff; storing manure a prescribed distance from streams, wells, ponds, wetlands, property lines and homes; ensuring that the storage area has an impervious base and that manure is covered, either with a structure or a tarp; and periodic removal of manure to prevent excessive buildup, insect infestations, and ground contamination.

CONCLUSION

Horses have unique requirements, so horse barns need careful planning to ensure all their needs are taken care of. Discussing these elements with potential clients may reveal areas that they haven't considered and that need to be resolved before moving forward. This will help ensure the best possible outcome for both builder and client. **RB**

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METALCON 2025

METALCON Returns to Las Vegas,
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METALCON's 2025 conference and tradeshow will take place Tues., Oct. 21 through Thurs., Oct. 23 at the Las Vegas Convention Center.

From intensive pre-show workshops and certification programs beginning on Monday, Oct. 20 to 35+ free educational sessions conveniently located inside the exhibit hall to inspiring keynotes, top industry experts will share their knowledge with attendees who are eligible to earn a year's worth of continuing education credits (CEUs), including AIA and FL CILB learning units.

The only global event dedicated exclusively to the application of metal in design and construction is brought to you by 2025 sponsors: Mill Steel Company (premier level), Flack Global Metals (platinum level), CIDAN Machinery Inc., (diamond level), ABIS (silver level), and many more, along with long-time partner, the Metal Construction Association (MCA).

Morning Kick-Off Sessions will take place on Tues., Oct. 21, and Wed., Oct. 22, at 8 a.m., including a presentation by California architects Tryggvi Thorsteinsson and Erla Dögg Ingjaldsdóttir on "Breaking the Cycle of Wildfire Destruction: The Urgent Need for Fire-Resilient Construction."

KEYNOTE SPEAKERS

METALCON welcomes Clint Romesha, Medal of Honor recipient, as keynote speaker on Tues., Oct. 21, at 9 a.m. Recognized for his heroism during the Battle of Kamdesh in Afghanistan, Romesha received the Medal of Honor from President Obama in 2013. He's the bestselling author of *Red Platoon* and the inspiration behind the film *The Outpost*, starring Scott Eastwood and Orlando Bloom. Clint's story is one of courage, resilience, and

leadership under pressure — an inspiration to us all.

Then, on Wed., Oct. 22 at 9 a.m., renowned economic advisor, market researcher, and future trends analyst Alex Chausovsky will deliver a highly anticipated keynote address, entitled "Economic and Labor Market Update — What to Expect in 2025 & Beyond." He will provide an in-depth analysis of construction-related data and offer comprehensive insights into the evolving tariff landscape, examining its implications for key industry players.

STATE OF THE INDUSTRY

Join industry experts and leaders from the MCA for a special State of the Industry panel presentation on Tues., Oct. 21 at 1:30 p.m., to discuss current and future opportunities and challenges facing the metal construction industry such as recent technical developments, upcoming regulatory issues, resiliency in a turbulent building market, the superior sustainability of metal substrates, and more.

MCA'S METAL MASTERY CLINICS

As metal continues to gain traction in the market, it's crucial for contractors and installers to grasp the intricacies and proper techniques for forming panels and installing metal roofing and wall systems. In a series of clinics, experts from the MCA and Metal Roofing Alliance will discuss best practices for installing metal shingles, standing-seam roofing panels, retrofit systems, and metal wall systems, and will demonstrate proper techniques for on-site rollforming and machine maintenance.

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Back by popular demand, the METALCON Training Zone

sponsored by Sherwin-Williams returns to offer hands-on training for roofing contractors. This dedicated area features live demonstrations and education using a variety of mock-ups and materials such as painted steel, aluminum, zinc, copper, and other exotic materials. Training will emphasize precise detailing and the use of appropriate tools, equipping contractors, remodelers, and other professionals to elevate their skills, ensuring the best, most efficient and cleanest work when installing various metal roof systems (conducted in English and Spanish).

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MORE NETWORKING THAN EVER

METALCON is introducing a variety of networking opportunities to foster communication and collaboration among industry peers. From the lively welcome party and happy hours to engaging speed networking, attendees can also unwind at The Back Yard. Metal and Mimosas, one of our signature networking events designed to bring together women in the industry for meaningful connections and conversation, takes place on Tuesday. This year, Jennifer Wilkerson, vice president of innovation and advancement at the National Center for Construction Education and Research, is the featured guest speaker. Back by popular demand, is our Future Leaders young professional program on Thursday. These events offer abundant opportunities for participants to exchange ideas and forge valuable connections.

NEW THIS YEAR!

Attendees are invited to start their Las Vegas experience a day early by connecting with nature and giving back. Join a memorable half-day adventure exploring the awe-inspiring Valley of Fire, led by Corporal Adam Bautz, U.S. Marine Corps (Ret.), founder and lead guide of Outdoor Travel Tours — 50% of every participation fee will be donated back to Semper Fi & America's Fund.

METALCON TOP PRODUCT AWARDS

On Thurs., Oct. 23 at 2:30 p.m., top product award winners recognizing the most innovative products and technologies shaping the metal construction industry will be announced.

LEARNING CENTERS

Check out METALCON's FREE education sessions. These 60-minute sessions from 10:15 am to 2:30 p.m. Tuesday-Thursday are organized into four learning centers on the show floor: Installation & Techniques; Building Performance; Business Growth & Innovation; and the Metal Masterclass. Attendees can earn up to 14 hours of CEUs.

Additionally, METALCON continues to offer in-depth workshops this year to provide cutting-edge education and training, which cannot be found elsewhere. For a small fee, attendees will be armed with new skills, fresh ideas, and strategic direction to address some of the major issues facing the construction industry today, including:

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- Roll forming for the Metal Construction Industry Parts 1 and 2
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- Low Slope Detailing Workshop – Certificate Course
- Advanced Metal Exterior Installation Techniques for Roofing & Building Contractors
- The Blueprint to Back Office Success: Managing Credit and Collections in Construction



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VETERAN SUPPORT

Each year, METALCON gives back to the local community where the show takes place. METALCON is proud to announce its ongoing partnership with Semper Fi & America's Fund (The Fund), a non-profit organization dedicated to helping veterans in all branches of the military. On the closing day of the show, a check presentation ceremony will be held at The Deck at 10 a.m., together with local representatives of The Fund.

"We're excited to return to Las Vegas — one of METALCON's most dynamic host cities," said Judy Geller, Vice President of METALCON. "This year's show is a can't miss experience for anyone in the world of metal construction, with hundreds of exhibits showing the newest innovations, wide-ranging networking opportunities, hands-on training, and targeted education for contractors, installers, architects, designers, engineers, developers and building owners." **RB**

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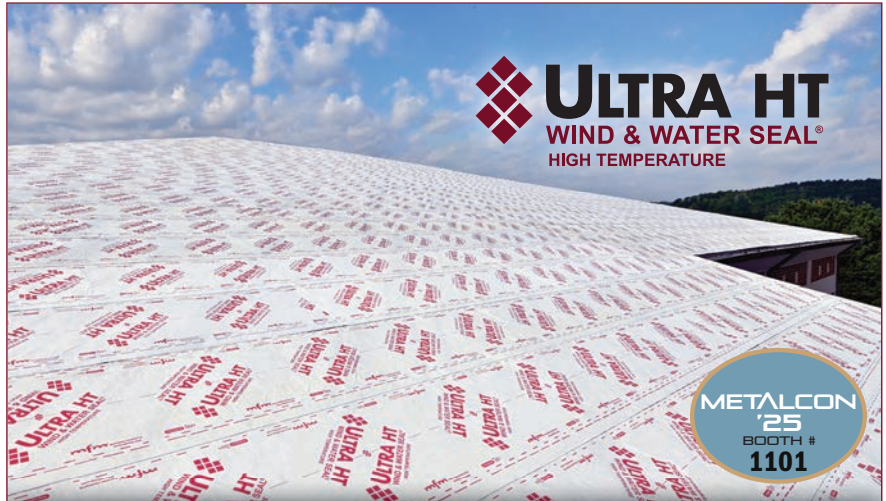
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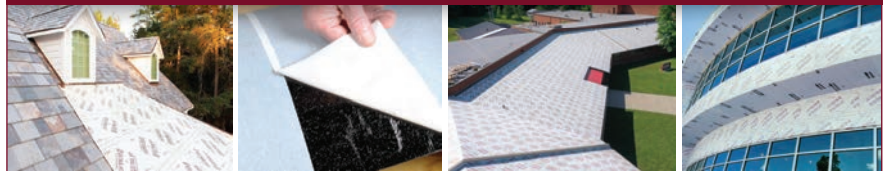
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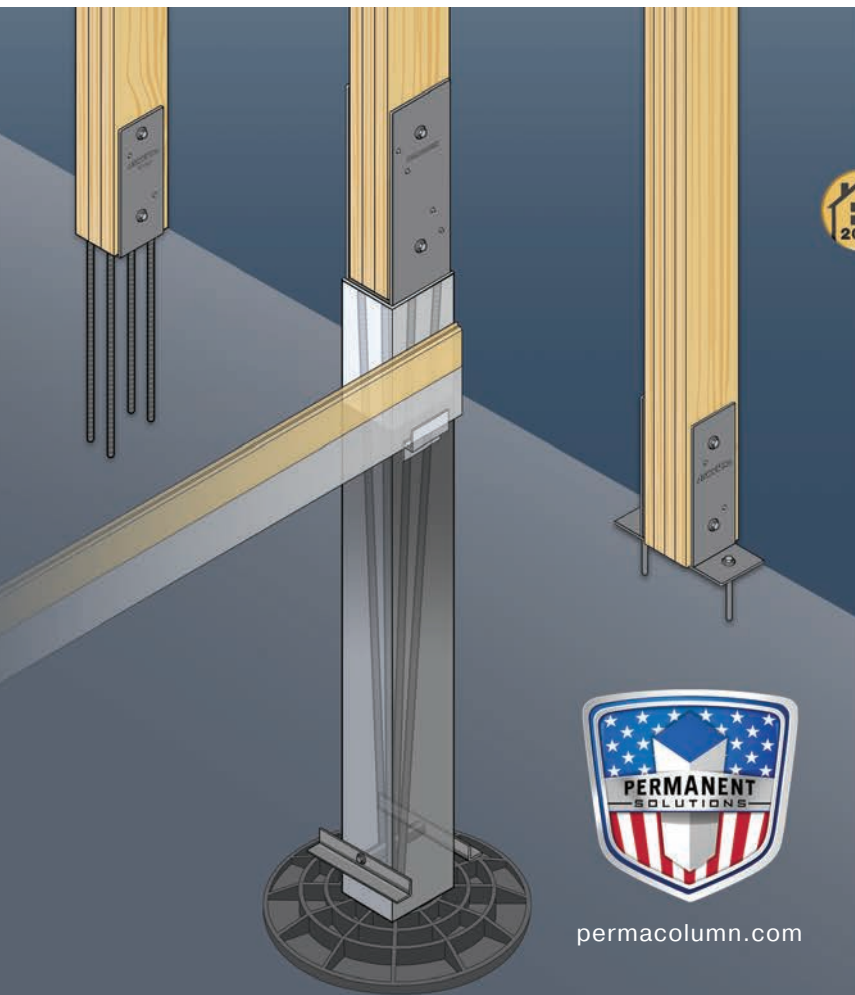


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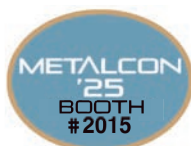


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BY JACOB PRATER

Commercial Greenhouse Ventilation

Designing Proper Air Flow

Ventilation is critical in greenhouses and serves more purposes than you might think. Ventilation is, of course, climate control (heat retention and cooling) but also humidity and condensation control, which plays a major role in disease prevention and also impacts pest control and human comfort.

GREENHOUSE DESIGNS VARY DEPENDING ON PURPOSE

Let's consider for a moment the use of the greenhouse. I have visited an operation that was using greenhouses for three different specific purposes, all with very different demands requiring different ventilation systems and approaches.

One greenhouse was simple and focused just on season extension with in-ground plants. The second greenhouse was winter-ready and was focused on starting seeds and growing seedling plants in the winter and doing some continued production in the summer. The third was a multi-use space that included functioning as a dining room for an on-farm restaurant in the fall and into winter. This broad array of uses may not be typical for most operations with greenhouses, but it does provide a good example of the breadth of uses and their demands for ventilation and climate control.

TYPES OF GREENHOUSES

There are a few types of structures that fit the term "greenhouse," but some distinctions need to be made. Some are designed mostly for season extension, some for year-round use regardless of the weather, and some are a variation in between. For the purposes of this article, we will define the extremes, and what is in between will become pretty clear. In any case, ventilation is important in a greenhouse to control temperature and humidity.

Season-Extending Greenhouses

Structures designed for extending the season are often simpler in design and generally shorter-longevity structures. Hoop houses would fit this category. In addition, some unheated greenhouses designed for in-ground plants or plants on platforms or tables would also fit this type of structure. Growing plants in the ground is often a feature of season-extension type greenhouses, as the



During the summer, Chain O Lakes Home and Garden's passive ventilation system requires relatively little intervention. They only close the roof for a storm or high winds. However, early in the season, when there are colder temperatures, the roof opening and closing needs to be monitored more closely. SHIELD WALL MEDIA PHOTO.

heat from the ground is used to help keep the greenhouse warm.

Ventilation for a season-extension greenhouse is usually accomplished by means of side curtains that can be raised and lowered. Side curtains are a type of passive ventilation system that are quite effective but are impractical in the winter or at times with lots of weather fluctuation, as they require manual adjustment (raising and lowering).

Year-Round, All-Weather Greenhouses

Classic greenhouses are all-weather structures designed to provide a year-round growing season or adjust for a different climate to deliver a subtropical climate inside a structure built in a temperate or even frigid climate. These types of structures require significantly more for ventilation, as they're likely to be dealing with both heating and cooling associated with their ventilation, as well as humidity control.

RIDGE/ROOF VENTS

Ridge or roof vents form an important part of a greenhouse ventilation system, especially for smaller commercial greenhouses

that rely mainly on passive ventilation, where the warm air rises and escapes through the roof and pulls cooler air in to replace it.

“We have three greenhouses where the roof opens up,” said Colton Wegener, co-owner of Chain O’ Lakes Home and Garden in Waupaca, Wisconsin. “In each greenhouse, one half of the roof opens up two to three feet. We’ve found that the opening in the roof works pretty well for us. There’s a track by each of the roof framings, and it opens the roof up, and we have one wall that rolls up and down. We also have small fans inside, four fans per greenhouse. They create a circular motion. The new greenhouse we’re putting up this fall will have an exhaust fan about 4’ x 4’ or 5’ x 5’ square. It’s a pretty good size.”

During the summer, the passive ventilation system they currently use requires relatively little intervention, Wegener explained. “The only time we close the roof is when there’s a storm coming or high winds. Otherwise, we leave them open. However, early in the season, when there are colder temperatures, the roof opening and closing needs to be monitored more closely, so in the spring, it’s a little more labor intensive. But Chain O Lake Home and Garden is constantly changing and adapting. “As we continue



Strategically positioned fans circulate air to help regulate ventilation in this greenhouse operated by Chain O Lakes Home and Garden in Waupaca, Wisconsin. SHIELD WALL MEDIA PHOTO.



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to grow, we will be switching to an automated system, where we can control everything from our phones,” Wegener said. “It’s currently expensive, but as AI becomes the new normal and automated systems become more widespread, prices will drop.”

POLYCARBONATE-COVERED GREENHOUSES

Some higher-end commercial greenhouses are covered with corrugated monolithic sheet or flat twin-wall or triple-wall polycarbonate panels, rather than plastic film. Polycarbonate is lightweight yet sturdier than plastic film, and the multi-wall polycarbonate panels have air spaces that provide more insulation than single-layer plastics. “Typically, multi-wall is used for its improved insulation properties in colder climates and corrugated polycarbonate is used in warmer climates,” said Mark Weaver, Technical Services Manager at Palram Americas. “This is a general rule of thumb, as obviously type of crop and other variables play a role in greenhouse covering selection.”

Polycarbonate panels can also be used to help regulate ventilation. “They are typically installed on the greenhouse, and the structure of the greenhouse has the venting built in such that an entire supporting member of the greenhouse will open and close with the polycarbonate panels attached. That is, they form passive venting,” said Weaver. These sections of the greenhouse can be opened and closed manually or automatically as needed.

CALCULATING AIR TURNOVER REQUIRED

For an active ventilation system (using fans), it’s important to determine the amount of air turnover needed. Since summer will require the greatest need for ventilation (otherwise it will get way too hot in the greenhouse), a general rule is that it should be able to exchange all the air inside in one minute. The first step, then, is to determine the volume of the air it holds. The simplest method is to use the dimensions of the greenhouse and not worry about subtracting space taken up by objects in the greenhouse.

With that figure in cubic feet, calculate a fan/ventilation capacity that can handle that volume of air each minute. This will provide the maximum ventilation capacity to handle your largest seasonal need. Keep in mind, though, that the system needs to be able to operate at that maximum capacity for long periods when the weather is hot, so make sure it can handle running at that number of cubic feet per minute for an extended time when necessary. A slightly oversized system or one with a heavier duty cycle (built to run at max most of the time) will perform better and require less maintenance than an undersized or light-duty ventilation system.



Some higher-end commercial greenhouses are covered with polycarbonate panels rather plastic film. The polycarbonate shown here is Palram America’s DYNAGLAS corrugated monolithic sheet. It is more durable than plastic film but is generally used in warmer climates that don’t need insulation. PHOTO COURTESY OF PALRAM AMERICAS

INLET VENTS AND FANS

The greenhouse’s inlet vent should be at least the size of the exhaust fan and, on a smaller greenhouse, can be a louvered vent. Larger greenhouses may benefit from inlet fans as well as exhaust fans and perhaps two on each end for large greenhouses. If the greenhouse is longer than 200 feet, then ventilation needs to extend across the greenhouse (side to side) rather than along its length (end to end).

COMPENSATING FOR STATIC PRESSURE

Beyond this sizing and air turnover, it’s important to make sure that the fans can operate and move the desired amount of air under static pressure. A general rule is that the fans should be able to operate at 0.06 inches of water static pressure. This allows the fans to overcome the resistance that the louvers on vents and



In this Chain O Lakes Home and Garden greenhouse, a roof panel opens along half the length of the building to allow passive ventilation. Warm air rises out the top, drawing cooler air from below to replace it. SHIELD WALL MEDIA PHOTO.

screens create. If additional features are added, like evaporative cooling setups (think swamp coolers), then fans that can operate at a higher static pressure may be needed.

COMBINING PASSIVE AND ACTIVE VENTILATION

Ventilation systems that combine passive ventilation and active ventilation can be very effective options in some instances. If your client wants to maximize the greenhouse square footage but isn't concerned about relying on open-side curtains in the summer, then a smaller system may be just fine, since the greenhouse can rely on a high volume of ventilation coming from the passive system in the summer. With this option, a winter season ventilation rate is around two to three air exchanges per hour (a much smaller volume of air movement needed than in summer), and smaller vent fans could be used.

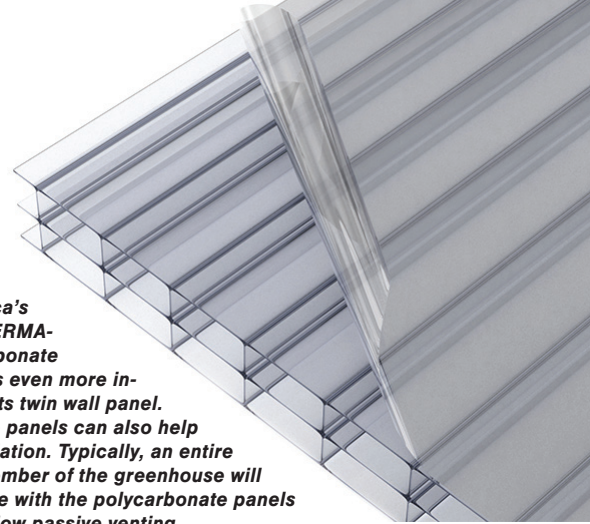
Keep in mind that, in the winter, there may be situations in which air needs to be exchanged faster than two to three air changes per hour. For example, it may be important if there is a buildup of moisture/humidity or condensation in the greenhouse that may cause disease issues and mold growth. This could require either dehumidification or a heating system to cope with the heat loss from increased ventilation.

HORIZONTAL AIR FLOW FANS

The greater the length of the greenhouse, the more important it is to ensure airflow along its full length and not just in and out at the ends. Horizontal air flow (HAF) fans can be a valuable addition to a greenhouse ventilation system as, without them, a greenhouse may have a horizontal temperature gradient of as much as 15 degrees at night. This may not sound like a major issue, but that temperature difference may be enough to cause dew



Palram America's twin-wall THERMAGLAS polycarbonate has a single layer of air spaces that help insulate a greenhouse. PHOTO COURTESY OF PALRAM AMERICAS



Palram America's triple-wall THERMA-GLAS polycarbonate panel provides even more insulation than its twin wall panel. Polycarbonate panels can also help regulate ventilation. Typically, an entire supporting member of the greenhouse will open and close with the polycarbonate panels attached to allow passive venting.

PHOTO COURTESY OF PALRAM AMERICAS

on the cold end, depending on the humidity, and that dew may lead to fungal diseases taking hold on plant leaves. Most plant pathogens simply need a susceptible host and the right environment for them to take hold. In most cases, that best environment for pathogens is wet or damp leaves and warm temperatures.

Air movement from HAF fans also helps keep CO₂ levels uniform and, thus, plant growth uniform as well. (Sometimes CO₂ may be added to a greenhouse.) CO₂ equilibrium is important because, otherwise, plants will grow larger and faster at the inlet-vented end than the exhaust end of the greenhouse.

HAF fans should be sized to move twice the floor square footage, in volume, per minute (cubic feet per minute, cfm). This means a 30' by 100' greenhouse should have fans capable of moving 6,000 cfm. This amount can and should be split into several fans (four at 1,500 cfm each, for example). The HAF fans should be mounted above the height that plants can grow and should be durable enough to run constantly, except when the exhaust and inlet fans are running.

The air movement pattern should circulate the air along one side and back on the other. Best practice has the fans on the ends closer to the end walls (10' to 15') and then further apart (40' to 50') in the long stretches of the main part of the greenhouse. This placement helps capture and turn the air at the ends more effectively. A longer greenhouse would benefit from more fans than a short one in maintaining horizontal air circulation.

CONCLUSION

When working with a client, take note of their goals and planned use to help them determine what sort of ventilation they need, so you end up with a happy customer.

As always, making it oversized and thoroughly explaining the various options is usually a good approach. **RB**

Jacob Prater is a soil scientist and associate professor in Wisconsin. His passion is natural resource management along with the wise and effective use of those resources to improve human life.

BY DAN BROWNELL

(Left) The hydraulic cylinders, frame, and door leaf on this PowerLift door form a strong rigid triangle to hold the door firmly in position when open, even in windy conditions.

PHOTO COURTESY OF POWERLIFT HYDRAULIC DOORS



Wind-Resistant Design of Hydraulic and Bifold Doors

Engineering at Work

During windy conditions, large commercial doors, such as hydraulic and bifold doors, are subjected to significant stress. But with a wind-resistant design, they can withstand the elements and provide years of reliable service.

While hydraulic and bifold doors have similar functions, and both are constructed of structural steel tubing, they operate differently. Hydraulic doors use pistons to raise a single panel door, hinged at the top, that swings out and up in a large arc. A bifold door, on the other hand, uses two panels hinged at the center that are raised using cables or straps.

Hydraulic and bifold doors are good options for larger openings. “When an opening exceeds 30 feet in width, they’re generally more practical than sliding doors,”

said Jason Myrvik, president of Midland Door Solutions. With the increasing size of agricultural and commercial buildings, they are becoming more popular.

“The amount of wind-resistance a door provides depends on how the door is engineered, reinforced, and tested to meet building codes,” Myrvik explained. “Doors are engineered to meet local building codes, but not all doors are provided with stamped engineering drawings.” Stamped engineering drawings can be provided at an additional cost, however.

The engineering approval is done at the state level to meet the local codes. “Your door design can be approved and sealed by a professional engineer registered in the state where the project is located for the proper wind loading and exposure,” according to Schweiss Doors, a manufac-

turer of both hydraulic and bifold doors.

According to Zach Campbell, Lead Engineer at PowerLift Hydraulic Doors, “Single-panel hydraulic doors, especially fully welded steel doors, are extremely robust. A well-engineered single-panel hydraulic door should be designed to be open in winds up to at least 40 mph. The hydraulic cylinders, frame, and door leaf on these doors form a strong rigid triangle to hold the door firmly in position when open, even in windy conditions. There is no slack in the door system which would allow the door to bounce in the wind.”

OVERHEAD DOOR WIND-RESISTANCE BUILDING CODES AND TESTING STANDARDS

The core building codes and testing

standards that apply to overhead doors for wind resistance, such as the International Building Code (IBC), ASCE 7, and DASMA's testing standards (ANSI/DASMA 108 and 115), are the same frameworks used for both hydraulic and bifold doors.

Wind-resistance testing is performed as a complete system, rather than just testing individual components separately. For example, when hydraulic and bifold doors incorporate windows, they aren't considered a weak area in the door. The window components are part of the overall door system that has been rigorously tested to industry wind load standards.

THE IMPORTANCE OF THE BUILDING STRUCTURE FOR DOOR SUPPORT

All large commercial doors, including hydraulic and bifold doors, rely significantly on the surrounding building structure for their primary support and wind resistance. "Whether a building is constructed from wood or steel, it needs to be engineered to support the forces of wind being applied to the door structure," Myrvik said. "The door manufacturer should provide loading information to the building manufacturer to ensure the jambs and header are sized adequately to handle the forces."

HANDLING POSITIVE AND NEGATIVE WIND PRESSURES

"Single-panel hydraulic doors can be designed to withstand both positive and negative wind pressures exceeding 200 mph, even on extremely large doors exceeding 100' in width and 28' in height," said Campbell. "This is accomplished through steel tube sizing and general structural design along with removable steel wind pins. These steel wind pins, often called 'hurricane pins,' are inserted through a welded steel bracket on the bottom of the door into the concrete floor when extreme winds are expected.

"Under normal conditions (winds 40 mph or less) wind pins are not necessary.

The hydraulic door is locked closed by hydraulic pressure built up in the cylinders," Campbell added. "When the door is closed, it is normal for the door operator to continue activating the 'close' button for two to three seconds after the door leaf is tightly closed against the frame. This builds hydraulic relief pressure in the rod end of each hydraulic cylinder, usually to about 2,500 psi. This effectively locks the door closed with several thousand pounds of hydraulic force, which is enough to withstand significant wind loads without being pulled open. Combined with one or more steel wind pins across the bottom of the door, single-panel hydraulic doors can be designed to withstand any wind speed on earth.

"Positive wind pressures are easy to design for as long as the door comes with

its own stationary frame that attaches to the building," Campbell explained. "This significantly strengthens the building opening by adding additional structure and giving extra support against wind trying to blow the door in. Removable steel wind pins can help with extreme positive wind pressures just as they do with extreme negative wind pressures."

DOOR LIMITATIONS AND PRECAUTIONS

While wind-resistant hydraulic and bifold doors can deal with windy conditions, precautions need to be taken to ensure they aren't overstressed. They're designed to handle the wind in a closed and latched position. "It is imperative that either door type be closed and locked during a high-wind event to prevent damage

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Hydraulic and bifold doors are good options for larger openings. When an opening exceeds 30 feet in width, they're generally more practical than sliding doors" according to Jason Myrvik, president of Midland Door Solutions. With the increasing size of agricultural and commercial buildings, they're becoming more popular.
PHOTO COURTESY OF MIDLAND DOOR SOLUTIONS

to the door or building structure," Myrvik said. "We recommend the door in the closed and latched position in any wind speeds greater than 30 mph."

SITE CONSIDERATIONS FOR NEW BUILDING CONSTRUCTION

Building orientation and prevailing wind direction should be a consideration during site planning, especially for structures featuring large hydraulic or bifold doors. While Midland's doors are rigorously designed for specific wind loads regardless of direction, strategic placement can help mitigate the most extreme wind forces on the overall building. This integrated approach not only optimizes the entire structure's wind performance but can also enhance the door's long-term operability.


REPLACING A SLIDING DOOR WITH A HYDRAULIC OR BIFOLD DOOR

A structure designed for a sliding door will need to be modified to accommodate a hydraulic or bifold door. "Structural framing, and potentially concrete footings, will need to be added to allow the door to be properly secured to the building structure, although the new door typically comes with a support structure," Myrvik said. "The support structure needs to be anchored to the building for lateral support. Therefore, it requires additional reinforcement."

CONCLUSION

Wind-resistant hydraulic and bifold doors create an efficient and effective building access system, especially for large openings

and in areas prone to high winds. However, builders should ensure that both new buildings and refitting projects have adequate structural support for the doors. In addition, for new construction in wind-prone areas, building orientation and prevailing wind direction should be taken into consideration to help reduce potential strain on the doors. **RB**

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The Relationship Between Wind-Resistance Building Codes and Geographic Location

By Jason Myrvik, Midland Door Solutions

Wind resistance codes are tied to geographic location because of varying wind risks across the country. The higher the likelihood of severe winds, tornadoes, or hurricanes in a specific area, the stricter the building codes for wind resistance becomes. Wind speeds and other factors are used to determine design wind pressures for testing and assessing doors. Risk categories and exposure categories are the classifications used to assess the potential risk and exposure of a building to wind hazards. The International Building Code (IBC) defines these below:

RISK CATEGORY

Category I: Buildings and structures that represent a low risk to human life and health in the event of failure. This category includes agricultural buildings, minor storage facilities and other structures with low occupancy loads.

Category II: Buildings and structures that represent a moderate risk to human life and health in the event of failure. This category includes most commercial and residential buildings, such as offices, retail stores, apartments, and hotels.

Category III: Buildings and structures that represent a substantial risk to human life and health in the event of failure. This category includes buildings with high occupancy loads or buildings essential to public safety, such as hospitals, schools, and high-rise buildings.

Category IV: Buildings and structures that represent an essential risk to human life and health in the event of failure. This category includes buildings housing hazardous materials, emergency response facilities and critical infrastructure.

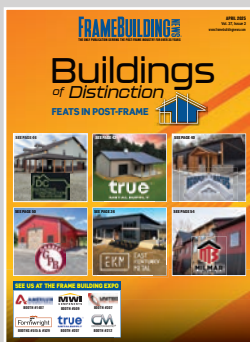
EXPOSURE CATEGORY

Exposure B: Represents the least wind-exposed areas, such as urban or suburban areas with numerous buildings, trees or other obstructions that shield structures from the full force of the wind.

Exposure C: Areas with moderate wind exposure fall into this category. Applies to urban or suburban areas with some obstructions but less dense than Exposure B areas.

Exposure D: Applies to locations with significant exposure to wind, such as coastal areas or flat, open terrain without many obstructions.

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If you have questions about the Project of the Month or any other editorial feature in Rural Builder, contact the editor: Karen Knapstein • 715-952-1633 • karen@shieldwallmedia.com

■ CENTRAL STATES INC. WELCOMES NEW MFG. UNIT PRESIDENT

Central States Inc., a leader in metal building components, roofing, and building packages, announced that Doug Watts has joined the 100% employee-owned business as Central States Manufacturing President. Watts comes to his new post with more than two decades of manufacturing and leadership experience and will oversee operations, sales, logistics, and customer service for Central States Manufacturing.



Doug Watts, Central States' new manufacturing president.

“First and foremost, Doug was a strategic fit for us from a culture and customer-first perspective,” said Jim Sliker, Central States Inc. CEO. “Doug’s experience in the building products industry is only surpassed by his character, leadership, and dedication to excellence. He will be instrumental as we guide the company toward continued success and innovation.”

With more than 25 years of experience in the building materials and glazing systems industries, Doug Watts brings a wealth of leadership and operational expertise to his new role as President of Central States Manufacturing. Most recently, he completed a distinguished 22-year tenure at Oldcastle BuildingEnvelope. There,

he held several key leadership roles, including President of Architectural Glazing Systems, where he oversaw full P&L responsibility for business units across the U.S. and Canada. Over a three-year period, Watts helped grow the company’s revenues by 50%.

Doug’s background includes deep experience in delivering full building envelope solutions — ranging from aluminum storefronts and curtain walls to windows and glass — supported by robust estimating, engineering, and project management services. He began his career in sales at Binswanger Glass and holds a Master’s Degree in Business Management from West Texas A&M University.

His proven track record of driving growth, operational excellence, and customer-focused innovation positions him well to lead Central States into its next chapter.

“I’m honored to step into the role of President at Central States Manufacturing,” Watts said. “This company’s culture of integrity, innovation, and employee-ownership is truly special. I’m excited to serve alongside our incredible team of employee-owners as we continue building on our legacy of excellence. I also want to thank Tim Ruger for his outstanding lead-

ership over the last decade. Tim’s contributions have positioned us for continued success, and I look forward to building on that foundation.”

Tim Ruger joined Central States in 2013 after a long career of leadership positions in automotive manufacturing. Under his leadership, Central States Manufacturing has experienced significant expansion, averaging more than 25% growth year over year, bringing new products and services to the market, and opening five new manufacturing facilities with two more scheduled to open their doors this summer. Ruger continues his work with Central States in the role of Chief Strategy Officer, helping to focus Central States on new ventures.

■ S-5! RECOGNIZED FOR EXCELLENCE IN WORKPLACE SAFETY

S-5!, an industry leader in metal roof attachment solutions, has earned the Metal Building Manufacturers Association (MBMA) Safety Award for exceptional performance in maintaining workplace safety and for zero recordable incidents at its Iowa Park, Texas, manufacturing facility.

Each year, MBMA recognizes member companies that demonstrate exceptional commitment to safety in the workplace over the past calendar year. The 2025 award was presented during the MBMA



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S-5!'s Safety Manager, Randy Crumpton (left) and Vice President of Operations, Shawn Haddock.

Spring Association Meeting in Charlotte, N.C. Shawn Haddock, Vice President of Operations at S-5!, accepted the honor on behalf of the entire S-5! team.

“We are truly honored to receive this recognition from MBMA,” said Haddock. “It’s a testament to the diligence, care and commitment of our entire manufacturing team. I am especially grateful to Randy Crumpton, our safety manager, for ensuring a safe manufacturing environment. He has fostered a safety-first culture by leading safety training, implementing policies and proactively addressing hazards to reduce the risk of workplace accidents and ensure regulatory compliance.”

MBMA plays a leading role in promoting industry-wide safety standards and best practices. “Promoting workplace safety is one of MBMA’s most important objectives, and these awards celebrate those members who set the benchmark,” said Tony Bouquot, MBMA General Manager. “S-5! is an active and engaged member of our association, and their achievement of a full year without a recordable incident is truly commendable.”

S-5!'s state-of-the-art manufacturing facility is certified to ISO 9001:2015 quality assurance standards and features advanced automation and equipment. In recent years, the plant underwent a 20,000+ square foot expansion to double its production capacity. This marks the fourth time S-5! has received the MBMA Safety Award.

■ SBCA RESTRUCTURES PROFESSIONAL MEMBERSHIP PROGRAM

The Structural Building Components Association (SBCA) has restructured and expanded its Professional Membership program to provide targeted value to engineers, architects, code officials, draftspersons, and others whose work is critical to the success of structural framing. This member initiative is designed to facilitate greater collaboration and communication between these key professionals and component manufacturers (CMs) by providing tools and resources that will make their jobs easier and more efficient. Whether these professionals are specifying trusses, reviewing plans, inspecting installations, or designing for structural performance, SBCA’s goal is to connect Professional Members with the people, knowledge, and resources that are driving best practices in structural framing today.

Going forward, SBCA’s Professional Members will gain access to SBCA’s growing technical resource library, exclusive continuing education (CEU) courses, structural detail guides, live educational events, and member-only virtual roundtables that foster direct collaboration with peers and CMs. These benefits are specifically tailored to help professionals solve today’s design challenges, efficiently meet code requirements, and improve communication throughout the supply chain.

SBCA expands Professional Membership to connect AEC pros with tools, insights, and collaboration in structural framing.

Joining SBCA as a Professional Member also provides integrated access to a national network of manufacturers and suppliers committed to advancing best practices, promoting cost-effective innovation, and fostering greater collaboration between design and construction disciplines that result in more successful projects

■ COMBILIFT RECEIVES ITS 3RD RED DOT WIN WITH FORKLIFT

Irish-based manufacturer Combilift, a global leader in multi-directional and customized handling solutions, has been awarded the prestigious Red Dot Award for Product Design 2025 for its Combi-CB70E, high-capacity, electric-powered multidirectional forklift, developed to meet the needs of heavy-duty, long-load handling in more sustainable ways.

The Red Dot Award, one of the most internationally renowned design competitions, recognises excellence in design quality and innovation, and is no stranger to Combilift’s exceptional vision to shaping the future of the Commercial Vehicles Industry. This award completes a hat trick for Combilift, which previously won a Red Dot for the Combi-WR and ‘Best of the Best’ for the Combi-CB4. Combilift’s Combi-CB70E impressed the international jury with its new ergonomic design, environmental credentials, and ability to enhance operator comfort and productivity in demanding industrial settings.

Martin McVicar, CEO and Co-founder of Combilift, com-

mented: “We are delighted to receive our third Red Dot Award this year for the Combi-CB70E. Our design and engineering teams have been striving to provide solutions that are not only functional and safe but also reflect excellence in industrial design. Our customers increasingly demand electric alternatives that don’t compromise on performance, and the CB70E is exactly that.”

The multidirectional Combi-CB70E is a 7-ton capacity electric counterbalance forklift, specifically designed for handling long and bulky loads in confined or challenging spaces. Equipped with Combilift’s patented Independent Traction Control System and large elastic rubber tires, it provides all-terrain capability while maintaining zero-emission operation. The spacious gas strut suspension cab and floor to ceiling glazing offers enhanced visibility and comfort, while the Auto Swivel Seat, which automatically swivels 15 degrees to the left or right, depending on the direction of travel, ensures optimal ergonomics and comfort for operators, even during extended shifts.

This Red Dot recognition comes in an exceptional 11 months of success for Combilift, which has also received multiple international accolades for its products and leadership, including Prod-



Martin McVicar, Combilift CEO and Cofounder (left); Mark Whyte, Lead Engineer.

uct of the Year and Ergonomics Award at the UKMHA Archies Awards, as well as Design Team of the Year and Industry Leader awards from the UK’s Engineering & Manufacturing Awards. **RB**

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BY JOSEPH LYMAN

Insulating Concrete Forms Come to the Forefront

And They're Perfectly Comfortable in the Country

DECEMBER 2003 FLASHBACK

The ICF sector has continued to grow since Rural Builder published this article in 2003. However, the ICF association is no longer the ICFA. The Insulating Concrete Forms Manufacturers Association has taken its place. According to its website (icf-ma.org), “The Insulating Concrete Forms Manufacturers Association (ICFMA) is the North American non-profit trade association for the insulating concrete form (ICF) industry. The ICFMA was founded in 2014 by a dedicated group of manufacturers with the interest of improving the quality and acceptance of Insulated Concrete Form construction. Our mission is to promote and enhance the social, environmental and economic value of insulating concrete forms in the North American marketplace.”



Insulating concrete forms, long used in residential projects, have been gaining popularity for use with agricultural buildings.

ECO-BLOCK PHOTO

For more than three decades, insulating concrete forms have captivated the hearts and minds of homeowners, delivering energy-efficient, disaster-resistant homes to hundreds of thousands of individuals throughout North America. Recently, though, building owners and design professionals have come to realize that ICFs deliver the same value-added benefits in commercial projects.

Due to the demanding nature of agricultural projects, ICFs are beginning to be used as a building system of choice. Whether

your needs be humidity or temperature control, structural integrity or low sound transmission, ICFs often exceed the performance standards required in the industry.

THE CONCEPT

ICFs are insulating forms for steel-reinforced poured concrete walls, which remain in place as a permanent part of the wall assembly. The forms, made of foam insulation, are either preformed interlocking blocks or separate panels connected with

plastic or metal ties. The left-in-place forms not only provide a continuous insulation and sound barrier, but serve as a backing for drywall on the inside, and stucco, lap siding, or brick on the outside.

Although all ICFs are identical in principle, the various brands differ widely in details of shape, cavity, and component parts. Block systems have the smallest individual units, ranging from 8x16 inches to 16x48 inches. A typical ICF block is 10 inches in overall width, with a 6-inch cavity for the concrete. The units are factory-molded with special interlocking edges, which allow them to fit together much like plastic children's blocks.

Panel systems have the largest units, ranging from roughly 1x8 feet to 4x12 feet. Their foam edges are flat, and interconnection requires attachment of a separate connector or tie. Panels are assembled into units before setting in place, either onsite or by the local distributor prior to delivery. Plank systems are similar to panel systems, but generally use smaller faces of foam, ranging in height from 8 to 12 inches and in width from 4 to 8 feet. The major difference between planks and panels is their assembly. The foam planks are outfitted with ties as part of the setting sequence, rather than being pre-assembled into units.

Within these broad categories of ICFs, individual brands vary in their cavity design. Flat wall systems yield a continuous thickness of concrete, like conventional poured walls. Grid wall systems have a waffle pattern in which the concrete is thicker at some points than others. Post and beam systems have widely spaced horizontal and vertical columns of concrete, which are completely encapsulated in foam. Whatever the differences among ICF brands, all major ICF systems are engineer-designed, code-accepted, and field-proven.

CREAM OF THE CROP

The Tupling family has been in the potato business since 1944, and has owned potato storage facilities since 1967. For



With added rebar, the ICF walls of Bert Tupling's potato barns withstand the weight of the 5.5 million pounds of potatoes he piles 19 feet high in each building.
ARXX BUILDING PRODUCTS PHOTO


Bert Tupling, a competitive market makes it impossible to compromise on anything, especially storage facilities. With 95 percent of his potatoes sold to major chains, wholesalers, and restaurants, maintaining the highest quality product is crucial to business success.


"Quality today sells a lot of product and when customers see good quality in our potatoes, they ask how we got it," Tupling says. "My answer is that we invested in good storage facilities and humidification systems."

In addition to providing owners with

the ability to easily manage the indoor environment, ICFs offer a wide selection of usable exterior and interior finishing systems that meet both Tupling's quality standards and the Health Approved Safety Standards Protection requirements in Ontario. This is especially important in maintaining cleanliness standards.

Each ICF building stores a different variety of potato, and each building is kept at a different temperature and humidity level depending upon that variety's needs. After researching the different building systems, it was determined a traditional







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Kansas builder Wes DeBey built this 5,300-square-foot combination bull barn/living quarters using ICFs, chosen for their sound proofing ability. REWARD WALL SYSTEMS PHOTOS

built structure could not compare to the longevity or performance benefits of ICF construction. With added rebar, the ICF walls withstand the weight of the 5.5 million pounds of potatoes he piles 19 feet high in bulk in each building.

ICFs ARE QUIET — NO BULL

In most areas of North America, bull barns are a serious niche market. However, in the heartland of America, they are quite common. Wes Debey, of Wes Debey Construction, Inc. of Hays, Kan., recently completed a 5,300-square-foot structure that combined a bull barn and living quarters for the foreman of the Proven Sires Ranch.

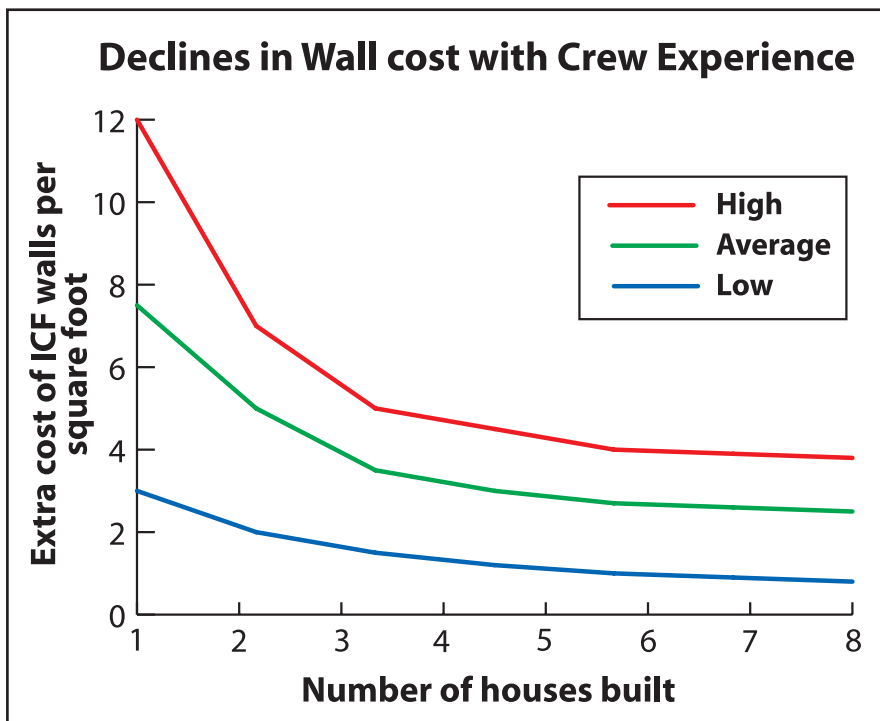
The 3,840-square-foot first floor of the building contains an office, feed room, bathroom and garage in the front, with the barn and loft in the back, and a three-bedroom, two-bathroom apartment occupies the second floor of the building. “The owners chose ICFs because of the sound proofing,” says Debey. “Having a home connected to a barn full of bulls can be very noisy. The ICFs significantly diminished the noise level!”

A BOWL OF GRAPES

Due to the complex nature of aging wine, the industry has been turning to ICFs to easily manage the processing and aging of its product. According to the wine industry, there are three keys to the proper storage of wine. They are: 1. Controlling temperature and humidity; 2. Preventing ultra-violet rays from affecting the wine; and 3. Controlling vibration. Since most wine storage facilities are built into the side of hills, steel-reinforced ICFs are able to withstand the lateral forces routinely placed on the system.

“ICFs provided sound structural behavior and a simple installation process, so we’re very happy with the product,” says Chuck Scullion-Smith of Robert Mondavi’s Facility Development Corporation Construction.

The 7,000-square-foot centrifuge and



Source: Insulating Concrete Form Association

ICF walls provide a sound barrier and ambient temperature control for this 7,000-square-foot winery centrifuge and filtration building. ARXX BUILDING PRODUCTS PHOTO



filtration building is the first structure in the huge complex. According to Smith, ICF walls provide an effective sound barrier for the centrifuge room and permit excellent ambient temperature control for the rest of the building.

“I drive by to check the building regularly,” he says. “There’s no cracks on the interior plaster or exterior stucco.”

Schweiger Vineyard’s winemaker, Andy Schweiger, was looking for ambient temperature control without air-conditioning or refrigeration for his barrel storage facility. In the end, they chose a cut-and-cover structure, which is 70 percent underground. Having the structure built into the ground allows the winemaker to easily control temperature and humidity and limit harmful ultra-violet light.

“It’s kind of like a cave, only better,” says Fred Schweiger, Andy’s father, a contractor and partner in the Napa Valley vineyard.

Lee Morton of Morton Building Solutions, an experienced ICF professional located in Santa Rosa, Calif., predicts that 50 percent of the ICFs being used commercially in central California are used in wineries. “ICFs are a perfect fit for wineries. They provide clients with the ability to easily construct and control the environment, and allow winemakers to produce a quality product,” says Morton.

PROJECT SUCCESS

Although ICFs are relatively new to the agricultural industry, their track record and performance in the residential and commercial markets are rock solid. **RB**

Joseph Lyman is the executive director of the Insulating Concrete Form Association.

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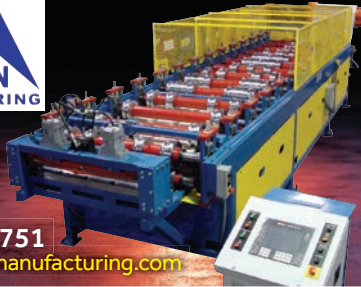
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BY GARY REICHERT

One Big Beautiful Bill

Tax Law Changes Manufacturers Need To know

One of the great things about my position at Shield Wall Media is I am in regular contact with upper management and C-Suite level people at a lot of construction related companies. One of the bad things is I am in regular contact with upper management and C-Suite level people at a lot of construction-related companies, and they share questions.

Rarely, I know the answers. Usually, it ends in a research project because if one person in our audience asked a question, many more have the same question and haven't asked. Those questions occasionally become article topics.

The most recent question was about One Big Beautiful Bill (OBBB) and how it affects Qualified Production Property, Bonus Depreciation and Rule 179. I am not nearly qualified to answer that question, but I can research.

I am not an accountant or tax attorney. This is not intended as tax or legal advice. The objective of this article is to provide enough knowledge for you to ask your advisors the right questions.

On July 4, 2025, Congress gave us the One Big Beautiful Bill (OBBB). It made sweeping changes across many areas, but three stand out for manufacturers and builders:

- Bonus Depreciation (Section 168(k))
- Section 179 (Rule 179)
- Qualified Production Property (QPP) (brand-new Section 168(n))

The name isn't just hype. This bill really is huge (about 1,000 pages), and with some planning may be beautiful, because you may be able to expand and grow your business sooner. You can read the entire bill at <https://tinyurl.com/BBB0725>. Here are the changes.

BONUS DEPRECIATION: 100% IS PERMANENT

"Section 168(k)... is amended... by inserting '100 percent.'" — OBBB text

No more phase-downs. Property acquired after January 19, 2025 can be fully deducted in year one.

What that means for production facilities and shops:

- Roll formers, forklifts, CNC machines — all 100% deductible.
- Delivery trucks, trailers, and jobsite equipment — also 100%.
- Software and certain systems — covered too.

QUALIFIED PRODUCTION PROPERTY

QPP is new. It allows you to expense the production-use portion of a nonresidential building, instead of depreciating.

The rules:

- Construction must begin between Jan. 19, 2025 and Dec. 31, 2028.
- The building must be in service before Jan. 1, 2031.
- Only production space qualifies. Offices, sales areas, and parking don't.
- Stop using the space for production within 10 years and you may face recapture.

Why it matters:

For a 60,000-square-foot expansion, if 45,000 is production, that portion can be fully expensed in year one. Traditionally, it would have taken 39 years. That's a seismic shift for plant expansions, modular facilities, and automated shops.

Section 179: More Room to Deduct
OBBB raised the Section 179 limits.

- Maximum deduction: \$2.5 million
- Phase-out starts at \$4 million
- Still tied to taxable income (can't create a loss)

For smaller shops (shed builders, truss yards, roll formers and component manufacturers) this remains a flexible tool. Unlike bonus depreciation, Section 179 lets you choose which assets to expense.

Our audience includes equipment man-

Section 179 vs. Bonus Depreciation

Section 179

- Limit: \$2.5M
- Phase-out: \$4M
- Must have taxable income
- Pick and choose assets

Bonus Depreciation

- No dollar cap
- Can create a loss
- Automatic 100% expensing

Quick Checklist

- Track contract dates (must be after Jan. 19, 2025).
- Map out production vs. non-production space for QPP.
- Verify your state's conformity rules.
- Decide when to use Section 179 versus bonus depreciation.

Plan for recapture if you may repurpose space.

ufacturers, component manufacturers and builders. Here's how OBBB changes the landscape:

- Manufacturers can justify expansions faster. QPP reduces the after-tax cost of new production facilities.

- Builders can help clients design with tax in mind—floor plans that separate production and office space maximizing immediate savings.

Accelerated depreciation and QPP

both a benefit manufacturers seeking new production facilities and a potential closing tool, for the builder, in the design build process

When we acquired the Construction Division of F+W Media through Chapter 11, timing deductions and cash flow was critical to survival. OBBB doesn't make decisions for you, but it creates more flexibility allowing you more paths to success. **RB**

How to Determine Qualified Production Property (QPP)

QPP is the production-use portion of a nonresidential building — plus the machinery and systems integral to production. Determining what counts is critical, because it sets the size of your deduction.

Included (Eligible for QPP):

- Production floors: Manufacturing and processing areas.
- Material handling: Aisles, staging, and loading areas integral to production flow.
- Machinery and equipment: Roll formers, CNC lines, presses, welders, conveyor systems.
- Built-in systems serving production: Heavy-duty electrical, dust collection, compressed air, overhead cranes — if they directly support production.

Excluded (Not QPP):

- Offices, breakrooms, administrative space.
- Sales areas, showrooms, lobbies.
- R&D labs, software development, engineering spaces.
- Parking lots, employee facilities, or lodging.
- Machinery unrelated to production (e.g., office IT systems).

Key Rules:

- Construction must begin after Jan. 19, 2025 and before Dec. 31, 2028.
- Property must be in service before Jan. 1, 2031.
- If production use ends within 10 years, IRS recapture rules apply.
- Lessors can't claim QPP for space or equipment used by a tenant — the tenant must elect it.

Pro Tip: Keep floor plans, equipment layouts, and system drawings on file. The IRS will expect documentation tying production space and machinery directly to the deduction.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (required by Act of August 12, 1970: Section 3685, Title 39, United States Code). 1. RURAL BUILDER. 2. (ISSN: 0888-3025) 3. Filing date: 8/24/25. 4. Issue frequency: Monthly except January, April, June and November. 5. Number of issues published annually: 8. 6. The annual subscription price is 29.98. 7. Complete mailing address of known office of publication: Shield Wall Media LLC 1990 Godfrey Dr., Waupaca, WI 54981. 8. Complete mailing address of headquarters or general business office of publisher: Shield Wall Media LLC 150 Depot St., Iola, WI 54945. 9. Full names and complete mailing addresses of publisher, editor, and managing editor. Publisher: Gary Reichert 150 Depot St., Iola, WI 54945. Editor: Karen Knapstein 1990 Godfrey Dr., Waupaca, WI 54981. Managing Editor: Gary Reichert 1990 Godfrey Dr., Waupaca, WI 54981. 10. 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Red Iron Barndo

Curbed Construction
curbedconstruction.com

Located just 20 minutes north of Chattanooga in an area known for its outdoor recreation opportunities like boating, camping, and hiking, the owners of this property sought a low-maintenance, visually appealing barndominium. Their vision included ample living space, a modern kitchen, and plenty of room to store recreational equipment and vehicles.

Curbed Construction, a general contractor based in East Tennessee with deep expertise in pre-engineered metal buildings, led the project under the direction of Andy Shuford. **RB**



THE DETAILS:

Size: 60'x125'

Roof Pitch: 3:12

Foundation: Concrete slab on grade

Posts: Olympia Steel Buildings,
12' eave height

Trusses: TJI ceiling joists in living area

Roof Panels:

Olympia Steel 26ga Galvalume

Wall Panels: Olympia Steel 26ga
Galvalume, Polar White
with burnished slate trim

Fasteners: Olympia Steel stainless
steel fasteners with neoprene
washers; Simpson Strong Tie
fasteners, and Tapcon fasteners

Overhead Doors: Three Raynor
insulated panel doors: 16'x10',
16'x10', 20'x10'

Walk Doors: ThermaTru

Windows: MI Windows and Doors, 5'x5'

Insulation:

Silvercote Energy Saver System

Other Details:

Stone fireplace

Polished concrete floors

Curbless walk-in shower

Custom cabinets and countertops

Stainless appliances

Tongue-and-groove porch ceilings

2,000 sf living space, 2 bed, 2.5 bath

4,000 sf garage



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Industry Insights Start with You: Take the Fall Survey

Welcome to autumn. This season includes a lot of work to get ready for winter and the new year. All of us here at Shield Wall Media are asking for a little help with one of those fall tasks, and it doesn't involve a rake.

This will be the third year for our *CSI-Annual*.

The *CSI-Annual* is where we compile industry data from our proprietary survey and other sources. We share this in the form of a book with all of the subscribers of all of our magazines and send roughly 2,000 additional copies to shows and events. We provide you with this industry data free of charge. That is in addition to our magazine subscriptions, that you also do not pay to receive.

As a little "inside baseball" between the survey, printing, mailing and writing the *CSI-Annual & Market Report*, Shield Wall Media invests a little over \$50,000 to get you this information.

If you would like to sponsor the book, we would love that. But, that is not what I am asking for.

I am asking that you check your email and take the survey. This costs you nothing but a few minutes of your time. The survey is anonymous, so you are not sharing any proprietary information.

Last year we increased the sample size by approximately 40% and received over 3,000 responses. We would like to get over 4,000 this

year. Across our titles we have about 100,000 subscriptions so that should be achievable.

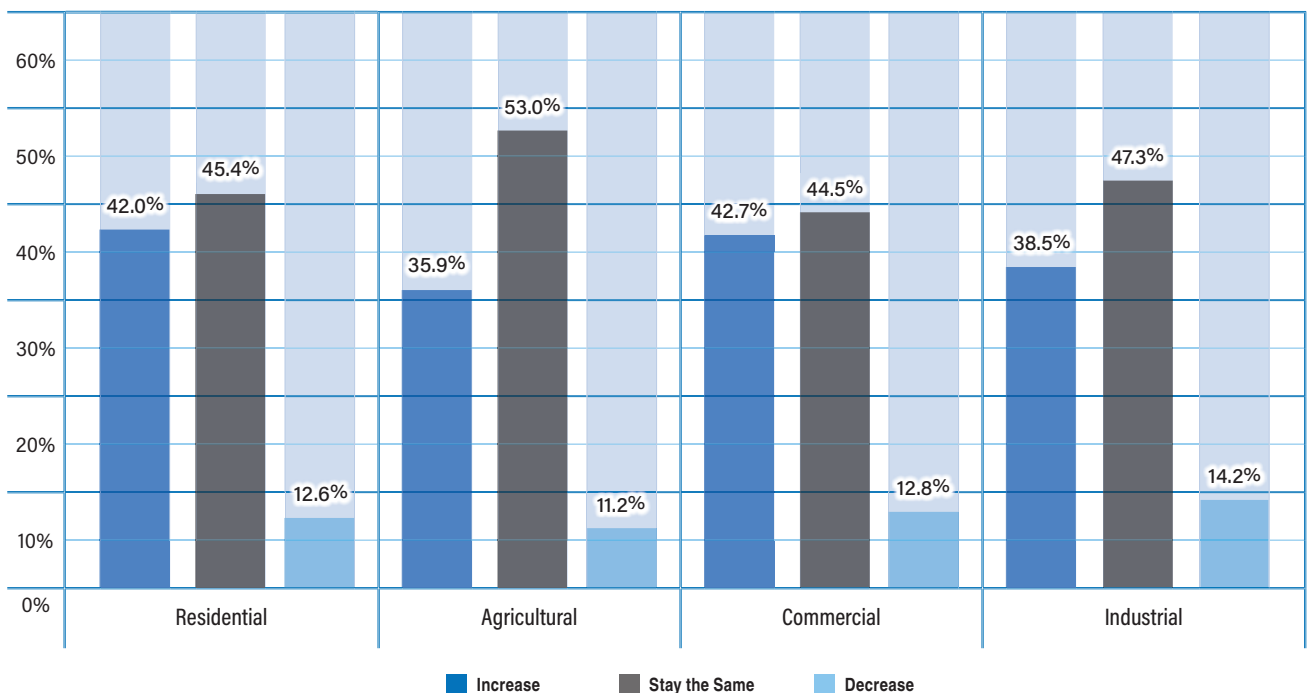
Please consider this a guilt trip. If you read our *CSI-Annual* and don't take the survey remember your peers did something you did not, to improve and help grow our corner of the construction world.

Help us help you. And, if you would like to come to Waupaca and rake leaves, we can give you a pass on taking the survey.

So you know what we are looking for, here are a few of the questions that will be on our survey, with the answers in the *CSI-Annual & Market Report* (mailing at the end of Q1, 2026):

- How did your 2025 profitability compare to 2024?
- How do you think your 2026 gross sales will compare to 2025?
- Across the country will residential construction increase, decrease or stay the same?
- Across the country will agricultural construction increase, decrease or stay the same?
- Which of the following (if any) do you see as a challenge in 2026?
- What new products or technology innovations are most likely to have the greatest impact on your business in 2026? **RB**

Expected Growth by Market Segment



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