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## On The Cover

Florida's Aventura Mall features a custom, vaulted skylight with high-performance glass and aluminum framing. The durable finish helps protect against the intense sunlight, heavy rains, high humidity, and salt spray. For more information, turn to page 34.

Photo by William Lemke/courtesy Super Sky Products Enterprises, LLC and Linetec

# Coming Together in the World of Metal Architecture



**Melanie Kowal**  
EXECUTIVE PUBLISHER

**This issue comes together in the middle of a busy stretch:** projects are moving, deadlines are real, and most days are focused on what's directly in front of you. It's not always easy to pause and take stock, which is part of what makes this time of year, and this issue, a good opportunity to do just that.

As the May issue of *Metal Architecture* reaches you, many in the industry will be gathering at the AIA Conference on Architecture & Design in San Diego. I'll be there as well, and it's always one of the highlights of the year for both what's on display and the conversations that happen in between. If you're attending, I'd genuinely welcome the chance to connect.

One of the most valuable parts of this issue is our latest architects survey. It offers a snapshot of how architects are thinking right now: where priorities are shifting, what challenges are top of mind, and how decisions are being made across projects. What stands out isn't just any one data point, but the consistency in how performance, efficiency, and practicality are shaping design choices.

You can see those priorities reflected throughout the issue. Materials like metal composite material (MCM) panels are helping support adaptive reuse, playing a larger role in project planning, offering a way to modernize structures while improving performance and maintaining design flexibility. Daylighting is being used more intentionally to create spaces that feel comfortable, inviting, and efficient. Rainscreen strategies are increasingly part of that conversation, reinforcing the importance of performance behind the facade.

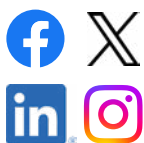
And then there are the evolving approaches to design itself. The continued interest in barndominium projects points to a broader shift toward flexibility and efficiency, finding new ways to meet client needs without overcomplicating the build.

What ties it all together, whether you're reading this from your office, a job site, or somewhere in between, is a shared momentum. Architecture today is not standing still. It's adapting, refining, and responding to new challenges with a level of creativity and technical precision that feels especially relevant right now.

I hope this issue offers both inspiration and practical insight as you continue your work. 

*Melanie Kowal*

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# Farmer Payne Architects:

## Collaborative minds make inventive designs

**By Hanna Kowal**

The Snow King Observatory in Jackson, Wy. features a prominent aluminum dome.

Photo by Cody Brown

In this edition of *The Firm*, *Metal Architecture* sat down with Jamie Farmer of Farmer Payne Architects. With main offices in Wyoming, Idaho, and Louisiana, the firm has established itself for its portfolio of community buildings, hospitality structures, mountain residences, and projects spanning the southern U.S. since opening in 2017. Now a team of 19 people, the company has grown significantly since Farmer and Scott Payne began their partnership.

### Community in design practice and purpose

Farmer explains the mindset behind the company's success: "We always try to provide the highest quality possible, and we do that through collaboration." Different types of projects require different skill sets, and the firm's approach capitalizes on the skills of various experts, tailoring them to each project and

working with engineers, designers, consultants, and building scientists.

Reaffirming the firm's values, Farmer shares, "We pride ourselves on quality and collaboration." He emphasizes the universality of teamwork as an architectural asset, leaning into the adage that it takes a village. "The more talented and inspired team members we can bring on," he notes, "the better the project can become."

Beyond the community it takes to design truly supportive and impactful projects, Farmer Payne Architects also aims to support local communities in their work. Kelly Condos in Jackson Hole, Wy., is a prime example of the firm's efforts in that regard. This multi-family residential structure offers 12 private residences and was made in collaboration with the Town of Jackson, Wy. With demand for cost-effective housing on the rise, the firm has worked on deed-restricted projects and aims to pursue more affordable



residential projects. Farmer observes, “The cost of living is a driving factor in our community.”

### The scope of collaboration in creation

A large aluminum dome defines the design of a science and technology cultural hub, the Snow King Observatory in Jackson, Wy. This project involved protecting and concealing a 3 m (9.5 ft) telescope, as well as developing a classroom, an observatory, a telescope viewing platform, and a planetarium area.

He emphasizes the necessary collaboration for a project of this scope, mentioning the many additional parties involved in the consulting and design process: a telescope consultant, a dome consultant, a planetarium consultant, and a nonprofit in Jackson called Wyoming Stargazing, the intended occupants of the facility. The finished building is a stunning blend of indoor and outdoor spaces, a roof highlighted by a shining silver-colored aluminum that draws attention to the stargazing purpose of the structure, and an overall integrated hub of community and astronomy.

### Metal remodel from the ground up

A log structure once sat in a stunning location in Sun Valley, Wy., in need of a refresh. Farmer Payne Architects came in with the intention of delivering a concept design for refurbishing the structure, until the exciting possibility of a whole new building emerged. The wood structure was moved, and, in its place, the firm designed a stunning new home, championed by metal.

Farmer explains metal makes up “the roofing, the cantilever steel wide flange beams, and columns, the steel paneling on the walls, and the steel railings.” In the design process, a welded metal panel railing was



created using z-clips to form a hanging bar system, making the panels easily accessible for cleaning or repair. With these elements incorporated, the desired modern refresh was achieved in a way that will stand the test of time due to the material selection and design.

### Metal versatility

The durability, low maintenance, and adaptability of metal have long been a selling point for its use in design. Farmer Payne Architects uses the material’s advantages to meet clients’ functional and aesthetic goals in design. Farmer reflects, “All of our projects have some form of metal, whether it’s roofing, structure, flashing, windows, or cladding.”

When navigating weather resilience in designs, Farmer notes “a lot of our requirements are that not only roofs, but walls are also non-combustible.” He explains the trend towards metal as an easy, positive solution to meet these requirements.

Farmer Payne Architects’ self-designed office building in Sun Valley, Idaho, called First Chair.

Photo by Gabe Border



In the Gill 3 + 4 residence, steel provides framing for glazing and acts as a decorative and functional support in railings.

Photos by David Agnello

Metal works well with other materials, offering adaptable design versatility. Throughout the firm's work, there is a prevalent demand for glass openings, where metal is an ideal framing system for its strong performance and adaptable appearance. He observes, "Traditionally, wood siding and wood products are known to fade or deteriorate over time, where metal, if coated correctly and installed properly, can be a really long-lasting and durable material."

Farmer highlights the vital role that metal plays in the emerging need to design wildfire-resistant metal buildings. On the pre-existing tendency to use wood roofing on log cabins and local properties, he remarks that wood is "not really a very durable or safe product when it comes to wildfires in our areas. That's a significant threat in our area during the summer, so policies and regulations now require the use of metal."

The majority of the firm's projects have metal roofs, and much of that metal is sourced from local companies, with the support and insights of builders and subcontractors to find the metal samples that best fit each project's needs. He explains that local companies in the Nido Falls, Rexburg, and Salt Lake City areas have been a valuable source of steel for their roofing projects.

### Sophisticated steel solutions

Blending contemporary styles into a historic neighborhood, the firm's project, the Gill 3 + 4 residence, uses steel's sleek profile to achieve a modern appearance.

Farmer explains, "When we're designing some of these structures that are more modern and open structurally, steel allows us to span or support the structure in a thinner profile than timber." Incorporating steel into designs through elements such as columns, rafters, and beams makes them more adaptable and more conducive to a modern look.

In the Gill 3 + 4 residence, steel provides framing for glazing and acts as a decorative and functional support in railings. The material's longevity and durability make it ideal for both interior and exterior applications.

He explains the additional advantages of working with steel, namely, mitigating the risk of rust and achieving a suitable aesthetic by specifying the right finish, whether it be painted, galvanized, coated with powder or resin, or bonderized.

### Detailing and defining character with metal

The firm's projects each often articulate themselves with intention and care, fusing structural elements with meaningful details that define the expression of their designs.

In a recently completed project in Idaho, Farmer Payne Architects embraced the local potato-farming culture in the design of a home. At the heart of this design is the traditional, agricultural, basic, simple, and durable vernacular that encompasses the culture of the surrounding architectural landscape. Drawing inspiration from the local seed and crop storage metal



**Far left:** The design of Jackson Drug in Jackson, Wy. uses copper panels with a retro-style pattern to complement the warm appearance of metal accents throughout the interior.

**Middle and right:** TGT Stickers incorporates metal elements into everything from large-scale framing to small-scale storage.

gable silos and corrugated, galvanized metal buildings that populate the area, the project comprises two large steel corrugated metal gables. The design carves out forms within the gables to create an elegant residence. The roofing and siding wrap together to create a visual flow. Farmer calls the project “a true metal building that was inspired by the local traditional architecture.”


Where the Idaho residence’s style was driven by its surroundings, with metal as a conduit of its expression, the use of steel in the design of a sticker store defines the project’s aesthetic. Farmer Payne Architects’ design for TGT Stickers is a testament to the artistic impact materials can have. This design embraces an industrial style, incorporating metal elements into everything from large-scale framing to small-scale storage. The project was a retrofit of an old traditional storefront, replacing dated wooden framing with steel, including steel columns and floors. Further, corrugated metal decking enabled the easy addition of a loft, creating an office space above the store.

Farmer explained the seamless process: “It was easy for us to retrofit everything he needed with steel structure and steel finishes, and then for all his stickers, all the compartments were these little steel storage systems.” A focal point within the store, an in-store installation of part of a red classic Volkswagen microbus complements the structure’s contemporary, industrial style.

Jackson Drug in Jackson, Wy., is another example of how Farmer Payne Architects uses metal to enhance a



structure’s character. One family has owned the original building for six generations, and the current owners wanted to convert the space into a restaurant and retail space. Preserving the property’s historical charm, copper panels with a retro-style pattern complement the warm appearance of metal accents throughout the interior, including light fixtures and bar stools. Farmer described the process as “an easy way to come in and retrofit an old building with a metal product that brought it back to life.”

Throughout these designs, Farmer Payne Architects uses community to create, inform, and communicate through the built environment. In its various applications, metal is used to pay homage to environments and legacies, and to inspire storytelling styles that reflect the identity of building occupants. 



# Building ‘Facelifts’ with Metal Composite Material

## By Ben Kweton

The building owner at 1951 Landmeier in Elk Grove, Ill., took advantage of the village’s facelift incentives to improve the appearance of the building with a lightweight aluminum rainscreen.

Photos courtesy  
Sheet Metal Supply

First developed in the 1960s and originally marketed as a strong, lightweight, aesthetic, and flat alternative for billboards and signage, metal composite material (MCM) gained architectural popularity for its use in facades by the 1980s. After the original patent expired, the market has seen tremendous increases in global adoption, producers, innovation, and the availability of materials and coatings, making aluminum composite material (ACM) a popular choice for both new and retrofit construction.

Not every project can be the Burj Khalifa, but many can leverage MCM to enhance performance and design. In the spirit of both the architectural adage “the most sustainable building is the one we don’t

build” and the sustainable principles of “reuse, reduce, recycle,” MCM has many attributes that put it at the top of the list for adaptive reuse and retrofit projects. Whether to assist in neighborhood rejuvenation, aesthetic appeal, corporate identity, or even building efficiency, MCM is a smart choice.

## Deliberate specification, precise fabrication

MCM refers broadly to metal skins on both faces over a typically fire-retardant core and encompasses a full range of materials from aluminum to zinc, copper, titanium, and stainless steel. ACM is the most popular, affordable, and easily fabricated type of



The building owner at 1951 Landmeier in Elk Grove, Ill., took advantage of the village's facelift incentives to improve the appearance of the building with a lightweight aluminum rainscreen. Photos courtesy Sheet Metal Supply



MCM. More exotic materials used in MCM can pose challenges for both the fabricator and the routing and cutting equipment.

Fabrication of composite materials begins with computer-aided design (CAD) drawings of the facade and individual panels. Drawings are translated into cutting parameters and are most commonly milled on large computer numerical control (CNC) table routers with multiple heads, which route a V-groove along bend lines, while a second routing head cuts the perimeter to size and may drill fastening and weep holes. Routed flat panels are then typically folded by hand, and an aluminum extrusion is mounted to the perimeter. From this point, stiffeners are added as needed, and the panel is ready for installation.

### Advantages of ACM

Aesthetic advantages of ACM include, first and foremost, the array of finishes available: white to black and everything in between, woodgrains, patterns, and anodized aluminum. There are many options to add curb appeal to an existing building and modernize its facade.

Modern technology has taken the traditional flat ACM wall and elevated its aesthetic by enabling curvature and borrowing ancient origami-style folding techniques, applying them to composite materials to give otherwise mundane facades a bespoke, unique look. Custom perforations and designs can be cut into the material to further enhance identity and integrate LED backlighting, creating a stunning facade.

Fire, weather, and temperature resistance are key material advantages of ACM. All metal components in the assembly are aluminum, providing rust and corrosion resistance in humid climates, while the common paint formulas, polyvinylidene fluoride (PVDF) and fluoroethylene vinyl ether (FEVE), are warranted against chalking, peeling, and fading for decades, even in harsh direct sunlight.

Substructural components can be designed and utilized to plumb decrepit or bowing walls. Minor adjustments can be made using a variety of widely available shims, while walls that need further adjustment can use more advanced multi-part components to bring an existing wall back to a flat plane. Several



This Walgreens store in Wheeling, W.V., received an aesthetic facelift with the installation of new aluminum composite material (ACM) to its storefront.

companies offer pultruded fiberglass girt options, in lieu of traditional galvanized steel, which prevent thermal bridging and enhance energy efficiency.

The use of an ACM rainscreen on an existing building also offers the opportunity to increase or add insulation to the exterior. If sustainability and reduced energy consumption are part of the project goals, this is a very economical way to achieve them.

### Sustainability and efficiency

In addition to enhancing performance and sustainability, ACM is environmentally friendly. Most of the aluminum used in the face and backside of the panels comes from recycled materials, and scrap from a project can be sent to a specialized recycling plant for processing. At the end of its usable facade life, ACM panels can be easily removed from the wall, substructural components can be reused, and new ACM panels can be applied.

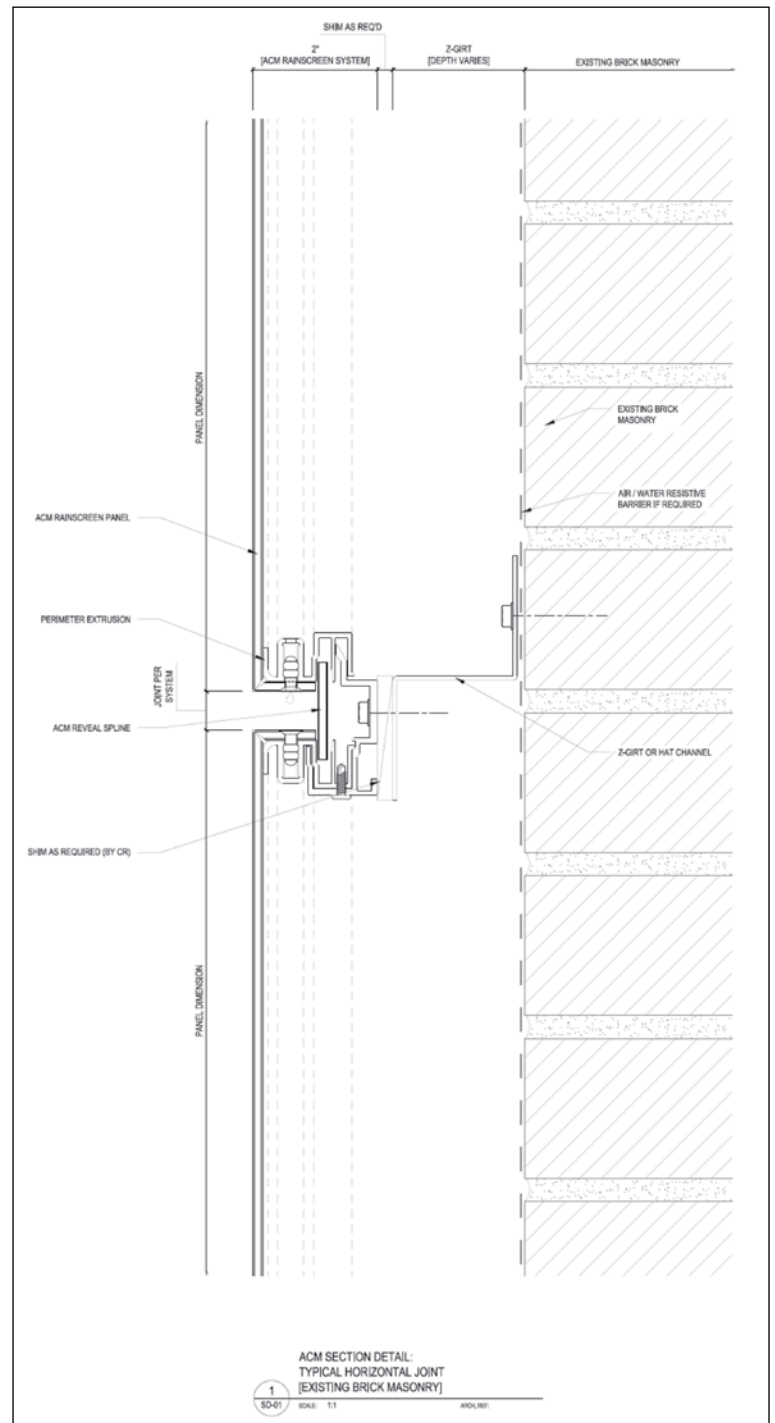
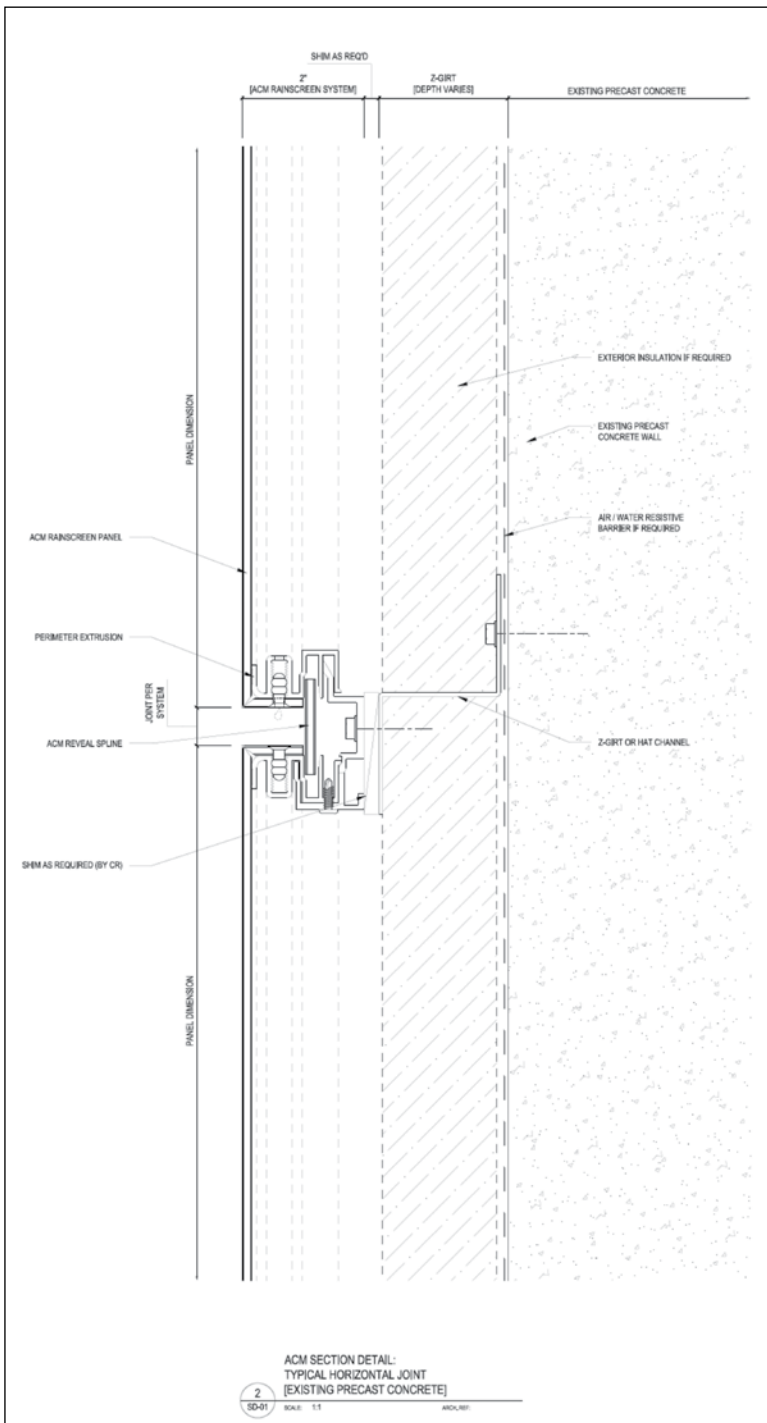
By nature, ACM is a very lightweight facade material. This reduces the structural requirements of the existing building and the seismic force on it. Lightweight panels reduce transportation costs and make them easy to move on a jobsite, enabling installation with minimal labor for maximum coverage.

ACM facades are extremely low maintenance, but not maintenance-free. Manufacturer's specific cleaning recommendations should always be followed, but, in general, routine once-yearly cleaning involving rinsing the panels with water and using mild soap and non-



abrasive cloths, brushes, or sponges satisfies this requirement. Harsh solvents, alkaline cleaners, and abrasive cleaning tools should be avoided at all costs as they can scratch, damage, or discolor the paint. If graffiti is a concern, approved graffiti removers are available and work very well, but should be tested in an unobtrusive area to ensure they do not damage the coating. This is also a good time to inspect any gaskets or sealants used in the panel assembly to ensure their integrity, and to note any scratches or damage to the panels.

Many municipalities offer grants for facade and streetscape improvements and beautification. While some are looking to reinvigorate their tired downtown restaurant and retail areas, others provide incentives in more industrial tax increment financing (TIF) districts. Typically, these grants help defer costs to the building owner through an application process and reimbursement after completion, and can help cover thousands of dollars in exterior improvements. Compared to simply painting an exterior, an



ACM facade offers a modern appeal with the aforementioned plethora of finish options and potential performance enhancements.

ACM continues to be a frontrunner in modern facade design, whether for new construction or retrofit, and for good reasons. Developments are constantly driving the market and quality forward, with cores shifting away from the original thermoplastic polyethylene (PE) to a mineral-filled thermoplastic fire-retardant (FR) core and new core innovations soon to be introduced, ACM manufacturers are continuing to push better, safer materials. The finishes continue to evolve as well.

From the sheer number of standard and stocked colors to color-shifting finishes, and printed graphics to produce murals, woodgrains, and even mimic granite and marble, incorporating ACM into a facade has never been more appealing. [Via](#)

**Ben Kweton** is the president of Sheet Metal Supply Ltd. Founded in 1991, the company fabricates zinc and provides custom-formed perimeter edge systems, wall facades, flat-lock tiles, substructural components, ES-1-rated products, glazed-in panels, standing seam systems, and ACM/MCM/plate panels.



# The Eagles Landing Barndominium

## The pride of Military Warriors Support Foundation

**By Stacey Lynn and Mahsa Mahdavian**

A rendering of the Eagles Landing barndominium.  
Courtesy The Barndominium Company

### **Creating a retreat for America's veterans**

Eagles Landing began with a clear mission: create a place where veterans transitioning from military service to civilian life could find rest, restoration, and a sense of community. The vision was to design a retreat-style residence built with light-gauge steel in a barndominium style, one capable of comfortably accommodating eight former service members while providing spaces for reflection, companionship, and everyday living. This project was designed, engineered, and fabricated with meticulous precision, aiming to reflect the excellence of the military operations performed by its new occupants.

Guided by this purpose, the design and supply team set out to transform the concept into a buildable structure. Together with several industry partners supplying materials and support, the team collaborated to deliver a project that combines thoughtful design, advanced roll-forming technology, and a shared commitment to honoring those who served.

## Design and application considerations

The original design concept evolved into a buildable structure and was tailored to support the client's lifestyle. The project team evaluated a range of factors throughout the process, including geographic conditions, applicable building codes, and structural performance requirements.

Deliberate design, engineering, and software choices moved the project from the concept stage to a fully engineered and constructible solution. Careful attention was given to selecting cold-formed steel as the primary structural material, recognizing its strength, durability, and flexibility for achieving both structural efficiency and architectural aesthetics.

Equally important was determining how the steel framing system would be fabricated and delivered to ensure the finished structure accurately reflected the original design vision. These considerations, along with several additional technical and practical factors, guided the collaborative effort behind the Eagles Landing project.

## What is a barndominium?

A barndominium is a custom-designed, steel-framed, clear-span residential or commercial building, typically with a metal roof and siding, though siding options vary. The ability to design without interior load-bearing walls (absent a second story) provides great flexibility in room design and placement. In the case of Eagles Landing, the structural versatility and the guiding aesthetic of a retreat-style venue that would provide a restorative environment for its future veteran occupants were key.

## The design concept behind Eagles Landing

The design was developed when the sponsor organization, The Military Warrior Support Foundation, communicated the need for an eight-bed/

occupant facility to house veterans transitioning from service to civilian life. The design comprises 233 m<sup>2</sup> (2,500 sf) of space, with high ceilings and windows to enjoy the surrounding views in Utah.

Foundation members outlined the requirements for the space:

- two four-person sleeping areas
- spacious multi-purpose spaces
- accessible bathrooms
- a functional hybrid great room and kitchen
- a storage area
- a laundry and mudroom with space for boots, jackets, sporting gear, and more

Eagles Landing was designed to be practical, functional, warm, inviting, and most importantly, to feel like home for those who served.

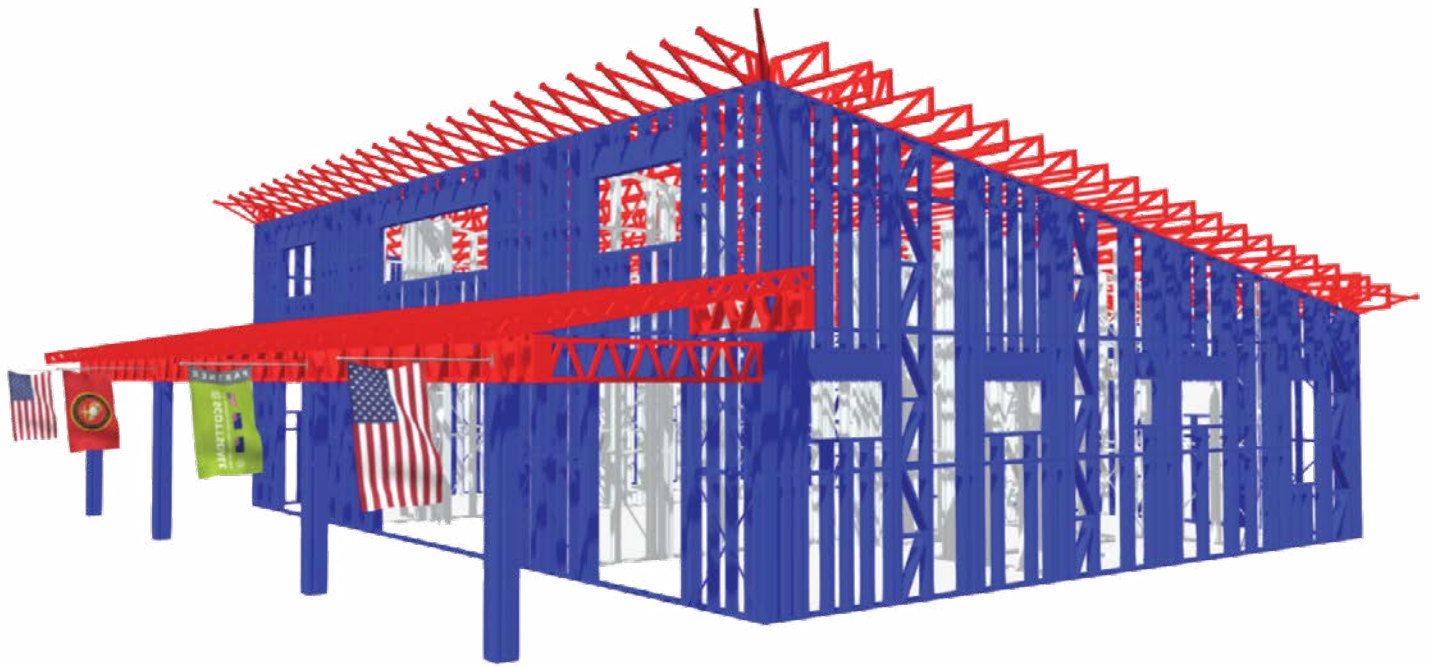
## Design for lifestyle needs

The homey feel was very important to the design's lifestyle aspect. This barndominium is situated in a location emblematic of the great outdoors. As such, large windows provide views that bring the outside in and take the inside out, which are important to the building's design and character. The barndominium's ability to create larger, open spaces with generous ceiling heights is a key element of the overall design.

Eagles Landing features a monoslope roofline, providing height and volume to all rooms while reducing material and construction costs. Further, when walking through the front door into the great room and kitchen area, at the far side of the room is a large glass garage door that opens onto the back patio, creating a seamless indoor/outdoor space when open and a picturesque window view of the countryside when closed. The front porch that spans the width of the barndominium provides another gathering space for the camaraderie of the occupants.

## Adapting to geographic conditions and building codes

Geographic location played an important role in several design decisions. One key adjustment involved selecting an appropriate wall thickness to allow sufficient insulation and meet the required R-value per local building code. The team accounted for regional snow load conditions. After the designer developed the initial



Software was used to streamline all parts of the process: design, engineering, fabrication, and construction.

Courtesy The Barndominium Company

model, the project engineer evaluated the structure and performed the necessary snow load calculations to ensure the design complied with local code requirements and structural performance standards.

### **Automation from concept to construction**

A range of digital tools was used to move the project efficiently from the concept stage to a fully buildable design. During the early design phase, the design team used software tools to develop the building layout and create initial 2D renderings. Once the core design was established, additional digital tools were used to produce high-quality visualizations, including photo-realistic renderings and video that helped communicate the design intent and overall architectural vision.

On the engineering and fabrication side, the software was also an asset for structural validation and for generating the detailed data required for manufacturing the steel framing system. The software used integrates with roll forming machines, enabling the steel framing system to be fabricated with exceptional precision, minimal material waste, and high production efficiency.

This digital workflow, from design visualization to automated fabrication, eliminates much of the manual labor associated with traditional stick framing and enables the framing system to be produced quickly and accurately using roll-forming technology. Eagles Landing was fabricated in just one-and-a-half days using three roll-forming machines.

### **Strengthening performance and aesthetics with steel**

Light-gauge steel is increasingly recognized as a forward-looking material choice for residential construction, not only for barndominiums but also for mainstream housing. In recent years, devastating wildfires in California and other regions have prompted greater scrutiny of traditional wood-frame construction. These events have also led parts of the insurance industry to reevaluate risk exposure, with some beginning to show greater interest in steel-framed building systems.

While the long-term impact of these shifts is still unfolding, the trend suggests growing awareness of the resilience and durability of steel framing. As communities seek construction methods that better address fire risk and long-term performance, light-gauge steel is emerging as a compelling alternative for future residential development.

Another key advantage of light-gauge steel is its high strength-to-weight ratio. In residential construction, this means the framing members are lightweight yet capable of carrying significant structural loads. The reduced weight of the framing system can lower overall foundation loads while still delivering the strength required to support floors, roofs, and environmental loads such as wind or snow. This structural efficiency also supports one of the defining design features of barndominiums: the ability to create large, open interior spaces without the need for numerous interior

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Steel framing expands opportunities for open-space designs.

Photos courtesy Scottsdale Construction Systems

load-bearing walls. By allowing loads to be carried through exterior walls and engineered roof systems, designers can achieve expansive, flexible floor plans and spacious living areas. This balance of strength and efficiency makes light-gauge steel particularly well-suited for projects that demand both structural performance and design flexibility.

Light-gauge steel members are also manufactured to precise dimensions, ensuring they remain straight over time. Unlike traditional materials that can warp, shrink, or twist, steel framing maintains its shape throughout the structure's life. The components are fabricated using advanced roll forming machines, producing consistent members with high accuracy and virtually eliminating human error.

The precision of this manufacturing process also improves how the system fits together. Connections align cleanly, and joints remain flush, resulting in a refined aesthetic once the building is finished. Beyond appearance, steel framing offers long-term durability. Light-gauge steel is resistant to mold, termites, and other biological degradation that can affect wood framing, helping ensure the structure maintains its integrity over time.

For the Eagles Landing project, these qualities—strength, precision, durability, and aesthetic consistency—made light-gauge steel a natural choice for delivering a high-performance residential structure designed to last.

### Eagles Landing's showcase at METALCON

The structural components were fully prefabricated as wall panels and truss systems before being shipped to METALCON 2025.

At the exhibition, the prefabricated framing system was assembled on the show floor in less than two days with the help of six volunteers, none of whom were professional builders. The speed and simplicity of the assembly demonstrated the efficiency of precision-fabricated light-gauge steel systems.

Eagles Landing remained on display throughout the duration of the event. After the show concluded, the structure was carefully disassembled in under six hours, returning to the same wall panels and truss systems used in the initial installation. The packaged framing system was then shipped to its destination in Utah for permanent installation.


This process highlighted how digital design, automated roll forming, and prefabricated steel framing can dramatically simplify construction. By enabling fast fabrication, rapid assembly, and efficient transportation, systems like Eagles Landing demonstrate the significant value light-gauge steel construction can bring to the housing industry.

### Collaboration for a greater purpose

Scottsdale Construction Systems and The Barndominium Company partnered to bring the Eagles



Landing project from concept to reality through a collaborative, front-end effort that combined design expertise, advanced technology, and efficient material use. The project demonstrates how modern light-gauge steel framing and roll forming can support innovative residential construction while delivering speed, precision, and build efficiency.

More importantly, Eagles Landing represents the power of collaboration within the construction industry to create something meaningful. By bringing together design, engineering, and manufacturing capabilities, the team contributed to a project that supports and honors some of America's finest—the veterans. Being part of this effort was both rewarding and a privilege for everyone involved. 

**Stacey Lynn**, widely known as “The Barndominium Lady”, is the founder and chief design officer of The Barndominium Company. She has transformed her passion for design, construction, and interior aesthetics into one of the nation's leading barndominium design-build firms. Self-taught in architectural and interior design, as well as general contracting, Lynn is recognized as the premier barndominium floor plan designer in the country and a leading authority in steel and post-frame residential design. Her firm serves clients in more than 40 states, with a significant presence in Texas. She has been featured in *The New York Times*, *Texas Monthly*, *Texas CEO Magazine*, and *The Houston Chronicle*, and has appeared

on Houston-area television. In 2025, she received an NFBA Best Building Award. With nearly three million followers across Instagram, TikTok, and Facebook, Lynn leads one of the largest barndominium-focused design-build platforms in the country. Clients are drawn to her firm for the team's design expertise, hands-on approach, responsiveness, and personalized service. Her long-term vision is to position barndominiums as a mainstream, luxury residential design solution and to inspire others to embrace the barndominium lifestyle.

**Mahsa Mahdavian**, global technical marketing director at Scottsdale Construction Systems, combines her engineering expertise with strategic marketing to advance the adoption of cold-formed steel framing and roll forming technology worldwide. With more than a decade of experience in cold-formed steel systems, she works closely with engineers, fabricators, and builders to communicate the technical advantages of steel framing solutions. Mahdavian initially specialized in cold-formed steel shear walls, conducting full-scale tests and developing supporting finite element models. Her academic research focused on cold-formed steel clip angles, with findings published in AISI Research Reports. Mahdavian began her career in the steel deck industry and later transitioned into a technical representative engineering role, developing practical solutions for complex structural challenges. Connect at [mahsa.mahdavian@scottsdalesteelframes.com](mailto:mahsa.mahdavian@scottsdalesteelframes.com).



# 40<sup>th</sup> Annual Architects Survey

# Trends and forecasts in metal architecture

By **Hanna Kowal**

Photo © joegough | Bigstockphoto.com

Annually, our Architects Survey allows architecture industry professionals to contribute to a current snapshot of firm progress and the use of metal in the built environment across the United States. This year marks 40 years of the *Metal Architecture* Architects Survey, a milestone for this ongoing reflection on materials and the performance of architecture firms. Architectural voices from all walks of American design are represented in this report, with the community of respondents inclusive of members of large, small, and multifaceted firms alike.

The survey reflects the current value and volume of firm projects, as well as critical insights into the types and frequencies of metal products used in projects.

## Resounding architectural voices

This year, 48.8 percent of respondents are employed at architecture firms, 2.4 percentage points more than last year's survey. Twenty-six percent of respondents are employees of firms that integrate architecture into multi-faceted companies, in architecture/engineering and design/build firms, and the remaining demographic consists of other architecture, engineering, design, and construction (AEDC) professionals.

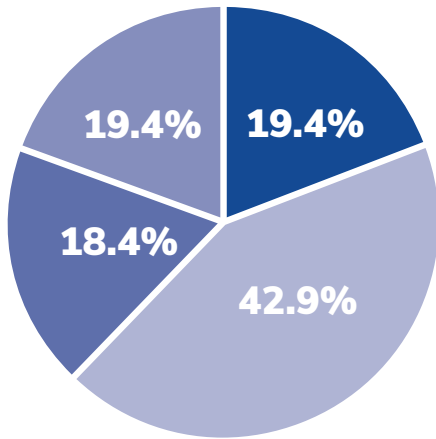
Survey participants hold various positions: 49.4 percent are firm owners or partners, 15.7 percent are head architects, and 15.7 percent are staff architects.

A 12.5 percentage point increase from last year, 71.4 percent of respondents are registered to practice in more than one state.

## Unpacking a national narrative

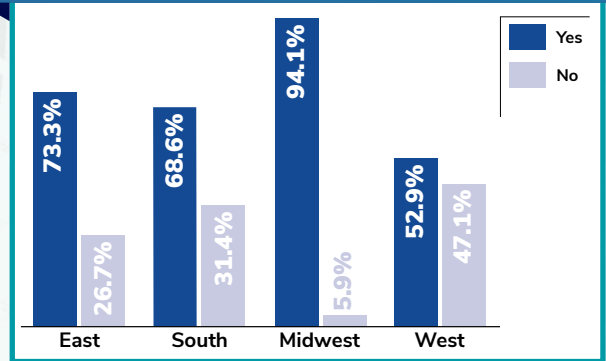
This report provides a rounded perspective of the architectural landscape with responses from across the United States.

Where is your company located?

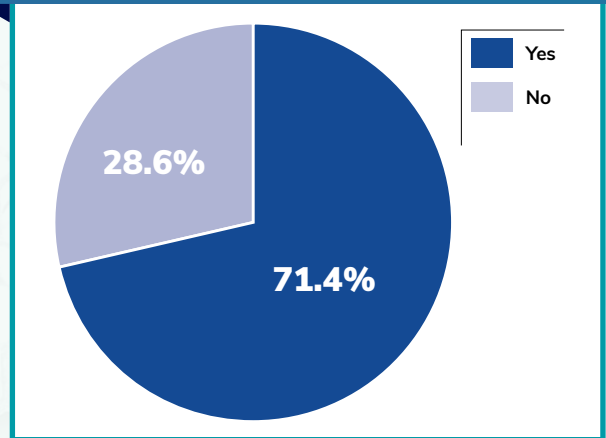


- 19.4%**  
**East**  
N.Y., N.J., Del., Conn., Mass., R.I., Vt., N.H., Pa., W.Va., Maine, Md., D.C.
- 42.9%**  
**South**  
Va., Ky., Tenn., Ark., La., Miss., Ala., Ga., N.C., S.C., Fla., Okla., Texas
- 18.4%**  
**Midwest**  
Minn., Iowa, Mo., Ill., Wis., Mich., Ind., Ohio, Neb., S.D., N.D., Kan.
- 19.4%**  
**West**  
Idaho, Ariz., N.M., Mont., Utah, Colo., Wyo., Calif., Nev., Ore., Wash., Hawaii, Alaska

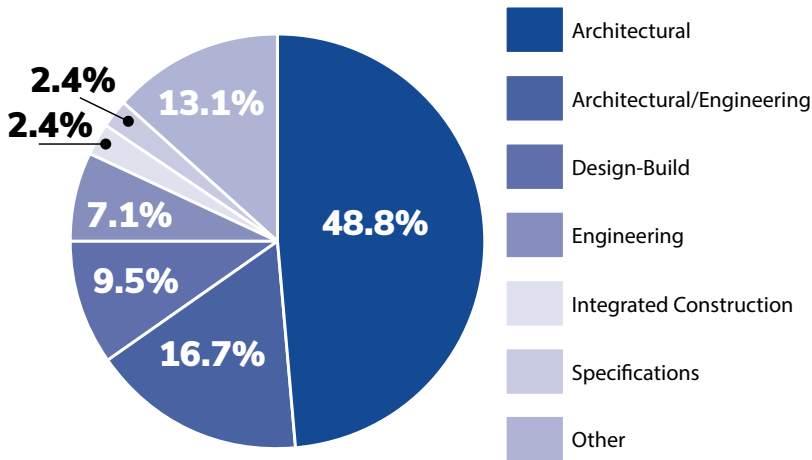
Is your firm registered to practice in more than one state? (Regional)



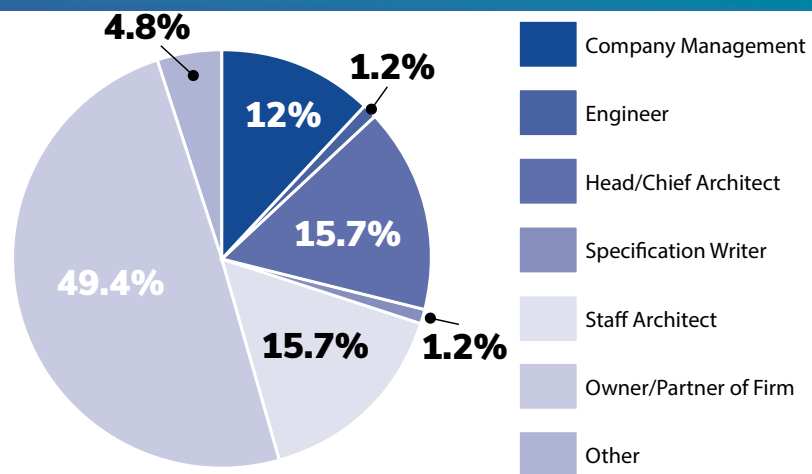
Is your firm registered to practice in more than one state? (National)



What is the nature of the organization you work for?



What best describes your position in your firm?



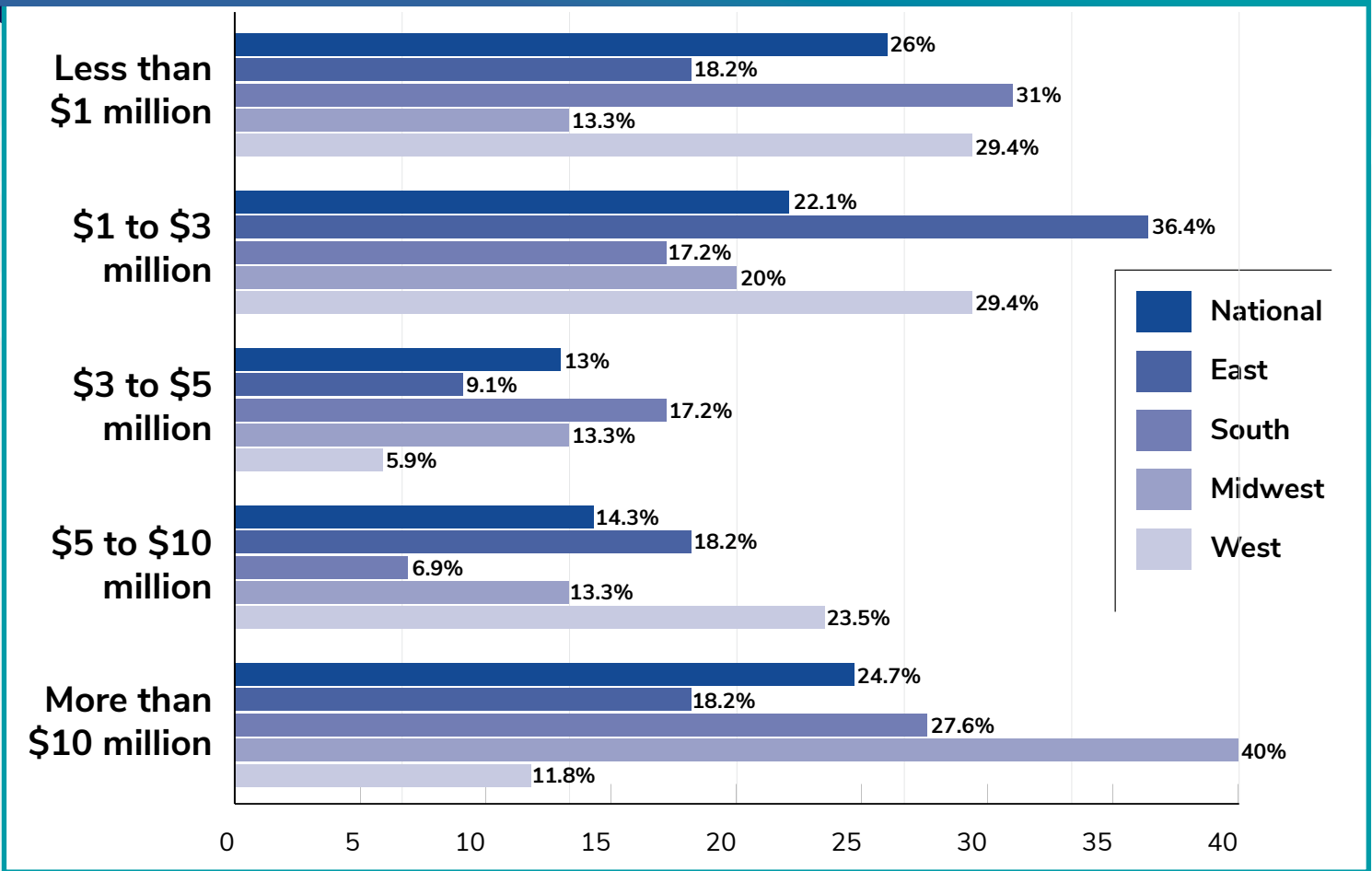
The East, West, and Midwest account for roughly equal shares of the remaining sources, each offering between 18 and 20 percent of respondents.

The majority of respondents are from the South, accounting for 42.9 percent—10 percentage points more than in the 2025 survey—with 35.7 percent of those respondents from Florida. Notably, due to weather implications, Florida tends to have the strictest building codes and often leads the charge in nationwide code adoption. The use of metal products in building projects often supports code satisfaction, likely contributing to the Southern geographical emphasis in the architectural interest for this survey and the use of metal in architecture.

**Bigger billings in 2025**

Last year was a period of financial growth for architecture firms. Reflecting on the 2025 calendar year, 45.3 percent fewer respondents reported firm billings of less than \$1 million than in 2024. This

What were your firm's approximate billings in 2025?



was the only billing range to decrease, demonstrating increased financial opportunity for architecture firms overall. Year-over-year, firms reporting \$1 to \$3 million increased by 10.8 percentage points, \$3 to \$5 million by 1.7 percentage points, \$5 to \$10 million by 1.8 percentage points, and more than \$10 million by 7.2 percentage points. Notably, 40 percent of respondents in the Midwest reported billings of more than \$10 million.

Most respondents (71.8 percent) reported year-over-year billing increases, a figure largely unchanged from last year, rising just 0.9 percentage points.

Regarding firm billings in 2025, compared to 2024:

- 29.6 percent reported a five to 10 percent increase; the relative highest percentage overall.
- As many respondents reported a 10 to 25 percent increase as a five percent decrease, at 18.3 percent.
- Less than 30 percent of firms in the South and West reported a decline.
- No firms reported an increase or decrease of over 50 percent.

Fortunately, only 1.4 percent of respondents reported a 25 to 50 percent decrease in billings, half the amount reported in last year's survey.

**Metal material: the role it plays today**

Metal building products offer versatile design opportunities that help architects ensure that designs stand the test of time and support performance, appearance, and sustainability goals. Increasingly, building owners are seeking designs that consider occupant health and wellness, are cost-effective, and environmentally conscious. Metal can help create spaces that fulfill these criteria and look good doing it.

When asked about the trajectory of specifying metal materials across the board in 2026, for metal roofing, metal wall panels, metal framing, and metal building systems, the majority of respondents said they expect to specify about the same amount as in 2025. Most notably, however, 31.8 percent of respondents expect to specify more metal wall panels in 2026, compared to last year's 23.4 percent.

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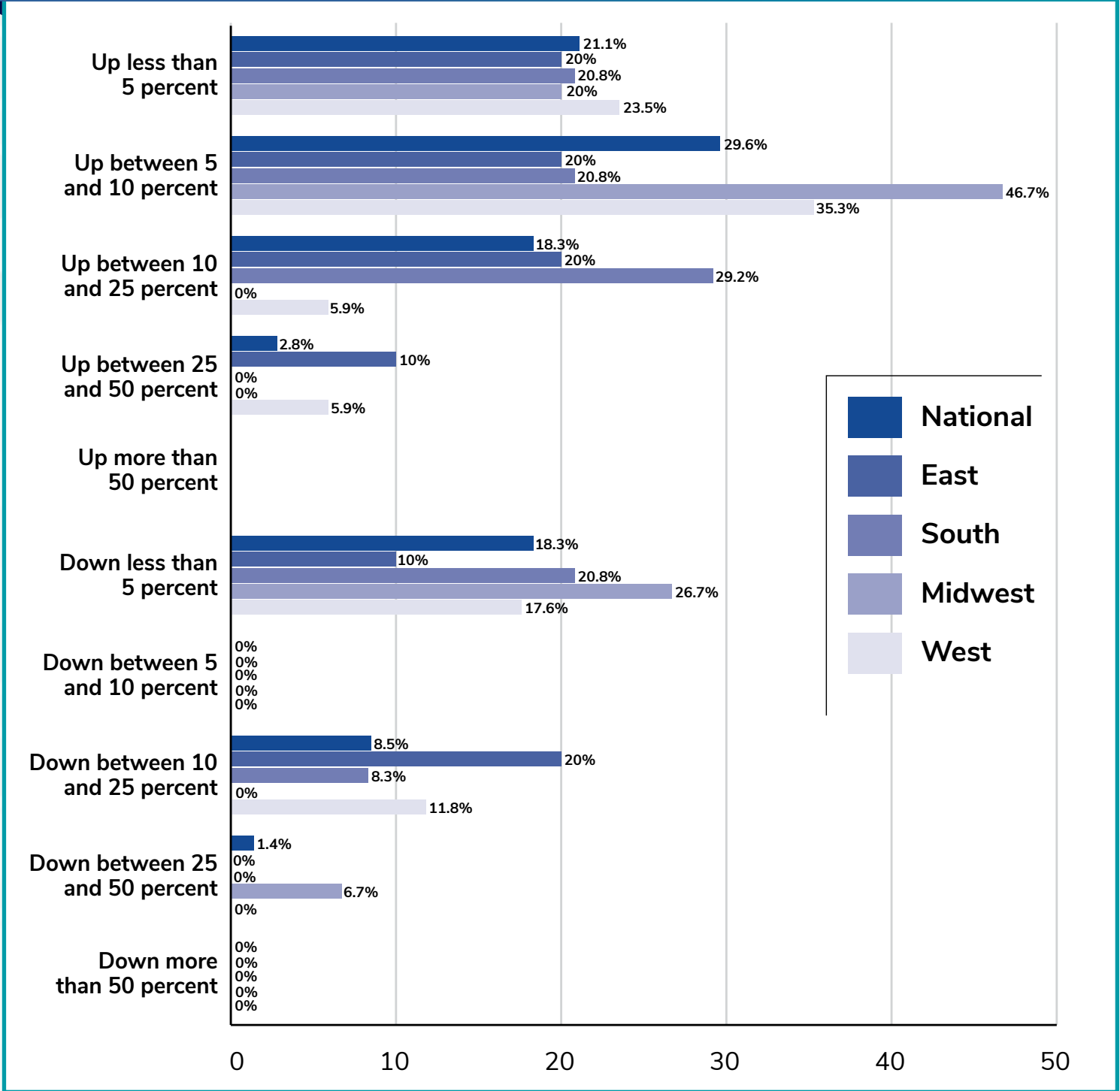


[kingspanbenchmark.us](http://kingspanbenchmark.us)



BENCHMARK™

Compared to 2024, what were your 2025 billings?



**Greener goals**

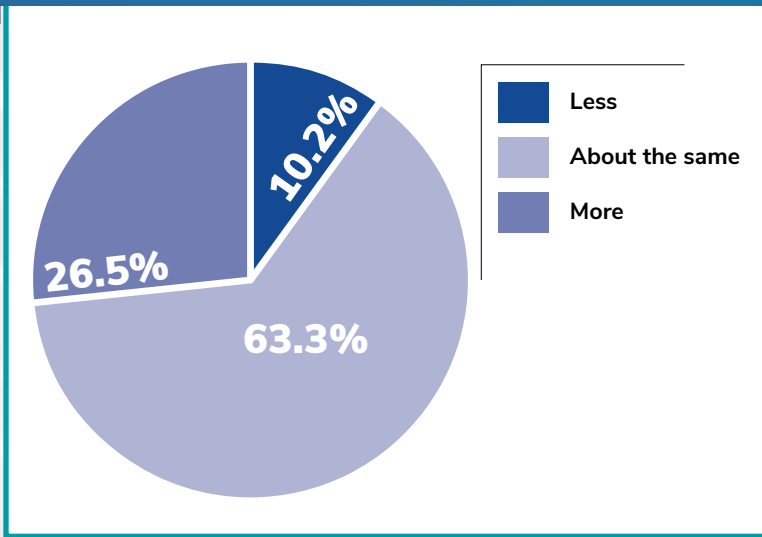
A shift in sustainable specifying with metal occurred over the past year, with a 70.6 percent increase and a 10.1 percentage-point increase in respondents affirming that they looked to metal building products to support environmental impact or LEED goals. 24.4 percent of respondents reported looking to metal to achieve

sustainability goals. Of these respondents, 40 percent are from the West.

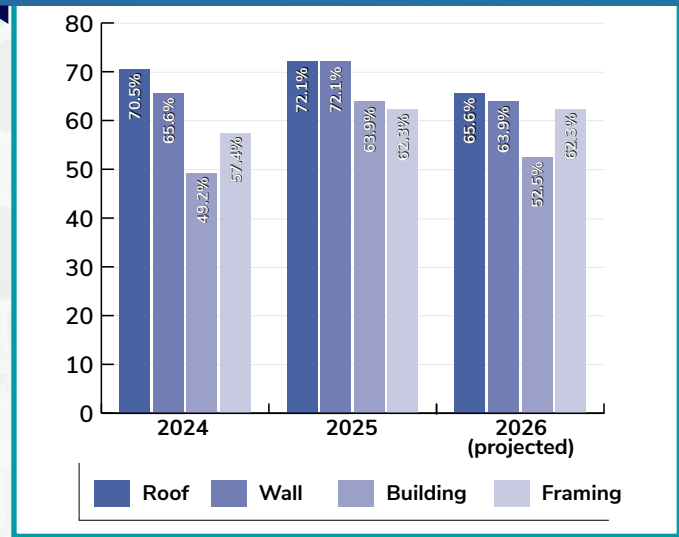
**Metal roofing systems**

While nominally more respondents specified metal roofs in 2025 than in 2024, at 72.1 percent, only 65.6 percent expect to specify metal roofing in 2026,

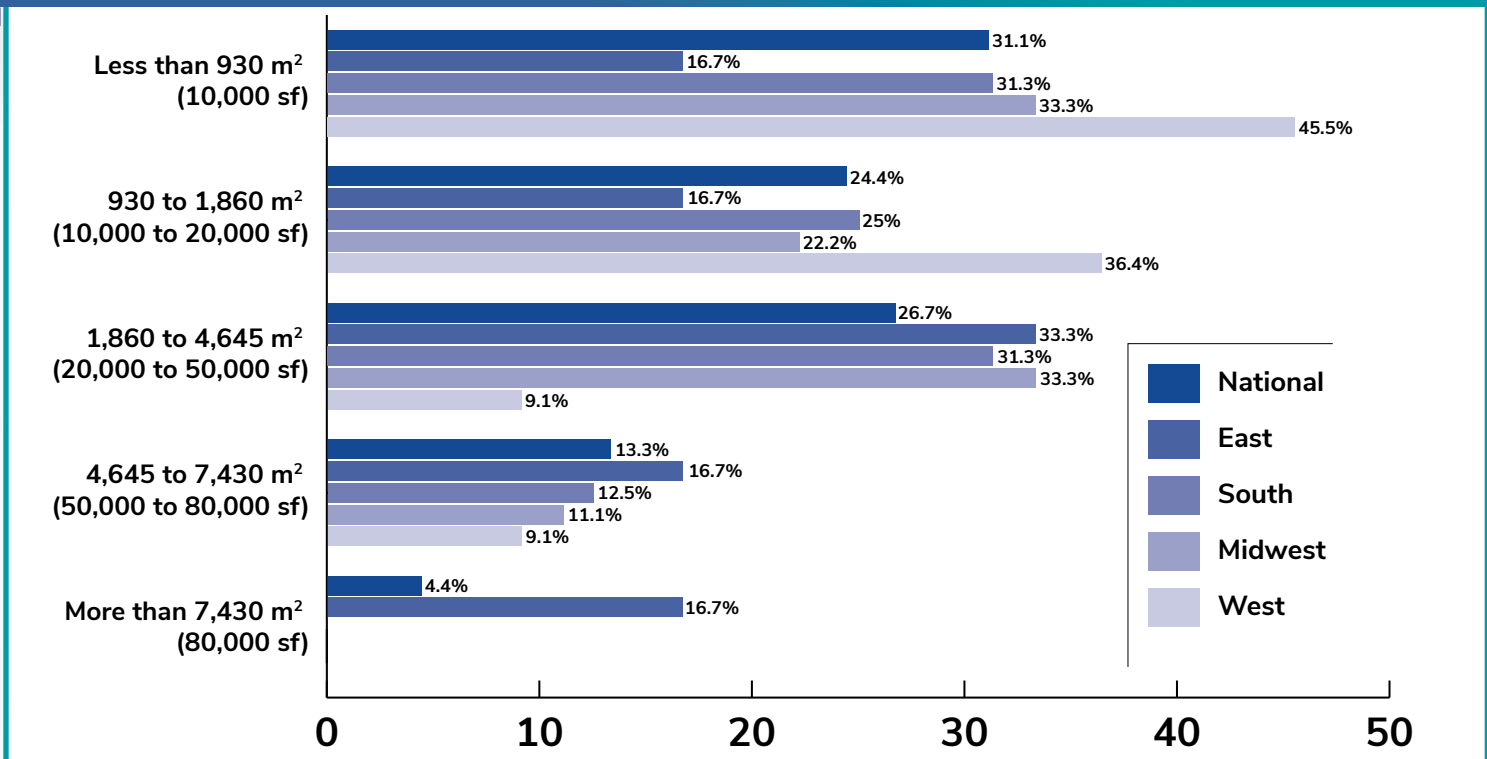
In forecasting 2026, compared to 2025, which best represents your expectations regarding specifying metal roofing?



Company specifications of at least one metal system in 2024 and 2025, with projections for 2026



What was the average size of the metal roofing projects your company was involved with in 2025?



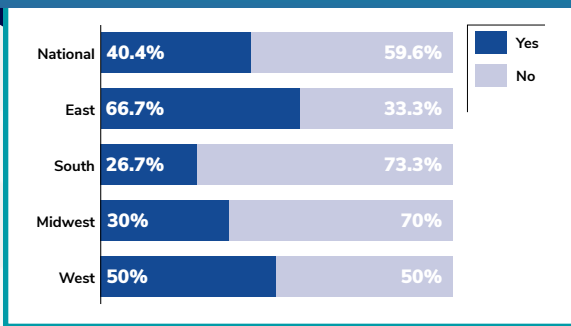
with the largest share of planned specification coming from southern firms.

In last year's survey, batten seam roofing was the most specified type of metal roofing amongst respondents. It seems this product has only grown in popularity, as 60.9 percent of respondents reported specifying the material in 2025, a 12.1 percentage point increase from 2024.

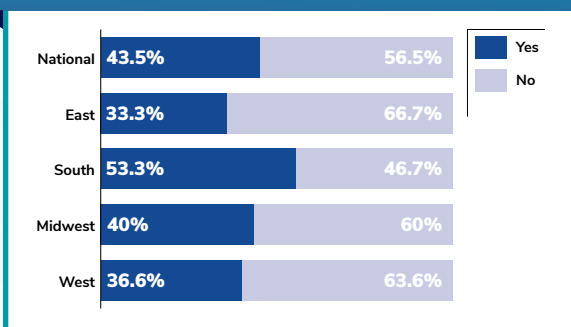
Metal roofing retrofits also saw a surge in specifications in 2025, with 40.4 percent reporting metal roofing projects for existing buildings, up from 17.3 percent last year.

Notably, in last year's survey, no respondents reported average metal roofing project sizes exceeding 7,430 m<sup>2</sup> (80,000 sf). This year, 4.4 percent reported average

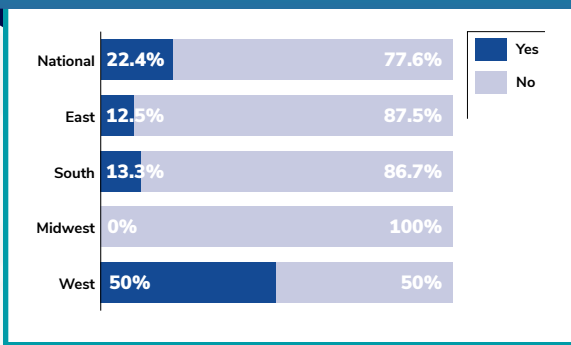
Did you specify retrofit metal roofing for an existing building in 2025?



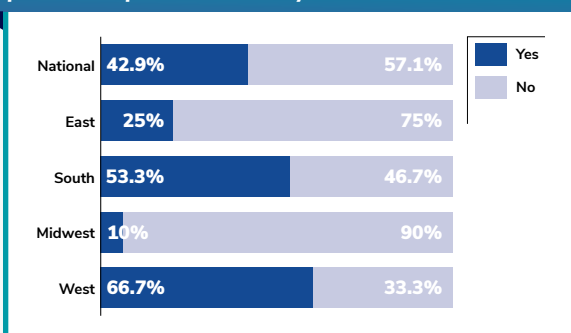
Did you or your firm specify “cool metal” coatings in any of your metal roofing solutions in 2025?



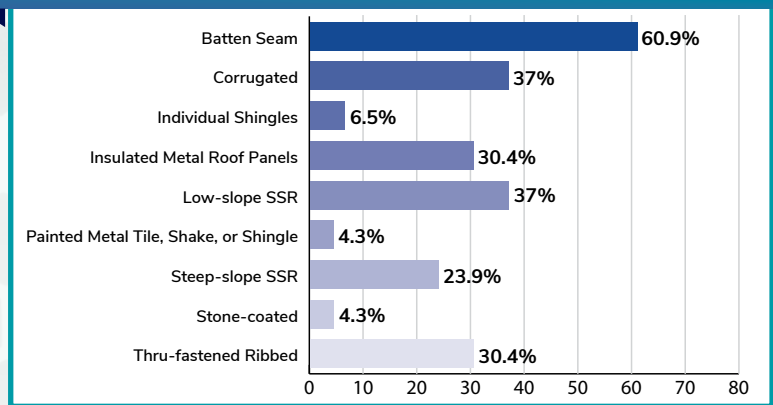
Did you or your firm specify solar panels, photovoltaics, or solar films in your metal roofing projects in 2025?



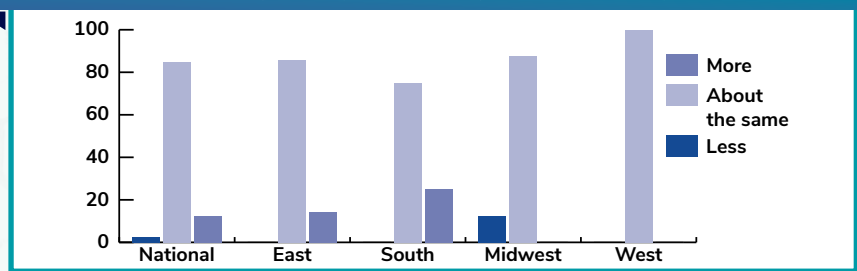
Do you expect to increase the number of solar panels or photovoltaic systems in 2026?



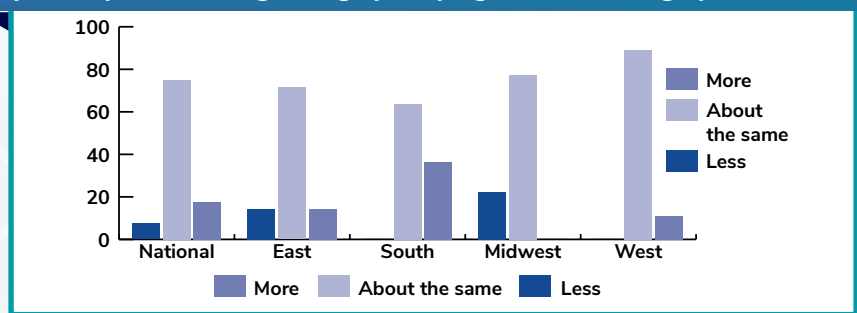
What types of metal roofing did your firm specify in 2025?



In forecasting 2026, compared to 2025, which best represents your expectation regarding specifying metal framing systems?



In forecasting 2026, compared to 2025, which best represents your expectation regarding specifying metal building systems?



metal roofing projects of that size. This demographic was composed exclusively of Eastern respondents.

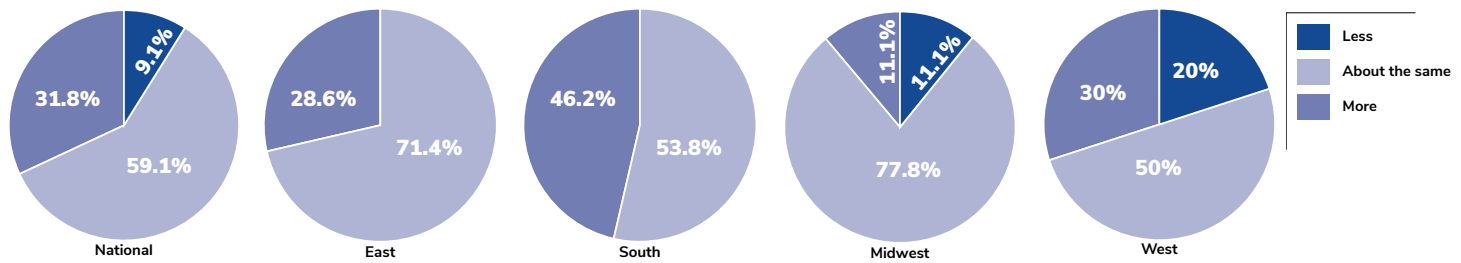
Sustainable systems are on the rise as well, with a 5.1 percentage point year-over-year increase in respondents who specified solar panels and photovoltaics in 2025. As a look into the near future of solar integration into design, a 28.8 percent increase in respondents expect to specify solar panels and photovoltaics in 2026, compared to respondents’ 2025 expectations.

Forecasting for 2026, 67.4 percent of respondents anticipate specifying roof curbs, a 34.8 percent increase from last year. Meanwhile, with roof hatches, 21.2 percent more anticipate specifying roof hatches. This accounts for 72.1 percent of respondents.

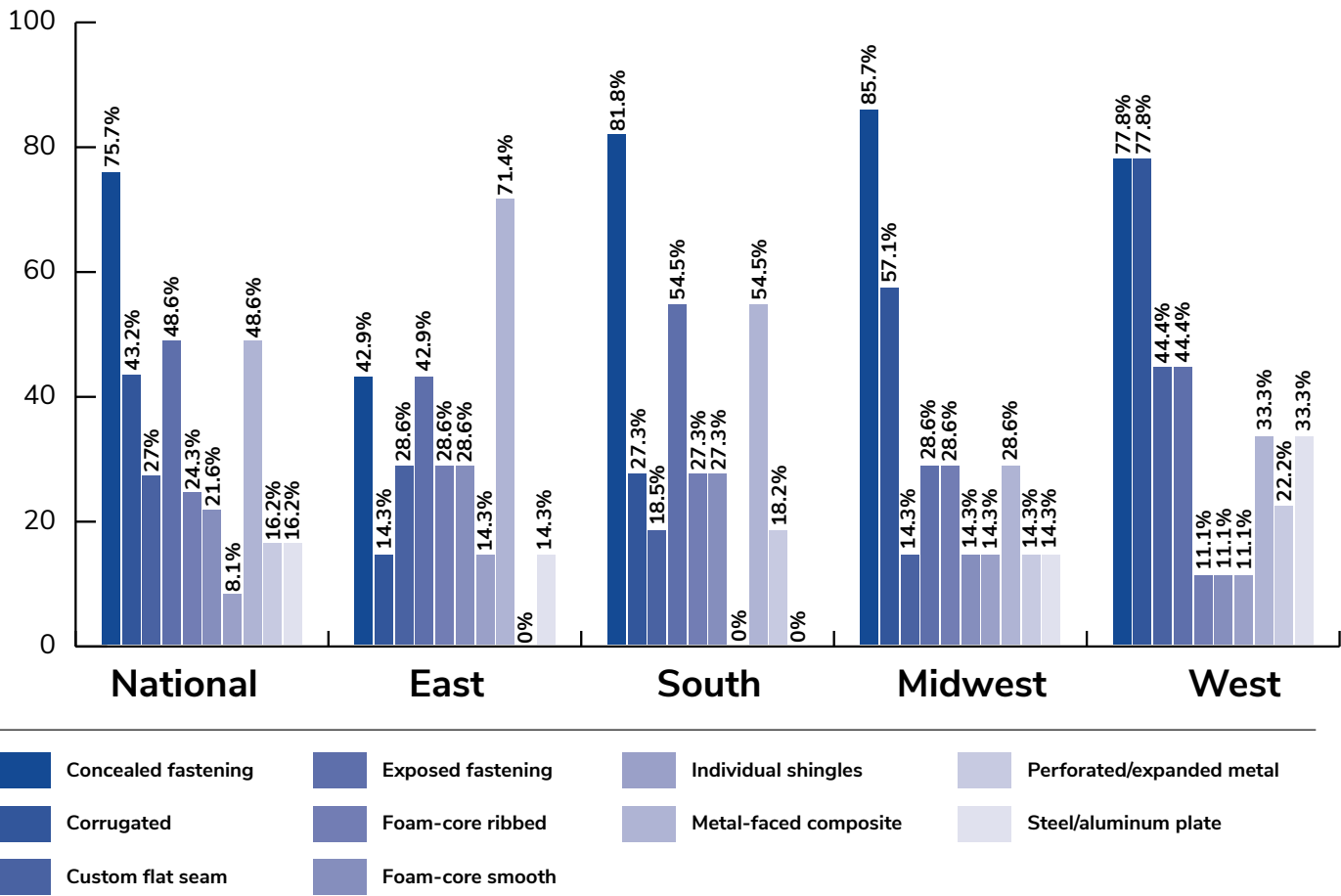
**Metal building systems**

In 2025, 63.9 percent of respondents’ companies specified at least one metal building system (MBS), 1.4 percentage points higher than forecasted in last year’s survey. For

In forecasting 2026 compared to 2025, which best represents your expectation regarding specifying metal wall panels?



What types of metal wall panels did your firm specify in 2025?



2026, however, only 52.5 percent of respondents expect their companies to specify an MBS. Respondents in the Midwest specified MBS the least in 2024 and 2025 and expect to specify at least one MBS the least in 2026. Meanwhile, respondents in the South specified, and expect to specify at least one MBS the most, with 80 percent of Southern respondents having specified at least one MBS in 2025.

**Metal framing systems**

Between 2024 and 2025, there was an increase in respondents who specified metal framing systems. Moving forward, as many

respondents expect their companies to specify a metal framing system in 2026 as have reported that their companies did so in 2025, at 62.3 percent.

**Metal wall panels**

Looking into 2026 relative to 2025, only 9.1 percent of respondents expect to specify fewer metal wall panels, a small proportion compared to 31.8 percent who expect to specify more. In 2025, concealed-fastening panels were the most specified metal wall panels, while individual shingles were the least specified. [Ma](#)

# Rainscreens and Building Science

Enhancing durability, efficiency, and moisture management



**By Dan Festa**

Photos courtesy  
Keene Building Products

**In recent years, the architecture industry has** seen a substantial increase in moisture-related issues in exterior wall systems. Drainage mat manufacturers often receive frequent calls from architects, engineers, manufacturers, and specification writers seeking guidance on improving drainage and ventilation in the building envelope. In this ever-changing industry, continuous innovations in building products are accompanied by moisture intrusion issues as buildings get tighter. This article explores rainscreens, the benefits of an airspace or rainscreen in wall system designs, and why they have become an essential part of the building envelope.

Rainscreens are wall assemblies or systems that include an outer cladding layer, a drainage gap, and a

weather-resistive barrier (WRB) over the sheathing. The purpose of a rainscreen is to manage any moisture that enters the system by creating a gap between the cladding and the WRB. This allows any moisture that penetrates the outer layer to drain away and evaporate, preventing damage to the wall structure. The gap also allows air to circulate behind the cladding, helping the cladding dry to the exterior and within the inner cavity.

To start off on the right foot, designers must understand five important rules of building science:

- Heat always flows from warmer areas to cooler areas, seeking to balance temperatures. This principle is important to consider when designing a building's insulation system to prevent energy loss.



can cause air to flow in or out. It is essential to design these wall systems with proper ventilation to ensure that air flows into and out of the building in the correct amounts.

- Building materials can get wet, and it is pivotal to let them dry. Water can penetrate various building materials, causing damage if left unchecked. It is essential to specify the proper system to help these materials dry faster, prevent long-term damage, and improve the overall lifespan of the building.

Achieving and adhering to these rules can increase the lifespan of the structures. Reducing water in buildings can be accomplished by implementing strategies such as overhangs and drip flashings to deflect water away from the building. This will significantly reduce the risk of water infiltration and potential damage to the structure. Deflection alone is not enough. It is equally important to provide a clear drainage path to prevent any moisture buildup. By providing a clear drainage path, designers can ensure that water is swiftly and efficiently directed away from the building. Proper drainage and moisture management are key to preserving the longevity and performance of the building.

- Water vapor will move from high-pressure to low-pressure areas. This movement is driven by the relative humidity (RH) difference between the conditioned and unconditioned spaces. As a result, moisture can travel through walls and cause damage or mold growth if not properly managed.
- Moisture will always try to move from areas of higher concentration to regions of lower concentration. This principle is fundamental to designing ventilation systems that control humidity levels.
- Air in equals air out. Air pressure differences between the inside and outside of a building

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The installation of a rainscreen system on a residential facade.

It is also important to allow any remaining water in wall systems to dry. Even with effective deflection and drainage, some moisture may remain. Proper airflow and ventilation accelerate drying, helping residual moisture evaporate quickly and reducing the risk of moisture-related problems. Selecting building materials with adequate moisture tolerance is essential to the long-term durability of the building exterior. By specifying durable materials that withstand moisture, builders can minimize the risk of deterioration and ensure the building's resilience to environmental factors. Rainscreen systems are a critical component of this durability.

To ensure long-term durability, energy efficiency, and moisture management, rainscreen technology is no longer merely a best practice; it is a necessity. A well-designed drainage and ventilation gap prevents moisture from being trapped, reducing the risk of mold, material degradation, and costly repairs.

Modern rainscreen innovations enable simple integration without compromising performance. Some housewraps combine a high-performance WRB with a built-in drainage gap, offering superior moisture management in a single step. Other solutions include rollable furring strip materials that provide a cost-effective, easy-to-install option for ventilated cladding systems. For the ultimate in moisture protection, open-

matrix drainage mats deliver a continuous drainage and ventilation plane for cladding materials. For example, installing an open-matrix drainage mat behind a moisture-sensitive cladding, such as steel or aluminum, not only allows moisture to flow down the interior wall space and escape but also enables omnidirectional airflow. Together, these features drain and ventilate with open airflow, helping address residual moisture. The best way to reduce the risk is to eliminate the source; the formula water in equals water out means healthy walls.

Whether specifying for new construction or retrofitting an existing structure, rainscreen systems are engineered to simplify and enhance high-performance building envelopes. As a design practice, it is essential to protect projects with proven rainscreen solutions that ensure resilience and efficiency for years to come. 

***Dan Festa** is a creative and forward-thinking senior product development executive with extensive experience shaping innovative building envelope solutions. He serves in a leadership role at Keene Building Products, contributing to advancements in roofing, drainage, and building science technologies. A graduate of Pennsylvania State University, Festa's engineering foundation is strengthened by involvement in organizations such as ASME, SPE, and RAINA. Beyond his professional work, he remains active in his community, including volunteering at his church.*



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# Letting the Light Shine on Consumer Comfort

Daylight strategies to enhance retail and dining experiences

By Glenn Ferris

Retail and dining environments share common challenges. They must attract people, keep them comfortable, and operate cost-effectively. Daylight can support all three objectives when planned early and controlled properly. Poorly designed daylighting can create glare, uneven lighting, and unwanted heat gain. Well-designed daylight provides usable, high-quality light, not just more light.

Architects understand the value of daylight in retail and restaurant environments and offer their clients design guidance on how to achieve its benefits through thoughtful daylighting strategies.

Fenestration products can be manufactured with metal framing and components. The Fenestration and Glazing Industry Alliance (FGIA) market studies report that nearly all commercial skylights, storefronts, and



curtain walls use aluminum for their framing material.<sup>1</sup> Metal allows for narrow sightlines and more glass, offering wider viewing areas and increased daylight.

## The benefits of designing with daylight

Natural daylight offers qualities that electric lighting cannot fully replicate. Humans are adapted to the rhythms of natural daylight. A daylit environment provides a dynamic interplay of natural illumination that stimulates the senses and supports vital biological processes. Exposure to the natural fluctuations of daylight helps regulate circadian rhythms, the body's internal clock that governs sleep-wake cycles, hormone release, body temperature, and other essential physiological functions.

As daylight changes in intensity and spectral composition throughout the day, it triggers the release of neurotransmitters such as serotonin, which influence mood, alertness, and overall well-being. This interaction helps humans feel awake and focused during the day and supports restful sleep at night.

In restaurants and retail environments, the health and wellness benefits of natural light help create a less

stressful, more productive setting where people can feel positive about their purchases and their jobs.

For diners and shoppers, daylight and its benefits help shape an inviting, pleasant experience that fosters brand loyalty and overall satisfaction. Customers lingering in sunlit stores and restaurants are more likely not only to make a purchase, but also to make a larger one.

Interior spaces with daylight and views also provide a visual connection to the outdoors, improving ambiance, assisting with wayfinding, and enhancing product and brand visibility. Colors, including those of food, tend to appear more vibrant under natural light than under most artificial light sources.

For service industry workers and other employees, access to natural daylight supports focus, alertness, concentration, and mood. This helps sustain their energy, accuracy, and job performance throughout long or irregular shifts. Happier, healthier employees also experience greater job satisfaction and fewer sick days, resulting in more consistent schedules and lower turnover, which in turn drives higher profitability.<sup>2</sup>

From an operational standpoint, effective daylighting design can reduce energy use in several ways. The FGI's *Daylighting Basics: Daylighting and Energy Savings* notes that lighting energy can represent a significant portion of a building's total energy consumption. Incorporating natural daylight reduces reliance on electric lighting during peak business hours. Decreasing the electrical use can help lower a building's utility costs. Using less energy also helps conserve natural resources, lower emissions, and reduce a building's carbon footprint.<sup>3</sup>

When properly harvested and integrated with lighting controls, daylighting can also reduce cooling loads. Electric lights emit more heat than the same amount of natural daylight, increasing air conditioning demand during warmer months and requiring systems to be sized for the additional load. Across all climate zones, fenestration systems with insulated aluminum framing further contribute to building envelope thermal performance and maintaining comfortable interior temperatures.

These benefits explain why daylighting is increasingly associated with human-centric design and sustainability objectives. However, achieving these outcomes depends on understanding how daylight enters a building and how it is managed.

For diners and shoppers, daylight and its benefits contribute to shaping an inviting and pleasant experience that fosters brand loyalty and overall satisfaction.

Photo by Alexandra Adele/  
Shutterstock



**On this spread:**

**Left:** Creatively combining fenestration systems for side-lighting and top-lighting maximizes the benefits of natural light for diners, shoppers, service industry workers, and building owners.

Photo by Arina P Habich/  
Shutterstock

**Middle:** Customers lingering in sunlit stores and restaurants have a greater likelihood of not only making a purchase, but making a larger one.

Photo by Eric Glenn/  
Shutterstock

**Right:** Florida's Aventura Mall features a sunlit experience for shoppers in the Miami area, featuring a custom, vaulted skylight with high-performance glass and aluminum framing. The durable finish helps protect against the intense sunlight, heavy rains, high humidity, and salt spray.

Photo by William Lemke/  
courtesy Super Sky Products  
Enterprises, LLC and Linetec

**Defining objectives, occupancy, and intended use**

For retail and restaurant spaces, typical daylighting objectives may include:

- Providing sufficient daylight to reduce electric lighting demand during daytime operating hours.
- Maintaining visual comfort for customers and staff by limiting glare and extreme visual contrast.
- Maintaining comfortable temperatures by eliminating unwanted heat gain.
- Supporting brand identity and ambiance through natural daylight.
- Protecting merchandise and finishes from excessive solar exposure.
- Integrating daylight with lighting controls and mechanical systems.

As outlined in the FGIA's *Skylight Selection and Daylighting Design Guide*, understanding a space's occupancy schedule and intended use is a critical first step in effective daylighting planning. A space's intended use remains central to the design approach, as the types of visual tasks performed will inform the selection and placement of daylighting elements. Once those tasks are identified, the next step is determining the appropriate illumination levels to support them.

Solar exposure varies by region and roof slope, making climate and roof orientation important considerations when determining spacing, glazing type,

and overall daylighting strategy. Daylight availability changes by time of day, season, and weather conditions, reinforcing the need to account for occupancy patterns early in the design process.<sup>4</sup>

Ceiling height, surface colors and textures, light shelves, and room dividers and partitions also affect how effectively daylight is distributed within a space and should be considered in planning.

The fundamental part of the art and science of illumination is determining the proper placement of light and illumination levels. Daylight modeling can be a valuable tool at this stage, enabling designers to analyze sun paths, assess interior lighting distribution, and test glazing configurations before developing construction documents. This process may avoid costly changes later in the project.

**Side-lighting and top-lighting strategies**

Daylighting approaches generally fall into two categories: side-lighting and top-lighting.

Side-lighting refers to daylight delivered through vertical fenestration such as metal-framed windows, storefronts, and curtain wall systems. This strategy provides strong visual connections to the exterior, supporting wayfinding and street presence. From an aesthetic standpoint, storefront glazing can play a crucial role in shaping the appearance and street appeal of a shop or restaurant; it is often the first point



of interaction between a customer and what draws them inside.


Side-lighting performance depends heavily on orientation and context. A south-facing facade in a sunny climate will behave very differently from a north-facing facade in a dense urban setting. Nearby buildings, overhangs, and trees also affect how much daylight reaches the interior. Additionally, low sun angles in the morning and afternoon can introduce glare if glazing is not properly shaded or specified.

Top-lighting refers to daylight delivered through roof openings such as skylights, roof windows, and tubular daylighting devices (TDDs). This strategy allows daylight to reach areas far from exterior walls, which is especially valuable in large, single-story retail buildings and open dining halls. It can also provide more uniform illumination across the floor plate and is often less dependent on site obstructions. Modern transparent and/or translucent glazing can be used to avoid glare and aid in capturing low-angle sunlight. Even on cloudy days, top-lighting can provide three times as much daylight as side-lighting, as cited in the *FGIA Daylighting Basics*.

Creatively combining fenestration systems for side-lighting and top-lighting maximizes the benefits of natural light for diners, shoppers, service industry workers, and building owners.

## Conclusion

Daylight is more than an aesthetic choice; it is a core component of human-centric design. Exposure to natural daylight influences circadian and perceptual systems, shaping how people see, feel, and function in a restaurant or retail space. These biological responses affect alertness, mood, and overall well-being, which in turn influence how customers experience a brand.

A well-designed, daylit environment benefits both customers and employees, including better focus, fewer headaches, and reduced eye strain. Effective daylighting reduces reliance on electric lighting, lowering energy use and cooling loads, while supporting sustainability goals. When daylight is treated as a core design element, it becomes an investment in both building performance and human experience. 

## Notes

<sup>1</sup> For more information, find *FGIA U.S. Industry Market Studies* at <https://store.fgiaonline.org>.

<sup>2</sup> "Daylighting and Productivity in the Retail Sector," California Energy Commission's Public Interest Energy Research (PIER), [https://www.aceee.org/files/proceedings/2004/data/papers/SS04\\_Panel7\\_Paper24.pdf](https://www.aceee.org/files/proceedings/2004/data/papers/SS04_Panel7_Paper24.pdf)

<sup>3</sup> Learn more: *Daylighting Basics: Daylighting and Energy Savings*, FGIA Skylight Council, <https://fgiaonline.org/council/183>

<sup>4</sup> To learn more, find *AAMA SKY-3, Skylight Selection and Daylighting Design Guide including Unit Skylights, Tubular Daylight Devices (TDD) and Sloped Glazing* at <https://store.fgiaonline.org>.

## Resources

For more, find *AAMA/Window and Doors Manufacturers Association (WDMA)/CSA 101/I.S.2/A440, North American Fenestration Standard/Specification* at <https://store.fgiaonline.org>.

*Glenn Ferris is the Fenestration and Glazing Industry Alliance's (FGIA's) fenestration standards specialist. He began his career with the association in 2018. He has extensive experience in the fenestration industry dating back to 1992. Ferris is a liaison for many councils, committees, and study/work/task groups, guiding them in the completion of the scope of each group. He can be reached at [gferris@fgiaonline.org](mailto:gferris@fgiaonline.org).*



# Healthy Metal Design:

Exploring the WELL Light Concept



Photos courtesy Nava Real Estate Development

The International WELL Building Institute's (IWBI) WELL Certification and standard support occupant health and well-being. Ten WELL concepts define criteria for healthier built environments. At the design stage, metal can contribute to meeting certain WELL requirements. IWBI specialists share insight into how architecture, engineering, and design (AED) professionals approach healthier buildings. In this article, *Metal Architecture* asks experts about the WELL Light concept.

### The WELL Light concept

The lighting environments where humans spend their time impact their visual, circadian, and mental health. Currently, lighting conditions in most spaces are designed to meet individuals' visual needs but do not account for circadian rhythms or mental health. This presents an opportunity for projects to provide lighting conditions that support human health and well-being. One of the 10 impact areas identified in the WELL Building Standard, the WELL Light concept promotes exposure to light and aims to create lighting environments that promote visual, mental, and biological health. Features under WELL Light aim to provide a lighting environment that reduces

### Meet the experts



**Nathan Stodola** leads the standard development team and serves as chief engineer at the IWBI. In this capacity, he works with strategies to improve health and well-being in the built environment through the WELL Building Standard, WELL ratings and the WELL AP credential. Prior to working at IWBI, Stodola worked at the University Transportation Research Council (UTRC) at City College, where he helped the New York Metropolitan Transportation Council (NYMTC) create federally required Regional Transportation Plans. He holds a Master of Science degree in mechanical engineering (Columbia University) and transportation engineering (City College). He received his Bachelor of Science in mechanical engineering from Union College, with a minor in music.



**Nancy Clanton** is renowned for her pioneering contributions to the field of lighting design. With a career marked by a passionate commitment to innovation, she has positioned Clanton & Associates at the forefront of sustainable lighting solutions. Her extensive expertise and visionary approach have significantly influenced contemporary lighting practices. Clanton's work is characterized by a deep commitment to advocating for dark skies and sustainable design principles. Her efforts have not only reduced light pollution but have also fostered greater public awareness about the environmental impacts of lighting. As an industry leader, Clanton has been instrumental in developing standards that prioritize energy efficiency and ecological sensitivity. Beyond her professional achievements, she is dedicated to mentoring the next generation of lighting designers. She has created numerous opportunities for young professionals to engage deeply with cutting-edge design techniques, sustainability practices, and regulatory frameworks.

circadian phase disruption, improves sleep quality, and positively impacts mood and productivity.

## Key terms

**Illuminance thresholds:** The light levels in a space can enhance the user's ability to perform tasks in that space, while contributing to the feeling of spaciousness. The age of the individual is also a factor in the amount of light required for visual acuity. WELL Light features require projects to provide appropriate illuminance on work planes for regular users of all ages, as required for the tasks performed in the space.

**Circadian lighting:** Humans have evolved to align their circadian rhythms with the natural light-dark cycles of day and night. Circadian lighting design requires projects to provide users with appropriate exposure to light to maintain circadian health and align the circadian rhythm with the day-night cycle.

## Unpacking light in design

*What factors contribute to successfully satisfying the light concept requirements?*

**Clanton says:** All the strategies in the WELL Light concept are created to support the visual wellness of occupants, including their visual experience: access to quality views, daylight, interior lighted surfaces, and glare-free electric lighting and daylighting. Having control over one's visual environment is very important for adjusting personal lighting levels, reducing glare from direct sunlight with shades, and balancing lighting to one's visual preferences.

There are many important and helpful published lighting recommendations, including:

- CEN EN 17037 Daylighting of buildings, Table "Assessment of the view outwards from a given position"
- ANSI/IES LP-1-20 Designing Quality Lighting for People and Buildings
- ANSI/IES LP-3-20 Designing and Specifying Daylighting for Buildings
- ANSI/IES LP-6-20 Lighting Control Systems—Properties Selection and Specification
- ANSI/IES LP-7-20 The Lighting Design and Construction Process
- ANSI/IES LS-5-21 Light and Color
- ANSI/IES LS-7-20 Vision—Eye and Brain
- ANSI/IES LS-8-20 Vision—Perception and Performance
- ANSI/IES RP-28-20 Lighting and Visual Environment for Older Adults and Visually Impaired
- ANSI/IES TM-18-18 Light and Human Health—An Overview of the Impact of Optical Radiation on Visual, Circadian, Neuroendocrine, and Neurobehavioral Responses
- ANSI/IES LM-83-23 IES Spatial Daylight Autonomy and Annual Sunlight Exposure
- "Visual Delight in Architecture" by Lisa Hescong



*How can light requirements be addressed during the design phase of a project?*

**Clanton says:** WELL Light requirements should be addressed at every phase of every project, including design, construction, and post-occupancy. Having the design team work together from the very start of the project will inform each design discipline of the importance of providing access to views and daylighting for all occupants. Also, designing the interiors so that surfaces such as walls and ceilings can be lit uniformly and glare-free. As the design progresses, the team should continue to refine it to meet all WELL Light requirements.

Once occupants have moved in and the building is occupied, a post-occupancy evaluation (POE) can identify and make adjustments to ensure all WELL Light requirements are met. Ideally, the POE should be conducted at least six months after occupancy to provide occupants with an enhanced visual experience.

*How can daylighting influence illuminance thresholds and the lighting reference guidelines?*

**Stodola says:** When daylight design interacts with electric lighting through automation and sensors, it can lead to energy savings. As a result, many building and energy codes allow more lighting to be installed in such buildings, since automation will reduce overall energy use. In WELL, the target levels for circadian lighting from electric lights are reduced for buildings with good daylight design, since the daylight will supplement the electric light levels.

Refer to standards L02.1, L03.1, L05.1, and L06.1.

*What strengths and limitations does natural daylighting have on circadian lighting design?*

**Stodola says:** Daylight can be a great part of a space's design for circadian lighting. The sun's daily cycle naturally aligns with our sleep-wake cycle, providing bright days and dark nights. However, electric lights must supplement the daylight to meet necessary targets, due to variations in weather, length of day, or window access within a building.

Refer to standards L01.1, L03.1, and L05.1.



**Left:** Clerestory windows with interior metal light shelves can be seen from the classrooms that face south.

Photos © Joseph Romeo / courtesy Perkins Eastman

**Right:** Skylight and lightwell paired with clerestory windows in the corridor side of the classrooms bring ample light into the interior spaces.

## Light in design practice

By Heather Jauregui, LEED AP BD+C, O+M, CPHC

*What strategies must architects employ while designing a building with optimal daylighting?*

**Stodola says:** The main goal of daylighting is, of course, to provide the space inside the building with sunlight. Large windows, limited walls or other obstructions, and light-colored surfaces help toward this goal. However, too much direct sunlight can cause glare, reducing the space's usability. In addition, large windows can lead to excessive solar heat gain, making the spaces near the perimeter of the building too warm.

External shading structures, often made of metal, are one strategy to block some direct sunlight while maintaining views and access to daylight. Perforated metal facades can also reduce glare and solar heat gain while maintaining some daylight, but at the cost of blocking views. Nevertheless, they can be useful in some designs, such as for clerestory windows.

Refer to standards L01.1, L05.1, and L06.1.

### Metal in designing for light

Based on the responses from IWBI experts, *Metal Architecture* outlined strategies for integrating the WELL Light concept into metal design.

Metal is a versatile material that can foster comfortable lighting in the built environment. The material allows canopies and sun-shading structures to be long-lasting and offers varied shading options through perforated and expanded metal. Architectural skylights also use metal framing to expand design opportunities, and by extension, the capacity to disseminate daylight. Steel- or aluminum-framed windows are another option for durable, energy-efficient natural light.

In these ways, architects, designers, and engineers can incorporate metal elements into their designs to achieve WELL Light goals. [Ma](#)

John Lewis Elementary School sets a new standard in sustainable design as Washington, D.C.'s first public school to achieve net-zero energy (NZE) and the world's first to earn dual LEED and WELL Platinum certifications. This "Net Positive Education" approach harnesses sustainability and human-centered design to create a high-performance learning environment that supports both student well-being and academic success.

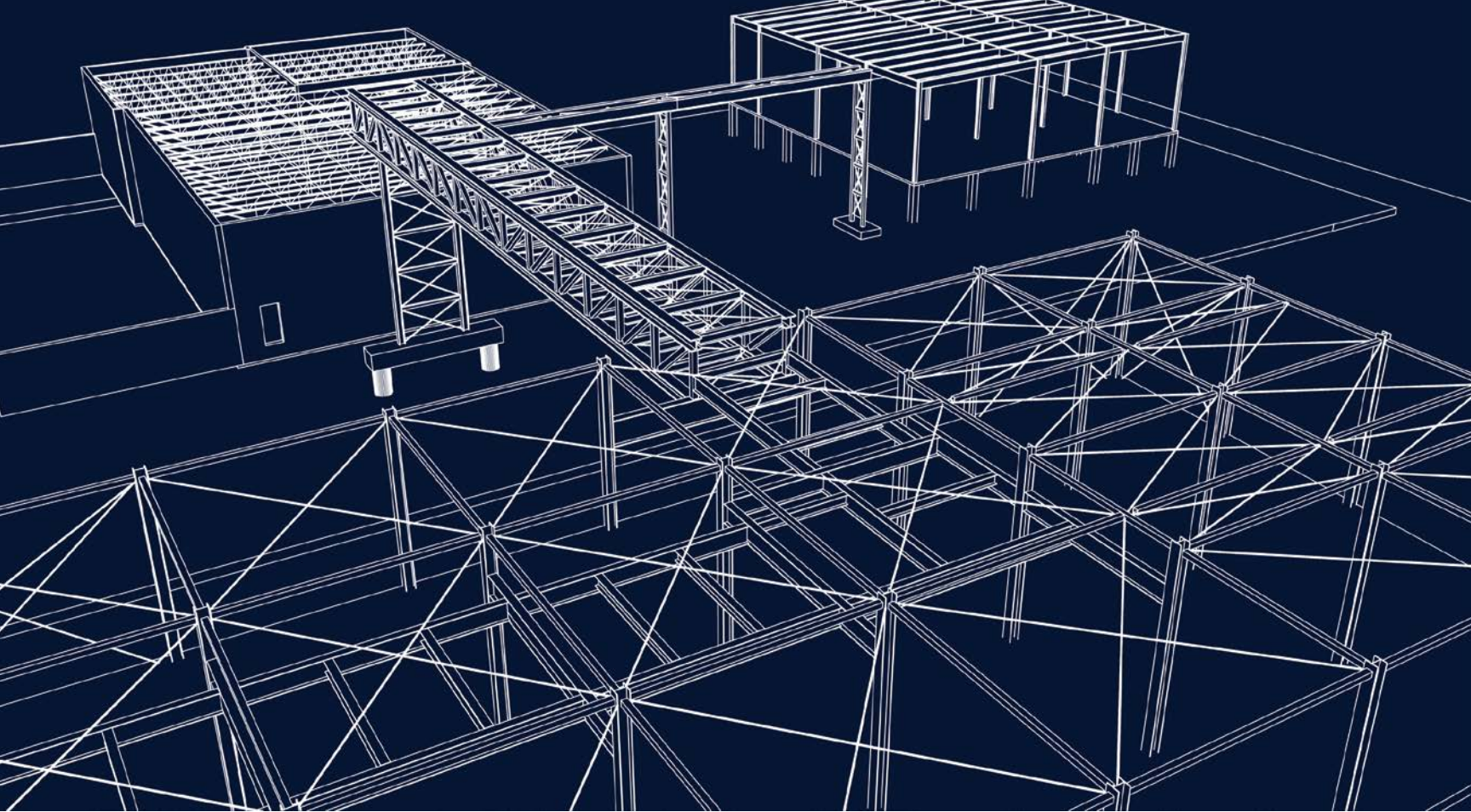
The new school replaces an obsolete, brutalist, open-plan building. Among the many issues with the original building, access to quality views and daylight was very limited. This was confirmed during a pre-occupancy analysis, which revealed the challenges the previous building faced with daylight and glare. With additional feedback from the students and teachers, natural light became a very clear priority in the new building's design.

Daylight is also the perfect example of how John Lewis Elementary School merges high-performance strategies with wellness-driven design to foster optimal learning outcomes—an approach Perkins Eastman calls "Net Positive Education." To achieve the project's NZE goals, daylighting was a critical strategy for reducing the building's lighting load. In addition, as outlined in the WELL Building Standard, it also has significant benefits for students' health and wellness, thereby positively impacting their performance throughout the day and their ability to learn and thrive. With daylight playing such a critical role, this strategy becomes the linchpin for achieving the project's goals for people's and the planet's wellness. It creates a quality educational environment.

Daylight studies guided the placement of glazing, achieving 77 percent spatial daylight autonomy, meaning teachers rarely need to turn on the lights or lower shades. Thermally broken aluminum view windows are shaded on the south facade with exterior metal shading to reduce glare, while clerestory windows and internal metal light shelves distribute daylight deeper into classrooms. In north-facing classrooms, skylights and corridor lightwells bring daylight to the back of the classrooms.

The project achieved all the WELL criteria points around daylight and views, including managing solar glare. Comparing pre- to post-occupancy results, there was a 63 percent increase in teacher satisfaction with daylighting in the new facility, and a 36 percent increase in student satisfaction.

*Heather Jauregui, LEED AP BD+C, O+M, CPHC, is the director of sustainability at Perkins Eastman.*



# Beyond BIM

## Reshaping design communication with web-based visualization

By Riddhi Vakharia,  
B. Arch, MURP

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Bigstockphoto.com

Software has been part of the architectural design process for more than four decades. Since the introduction of early personal computers in design offices, digital tools have steadily influenced how architects draw, visualize, coordinate, and ultimately deliver buildings. What began as a digital replacement for hand drafting has evolved into a complex ecosystem of specialized platforms, each promising greater efficiency, accuracy, and control.

From computer-aided drafting to 3D visualization, and later to Building Information Modeling (BIM), each generation of software introduced new capabilities, different inputs and outputs, and a distinct role within the project lifecycle. Some tools came and went quickly, others became deeply embedded in professional practice, and many continue to evolve through constant

updates and revisions. One thing that has remained consistent throughout this evolution is the concept of change itself.

While these advancements have undeniably improved precision, coordination, and production speed, they have also introduced unintended challenges. In many cases, software has shifted from being a supportive instrument to becoming a defining constraint on both process and communication. The tools intended to enable design have, at times, begun to shape it in ways that are not always intentional or beneficial.

### From CAD to visualization

Early computer-aided design (CAD) systems fundamentally transformed architectural practice by digitizing manual drafting. Plans, sections, and

elevations could be produced faster, revised more easily, and issued more efficiently. Layer management, line weights, and blocks improved consistency across drawing sets, while digital files reduced physical storage and reproduction costs.

Yet despite these advantages, the core method of communication remained largely unchanged. Understanding a building still depended on the ability to read technical drawings. Clients who were comfortable with blueprints could follow the conversation, but many others struggled to visualize space, scale, and materiality from two-dimensional representations alone.

Three-dimensional (3D) modeling and visualization tools marked a meaningful shift. Designers could now communicate form and volume in immediately understandable ways, even to non-technical audiences. Massing studies became intuitive. Material options could be shown rather than described. Spatial relationships that once required explanation could now be experienced visually.

This shift was especially significant in metal architecture. Roof profiles, panel systems, bay spacing, and structural depth have a profound impact on both the appearance and performance of a building. A subtle change in roof slope or cladding orientation can dramatically alter a building's character; yet, these differences are often difficult to communicate through plans and elevations alone. Visualization tools made these conversations clearer, faster, and more collaborative.

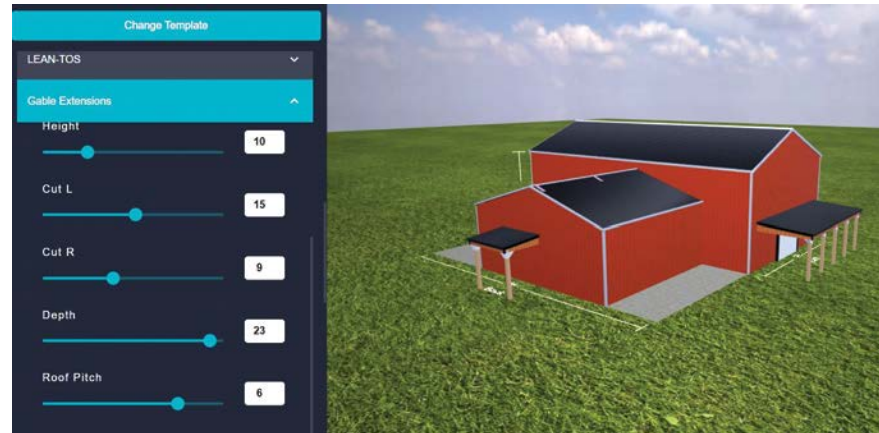
However, these tools typically existed outside the formal documentation workflow. Models used for visualization are rarely translated directly into construction drawings. When designs evolved, updates had to be manually coordinated across multiple platforms. This duplication of effort increased the risk of inconsistency and often limited the depth to which visualization tools could be integrated into the overall process.

## BIM and the rise of complexity

BIM introduced a more comprehensive approach. Geometry, quantities, schedules, and coordination could coexist within a single parametric environment. Changes made in one view could propagate throughout the model, automatically updating drawings, schedules, and related data. For complex projects involving multiple disciplines, BIM became not just useful but essential.

At the same time, BIM significantly raised the barrier to entry. Learning curves became steeper. Software costs increased. Hardware requirements grew. Workflows became more specialized and role-driven. CAD, BIM, and visualization tools began to feel like separate disciplines rather than complementary parts of a single design continuum.<sup>1</sup>

Over time, this separation became visible in the work itself. It is often possible to recognize which software a design originated from, not because of design intent, but because tools subtly influence how problems are approached and resolved. Certain geometries, layouts,



An industrial shed with gables and a porch is displayed in a building modeling tool.

Photo courtesy Steelarch.ca

and detailing strategies recur, shaped as much by software constraints as by architectural choices.

More critically, BIM complexity placed clients further from the design process. While these platforms are powerful for professionals, they are largely inaccessible to owners, developers, and builders during the early stages of decision-making. Engaging directly with a BIM model requires training, time, and familiarity that most stakeholders lack.

## The client communication gap

Clients come to projects with varying degrees of technical knowledge, availability, and confidence. Some are deeply involved and highly informed. Others rely almost entirely on their design teams for interpretation and guidance. Many have clear goals but struggle to translate those goals into spatial or material decisions.

Expecting clients to engage meaningfully through BIM software is unrealistic. Few have the time or motivation to learn tools designed for full-time professionals. As a result, their participation is often limited to reviewing drawings or renderings prepared by others, rather than actively exploring options themselves.

This creates a familiar pattern. Key decisions are made early, sometimes before clients fully understand the implications. When clarity arrives later, changes can be disruptive and costly. Revising coordinated BIM models requires time, expertise, and careful revalidation across systems. The cost of change increases dramatically as projects progress.

This is where early-stage communication most often breaks down, not because of a lack of expertise, but because of a lack of accessible tools.

## Web-based visualization as a bridge

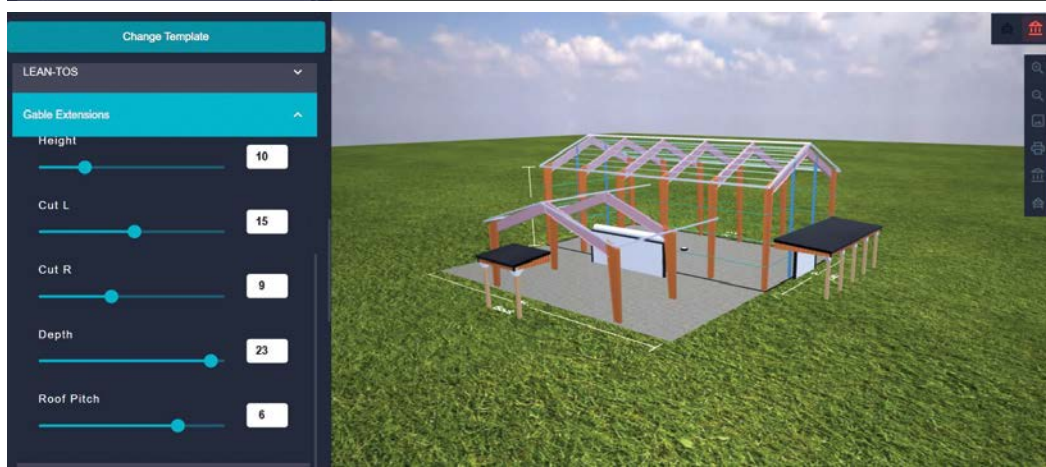
Web-based visualization tools are emerging as a response to this long-standing gap. These platforms operate entirely within a web browser, requiring no installation, licensing, or specialized hardware. They enable non-technical users to explore building configurations, proportions, and material options in real-time through intuitive controls.



**Top:** Software supports visualization of elevation in plans for an industrial shed.

Photos courtesy Steelarch.ca

**Bottom:** Software allows for views of the exposed structure of an industrial shed with gables and a porch.



designs with platforms created to support early-stage visualization for metal building projects while remaining compatible with established professional workflows. The goal was not to replace existing tools, but to complement them by addressing a critical gap in early communication.

## Looking ahead

Architectural software will continue to evolve. Some tools will disappear. Others will become more sophisticated and specialized. What will remain essential is the ability to communicate clearly with all stakeholders involved in a project.

In an increasingly complex digital landscape, tools with low barriers to entry are becoming increasingly important, not less so. Free or easy-to-use platforms that require little or no learning

Rather than replacing CAD or BIM, these tools serve a different purpose. They support early alignment by lowering the barrier to participation. Clients can experiment, compare, and visualize without needing to learn professional software. Designers can guide conversations while maintaining control over feasibility and intent.

In metal building projects, this capability is particularly valuable. Decisions related to structural systems, roof slopes, bay spacing, and cladding profiles carry both visual and financial consequences. Web-based visualization allows these choices to be explored early, when alternatives are still flexible, and change is inexpensive.

## Practical integration

The most effective use of web-based visualization occurs when it is thoughtfully integrated into an existing workflow. Early exploration and alignment can happen through accessible tools, followed by formal modeling and coordination within BIM environments once decisions are established.

This layered approach allows each tool to serve its intended role. Visualization supports communication and understanding. BIM supports coordination and documentation. CAD supports precision and detailing. When used together, rather than in isolation, these tools create a more coherent and efficient process.

As practitioners, industry professionals have seen the value of this approach firsthand. It informed the development of metal-specific

curve are not a threat to professional software. They are a necessary complement, particularly during the early stages of design when clarity and alignment matter most.

The future of architectural technology lies not in a single solution, but in thoughtful integration of the existing and emerging options. When the right tools are used at the right stages, technology supports design intent rather than constraining it. For the profession, this balance may be the most important design challenge of all. [NIA](#)

## Notes

<sup>1</sup> National Institute of Building Sciences. (2017). *National BIM guide for owners*. National Institute of Building Sciences. Retrieved from NIBS: <https://www.nibs.org>

**Riddhi Vakharia, BCIN, B.Arch., MURP**, is the founder and principal of *Inarch*, an architecture and planning practice, and *Inarch 360*, a design and technology platform serving the metal building industry. With over ten years of global experience, she specializes in metal building design, light gauge steel framing, zoning analysis, and Ontario Building Code compliance for residential and commercial projects across Canada. She is a BCIN small buildings designer. Vakharia is also the creator of *SteelArch*, a 3D metal building visualizer that supports early-stage design, feasibility analysis, and streamlined project delivery for metal buildings. She can be reached at [riddhiv@inarch.ca](mailto:riddhiv@inarch.ca).



# Conspicuously Inconspicuous

Why air barrier installation makes or breaks building performance

Among building components, few are as critical and as easily overlooked as the air barrier. It rarely appears in project photos, is quickly hidden by insulation and cladding, and is often taken for granted once specified. Yet a poorly installed air barrier can undermine the performance of an otherwise high-quality building enclosure, leading to excessive energy use, condensation and moisture damage, occupant discomfort, and indoor air quality (IAQ) problems.

For this reason, building codes and voluntary high-performance building standards have steadily tightened requirements related to air leakage. Today, airtightness

is no longer a theoretical design intent; it must also be demonstrated in the field. For the professionals responsible for delivering the building, including architects, general contractors, and subcontractors, the air barrier has become one of the most consequential elements of enclosure performance.

## From prescriptive design to verified performance

Historically, energy codes focused on prescriptive requirements, including HVAC efficiency, lighting power densities, and minimum insulation values for



By Alan Scott and Pam Jergenson

Photos by Pam Jergenson



**Photo 1:** Out-of-sequence roof-to-wall work interrupts air barrier continuity before the transition membrane is installed.

**Photo 2:** Missed air barrier transition forces masonry removal, highlighting the cost of sequencing errors.

**Photo 3:** Wall-to-roof transition detailing must account for material compatibility and long-term airtightness.

walls and roofs. Over time, performance modeling was introduced as an alternative compliance path, allowing teams to demonstrate energy savings on paper.

More recently, codes and standards have advanced to post-construction performance verification. This shift began with the commissioning of mechanical and lighting systems and has since expanded to building enclosures, particularly air leakage. While enclosure commissioning addresses all four control layers in enclosure assemblies (water, air, vapor, and thermal), the air barrier, a significant part of the air control layer, is increasingly important for energy efficiency and sustainability. The reason is straightforward: a leaky enclosure compromises insulation performance, increases heating and cooling loads, and introduces uncontrolled moisture and pollutants into the building.

As a result, many jurisdictions now require whole-building airtightness testing (WBAT), commonly

known as blower door testing. Compliance pathways often include either field observations of the air barrier installation conducted by a qualified third-party air barrier inspector or WBAT in accordance with ASTM E779, demonstrating air leakage below a prescribed threshold, typically around  $2.03 \text{ L/s}\cdot\text{m}^2$  ( $0.40 \text{ cfm/sf}$ ) of enclosure area.

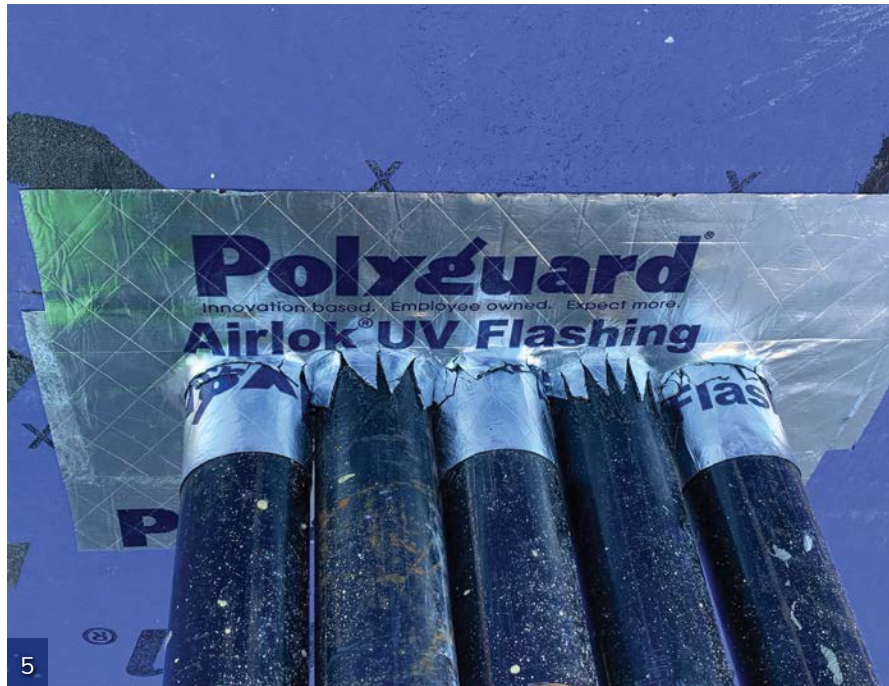
The challenge is not the test itself. The challenge is that by the time a building reaches substantial completion and the WBAT is performed, the air barrier is fully concealed behind insulation, finishes, and exterior cladding. Any deficiencies discovered at that point are difficult, expensive, and time-consuming to correct.

### Why air barrier failures are still so common

Unlike many enclosure components, the air barrier is not installed by a single trade. Its continuity depends on the coordinated work of framers, air barrier installers, roofers, cladding and window installers, and mechanical and electrical trades. Small gaps left by one trade can negate the careful work of another.

Across hundreds of projects, two field installation issues consistently account for most air barrier failures: improper sequencing and detailing at transitions and penetrations through the air barrier after installation.

These issues occur regardless of the exterior finish, whether masonry, metal wall panels, precast, or composite systems, and are routinely encountered by general contractors and air barrier installers alike.



## Sequencing and transitions: where good details go to die

From a general contractor's perspective, sequencing exterior systems is routine site management. From a building enclosure perspective, even minor sequencing changes can have outsized consequences for air barrier continuity.

The most problematic transition, by far, is the roof-to-wall interface. Airtightness testing, enclosure forensics, and litigation history consistently show this junction to be the single most significant contributor to poor building performance. Considering that no fewer than three trades typically affect air barrier continuity at the roof edge, coordinating installation in the precise order required by the drawings is often like aiming at a moving target.

An example of out-of-sequence detailing at the roof edge is shown in Photo 1. In the project drawings, the roof edge detail clearly noted a self-adhered air barrier transition membrane connecting the fluid-applied wall air barrier to the roof edge wood blocking. However, steel stud framing and spray foam insulation were installed on the wall before the required transition membrane was applied, thereby interrupting continuity at this critical junction.

On an adjacent exterior elevation, clay brick masonry was installed before the self-adhered air barrier transition membrane. As shown in Photo 2, this required removing the newly installed masonry to properly install the transition membrane, an outcome

that was less than optimal and resulted in schedule delays and added labor for multiple trades.

In buildings with complex roof geometries, multiple parapets, or stepped rooflines, roof-to-wall transitions become even more challenging. Transition material compatibility and long-term service life must be carefully considered. For example, common multifamily wall assemblies with sheathing and building wrap do not readily transition to a ballasted ethylene propylene diene monomer (EPDM) roof, as illustrated in Photo 3. Constructing a continuous air barrier system for long-term performance requires transition materials compatible with both roof and wall assemblies and with a service life aligned with adjacent exterior components.

## Penetrations: small holes, big consequences

Penetrations through the air barrier after installation are another common source of failure. Conduit, piping, and mechanical penetrations often occur late in construction and can be difficult to detail properly.

As most conduit and plumbing penetrations are circular, air barrier detailing around "round things" in the otherwise square construction world remains a persistent challenge. Taking the time to properly form and install compatible transition membranes can produce excellent airtightness results, as shown in Photo 4.

The challenge increases significantly when penetrations are ganged or clustered. Limited space between pipes may prevent proper installation of the

**Photo 4:** Properly detailed round penetration demonstrates effective air barrier continuity.

**Photo 5:** Ganged penetrations limit detailing space and increase air leakage risk.



**Photo 6:** Sealing metal wall panel clip fasteners adds critical protection at unavoidable air barrier penetrations.



**Photo 7:** Localized depressurization testing verifies airtightness at metal wall panel clip attachments.

transition membrane, increasing the likelihood of air leakage, as illustrated in Photo 5.

### Metal wall panel clips: a special case

Unlike many penetrations, metal wall panel clips cannot be avoided. They are installed after the air barrier and must penetrate it. Although some clips are marketed as “self-sealing,” relying solely on this feature can be risky.

The best practice during construction is to apply a bead of compatible air barrier sealant at clip fastener penetrations, providing an added level of protection at each attachment point, as shown in Photo 6.

Alternatively, sealing clip penetrations can be addressed during the design phase. Architects may specify sealing from the interior side of the wall assembly using spray foam insulation or another air barrier material within the stud cavity. This approach requires careful sequencing, installing clips before interior finishes, but can be highly effective when properly executed.

Given the sheer number of metal wall panel clips on a typical facade, even small leaks at each fastener can accumulate into a significant air leakage pathway. For quality assurance, localized depressurization testing with a small test chamber and leak-detection liquid applied at the clip attachment can confirm airtightness, as shown in Photo 7. This testing provides valuable protection against larger air leakage issues later.

### Verify early

Sequencing and penetration issues are often concealed by successive enclosure layers long before substantial completion. WBAT performed at the end of construction will reveal deficiencies, but by then, corrections often require destructive, costly rework. Avoiding these outcomes requires early coordination,

intentional detailing, and targeted verification during construction. Identifying and resolving issues while assemblies remain accessible protects schedules, budgets, and ultimately building performance.

### Conclusion

Air barriers may be inconspicuous, but their impact on building performance is enormous. As energy codes, sustainability standards, and owner expectations continue to tighten, airtightness is no longer optional, and surprises during final testing are unacceptable.

The path forward is clear:

- Treat the air barrier as a system, not a product.
- Prioritize sequencing and transitions, especially at roof-to-wall interfaces.
- Anticipate and detail penetrations, including those for metal wall panel attachments.
- Verify performance before the enclosure is complete.

When project teams proactively address these issues, they avoid costly rework, protect construction schedules, and deliver buildings that perform as intended for decades. Ultimately, the most successful air barriers are the ones no one notices because they work. [Ma](#)

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**Pam Jergenson, FCSI, CDT, CCS, CCCA, BECxP, CxA+BE, CABS**, is a building enclosure commissioning professional, licensed air barrier field auditor and trained WBAT technician with over 35 years of experience. She is Technical Director for Intertek Building Science Solutions.



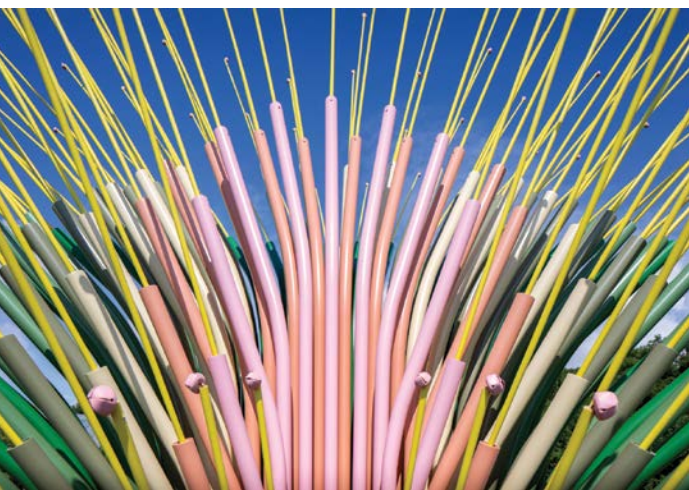
# Kinetic Connection at Lauritzen Gardens

More than ever, architecture is on the move. Literally. Kinetic designs instill architectural elements with an immersive quality, connecting structures not only to their environments but also to the people who interact with them. Chorus Ventus, a sculptural structure made from stainless steel tubes, serves as a focal point for the Children's Garden at Lauritzen Gardens in Omaha, Neb. The project exemplifies kinetic design as a beacon of connection.

Lauritzen Gardens is a botanical garden and cultural hub that fosters appreciation and education for nature. The 40.5-ha (100-acre) area includes trails, formal gardens, artistic displays, and more. The Children's Garden, designed by The Architectural Offices, offers hands-on opportunities for young minds to flourish and nourish a deep appreciation for nature.

**By Hanna Kowal**

Photos by Tom Kessler/  
courtesy v2com



Designed by Mark Nixon and Viliina Koivisto of NEON, a firm that combines architectural and artistic perspectives in its practice, the Chorus Ventus pays homage to the abundant grassy ecosystem that once engulfed central North America. Like plant life, this structure moves with the wind and the vibrations of its surroundings.

The floristic formation comprises 151 curved steel tubes that support glass-reinforced plastic (GRP) rods featuring bells on each tip. Showcasing a natural color scheme, the steel tubes are powder-coated. The outermost layer of steel tubes is green, wrapped around layers that gradate to shades of yellow, orange, and finally a soft pink at the innermost layer. The organic progression of color allows naturalistic wonder to prevail, no matter the season.

Steel is strong and durable, allowing the flora-inspired design to bear Nebraska's cold winters and warm summers for decades to come. The tubes are also thoroughly anchored to the ground, with a two-layer baseplate providing confidence in the design's ability to withstand storms and tornadoes. Steel also acts as a sturdy foundation for the attached rods, which are interchangeable and replaceable, ensuring resilience over time.

Red, green, and blue (RGB) lighting at the base of Chorus Ventus allows the structure to be seen at night, enhancing its bright colors and contrasting beautifully with the dark night sky.

Inviting in both its composition and situation, the structure stands at the top of a spiral ramp, decorated with complementary plants along the way. Seating areas surround Chorus Ventus, providing spectators with a peaceful place to enjoy views of both the sculpture and the Missouri River.

With its gentle movement and bell chimes, Chorus Ventus truly becomes a living part of its surroundings—and its steel composition ensures that its life will last. 

INTRODUCING



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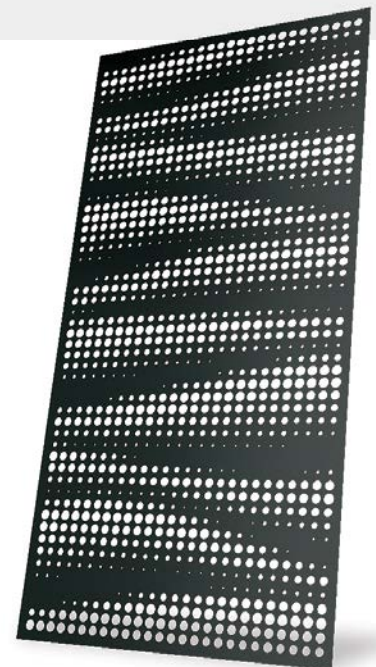
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