

Volume 58
Issue 1
January 2023

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Still in Demand

Even as some parts of the construction economy begin to moderate, more growth is ahead for the U.S. architectural glass industry. According to Key Media & Research data, nonresidential architectural glass volume will expand in 2023.



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Maximizing Space

Movable glass walls transform floorplans and create seamless transitions from interior to exterior spaces. Designers and architects value the versatility and flexibility they provide.



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Recognition for Glass Design

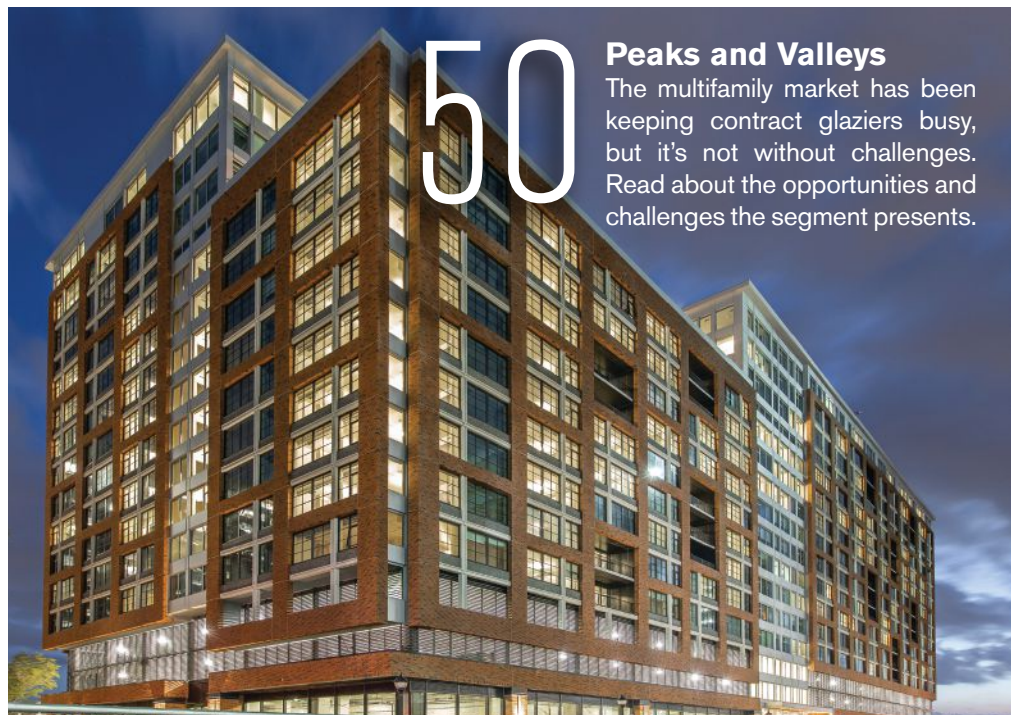
Winners of the fourth annual **USGlass** magazine design awards showcase outstanding innovation, performance and aesthetics.



ON THE COVER

Submitted by Sentech Architectural Systems, Concho Tower III in Midland, Texas, is the Structural Glass category winner in this year's **USGlass** Magazine Design Awards. Turn to page 38 to read about this project as well as the other winners.

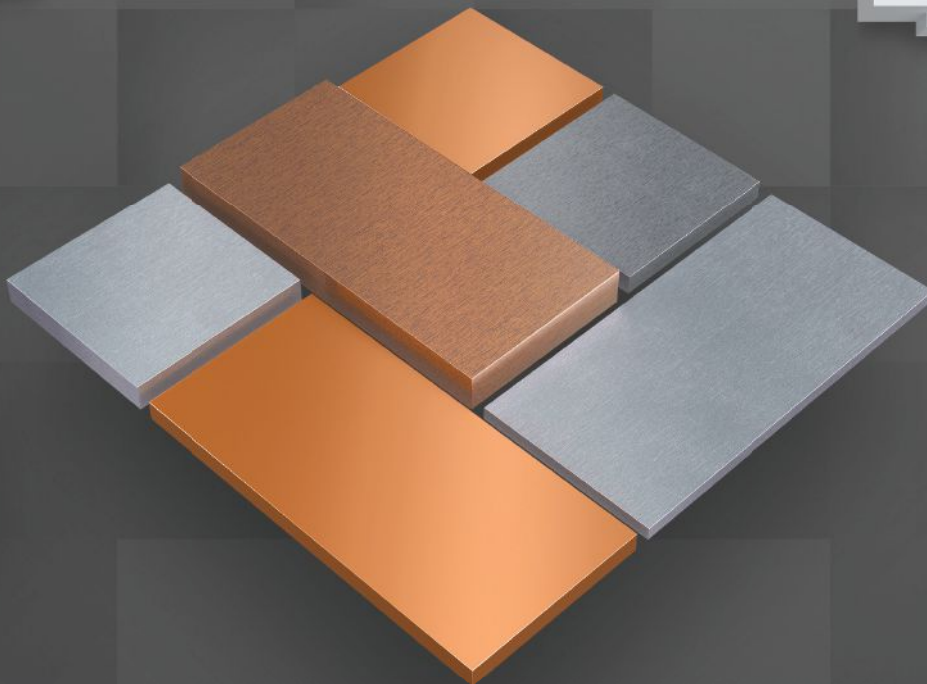
Photo credit: Hester + Hardaway.



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Peaks and Valleys

The multifamily market has been keeping contract glaziers busy, but it's not without challenges. Read about the opportunities and challenges the segment presents.



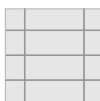
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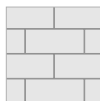


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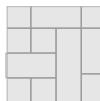
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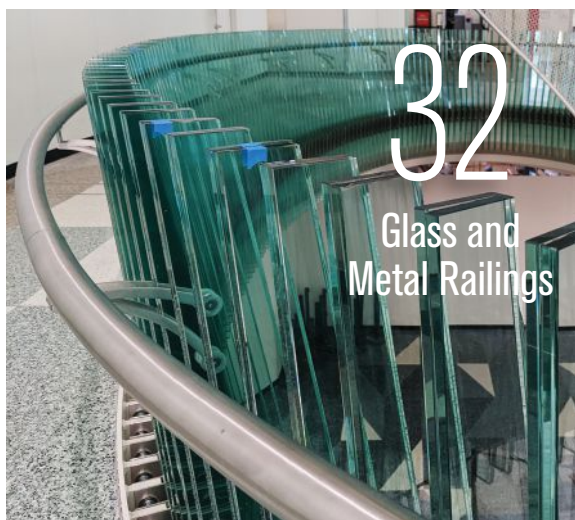
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Lite Notes
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Commercial Commentary
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Field Notes
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THURSDAY
Mind Your Business
John Rovi



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On the Safe Side
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Insights and Inspirations
Helen Sanders

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PROJECT OF THE MONTH

Glass Brings Daylight, Transparency and Comfort to San Francisco High School

<https://bit.ly/3w2Jzby>

Transparency and daylighting were important to architect EHDD when designing San Francisco's industrial arts-focused Lick-Wilmerding High School. To achieve aesthetic and performance desires, they worked with Solarban® 70 glass from Vitro Architectural Glass (formerly PPG Glass) for new skylights and a curtainwall addition to the existing building.

The new third-story curtainwall, with its mullion-less silicone joints, rests lightly on top of the historic building below and integrates with the existing mid-century curtainwall. For added thermal performance, the architect added interior acrylic glazing to the older system.

The design provides daylit hallways and break-out spaces to help promote collaboration and interaction. The glazed curtainwall addition and new skylights served as a way to bring more daylight into the interior, which was restricted in height by the city's historic preservation guidelines. Following the renovation, the building posted an occupant survey satisfaction score of 94% based on air quality, acoustic quality, lighting and thermal comfort.



Photo: Michael David Rose Photography



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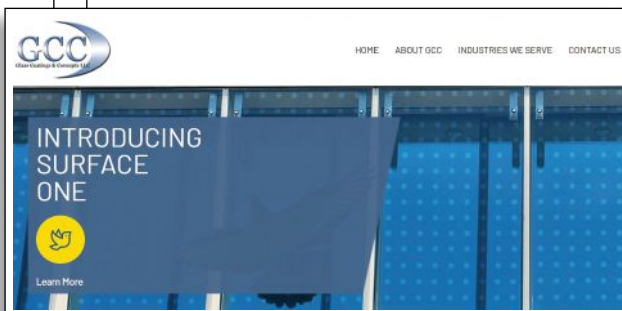
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ISSUE AT HAND

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New Year's News

The 2022 holidays seem a distant memory now so let me be the last to wish you a Happy New Year. I always toast it with a bit of excitement and a bit of trepidation. What kind of year will it be? When it ends, will it have been a good one or a bad one? And by what standards? It's ironic that we spend so much time predicting the coming year, without spending any time seeing how right our predictions for the previous year were.

This year is a bit different because the experts, the economic pundits and random opiners are all in agreement about the future. The year 2023, they say, cannot be forecasted well. There's too much uncertainty and variables. As you'll see by reading the reports on pages 12 and 36, Nick St. Denis provides a forecast of glass usage. See what Nick (who nailed it last year) says about our future. It's not nearly as uncertain as the pundits would have you believe.

Personally, I am optimistic about our newly birthed year. The glass industry is changing tremendously—its products, its players, its personalities—but it's doing so in a positive direction. Glass, as a material, has never been more energy-efficient than it is now. And it's nowhere near as efficient as it will someday become. Contract glaziers are better utilizing the advances in digital products, robotics and artificial intelligence (AI) as other segments of the construction industry have done for quite a while.



Holly X. Biller

It's energizing and exciting to be part of it.

We've had some excitement here ourselves.

You've already heard about Ellen Rogers' promotion to editorial/content director in September (*see page 8 in September USGlass*). I am just as happy to now announce the promotion of Holly X. Biller to the position of president of our parent company, Key Media & Research. Holly has served as vice president of the company for quite a while and has spent her career in positions of increasing responsibility and advancement there. She has been instrumental in developing KMR's digital offerings and advancing its live events, international

footprint, and many other initiatives during her 28 years at the company.

Holly began her career here as an intern and chose KMR from many of others after college, and pursued an advanced degree while helping to grow KMR. She has been managing the day-to-day business for a time now, so this role is not too new for her. The new title, in reality, catches up to what she has been doing. My own corporate title will be CEO going forward.

I liken Holly to Mary Barra, GM's top executive, who began her work at the automaker as a co-op student in 1980. If you have ever worked with Holly, you know what a competent professional and special person she is. I hope you will join me in welcoming her to a new role.

Deb

USGlass[®]

Publisher

Debra Levy

540/602-3282 • deb@glass.com

Editor/Editorial and Content Director

Ellen Rogers

540/602-3249 • erogers@glass.com

Assistant Editor

Joshua Huff

540/602-3243

jhuff@glass.com

Contributing Editors

Chris Collier

540/602-3264

ccollier@glass.com

Travis Rains

540/809-5724

trains@glass.com

Director of Research

Nick St. Denis

540/602-3265

nstdenis@glass.com

Art Director/Managing Editor

Dawn Campbell

540/602-3247

dcampbell@glass.com

Art Director

Saundra Hutchison

540/602-3245

shutchison@glass.com

Advertising Coordinator

Erin Harris

540/602-3250

eharris@glass.com

Senior Events Director

Tricia Lopez

540/602-3257

tlopez@glass.com

Director of Exhibits

Tina Czar

540/602-3261

tczar@glass.com

Marketing Coordinator

Nicole Rubio

540/602-3270

nrubio@glass.com

Marketing Liaison

Casey Flores

540/602-3260

cflores@glass.com

Web Developer

Bryan Hovey

540/602-3244

bhovey@glass.com

Video Producer

Chris Bunn

540/602-3254

cbunn@glass.com

Administrative Assistant

Sarah Bauder

540/602-3259

sbauder@glass.com



Published by Key Media & Research

P.O. Box 569, Garrisonville, VA 22463

540/720-5584; fax 540/720-5687

Debra Levy, CEO

540/602-3282

deb@glass.com

Holly Biller, President

540/602-3251

hbiller@glass.com

ADVERTISING OFFICES

Midwest

**Lisa Naugle,
Associate Publisher**

lnaugle@glass.com

Phone 312/850-0899

Fax 312/277-2912

**Northeast, West Coast
& Canada**

Josh Lentz

jlenz@glass.com

Phone 262-269-6217

Fax 888/786-8777

Southeast

Scott Rickles

srickles@glass.com

Phone 770/331-9562

Fax 770/740-1399

**Europe, Asia, Mexico
& South America**

Barry Atkins

batkins@glass.com

Phone 540/602-3268

All Others Contact Publisher

Glass Expos

Barry Atkins

(new clients)

batkins@glass.com

Phone 540/602-3268

Tina Czar

(existing clients)

tczar@glass.com

Phone 540-602-3261

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Back on Track

Closing the Decarbonization Gap

“We are on a highway to climate hell with our foot still on the accelerator,” warned United Nations (UN) Secretary General António Guterres at the opening of COP27 in November. The UN Environmental program 2022 Global Status Report identified that the building sector is not on track to reach its decarbonization goals.

There is a large gap between the UN Economic and Social Council’s framework for building energy efficiency standards, which sets a primary energy use intensity (EUI) target of 14 kBtu/ft², and current U.S. baseline code performance. A medium office building compliant with ASHRAE 90.1-2019 has a predicted EUI of 30 kBtu/ft².

“There is a large gap between the UN Economic and Social Council’s framework for building energy efficiency standards, which sets a primary energy use intensity target of 14 kBtu/ft², and current U.S. baseline code performance.”

However, three leading jurisdictions in North America—British Columbia, New York and Pennsylvania—are driving building performance faster than the current trajectory of baseline code development. The North American Passive House Network (NAPHN) analyzed key components of code and policy in those areas, identifying a framework for building decarbonization policymaking.

Policymaking Framework

Several common threads were identified that support the construction of high-performance buildings:

- **Clear specific targets** for the industry to reach, which are measurable and with tools connected to support outcomes;

- **Available training** tailored to support specific performance targets; and
- **Direct financial support** for projects that are stepped, competitive and required reporting and monitoring.

All three also had active volunteer Passive House practitioner communities supporting policymakers. Where needed, policymakers also removed roadblocks that were embedded in baseline codes.

Key Policy Levers

A combination of policies that lie both inside and outside the building code processes were identified to encourage the use of higher performance standards, such as:

- **Zoning incentives**, e.g. allowing additional height or smaller setbacks;
- **Accelerated plan approvals or reviews**;
- **Availability of stretch codes**, e.g. step codes, net zero pathways;
- **Alternative code compliance pathways**, e.g. Passive House Planning Package;
- **Existing building performance standards**, e.g. Local Law 97 in New York City;
- **Training subsidies**;
- **Tax credits**; and
- **Direct subsidies**.

Additional keys to success were identified:

- Having **tiered code adoption programs** with weighted incentives directly tied to the long-term target, such as net-zero carbon; connecting voluntary standards; and baseline codes;
- **Connecting different regulatory codes**, such as zoning and energy; and
- Having **circular feedback loops** for reporting outcomes and costs.

These insights can be important to jurisdictions seeking to make transformational changes in buildings to achieve climate change targets.

USG

➔ **Helen Sanders** is the general manager at Technoform North America Inc. based in Twinsburg, Ohio. Read her blog each month at www.usglassmag.com/insights.

A modern office interior featuring a large wooden conference table in the foreground. Behind it is a glass-walled meeting room with wood-paneled walls and whiteboards. The room is lit by recessed ceiling lights and pendant lamps. The floor is a polished concrete.

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Checking in with the Fabricators

Glass Suppliers' Outlook Heading into 2023



“Expectations are very strong among fabricators, with nearly two-thirds anticipating an increase in sales in 2023 compared to 2022.”

Glass Fabricators' Sales Expectations

% Change from 2022 to 2023

■ Decrease ■ No Change ■ Increase



Source: Key Media and Research

It's the time of year that we conduct substantial research on the glass and glazing industry to get a read on prospects for the year ahead. As you'll see in the first several issues of the magazine each year, there is a focus on sentiment among glazing contractors, with our annual Industry Outlook reports and the Top Glazier articles coming fresh out of the USGlass oven.

We don't forget about the fabricators' views, either. That is our focus here.

We recently surveyed several dozen glass fabricators throughout North America to get their perspective on the outlook for the next 12 months. Expectations are very strong among fabricators, with nearly two-thirds anticipating an increase in sales in 2023 compared to 2022—a majority of whom expect an increase of 10% or more.

A share of the growth can be attributed to improved pricing. Supplier costs across the board—and notably in flat glass—saw significant spikes in 2022, so those are being passed along. That aside, most expect, from a sheer volume standpoint, demand would stagnate or decrease for glass in nonresidential construction project starts during 2023. This seemed to be a reasonable hypothesis, given the overarching commentary surrounding the construction industry.

Based on the best available data, that's not necessarily the case in our corner of the construction industry. There had been a massive expansion of manufacturing and warehouse space over the past two years, which is likely to slow down (at least temporarily) in 2023 and could be responsible for a pullback in nonresidential construction. When looking

specifically at the most glass-relevant building categories, there is still room for growth. Commercial sectors such as office, lodging and retail, and institutional categories such as educational and healthcare, collectively show signs of continued expansion. More detail is available on that on page 36.

Now, getting back to the fabricators. While the outlook is positive in the near future, fabricators do have some major concerns. The largest one (and one that has been chief among both fabricators and glazing contractors for the past decade) is the labor shortage. Long-time experienced employees continue to retire, and fabricators, like many manufacturing and industrial-type businesses, are having difficulty passing their valuable knowledge and skillsets to the next generation. General concerns of inflation and the supply of materials also plague the industry, though these should dissipate to some degree in the year ahead.

There has been a theme of cautious optimism the past two years, and really for most years since the great recession aside from the depths of the COVID pandemic.

And while this time it is coming as economists warn of a potential recession in 2023 or 2024, experts can't pinpoint how severe it may be nor the exact timing. So until then, it's business as usual for glass fabricators. **USG**

→ **Nick St. Denis** is the director of Research for Key Media & Research (KMR), parent company of **USGlass** magazine. To subscribe to his free *Glass and Glazing Quarterly Review* report, or for any other research-related inquiries, email nstdenis@glass.com.



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It's Only Been Forty-Six Years

Looking Back on a Career—the Special People and the Moments

That's all. It's not a lot, is it? I've been in our wonderful glass industry for 46 years with three companies: C.R. Laurence (CRL), Floral Glass and Bieber Consulting LLC. Three great companies.

What's going on now? Why this column? Because I am reducing my input to USGlass magazine, dropping off the blog page and the bi-monthly columns. My wife said I was retiring. I told her, "Just taking a long vacation."

A Look Back

So here is some history acknowledging some of the wonderful folks I've worked with for these 46 years. It started in 1976 with Phil Saitta, who hired me as a sales rep for CRL. Living in Boston, I was given the states of Massachusetts, New Hampshire, Maine and Vermont. It took me eight weeks to see each glass company and tens of thousands of miles. I loved this job, loved the industry and met wonderful people who taught me about glass.

In 1979, CRL sales manager Bill Rowe offered me the regional sales manager's position, covering the Northeast and Mid-Atlantic states and working with 12 salespeople. My wife, Elaine, and I moved to New Jersey. I was on the road 42 weeks a year. After five years of this and the arrival of our baby daughter, Jessica, we decided I needed a better home life. So, after nine years with Bernie Harris and Don Friese the owners of CRL, I started as the general manager of Floral Glass on Long Island. I became the chief operating officer of this privately-held company and stayed there for 20 years until we sold to Oldcastle Building-Envelope®. It was a great company owned and led by Chuck Kaplanek. After a year together, Chuck and I were finishing each other's sentences and thinking through many thoughts



"We survived economic struggles, three-day strikes and hurricanes. We morphed from a one-shift-per-day company to a three-shift operation, with maintenance on the weekends. It was a wonderful job and career."

like twins. We are still best friends and speak regularly.

A Great Team

Floral Glass went from an 80-person distributor and fabricator of insulating glass in three states to a 225-person fabricator with the largest tempering line and laminating lines in the Eastern U.S. Of course, lines are much larger now, but this was in the 1990s.

So many wonderful people contributed to our success. Stan Lane was our financial genius. Steve Brenner ran our sales group for many years. Kevin Nolan held together our great inside sales and service phone operation. Terry and John Turner ensured our trucks were out on time and carefully loaded. John Mendlovsky (arguably the best mechanical genius I've ever met) kept us running through hurricanes, power surges and stupid mistakes by everyone else. Alan Freeman successfully ran our plant in Connecticut.

We had one computer in our accounting

department in 1985. Like everyone in the 1980s and 1990s, computers grew and became extremely valuable. A lot of learning for an established group was on our continuing agenda.

The biggest issues we faced as the leaders of this company were not related directly to glass! First was insurance. Between worker's comp and medical insurance in three states, we spent more money on insurance than anything other than glass and direct labor. I am betting that glass shop owners understand.

The second biggest issue was safety. We had great employees with many decades of experience. The unfortunate part of that is they thought they couldn't be hurt. They "knew" how to be safe. Every time we added a new safety rule or required more folks to wear hard hats or cut-resistant sleeves, we had headaches with people. More people were suspended for safety violations than any other reason.

I can't forget Nat Aquilino, our local labor union's business agent and a former company leader. He kept our operation smooth, bringing in qualified applicants and helping with many problems to satisfy our multi-national workforce. Chuck's son, Cory, learned the glass industry and became a very special part of our salesforce. So many wonderful folks worked with us. It was and still is a great source of pride that we grew this business with such a loyal and hard-working crew.

Suppliers & Partner Relationships

We had a great relationship with LOF, which morphed into many companies over the years. Then PPG and AFG introduced us to low-E and perfectly clear glass; we received thousands of truckloads of product from Stroupe Mirror and many others after they closed.

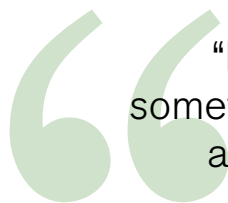
We were the first company in North America to have Bystronic machinery. When Bystronic set up a U.S. office, it was just two miles away from us, and we were their showroom. They made sure our equipment operated flawlessly.

We serviced glass shops in New Jersey, New York and Connecticut. There were thousands of them, and they all knew us. Most even bought from us. We survived economic struggles, three-day strikes and hurricanes. We morphed from a one-shift-per-day company to a three-shift operation, with maintenance

on the weekends. It was all wonderful.

After selling to Oldcastle in 2004, I stayed for one year to help with the changeover. Elaine and I pondered what to do with the next chapter of our lives. Our grown children didn't live with us, and we could do anything. We moved to the southwest corner of New Hampshire, near Elaine's hometown and family, and have lived here since.

Working with Stan Lane, our finance wizard at Floral Glass, we started Bieber Consulting Group LLC. We helped companies in our industry with many time-proven solutions to personnel problems and situations.




"I had a great time writing, sometimes serious, sometimes silly, and always from my heart."

About the time we started consulting, came THE phone call from Deb Levy, the publisher of **USGlass**. We had worked together often on glass industry expos and glass events. She asked if I would be interested in writing a bi-monthly column for the magazine. Then I learned from Ellen Rogers, the well-experienced editor of **USGlass**, as she quietly improved my writing. A hundred columns later, this is the last one.

I also wrote a weekly blog. I didn't know what a blog was back then. I had a great time writing, sometimes serious, sometimes silly, and always from my heart. Last year we added Paul Daniels, who, 40 years earlier, replaced me as the Boston area salesperson for CRL and then as the Northeast regional sales manager. Six hundred blogs later, it is time to put this part of life behind me.

So, farewell to my readers. Thank you for your comments, interesting phone calls and conversations. My friends will remain, and the phone calls and emails will go on. It was a wonderful past, and an interesting future is coming. **USG**

 **Paul Bieber** has more than 40 years' experience in the glass industry, with C.R. Laurence Floral Glass, and, most recently, Bieber Consulting Group LLC. He can be reached at paulbaseball73@outlook.com.

Guardian Glass Buys Miami Fabrication Business, Vortex Glass

Guardian Glass has acquired Vortex Glass in a move to expand its hurricane and insulating glass capabilities and increase Vortex's plant capacity and service offerings.

"This transaction represents an important opportunity for Guardian Glass to add value to our residential customers in the Southeast," says Guardian's executive vice president Rick

Zoulek. "We remain committed to our existing customers and partners, and we've identified Vortex as a company with the right team, capabilities and motivation to fit Guardian's fabrication business model. We look forward to the successes to come."

Vortex fabricates laminated and insulating glass that meets Florida Building Code requirements for hurricanes. It also supplies customers of Florida and the Caribbean Islands with complete tempered glass packages for residential and commercial construction, including office partitions, shower doors and glass railings.

By acquiring Vortex, Guardian explains that it has better positioned itself to assist customers in meeting ever-changing building safety and conservation codes.

"We are very pleased to see in Guardian Glass a buyer that has strategic synergies with our existing business, the right values and the ability to help Vortex continue to provide great service to our existing customers while identifying and adding the capability for us to add new business," says Vortex president Humberto Juliaio. "It's a chance for the business and our team members to grow."



Guardian Glass has acquired Vortex Glass in a move to expand its hurricane and insulating glass capabilities and increase Vortex's plant capacity and service offerings.

FHC Acquires Morse Architectural

The Frameless Hardware Company (FHC) has acquired all of Morse Architectural's assets from M-D Building Products Inc. FHC says the sale includes all inventory, product designs and three U.S. facilities, including Kent, Wash., Columbia, S.C., and Brea, Calif.

"Morse is a household name in the glass and metal world," says Chris Hanstad, FHC president and CEO. "They have a 40-plus year pioneering track record which aligns with our business model and mission that centers on experience and innovation. Their people, knowledge, product offering, and network are exactly what FHC looks for in strategic acquisition opportunities, and we are always looking."

The acquisition is the third for FHC in two years. According to the company, the deal opens distribution channels in the Pacific Northwest and along the East Coast and provides direct access to Canadian markets.

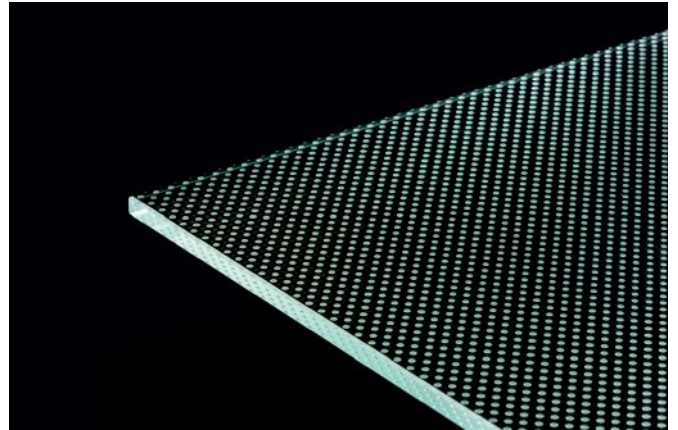
The added locations increase FHC's bi-coastal manufacturing and distribution footprint to 400,000 square feet. The move also bolsters FHC's national sales team and capacity, accommodates growing demand for supply chain alternatives and shortens lead times across North America.

Morse general manager Larry Larsen will oversee the company's integration.

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SGC Crystal Clear Low Iron Glass

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- Crystal Low Iron Patterned Glass (1/8"-1/2")
- Crystal Low Iron Tempered Glass (1/8"-1")
- Low Iron Laminated Glass (SGP Interlayer)
- Low Iron Satin Etched Glass (1/8" - 3/4")
- Low Iron Epoxy Coffer Free Mirror (1/8"-1/4")
- Low Iron Digital Printed Glass (1/8" - 3/4")



SGC Jumbo Glass Fabrication Capability

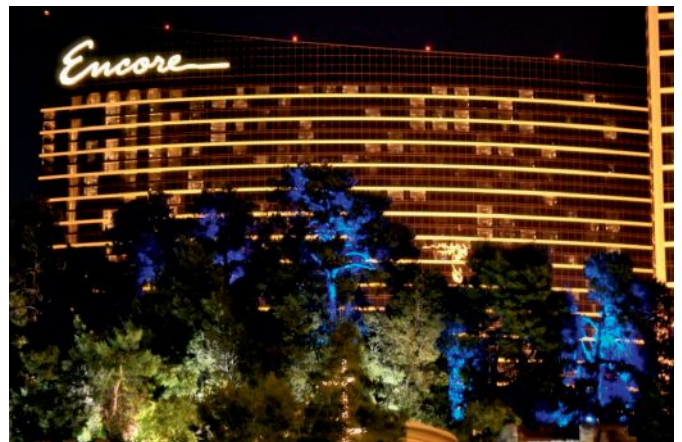
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Pulp Studio Hosts TV Stars Tim Allen and Richard Karn

History Channel filmed an episode of its *More Power* series at Pulp Studio's facility in Gardena, Calif. The original series features Tim Allen, Richard Karn and April Wilkerson and covers how tools have evolved over the years.



Pulp Studio's chief operating officer Kirk Johnson (center) gives Tim Allen (left) and Richard Karn (right) a behind-the-scenes-factory tour.

Pulp Studio is featured in the episode "Heat," which takes a look at how the company makes tempered glass in ultra-hot kilns.

Pulp Studio's chief operating officer Kirk Johnson gave the *More Power* team a behind-the-scenes-factory tour. The tour included stops at an electrically powered custom kiln, which can be heated to more than 1,500 degrees Fahrenheit. It also involved demonstrations of the technical challenges and the

craft involved in printing and bending glass for architectural projects.

"We had so much fun shooting for over six hours with Tim, Richard and the whole *More Power* History Channel crew," says Johnson. "They took a genuine interest in learning how we bend and strengthen glass in our custom kilns and tempering furnace. Most people experience our products as they walk on a glass floor or lean against a glass polished railing without thinking about how that product was created. There are so many steps and hand craftsmanship to bend glass, but also to make a finished design that is easy to maintain, plus safe to use with heavy traffic over time."

Allen and Karn also witnessed the effects of thermal stress on glass production and learned how Pulp Studio minimizes the risks of glass shattering when not cooled properly. Additionally, the duo was shown Pulp Studio's glass strengthening furnace.

Johnson says that the overall experience with the film crew was amazing.

"Those two comedians had me laughing the entire day," says Johnson. "The episode is amazing for the industry. Now everyday consumers can experience what a glass factory is like and how much work and passion goes into our processes."

You can watch episodes of *More Power* on the History Channel or by streaming via Google Play, Vudu and Amazon.

Saint-Gobain Recognized for Inclusion Efforts

Saint-Gobain North America won three Globees at the 2022 CEO World Awards for its work to attract, retain and empower women in the manufacturing industry.

The company received two Gold Globees in the categories of Achievement in Women Empowerment and Achievement in Mentorship and Sponsorship of Women. It won a Silver Globee in Achievement in Developing and Promoting Women.

The annual CEO World Awards celebrate the achievements of leaders, executives and their management teams behind the year's most outstanding initiatives. Organizations private or public, corporations, nonprofits, associations, vendors and government organizations worldwide are eligible to participate.



Saint-Gobain won three Globees at the 2022 CEO World Awards for its work to attract, retain and empower women in the manufacturing industry.

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NSG Group Expands Research Capabilities, Adds Glass Processing Plant

The NSG Group, the parent company of Pilkington, wrapped up 2022 with a number of growth initiatives. The company broke ground on a new Pilkington IGP glass fabrication plant in Sandomierz, Poland, and also added a second research laboratory in Itami City, Japan.

The glass processing plant is scheduled for commission in May 2023. The group's new facility at the Technical Research Laboratory of Japan provides facility upgrades and improved research and development capabilities.

The glass fabrication plant will include specialized machinery and equipment, such as two manufacturing lines for insulating glass units, glass cutting tables, scissor lifts, manipulators and benders. The facility will feature 56,510 square feet of production space alongside 10,763 square feet of office, social and warehousing space.

The Itami laboratory was established in 1968 and has contributed to the development and quality improvement of new products and pro-



NSG is upgrading its facilities to improve efficiency in research and development, and to meet market needs quickly.

cesses for glass technology, thin film technology and analysis and simulation technology.

By the end of March 2023, NSG plans to improve research and development efficiency by making existing facilities earthquake-resistant and consolidating various testing facilities scattered throughout the site into the new building.

Grenzebach Builds New Glass Plant

Grenzebach recently broke ground on its new production facility in Iași, Romania.

The new facility will provide additional production areas for glass, building material and intralogistics sectors along with areas for future developments and service. The facility is scheduled for completion in fall 2023.



From left, DI. Paul Margarint, director general Demo Construct; Moritz Ückert, managing director Grenzebach Romania; Ralf Jäger, COO Grenzebach Group; Silviu Nica, plant manager Grenzebach Romania; and DI. Ion Baietrau, administrator Demo Construct participated in the groundbreaking of Grenzebach's new building late last year.

"We see our Romanian location as a perfect base for technological developments," says CEO Steven Althaus. "And as the ideal response to the growing demand from our core markets as a further production and development center."

The facility is located adjacent to Grenzebach's current location. The company says that the structure is part of a comprehensive reorganization concept for the Iași location. Alongside the new production hall, the existing factory building is being modernized to conform to today's efficiency and sustainability requirements.

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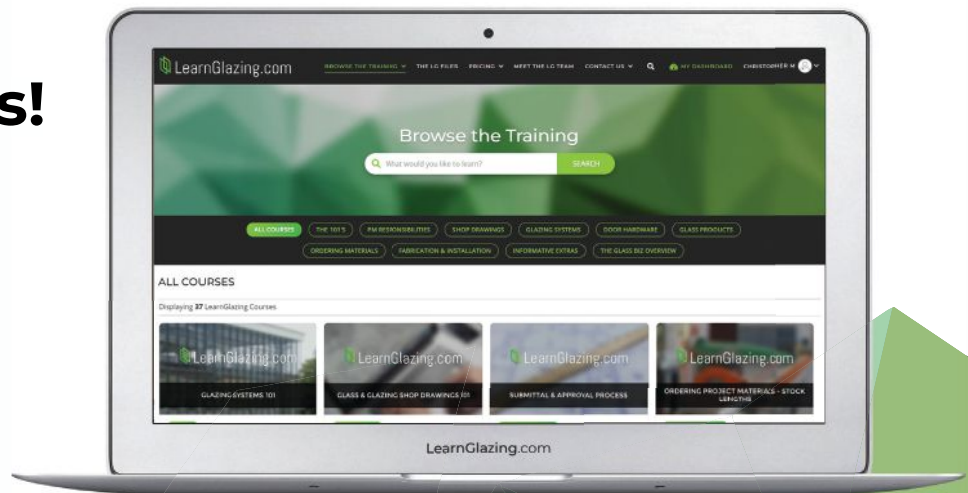
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New Year, Same Problems for Contract Glazing Companies

“It’s tough to get younger people into the trades despite the great benefits that come with it and the skills that you learn.”

—Thomas Cornellier,
CEO, TSI Corporations



Only 15% of companies say that it will be easier to hire workers in 2023, compared to 58% that say it will be harder to hire.

Workforce shortages remain a problem throughout the contract glazing industry. Debbie Baker, Binswanger’s director of human resources, thinks all industries will face significant challenges finding talent in 2023. The key will be implementing solutions to keep current employees engaged and moti-

vated. This includes pay raises and bonuses.

Workforce shortages have impacted the glazing industry for years. It’s been tough to get people in the door, says Thomas Cornellier, CEO of TSI Corporations, a designer, engineer and installer of building envelope glass systems, ornamental metals and aluminum

Giroux Glass Recognized by ICIC

The Initiative for a Competitive Inner City (ICIC) named Giroux Glass one of the 100 Fastest-Growing Inner City Businesses in the U.S. The ICIC promotes economic diversity in under-resourced communities through programs and research to create jobs, income and wealth for residents.

The non-profit organization each year recognizes and spotlights 100 of the fastest-growing businesses in under-resourced communities across the country. The 2022 winners were evaluated and ranked based on overall revenue growth during the four years from 2017 to 2021.

Los Angeles-based Giroux Glass ranked No. 90 out of 100 on ICIC’s list. It has been featured on the list for several consecutive years. Giroux Glass is now identified as a “Hall of Fame” business for making the list more than five times.

ICIC’s 2022 Impact Report shows that the number of Black, Indigenous, People of Color (BIPOC)-owned businesses supported by ICIC in 2022 increased by 4% over last year while the number of woman-owned businesses rose by 6%. Of the nearly 3,000 businesses served, 71% are now BIPOC-owned, while 65% are woman-owned, representing more than 800 cities across 55 U.S. states, territories and Canadian provinces.

metal panels in Upper Marlboro, Md.

"It's difficult to hire for the trades," says Cornellier. "It's tough to get younger people into the trades despite the great benefits that come with it and the skills that you learn."

To mitigate that problem, Cornellier says that pre-fabrication has become more important. Pre-fabricating components mean fewer workers are needed in the field. For instance, Cornellier says that rather than managing multiple trades and "80 different people on-site, you're hanging these panels with ten guys," thanks to most of the work being done offsite.

In addition to doing less with more people, companies are turning to current employees to help lure workers.

Nataline Lomedico, CEO and president of Giroux Glass, says her company offers a generous employee referral program.

"We do this to fill key positions, and it saves us time and drawn-out vetting and background processes as well as recruitment fees," says Lomedico. "Our employee-owned company culture holds high regard to our values of respect and unity, and we've discovered team approach is always best."

To combat the shortage of workers, Binswanger plans to offer even more competitive pay and benefits in 2023, says Brady Nails, director of operations. Along with pay increases, companies are investing in technology to compensate for the lack of workers.

According to the Associated General Contractors of America (AGC) 2023 hiring and outlook survey, nearly 72% of companies reported increased base pay rates in 2022. This was more prominent in the South, where 76% of firms increased base pay rates in 2022 more than in 2021, compared to 73% of firms in the West, 72% in the Midwest and 65% in the Northeast.

Companies add that they expect difficulties in hiring to persist in 2023. Only 15% of companies say that it will be easier to hire workers in 2023, compared to 58% that say it will be harder to hire workers this year. As tough as finding new workers is, 69% of companies expect their headcount to increase. **USG**

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White House Seeks to Cut Federal Building Emissions 30% by 2030

“Buildings need to be built and managed a lot more efficiently if the U.S. and the world are to solve the climate crisis...”

—Deepak Shivaprisad,
vice president of
product marketing
at View Glass

If the White House gets its way, dynamic glass will play a major role in federal buildings of the future.

According to the U.S. Green Building Council (GBC), buildings consume 70% of the electricity load in the country and half of that energy goes right out the window. The GBC predicts that 15 million new buildings will need to be constructed to meet demand, and glass will cover 80% of the building envelope.

The Federal Building Performance Standard proposal seeks to cut energy use and electrify equipment and appliances by 30% in buildings owned by the federal government. The government wants this done by 2030 using energy-efficiency and building-system technologies, such as dynamic glass.

“Climate change is a major societal issue, and buildings consume 40% of all energy and 70% of all electricity,” says Deepak Shivaprisad, vice president of product marketing at

View Glass. “Buildings need to be built and managed a lot more efficiently if the U.S. and the world are to solve the climate crisis and addressing the efficiency of windows is a significant part of achieving that.”

Dynamic glass has proven to help lower heating, cooling and lighting-related energy costs due to its ability to actively or passively control how much heat and sunlight a building receives. The Inflation Reduction Act provides credit for up to 30% of the costs associated with dynamic glass.

“The [tax credit] is a true game changer for the industry,” Michael Lane, vice president of sales for SageGlass, said about dynamic glass’ inclusion in the Inflation Reduction Act. “Dynamic glass has proven itself for years in larger and larger applications, but the cost has remained an obstacle to large-scale adoption. This tax credit can go a long way towards making the technology more accessible.”

Glass Companies Help Shatter Recycling Record

The Imagination Station in Toledo and a number of industry partners, including NSG Pilkington, set out in November 2022 to break the Guinness world record for the most glass bottles collected for recycling in a single hour. The group ultimately shattered the 2019 record, with a portion of those bottles set to be turned into sand for industry use.

The one-hour effort saw more than 20,970 pounds of glass bottles collected for recycling. The previous record, set in 2019 in Spain, was for less than 5,500 pounds. Kyle Sword of NSG Pilkington, a partner in the endeavor, says numerous elected officials were in attendance as were a dozen different companies and volunteers from schools.

Sword adds that the collection is a great example of collaboration.

“Toledo is the glass city, and yet we don’t collaborate and work with each other,” he says. “So, this has been a nice opportunity for us to get together and work with other glass companies.”

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NSG Pilkington was one of the partners in Imagination Station’s attempt to break the Guinness world record for the most glass bottles collected for recycling.

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Heat Stress Injuries Bring Problems, and Even Deaths, in Glass Manufacturing

Effects of Heat Stress

As many as **2,000 workers** each year lose their lives to excessive heat in the workplace.

Preventable heat-related illness, injury and fatalities cost the U.S. economy **\$100 billion** each year.

170,000 workers are injured each year in heat stress-related accidents at work.

The lowest-paid **20% of workers** suffer five times as many heat-related injuries as the highest-paid 20%.

Source: Juley Fulcher, Public Citizen's National Heat Stress Campaign coordinator.

Glass manufacturing and fabrication are heat-intensive operations and often occur in an un-air-conditioned environment.

Some companies use fans and open doors to alleviate the heat. Magid Glove & Safety, a PPE manufacturer and distributor, offers cooling gear such as towels, face coverings and skullcaps that can also be helpful in these situations.

Not every company takes these same measures, however. A report published by the non-profit Public Citizen found that the failure of employers to mitigate the effects of heat stress on workers leads to “preventable heat-related illness, injury and fatalities and costs the U.S. economy \$100 billion each year.”

According to Juley Fulcher, Public Citizen's National Heat Stress Campaign coordinator and author of the report, as many as 2,000 workers each year lose their lives to excessive heat in the workplace. An additional 170,000 workers are injured in heat stress-related accidents at work.

To prevent heat-related incidents in the workplace, California Rep. Judy Chu introduced the Asunción Valdivia Heat Illness and

Fatality Prevention Act (H.R. 2193) in 2021. The legislation would require the Occupational Safety and Health Administration (OSHA) to establish an enforceable federal standard to protect workers. It was named after a worker who died from heat stroke after working 10 hours straight in 105°F temperatures. It has yet to be passed.

OSHA is now developing a new heat standard to target indoor workers without climate-controlled environments. The agency typically pursues charges against employers for heat-related injuries and illnesses among workers, primarily in outdoor environments. However, it has done so under the General Duty clause rather than any heat-related standard.

“Every day, workers around the country, whether on a farm or in a warehouse, work in 100°F temperatures or more just to feed their own families and the country,” Chu said when she introduced the bill. “But that exposure to high heat puts workers at risk of heat stroke or heat exhaustion. Even in just a single eight to ten-hour shift, a worker can fall into a coma and die.”

Lurking behind the physical toll of heat exposure is the financial hardship. In a report for the Washington Center for Equitable Growth titled *Workplace Safety, and Labor Market Inequality*, the authors found that the lowest-paid 20% of workers suffer five times as many heat-related injuries as the highest-paid 20%.

These workers are ill-equipped to miss work. More than a third of low-wage workers cannot cover one month of living expenses, including necessities such as food, should they lose their income.

“The burden of occupational heat stress on the economy is tremendous and rapidly growing,” writes Fulcher. “Failing to mitigate the hazard for workers has great financial consequences for employers. And the price paid by workers is incalculable and unacceptable, not only in dollars but more importantly in the loss of health, safety and life.”

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For those working in heat-intensive facilities, such as glass manufacturing, the physical and mental capacity of workers to function drops as heat and humidity increase.

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A Look at Some New Developments in Bird-Friendly Glazing

As many as one billion birds die each year from building collisions. So says the National Audubon Society (NAS), an American non-profit environmental organization dedicated to conserving birds and their habitats. NAS says collision-based fatalities account for 2 to 9% of all birds in North America in any given year, making building strikes “second only to feral and free-roaming cats as a source of human-caused avian mortality



Saflex FlySafe 3D from Eastman includes three-dimensional, reflective sequins between glass lites to deter birds.

in the United States.” Daytime crashes occur when birds mistake the reflection of an open sky or nearby vegetation for the real thing. These collisions occur because birds can’t see the glass. Instead, they see what’s reflected in the glass. As a result, glazing products designed to mitigate these occurrences have made their way to the market.

Bird-friendly glass itself is well-known. These products are specially designed to make the glass visible to birds while still being transparent for humans. Several other products have entered the market offering additional ways to create a bird-friendly façade.

Laminated Glass Interlayers

Recognizing the risks that large glazed structures can present to both local and migrating birds, Kuraray recently introduced Trosifol® BirdSecure and SentryGlas® BirdSecure. These bird-friendly interlayers incorporate a dot pattern on Trosifol® UltraClear and SentryGlas®, respectively.

This technology involves printing directly onto the interlayer rather than the glass.

The new offering has been fully tested to American Bird Conservancy standards and can be used on its own or with solar-control coatings.

In partnership with SEEN AG, Eastman Chemical also entered the bird-friendly market with its new polyvinyl butyral interlayer, Saflex FlySafe 3D. The new interlayer features three-dimensional, reflective sequins between two layers of glass. The sequins catch the light at different angles, subtly twinkling to deter birds from the glass. According to the company, the discreet sequin pattern covers less than 1% of the glass area.

Collision Laboratories in Hohenau-Ringelsdorf, Austria, tested and rated the 3D-reflective technology used in Saflex FlySafe 3D.

Coatings

While traditional ceramic frits can make the glass more visible to birds, their primary purpose is usually privacy or solar control. Frits are typically applied to interior glass surfaces. Research has shown, however, that the most effective bird-friendly solutions typically incorporate some marking on the exterior surface (first surface). Glass Coatings and Concepts (GCC) introduced the EX Series Surface One ceramic enamel, an engineered frit for first surface application. The frit is engineered to withstand external elements better and is more durable compared to standard ceramic frit coatings. The Surface One product line is designed to be screen printed and creates a bird-friendly glass when applied in approved patterns.



Hegla has developed equipment that can now print bird-friendly patterns onto glass in existing buildings.

Existing Building Solutions

Historically, most bird-friendly products are used in new construction applications. However, some products have been developed for the retrofit market.

HEGLA boraident from Halle in Germany offers laser printing equipment to prevent bird strikes. Called LaserBird, the system can print subtle patterns, such as tiny dots or geometric elements, almost invisible to humans.

Until recently, the equipment was used to apply the patterns to the glass before installation. A new option now prints the dot patterns onto an existing building. The equipment is attached to a crane and moves across the façade, laser printing the pattern. The American Bird Conservancy has tested the printed glass and approved it for use in the American market.

Window film is also increasingly relevant. For biologist Dominique Waddoup, founder and CEO of Austria's BirdShades, window film can provide a solution.

"Our mission is to save birds; to make the sky a safe place for birds to fly," Waddoup says. "Dying from window collisions is a needless death."

Together with co-founder and material science expert Christoph Cerny, Waddoup is working to decrease the number of bird collisions that occur annually. She witnessed the disturbing trend firsthand when studying animal behavior and biology at The University

of Graz in Austria.

"At my university, there was a glass corridor with lots of bird-window collisions," Waddoup says. "I wanted to find a solution because there were so many birds [crashing] within two months. I went to the university to take action, but they wouldn't accept any of the visible solutions because it was a very architectural, fancy glass corridor."

Waddoup built a BirdShades prototype in 2016, later founding the company in 2019. Waddoup and Cerny developed an adhesive film that's applied to glass. It's advertised as invisible to humans, but birds can see its ultraviolet-reflective pattern.

Taking Action

Cities and other jurisdictions across the U.S. and Canada continue to push for safer glass buildings for birds. Mountain View, Calif., New York City and Toronto have mandatory guidelines calling for bird-friendly glass. In New York, for example, Local Law 15 requires all new buildings, from houses to skyscrapers, to use at least 90% bird-friendly materials in the first 75 feet above grade.

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➔ **Ellen Rogers** is the editorial director for **USGlass** magazine. Email her at erogers@glass.com and connect with her on Linked In. Assistant editor **Chris Collier** contributed to this article.



Transporting Glass: Equipment Shortages Hamper the Glass Industry

The trucking industry is vital to the glass industry. However, this important profession has failed to attract workers. The American Trucking Associations states the industry was short a record 80,000 drivers in 2021. The U.S. Transportation Department reports that more than 250,000 truck drivers leave the profession each year, often for a career change or to retire.

Pat Iaquinto is the owner, chief financial and chief operating officer of Michigan-based Midwest Glass, a commercial glass fabricator. Iaquinto says his company has experienced the shortage firsthand, especially on long-haul routes. His company needs at least “four more full-time drivers to fulfill its last bit of struggling routes.”



MyGlassTruck vice president of sales Amber Deimler, says while there is a large demand for glass-carrying vehicles, it's been hard for manufacturers to keep up with demand due to their own supply chain challenges with components to finish vehicles.

The shortage has forced Midwest Glass to adjust schedules, add stops and routes.

“Our schedules have had to be altered to fill the trucks with double the stops to ensure all deliveries are made,” says Iaquinto. “Some drivers have new routes to take on to help in cities with higher demand.”

The schedules are further scrambled when a driver takes the day off. Iaquinto says it's tough to find a replacement when a driver calls out. Midwest Glass used to have enough drivers on call to fill in before the pandemic. That's not the case anymore, says Iaquinto.

Brian Savage, supply chain manager at Minnesota-based Viracon, an architectural glass fabricator, says that while the company has not experienced widespread driver shortages, it has noticed a scarcity of drivers for specialty materials. Savage says, however, that Viracon actually receives more cold calls from companies looking for freight to haul.

“We are seeing an overall loosening in standard freight hauling, so that hasn't been as big of an issue for us,” he says.

Savage adds that Viracon has had to ensure that its forecasting, ordering and inventory processes are robust enough to allow for shipping delays.

Deregulating the Trucking Industry

The life of a truck driver has never been romanticized. Long hours, low pay and time away from home are often cited as reasons to avoid the industry. However, statistics show that the industry's decline can be pinpointed to the passage of the Motor Carrier Act of 1980, which deregulated the industry. The bill's passage cut the cost of moving goods by truck and led to a decrease in driver salaries, states *Business Insider*.

Before the bill's passage, the federal government set the price to move products. Trucking companies had to apply for the right to carry a particular good, which meant fewer companies could deliver goods. This resulted in higher pay and better treatment for drivers.

The bill ended that system. It allowed anyone to haul anything, anywhere and at any price. This forced many trucking companies to shutter, only to be replaced by an array of start-ups. According to *Business Insider*, the number of trucking companies doubled from 1980 to '90, which increased competition and decreased wages. The outlet analyzed truck driver salaries and found that their pay decreased by more than 21% since 1980. In some urban areas, they've declined by as much as half.

Iaquinto says that Midwest Glass is aware of the perception of truck driving. That's why the company is doing its best to entice workers with bonus and incentive programs along with the promise of a positive work environment.



Photos: MyGlassTruck

The way dealerships and manufacturers do business has changed; most vehicles now have to be ordered versus in the past “where you could go to look at a van on a weekend and own it by Monday,” says Deimler.

Shortage of Glass-Carrying Vehicles

Drivers aren't the only transportation necessity in short supply, glass-carrying vehicles are as well.

Amber Deimler, vice president of sales at New Jersey-based MyGlassTruck, a manufacturer of glass transport racks, truck bodies and trailers, says obtaining a glass-carrying vehicle has been a challenge for the glass industry.

“There is a large demand for glass-carrying vehicles; however, the manufacturers aren't able to keep up with demand based on their own supply chain challenges with components to finish vehicles,” says Deimler. “So, while our industry is growing, and customers need more vehicles, the availability has been far less than what is needed to keep up.”

John Weise, president of Wisconsin-based F. Barkow, a manufacturer of glass carrier systems, says that the shortages are due to the same old issue: supply chain issues, specifically computer chips.

Iaquinto says Midwest Glass has adapted to offset the shortage of glass-carrying vehicles. The company typically hunts for bargains and purchases used trucks, but the prices of used vehicles have nearly doubled in recent years — automotive analysts from J.P. Morgan report that used vehicle prices jumped 43% from February 2020 to September 2022. Midwest Glass has instead signed leases on two new Penske trucks, says Iaquinto. Even then, the delivery date is over a year out.

That long of a wait is not uncommon, says Weise. He states that some of his customers have waited up to two years for new trucks only to have the manufacturer cancel the order.

According to Deimler, these delays typical-

ly involve the truck chassis, vans and pickup trucks. Larger truck chassis take longer because of the complexity and the difficulty of locating components. The availability of vans and pickup trucks has improved, but the biggest obstacle to obtaining them is a lack of pre-planning.

“Lots used to have tons of inventory on the ground, and we see a fundamental shift in how dealerships and manufacturers do business,” says Deimler. “They are having most vehicles be ordered versus in the past where you could go to look at a van on a weekend and own it by Monday. That's not the climate we are seeing.”

Steve Lawler, president of Kansas-based Unruh Fab Inc., a provider of glass transporting equipment, says it's been a battle dealing with the shortages. He adds that he has half a dozen bodies built that are waiting on trucks.

“They'll show up someday,” he says. “It's just that nobody can tell you when that day is. That's what's frustrating.”

The shortage of certain glass-carrying vehicles has forced glass companies to keep their current fleet longer than intended. Weise says that because of this, vehicles need more maintenance. He adds that everyone knows it isn't a question of “if” a hardworking chassis will have problems but “when.”

“Some customers are really struggling because their intention was to refresh the fleet and they have not been able to do that,” he says. **USG**



➔ **Joshua Huff** is the assistant editor of **USGlass** magazine. Email him at jhuff@glass.com and connect with him on LinkedIn.

Spotlight on Glass and Metal Railings

Glass and metal railings feature hundreds of elements that help create a polished product. These elements can bring a lot of life to a project while meeting safety and performance features. Here's a look at a few stand-out projects.

The Aurora Sculpture Minneapolis-St. Paul Airport

The Aurora, a 29-foot-high glass and metal sculpture designed by Jen Lewin, sits suspended through an oval opening between two floors at Terminal 1 in Minneapolis-Saint Paul International Airport. To protect both onlookers and the sculpture itself, Sightline Commercial Solutions (formerly Trex Commercial) fabricated a custom-designed elliptical perimeter railing system featuring 90 linear feet of vertically positioned glass fin railing panels and a stainless-steel handrail around the second-story overlook. Using 3D laser scanning and sheet metal laser cutting, Sightline Commercial, working alongside Alliance and Morcon Construction, verified precise dimensions and ensured secure attachment of the clear glass fins and knife plates.

The Aurora features an aerial wave of more than 20,000 aluminum rings and 2,000 hand-blown glass bulbs fitted with color-changing LEDs. The sculpture uses current live weather data to present changing light displays, reflecting Minnesota's seasonal shifts. The lighting shifts from blues and whites in winter to greens and yellows in spring and oranges and reds in fall. Beneath the installation is an interactive cluster of reflective glass platforms that take the shape of local public lakes.

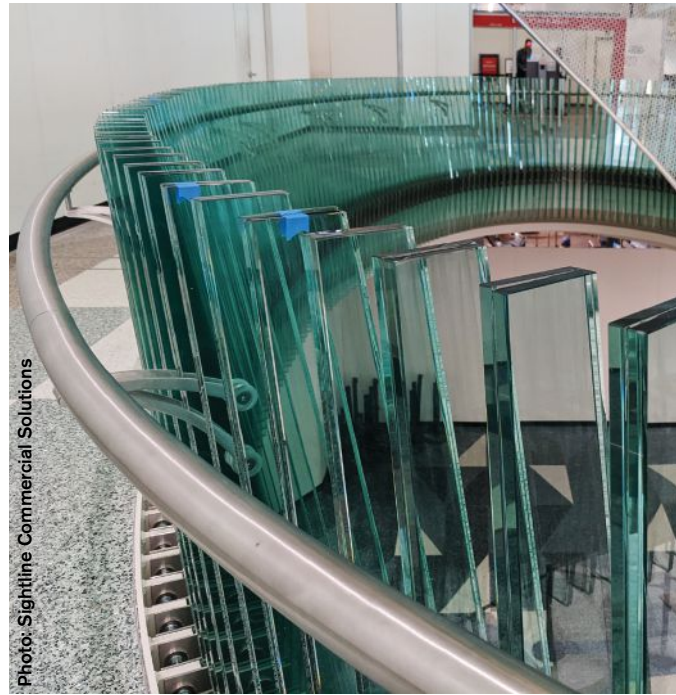


Photo: Sightline Commercial Solutions

The White House Miami



Located in Miami, the White House project features a specially designed and crafted circular staircase that serves as the crowning jewel of the privately-owned waterfront property. Aside from the staircase stringers and handrail, glass was the predominant material used for this project. This includes multi-laminated stair treads, providing an impressive display of the durability and versatility of glass, as well as light to fill the home.

The staircase was a combined effort of installers at Bella Stairs LLC and interior designer Nathalie Ohayon from Renovaid Interiors, who designed the staircase layout. Glasshape provided digital field measuring services and 3D laser scanning of the staircase during construction. The company then used the data to 3D model the structure and design the TemperShield ⁹/₁₆-inch low iron, laminated bent glass.

Photo: Silvia Pangaro



Choctaw Casino

Durant, Okla.

The Choctaw Casino in Durant, Okla., is the eighth addition to the tribe's casino operations. The project was a collaborative effort among Viva Railings, Manhattan Construction, JCJ Architecture and contract glazier Tepco Glass. The casino features nearly 4,257 feet of the iRAIL LED lighting system, providing a futuristic luminescence to the curving lines of the casino. The iRAIL LED system, a modified version of the iRAIL line, was slotted to accommodate a high-performance LED outfit while resulting in minimal emissions.

The outdoor balconies of the casino are outfitted with a Cube Outdoor Balcony Railing System, continuing the contemporary flow of the rest of the casino. Additionally, the balconies feature custom glass dividers created through ceramic frit glass and clear glass amalgam, resulting in a unique pattern that is distinctive yet subtle.

Pendry West Hollywood

Hollywood

Located along the famed Sunset Strip in West Hollywood are Pendry West Hollywood and the Pendry Residences by Montage Hotels & Resorts. The 300,000-square-foot development encompasses an entire city block. The Pendry West Hollywood's hilltop perch creates expansive views of one of the area's most famous districts.

With the project's impressive location, taking advantage of surrounding views was a significant component of the project's design. C.R. Laurence (CRL) collaborated with EYRC Architects and contract glazier Kovach to bring this vision to life. EYRC Architects worked to maximize exposure to the iconic Los Angeles views in all upper-level exterior spaces. To minimize visual barriers and keep as much of the view open as possible, architects specified the CRL GRS glass railing system. The system was specified with cap rails and laminated glass for more safety and structural performance. The railing system serves as a safety barrier that improves the experience while maintaining unbroken sightlines, allowing the surroundings to be a focal point.



Lincoln Center's David Geffen Hall

New York



The new Lincoln Center David Geffen Hall was designed by Diamond Schmitt and Tod Williams/Billie Tsien Architects. The center was built with a focus on improved and impressive acoustics within the main theater, providing a world-class experience for the New York Philharmonic.

Pulp Studio created more than 8,700 square feet of flat and bent laminated glass railings and guardrails, specifically chemically strengthened for the job's tight 8-inch radii. Lafayette Metal & Glass Company was the contract glazier. For post-polish on the glass edgework, Pulp Studio used its Precision Edge technology, creating a refined look. A guardrail featuring specially etched low-iron laminated glass, finished with a digital design for privacy and intimacy, was also installed.

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Design Service Demand Tumbles

Demand for design services decreased for the second consecutive month in November following nearly two years of continuous growth, states the American Institute of Architects (AIA). The association reports that November's Architecture Billings Index (ABI) score was 46.6 (any score below 50 indicates a decline in firm billings).

October's ABI reading was the first decline in billings since January 2021. Inquiries into new projects slowed but remained above the 50 threshold with a score of 52.0.

New design contracts, however, remained negative, with a score of 46.9.

Regionally, all but the South (50.5) posted scores in the negative. The Midwest scored 47.6; the West scored 45.8, and the Northeast scored 42.4. Each region's score decreased from October. Multi-family residential and commercial/industrial projects reported a score of 46.1 and 44.2, respectively. The institutional sector dropped below the 50 mark with a score of 47.7.

Hotel, Data Center Projects Contribute to Increase

The Dodge Momentum Index (DMI) increased by 3.8% in November to 207.2 from October's score of 199.6, reports the Dodge Construction Network (DCN). The DMI's commercial component rose by 4.3% and the institutional component increased by 2.7%. The DMI is a monthly measure of the initial report for nonresidential building projects in planning. The measure is shown to lead construction spending for nonresidential buildings by a full year.

The DCN states that commercial planning rose substantially thanks to an increase in hotel and data center projects. Education and healthcare projects slowed in November, however. The commercial component increased by 13% and the institutional component rose by 2.9%. Year-to-year, the DMI reading is 28% higher, the commercial component 29% higher and institutional planning 25% higher.

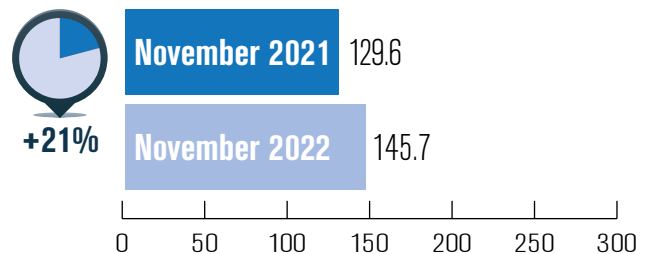
Dodge Momentum Index [Year 2000=100]



Commercial Building

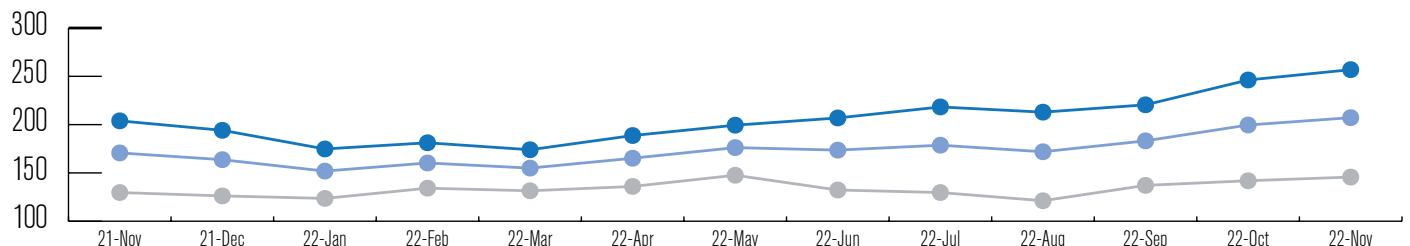


Institutional Building

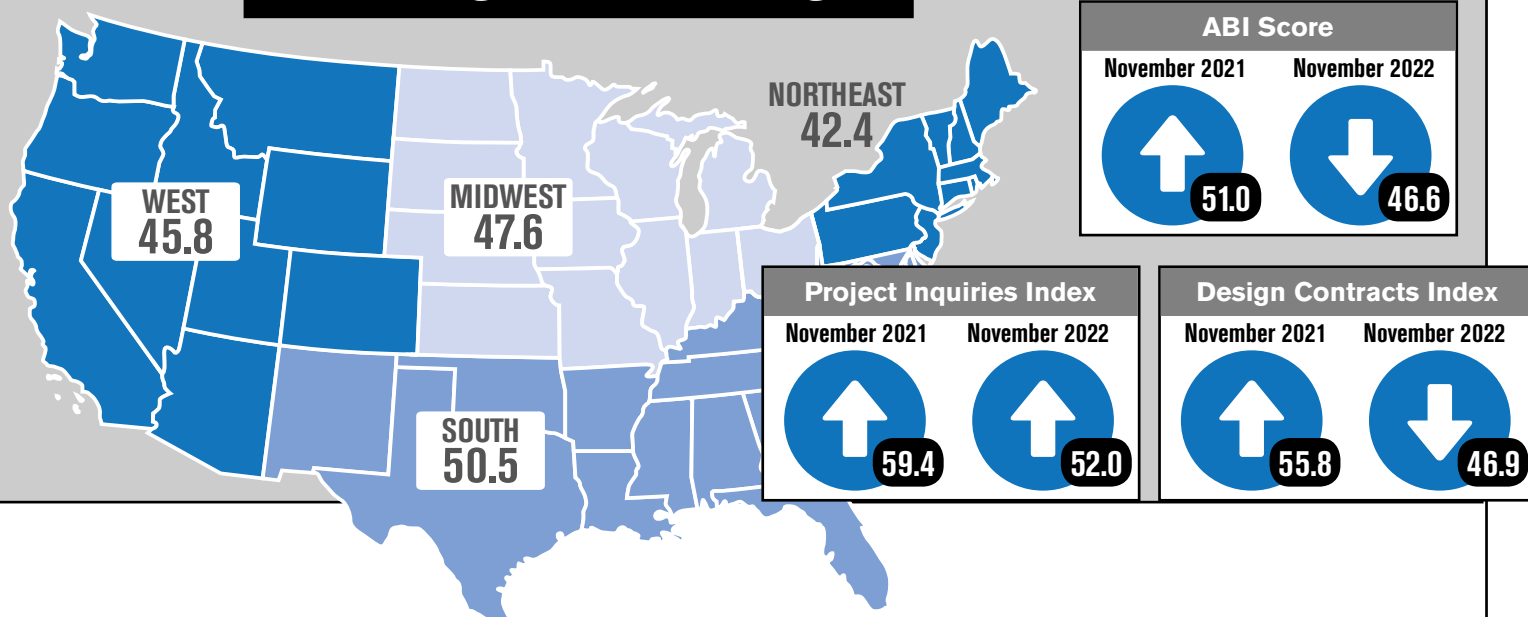


Dodge Momentum Index By the Month

● Commercial Building ● Dodge Momentum Index ● Institutional Building



ABI Regional Averages



Total Construction Starts Decline in November

Volatility in the construction industry caused total construction starts to decline 18% in November to a seasonally adjusted annual rate of \$926.3 billion, states the Dodge Construction Network (DCN). The organization reports that nonresidential building starts fell 25% and residential starts dropped 5%.

Despite the decline, total construction starts were 14% higher in the first 11 months of 2022 compared to the same period in 2021. Year-to-year nonresidential building starts rose 36% and residential starts were down 1%.

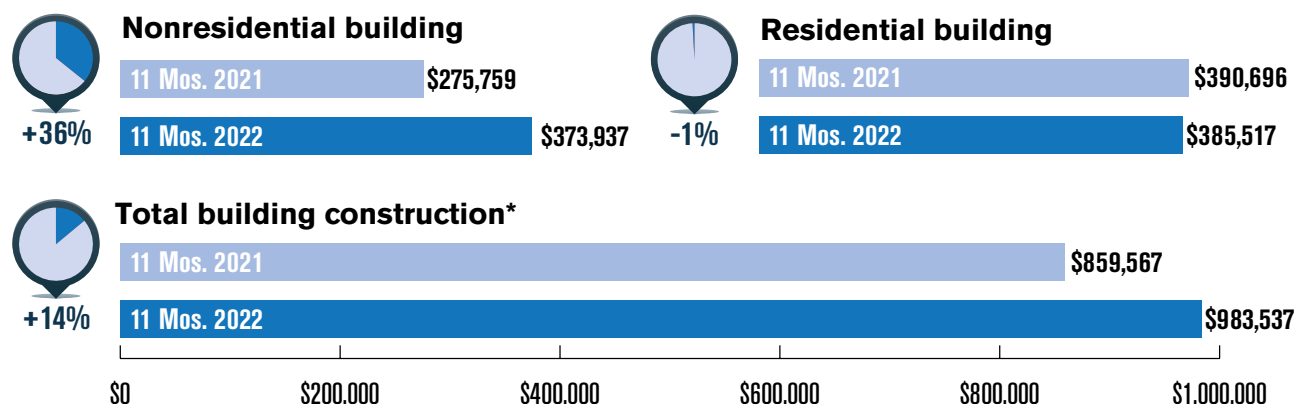
The DCN reports that nonresidential building starts fell 25% in November to a seasonally adjusted annual rate of \$361.6 billion. Commercial starts fell 33%, institutional starts decreased 12% and manufacturing declined 69%.

Residential building starts fell 5% in November to a seasonally adjusted annual rate of \$346.5 billion. Through the first 11 months of 2022, nonresidential building starts were 36% higher than the first 11 months of 2021. Commercial starts grew 25%, and institutional starts rose 19%.

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Year-to-Date Construction Starts

[Year 2000=100] Unadjusted totals, in millions of U.S. dollars



*The total includes nonbuilding construction.

Source: Dodge Data & Analytics

Still in De

Room for Glass Growth in Nonresidential

by Nick St. Denis

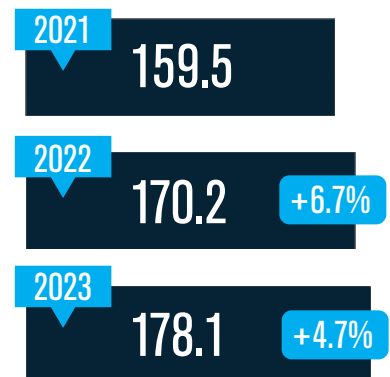
The U.S. architectural glass industry is in a healthy position heading into the New Year despite the somewhat skeptical outlook of the overall construction economy. According to Key Media & Research (KMR) data, the volume of architectural glass used in nonresidential construction will expand in 2023 for a second-straight year, albeit at a slower pace. KMR is the parent company of USGlass magazine.

In terms of project starts, some major sectors in construction are flattening or pulling back, including the previously hot residential category and industrial segments such as manufacturing and warehouse. However, the commercial and institutional areas most critical to architectural glass are looking at another year of growth, continuing an expansion that resumed following the pandemic-induced economic downturn.

KMR estimates architectural glass usage* in nonresidential construction (for projects starting in a given year) will increase by 4.7% in 2023 to 178.1 million square feet, following a 6.7% uptick the year before.

Estimated Glass Usage in U.S. **NONRESIDENTIAL** Construction Starts

(In Millions of Square Feet)



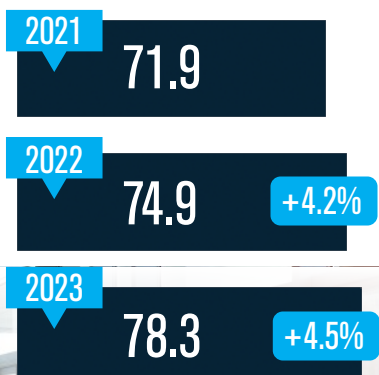
Institutional Building

Institutional building starts in 2023 will use 4.5% more glass than a year ago, following a year-over-year change of 4.2% from 2021 to 2022. The healthcare segment is the largest area of growth within institutional building, led by hospital construction. Educational facilities make up a significant share of the institutional building sector and will edge down slightly this year after seeing a strong increase in 2022. Within the remaining "Other Institutional" category the small but very glass-heavy transportation terminal subsector will see the largest uptick on a percentage basis, while sports stadiums and convention centers will also increase, though very modestly.

Subsector	2022	2023
Educational	▲	▼
Healthcare	▼	▲
Other Inst.	▼	▲

Estimated Glass Usage in U.S. Nonresidential Construction Starts – **INSTITUTIONAL**

(In Millions of Square Feet)



mand

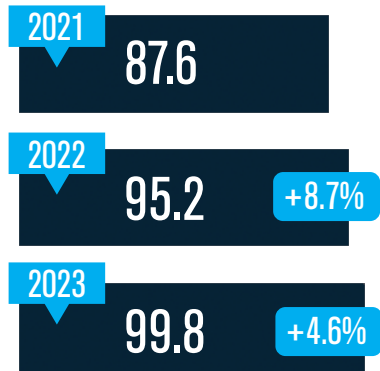
“The commercial and institutional areas most critical to architectural glass are looking at another year of growth, continuing an expansion that resumed following the pandemic-induced economic downturn.”

Commercial Building

It is anticipated that glass usage in commercial building starts will follow an 8.7% increase in 2022 with a 4.8% uptick in 2023. The two primary categories that took the biggest beating during the pandemic—lodging and retail—are now key areas that are buoying demand for architectural glass. Retail was on a consistent downturn prior to the pandemic and plateaued in 2021. It finally turned the corner in 2022 and is expected to expand again in 2023. The lodging sector (primarily consisting of hotels) plummeted in 2021 but made a sharp turnaround this past year. The ever-important office sector has been flat for several years but is set to bump up in 2023, providing some additional support to the glass industry. Other remaining commercial segments, most of which are less important to the glass industry, will drop rather significantly in the year ahead after a strong 2022.

Subsector	2022	2023
Office	▲	▲
Lodging	▲	▲
Retail	▼	▲
Other Comm.	▲	▼

Estimated Glass Usage in U.S. Nonresidential Construction Starts – COMMERCIAL
(In Millions of Square Feet)



*The square footage of glass figures estimate the physical volume of fabricated architectural glass used in projects that start in a given year. For example, if a construction project that begins in 2023 will use 20,000 square feet of glass, that entire amount of glass will be accounted for in that year regardless of whether it is installed until 2024, or if only a portion was installed in 2023. KMR uses a variety of inputs, including construction starts data from ConstructConnect, as a basis, and applies proprietary sector-based formulas to calculate glass estimates. Discretionary adjustments are made based on KMR expertise and analysis.



➔ **Nick St. Denis** is the director of Research for Key Media & Research (KMR), parent company of **USGlass** magazine. To subscribe to his free *Glass and Glazing Quarterly Review* report, or for any other research-related inquiries, email nstdenis@glass.com. **USG**

Recognition in Glass Design



Announcing the Winners of the Fourth Annual USGlass Design Awards

From large-scale installations to unique and artistic uses of glass, the winners of the fourth annual USGlass Magazine Design Awards capture many of today's architectural trends and developments. Two design submissions for one project were the standout this year, so much so that judges chose to recognize it with the "Best Overall Use of Glass Award." Winners were also selected in the following categories:

- Art Glass;
- Commercial Interiors;
- Facade Retrofit/Renovation;
- High-rise construction (more than 75 feet);
- Low- to mid-rise construction (under 75 feet) and
- Structural Glass (façades).

The competition was open to all members of the architectural glazing industry, including contract glaziers, glass and metal fabricators and suppliers, architects, developers, owners and building envelope/façade consultants. The judges scored the projects based on design innovation; aesthetic achievements; and technical difficulty.

Information included here was provided by the companies in their project submissions and has been edited for editorial and style purposes.

Submission information for the 2023 awards will be available this spring. For an entry form contact Ellen Rogers at erogers@glass.com.

Best Overall Glass Use

One Vanderbilt and The Summit

New York, N.Y.

Square Footage: 753, 500 (tower);
27, 980 (The Summit)

When it comes to stand-out use of glass, the Summit at One Vanderbilt is hard to top. Stretching across the floors of the tower's observation level, the Summit has a fully mirrored interior space that is more than 1,000 feet high. The project, completed in October 2021, is a multi-sensory experience that immerses visitors in the New York skyline. The observatory's interior design allows visitors to get a sense of their place in the city through the use of art, sound and lighting.

Glass Flooring Systems Inc. engineered and fabricated the glass used in the floor of the Sum-



Roman Schieber



Julia Schimmelpenningh



Adam Sokol



Brad Thurman



Christoph Timm



Marty Trainor



Josh Wignall



Greg Wright

Thank You to our Judges

USGlass magazine would like to thank and recognize its esteemed panel of judges: **Roman Schieber**, associate director with knippers helbig in Stuttgart, Germany; **Julia Schimmelpenningh**, architectural industry technical manager for the Advanced Material Interlayers business of Eastman Chemical Company; **Adam Sokol**, principal architect and founder of asap/Adam sokol architecture practice; **Brad Thurman**, vice president of sales and marketing for the Fabrication Division of General Glass International (GGI); **Christoph Timm** head of SOM's Enclosure Group in the firm's New York office; **Marty Trainor**, co-founder and senior vice president of pre-construction for Ventana Design-Build Systems LLC; **Josh Wignall**, director of commercial marketing at Quaker Windows & Doors; and **Greg Wright**, vice president of the Nevada operations for Giroux Glass Inc.



Photo: Kuraray America Inc.

The Summit, located in the One Vanderbilt tower in New York, is a multi-sensory glass experience that immerses visitors into the city's skyline.

mit observation deck. The company provided about 10,000 square feet of mirrored structural glass flooring. The laminated glass was fabricated with Kuraray's SentryGlas interlayer. Crista-curva fabricated the glass used in the interior portions of the project and Sedak fabricated the glass for the exterior railings. AGC Interpane supplied the glazing, which incorporates Super Spacer T-Spacer SG from Quanex for the four floors of the observation area.

The glass floor is part of the permanent art installation at Summit, designed by Kenzo Digital, a studio led by an artist of the same name. The glass floor was installed by Mistral Architectural Metal + Glass Inc. The interior design is the work of Snøhetta.

Kohn Pedersen Fox Associates is the architectural firm behind the One Vanderbilt project. Completed in March 2021, the 1,400+ foot skyscraper redefines the Manhattan skyline. Owned and developed by SL Green, the building features four interlocking and tapering planes that spiral toward the sky. With a size of 1.7 million square feet, the building is LEED Platinum and includes 660 corner panels that were all different from each other since the tower tapers from the bottom to the top, re-

sulting in several unique panel modulations. This façade is characterized by two main panels. The vision panels, which are used at the typical office space unit, are equipped with tall glass that reaches almost 22 feet on the executive floors, and a ventilated spandrel panel clad by terracotta tiles. In addition, a special solution was developed for the mechanical floor units, which are uniquely equipped with three IGU faces, where one is recessed from the others in order to allow for natural ventilation.

Guardian Glass supplied its SunGuard Neutral 50/32 coating on low-iron glass for the building's facade, which was fabricated by Tvitec and installed by Permasteelisa.

W&W Glass Engineered Solutions was responsible for the podium installation. The project includes Viracon glass on the atrium glass walls, as well as on the podium curtainwalls and storefront; Pilkington laminated glass fins on the atrium; and Tvitec jumbo laminated glass on the tall-span lobby entrance walls.

The structure measures 1,401 feet tall, making it the tallest commercial skyscraper in Midtown Manhattan and among the top 30 tallest buildings in the world, according to the building's website.



Photo: Michael Young

The One Vanderbilt tower features tall glass spans that reach almost 22 feet on the executive floors.

Recognition in Glass Design

continued from page 39

Art Glass

Ventana De Campeones

Barranquilla, Colombia

Completion Date: October 2021

Square Footage: 15,100

Architect: Miguel Ángel Cure and Pablo Andrés Castellano

Glazing Contractor: ES Windows

Glass Supplier: Vidrio Andino/Saint Gobain; Tecnoglass Group

General Contractor: Aconstruir

Developer/Owner: Fundacie

Suppliers: Kuraray, PVB interlayer; Alutions, aluminum; Dow, sealants

Ventana De Campeones was designed by architects Miguel Ángel Cure and Pablo Andrés Castellano. The structure stands 108 feet (33-meters high), and is covered in glazed panels constructed with 1,400 square meters of laminated glass. The laminated glass was an essential part of this project due to the local environment and a need for the structure to withstand strong winds. Trosifol PVB was used to provide safety, security and durability.

The architects designed the monument with reflective glass, which allows the structure to be perceived in different ways at different times of the day, framing the environment, city, river and clouds. The 12-mm thick laminated glass, with a reflective low-E coating was selected to reflect the lighting system that is made with 87,480 computerized RGB LED lights, which fill the monument with color at night giving a dynamic aesthetic. Fabricated by Tecnoglass, the largest panel on the project spans 9 by 6 feet.

Standing 108 feet tall, Ventana De Campeones is an art glass sculpture constructed with 1,400 square meters of laminated, reflective glass.



Commercial Interiors (podium, lobby spaces, etc.)

Moynihan Train Hall (Railings, Handrails, Entrance Doors)

New York, N.Y.

Completion Date: January 1, 2021

Square Footage: 6,000

Architect: Skidmore, Owings & Merrill (SOM)

Glazing Contractors:

Above All Storefronts;
Permasteelisa; seele

Glass Suppliers: Oldcastle
BuildingEnvelope®

General Contractor: Skanska
USA Building Inc.

Developer/Owner: Empire
State Development

Suppliers: C.R. Laurence

Glass fixtures in the Moynihan Train Hall are uniquely designed to complement the aesthetic of the space, while delivering the durability needed for high-traffic areas. The glass components function alongside the iconic skylight, with glazing fabricated by BGT Bishoff Glasstechnik and installed by seele. The entrance doors support handle hardware on thin insulating glass, creating a “floating on air” appearance. The 1-inch-thick, insulating glass helps create an elegant appearance while exceeding building codes for safety and energy conservation.

Glass railings, handrails and cap rails complement the overall aesthetic of the design. They go beyond unifying the creative vision, lending themselves to the structure’s theme of openness. The selection of glass for these elements accentuates the natural light that comes from the iconic skylight, blending the modern, sleek design with the classic influence of the historic structure. Beyond the railings, the glass doors serve as a gateway for the

hundreds of thousands of daily passengers. The balanced doors on the exterior cultivate a feeling of unity in the design, and a welcome openness for the space to serve as a hub for gathering pedestrians. The entrance doors in the interior accentuate the airy ambiance of the space and optimize the use of natural light while maintaining safety standards for public spaces and crowds.

The interior features products supplied by C.R. Laurence including the GRS Taper-Loc Glass Railings (dry glazed); HRS handrails and cap rails; Blumcraft Entice Series Doors with insulating glass; and Blumcraft Balanced Doors with laminated glass.



Glass fixtures, including railings, handrails and interior doors located throughout Moynihan Train Hall, help enhance the station’s aesthetics and overall sense of openness.

Photo: © Lucas Blair Simpson | SOM; Photo courtesy of CRL

Recognition in Glass Design

continued from page 41



Formerly known as the A.J. Palumbo Center (left), the facility underwent a major renovation incorporating large spans of glass to bring more light into the building.

Façade Renovation/ Retrofit

UPMC Cooper Fieldhouse at Duquesne University

Pittsburgh, Pa.

Completion Date: February 2, 2021

Square Footage: 14,733

Architect: DRS Architects Inc.

Glazing Contractors: Gurtner & Sons
Glazing

Glass Suppliers: Vitro Architectural Glass
(primary); Trulite Glass & Aluminum
Solutions - Cheswick (fabricator)

General Contractor: PJ Dick

Developer/Owner: Duquesne University

UPMC Cooper Fieldhouse officially reopened February 2, 2021, after a 22-month dynamic renovation of an historic athletic facility at Duquesne University in Pittsburgh. Developers selected glass to create a stunning curved façade that brings new life and more light to the facility. Architects designed a bright, inviting, street-facing façade that provides optimal daylighting for the inside of the facility and also aligns aesthetically with Duquesne University's recent campus upgrades.

The project features Solarban® R67 (formerly Solarban® 67) Starphire® glass by Vitro Architectural Glass. With a solar heat gain coefficient of 0.30 in a standard 1-inch insulating glass unit, the glass offers solar control performance that helps improve the building's overall energy efficiency. The glass also has visible light transmittance of 57%, bringing abundant daylight to the building's interior.

High-Rise Construction (75 feet or more)

105 West First Street

Boston, Mass.

Completion Date: October 29, 2021

Square Footage: 80,000

Architect: Payette

Contract Glazier: Massey's Plate Glass

Glazing Consultant: Front Inc.

General Contractor: Consigli Construction

Glass Suppliers: Tianjin NorthGlass
(oversized glass); Interpane (unitized glass)

Curtainwall Fabricator: Fabbrica

Developer/Owner: Tishman Speyer

Suppliers: Gastaldello Sistemi (extrusions)

105 West First Street features extruded terracotta cut on angles to create a wavy, intersecting look of the façade moving in and out. The glass and terracotta were fully unitized. The podium level includes oversized glass ranging from 7 feet wide to 27 feet tall. The oversized glass is more than 2 ½ inches thick. Five lites of glass create a clear opening of 27 feet with no intermediate supports. The unitized portion above includes alternating panels of glass and terracotta.

Photos: Massey's Plate Glass



105 West First Street in Massachusetts combines glass and terracotta to create a wavy, interlocking façade.

Recognition in Glass Design

continued from page 43

Low- to Mid-Rise Construction (less than 75 feet)

Louis Vuitton's Flagship Store, Tokyo

Completion Date: March 25, 2021

Square Footage: 20,000

Architect: Jun Aoki and Associates; Peter Marino
(interior)

Glazing/Metal Contractor: ShenNanYi

Developer/Owner: Louis Vuitton Group

Glass Supplier: XinBao Glass

Curtainwall Supplier: ShenNanYi

Other Suppliers: Kuraray, PVB

In designing the Tokyo Louis Vuitton flagship store, Japanese architect Jun Aoki was inspired by Claude Monet's painting of La Grenouillère, a resort on the Seine near Paris. The reflections in the water as painted by Monet appear to transfer seamlessly from the canvas onto the store's façade. The water wave shape effect was achieved by using an inter-layer and a dichroic film with blue, orange and green backgrounds. The glass make-up includes 10-mm low iron glass with 3.04-mm clear SentryGlas and 10-mm low iron glass, as well as a colored coating on surface #2.

Applying extremely thin metal oxide coatings on a variety of base glass helped create the different iridescent colorful effects. The coating is also resistant to chemical assault. It is scratch-resistant and coated in layers that are each less than 100 nanometers thick.

Photo: Kuraray America Inc.

The Louis Vuitton flagship store in Tokyo has a dichroic, laminated glass façade which creates an aesthetic of rippling water.



Structural Glass - Facades

Concho Tower III

Midland, Texas

Completion Date: February 1, 2021

Square Footage: 3,600

Architect: RWA Architects

Glazing Systems: Sentech

Glazing Contractor: Duke Glass

General Contractor: W.S. Bellows

Construction Corporation

Glass Supplier: Tianjin NorthGlass

The entrance façade features three structural glass walls using Sentech's structural glass system. The overall structure spans 140 feet in length by 26 feet in height. Each one of the slim glass panels span 26 feet from floor-

to-ceiling, by 2-6 inches in width. In effect, the total square footage of structural glass measures just over 3,600 square feet. Additionally, the elongated design of the structural glass walls utilized specialized aluminum fins that sit on the interior of the façade. These aluminum fins include 10-⁹/₁₆-inch deep custom aluminum extrusions, with two coats of Kynar finish. The glass panels are composed of ¹³/₁₆ inch thick, low-iron, tempered laminated glass with a ⁵/₈ inch PVB gray vertical frit interlayer. According to Sentech, the use of glass panels manufactured at 26-feet tall and less than 3-feet wide is unique, as there are only a handful of projects that use glass of this ratio in the country.

The columns add shading to the building at different times during the day and the slender glass gives the façade a sense of openness.

USG

Each of the slim glass panels used in the Concho Tower III project spans 26 feet tall from floor to ceiling. Total square footage of structural glass measures just more than 3,600 square feet.

Maximizing Space

Moveable Glass Walls Offer Flexibility and Aesthetic Appeal

by Joshua Huff


Moveable glass walls expand living spaces and enhance the workspace. Thanks to their versatility, property owners can enjoy an abundance of light and enhanced flexibility while preserving privacy and incorporating stylish design elements.

“Moveable walls have been sought-after architectural systems for some time,” says Laura Aguiniga, director of the Architectural Products Group at Los Angeles-based C.R. Laurence (CRL). “Their unique ability to transform floorplans and create seamless transitions from interior to exterior spaces remains an attractive feature for residential and commercial applications. Homeowners, business owners, designers and architects value the versatility and flexibility

they provide.”

Moveable glass walls help create a dynamic space that embraces flexibility thanks to their ability to be rearranged. In schools, for instance, glass walls can turn a static classroom into an airy and engaging environment that can be adapted to fit the teacher’s needs.

The walls can be used in various locations, including offices or residential towers, to take advantage of the view. In restaurants, they are often used to connect indoor and outdoor dining spaces. Other applications include hotels, museums and stadiums—any place where the desire is to define spaces when closed and create expansive floorplans when opened.



Moveable glass walls can be used in a variety of locations to take advantage of great views. C.R. Laurence’s Palisades S90 bi-folding door can swing in or out to maximize space.



What Can Moveable Glass Walls Offer?

Versatility: Movable walls can be opened to take advantage of great weather or closed when it's cold or windy.

Views: When opened, movable walls place striking views center stage.

Increased light: Because moveable walls often feature large glass spans, they allow ample daylight to create vibrant interiors.

Ease of use: Despite their large scale, movable walls often only require one person to operate.

Sound absorption: Several moveable wall categories have excellent sound attenuation properties to keep areas such as conference rooms quiet.

Photo: Modernfold



Photo: CRL

Clear, uninterrupted sightlines leave spaces feeling modern and innovative.

Advantages of Moveable Glass Walls

Bryan Welch, managing director of Indiana-based Modernfold, a manufacturer of custom wall solutions, says that one unique benefit of glass wall systems is security, especially in schools.

"Unfortunately, having 'line of sight' safety options is now necessary for schools," he says.

Jay Brotman is familiar with the need for school safety. The managing partner at Svigals + Partners, in New Haven, Conn., helped design the new Sandy Hook Elementary School. Brotman says his company gained a deeper understanding of security principles after that tragedy. It was apparent that the more open the school, the safer the environment is.

"Using natural observation and a significant amount of exterior glass, the building would provide the children access to natural daylight and views of nature, which have been shown to improve learning outcomes while also providing a higher level of safety," says Brotman.

Matt Thomas agrees. The marketing manager at California-based Nanawall, a developer of moveable glass walls, adds that along with the advantages of sightlines, certain types of moveable glass walls, such as folding doors, can be designed with locking systems. These locking systems set steel locks into the seal and head jam on each panel set. You would have to try and break the glass to get in, which is not an easy feat, says Thomas. ➔



Photo: Modernfold

Moveable glass walls have a unique ability to transform floor plans and create seamless transitions from interior to exterior spaces.

Moveable glass walls provide ample flexibility while still offering protection. Welch says that architects and interior designers find them appealing due to their elegant look yet strong functionality.

“Clear, uninterrupted sightlines leave spaces feeling modern and state-of-the-art,” he says. “Customization options are endless. Glass walls can also be lightweight, thereby increasing the ease of operation for the average user.”

Types of Moveable Glass Walls

There are three fundamental types of moveable glass walls, explains Aguiniga. These include bi-folding doors, sliding doors and stacking partition systems. They each vary in size and performance.

Bi-folding doors can be top-hung or bottom-rolling, which places less strain on overhead beams. Bi-folding panels can swing in or out; typically, up to nine panels can be specified per jamb.

Sliding doors often feature the largest glass panels of the three. Independent panels are bottom rolling and can slide left or right on one, two or three tracks, depending on the number of panels. They offer ease of operation, multipoint locking devices and flush or raised sills.

Stacking partitions are top-hung and offer all-glass visuals. Glass panels stack neatly to the side to create expansive openings. Because they are frameless, they are better suited for interior applications.

Moveable glass walls typically are designed with monolithic tempered and laminated tempered glass. Insulating glass is also an option for exterior applications. Interior glass walls use monolithic glass unless the glass panels are large. If the panels are too big, says Aguiniga, laminated glass is preferred to maintain structural integrity. Exterior moveable glass walls are designed with laminated glass to provide security.

Climate change also plays a role in the type of glass used. Aguiniga says that 1-inch insulating glass is often used because it helps “reduce solar heat gain in the summer and acts as a barrier against cold exterior temperatures in the winter.”

Moveable Glass Wall Trends

Moveable glass walls have been coveted for some time, states Aguiniga. Their unique ability to transform floor plans and create seamless transitions from interior to exterior spaces remains an attractive feature for commercial and residential applications. However, architects and customers still

seek out the latest and greatest. This includes large glass, less metal and personalization options.

Aguiniga says CRL has seen a surge in demand for large panel sizes and thinner frames. Customers want to preserve views and incorporate a minimalist look. For example, Aguiniga says that the latest sliding doors can reach system heights of up to 13 feet with panel widths of 7 feet.

Thomas’ company has also seen a shift to wider openings and more glass. That shift became more pronounced during the pandemic as people learned about the benefits of fresh-air ventilation.

“The pandemic has taught people the benefits of flushing your home no matter where you live,” says Thomas. “Moveable glass walls make it really easy to flush their homes and close those panels.”

While glass walls become larger, Modernfold discovered that designers desire noteworthy touches. This includes personalization through the use of designer glass, custom design etching, appliques, mullion offerings, glass markerboards, and more. Welch says combining glass partitions with colorful powder coat options has also grown in popularity.

Future of Moveable Glass Walls

The future is bright for moveable glass walls. Companies continuously innovate to meet the needs of customers. As a result, exciting new technologies have emerged in recent years, says Aguiniga, particularly with sliding doors.

“Pocket installation allows sliding glass panels to be completely concealed within an adjacent wall delivering a truly unobstructed view,” she says. “With automation, sliding panels are motorized so that with the touch of a button, the movable wall opens to reveal the view and provide a seamless transition to exteriors.”

According to Thomas, the market for moveable glass walls has ample room to grow. People want to be comfortable and healthy, he says. Moveable glass walls provide that.

“This market has immense room to grow,” he says. “The market is just now gaining traction. A lot of it is driven by the permanent nature of what came out of the pandemic.” **USG**



➔ **Joshua Huff** is the assistant editor of **USGlass** magazine. Email him at jhuff@glass.com and connect with him on LinkedIn.

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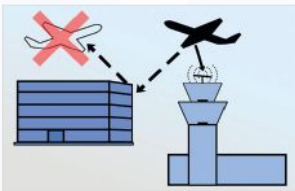
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Cooper Cary's 200 Stovall St. residential project in Alexandria, Va., features TSI-installed window wall, stick-built curtainwall and metal panels.

Peaks and Valleys

Multifamily Construction Offers Opportunities and Challenges

by Ellen Rogers



TSI Corps installed window wall and stick-built curtainwall for the 1900 Half St. residential project in Washington, D.C., designed by Antunovich Associates.

Not since the 1980s has the multifamily construction market been like this. Dodge Construction Network reported multifamily construction starts reached the highest levels recorded since the mid-1980s in its 2022 year-end report, mainly due to rising interest rates in the single-family market. And for the glass industry, there's at least one (maybe more) nice thing about a multifamily project: lots of windows.

While the market is strong, contract glaziers still see challenges and have concerns, especially given high interest rates and inflation.

Opportunistic

The economy may be a bit shaky, and some areas of construction may feel elements of a recession in the near future. The multifamily market—at least for now—is doing well. Thomas Cornellier, CEO of TSI Corporations in Upper Marlboro, Md., says the multifamily market, specifically apartments, is one of the few currently experiencing growth.

"The driving factor behind this is interest rates pushing mortgage rates on single-family homes and condos higher," he says. "With many single-family homes becoming less affordable, more people are renewing apartment leases, and first-time homebuyers are now looking at apartments until interest rates settle."

He adds that rising interest rates are still hurting developer's investment models, and the company is seeing more projects shelved, despite the high housing demand.

Marty Trainor, senior vice president of Ventana based in Chicago, says the multifamily market has been strong due to a housing shortage, particularly in mid-tier cities, such as Cleveland and Phoenix. He says the market could suffer due to interest rates in the short term.

Brock West is the president/CFO of Glass Systems Inc. in Stonecrest, Ga., which mainly serves Atlanta and surrounding areas. "Developers are still optimistic, regardless of the economy," he says. "There is a need for housing in the Atlanta market; it's very underdeveloped. Plus, development here goes along with the World Cup in 2026 when Atlanta will host at least two of the games."

Multifamily vs. Nonresidential

For some contract glaziers, the multifamily market is the most important for business. According to Cornellier, his company feels the only market segment that will outperform multifamily is healthcare.

"With our aging population, there is still such a large need for all types of healthcare projects across the U.S.," he says.

West adds, "Shockingly, the majority of our projects are multifamily. That's the market driver here. We do not see a lot of offices [or other segments]."

Trainor points out that compared to the non-residential market, residential is competitive.

"The residential market tends to be largely commodity system driven on price. It can be a struggle to be competitive due to ➔

What is Passive House?



Photo: PHIUS, Green Hammer, Ankrum
Molsan Architecture, Walsh Construction

Passive house is a building standard that focuses on energy efficiency, comfort and affordability. The Passive House Institute originated in Central Europe. In 2007, Katrin Klingenberg (who designed and built the first passive house in the U.S.) and builder Mike Kernag founded the Passive House Institute U.S. (PHIUS). PHIUS is a non-profit or-

ganization that certifies, researches, provides information and sets standards to promote passive house design and building within the U.S. The PHIUS + 2015 Passive Building Standard emphasizes five building-science principles:

- The employment of continuous insulation through the entire envelope without any thermal bridging;
- The building envelope is extremely airtight, preventing infiltration of outside air and loss of conditioned air;
- Utilizes high-performance windows (double- or triple-paned windows depending on climate and building type) and doors—solar gain is managed to exploit the sun's energy for heating purposes in the heating season and to minimize overheating during the cooling season;
- Uses some form of balanced heat and moisture-recovery ventilation; and
- Uses a minimal space conditioning system.

The PHIUS standard differs from the European standard in that it accounts for the broad range of climate conditions in the U.S.

that nature," he says. "In other markets, such as institutional, I think there's more demand for high-performance wall systems, so when we have those jobs, there's more profit opportunity."

Trends and Changes

Just as the aesthetics of apartment buildings have evolved over the past few decades, so have the glazing products and performance requirements. Trainor says energy codes are becoming increasingly rigid.

"It's harder and harder to meet thermal requirements," he says. "In Chicago, the energy code has gotten stringent, so you have to find ways to make systems better thermally." Trainor's company uses non-traditional components such as high-performance plastics in place of aluminum when fabricating such systems.

"We have developed proprietary materials that we can use as nonstructural components of the curtainwall," he says, explaining these are ancillary parts and pieces to the system. "We can use these because they perform better thermally, and we can get the required thermal performance."

Cornellier says his company mostly sees unitized window wall in thermally-broken systems.

"We hear about passive house (see sidebar above) coming to the D.C. market, but we haven't seen much of it to date, only a couple of projects," he says. "We expect more and more of these products to come to the market as the economy recovers."

There are two product areas where West sees a shift.

"The Southeast market has been the window wall capital," he says, pointing to the significant number of window wall projects in the area. "Now, we're seeing a shift toward larger punched openings."

The other change he sees is the requirement for sound transmission class and outdoor/indoor transmission class ratings.

"There's very much [a need] for sound control," he says, particularly in busy, urban areas where it can get noisy.

Forward Thinking

The multi-family market may be doing well now, but contract glaziers still have concerns about how things will fare over the next few years.

"There is a major housing shortage coming, and with the hit to the single-family homes market, this should continue to push the apartment growth. However, rising interest rates are putting more and more projects on pause. While this may be a short-term hit, it may extend the growth in this market over a longer period of time," says Cornellier.

Trainor adds, "I think that it will be even tougher to compete and win work due to interest rates and falling rents. There is also pressure on costs related to increased performance, so there will be fewer projects greenlit, and it will remain a commodity market—with a lot of players operating in it."

West also sees uncertainties. "While there may be a need for a half million units in the next five years, it still feels over-saturated," he says. "We have seven projects now and have signed contracts for three more in the next year or so. We're happy to do the work, but a lot of it is happening."

While they are encouraged to see money coming into multi-family developments, West says it's not without worry.

"There are concerns things will be like in 2008-2011, and then the financing is gone," he says. "We are purposely aligning ourselves with healthy clients, and feel the likelihood of that happening is minimal. When others ask us to get involved, we're gun-shy."

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➔ **Ellen Rogers** is the editorial director of **USGlass** magazine. Email her at erogers@glass.com and connect with her on Linked In.



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OBITUARIES

Azon



James Dunstan

James (Jim) Dunstan, founder of Azon based in Kalamazoo, Mich., passed away on Dec. 29, 2022, at the age of 95. In 1977, Dunstan founded the company with his wife, Ruth, who passed away in 2019.

The Dunstans grew Azon into an international company with several facilities around the globe, including China, Korea and Wales.

Jim's passion for Azon and the industry it serves is well known. He was involved in the aluminum industry even before founding Azon. Azon serves in the membership of the American Architectural Manufacturers Association and Aluminum Extruders Council and its various committees. Jim also served as a board member of the National Association of Manufacturers. He responded fervently whenever the aluminum extrusion industry came under attack.

Jim was inducted into the Glass and Metal Hall of Fame™ in 2002 and earned many other industry recognitions.

Mapes Industries

Bill Cintani, Mapes Industries CEO, passed away on Dec. 10, 2022. Cintani joined Mapes in Lincoln, Neb., in 1978 and became owner and operator in 1986. He led the company through a long period of growth that continued until his death. Cintani was also a member of the board of directors of Hampton Enterprises, Assurity and Nelnet. He served on community, non-profit and charitable boards, including the Lincoln Community Foundation, Bryan Hospital, Bryan Heart, and Chancellor's Board of Counselors and UNMC, among others. Additionally, Cintani was an avid fisherman, and in 2018 joined his late father as a Master Angler in the Minnesota Fishing Museum Hall of Fame.



Bill Cintani

APPOINTMENTS

American Insulated Glass



DJ Stiffler



Craig Scott

American Insulated Glass (AIG) has appointed two new general managers at locations throughout the Southeast. **DJ Stiffler** is now the general manager of AIG Charlotte and **Craig Scott** is the general manager of AIG Birmingham. Stiffler assumes the role with more than 21 years of experience in the glass industry. He previously served as director of operations for View Glass. Scott arrives in Birmingham following a stint as operations manager for ARD Logistics. He has over 20 years of experience in manufacturing, management and quality control in the automotive and building product segments.

Impact Security

Jill Read is the new national sales director at Impact Security. The manufacturer of forced-entry, bullet resistant and specialty retrofit glazing products says that Read brings more than a decade of experience in sales and marketing to the role. Throughout her career, Read has worked with large national retailers, restaurants, commercial contracts, architects and project managers. She has also worked alongside several school districts in both Texas and Tennessee to provide renovations and maintenance, along with glass and framing systems.



Jill Read

PROMOTIONS

Giroux Glass

Marty McKinley is now the vice president of Arizona operations at the Giroux Glass Phoenix location. McKinley brings more than 20 years of glazing experience to the role. He was initially hired by Giroux in 2019 as the general manager of Arizona operations.



Marty McKinley

Technoform

Technoform North America promoted **Alexandra Blakeslee** to co-manager of its market team and hired **Patrick McMahon** to lead business development and provide customer support for the Western region.

Blakeslee's new role includes helping manage a team focused on edge bond solutions for insulating glass in windows, doors and other fenestration systems. Blakeslee has been with Technoform for nearly 10 years.

McMahon brings more than 15 years of experience in market development and sales of components for high-performance building envelopes. Before joining Technoform, McMahon was the first North American employee as head of sales for Swiss-owned SIGA.



Alexandra Blakeslee



Patrick McMahon

NEW HIRES

Quanex



Jim Nixon

Jim Nixon is now the vice president of innovation and new markets for Quanex. In the role, Nixon will advance new product and market strategies as well as lead strategy development and more for Quanex Custom Mixing, formerly known as LMI Custom Mixing.

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Beyond the Edge



A number of polishing products for beveling machinery are available from Salem Fabrication Supplies. These include Axion and Vista cerium oxide polishing compounds and NovaFelt felt wheels. Axion, a high production grade white polishing compound, provides consistent particle hardness and size. Vista is equally effective in both production glass polishing applications and glass cleaning in pre-silvering scrubs, according to the company. The NovaFelt line features a polyester fiber architecture that readily accepts a cerium charge but resists “loading” and glazing. The wheels provide a polish like natural wool with the characteristics of synthetic materials.

www.salemftg.com

GLAZING SYSTEMS

Stack It

The Slimpact line from Faour Glass Technologies has a new addition with the family of frameless hurricane impact glazing solutions. Slimpact XL Stack, engineered using Florida Product Approval, offers design pressures of



+/- 75 PSF and is available in up to five panels of 12-foot widths by 8-foot heights capable of completing a 40-foot high opening. This new glazing solution offers the option to use the frameless Slimpact XL window system in vertical and stacked applications. Additionally, the system is engineered with structurally glazed horizontal joints.

www.slimpact.com



A Clear Difference

HHH Equipment Resources is now offering the Kodiak 371 beveler, part of a line of glass polishing machines. The Kodiak 371 is an 11-spindle machine with a variable angle up to 45-degrees. It includes three felt wheels, seven grinding/smoothing wheels and one peripheral edging wheel. The Kodiak line features a sturdy frame construction with 77-pound spindles and riveted pads. Features include 10-inch display screens, automatic lubrication and UL-certified components.

www.hhhglassequipment.com

TAPES AND ADHESIVES

A Bonding Experience



Avery Dennison Performance Tapes provide a portfolio of interior surface bonding solutions for the building and construction segment. The new Interior Surfaces portfolio offers nine pressure-sensitive tape constructions featuring a variety of adhesive technologies. The products can be used for wall mounting, backsplashes and more. According to the company, the bonding elements are safe, durable and easy to use.

tapes.averydennison.com

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Glass TEXpo™ '23 Returns to San Antonio

Registration is now open for Glass TEXpo™ '23. The biennial architectural glass and metal industry trade show returns May 11-12, 2023, to the Henry B. González Convention Center in San Antonio. Glass TEXpo™ '23 is co-sponsored by the Texas Glass Association, USGlass magazine and USGNN™.

The event will feature various education, training and networking opportunities. It begins at 8 a.m. on Thursday, May 11, 2023, with an educational program followed by the trade show floor opening at 2 p.m. Further educational opportunities will be offered on Friday, May 12, 2023, beginning at 8 a.m. The trade show will run from 10 a.m. to 3 p.m.

Accommodations are available at the San Antonio Marriott Riverwalk Hotel, which is just a one-minute stroll to the convention center. The hotel combines contemporary luxury, authentic culture and charming views to create a unique



In addition to education and networking, Glass TEXpo™ includes a trade show filled with some of the industry's newest products.

experience in the city's heart.

Attendees and exhibitors can secure rooms for a rate of \$199 USD per night, per single/double, plus tax and fees. This room rate will be available until April 18, 2023, on a first-come, first-served basis.

Visit the event website at www.glasstexpo.com to learn more, register or book your hotel room.

www.glasstexpo.com

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UP & COMING » To see the full event schedule or add your own events, visit www.usglassmag.com/events.php. Unless otherwise noted, all events are live.

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➔ THE BUSINESS

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vived recessions, political upheaval, terrible wars, riots in our streets, countrywide shutdowns due to a pandemic, insane governmental decisions, leisure suits and disco music. I have seen success and failure up close—good times, economically speaking, and truly bad times. I have seen bad people prosper and good people fail. The same holds true for some business enterprises, too. Life, individually and collectively, is an ever-swinging pendulum. As a teenager, my wonderful father, Lyle Alvin, once told me, "son, no matter how bad things get, they will one day get better, and no matter how good things get, they will one day get

worse." He was right.

So to my incredibly talented daughter Amy, and to anyone else who uses the phrase "It's all good," I say to you, no, it is not all good. But it is all okay. Plan well, make good decisions and work hard. Those things certainly increase your odds of success. But no matter what ... It really will all be okay. **USG**

➔ **Lyle R. Hill** is president of Glass.com®, an information portal and job generation company for the glass industry. Hill has more than 50 years' experience in the glass and metal industry and can be reached at lhill@glass.com.

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It's All Good, Or Is It?

OUTLOOK

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"I know the buzzwords and the formulas and all that gets used to tell us why we are where we are and why we are going to go where we might not be at present."

My oldest child, Amy Rebecca, will regularly answer my question about how everything is going in her life by responding ... "It's all good." I have noticed others using this same phrase when asked similar questions. It seems to have become a popular and common expression. Why, I cannot say. My daughter Amy is an optimist; I consider myself a realist. And I can tell you that not all is good in the world in which we live. Unless you don't have a television, read a newspaper from time to time or you live in a cave somewhere, you too would have to agree that all is not good in today's world.

Exactly 30 years ago, I was asked to write a "forecast column" for the coming year. In preparation for this, I made a few calls and gathered up some opinions on where our industry, in particular, and our country, in general, were headed in the year ahead ... 1993 ... and dutifully, I finished my assignment. The title of that column was "Still A Little Cloudy." Not all was good in the industry or the world then, but there were some rays of sunshine, and certainly, all was not bad. Over the past three decades, I have written several columns for various publications that you could call ... primarily because they are published in January ... forecast columns. Some have been lighthearted and a bit silly. Some have been very serious with facts and figures to back up whatever I was saying. In my early days of writing, I even made predictions that were often very specific. Some years there were no such columns at all. However, this year, I was once again encouraged by more than a few people to put together some type of forecast for the coming year. The nationally recognized pundits and economists are all over the map with their predictions and forecasts. Some see good days ahead, while



others predict a deep recession starting in the year's second half. In preparation for this column, I actually looked at some of the data that these "experts" are using to predict what the next 12-24 months will bring. As a few of you might know, at one time ... about 25 years ago ... I taught economics at Olivet Nazarene University's Graduate School of Business. So I know the buzzwords and the formulas and all that gets used to tell us why we are where we are and why we are going to go where we might not be at present. It can be confusing. To say the least. As an old saying goes, "ask five economists the same exact question, and you will get at least seven different answers."

Here's what I know ... actually, what I think because I'm not going to pretend to know what the coming year will bring us. I think the coming year will see winners and losers in all walks of life. Some will prosper due to wise planning, sound decisions and hard work. Some will prosper due to good luck and not much of anything else. Others will falter and possibly fail due to poor planning, bad decisions and lack of effort. Others will fail because of bad luck and not much of anything else.

I have been around long enough to have sur-

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