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MAGAZINE®

THE GLASS AND GLAZING AUTHORITY • NOVEMBER/DECEMBER 2022

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On the cover: Women leaders in glass and fenestration gather at the GlassBuild Main Stage for learning, networking and community. Read more on page 8.

NorTex Glass & Mirror employees demonstrate safe glass handling. Learn more about Safety on the Jobsite on page 50.



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FROM THE SHOW FLOOR

ITR Economics' Senior Forecaster Connor Lokar presents at the Main Stage during GlassBuild America 2022. See full event coverage at GlassBuild.com and @GlassMag on Twitter.



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Standing room only crowd at the Women in Glass and Fenestration event at GlassBuild America.

Look for Women in Glass, Find Community, Solutions and Inspiration



KATY DEVLIN
Editor-In-Chief
kdevlin@glass.org

I'm writing this Editor's Notes on a late-night flight, returning home after an exhilarating GlassBuild 2022 in Las Vegas. I intended to use this column to discuss some of the incredible product and equipment innovations I came across on the show floor, or perhaps to offer up the main takeaways from the in-depth economic forecast at the Glazing Executives Forum.

Instead, I find myself coming back again and again to a story relayed to me by my colleague Melanie Dettmer following the packed, standing-room-only Women in Glass and Fenestration panel, held at the GlassBuild Main Stage on Oct. 19.

Dettmer is a key part of NGA's business development team and was the driver behind the Women in Glass event. She told me she had been chatting with mother-daughter glazing team Casey Weir and Anna Wright, after the panel. During their conversation, Weir and Wright, who had just been recognized for being the first women to receive Architectural Glass and Metal Technician Glazier Certification, were approached by a second mother-daughter glazing team—Jane Primeau and Laura Primeau-Vlahovic—and the discussion immediately shifted to tool talk.

"They were talking about which tools they like to use—the suction cups that best fit women's hands, their favorite gloves. They were sharing advice and stories," Dettmer described. "They all have the understanding of what it is to be a woman in the field. ... It was amazing."

That single interaction exemplified the primary talking points from each of the speakers during the Women in Glass panel—that building community among women in the industry lifts up those women. It helps identify barriers for women in glass, and it ignites action to begin to tear down those barriers.

"It's critically important that we share resources and information with one another," said panelist Deb Callahan, CEO of the National Fenestration Rating Council. "Women lead by example. So please help one another by advocating, mentoring and helping to pay it forward."

"If you want to feel inspired and supported, just get in touch with other women who do what we do in the industry and see what they do to try and promote other young people to get into the industry," said Barbara Kotsos, director of marketing and PR for Giroux Glass. "Because I was so new to the industry and recognized how absolutely little I knew about it, I thought the best way that I could learn would be by involving myself with a community of women in the industry. ... You get the real nitty-gritty from talking to the women who work in our field."

This panel is just the start of the NGA's efforts to provide community for women currently in glass, and to encourage more women to enter the glass and glazing field. The crowd, which spilled out of the Main Stage area into the surrounding aisles, demonstrates interest, excitement and demand among both women and men in the industry to have these conversations and provide support. If you are interested in getting involved in future activities to promote women in glass and fenestration, please contact me at kdevlin@glass.org or Melanie Dettmer at mdettmer@glass.org. And for complete coverage from the show, including details about those show floor innovations and about the 2023 forecast, visit GlassMagazine.com or [@GlassMag](https://twitter.com/GlassMag) on Twitter. ■



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YOUR ASSOCIATION AT WORK

NEED-TO-KNOW INFORMATION
FROM THE NGA



GLASSBUILD AMERICA 2022 DRAWS MORE THAN 8,200 TO LAS VEGAS

GlassBuild America: The Glass, Window & Door Expo returned to the Las Vegas Convention Center in October, attracting more than 8,200 registered attendees for the largest glass and fenestration industry trade show in the Western Hemisphere.

The three-day event, organized by the National Glass Association, drew attendees from the United States and internationally to see new product solutions, advanced machinery and equipment, innovative tools and components, and more. The 146,700-square-foot show floor included 386 exhibitors, including 100 international exhibitors and 81 first-time exhibitors.

“GlassBuild 2022 has been electric, exceeding our expectations and more,” according to officials from Technical Glass Products. “We’re here in Vegas connecting with friends, new and old, along with other professionals that keep this industry innovative and exciting.”

In addition to a busy show floor, GlassBuild also offered a wide range of education opportunities: the 16th Annual Glazing Executives Forum; the inaugural GlassFab, the NGA’s new educational pilot program for glass fabrication plant managers; and Main Stage sessions, including an economic update, a gathering of women in glass and fenestration, a panel on mental health and suicide prevention, and fabrication and installation best practices presentations from the Fenestration & Glazing Industry Alliance. ■



WOMEN IN GLASS + FENESTRATION ENCOURAGES MENTORSHIP AND COMMUNITY

How can we encourage the next generation of women to join the glass and fenestration industry? Successful female industry leaders Deb Callahan, CEO of the National Fenestration Rating Council, Barbara Kotsos, director of marketing/PR for Giroux Glass, and Alicia Hamilton, operations manager of the NGA, had some ideas and advice for the crowd that attended the standing-room-only Women in Glass and Fenestration event held Oct. 19 at GlassBuild.

"The voices of women are very important," says Callahan. "Women are strong leaders and it's critically important that we share resources and information with one another. Women lead by example so please help one another by advocating, mentoring and helping to pay it forward." ■

"WOMEN ARE STRONG LEADERS AND IT'S CRITICALLY IMPORTANT THAT WE SHARE RESOURCES AND INFORMATION WITH ONE ANOTHER. WOMEN LEAD BY EXAMPLE SO PLEASE HELP ONE ANOTHER BY ADVOCATING, MENTORING AND HELPING TO PAY IT FORWARD."

GEF ADDRESSES CONTRACTS, LABOR AND PREPARING FOR THE NEXT RECESSION

Nearly 300 attendees gathered at the Las Vegas Convention Center Oct. 18 for the Glazing Executives Forum, organized by the NGA and held in conjunction with GlassBuild America. The group of glazing contractors and other glass industry leaders heard presenters address key issues in the market: managing contracts in the face of supply chain challenges and inflation; training and retaining the next generation of glaziers; preparing for the next industry downturn; and more.

"This year's Glazing Executives Forum is intended to be 'Future Focused,' bringing together the industry's top glaziers in order to build better businesses," says Jodi Martinez, president of AllStar Glass Co., and emcee of the event. "We'll set the stage to thrive in an uncertain environment when it comes to your contracts, how you build up your people and what strategies you can employ now to reduce any later impacts." ■

MENTAL HEALTH PANEL: HOW CAN WE SAVE LIVES?

The GlassBuild Main Stage hosted a panel discussion, Mental Health and Suicide Prevention, to start a conversation within the industry on addressing mental health and suicide prevention. Panelists included John Hewitt, co-founder, "We Mind and Kelly Matters"; Steve Dillon, corporate marketing director, VEKA North America; Dustin Anderson, creator of The Alone Effect mental health awareness project and industry glazier; and Mai Tran, area director, Nevada, for the American Foundation for Suicide Prevention. All indicated the importance of breaking the stigma around suicide and mental health. A good first and ongoing step is having conversations, they say.

"When an industry allows the conversation of mental health to be a topic at one of the largest trade shows in the world, they are doing something right," says Anderson. "When they put a group of individuals together like this to make sure that conversation is heard,

they are raising the bar."

Check out complete coverage at GlassBuild.com and GlassMagazine.com. ■

NGA NAMES NEW BOARD MEMBERS AND OFFICERS

The National Glass Association is pleased to announce new board officers and members took office for the 2022-23 term on October 17, prior to the start of GlassBuild America: The Glass, Window & Door Expo in Las Vegas.

Board officers for the 2022-23 term: chair, Brian Hale, Hale Glass Inc., Placentia, California; chair-elect, Ron Crowl, FeneTech, Aurora, Ohio; treasurer, Rick Locke, Montana Sash & Door, Bozeman, Montana; and immediate past chair, Guy Selinske, American Glass & Mirror, Prior Lake, Minnesota.

Joining the board are Tara Brummet, Vitrum Glass Group, Langley, British Columbia, Canada; Syndi Sim, Diamon-Fusion International, Irvine, California; and Kyle Sword, Pilkington North America, Toledo, Ohio. ■

YOUR ASSOCIATION AT WORK



The 2022-2023 NGA Board of Directors, from back, left to right: Jim Stathopoulos, Courtney Little, Rick Locke, Tim Kelley, Tara Brummet, Ron Crowl, Silas Koonse, Kyle Sword, Nicole Harris, Jodi Martinez, Guy Selinske, Denise Bardwell Baker, Syndi Sim (not pictured, Brian Hale).

Returning board members are Denise Bardwell Baker, Spring Glass & Mirror, Spring, Texas; Tim Kelley, TriStar Glass Inc., Catoosa, Oklahoma; Silas Koonse, Koonse Glass Co. Inc., Columbia, Missouri; Courtney Little, Ace Glass, Little Rock, Arkansas; Jodi Martinez, AllStar Glass Co. Inc., Spokane Valley, Washington; and Jim Stathopoulos, Ajay Glass, Canandaigua, New York.

Departing the board are Darijo Babic, Guardian Glass, Cathie Saroka, Goldray Glass and Doug Schilling, Schilling Inc. Saroka and Schilling both served on the NGA board since 2018, with Schilling transitioning to the NGA board from the Glass Association of North America board when GANA combined with NGA that year. ■

FHC AND FRIESE FOUNDATION INVEST BIG IN GLAZIER EDUCATION THROUGH NGA

In October, NGA announced that the Frameless Hardware Co. and the Friese Foundation have committed to continue and increase respective generous support of glass and glazing industry education in 2023 through MyGlassClass.com.

Formed by industry veterans Chris Hanstad and Barry Sutherland, FHC has positioned itself as a leading service-oriented one-stop-shop for glazing contractors and fabricators. In line with its mission, the company has graciously dedicated substantial funds to support the industry on the education front.

“Our customers are our livelihood, and we owe it to them to support them in every way possible,” says Hanstad, president of FHC. “The glass industry has given so much to me and my family, I want to offer the same opportunity to everyone I can. The only way to do that is through exposure and education.”

The Friese Foundation was founded by industry icon Donald Friese, former CEO of C.R. Laurence, who along with his wife Andrea Friese and son D.J. Friese have built a self-sustaining philanthropic model to support noble causes such as the American Red Cross, L.A. Regional Food Bank, National Veterans Foundation and Salvation Army, among others. With the glass industry being instrumental in their lives and success, they felt a duty to give back.

“I’ve always been in the business of people,” says Donald Friese. “Providing others with opportunities, some of which might not otherwise have access to, has been incredibly fruitful and rewarding to my business endeavors. It’s an honor to present these opportunities and invest in people in the glass industry.” ■



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GLASS INFORMATIONAL BULLETIN

Structural Glass Mullion Systems

Editor's note: *The following is an excerpt from the National Glass Association's Commercial Fenestration Systems Manual, developed by NGA member company volunteers. The manual is available for download at glass.org/store.*

Glass mullions, also called glass fins, can be implemented as structural members to support the face glass of building enclosures. While the main plate glass (or face glass)—usually the principal plane of the wall—primarily resists out-of-plane loads, glass mullions primarily resist in-plane loads, both for wind and gravity. The glass fins or mullions can be mounted in front of, in the middle of, or behind the face glass, and are usually installed perpendicular to the face glass.

Types of glass

Both fully tempered and laminated glass are used to fabricate the main plate glass, mullions or both. The edge of the mullions is typically exposed and is also part of the design, detailing and specification of the glass. The glass fabricator can assist with selecting options for finishing glass edges. Laminating criteria should also address alignment and exposure of the laminating material at the edge.

Connections

Connections between glass mullions and face glass may be achieved with point-support hardware or patch fittings to transfer either dead load and/or wind load. Continuous structural



silicone seals can also transfer wind load to the vertical glass mullions but are usually limited in size and not deemed sufficient to carry gravity or dead loads. Point-support hardware is typically implemented near the edges of the mullions and the face glass; structural silicone seals can be implemented at any location on the interior side of the face glass or on the glass edge, if the sealant and glass manufacturer approve.

Glass mullions of longer spans, using more than one individual lite per mullion, can be achieved using moment splice hardware.

Perimeter connections often are designed by the architect to be recessed, which is not a necessity. When so designed, the glass can appear to be supported by these perimeter finishes while the system

perimeter is not visible in the finished application. Exposure of the glass to floor-cleaning equipment, pedestrian traffic and everyday use should be considered. “Shoes” in which the glass is supported at the floor are typically mounted above the finished floor and offer some protection to the glass when used. Glass replacement should also be considered in the design of perimeter conditions and should not require the removal of adjacent materials to facilitate glass replacement.

Glass mullions are typically tempered for enhanced strength, particularly in managing stress concentrations associated with point-support hardware. Tempered laminated glass mullions can facilitate redundancy through designs that provide short-range functionality in the event of breakage of one or both of the exposed lites.

Vertical glass mullions may be either base-loaded or suspended. Both configurations must sufficiently resist flexural buckling in the vertical fins, though base-loaded mullions must also resist compressive buckling. Depending upon the connection detailing, the face glass may offer a level of lateral stability. When necessary for additional stability, glass mullion systems may implement reduced cross-sectional aspect ratios or independent bracing in the form of horizontally oriented stainless-steel cables, horizontal glass fins or other elements that brace the vertical glass members to the main building structure.



GLASS INFORMATIONAL BULLETIN—STRUCTURAL GLASS MULLION SYSTEMS



Hardware connecting glass mullion system.

Top-hung systems require sufficient structure above the glass mullion system to carry the entire dead load weight of the wall. The main plate weight is transferred into the vertical fins through the glass fittings. Stacking multiple lites on top of each other (in bottom-supported applications) or putting connections between main plates and tensioning the main plate glass (in top-hung situations) is generally not advisable due to glass strength. Hardware for hanging the glass gets bulky, even in monolithic applications, and may defeat the aesthetic the designers are trying to achieve. When hung, the top anchor or connecting device may be substantial, with the size and/or number of fasteners required being dependent on total weight and shear strength of the glass at the connection. When bottom hung, the top anchor doesn't need to be as substantial for wind load transfer only.

Anchoring details must also account for building movements due to seismic

or live load deflection, expansion/contraction, and construction tolerances. While the glass itself has fairly low expansion coefficients, it still must be considered in the anchorage.

Design review and oversight

Glass mullion systems require design review and/or oversight by a licensed engineer in order to evaluate serviceability for all design loads and building movements, to ensure material stresses are within acceptable limits, and to ensure suitable buckling resistance is inherent in the mullion design and sizing. A licensed engineer can help provide appropriate emergency safety mechanisms; ensure that accommodation of all main building, glass façade and hardware fabrication tolerances are sufficiently addressed; and establish precise connections that provide for all translational and rotational loading, compatibility, durability and other requirements.

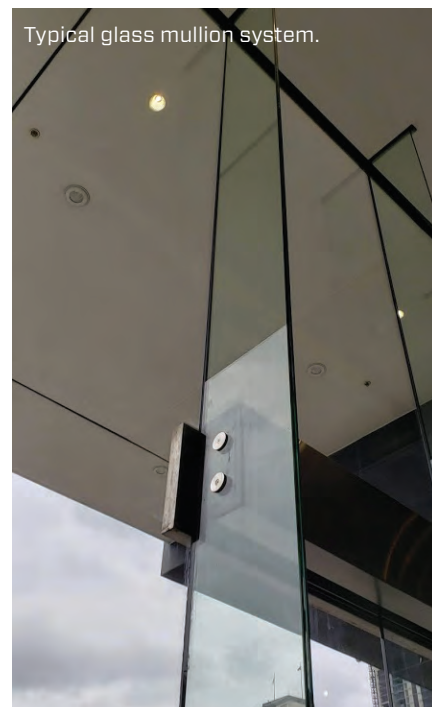
Glass fabricators should be consulted for application guidance. For structural-silicone-connected glass mullion systems, the structural silicone manufacturer should be consulted for guidance on sealant selection, compatibility and connection detailing. Both the glass and sealant manufacturers should review shop drawings for technical accuracy with respect to their materials.

Keeping in mind energy considerations, the selection of the main face glass may also require the glass manufacturer's input. The method of supporting the glass—either with point-supported hardware or other devices requiring thru-glass configurations—may limit the use of low-e coatings, tinted glass or insulating glass configurations. Heat treating (heat-strengthening or tempering) may

enhance the lite's structural performance, or resistance to thermal loading from exterior shading or tinted glass substrates, for example, depending on the application.

Conclusion

The project architect (and by association, the structural engineering consultant), façade engineer, glass fabricator and installing subcontracting glazier should closely coordinate the design and fabrication of these installations to ensure the delivery of an aesthetic, functional, sustainable and readily constructible system that fully meets the expectations of the building owner and satisfies the immediate and long-range needs of the building occupants. ■



Typical glass mullion system.

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Andersen Corp. and Ubiquitous Energy to Develop First Energy Generating Windows and Doors

Andersen Corp. and Ubiquitous Energy entered into an agreement to jointly develop energy-generating window and door products.

The companies are working together to bring products to market that evolve solar generation for residential and light commercial buildings and contribute to a healthier planet, say officials. The products will leverage Ubiquitous Energy's UE Power technology, a transparent photovoltaic glass coating that harnesses solar power to generate electricity, while looking similar to traditional windows.

To Increase Employment, U.S. to Use All Employment-Based Green Cards

The U.S. Citizenship and Immigration Services hopes to give out all leftover employment-based green cards this year to prevent them from going to waste, according to The Wall Street Journal.

The National Glass Association supports the position of the National Association of Manufacturers in emphasizing the need to ensure the industry can get the workers it needs. Immigration advocacy groups have petitioned the government to keep the cards open for applicants. Meanwhile, organizations like NAM have been vocal about the importance of employment-based green cards in the manufacturing industry and have pressed for a more efficient, effective process.

"Addressing the green card backlog and providing green cards to

hardworking and talented immigrants in the manufacturing workforce is an important step to address the current workforce crisis and support a stronger economy," says NAM President and CEO Jay Timmons.

Vitro to Build Two Glass Factories in Egypt

Vitro has plans to build two new factories in Egypt with around \$400 million in investments, according to a release from Zawya. A factory for manufacturing glass will be set up spanning 1.1 million feet, while another factory will be built on 493,000 feet of land for producing container glass. Both factories will be established as per the free zones system and will provide about 1,500 new jobs.

NSG Group to Invest in New Solar Glass Line in Malaysia

NSG Group plans to invest in additional production capacity of TCO, or transparent conductive oxide, coated glass in Malaysia to support the growing solar market.

In the plan, a float line at the Johor Bahru factory of Malaysian Sheet Glass SDN BHD, a member of NSG Group, will install online coating capacity in the near future, and will start shipping TCO glass for solar panel manufacture after the facility is in operation. It is anticipated that the supply from the converted line will commence during the fourth quarter of the fiscal year ending March 2024. The investment is contingent on the successful conclusion of commercial negotiations and the government issuance of permits and incentives.

New Canadian Solar Patterned Glass Plant Partners with Solar Module Manufacturer

Canadian Premium Sand Inc. entered a memorandum of understanding with Heliene Inc. concerning discussions on a definitive commercial offtake agreement for patterned solar glass from the company's glass manufacturing facility being developed in Selkirk, Manitoba, Canada.

Heliene, a provider of North American-made solar modules, is focused on establishing a domestic, low-carbon, solar supply chain to support its growth strategy in North America. The local supply of CPS glass will enable Heliene to meet the accelerating solar demand while ensuring certainty and quality thanks to the supply of regional components of its bill of materials.

Saint-Gobain Partners with Megasol

Saint-Gobain and the solar manufacturer Megasol, the European leader in building integrated photovoltaics, or BIPV, announced a strategic partnership. As part of this partnership, Saint-Gobain has acquired a minority stake in Megasol's business unit that develops and manufactures building-integrated photovoltaics at its site in Deitingen in Switzerland.

IGE Glass Technologies and Schirmer Maschinen Announce Cooperation for U.S. Market

IGE Glass Technologies officials announced an exclusive distribution agreement with Schirmer Maschinen. Schirmer, part of the Beckhoff Automation Group, has more than 40 years of providing automated profile

processing centers. IGE will distribute the Schirmer product line as well as provide installation, technical service and spare parts for the U.S.

Compusoft + 2020 Rebrands as Cyncly

Officials from Compusoft + 2020, the parent company of FeneTech, announced the rebrand of its recently merged company now known as Cyncly. The Cyncly name was inspired by the words “synchronization” and “simplicity.” It expresses the mission of the company to be the ultimate platform for connecting designers, retailers, manufacturers, contractors and consumers to make spaces amazing. Cyncly brings together more than 30 years of experience and offers industry-specific solutions in the window, door and glass industries.

Assa Abloy Acquires Bird Home Automation

Assa Abloy has acquired Bird Home

Automation GmbH, a German manufacturer of high-quality IP door intercoms for single and multi-family buildings, for indoor station or smartphone control, marketed under the trademark DoorBird.

DoorBird was established in 2014 and has some 110 employees. The main office is located in Berlin, Germany.

FENBC to Become First Canadian Region of FGIA

The Fenestration Association of British Columbia became a Canadian region of the Fenestration & Glazing Industry Alliance. The boards of both organizations approved the creation of FGIA's first Canadian region by integrating FENBC as the newly formed FGIA FENBC Region.

The new region will operate similarly to the pre-existing FGIA U.S. regions, FGIA Southeast Region and FGIA Western Region, and will focus on regulatory and government initiatives,

product installation, commercial contractor interests, and related needs within British Columbia. In addition, a region-specific, one-day, in-person meeting and a one-day virtual event are targeted for inclusion each year.

Binswanger Glass Sells Auto Glass Division to Safelite Group

Binswanger Glass announced an agreement to sell its auto glass division to Safelite Group, owner of Safelite AutoGlass.

“Binswanger has been through a lot of changes over the last 150 years, and I am excited to realign our business strategy so we can focus on our core competencies in the commercial and residential flat glass segments of the company that represent 90 percent of the overall business,” says Mark Newsome, president and CEO of Binswanger Glass.

“This is an exciting time for Binswanger. We have a lot of strategic initiatives going on that are transforming



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this company to provide first-class service to our residential and commercial customers. Our brand has never been stronger or more relevant,” says Blake Hancock, CFO/COO of Binswanger Glass.

Rehau Window Solutions and AGC Glass Europe Announce VIG Plans

Officials from Rehau Window Solutions announced the company has entered a development and sales

cooperation with AGC Glass Europe for the development and marketing of innovative and future-oriented solutions for windows with vacuum insulating glass. The combination of Rehau solutions for windows and doors and AGC Glass Europe's Fineo vacuum insulating glass offers decisive answers to global trends and challenges, according to Rehau officials.



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PEOPLE NEWS



Biasiotta



Marcely

Oldcastle BuildingEnvelope Inc. appointed *Bruno Biasiotta* as chief executive officer.

Biasiotta brings to OBE over 30 years of experience leading transformations of companies in the building efficiency sector and developing

high performance organizations. Most recently, he served as president and CEO of Nortek Air Management, driving significant growth and margin expansion while investing in new products and modernizing facilities to better serve customers. In addition to Biasiotta, OBE named *Michael Marcely* as chief financial officer. Previously chief financial officer of Nortek Air Management, Marcely has over 25 years of experience in financial leadership roles, including chief financial officer of Alpha Packaging and senior vice president of finance of Spartech Corp.



Green

Tubelite Inc.'s Steve Green will retire as vice president of sales in March 2023 at the end of the company's fiscal year. A search

is underway and a successor will be announced in the coming months. Green has been a key part of Tubelite's leadership team for more than 32 years. In his current role, Green oversees the sales and client service teams for Tubelite, as well as for two additional Apogee Enterprises businesses, Alumicor and Linetec.



Paulin

General Glass International named *William Paulin* as the company's new chief financial officer. Paulin most recently worked as president and CFO for Kuehne Chemical

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NEWS TO KNOW

Co. in Kearny, New Jersey. He brings more than 20 years of experience in the industry with him.



Schulte

Roschmann Steel & Glass Constructions, a member of Roschmann Group, named *Dirk Schulte* as its new president and CEO of Roschmann's North American Operations.

In this role, the company expands Schulte's responsibilities to lead its executive management team, commercial sales and project contract operations as well as strategic business development throughout the U.S. and Canada.



Butler

The board of directors of **Eastman Chemical Co.** elected *Eric L. Butler* as the new director. Butler is the former executive vice president and chief

administrative officer of Union Pacific Corp. Butler also served as the chairman of the board of the Federal Reserve Bank of Kansas City, Omaha Branch, and is a member of the board of directors of NiSource Inc.



Given

Vitro Architectural Glass

announced that *Bryce R. Given* was appointed national architectural manager for Oregon,

Washington, Idaho and Alaska in the United States and British Columbia and Alberta in Canada. In this role, Given will focus on delivering product, technology and service solutions to architects, specification writers, glazing contractors, façade consultants and Vitro Certified fabricators.



Poux-Guillaume

The shareholders of **AkzoNobel** appointed new CEO *Gregoire Poux-Guillaume* as a member of the Board of Management, effective

Nov. 1 of this year, at the most recent Extraordinary General Meeting.

Poux-Guillaume will succeed Thierry Vanlancker, who has been CEO and member of the Board of Management since 2017, and whose term of office is coming to an end. ■

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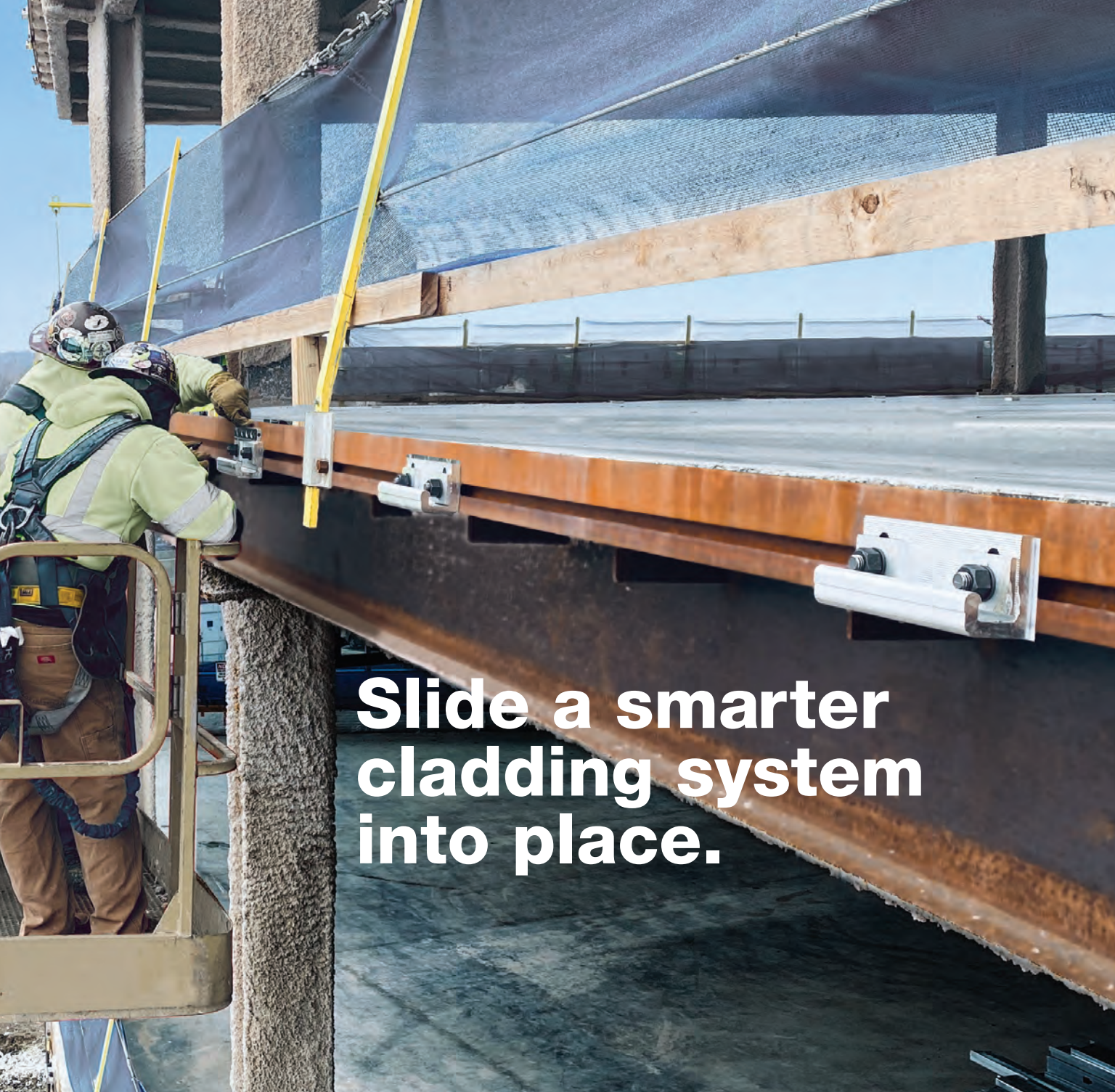
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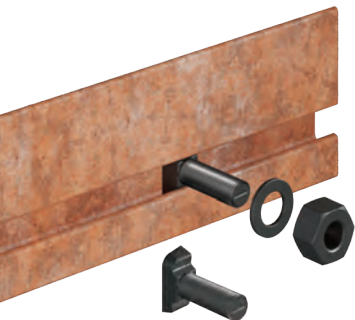
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Binswanger glass 1963

BINSWANGER GLASS CELEBRATES 150 YEARS

HOW BINSWANGER GREW FROM A SMALL FAMILY BUSINESS IN RICHMOND, VIRGINIA, TO A LEADING GLASS AUTHORITY **BY RACHEL VITELLO**

Binswanger Glass, a residential, commercial and automotive glass provider, with 66 locations across 15 states, is celebrating 150 years in business this year. As this is a rare feat in the glass industry, Binswanger officials credit their company values, atmosphere and hard-working employees on all levels for the past century and a half of success.

Looking back

Binswanger Glass was founded in 1872, when Samuel Binswanger used his last dime and all the money he could borrow to start a small retail glass store on East Main Street in Richmond, Virginia, in the aftermath of the Civil War. The glass store was in downtown Richmond, which was still rebuilding after the war. The location was strategically chosen for access to the railroad, as locomotives were vital to moving people and materials before the

automobile was invented. The original building façade is still standing today with a new occupant.

Samuel's sons, Harry, Mose, Milton and Ralph, began working in the store, and the family business expanded steadily. Samuel Binswanger died in 1896, but the company lived on as Harry took over. The firm was incorporated in 1903, with Harry as its first president.

In 1906, Milton Binswanger established the first branch office in Memphis, Tennessee, and in 1923 a third office opened in Houston. From then on, Binswanger only continued to expand, with members of the Binswanger family continuing to run the company until 1969, when it was sold.

"I'm very proud that the company is still one of the leading glass companies in America and is still doing a great job with its customers and employees while leading the industry," says Richard



Binswanger, great-great-grandson of Samuel Binswanger.

"There are several second- and third-generation workers at Binswanger. However, we still feel like a family-owned business, and it gives me a sense of pride to see the company continue to grow," says Debbie Baker, director of human resources.

While Binswanger officials say it's hard to pinpoint the company's biggest accomplishments since 1872, in an anniversary video Binswanger created to commemorate their anniversary, Richard Binswanger says the company was awarded the opportunity to put 57,000 names on the Vietnam War Memorial in Washington, D.C. He says this was a great honor for the company that they did not benefit from financially or advertise off of; the company simply did it for the sake of doing something good.

Also in the video, President and CEO Mark Newsome says that although a lot has changed over the years, and regardless of how fast Binswanger continues to grow, "we will still operate under the founding principles from 150 years ago."

"The principles we were founded on back in 1872 are quality, service and price. Our legacy says a lot about our

company. We're a company that's been in business for 150 years. We've gained a lot of long-term customers over those years who trust us and have built relationships with us; even generationally passing down those relationships to their sons and daughters. Those are the principles we were founded on that still hold true today," says Jennifer Brereton, director of marketing.

The people of Binswanger

Binswanger officials say their employees, combined with the incentives the company offers, help keep the company not only running smoothly, but cultivate a supportive and productive environment.

"We have a bottom-up mentality. We really are greater than the sum of our parts. It could be a glazier with a good idea, or a manager with a good idea, so that bottom-up approach makes it hard to pinpoint an exact person [who has contributed to Binswanger's success]," says Brady Nail, regional director. "We are here today because people show up every day."

Brereton says Binswanger has a program in place to incentivize its employees to come up with good ideas. Any employee can put a plan together and present it to the leadership team, which aims to "promote innovative thinking" and ensure that everyone has an opportunity to voice their opinion.

Overcoming obstacles

It would be difficult to make it 150 years in business with no challenges or hurdles to overcome as a business, but Binswanger has persevered through it all, say officials.

"This company has survived the Great Depression and a lot of economic challenges over the years. We started growing like crazy in 1872, spreading out and getting new branches put together; then the Great Depression happened and the owners at that time had to forgo making profits just to keep the business going," says Brereton. "There's been a lot of fluctuations in the economy, and ownership, over the years, but

we've been Binswanger all throughout that time. One of the things Richard Binswanger, the great-great-grandson of founder Samuel Binswanger, talked about was how the name has stayed the same all these years; the principles we were founded on [have] stayed the same all these years. So, with all the challenges that have gone on through the history of the company, we've been able to maintain the name and the legacy for 150 years."

What's next?

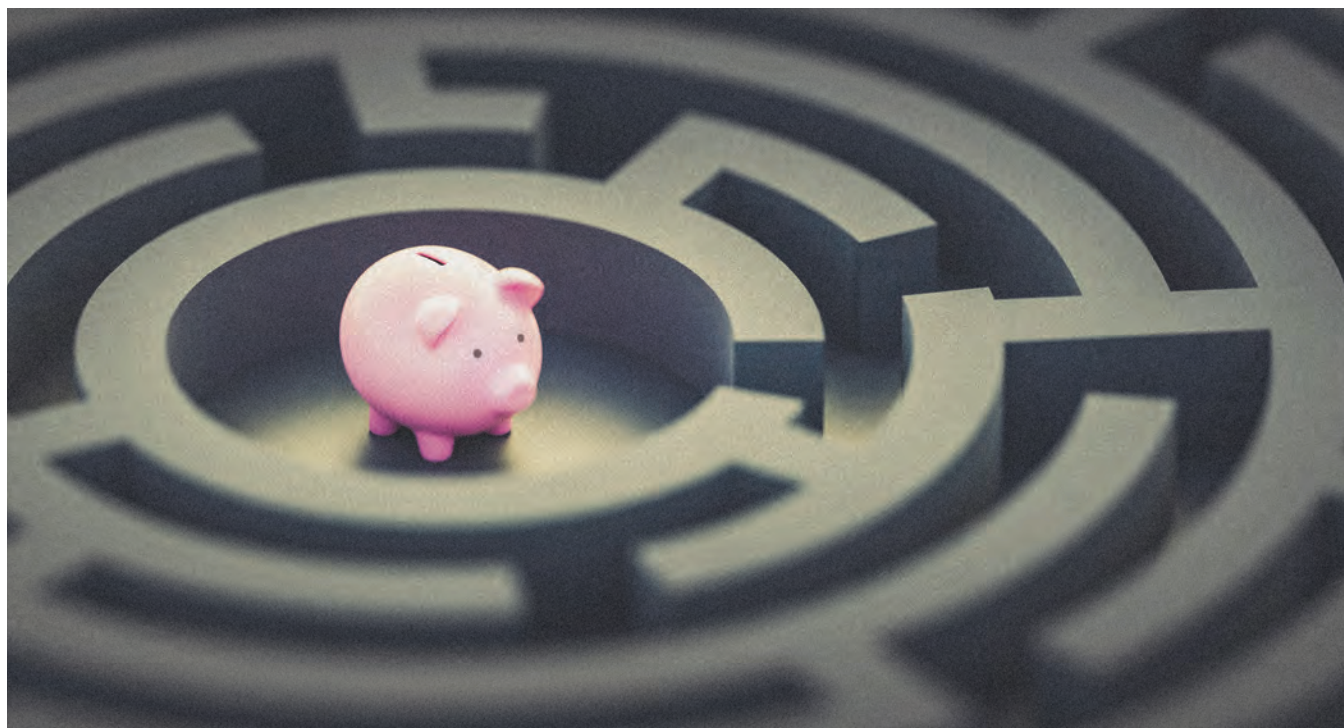
Moving forward, those at Binswanger have their eyes set to the future to ensure the continued success of the company. Charles Witherington, director of purchasing, says he sees the company making a greater push into the commercial construction space, with a large opportunity there. Witherington says Binswanger has made some big investments in the commercial segment over the past year, which has helped the company's revenue "grow substantially."

Rich Porayko, a consultant for Binswanger, says that making sure the company becomes an employer of choice is the "next strategy to bring in the best people in the industry" and to help the company continue to grow in a positive direction.

"I think the big thing is trying to standardize even more and utilize our skill and take full advantage of that. It's a balancing act of nurturing that entrepreneurial mindset, but also trying to scale up," says Brady. "I hope down the road we see an even more cohesive brand and business practices from the company. Trying to balance that with an individual spirit, that's one of the fundamental challenges," says Brady.

Brereton added that Binswanger is continuing to invest in its people and equipment, including a new RhinoFab machine in Texas that will help make their operations more efficient.

"There's an innovative approach to those kinds of things that's going to help us succeed in the future, all the way down to the branch level," says Brereton. ■



FINANCE

HOW AND WHEN TO USE FINANCING

BY MARCO TERRY



We find ourselves in a complex and uncertain business environment that seems to be heading toward a recession.

Inflation and interest rates have increased. Consequently, the cost of financing and the general risk to businesses have also increased. This situation makes it harder to get financing at a time when businesses may need it the most.

How to make the wrong decision

Many bad financial decisions happen because of an error in judgment by a person or team. These errors usually fall into three general categories:

Not doing due diligence. Many small business owners don't spend enough time and resources doing due diligence. I can understand it; due diligence is tedious work. As a general manager, you have better things to do than focus

on all the details. Unfortunately, not performing thorough due diligence increases your likelihood of making an avoidable mistake.

Allowing emotions to play a role in the decision. I have seen business owners who attach a lot of emotion to financial decisions. The type and intensity of emotion vary by situation. Unfortunately, letting your emotion interfere with these decisions is usually detrimental to your business. Examples include situations in which owners make a "prestige purchase" or avoid reviewing their financial statements because of negative emotions.

Not getting objective advice when needed. Small-business owners, especially in competitive industries like construction, are very self-reliant. They got to where they are by doing everything themselves. Self-reliance may be an advantage

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sometimes. However, it backfires when you become overconfident in your abilities. Overconfidence always leads to bad decisions.

The strategies discussed in the following sections are designed to help you avoid making these common errors.

Solving cash flow problems

One of the most common reasons construction companies get financing is to manage cash flow problems. These problems can lead to companies delaying vendor payments or not having the funds to pay for necessities. This situation creates a sense of urgency which can prompt business owners to get financing quickly. However, rash decisions without adequate due diligence can cost your business dearly. As a rule, never get financing until you can answer the following four questions confidently:

Why do you have a problem?

Finding out why you have a cash

“
YOU MUST DETERMINE
WHETHER FINANCING WILL
HELP IMPROVE THE SITUATION.
FINANCING WON'T FIX EVERY
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flow problem takes some diligence. The only way to do this effectively is to scrutinize your financial reports. These reports help determine the source of the problem and point to a possible solution. For example, companies often have cash flow problems because clients pay too slowly or because excess funds are tied to slow-moving inventory. Companies may also have issues because the business is unprofitable or has expensive debt. These scenarios create cash flow problems that lead to a dangerously low bank account. However, they have different causes and require specific solutions.

Keep in mind that companies often have more than one problem. Consequently, don't stop examining the company's statements and operations until you have done a thorough evaluation.

Will financing fix the problem? You must determine whether financing will help improve the situation. Financing won't fix every cash flow problem. In fact, it could worsen some problems. For example, financing could solve problems due to slow-turning accounts receivable or slow-moving inventory. However, financing can also enable an unprofitable business to operate longer and get into more problems. For this reason, it is dangerous to get financing without first understanding your situation.

What products should you consider? In most cases, the best solutions for these challenges are revolving lines of financing. These solutions include options such as lines of credit and receivables-based financing. You can use these products when you need funds, and repay the line as your situation improves. The main exceptions to this are problems caused by expensive debt or unprofitable businesses. These problems require you to restructure the debt or company accordingly.

What is your exit strategy? Getting financing may bring peace of mind, but it comes at a cost. Unless the funding is explicitly used to grow the business, it will hurt profits. It's to your advantage to

use the least amount of financing for the shortest time frame that allows you to solve the problem.

Develop an exit strategy to move your company off the financing line.

Ultimately, this goal requires that you solve the problem that prompted the need for financing in the first place. For example, companies with slow-paying clients or collections problems should improve those areas and build a cash

reserve. Each situation is unique, though, and requires a specific solution.

Replacing or adding new assets

Business owners also get financing when they need to replace existing assets or add new assets. This situation differs from cash flow problems and requires a modified approach. In this section, the term "asset" refers to machinery and equipment. However, the process

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Real-World Worst-Case Scenario

Some years ago, I worked on a transaction involving a very successful company. The business was a proverbial cash cow that made lots of money for the owners. The managers ran a “lean” company, as reflected in their financial reports. Their operations were so lean that their current offices and facilities looked spartan, to put it kindly. The CEO decided it was time to upgrade to a better facility that matched their exalted level of success.

The company bought a new building and equipped it accordingly. The facilities were spectacular by every measure, and the CEO was proud of the acquisition. I was impressed, though it looked like the CEO had purchased the building to increase the company’s perceived prestige. There was one catch with the transaction: its financing cost was just as spectacular as the new facility.

Things didn’t take long to unravel. The market turned, and the company became distressed. They no longer had a strong financial position thanks to their recent acquisition. Consequently, they had to take drastic actions. The company began cutting expenses and soon realized they had to unload the new facility.

Because the market had turned, the building was sold at a heavily discounted price. Predictably, the company’s finances had to be restructured. Restructuring only postponed the inevitable. Ultimately, the company went into an unrecoverable financial tailspin.

remains the same for any type of asset.

Do you need the asset? The answer to this question may seem obvious, but many business owners replace machinery with more expensive models or add new equipment without a solid financial justification. This mistake can affect your company’s financial health for a long time.

Ask yourself if the company needs the asset you are getting. Develop a business case and financial justification for the acquisition. Compare the costs of getting the asset against the revenues the asset will generate.

Can the company afford the asset? The next step is to determine if your company can afford the asset. It’s a matter of examining your financial statements and ensuring your company can make the payment without getting into trouble. Buying assets in anticipation of future demand is more complex. Ideally, you want to secure assets incrementally as demand



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grows. This strategy helps ensure you never acquire assets you won't use or can't afford.

How are asset acquisitions financed? Assets are usually purchased using a term loan. The lender pays for the asset while you make fixed payments to the lender for a period of time. Another option is to lease the machinery or equipment. Leases are similar to rentals, though most leases allow buying the asset at the end of the term for a nominal cost.

Handling large purchases

The analytical process of determining whether to make a large purchase, such as buying a new facility or acquiring a competitor, is similar to the process in the previous section. You determine three things: if you need it, if you can afford it and how you will finance it.

There is one crucial caveat. Making a mistake in a large purchase could put you out of business. This point

leads me to one additional question you should always ask when you make a large purchase.

What is the worst that could happen? Consider the worst-case scenario if you make the acquisition and things don't go as expected. Will your business be able to handle the purchase and manage a downturn or a significant customer loss? If it can't, reconsider your strategy.

A word of advice

Financial decisions can have long-standing consequences for your business, for better or worse. Consult a CPA or similar professional before making any major financial decision. Ideally, work with a CPA who is seasoned in business management.

This is a no-lose proposition. There are two possible outcomes: the CPA may find problems with your strategy and prevent you from making a costly mistake. Alternatively, the CPA may

agree with your strategy, reinforcing the course of action. Either way, you are better off for having had the consultation.

The process doesn't need to be complicated. Generate financial reports and prepare a simple justification for your plan. Discuss the project with your CPA and describe your reasoning. Ask them specifically if they see any problems you have overlooked.

Depending on the project's complexity, the meeting with the CPA could cost a few hundred to a few thousand dollars. This expense is money well-spent. ■

Marco Terry is managing director of Commercial Capital LLC, a factoring company and provider of invoice financing to companies in the glass industry. He can be reached at 877/300-3258.



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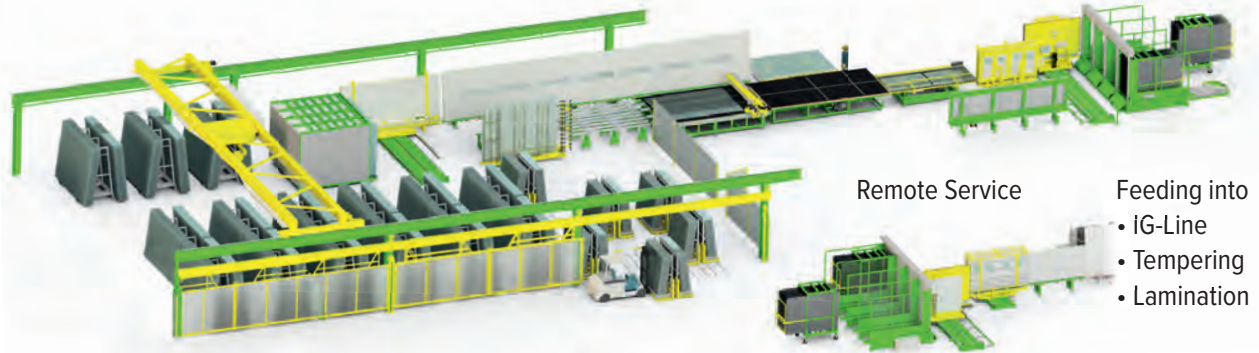
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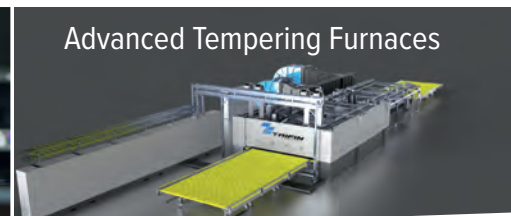
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CURTAIN WALL BASICS

5 DESIGN CONSIDERATIONS, AND PERFORMANCE AND TESTING REQUIREMENTS **BY AARON BLOM**

Editor's Note: The following is based on the education session "Curtain Walls / Design Considerations, Tolerances and Testing," presented by Blom at GlassBuild America, held Oct. 18-20, 2022, in Las Vegas. For more news and coverage from the show, visit [GlassMagazine.com](https://www.glassmagazine.com) and [GlassBuildAmerica.com](https://www.glassbuildamerica.com).

In its basic form, a curtain wall system consists of insulating glass and extruded aluminum framing either installed piece by piece in the field (stock lengths), or installed using pre-assembled, pre-glazed framing and glass panels (unitized). Hybrid versions include various system options and fabrication and installation techniques that can be used to achieve specific design aesthetics as well as maximize fabrication and installation efficiency.



Aaron Blom, presenting at the GlassBuild Main Stage.

Regardless of the installation methods used, curtain wall systems must address five primary design considerations: structural integrity, movement capability, weathertightness, energy efficiency and sound control.

Structural integrity

As with all types of fenestration, wind load is an important structural consideration for curtain wall systems. The more the frame deflects due to the design wind load, the more stress is placed on the assembly and the greater the likelihood of system failure and/or glass breakage. The engineering calculation used to determine maximum vertical framing deflection is $L/175$ for spans up to 13 feet 6 inches and $L/240 + 1/4$ -inch for spans that are greater, where L is the vertical span length. Other

structural performance considerations include live load, dead load, seismic and inter-story drift.

Provision for movement

There are multiple factors to consider when designing a curtain wall system to accommodate expected movement, including thermal expansion and contraction, movement due to wind load and gravitational forces, and movement caused by deformation or displacement of the building. Movement must be accommodated to limit the stress on the glass, framing and anchors, and without excessively reducing the frame's "bite" or capture of the glass.

Weathertightness

Weathertightness means protection against both air and water leakage.

Water penetration. There are two methods for preventing water leakage through a curtain wall system. One is the “internal drainage” system utilizing weep holes in the pressure plate and face cap. The other is achieved through “pressure equalization” of the system. Basically, a pressure-equalized design ensures there is not a significant negative pressure pulling water into the system from the exterior.

Air infiltration. For obvious reasons, excessive air infiltration is less critical than water penetration but can compromise the energy efficiency of the building envelope. Industry standards limit air infiltration to 0.3 liters per second air leakage per square meter of fixed wall area (0.06 cubic feet per minute per square foot of area) when tested at an air pressure difference of 1.57 pound-force per square foot.

Energy efficiency

Curtain wall systems must meet an

overall maximum thermal transmittance or U-Factor ($W/m^2 \cdot K$ or $Btu/hr \cdot ft^2 \cdot ^\circ F$) stipulated by applicable codes based on project location and other project-specific thermal performance requirements. Improved thermal performance can be accomplished in multiple ways, including using thermally broken framing materials, using high-performance insulating glass and adequately insulating large spandrel areas.

Sound control

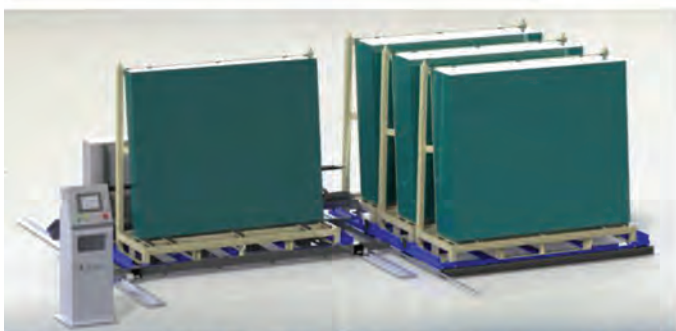
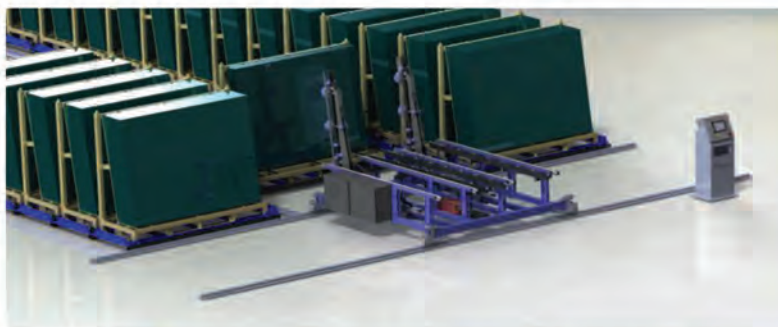
Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) are the standard methods for rating sound attenuation of glass and window systems. Using laminated insulating glass, using insulating glass with an increased airspace and minimizing air infiltration will generally improve sound transmission—of particular concern near airports and in metropolitan areas.

Performance and testing requirements

Due to the wide range of forces that act upon a building in a particular location, physical testing for air infiltration, water penetration and structural performance (including frame deflection limits) is often the only reliable means of verifying performance in field conditions. This testing may be conducted on stand-alone mock-ups or on completed installations, also called in-place mock-ups. ■

Aaron Blom is the technical training specialist for the Fenestration & Glazing Industry Alliance. The FGIA FenestrationMasters program offers training and certification covering the full breadth of fenestration products, components and materials, including performance standards and test methods. Achieving certification also earns continuing education credits with the International Code Council. Learn more at FGIAonline.org.

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COMBATING SOLAR HEAT GAIN

SUNSHADES AS A SOLUTION
BY MATT GYORE



The effects of climate change are many, but one of the most prevalent is a steady rise in temperatures and cases of extreme heat. This causes commercial buildings to increasingly rely on air-conditioning systems to keep interior temperatures at a comfortable level, making them less energy efficient.

There are several ways to combat the rise in temperatures and corresponding effects of solar heat gain on buildings. Some examples are next-generation thermally broken curtain walls and insulating glass units. But architects and contractors are going an extra step and selecting sunshade systems.

Sunshades can play an important role in energy-efficient building design. When

properly specified and installed, they can help mitigate the effects of intense direct sunlight on the building envelope, particularly during the summer months when the sun is at its peak and glass façades are most vulnerable.

Key considerations

Installation. Sunshade systems can be attached directly onto a building's façade, including on concrete slabs and aluminum extrusions. In the northern hemisphere, sunshades are commonly installed on the south-facing walls of the building. This allows them to block a significant amount of direct sunlight during hot summer seasons when the sun is higher in the sky.

Location. A building's geographic



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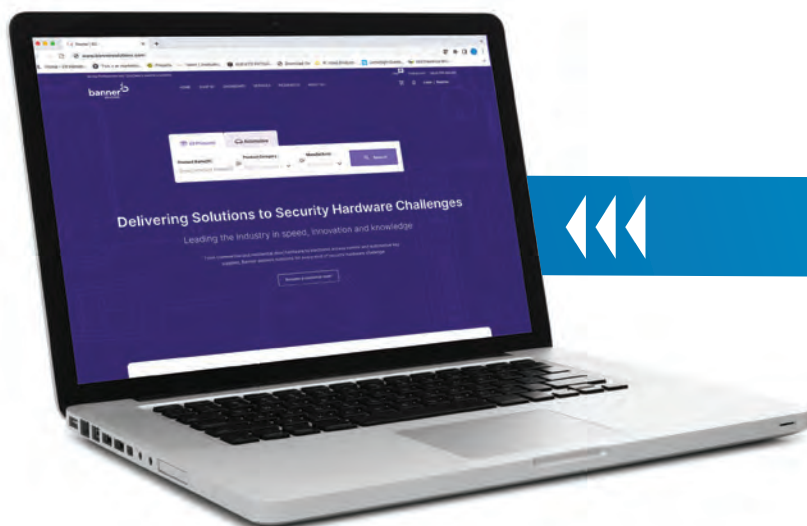
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location should be carefully considered before installing sunshade systems. This dictates the extent of sunshade coverage needed on the building's south-, east- and west-facing walls. It will also define the sun's progression across the sky at different times of the year, which will identify critical areas to be shaded.

Aesthetics. Aesthetics is another key consideration when selecting sunshade systems. They should complement and not clash with the building envelope's design. Fortunately, manufacturers offer custom sunshade programs that give control over visual elements. Single-blade adjustable sunshades are the latest example of this. They are highly versatile and feature operable mounting brackets that allow vertical blade adjustment anywhere from 0 to -35 degrees. Single-blade sunshades offer a streamlined aesthetic and multiple blades can be installed directly onto curtain wall, window wall and storefront extrusions.

Other custom sunshade systems

offer a selection of blade styles such as rectangular, square, round and airfoil blades. Outrigger options include square, tapered square, bullnose and tapered bullnose. These sunshade systems typically have a three-foot projection.

If custom sunshades are not required, standard options are available. Sunshade systems with perforated panels not only help protect interiors from solar heat gain, but also create a distinct visual element that enhances building aesthetics. The perforated panels typically have a notched design to allow daylight to pass through while effectively blocking solar radiation during peak times to reduce cooling loads.

Regardless of the design, sunshades can help mitigate solar heat gain while enhancing aesthetics by adding dimension and depth.

LEED credit

Green design has become a critical aspect of contemporary buildings, not

only because of climate factors, but because of increasingly stringent energy codes such as California Title 24. That's why the construction industry is seeing a rise in net-zero energy buildings.

Many building owners and architects are aiming for LEED-certified structures, and sunshade systems can provide some of the credits needed for certification. The use of solar shading can help reduce energy consumption by placing less strain on HVAC systems. This qualifies for LEED points under the article *Energy and Atmosphere 1 – Optimize Energy Performance*.

Another way sunshade systems can provide LEED points is under the article *Material and Resources 4.1 – Recycled Content*. Most sunshades are made of aluminum, which is a recyclable material that minimizes a building's environmental impact.

Cost-benefit

The benefits of sunshades are numerous: they mitigate solar heat gain; they help create comfortable interior environments that improve occupant well-being; they protect glazing and furniture from intense UV rays; and they can enhance aesthetics by adding visual depth.

The costs associated with sunshades are offset over the life of the building via energy savings and reduced wear on HVAC systems. New technologies and components are being integrated into sunshades, including photovoltaic panels and automated mechanisms that can adapt to solar conditions throughout the year.

Keep in mind that sunshades are just part of the equation when combating climate change and the effects of extreme heat on building envelopes. They should be used in conjunction with next-generation thermally broken curtain walls, insulating glass units and low-E glass to achieve optimal performance. ■

Matt Gyore is technical director, Architectural Railing & Metals at CRL.

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Photos courtesy of alanblakely.com



GREAT GLAZING: CAREINGTON DIALCARE

The basics: Medical and dental insurance provider Careington International, and its subsidiary DialCare, opened its third facility in Frisco, Texas, in April 2021. This 75,000-sq.-ft. office building houses DialCare's telemedicine services: a customer-service call center, sales personnel, and several other departments.

Signature design: Architects utilized dark bronze standing seam metal panels installed vertically, combined with a geometric glass curtainwall to create a signature entrance for the building. In the lobby area, these metal panels wrap around exterior-side columns to develop a

connection with the outside. On the opposite interior wall, they're placed between the columns and, after a break for a row of interior windows, continue up and across the ceiling, with the seaming contributing a simple-yet-dramatic decorative flourish.

The players: The project's metal system supplier was PAC-CLAD | Petersen. Merriman Anderson Architects, of Dallas, was the architect, and Mycon, also of Dallas, was the general contractor. The installation contractor was King of Texas Roofing Co. of Grand Prairie, Texas.

Metal systems: The 6,000 square

LOCATION: FRISCO, TEXAS
METAL SUPPLIER: PAC-CLAD | PETERSEN
ARCHITECT: MERRIMAN ANDERSON ARCHITECTS, DALLAS, TEXAS

feet of vertical standing seam metal panels, specified for the exterior and interior walls and exterior soffit, are 22-gauge steel PAC-CLAD Snap-Clad Metal Roofing System panels. More commonly used in roofing applications, these panels are also suitable for wall cladding, as used here. The finish is a custom Midnight Bronze. An additional 350 square feet of PAC-CLAD PAC-3000 Composite wall panels were used to clad the interior and exterior framing of the building's entry vestibule. ■

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MOVING



FORWARD

Glass and metal systems
suppliers focus on customers as
markets continue to shift
BY NORAH DICK

01

The headquarters for California Independent System Operator in Folsom, California, spans 277,000 square feet over 25 acres. To meet ambitious sustainability goals, optimization of thermal performance was critical. Low-emissivity insulating glass is bolstered with a dual thermally broken curtain wall. For enhanced protection from solar radiation, a large scope of the building envelope is lined with 7750 Series Sunshades from CRL. The unique, perforated panels of 7750 Series Sunshades protect interiors from solar heat gain and create a distinct visual element that enhances the aesthetics.



04

© St. Cloud Window, Inc.

C

Construction and manufacturing continue to weather interesting times, and glass and metal systems suppliers are no different. As supply chains remain predictably unpredictable for many companies, inflation and cost have stressed an already fraught market. “Inflation has been the biggest curveball coming after COVID,” says Josh Wignall, director of commercial marketing, Quaker Windows & Doors. “Inflation compounded issues of supply chain, the disruptions in PVC, tariffs, labor challenges. Then adding the war on Ukraine created a perfect storm, which put enormous pressure on supply chain, and then costs.”

As financial conditions remain unstable, industry leaders in glass and metals say customers are asking

how long suppliers can lock in pricing. “There’s a push and pull in the last 18 months,” says John McClatchey, vice president of sales and marketing, SAF. “We want the work, and we want the business from our customers, but they’re not sure they can afford to employ us right now.”

Speaking to industry leaders in the glass and metals space, it became clear that companies continue to overcome challenges to create the built environment, and that for now, entrenched challenges of labor and supply chain have changed how people do business.



03



02

The new Green Globes-certified Veterans Affairs Community Based Outpatient Clinic in San Antonio, Texas, offers patients, medical professionals, staff and visitors an environment promoting health, life safety and well-being. Bringing the concepts to reality, the three-story, 226,148-square-foot facility features Tubelite's high-performance ForceFront Blast curtain wall, storefront and entrances on the exterior. Tubelite's interior framing systems also were provided for the security entrance vestibule and breakroom. All the aluminum was finished by Linetec in "Silversmith" color using 70 percent PVDF resin-based architectural coating. The VA's finished aluminum framing and glazing systems were installed by San Antonio-based glazing contractor Bulverde Glass, in collaboration with Jacobsen Construction. Photo by Tyler Messer of Bulverde Glass Inc.

03

Highlands Oncology is a state-of-the-art oncology clinic located in Springdale, Arkansas. The five-story, 125,000-square-foot building houses multiple disciplines and services required by cancer patients. Occupant comfort and well-being was a primary consideration of the clinic, which offers access to the most up-to-date treatment technology, say officials at Kawneer. The building features 1600 Wall System 1 curtain wall to provide patient and employee spaces with an abundance of natural light and expansive views while Kawneer's Versoleil SunShades maintain thermal efficiency. ACE Glass Construction was the glazing contractor. Photography by Bob Perzel.

04

Listed on the National Register of Historic Places, the 205,000-square-foot Vandalia Tower in St. Paul, Minnesota, recently completed a significant renovation. To maintain the 1920s, industrial, brick building's architectural heritage, the property owner sought to replace the broken and missing windows with ones that replicated the look of their original, large, steel-framed, divided lite appearance with new units that would improve energy savings and comfort. Helping meet both the project's aesthetic and performance requirements, Linetec finished and thermally improved 290 aluminum-framed replacement windows manufactured by St. Cloud Window. NewStudio Architecture specified these products with a durable 70 percent PVDF resin-based finish in black to resemble the color of old steel windows. Photo courtesy of St. Cloud Window Inc.



EXTREME LABOR SCARCITY IS PUSHING MORE PREFABRICATION AND SHOP GLAZING

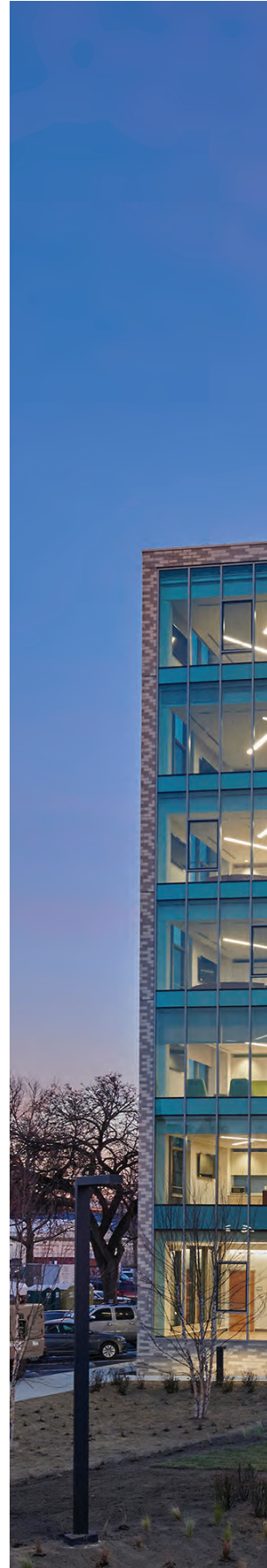
While inflation has stressed an already-stressed market, labor challenges remain the biggest issue, industry leaders say. “As we all try to expand and add capacity, labor is probably the greatest challenge—that’s true for manufacturers, installers and contractors. Labor is the biggest issue right now,” says John McGill, general manager, project center, YKK AP.

A lack of labor, especially in the field, is accelerating the drive toward unitized systems and shop glazing, says Steve Schohan, marketing and communications manager, YKK AP. McGill adds that prefabrication, and even modular options, can now include precast façade panels with windows already installed and glazed, and is becoming a trend with general contractors.

Chris Schultz, P.E., product manager, storefronts and entrances, Kawneer, has also seen reduced labor and increased costs lead to more prefab. “Finding skilled glaziers is more challenging than ever, so customers can pre-build units offsite to improve the efficiency and quality of the fabrication,” he says. “This also reduces the onsite construction costs by streamlining installation and minimizing disruption to other trades.”

Quaker’s Wignall says the company has also seen a rising interest in modular building, which allows whole rooms or floors to be prefabricated offsite and then transported to the jobsite. Wignall says that for window manufacturers, the rise in modular creates questions around installation. “Now you’re putting a window into a modular unit or wall, and in both cases, the window is going to be put into that assembly and then transported to the jobsite. How do you seal that window, in that case? Should you transport it vertically or horizontally? We’re interested in codes and requirements that make sure our windows will still perform once installed on the building,” he says.

As glass and metal system suppliers bring fabrication into the shop, some developers and general contractors are also vertically integrating façade installation, as subcontractors become harder to schedule due to the labor shortage, says SAF’s McClatchey. “Bigger companies with deeper pockets are self-performing, doing glazing packages,” he says.





06

05

The defining architectural characteristic of the Harrison PATH station, located in Harrison, New Jersey, comes from the large-scale, curving glass curtain walls secured via a series of vertical, horizontal and diagonal columns and beams. For the main vertical columns, the team at BAMCO Inc. selected SAF to fabricate a series of intricate column covers that required them to manufacture a litany of components with complex geometries. SAF had to carefully engineer the column covers for the train station so they could accommodate various penetrations and cutouts that serve as connection points for the intersecting beam structure. In addition, the ground-floor portions of the column covers feature rails for vertical sliding doors. Photo by Timothy Schenck.

06

The Aya is an affordable, short-term family housing project in Washington, D.C. The seven-story building provides a soft landing for those seeking temporary housing with additional spaces for play, dining, work and a public health center. YKK AP provided metal systems for the unique façade design, which is different on each side and utilizes elevation so there is no visible front or back of the building. Checkering utility-size brick with large-glazed windows helps flood the interior with natural lighting throughout all times of day and also enables the preservation of existing tree canopies in the neighborhood. Inside the LEED-Gold certified building, residents are immersed in bright, clean spaces with pops of color that elevate the interior design and create a connection to the architecture. Photo by Anice Hoachlander Photography.



“WE’RE BEING CHALLENGED TO DEVELOP WINDOW WALL SYSTEMS THAT HAVE CUSTOM SLAB EDGE CONDITIONS THAT AREN’T JUST A METAL PANEL OR AN ACM PANEL BUT NOW ARE SPANDREL GLASS; THEY WANT THOSE TOWERS TO LOOK JUST LIKE REGULAR CURTAIN WALL.”



RISE IN MULTIFAMILY AIMS TO CLOSE THE HOUSING GAP

As the pandemic eases, developers appear interested in revitalizing city centers. This has meant major growth in multifamily construction, say McGill and Schohan at YKK AP. The demand for urban residential towers is also being pushed by President Biden's housing supply action plan, an initiative to close the U.S. housing gap, which it estimates at 1.5 million units.

"We're being challenged to develop window wall systems that have custom slab edge conditions

07

Trex Commercial engineered more than 18,000 linear feet of custom railing for Climate Pledge Arena in Seattle. The facility is the world's first zero-carbon arena, employing numerous sustainable materials, practices and operations and powered solely with renewable energy sources. The Trex Commercial railing systems contributed to the project's receipt of LEED certification, helping the facility become even more sustainable. Providing a nearly invisible look around the facility is ½-inch PVB and ¾-inch SGP clear glass infill panels and glass FOB rail integrated with ribbon board to optimize sightlines for viewers. GlasPro fabricated the glass. Additionally, custom extrusion post LED picket rails with steel balusters guide navigation, enhancing the ambiance and safety of the eco-centric environment.

that aren't just a metal panel or an ACM panel but now are spandrel glass; they want those towers to look just like regular curtain wall," says McGill. An increase in residential urban living also means products need to have higher acoustical performance, he says.

Adaptive reuse and retrofit segments have also increased, likely pushed by inflation, says Quaker's Wignall. "Anytime you have inflation where we've seen it, meaning interest rates have gone up, the new construction market tends to be hit first, so people look to the existing buildings they have to invest in first, so we continue to see that uptick in existing stock."

As students return to university, YKK AP's Schohan says that the institutions are also improving campus spaces as a way to compete for students. "Universities are adding more extreme environments, spaces that are more aesthetically pleasing, more inviting and that have more natural light and ventilation."



SUPPLY CHAIN WOES REMAIN

Unpredictable supply and transportation continue to disrupt lead times and projects. “Only about 12 months ago, we were seeing 4-6 weeks for some materials. Now, it’s not unheard of to see double that or even in the 12- to 16-week time frame,” says Nick Bauer, product manager at Trex Commercial. “[We’re seeing a lack in availability] of [interlayer] that has become the go-to interlayer for railings and windscreens that require high structural loading. It’s difficult to find manufacturers that are able to source the material in a reasonable time frame, if at all, at this point.”

Tubelite Senior Manager Brian Tobias says the company has had issues sourcing parts, like flush bolts for doors, Ethylene Propylene Diene Monomer gaskets, and other small accessories and components. “The raw materials for EPDM gaskets have been held up overseas and at U.S. ports. Many [parts] have been affected by supply chain delays from countries of origin, such as China,” he says.

Continued disruptions have forced companies to source from multiple suppliers. “Qualifying secondary suppliers for components has become critical to meet project schedules,” says Kawneer’s Schultz. “This does create challenges, as often testing and technical reviews are required, and costs can increase when volumes are spread across multiple suppliers. Qualifying second and third suppliers allows us to schedule production more accurately as we rely on inventory being available as we rotate among suppliers to meet customers’ demands.”

Companies also continue to encounter logistics



and transportation issues. SAF opened new branches so the business does not have to ship more than 500 miles, says McClatchey. The company also tries to offer customers voluntary alternatives for the shipping of product. “We say to customers, if you wait a few more days, we can put your product on a consolidated truck, and rearrange the route of the driver.” SAF also offers the potential to ship on dedicated trucks, or the company’s own trucks, and offers alternatives before the customer asks. “People just need a lot of help right now,” he says. ■

08

The Emerald Flats is an affordable housing multifamily complex located in Grand Rapids, Michigan. The project is a historic preservation of Eastern Elementary School, and even won the 2022 Michigan Historic Preservation Council Award for Tax Credit Project, according to the Grand Rapids Business Journal. Part of preserving the historic façade involved Quaker Windows & Doors H450 Casement Window. Cardinal Glass manufactured the glass, and Double O Inc. was the installer. Photo courtesy of ICCF.org.

09

1105 West Peachtree, located in Atlanta, is a tri-tower mixed-use development. The overall development covers an entire city block in Atlanta's busy Midtown district. MillerClapperton fabricated and installed materials for all portions of the project, including the 31-story, 730,000-square-foot office tower. MillerClapperton fabricated 59,800 square feet of metal composite material for the exterior of the project, which included office column frames, spandrels and fascia for the balconies. To ensure the finished product matched the design intent for the project, the company developed new fabrication and installation methods that ultimately paid off for this custom application of metal composite material. The work on this project took one year to plan and 15 months to install, totaling 2.5 years from kickoff through to completion.

TOP CONSIDERATIONS
FOR HEAT SAFETY,
GLASS HANDLING AND
TRANSPORTATION

By Rachel Vitello

SAFETY



HEAT



⌵ A Nortex Glass & Mirror employee wears a safety shield while working.

THE
ESSENTIALS

W

When it comes to handling, transporting and working with glass in general, remaining safe is of the utmost importance. Safety practices and safety equipment help keep glass industry workers safe from the factory to the jobsite, and everything in between. But it's important to know when and how properly employ safety measures and to use protective tools and equipment. This article takes a closer look at worker safety for the glass industry, focusing on jobsite safety for glaziers, including transportation and heat safety.

Safety statistics

According to the U.S. Bureau of Labor Statistics, for glass and glazing contractors in 2020, there were 2.7 total recordable cases of nonfatal occupational injuries and illnesses per 100 workers. This is higher than the injury and illness rate for all building construction workers—2.3 per

“The most important things for a glazier to remember when handling glass [with a lifter] are to monitor the vacuum level, remember safety protocol (like using tag lines), wear safety gear and avoid being under the load.”

100 workers. Of the injuries and illnesses for glass and glazing contractors, 56 percent resulted in days missed from work.

The four most common types of accidents for construction workers include falls, electrocution, caught-in and struck-by, according to the Occupational Safety and Health Administration, which calls these the “fatal four.” Glaziers have additional safety considerations, including safe glass handling, glass transportation, vacuum cup safety and more.

Heat exposure is also a dangerous safety concern for those in the glass industry. From 2011 to 2019, the BLS reported 344 worker-related deaths in the United States were due to environmental heat exposure. According to the Centers for Disease Control and Prevention, between 1992 and 2016, 285 construction workers died from heat-related causes, more than one-third of all



← Magid's safety gloves provide adhesion resistance and high cut resistance and dexterity for window manufacturers and other industries that work with hot melt and sealant.

Safety in the Glass Factory

While this article focuses on the jobsite, safety is also paramount in the factory. Glass manufacturers had a total recordable incidence rate of nonfatal occupational injuries and illnesses of 2.9 cases per 100 full-time workers in 2020, with flat glass manufacturers at 3.3 cases. Among those injuries and illnesses for glass manufacturers, about 70 percent resulted in days missed from work.

Among manufacturers, leading causes of injury include: contact with objects and equipment; overexertion and other bodily reactions; falls, slips and trips; repetitive motion; and exposure to harmful substances or environments, according to data from the National Safety Council. Companies in the glass industry must account for the above hazards as well as more industry-specific threats, including cuts and lacerations from glass, getting caught in/between glass racks and injuries from falling glass.

For detailed safety guidelines for the glass factory, visit [MyGlassClass.com](https://www.myglassclass.com) for a course bundle on safety. ●

U.S. occupational deaths from heat exposure. Workplace safety experts also believe the actual number of heat-related fatalities may be underreported or misreported as another cause, such as heart attacks, according to the U.S. Department of Labor.

Safe handling

To ensure safe handling on the jobsite, glaziers must follow safety guidelines for manual and mechanical handling, and carefully follow guidelines for any lifting equipment. (See the National Glass Association's [MyGlassClass.com](https://www.myglassclass.com) safety bundle for more.)

Barbara Murphy, marketing liaison for Woods Pwr-Grip, says that glass handling has become more challenging for glaziers in recent years due to larger sizes, more unitized systems, curved glass and irregular shapes. Glaziers are tasked with maneuvering panels that

are heavier and may require different equipment, such as counter-weight balancers, says Murphy.

"Counter-balancers as a whole helps get the glass into the desired position without large operator forces or other questionable methods," explains Murphy. "This is particularly valuable for big and curved glass applications."

Murphy adds that the most important things for a glazier to remember when handling glass are to monitor the vacuum level, remember safety protocol (like using tag lines), wear safety gear and avoid being under the load. Additionally, companies must remember general maintenance, including ensuring that vacuum pads, the power system, the vacuum system and the structure are in good condition. Murphy says that using aged or weathered vacuum pads is too often overlooked.

To maximize safety during an

installation, glaziers should develop a lift plan, she adds. This plan can include, but is not limited to, selecting the right lifter with the right power; knowing how fast the process needs to happen and whether special accommodations or capabilities are necessary; consideration of the surface being attached to irregularities, sensitive surfaces, etc.; and ensuring hoisting equipment has adequate capacity, height and reach.

Safe transportation

Larger sizes and increasing complexity also affect glass transportation systems, according to glass truck and rack suppliers. Michael Mroczek, creative lead for [MyGlassTruck](https://www.myglasstruck.com), a glass rack company, says the biggest challenge facing glass transporters today is that installations are increasing in size and becoming more intricate.



← Glass truck from F. Barkow Inc.

How One Contractor Keeps Its Workers Safe

Aragon Construction Director of Safety Kevin Cork says the biggest challenge with jobsite safety is how the design of construction projects has become more complex over the years, which requires larger, heavier pieces of glass in very interesting locations throughout the building.

“These systems are incredible, but the challenge is we don’t always have the greatest access to utilize the desired equipment for installation,” Cork says. “This has forced us to become creative in our installation process. It takes our entire team—operations, field and safety—to come up with the best installation and safety plan possible.”

Industry product trends such as heavier, larger glass and the emergence of pre-glazed, unitized systems have also affected jobsite safety concerns over the years. Cork says it has altered the way they plan for installation and safety.

Continued on page 57

“As installations grow in size and become more complex, it is important to make sure that the transportation systems used can accommodate the various types of glass a glazier might carry on a day-to-day basis,” Mroczek says. “With more vehicles on the road today, it’s important to remember that glass transportation vehicles share that space with regular motorists, and their safety is just as important.”

To address this challenge, transporters should use a purpose-built rack to carry glass to the jobsite, secure glass to the rack properly, not exceed rack capacity or truck weight rating and use the right vehicle for the job. John Weise, president of F. Barkow Inc., says that unless there is an accident on the road or a co-worker didn’t secure the glass properly, there is no reason that glass breakage should occur during transportation.

Additionally, Weise says that weight limits must be followed to ensure safe transport. “The Gross Vehicle Weight Rating [GVWR] on the vehicle will determine how much weight can be transported. Human nature tells us ‘Why should I take two trips to move this glass when I can move everything in one trip?’ We need to be conscious of the GVWR; just because you can do something doesn’t mean you should,” Weise says.

Weise adds that self-locking stakes are one of the best safety features in the industry today and that solid welds by skilled craftsmen “are an essential part of any safety program.”

According to Mroczek, a “safety-first” mindset and comprehensive training

are the most essential “equipment” needed when moving glass.

Staying safe in extreme heat

In addition to glass handling, glazing contractors should also consider heat safety. For those who work in extreme heat, whether outdoors or indoors, high temperatures can be harmful, and at times potentially lethal. Occupational risk factors for heat illness include heavy physical activity, warm or hot environmental conditions, lack of acclimatization, and wearing clothing that holds in body heat. Hazardous heat exposure can occur indoors or outdoors, and can occur during any season if the conditions are right, not only during heat waves,

↘ Aragon construction workers receive onsite safety training.



according to OSHA.

Most at risk are employees who are new to working in hot environments or those who are returning to work in hot environments. Anywhere from 50 percent to 70 percent of outdoor fatalities occur in the first few days of working in warm or hot environments, because the body needs to build a tolerance to the heat gradually over time.

There are ways that those who work in the heat can keep themselves safe. Drinking cold water, taking breaks and dressing appropriately for the weather are the main ways that workers can stay cool in the heat and prevent heat illness or overexposure. According to OSHA, those working in extreme heat should drink cold water even when they're not thirsty, as drinking cool water helps lower heart rate, hydrates internal organs and improves focus. The recommended amount is one cup every 20 minutes

Magid, a safety equipment supplier, also suggests employers take the following precautions to keep their workers

Symptoms and Treatments

The following are common symptoms of heat-related illnesses:

- Headache
- Nausea
- Weakness or dizziness
- Heavy sweating or hot, dry skin
- Elevated body temperature
- Thirst
- Decreased urine output

What should you do?

- Provide water
- Remove unnecessary clothing
- Move to a cooler area
- Cool with water, ice or a fan
- Do not leave alone
- When in doubt, call 911*

*Signs of a medical emergency, when 911 should be called right away, include abnormal thinking or behavior, slurred speech, seizures and loss of consciousness.

Source: OSHA

hydrated; give out cool beverages with additional nutritional and mineral benefits, provide hydrating options other than soda and energy drinks, and place drink stations as close to an employee's jobsite as possible.

Dressing for the weather is vital when working in the heat. Just like one should wear layers when working in the cold, workers should be equally prepared while working in the heat and sun. Workers outside should wear a hat and light-colored, loose-fitting and breathable clothing if possible.

"Hot, uncomfortable, bulky clothing makes it harder to do the work, so people tend to be less compliant when wearing it. If it's hot outside or the plant is hot, you're going to see non-compliance where people are pushing sleeves up, opening their sweater, those kinds of things. Protection, heat stress and clothing all go hand-in-hand for worker protection," explains Jennifer Walrich, Magid safety expert and manager of growth strategy and product management.

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Products that Magid offers for heat safety include hard hat shades, wicking clothing, cooling vests and jackets, and a line of clothing specifically for heat stress. "Cooling products can be utilized to further mitigate the effects of heat stress. Those are not protective products but they do help with alleviating that problem," Walrich says. Walrich adds that Magid spoke with glaziers and designed its clothing specifically to be breathable, comfortable and lightweight to make work safer for them and meet their needs.

Employees working outside should also take breaks long enough to recover from heat given the temperature, humidity and conditions of the day. Employers should make sure to provide adequate breaks or alternating shifts throughout the day depending on the temperature, humidity and level of work.

According to the CDC, for example, employees performing heavy work in 95-degree weather should work for 45 minutes and rest for 15 minutes on average. The rest-to-work ratio changes

depending on the temperature and the level of work being done.

Even when steps are taken to prevent heat illness, it's still possible to fall susceptible to the extreme heat of the summer while working outdoors, which is why those working outdoors should know the signs of heat illness.

Resources

The National Glass Association offers several safety resources for glass companies. The NGA's online learning platform, MyGlassClass.com, offers a course bundle for purchase on safety, which includes online courses on safe glass handling, PPE for working with flat glass, best practices for removing broken glass and more. NGA also has a library of glass technical papers, or GTPs, for members, which includes documents like "Guidelines for Handling and Cleaning Decorative Glass," "The Importance of Fabrication Prior to Heat-Treatment," and "Safety Guidelines for Deglazing Structural Silicone." ■

How One Contractor Keeps Its Workers Safe

Continued from page 54

"Instead of stick-building smaller openings and possibly working off ladders and/or scaffolds, we are now switching our focus to utilizing specialized equipment like Spyder Cranes and power cups to give us flexibility and maneuverability to access challenging openings that tend to have many constraints," Cork says.

When it comes to staffing challenges, Corks says Aragon is fortunate to have a "core group" of experienced employees who can educate and support those who are less experienced. They have also increased hands-on training sessions to focus on specialized equipment as well as instituting dry installation runs that simulate different scenarios to ensure crew members know their roles and responsibilities.

"We must never forget to plan for the "what if's" by ensuring our personnel are prepared and have the proper equipment," says Cork. ●



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The 2500 UT Unitwall® System marries the elegant aesthetic of a gleaming glass, unitized curtain wall with ultra-thermal performance built into the design. The 2500 UT Unitwall® System is a cost-effective, unitized framing system that reduces the time required to fabricate, assemble, glaze and install.

With a variety of flexible options—from four-sided captured exterior covers to structural silicone glazed (SSG) or structural glazing tape (SGT) configurations—this sturdy, high-performance system is ideal for commercial applications, mid- to high-rise projects and more.

The 2500 UT Unitwall® System employs a continuous polyamide thermal break vertically and horizontally, providing ultra-thermal performance levels in a cost-effective unitized curtain wall system. In addition, the one-piece polyamide thermal break eliminates pressure plates and fasteners, reducing the amount of metal used and time required to assemble the system. Additionally, its ultra-thermal performance allows architects and designers to take their vision to a new level, regardless of climate or location. The 2500 UT unitized curtain wall system's virtually seamless walls of glass connect

interior building spaces comfortably with the outside world, elevating performance and expanding aesthetics.

Economy and flexibility

The 2500 UT Unitwall® System provides options that allow architects and contractors to meet tough project timelines while delivering enhanced thermal performance and lower overall operating costs for building owners. Unitized construction accelerates installation while minimizing disruption to the surrounding area or existing tenants, making it an exceptional choice for new or retrofit applications, particularly in urban areas or where space is limited. The system is available to glazing contractors in stock lengths, fabricated

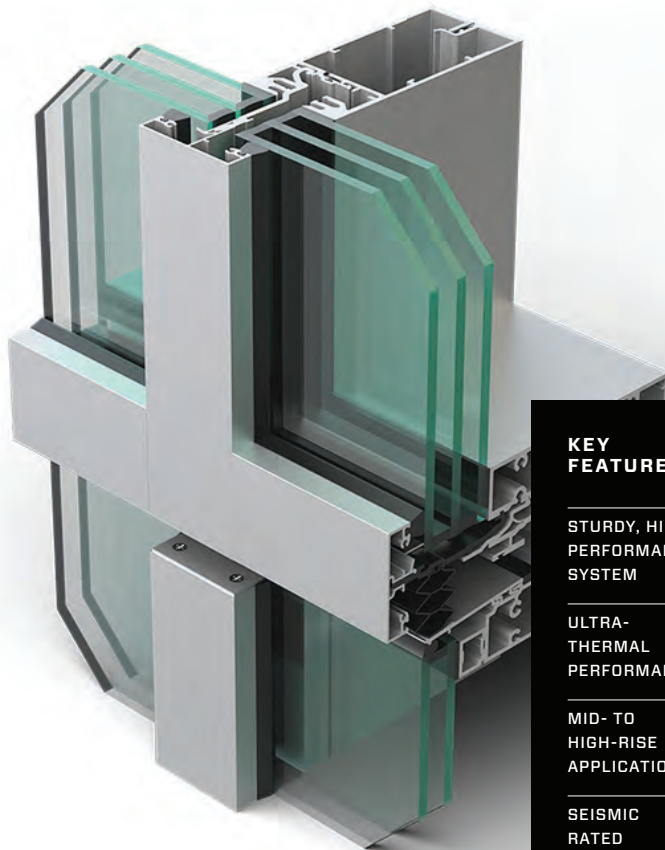
or pre-assembled and glazed—offering the flexibility to meet a range of budgets, worker availability and timelines.

- With stock lengths, glazing contractors can provide fabrication and pre-glazing under controlled conditions in their own shop.

- Factory-fabricated and glazed units make it easier to meet tight construction schedules, reduce field labor costs and lessen the demand for jobsite equipment.

- SGT option offers the aesthetic of structural glazing without the cure time required by silicone, helping to speed up final delivery times. Cost savings on metal and fabrication materials can be realized when compared to a typical curtain wall configuration.

Learn more at kawneer.com. ■



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01



02



03

01. Aluminum window system

Akotherm Aluminum-Profilsysteme introduced the AT 740 aluminum window system, which provides burglar resistance up to RC3, sound protection and excellent insulation. Despite eliminating foil-laminated insulation bars, the required U-values in Germany's Energy Saving Ordinance can be reached with double glazing. Additionally, the system is designed to offer architectural leeway by combining various styles and casement sizes up to 106 inches tall.

917/734-8169 | AKOTHERM.DE

02. Window wall system

Kova's Window Wall System can be fully installed from the interior of the building. Constructed with a non-strutted thermal break, the system optimizes a building's energy performance and efficiency through the thermal separation functionality. The system is 100 percent recyclable. The tilt-in installation process allows for seamless project execution with minimal equipment needed. Ideal for projects ranging from large commercial buildings to mid-sized, multi-family housing units, the Window Wall System can be installed in high-rise properties that are up to 30-40 stories tall as well as apartment buildings with four to five stories.

4206/739-0944 | KOVAPRODUCTS.COM

03. Window and door rollers

Heavyweight architectural window and door panels require a roller that not only handles the weight but also functions with ease. The 9000 Series rollers from Anthony Innovations can handle even the biggest panels. The system can manage loads up to 800 pounds. It features wheels available in stainless steel and in CNC-machined polymer material. A single-bogie carriage offers balanced load distribution and smoother glide, and customizable mounting tabs and spacers make it easy to adapt different existing systems.

747/258-5873 | ANTHONYINNOVATIONS.COM



01

01. Hardware

T-Concepts Solutions Inc. launched an antimicrobial door hardware solution for the commercial industry that is EPA registered, in partnership with Microban International. It includes antimicrobial technology built-in to all custom matte black handles. T-Concepts Solutions door handles with built-in Microban antimicrobial product protection inhibits the growth and reproduction of odor, stain, and degradation-causing bacteria. Integrated antimicrobial technology helps to fight against the growth and survival of such bacteria on surfaces on a treated product throughout its expected lifecycle.

888/409-9340 | T-CONCEPTS.COM



02

02. Liquid Resistant Gloves

Brass Knuckle SmartFlex Full Coat Liquid Resistant Gloves feel light and provide allover protection from liquid exposure, sealing out liquids and keeping hands dry, to make them less prone to skin diseases. SmartFlex 350 has an additional double dip of latex foam on the palm that provides excellent grip, abrasion resistance, and tear resistance. Although not recommended for oily applications, this glove is an excellent dry or wet gripper virtually anywhere else. SmartFlex BK350 is made to fit comfortably. Fingers are tapered and curved. Sizing is carefully considered, and gloves are manufactured to the highest tolerances to ensure flex points match up to the wearer's knuckles.

770/674-8930 | BRASSKNUCKLEPROTECTION.COM



03

03. Health care door

AD System's new DualSwing is designed for use in acute healthcare settings. The smoke-rated door system features a large primary door and a smaller auxiliary leaf that can open to accommodate patient beds, CT scanners, MRI suites, cath labs, and other large equipment. This single-source swing door assembly provides sleek profiles and durable construction, making it ideal for projects that need flexible openings like healthcare facilities with inpatient rooms, med-surge patient rooms and more. DualSwing also offers a range of glazing options, including integral blind units, and a full complement of Allegion door hardware solutions.

425/740-6011 | SPECADSYSTEMS.COM



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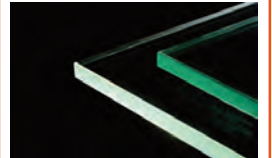
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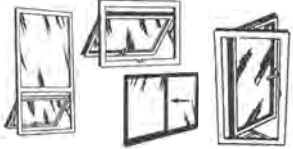
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Companies from all parts of the glass and glazing industry have implemented innovative, out-of-the-box ideas to improve business from the ground up. Here's an Idea showcases these sometimes small behind-the-scenes ideas that can make a big impact on a company's bottom line. If you have an idea that you would like to share, contact Norah Dick, ndick@glass.org.

3 STEPS TO MAKING PURCHASES

BY PETE DE GORTER



You have enough knowledge at the tips of your fingers to research and determine what products likely best fit your needs. While finding products is easy, finding the right solution is not. Let's talk about how to find the right solutions for you. Follow three simple points and you'll be sure your next purchase is one you won't regret.

01 Find the right partner, and vet them first

First and foremost, finding the right partner makes all the difference in the world. Choosing the right partner may be the difference between going back to the drawing board and starting over or fostering a long-term relationship you can rely on.

You're looking for a partner with integrity, honesty, and a reputation that backs those traits. You'll need a partner with excellent service, one you know will be there when you need them even if that is 7 p.m. on a Friday or during a holiday. Problems inevitably occur; your partners' service is how those are resolved.

As well, one of the best ways to see one's true colors is during a challenging time. Many are happy to court you for a sale; not everyone is there after the sale is completed and that is when the real work begins. If you're at a tradeshow, cruising the show floor or speaking with vendors ahead of time, ask them directly, what is the after-the-sale service like? What types of challenges



have they faced and how were they resolved? If they tell you there's never been a challenge or problem, that's a red flag.

02 Set reasonable expectations for purchases

You get what you pay for. There's nothing wrong with that when expectations are set accordingly. So long as you have the right expectations, you're not going to be left disappointed. In the world of vertical edging equipment, a \$45,000 edger is not the same as a \$100,000 edger, even though they may both be 10-spindle vertical edgers.

If you've found a partner with integrity, they will have no problem advising their solution may not be the right fit for your application. They will not only listen but actually hear you, allowing them to recommend a solution that better fits your needs even when it is not their own.

03 To build trust, listen to your partners

If you've been honest with your

expectations, and done the research to find a good partner, then you are well on your way to the third tip: building that relationship based on trust. Trust is a two-way street and it must go both ways to be successful.

While you can be armed with knowledge from your research, it helps to listen should a partner give advice. You've determined they're reputable and working with integrity; if they have suggestions, listen. It doesn't mean you have to take the advice, but you should understand why they're making suggestions.

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Pete de Gorter is vice president of DeGorter Inc.

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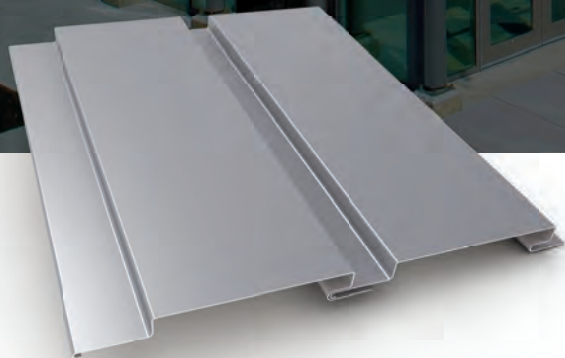
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-Andreas Lange, AIA, senior associate, Perfidio Weiskopf Wagstaff + Goettel

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