

GLASS

MAGAZINE®

THE GLASS AND GLAZING AUTHORITY • GLASSMAGAZINE.COM

MAY/JUNE 2020

TOP 50 GLAZIERS
ADAPT TO A
COVID-19 WORLD

BUILDING A NEW NORMAL

MULTI-
FUNCTION,
FIRE-RATED

GLASS
BARRIERS
STOP VIRUS
SPREAD

OFFICIAL
PUBLICATION

NGA

NATIONAL
GLASS ASSOCIATION
with GANA

GLASS.ORG



GLASSFAB

TEMPERING SERVICES, INC.

"Raise Your Glass With Excellence"

CERTIFICATIONS



1.800.490.3860 | Fax: 1.209.229.1061 | 1448 Mariani Ct, Tracy, CA 95376, USA | WWW.GLASSFABUSA.COM

**OLD TECHNOLOGY
FIRE RATED GLASS**

TINTED

Laminated Ceramic

\$\$\$



**NEW TECHNOLOGY
FIRE RATED GLASS**

CLEAR

***SuperClear® 45-
HS-LI***

(HS Hose Stream - LI Low-Iron)

\$



**Request a sample of
SuperClear® 45-HS-LI today!**
Patent Pending



Visit ***www.safti.com/sc45***
to request your sample



888.653.3333



MAY/JUNE 2020 | GLASSMAGAZINE.COM



FEATURES

42. **Top 50 Glaziers**
Building a New Normal:
Companies adapt to
uncertainty during
COVID-19
BY NORAH DICK
48. The List
52. Sales and Markets
56. Products and Technology
58. **Advanced Protection**
Fire-rated glass and
glazing manufacturers
push for performance,
security and aesthetic
solutions
BY KATY DEVLIN

INSIGHTS

26. **Legal**
Breach of Contract:
Clauses to look to when
terms aren't met
BY MATT JOHNSON
30. **Trendhunter**
Blast Glazing: How trends
are changing the way
contract glaziers operate
BY DAVID BEN-ISRAEL
34. **Code Watch**
Wired Glass: Safety
considerations, fire
protection, product details
and more
BY THOM ZAREMBA
40. **Performance**
What is Embodied Carbon
and Why Does it Matter?
BY MIC PATTERSON

“

MANUFACTURERS
TODAY INCREASINGLY
PROVIDE FIRE-RATED
GLASS AND GLAZING
SOLUTIONS THAT ARE
LARGER, MORE COMPLEX
AND BETTER ABLE TO
MEET ADDITIONAL
PERFORMANCE
REQUIREMENTS FOR
THERMAL EFFICIENCY,
DAYLIGHTING, IMPACT
SAFETY AND MORE.

”

DEPARTMENTS

08. Editor's Notes
10. From the NGA
11. Glass Informational
Bulletin
16. News to Know
22. Closer Look: Protective
Glass Barriers
64. Products
68. People
70. Classifieds
72. Suppliers Guide
85. Reader Response Center
86. Here's an Idea

On the cover: The Mount Sinai
Skolnick Surgical Tower and
Hildebrandt Emergency Center
in Miami Beach, Florida, features
impact-rated glazing systems from
Top 50 Glazier Crawford-Tracey
Corp., with glass from Viracon.
Healthcare applications are a likely
area of growth for glazing firms,
say industry sources.



Pulp Studio's Precision Edge®

Other Manufacturer's

PRECISION® EDGE

The exposed edges on glass handrails are an aesthetic detail you don't want to overlook. Codes only require that handrail glass be laminated, but high-quality edgework is imperative for the integrity of the design. Never feel pressured to accept a pre-polished laminate product when you have better options.

Precision Edge® complements the design by providing a high-quality, zero-tolerance finish, with perfect alignment for both tempered and annealed laminated glass.

ONLINE

AT GLASSMAGAZINE.COM

YOUTUBE.COM/GLASSMAGAZINE

TWITTER.COM/GLASSMAG

INSTAGRAM.COM/GLASSMAGAZINENGA

FACEBOOK.COM/GLASSMAGAZINENGA

E-GLASS WEEKLY NEWSLETTER AND

DIGITAL EDITION: Subscriptions available under the "Subscription Services" tab on GlassMagazine.com

SIGN UP FOR
OUR DIGITAL
EDITION

BONUS ISSUE CONTENT

Available at GlassMagazine.com

DIGITAL SUPPLEMENT

Information and best practices for companies navigating COVID-19.

WEBINAR

The Now and Next series addresses financial, sales and legal concerns.

VIDEOS

Hear how businesses across the industry are managing during the pandemic.

GLASSBLOG



INVESTMENT

Invest During Difficult Times

By Chris Kammer, A+W Software North America



MOMENTUM

Lessons from a Pandemic

By Pete de Gorter, DeGorter Inc.



FORECAST

The Work Doesn't Stop

By Max Perilstein, Sole Source Consulting



PROJECT NEWS

Featured in e-glass weekly and on GlassMagazine.com. To submit projects, write Norah Dick, ndick@glass.org. **Pictured:** The Vessel is a landmark of glass-railed stairs and platforms built as part of the Hudson Yards redevelopment project in Manhattan, with tempered laminated glass from Formator with SentryGlas interlayer, fabricated with Tyrolit diamond wheels.

GLASS MAGAZINE

Published by the

NGA NATIONAL
GLASS ASSOCIATION
with GANA

1945 Old Gallows Rd., Suite 750
Vienna, VA 22182-3931
P: 703/442-4890 F: 703/442-0630

EDITORIAL

Content Director

Jenni Chase • jchase@glass.org

Editor-in-Chief

Katy Devlin • kdevlin@glass.org

Managing Editor
Laurie Cowin

Production Director
Beth Moorman

Associate Editor
Norah Dick

Creative Lead
Cory Thacker

Senior Manager, Digital Media
Bethany Stough

Web Editor
Wendy Vardaman

Circulation Manager

Jo Ann Binz

jbinz@glass.org • 843/388-3808

ADVERTISING

Executive Publishing • 410/893-8003
Account Managers

Chris Hodges

chodges@executive
publishing.com • ext. 1#

Mike Gribbin

mgribbin@executive
publishing.com • ext. 4#

Tim O'Connell

toconnell@executive
publishing.com • ext. 3#

NGA BOARD OF DIRECTORS (2019-20)

Chair
Chris Bole
Pikes Peak Glass

Chair-Elect
Cathie Saroka
Goldray Glass

Treasurer
Doug Schilling
Schilling Inc.

Immediate Past Chair
Angelo Rivera
Faour Glass Technologies

Ron Crowl
FeneTech Inc.

Brian Hale
Hale Glass Inc.

Tim Kelley
TriStar Glass Inc.

Rick Locke
Windows, Doors &
More Inc.

Guy Selinske
American Glass &
Mirror Inc.

Jim Stathopoulos
Ajay Glass Co. NA

Mark Twente
AGC Glass Co.

President & CEO
National Glass Association
Nicole Harris

Glass Magazine® [ISSN 0747-4261], Volume 70, Number 4, is published eight times a year, monthly except for combined issues in January/February, May/June, September/October and November/December, by the National Glass Association, 1945 Old Gallows Road, Suite 750, Vienna, VA 22182; 703/442-4890. There is no charge for subscription to qualified requestors in the United States. All other subscriptions will be charged \$49.95 in the U.S., and \$79.95 outside the U.S. Periodicals postage paid at Vienna, Va., and other mailing offices. POSTMASTER: Send changes of address to Glass Magazine, Subscriptions, Box 460, Congers, NY 10920. Canada Post: Publications Mail Agreement #40612608. Canada Returns to be sent to Bleuchip International, P.O. Box 25542, London, ON N6C 6B2. For all subscription inquiries, please call 1-800-765-7514. ©2020 National Glass Association. All Rights Reserved. Printed in the U.S.A.

Layered Texture



An entry canopy fabricated from perforated aluminum PAC-CLAD 7.2 panels appears to continue into the building, creating a signature ceiling element. "It really brings that texture and layering into the building – it blends the interior and exterior space."

-Stacia Ledesma, Designer, SmithGroup

Eloy City Hall, Eloy, AZ Installing contractor: Progressive Roofing Architect: SmithGroup
General contractor: CORE Construction Photographer: alanblakely.com

7.2 Panel perforated

Aged copper finish

CASE STUDY @ [PAC-CLAD.COM/ELOY](https://www.pac-clad.com/eloy)





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

Essential Connection

In late March, the Cleveland Clinic posted a photo on its social media showing a message of thanks from a recently discharged COVID-19 patient. The message was written in marker on the glass door of the patient's hospital room.

"This window has been the most impactful window in my life," the patient wrote. "I watched some of you have good nights and some bad nights but what was consistent every night was that you care for people."

From his isolation room, the patient relied on the glass to create human connection. During his stay, caregivers would frequently communicate messages to him by writing on the glass. And from inside the room, he could watch the hospital workers around him.

In the glass industry, we often discuss the benefits of glass to building occupants—the ways that daylighting and views correspond to improved test scores among students, increases in productivity among office workers and faster healing times among patients in health care facilities. One critical component of this is glass' ability to provide connection—connection to the outdoors, to nature and, most importantly, to people.

In the era of COVID-19, people are more isolated—whether in ICU rooms like the patient from Cleveland Clinic; in senior care facilities, where visiting has been disallowed; or in homes and apartments around the globe, where people are socially distanced and apart from extended family, friends and community. In the face of this isolation, glass provides opportunities to safely interact and communicate.

Social media is filled with such stories—a grandparent meeting a newborn grandchild through a sliding glass door, a nursing home

“

IN THE ERA OF COVID-19, PEOPLE ARE MORE ISOLATED. IN THE FACE OF THIS ISOLATION, GLASS PROVIDES OPPORTUNITIES TO SAFELY INTERACT AND COMMUNICATE.

”

patient celebrating a birthday with family through the windows of a care facility, a priest offering blessings from the other side of a sidelite window.

During this pandemic, most glass companies have been allowed to continue operations, as they have been deemed essential businesses. Glass companies manufacture, fabricate and install products that keep building occupants safe. This issue of Glass Magazine spotlights the essential work of industry companies, beginning with coverage of glass solutions to protect workers on page 22. This continues with a look at the important work of glazing contractors in the Top 50 Glaziers report on page 42, a feature of multi-functional fire-rated glass and glazing products on page 58, and a spotlight of additional protective glazing offerings on page 64.

Yes, glass is essential. But what COVID-19 reinforces is that, even in isolation, glass creates the possibility for an essential connection. ■

The text "Pilkington Spacia™" in white, set against a blue background that is part of a larger image of a building with large windows.

Vacuum Insulated Glazing

The thermal performance of conventional double glazing in the same thickness as a historic single pane window, making it perfect for restoration projects.



YOUR ASSOCIATION AT WORK

NEED-TO-KNOW INFORMATION
FROM THE NGA

BUILDING COMPLIANCE FAQs FOR CALIFORNIA AB262

The National Glass Association announced a new Frequently Asked Questions resource that addresses compliance of glass in buildings in accordance with the California AB262 legislation, also known as the Buy Clean California Act.

“The Buy Clean California (AB262) legislation has generated a lot of questions about its impact on the use of glass in construction in the state,” says Chris Dolan, Guardian Glass and member of the NGA Forming Committee. “We think stakeholders and other interested parties will find the NGA Frequently Asked Questions a helpful document. It summarizes key elements of the legislation, defines flat glass and processed glass to their respective Product Category Rules and offers guid-

ance on what is required when bidding on California state-funded projects.”

The FAQs cover:

- The definition of a public works project and how it fits into CA AB262
- Key legislation dates that affect eligible materials accepted
- Definitions of flat glass and processed glass according to the legislation verbiage
- Requirements to bid on a California state-funded project
- Methods to locate data and address questions surrounding data for Global Warming Potential and compliance with AB262
- And more.

“NGA continues to work with the California Department of General Services and other interested parties to clarify the language of the bill—to ensure they understand the effects on public works building projects in California and to provide education about glass and glazing supply,” according to Urmilla Sowell, NGA advocacy and technical director.

To view and download the FAQs for Glass in Buildings in Compliance with California AB262, visit NGA’s Advocacy webpage at glass.org/about-nga/advocacy. ■

GLASS CONFERENCE TRANSITIONS TO INTERACTIVE ONLINE EVENT

The NGA announced it will shift its NGA Glass Conference: Chicago to an interactive online event to take place July 28-30, 2020. Due to the COVID-19 pandemic implications and many company-enforced travel restrictions, the event will now be hosted via private online video conference using the Zoom platform.

“NGA has reimaged the NGA Glass Conference in a robust online format that will be both engaging and productive and that will allow us to reach new participants who may not have had the opportunity to attend the in-person conference,” says Nicole Harris, NGA president and CEO.

Learn more at glass.org.

MASKS FOR MEMBERS

The NGA launched a Masks for Members program to help glass and glazing companies access protective equipment to help ensure safe operations during the coronavirus. KN95 masks and disposable paper masks were made available to NGA member companies in limited quantities. For more information, contact membership@glass.org. ■

NGA’S AIA-APPROVED PRESENTATIONS ELIGIBLE FOR LIVE WEBINARS

NGA is an approved AIA Provider and, thanks to the involvement of its volunteer members, has nine (9) AIA-accredited presentations as part of its resource library. Now is the time for companies to stay in front of their stakeholders. NGA member companies may use these presentations as a resource when reaching out to their architect clients and other interested customers. They are now approved for live virtual presentation via webinar.

NGA members can find more information on becoming an approved presenter at glass.org/resources/education-training/aia-continuing-education. ■



GLASS INFORMATIONAL BULLETIN

Distortion: One Optical Number Does Not Fit All

The glass industry has been challenged for many years with creating an optical measurement standard for glass products and windows. Measuring glass distortion, i.e., deviation from flatness, is not a new topic. However, tighter energy efficiency demands, more variations in glass sizes, code changes and new glazing systems have resulted in more heat-treated glass, double (and even triple) insulating glass units, and multiply laminates in use than ever before. All these products may increase the amount of distortion seen on buildings.

Defining distortion

Distortion in glass is not a color or sharpness issue, but an aberration that renders straight lines in an object or image to appear curved. Image distortion is simply a reality that glass fabricators try to keep to a minimum.

Distortion in glass is often perceived when the observed object or image fails to agree with the expected or true shape of the object. The shape of this distorted image is more apparent when viewing the image reflected from the surface of the glass rather than viewing the transmitted image through the glass.

Factors critical in quantifying the



ONLINE

Visit glass.org/store for all Glass Informational Bulletins ready for download, and for other available NGA resources.

perceived visible distortion are:

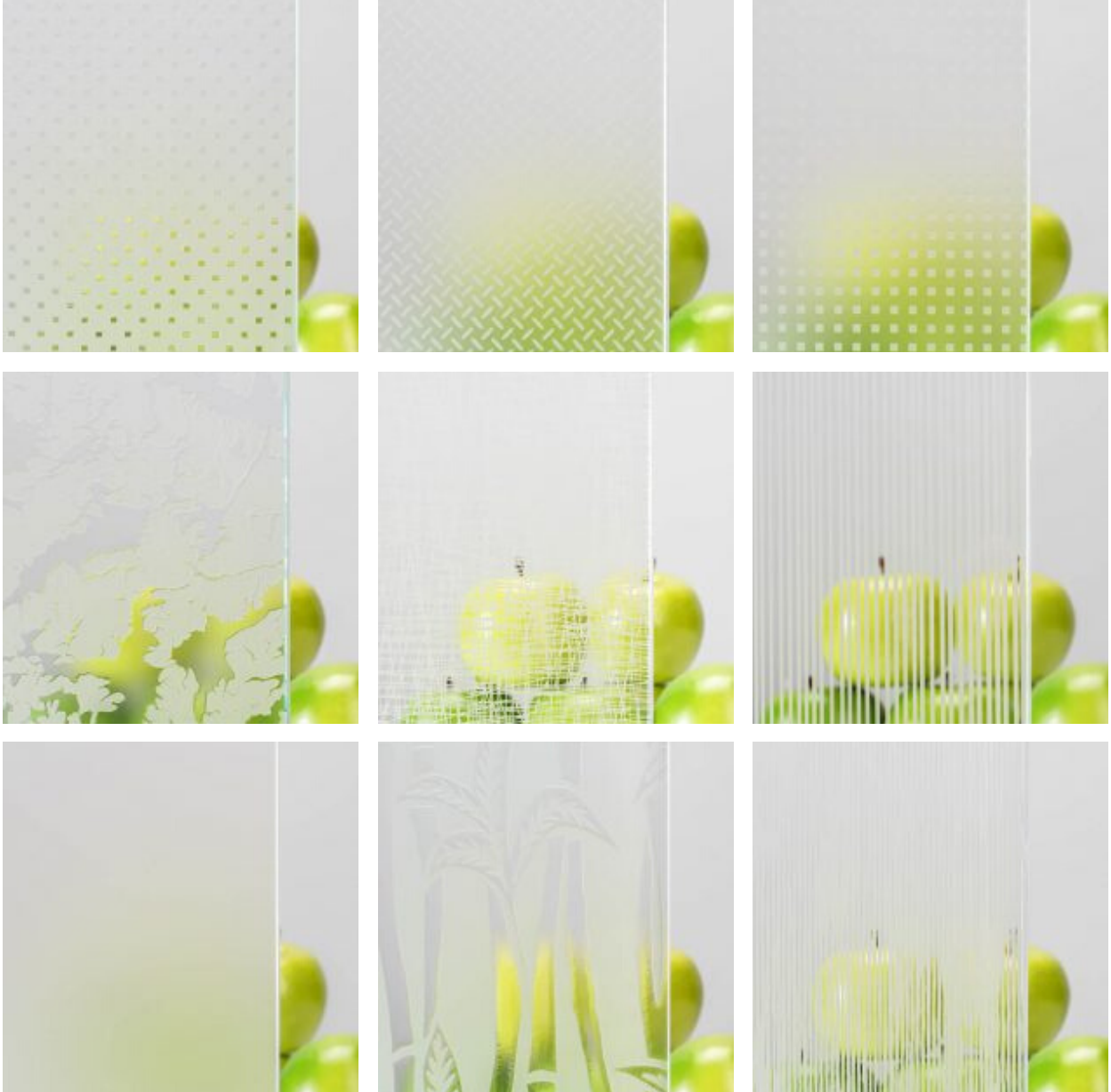
- the appearance of a reflected image
- the viewing angle
- the distance of the viewer from the glass
- the distance of the viewed objects to the glass
- how the image moves
- the shape of the image.

Also, it is important to understand that human perception of distortion varies among individuals. Where the reflected

image contains trees or clouds in the sky, it is more difficult to discern the degree of distortion in the glass compared to straight lines or 90-degree angles, where distortions will be very easily perceived. The reflection of a building far away will have greater distortion than a building that is near. Distortion may not be evident if the viewer is right up against the glass, whereas it can be obvious if he is a great distance from the glass.

A very small deviation in surface

WE MAKE SOURCING SPECIALTY GLASS EASY.



Get what you need, when you need it.

Sourcing satin-etched, decorative and other specialty glass products can become a time-consuming and costly effort. This is where GGI can make ordering mixed loads fast and easy, saving you time and money.

ANTIQUE MIRROR | ANTI-REFLECTIVE | BACK-PAINTED | FIRE-RATED | FLOAT GLASS
LAMINATED | LOW-IRON | PATTERNED | SATIN-ETCHED

sales@generalglass.com | 800.431.2042 | generalglass.com

SEE WHAT
GLASS
CAN DO
GGI

GLASS INFORMATIONAL BULLETIN—DISTORTION: ONE OPTICAL NUMBER DOES NOT FIT ALL

flatness causes a large deviation over long distances. As the viewing angle (line of sight) increases from 90 degrees (perpendicular to the glass) toward 0 degrees (parallel to the glass) any visible distortion will be changed. Under certain viewing conditions, some distortion will inevitably be seen.

Sources of distortion

Distortion in glass can be caused by variations in thickness, flatness and parallelism (i.e. heat-treated laminated units or insulating units).

Annealed float glass

Annealed float glass is typically considered to be flat and distortion-free; however, that may not always be the case. One cause of distortion in annealed glass is thickness variation across the float ribbon, especially in thicker glass. As the glass ribbon is cooled, distortion associated withlehr rolls may appear.

Heat-treated glass

The leading and trailing edges can curl as the glass leaves the heat-treating furnace, roll wave from horizontal furnaces can occur, and there can be bow and/or kink in the glass. All heat-treated glass has some degree of distortion. These distortion effects can become more apparent with the use of glass tints, reflective coatings and low-emissivity coatings.

Laminated glass

When laminating glass, surface flatness variations will occur if one or more of the individual plies is heat-treated. The laminated glass interlayer sheet or liquid can flow to fill the non-parallel gap

between the two plies of glass, creating a series of low-power positive and negative lenses that may cause transmitted distortions under various viewing conditions.

IGU

Reflective distortion in a sealed IGU has been in existence since insulating glass units have been marketed. The glass in a sealed IGU can deflect with altitude change, atmospheric temperature and/or barometric pressure change, and interior/exterior temperature differences. These changes can vary by the hour, day, season and geographical location throughout the year.

Framing

Installation details can easily add to perceived distortion. Out-of-plane frames can twist a large lite of glass and show a twist in the reflected image. Distortion along the glass edge may occur with non-uniform glazing pressures.

Measuring distortion

The distortion prevalent in heat-treated glass is often seen as a sequence of concave and convex variations from a flat surface creating an optical lens power that can be expressed in diopters or millidiopters. A diopter is a unit of measurement describing the optical power of a lens or curved mirror ($1D = 1,000 \text{ mdpt}$). The length of the lens radius defines the lens power of the curved glass and, therefore, the optical distortion in the resultant glass.

Measurement systems currently available can inspect single lites, batches of multiple single lites and completed laminates. Capabilities do not currently

References

ASTM C14.11 Subcommittee is part of ASTM C14 Committee on Glass and Glass Products available at astm.org

ASTM C1651 Standard Test Method for Measurement of Roll Wave Optical Distortion in Heat-Treated Glass

ASTM C1652 / C1652M Standard Test Method for Measuring Optical Distortion in Flat Glass Products Using Digital Photography of Grids

NGA Glass Informational Bulletin FB180-08 Methods for Measuring Optical Distortion at glass.org/store

NGA Engineering Standards Manual at glass.org/store

exist for measuring insulating glass units or laminated insulating glass units in an installed condition.

Conclusion

Creating an optical standard and/or number for a glass product is not currently practical due to the wide variety of fabrication equipment and processes used, the number of lites of heat-treated glass in finished products, the effects of temperature/pressure changes, glazing system related issues, etc.

Specifying an optical standard on a single pane of glass does not guarantee the entire glazing assembly is acceptable. The actual glass products, size, application and market; the building type and location; and, the architect/owner expectations need to be considered on any given project. ■



Coast to Coast Sales & Rentals

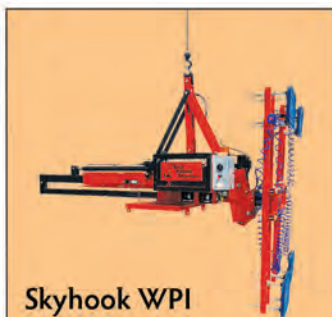
Financing Available

GM2000-16
with Winch



2 in 1!

34" Wide



Skyhook WPI



GM 800
GM1200



THOM 2200
THOM 4000



GM2000-26

Made in the USA



Means Serviceability



Call or email Jerry - j.nudi@ergorobotic.com • 518-796-2179 • ErgoRobotic.com

Four layers of silver.

Introducing Quad LoE-452™ (Quad 452) premium glass. With four true layers of silver, it offers exceptionally low emissivity, 99% UV protection, low exterior reflection and superior solar control. Quad 452 comes standard with Neat+™, which repels 40% more dust. Neat+ also reacts with the sun's UV rays to break down greenhouse gases such as methane for naturally cleaner glass. Learn more at CardinalCorp.com/452.

One layer of clean.



Premium Performance Glass



Naturally Cleaner Glass

The most clicked news stories on GlassMagazine.com, brought to you by **GLASS MAGAZINE WEEKLY***

Glass and Glazing Industry COVID-19 News and Updates

Glass Magazine offers complete coverage of COVID-19-related company updates, event news, government mandates and more. Visit glassmagazine.com/general-topic/covid-19 for the most up-to-date coverage.

Additionally, view and download essential industry information related to COVID-19 from the National Glass Association and Glass Magazine in the special digital supplement, NOW and NEXT: Navigating the COVID-19 Health and Economic Crisis. The supplement offers glass and glazing industry resources on financing, regulations,



SIGN UP

Not getting Glass Magazine Weekly, formerly e-glass weekly, every Tuesday? Subscriptions are available at GlassMagazine.com under the "Subscription Services" tab.

safety and more, available through glassmagazine.com and glass.org.

Vitro to Shut Down Float Line for Automotive Glass

Vitro Automotive will close one of its raw-glass production lines at its Meadville, Pennsylvania, plant effective June 10, affecting 108 positions. The ongoing downturn in the U.S. automotive marketplace—worsened by the economic impacts related to the global coronavirus outbreak—necessitated the decision, say Vitro officials in a statement. Vitro's Meadville facility will continue operations on Line 1, primarily supplying feedstock for



'One-Stop' Solution & Service

Integrated Products for
Door & Window



DOOR & WINDOW SYSTEM

KIN LONG
For Better Living

INTEGRATED EXPERTS ON CONSTRUCTION HARDWARE SOLUTIONS

Stock Code : 002791

www.kinlong.com

Email: mail@kinlong.com

When Performance matters. We deliver!

FOR DEVELOPERS

PRECISION + INGENUITY

German Engineering,
made in America

PROFITABILITY + PERFORMANCE

Competitive advantage for
better project completion

DURABILITY + SUSTAINABILITY

Quality products, projects,
people and principles

FOR GLAZING CONTRACTORS

QUALITY + TECHNOLOGY

High-performance products,
high-quality results

CONVENIENCE + CONFIDENCE

Buy direct and bring in
new business

SUPPORT + SERVICE

Reliable resources to
mitigate risk

FOR ARCHITECTS

FREEDOM + FLEXIBILITY

A systematic approach to
standard components

AESTHETICS + FUNCTION

Never compromise between
design and technical specifications

CREATIVITY + TECHNOLOGY

Bring visionary design from
concept to (virtual) reality

SCHÜCO

**CONTACT
US!**

+1 860.666.0505
www.schuco-usa.com

Vitro's downstream automotive-glass finishing plants in the U.S.

NSG to Test the World's First Use of Hydrogen Fuel for Glassmaking

NSG Group will test the use of hydrogen as an alternative fuel for the float furnace to manufacture glass at its Greengate Works in St. Helens, United Kingdom. A global first, the initiative is part of a project managed by HyNet, a consortium of industries in the North West of England, aimed at reducing carbon emissions from industry, homes and transport. NSG Group will investigate whether hydrogen can be

used to wholly or partly replace the natural gas and oil that are the standard fuels for the glassmaking industries.

Saint-Gobain Divests from German Fabrication Business

Saint-Gobain sold Glassolutions, a German-based glass fabricator, to Industriekapital GmbH, an investment firm, as reported on nasdaq.com. The divestment will include seven locations, and affect a total of 350 employees, according to the reporting.

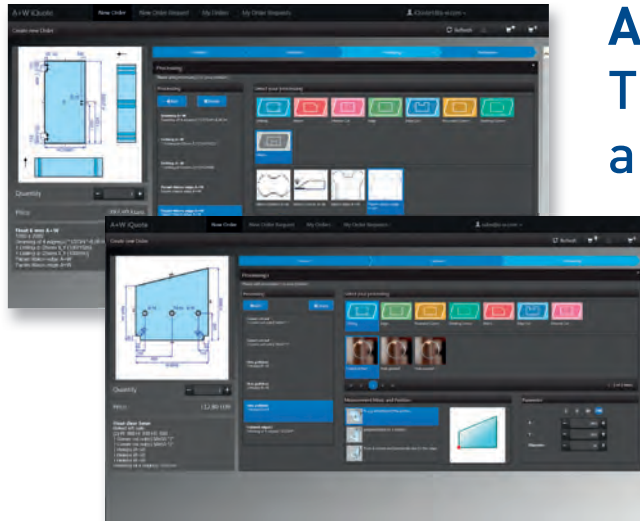
A+W Software to Move its North American Headquarters

A+W Software moved its North American headquarters as of March 16. The new headquarters is located at 10275 Higgins Road, Suite 250, Rosemont, IL 60018.

WEC to Expand Offerings for Clients in New York State

Officials at Wheaton Sprague will provide further support and improved capabilities for clients working in the State of New York through its new affiliate, Wheaton Engineering & Consulting of NY LLC (WEC). WEC is a New York authorized professional

Back To Normal. Or Forward to Something Even Better?



A+W iQuote

The next step in software automation.

- Configure quotes
- Place orders
- Communicate status
- Empower customers to buy (while physically distancing)

➤ www.a-w.com/us/products/aw-clarity-add-ons/a-w-iquote





Roto North America is pleased to showcase our **RotoFasco Secura** Sliding Patio Door Hardware

Excellence in Window & Door Hardware

Roto North America | rotonorthamerica.com

Tilt & Turn

Inowa

PatioLift

Swing Door

Casement

Sliding Patio Door

Sash Locks



THINK BIG THINK GLASSWERKS

CALIFORNIA'S PREMIER GLASS FABRICATOR



Jumbo Tempered & Laminated Glass
Bent Tempered, Laminated, & I.G.
Jumbo High-Performance I.G.
Digital In-Glass Printing
Heat Soaked Glass
Custom Mirrors
Entrance Systems
Shower Doors
Much More

glasswerks.com | 888.789.7810

MyGlassTruck.com
America's Glass Rack Leader



Top Quality Glass Racks & Truck Bodies Since 1989

All Racks Feature:

- Strong Aluminum Construction
- Aircraft-Grade Fasteners
- Most Glass Protection Padding
- Fuel Efficient - Large Payload



All racks ship fully assembled with step-by-step installation instructions.



Factory authorized installations available across North America.



Glass trucks built to order and in-stock for fast delivery.

Call Today for More Info and a Quote
1-844-364-4022



For every glass rack sold MyGlassTruck makes a donation to Susan G. Komen



NEWS TO KNOW

services firm, specializing in building envelope design, engineering and consulting.

AIA Officially Cancels 2020 Conference on Architecture

The American Institute of Architects officially canceled the AIA Conference on Architecture 2020, due to the COVID-19 pandemic. "By making this decision now, we hope to minimize any stress or inconvenience," said organizers in an official statement. According to the statement, the AIA Conference in 2021, A'21, is still scheduled to be held in Philadelphia, June 17-19, 2021. Organizers say they are also exploring hosting a virtual event later this year, and additional continuing education opportunities.

PGT Innovations to Consolidate Florida Manufacturing Facilities

PGT Innovations Inc. plans to consolidate its Florida manufacturing facilities to optimize operations and reduce fixed costs, according to the company. The company expects to cease production at its Orlando facility in June 2020, where its WinDoor and Eze-Breeze products are assembled, and plans to relocate the manufacturing of those products to the Venice and Tampa, Florida, plants, respectively. ■

**From March 1 to press time, April 22. Read these stories, and others, in their entirety at glassmagazine.com.*



GROVE SHIMS™

RUGGED, INEXPENSIVE, AND CONVENIENT LEVELING AND ALIGNMENT AIDS FOR THE GLASS AND CONSTRUCTION INDUSTRY

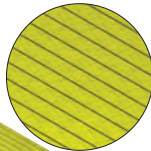
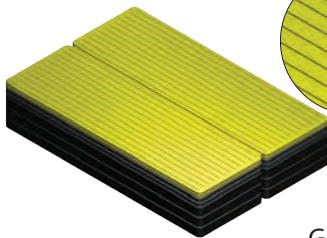
**If you are stuck being dependent on Imports,
we offer our condolences.***

TARIFF FREE*
16,000 miles from your source, Long Supply Chain,
Long-Term Contracts, Managing Supply Chain Logistics

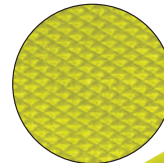
**If you would like to enjoy the benefits of
American-Made Hardware, we offer our services.**



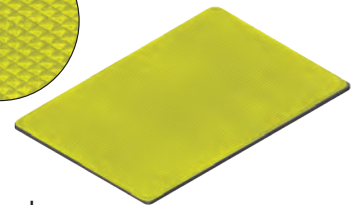
GROVE SHIMS™
RAISED RIB



**Why buy from
any other country?**



GROVE SHIMS™
MICOGRID



Grove Shims™ has the perfect shim for all your shimming needs.
With color-coded shims and solid thicknesses, the right shim can be easily applied for perfect alignment.
No guesswork or realigning. Our shims save you time and money.

* Contact us about eligible tariff fee reimbursements on the purchase of Grove's shims only.

"This ad applies to U.S. and Canada only. Offer expires 12/31/20."

Need help? Just ask! We're here to help.

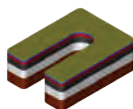
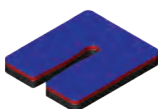
978-534-5188

Visit us online to see all of our available solid 3x4 Shims.

www.groveshims.com

Free Samples are Available Upon Request.

Grove Shims™ is the leading producer of plastic structural shims. We have been in business since 1962, making shims since 1975, our family-owned business provides prompt, personalized attention to each order. In addition to our large line of in-stock shims, we will custom fabricate parts to meet your unique requirements. Unlike many competitors, our shims are solid and do not have hollow voids, so you can depend on them in crucial, load-bearing conditions.



Grove Shims™ • 17 Marguerite Ave • P.O. Box 240 • Leominster, MA 01453, USA

Tel: 978-534-5188 • Fax: 978-840-4130

Email: sales@groveshims.com • www.groveshims.com

GLASS COMPANIES PIVOT TO PROVIDE PROTECTIONS FOR ESSENTIAL WORKERS



ONLINE

Visit GlassMagazine.com for a gallery of glass products designed to stop the spread of viruses.

Numerous glass industry companies have stepped up to help protect essential workers during the COVID-19 pandemic. Glass businesses have pivoted to provide guards and shields at checkout counters, for groceries, hardware stores and even traditional retailers. Meanwhile, other companies have made moves to provide shields specifically for health care applications.

This article highlights news updates from companies pivoting to provide glass guards and similar products. To share similar news, write to kdevlin@glass.org.

OBE Announces Health Care Glass Enclosure

Oldcastle BuildingEnvelope developed a glass enclosure to address the challenges communities and health care workers face in the current pandemic environment. The health care worker protection glass enclosure provides an easy-to-clean, physical barrier between a patient and caregiver, mitigating pathogen exposure. Its use not only protects frontline health care workers, but reduces the need for personal protective equipment that is in critically short supply.

The system is offered in two formats—three-sided or four-sided fully

enclosed—that are modular in nature and can be combined in varying configurations to meet health care facility needs. Oldcastle BuildingEnvelope has requested an Emergency Use Authorization from the FDA in an effort to rapidly deploy the product.

Binswanger Glass Produces Intubation Boxes

Binswanger Glass is producing intubation boxes for hospital intensive care units, to aid in the battle against COVID-19, say company officials.

Binswanger's intubation/aerosol boxes are being used in Topeka, Kansas, ICUs to protect front-line health care workers. The company can customize and ship these packaged flat anywhere in the country for quick and easy onsite assembly. Pickup/delivery of fully assembled units are available from 61 locations in 14 states. Custom sizes, aperture openings and arm hole sizes/placements are available.

FHC Supplies Protective Guards, PPE

Frameless Hardware Co. is manufacturing free-standing glass guards, which do not require mounting holes. The guards are available in stock and custom sizes, according to the company. FHC is also supplying

disposable face masks and biodegradable disposable gloves.

MY Shower Door / D3 Glass Manufactures Protective Guards

Amid deep safety and health concerns over the spread of the coronavirus, Southwest Florida-based MY Shower Door / D3 Glass is building glass health guards that can protect businesses, their employees and the community, say company officials.

Bill Daubmann, president and founder of MY Shower Door / D3 Glass, says the company is ramping up production of these protective health guards of custom sizes for rapid delivery. These guards can be a great deterrent in preventing the spread of COVID-19 through direct droplet transmission. The guards can be installed in register aisles, at cashier counters and in food areas. Office space—both permanent and temporary—can be fabricated with large glass panels where individuals can work, be protected and be separated from the public.

Giroux Glass Offers Essential Protective Services

Officials from Giroux Glass posted updates on its essential protective services during the COVID-19 crisis, including installation of social distancing partitions. "We can help enforce social distancing and shield office workers from potential airborne germs by quickly erecting glass partitions between desks in open work environments. We can close off offices that used to open onto shared hallways, keeping workers contained within their own safe air space," according to the company.

Giroux is also promoting its hands-free door devices to allow owners to reduce touchpoints.

HMI Cardinal Provides Cardinal Shield

HMI Cardinal offers the Cardinal Shield glass barriers for retail and office applications. The glass protects employees and customers from exposure to respiratory droplets, according to company officials. The



YOU NEED
the Push Paddle.



YOU NEED
the Door Closer.



YOU NEED
the Stocking Door
Hardware Expert.

Everything you need to get the job done.

From our unmatched in-stock inventory of premium brands, to the unparalleled knowledge and experience of our technical sales team, we deliver the door hardware products and expertise you need.



SECLOCK.COM | 800-847-5625



Shield barriers can be customized for size, cutouts and configurations. Additionally, the surface is easy to clean, resists scratches, and holds the color of its natural state.

CRL Introduces Portable Protective Barriers

C.R. Laurence Co. introduced two portable protective barrier systems: the Acrylic Barrier Kit and Protective Barrier Posts. The Acrylic Barrier Kit comes in two sizes: 24 inches by 32 inches with a 1/4-inch acrylic panel, and 30 inches by 40 inches with a 3/8-inch acrylic panel with a pass-through window. The protective barrier posts also come in two sizes—24 inches and 36 inches in height—and can be used with glass or acrylic. Both systems feature brushed stainless steel.

Carvart Offers Glass Screen Products

Officials from Carvart announced a range of glass screen products that are easy to

mobilize, provide an effective screen for commercial transactions, and reduce transmission of COVID-19, according to company officials. The line of products, known as glassScreen > Shield, includes counter-top shields, some available with transaction windows and no-draft speak-throughs.

EnduroShield Promotes Easy-clean Sneeze Guards

As numerous glass companies expand product ranges to include glass shields, sneeze guards and partitions, EnduroShield is promoting its options for easy-clean surface treatments. "With the ongoing cleaning requirement for these surfaces, our partners are pre-treating the glass with EnduroShield. While the coating itself is not anti-viral, the water and oil repellency provides an easy-to-clean surface with added protection from exposure to dirt, grime and fingerprints," according to company

officials. When the glass is cleaned, EnduroShield also helps to reduce streaks that can be left behind, making cleaning faster and more effective.

Bendheim Promotes Naturally Hygienic Properties of Glass

The hygienic properties of glass make it a perfect surfacing material for high-traffic spaces found in health care, hospitality, commercial offices, lobbies, schools and universities, and elevator interiors, say officials from Bendheim. From partition walls to privacy screens, wall cladding to writing surfaces, glass can be used in a wide range of applications to provide a healthy environment and good design.

Bendheim's range of glass types gives bacteria and germs no place to hide as they enhance building environments. Surfaces can easily be cleaned and disinfected, dramatically reducing the risk of exposure to viruses, say company officials. ■




www.e-bentglass.com

One piece or thousands, our custom fabricated BENT GLASS is bringing form and function to the designs of tomorrow.








Architectural, Interior, Solar & Transport Applications



Precision Glass Bending

THE WORLD LEADER IN
CUSTOM FABRICATED
BENT GLASS

Precision Glass Bending Corporation
PO Box 1970, 3811 Hwy 10 West
Greenwood, AR 72936-1970
UNITED STATES OF AMERICA



Guardian SunGuard Select™ Fabricator






TEL (800) 543-8796 • FAX (800) 543-8798 • sales@e-bentglass.com



Ultra thermal performance with a slim sightline.



© 2020 Kawneer Company, Inc.

Kawneer's **1620UT/1620UT SSG Curtain Wall System** surpasses expectations. Built on the success of the 1600UT Curtain Wall platform, the new system sets the standard for thermal performance. A **narrow 2" sightline** enhances the sleek, monolithic look of the exterior and views from the interior. And, an engineered polymer thermal break and the ability to accommodate 1" insulating glass increases building performance and occupant comfort. **1620UT/1620UT SSG Curtain Wall System: When less means more.**



ARCHITECTURAL SYSTEMS
ENTRANCES + FRAMING
CURTAIN WALLS
WINDOWS
kawneer.com



LEGAL

BREACH OF CONTRACT

Contract clauses and defenses to look to when terms aren't met

BY MATT JOHNSON



Failure to meet a contract's terms—to breach a contract—is a business reality. Businesses regularly face the prospect of someone breaching a contract or breaching a contract themselves.

The legal and monetary consequences for breaching a contract can be significant, but they are not always certain.

There are legal realities when performance under a contract can be avoided, even permissibly. Those situations vary by agreement and state law. But as a general matter, the terms of most contracts and available legal defenses can present grounds when a contract's terms will not be enforced. A general review of these situations can help show a few of the challenges that can accompany enforcement of a contract.

Contract terms to watch

Contract terms often define situations where strict performance with the terms can be modified. These clauses set out situations where the parties have agreed, up front, that express performance can be adjusted to accommodate then-unknown situations. Common examples include supplier-delay or excused sub-tier clauses, both of which define situations where performance targets can be adjusted due to the conduct of others.

There are also regularly incorporated contract terms that can excuse performance. Many of these “boilerplate” terms are not given much review because the circumstances triggering the clauses are so rare. Common examples include impracticability of performance. These clauses have terms

YOUR FIRST CHOICE IN DOOR HARDWARE

JLM WHOLESALE

SECURITY DOOR HARDWARE

At JLM Wholesale, we prioritize our customers' satisfaction. It is of the up most importance that we provide the best solutions for the glass and glazing industries. We make sure we offer you expertise and exceptional service every step of the way.

Our trained sales associates, vast inventory and strategic shipping locations ensure that we are your best source to find your security door hardware solutions.



**BEST PRICE,
THE FIRST TIME**



QUALIFY & CHECK



FAST LEAD TIMES



**EXTENDING
YOUR TEAM**



**ELIMINATE
THE HASSLE**



**YOUR BEST
RESOURCE**

JLM Wholesale offers a complete range of hardware and accessories for any application. Contact us today!

MI: 800.522.2940 | WWW.JLMWHOLESALE.COM





CONTRACT BREACHES AND COVID-19

The general considerations in this article have gained an unusual importance with the unprecedented effects of COVID-19. The inability to meet contract terms is a new reality for many. It is essential to remember, however, that this current situation is temporary.

Soon, there will be demands for work and returns to complete contracted projects. Keep vigilant. Where current agreements exist, strictly comply with notice terms regarding delay and uncontrollable events. Seek to add modifying addenda that recognize specific COVID-19 impacts on projects and the contract terms. And, as the nation begins its state-by-state “reopening,” stay current with supply chain and labor limitations so you can be nimble and ready to target open work.

This will pass soon. Be ready for when it does.

that define conditions or thresholds under which the parties agree neither will be responsible for performance of the contract. Others include the force majeure or “beyond control” clauses like those in AIA A201-2017. These clauses generally state that where performance becomes impossible due to the proverbial Act of God, the contract cannot be enforced.

Contractual clauses modifying or excusing performance often have a notice component that requires the party seeking modification or claiming an uncontrollable event to provide timely notification to the other party and provide a statement of justification. For example, AIA 201-2017 requires notice within 21 days of the event. Full compliance with these notice clauses can prove essential to preserving contractual-based arguments against breach.

Legal defenses

In situations where a breach has occurred and the parties are considering litigation or claims to enforce the contract, it is important to recognize that there are defenses available that can excuse breaching conduct, regardless of an agreement’s written terms.

Defenses regarding the existence of the contract tend to focus on the circumstances that existed when the contract was formed. Common examples include a lack of exchange (consideration) for the contract, mutual mistake regarding the substance of the contract, or that one of the parties was clearly incapacitated, unduly influenced or under duress. In each of these scenarios, the party’s defense is that no contract was formed to support a breach, or that the enforceable scope of the contract is limited.

Where there is a contract, defenses still exist when clear terms are set. Many of these defenses arise within concepts of equity or fairness. In those situations, there is something about the conditions of performance or circumstance surrounding performance that would make it so unfair that courts or arbitrators are willing to excuse the required performance in some measure.

Common examples here include circumstances where requiring performance is clearly unconscionable. Perhaps one party had no choice but to enter into the agreement. Or if the terms for performance are so blatantly one-sided that enforcing the agreement would be offensive. In each of these scenarios the unfairness itself can present a legal defense to breaching conduct.

Another example includes the impossibility of performance—situations involving something that has occurred after the contract was entered into that could not have been anticipated by the parties. The event was of such a magnitude that performance of the contract is objectively impossible or completely impactable. This is similar to a force majeure event.

Good faith and fairness

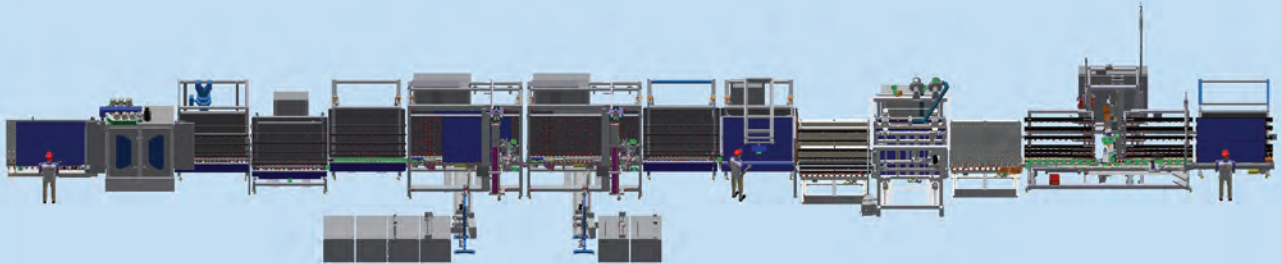
When faced with a breach of contract, it is essential to remember that underlying most agreements is a duty to act in good faith and deal fairly with the other side. Reasonable efforts to meet all contract requirements can be essential to the pursuit of a legal claim based on the agreement. And, where circumstances are such that breach cannot be avoided, a showing of reasonable effort to work with the other side can help preserve defenses to the breach itself. ■

Matt Johnson is a member of The Gary Law Group, a Portland-based firm specializing in legal and risk issues facing manufacturers of glazing products. He can be reached at matt@prgarylaw.com.

SOCIAL DISTANCING - WE'RE PREPARED

North American Made Safety & Ergonomics

Layout of Erdman® High Speed IG Line
Produce Up to 1200+ IG Units Per 8 hr Shift



3-4 Operators
(Reduced from 8-10)

Erdman® Equipment is Designed with Not Only Labor Savings, but also with Your Employees Safety in Mind.



View video at www.erdmanautomation.com/ppl

Erdman is your Local Partner in Robotics and Automation. We will work with you to innovate and reduce your labor requirements to provide a safer environment at your facility as well as a significant cost savings.

Erdman is unique in that we focus on all facets of window manufacturing and can help you integrate your departments and create a safer, more efficient flow through automation.

For 27 years we have concentrated completely on the North American Market. We started small, service focused, nimble and innovative. We continue that focus today even as we are big enough to handle the largest of projects.



Call Us Today! 763-389-9475
eac@erdmanautomation.com
www.erdmanautomation.com



BLAST GLAZING

How trends in blast-resistant glazing change the way contract glaziers operate

BY DAVID BEN-ISRAEL



Since 9/11, blast-resistant systems have become a prevalent type of glazing for governmental and institutional facilities. Although this trend has created a new and rapidly growing niche industry within the glazing market, it has also created a multitude of operational complexities for any glazing contractor, no matter the size. This article presents three trends contract glaziers should consider when looking to expand into blast-resistant glazing.

01

Steel, steel and more steel

Blast-resistant façades mean more steel. From simple brackets and angle attachments for punch windows all the way to steel exoskeletons built for progressive collapse, contract glaziers need to understand how steel is integral to their scope of work. Due to this cause and effect, contract glaziers should perform their due diligence and clearly determine whether they have the capability to perform blast-resistant contracts. Whether it is dealing with the supply chain, fabrication, engineering, shop drawings, sealants or even installation, steel can become the structural

crux of the entire system.

Although glaziers should not feel they need to have the capabilities to fabricate and erect structural beams and columns, they should have the proficiency to design, fabricate and install the attachments that tie their glazing system back to structure. More importantly, if they want to land larger blast contracts, they should have the capability to do that at scale, whether that means creating a strategic partnership with a steel erector, building a steel fabrication shop in-house, or acquiring a local miscellaneous metals fabricator.

120th
ANNIVERSARY
GGI

CELEBRATING 120 YEARS



BRINGING YOUR CREATIVE VISIONS TO LIFE.

From building facades to stunning interiors and public art displays. GGI offers specialty glass solutions, custom fabrication and oversized capabilities designed to enhance the modern built environment. Glass that is functional, decorative and environmentally friendly, combined with precision workmanship and five generations of glass industry expertise.

This is what you can count on from GGI.

ALL-GLASS SYSTEMS • DECORATIVE GLASS • FIRE-RATED • SPECIALTY GLASS



800-431-2042



sales@generalglass.com



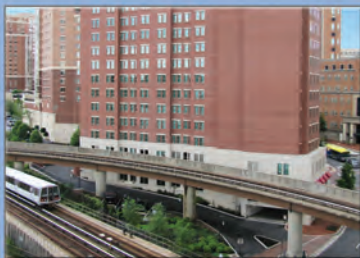
generalglass.com

SEE WHAT
GLASS
CAN DO
GGI



st. cloud
window

Quiet. Safe. Timeless.



Custom Aluminum Windows & Doors

for commercial buildings
of distinction,
where aesthetics and
advanced performance are
critical considerations.

stcloudwindow.com
800.383.9311

“TO ACHIEVE SUCCESS, GLAZIERS NEED TO HAVE THE RIGHT EXPERIENCE AND CAPABILITIES IN PLACE, FROM IN-HOUSE ENGINEERING AND DESIGN SERVICES, TO VERTICALLY INTEGRATED STEEL SUPPLY CHAINS, TO BLAST TEST CHAMBERS, TO THERMAL MODELING.”

02

Custom blast loads

In the past, contract glaziers could get away with installing off-the-shelf and pre-tested blast systems on government and institutional projects. These systems were built to accommodate U.S. General Service Administration standard blast loads, and large fabricators had plenty of pre-designed and tested products that were consistently listed as Basis of Design options that could be easily purchased and installed.

As design trends continue to dictate unique and custom façade systems, it has become harder to utilize these off-the-shelf systems for blast resistance. More often than not, prominent public, institutional and governmental buildings have a unique design that requires a custom psi/psi-ms blast load. This situation forces fabricators to engineer, build, test and certify a custom system specific to that project. This process takes longer, costs more money and requires a higher level of engineering capabilities than what would be required if using a pre-tested system. This issue is only compounded on projects with design assist or delegated design requirements, as a great portion of the engineering risk falls squarely on the façade fabricator. Larger fabricators or contract glaziers might have the capabilities to meet these challenges; however, midsize to small glaziers should make sure they fully understand what is required of them before signing up for a glazing system with a custom blast load.

03

Million-dollar mockups

Many blast projects require mockups. From offsite performance mockups to in-situ visual mockups, the scope, size and cost of the mockups are critical aspects of a project for the glazing contractor. Depending on the size of a project or design complexity, the mockups can have drastic ranges in cost, from a couple hundred thousand dollars all the way up to multimillions.

This trend is especially evident on blast-resistant projects that have custom testing requirements, as mockups can become critical path bottlenecks if the façade contractor is not able to build them, test them and get them approved within the CPM schedule. Without that approval, the fabrication cannot get released and the entire project schedule is impacted.

To achieve that success, glaziers need to have the right experience and capabilities in place, from in-house engineering and design services, to vertically integrated steel supply chains, to blast test chambers, to thermal modeling. The glaziers that can embrace these challenges will be positioned to provide timely solutions to their clients and withstand any force that comes their way. ■

David Ben-Israel is senior cost consultant – Design & Construction, MGAC. He can be reached at dbenisrael@mgac.com.

READY FOR DELIVERY:



With same-day shipping and a network of distribution centers capable of serving over 90% of the US population with next-day service, there isn't another wholesaler ready to deliver like Banner Solutions.

Redefine your expectations at: BannerSolutions.com



dormakaba 

WE ARE NOW BANNER SOLUTIONS

Midwest Wholesale Hardware | Akron Hardware | HSI | SLD | Berg Wholesale | Specialized Builders Hardware

WIRED GLASS

Safety considerations, fire protection, product details and more **BY THOM ZAREMBA**

SOURCE: THE NATIONAL GLASS ASSOCIATION'S TECHNICAL AND ADVOCACY TEAM

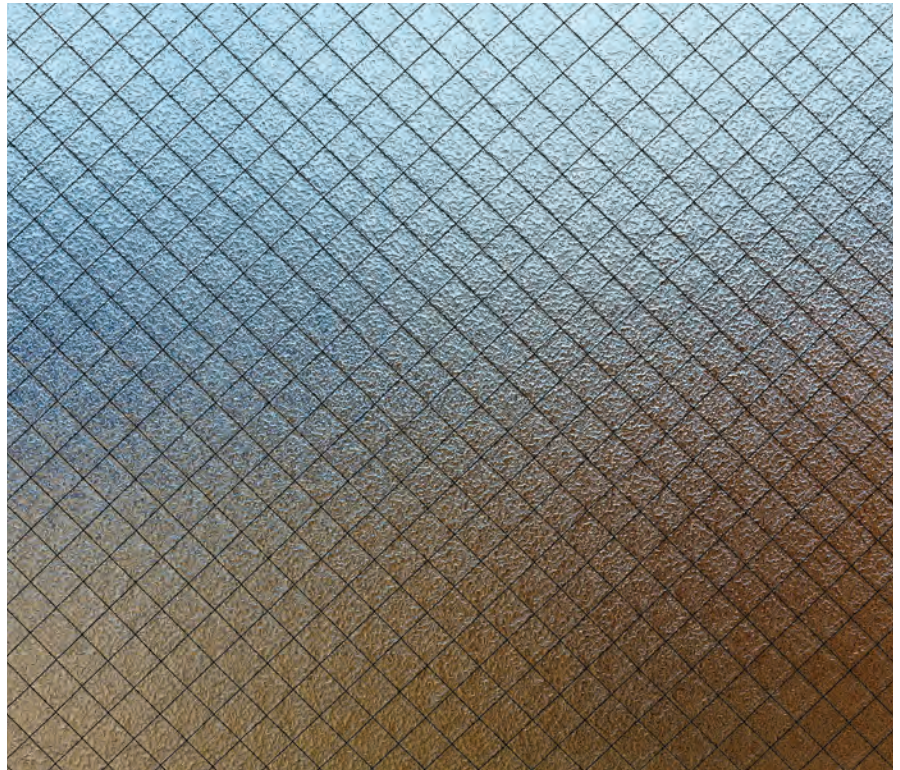


The use of wired glass has evolved over the years. For many decades, wired glass was the only viable glazing for use in locations that required a fire-protection rating. Today, monolithic wired glass is prohibited in areas designated by the building codes as “hazardous locations” even if fire-protection-rated glazing is required. However, if properly coated with an organic film, wired glass can not only meet safety glazing regulations for use in hazardous locations, but also pass the fire tests needed to qualify it for use in areas requiring a fire-protection rating.

This article presents information to help companies navigate the regulations governing how, when and where wired glass may properly be used.

What is wired glass?

Monolithic wired glass is rolled,



ONLINE

Listen to a webinar on wired glass from Thom Zaremba and access additional educational webinars at glass.org/thirsty-thursday-webinar-series-archives.

polished, annealed glass with a layer of wire embedded in the middle.

Historically, wired glass was used in locations where an “appearance” of security was sought, for example, in jewelry display cases and museum displays. It has also been used in skylights to prevent broken glass from falling into a room or onto walkways in the event of breakage. Wired glass gained popularity, in part, because it can be cut to size from stock sheets in the field, using tools commonly used for glass cutting. The primary use of wired glass was and continues to be in locations that require fire-rated construction materials.

Why is wired glass fire-rated?

When wired glass is exposed to fire, the annealed glass will crack as its temperature reaches approximately 100 degrees

Celsius or 212 degrees Fahrenheit. When the glass breaks, the wire in the glass holds it together in its frame.

As the temperature of the fire and the glass increases, the glass quickly softens and heals the cracks, all while being held together by the wire. Once the cracks are “healed,” wired glass will prevent flame, smoke and hot gasses from passing through it for approximately 45 minutes in the fire endurance tests of NFPA 252 for fire doors and NFPA 257 for fire windows.

As importantly, most fire-protection-rated materials (except those used in some 20-minute fire-protection-rated fire doors) are tested with a stream of water following exposure to a fire test. This is called a hose stream test and is intended to test the structural integrity of a fire-rated product following its exposure to fire. The test mimics the product being struck by water from a fire hose.

SplitFin

Unique solution for processing
with water jet technology



Configure online now
www.lisec.com/configurator

The SplitFin is an integrated and continuous solution for fast, effective and uncomplicated processing of glass sheets. The line is aimed especially at the complete processing of sheets. A significantly higher output is achieved in comparison with individual machines as a result of the distribution of the processing steps (edge polishing and grinding / drilling and milling with water jet / washing & drying) and the associated permanent use of the individual devices. The SplitFin sets new standards, not only through extremely fast cycle times, unparalleled in the industry, but also with regard to ease of maintenance as all of the most important mechanical assemblies are easily accessible and in the dry area as far as possible.

Use our configurator for possible machine and line configurations:

www.lisec.com/configurator



LiSEC

best in glass processing

Can wired glass be used in hazardous locations?

At one time in the U.S., wired glass was included as a “safety glazing” under ANSI Z97.1 and was exempt from the safety glazing rules established by the Consumer Product Safety Commission (CPSC) in 16 CFR 1201 when it was used in a fire-rated location. At one time in Canada, wired glass defined Canada’s safety glazing standard. However, since wired glass is annealed glass, it will break when struck with 100 ft. lbs. of force or less, meaning it can break under accidental human impact, causing piercing and cutting injuries. Moreover, the wire embedded in wired glass can enhance the degree of injuries resulting from human impact.

In its monolithic (or un-coated) form, wired glass is no longer considered safety glazing in either the U.S. or Canada.

In 2004, the International Building Code required all glass used in

“hazardous locations” to meet either the 18-inch/180 ft. lb. or the 48-inch/400 ft. lb. test of CPSC 16 CFR 1201, or the same impact tests of ANSI Z97.1. This effectively prohibited the use of monolithic wired glass in any hazardous location, without regard to whether a fire-rated glazing was required in that location or not.

In 2017, Canada adopted a new safety glazing standard: CAN/CGSB-12.1-2017 Safety Glazing. It does not include any monolithic form of annealed glass, including wired glass, as a safety glazing. Earlier this year, a special task group, appointed by the Canadian Commission on Building and Fire Codes of the National Research Council of Canada, voted to adopt Canada’s new safety glazing standard as the minimum required testing for all glazing to be installed in hazardous locations in the 2020 edition of Canada’s National Building Code. Although the CNBC has not yet been published at the time of

this writing, when the CNBC is adopted by Canada’s Provincial and other local jurisdictions, it will effectively ban the use of monolithic wired glass in hazardous locations.

Note that monolithic wired glass is still allowed in any non-hazardous location in both the U.S. and Canada. An example of a non-hazardous location would be the transom lites that are sometimes found above doors.

Can wired glass be made safe to use in hazardous locations?

Wired glass can be made safe in the event of accidental human impact. Special organic coatings in the form of surface-applied safety films can be factory-applied to wired glass. Doing this can:

1. allow it to pass safety glazing standards (CPSC 16 CFR 1201 or ANSI Z97.1) at both 18-inch and 48-inch drop heights,
2. while also passing the fire tests of



Western’s Elite Glass trailer is light weight, with a rolling tarp system & tie downs to haul a 50,000 pound, payload easily. Contact a sales representative today to find out more about our new innovative trailer!



888.344.2539 • www.westerntrailer.com

seele



Façade specialist seele realizes innovative façade and roof solutions worldwide. Our unique shell structures, intricate all-glass designs, and complex unitised façades show their aesthetics, technology, and incomparable quality – all from a single source made by seele.

seele, Inc. | 24 W 40th Street, 12th Floor | New York, NY 10018 | United States | info.us@seele.com

NFPA 252 and NFPA 257. (Applied films that “flame” in the NFPA 252 or 257 fire tests will, likely, fail the test. Some applied films are specifically formulated to char and slough off the glass rather than flame—these films can pass the test.)

To be used in a hazardous, fire-rated location, the film-to-wired-glass combination must be:

1. tested to NFPA 252 and/or NFPA 257 and bear the label of an independent, accredited test laboratory, and
2. tested and properly marked to show compliance with the acceptance criteria of either Cat. I or II of CPSC 16 CFR 1201 or Class A or B of ANSI Z97.1.

What should be done with pre-existing installations of monolithic wired glass in hazardous locations?

Current building codes do not mandate

or require the replacement of existing, unbroken installations of monolithic wired glass if it complied with the building code in effect at the time of its installation. However, because there is no building code mandate to repair or replace such glass, it is worth considering that code updates following the original installation might be offered as evidence of a higher standard of care than existed at the time of installation. This could mean that, if someone is injured by a monolithic wired glass installation in a hazardous location, even though it was compliant when originally installed, the owner may be confronted with a claim that the failure to bring that installation up to current building code standards was negligent and the proximate cause of an injury. Therefore, even though it is not required, this should encourage building owners to seriously consider repairing or replacing monolithic wired

glass installations found in hazardous locations on their properties.

If a pre-existing wired glass installation breaks, the building codes do require the replacement glass to meet current code. NFPA 80 governs the installation and maintenance of fire-rated windows and doors and is currently considering making this obligation specific in its next edition. So, in short, if an existing installation of wired glass in a hazardous location breaks, it should be replaced with a glazing product that meets the new safety glazing requirements. If the hazardous location is also a fire-rated location, the replacement glazing should also meet the fire-rated requirements of that location. ■

Thom Zaremba is a partner at Roetzel & Andress and code consultant for the National Glass Association and its Glazing Industry Code Committee.

COMMERCIAL | RESIDENTIAL | ALUMINUM | VINYL | WOOD

IMAGINE THE POSSIBILITIES

FOLDING
PIVOT
SLIDING
STACKING
SWING
DOORS &
WINDOWS
SKYLIGHTS
CURTAIN WALLS
GREENHOUSES
CONSERVATORIES
SUNROOMS
& MORE

SOLAR INNOVATIONS®
ARCHITECTURAL GLAZING SYSTEMS

f i p p solarinnovations.com | 570 915 1810
© 2020 Solar Innovations®. All rights reserved.

NGA

July 28-30, 2020

GLASS

Interactive Online
Conference via
Zoom

CONFERENCE

Registration
opens May 19

WHAT IS EMBODIED CARBON AND WHY DOES IT MATTER?

BY MIC PATTERSON

The biggest near-term carbon impact of new buildings is by far that of embodied carbon. United Nations data reveals that embodied carbon will account for nearly half of total emissions from new buildings between now and 2050. Urban growth assessments project this is the equivalent of constructing a New York City monthly for the next 40 years. That's a lot of embodied carbon.

The concept of embodied carbon is simple enough. It is a measure of carbon emissions produced during building implementation, outside of building operations. This starts with material extraction, transport, rounds of processing, fabrication and assembly, right up to and including onsite building construction. Add to that emissions resulting from maintenance,



“

REDUCING THE EMBODIED CARBON FOOTPRINT OF NEW BUILDINGS IS BY FAR THE MOST EFFECTIVE WAY OF ACHIEVING NEAR-TERM CARBON REDUCTIONS.

”

repair and renovation activities during the operational cycle and end-of-life activities (recycle, reuse, disposal), and the result is embodied carbon.

Embodied carbon matters now more than ever because of the time-value of carbon. The concept of the time-value of carbon highlights the depreciating value of carbon savings over time with respect to mitigating the impacts of the climate change emergency. In other words, the more near-term the savings, the higher the value. Reducing the embodied carbon footprint of new buildings is by far the most effective way of achieving near-term carbon reductions.

Embodied vs. operational carbon

For many years, the focus of design activities has been on reducing operational carbon—the carbon emissions created

through building use and operation. While embodied carbon is “baked” into a building at the time of completion, operational emissions start from zero upon building occupation and build incrementally over the service life of the building.

Because of the focus on operational carbon, we have been designing with only half of the equation in our pursuit of carbon reduction by focusing on operational carbon and ignoring embodied carbon entirely. Where performance upgrades hold the promise of improving operational carbon emissions as we move forward in time, the embodied component is fixed upon building completion. Even if all new buildings were to become net-zero energy today, there would still be massive embodied carbon impact.

Strategies to reduce embodied carbon

Material selection

Material selection is an obvious strategy to reduce embodied carbon emissions, and there is progress on this front. Environmental product declarations provide key metrics in material selection, and organizations like Architecture 2030 offer tools and resources, such as the Carbon Smart Materials Palette.

Extended service life

Another potentially powerful, but largely neglected, strategy is to extend the service life of a material, component, assembly and building. Doubling the service life approximately halves the lifecycle of embodied carbon.

Extending the service life requires discussion of durability and its significance in buildings. The consideration of durability pulls forward a host of related considerations that are seldom included in building programs—considerations that support strategies to extend service life, including maintainability, repairability, upgradability and adaptability. This also requires discussion of broader issues for which there has been little consideration or convergence in



ONLINE

The National Glass Association developed a resource to help industry officials navigate building life cycle measurements, including embodied energy. Download the document by searching for “life cycle” at glass.org/store.

practice: how long a building should last, how long its façade system should last, and just what are the causal forces of building obsolescence anyway?

End-of-life activities

A third strategy addresses end-of-life practices for reuse, recycling and disposal of buildings.

The strategies to reduce embodied carbon present challenges for the glass and glazing industry. Ponder one of these considerations—maintenance. How might the glass industry employ a strategy of maintenance to significantly extend service life to more appropriately match the service life potential of, say, float glass in an insulating glass unit? Do we bond the entire assembly together in a manner that defies both recycling and maintenance and, furthermore, collapses the service life potential of the glass from hundreds of years (at least) to a mere 25 years?

Another example: do we bury the business end (air and vapor barrier) of a unitized curtain wall stack joint in a channel where it cannot practically be inspected, repaired or replaced for the service life of the façade system?

These considerations force a change in the way we think and design. We need to give priority consideration to the usability of the buildings we build today as they age into an uncertain future. Economic and social conditions may demand their uninterrupted use well beyond current service life expectations.

Embodied carbon dilemma

The best way to reduce embodied carbon emissions is to stop building. In other words, the greenest building is the one unbuilt. However, I understand this concept is a nonstarter. Nonetheless, I have for the past few years been telling my colleagues, somewhat playfully, that the best thing they could do to move us toward a more sustainable built environment is to slow down. The suggestion garnered a few wry grins and an occasional chuckle. That idea also seemed a nonstarter.

However, I’m sitting in my home office in mid-April writing this in the midst of the COVID-19 lockdown. I’m astonished at the breathtaking speed with which the entire world downshifted. I would have never thought it possible. It’s hard to talk about this experience positively; it’s just too painful for far too many. But in some ways, the virus is forcing us to do things that we should be doing proactively to prevent the looming catastrophe of climate change. Hopefully we will learn and carry much from this experience forward.

Whatever you do, keep your eyes open for the next potential disrupter. The architectural glass and curtain wall industries, and indeed the entire building industry, are ripe for disruptive change, and COVID-19 has demonstrated just how fast that can happen. ■

Mic Patterson is Ambassador of Innovation & Collaboration for the Facade Tectonics Institute, a nonprofit member organization pursuing resilience and sustainability goals in buildings and urban habitat through the pervasive influence of the building skin. He can be reached at mpatterson@facadetectonics.org.

But A Normal

Building New a

TOP 50 GLAZIERS ADAPT
TO UNCERTAINTY DURING
COVID-19
BY NORAH DICK

BUILDING DURING COVID-19



This year's Top 50 Glaziers survey, which opened in mid-March, captured responses from an industry facing unprecedented challenge and uncertainty due to the COVID-19 pandemic. Results from the survey, collected over a month, show the cascading effects of the coronavirus on the glazing industry, including increasing concern for worker safety, cancelled and delayed projects and supply chain disruptions.

Despite the disruptions, and sometimes because of them, companies have adapted and innovated, blazing trails and moving forward into uncharted territory. "I don't think we'll ever go back to what was normal before," says Nataline Lomedico, CEO and president, Giroux Glass, a Top 50 Glazier. "I think it will be a new type of normal."

I write this as I work from home, one of the many members of the workforce who is doing so as office spaces are closed, and stay-at-home orders are still in effect for most states as of late April. Construction field work, which cannot be done remotely, has proceeded with safety measures in place in states that deemed it an essential service, though some states, like New York, shut down all but the most essential construction work as the coronavirus continued to spread.

For those firms still operating, with reduced business or not, field work has posed new challenges. "We do daily cleaning of work stations, check people's temperatures—using an infrared thermal unit—promote frequent cleansing and washing of the hands, social distancing, and we have our project management meetings outside," says Ray Crawford, president of Crawford-Tracey Corp., a Top 50 Glazier.

Many companies reported difficulty acquiring PPE for workers to wear on the jobsite, which pushed glaziers to get creative. Giroux Glass leadership, for example, created its own face shields for field staff, says Lomedico.

Though some construction has persisted, many companies have faced jobsite closures. Data from the Associated General Contractors of America surveys in March and April paint a picture of rolling closures as the pandemic spread. The AGC survey, published April 3, compiling responses from March 30-April 2, recorded that 53 percent of contractors reported

"I DON'T THINK WE'LL EVER GO BACK TO WHAT WAS NORMAL BEFORE. I THINK IT WILL BE A NEW TYPE OF NORMAL."

delayed projects, and seven percent cancelled projects.

Business closures have resulted in furloughs and layoffs across industries, and historic levels of unemployment. March data from the Bureau of Labor Statistics shows that total nonfarm payroll employment fell by 701,000 in March, and the unemployment rate rose to 4.4 percent, the largest over-the-month unemployment increase since 1975. Nonresidential building construction lost 11,000 jobs in March.

While lack of cash flow and worksite closures put pressure on many businesses to furlough or lay off workers, Lomedico recommends keeping workers if at all possible. "You should be trying your best to keep your talent, because the work will return," she says. "It takes a long time to find the right people, and to have to lose them because of a short-term situation would be devastating. I would recommend doing everything in your power to find different ways to use your team."

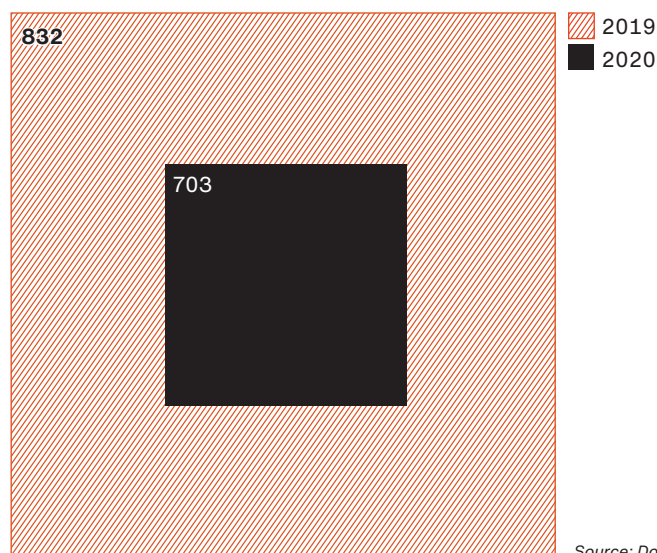
ECONOMIC OUTLOOK

Looking ahead to recovery, economists warn that the landscape has changed, and that construction recovery will take time. “I think the trend toward having less work is going to continue,” said Ken Simonson, chief economist for the Associated General Contractors, in an early April presentation. “I think that even if businesses start to reopen, if the extreme orders to stay at home are lifted, just getting businesses up and running again will be [owners’] priority. And so many businesses are not going to have either the immediate cash, or the expectation that they will need a project that they have been contemplating.”

Forecast data from Dodge Data & Analytics suggests that commercial construction starts will drop by 16 percent in 2020. “We are in recession, full-stop, no question about it,” says Richard Branch, chief economist for the organization. Branch projects a “short U” shape recession, meaning a more gradual recovery, rather than a quick rebound.

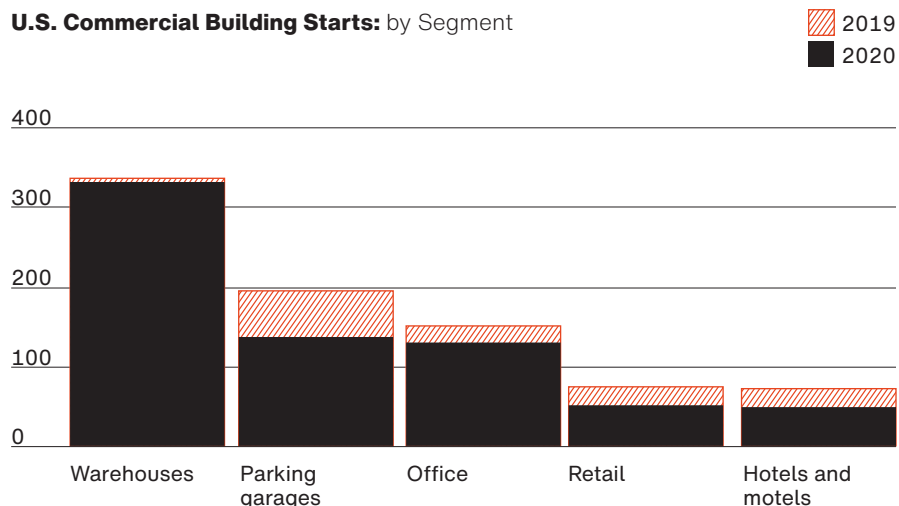
Branch says that not every market segment will rebound in the same way, or on the same timeline. He predicts that retail and hospitality will be the hardest-hit sectors, with projected 2020 declines of 33 percent and 31 percent respectively. Meanwhile, health care will be the strongest sector to recover. Branch forecasts a 5 percent rise in 2020. K-12 building will continue to ease, as will college and university building, the latter due to current financial strain, he says.

U.S. Commercial Building Starts
(in millions of square feet)



Source: Dodge Data & Analytics

U.S. Commercial Building Starts: by Segment



BEYOND THE PANDEMIC



Online

View a gallery of notable projects from Top 50 Glaziers at [GlassMagazine.com](https://www.glassmagazine.com).

It may be hard for companies to plan for the future when it is difficult to predict labor and market realities a week, let alone a month, in advance. However, some in the industry feel that the current situation is an opportunity for glaziers to pause, plan and prepare. Here are a few potential ways that business could change after COVID-19.

PREFABRICATION

The COVID-19 crisis has highlighted the potential use of prefabricated materials and modular building. Sixty-four percent of Top 50 Glaziers report fabricating curtain wall in-house. “Prefab could be a trend going forward—it’s a no-brainer with regards [to] the efficiency, and the quality control,” says Crawford. Dodge Data’s Commercial Construction Index for Q1 2020 reports that the top sector for the use of prefabricated materials is health care, which, given the likely stability of the health care market segment, may further push adoption of prefabrication.

MARKET DIVERSITY

Given the likelihood that the profitability of some industries will change temporarily, and possibly permanently, Lomedico says that the company is reconsidering what kinds of market segments to seek work in. “Some diversity is needed,

because we won’t know the impact of how it will trickle down to us through the different industries we work in,” she says. “We’re taking a better look at the owners of the projects in our backlogs, and asking, ‘Will they still have the funding? What is their financial strength? What else are they investing in?’”

DIGITIZATION

Another result of the pandemic may also be increased use of technology and software, both on and off the jobsite. Many companies, across industries, have had to set up remote work situations, some for the first time and in short order.

“This could change [the use of] technology; the face-to-face and social aspect of [work] might lessen, and many of our people are now learning how to work from home,” says Crawford. Crawford-Tracey already had a remote desktop set up for workers before the COVID-19 pandemic, a system that allows employees to access files from their office workstations at home.

Lomedico also feels that this marks a turning point in the adoption of technology. “We are all becoming accustomed to ever-changing information, and when this is over, we’ll be used to that,” she says. She characterizes this as an opportunity for glaziers to get the kind of systems that will work for them. “Software

companies, on the development side, are working at a rapid pace to customize what we need. We’re all going to reap the benefits of that,” she says.

Jeff Sample, director of strategic accounts at eSub, a construction software firm, also says this could be a “Big Bang” moment for glazing firms to digitize. “I think we won’t go back to business as usual across the board,” he says. “I think it will fundamentally be the digitization moment, the adoption in usage of technology and remote work ... We’ve just not had a reason to change the way we do things. And I feel like now we have one. And it’s on us now, as an industry, if we don’t embrace it.”

INDUSTRY RANKING AND MARKET REPORT

The following report includes a ranking of the Top 50 glazing firms serving the North American market, organized by 2019 gross sales information. For the industry ranking, see pages 48-51.

The report also includes in-depth market analysis of the state of the U.S. glazing market, based on statistics supplied by reporting companies. The report presents sales and growth information, an early look at how COVID-19 might affect construction in 2020 and beyond, as well as product and technology trends. For market information, see pages 52-57.

COME OUT STRONGER

TO HELP GLASS AND GLAZING COMPANIES COME OUT STRONGER AFTER THE COVID-19 CRISIS, NGA HAS ADDED SEVERAL NEW COURSES TO THE MYGLASSCLASS.COM ONLINE TRAINING PLATFORM SPECIFIC TO BUSINESS OWNERS

myglassclass.com
An initiative of the **NGA**

NEW COURSES INCLUDE:

- COVID-19: Protecting Yourself and Others (free)
- COVID-19: Your Workplace (free)
- Assessing Your Organization's Risks
- Enhancing Productivity with Remote Workers
- Managing in a Crisis
- Avoiding Discrimination During the Coronavirus Pandemic

**LEARN MORE AT
MYGLASSCLASS.COM**

Two additional courses—*Glazing Math Essentials* and *Interpreting Common Documents*—are also now available.



MyGlassClass.com offers more than 60 courses for contract glaziers, full-service glass companies, glass and metal fabricators, customer service and sales reps, and business owners that are designed to complement—and shorten—hands-on training.

THE

\$	Rank	Previous Rank	Company	U.S. Locations	Full-time Employees	Total Employees
Over \$200 million	01	01	Permasteelisa North America permasteelisagroup.com, Windsor, CT	5	-	-
	02	02	Enclos Corp. enclos.com, Eagan, MN	14	550	550
	03	04	Harmon Inc. harmoninc.com, Bloomington, MN	18	598	599
	04	03	Benson Industries bensonglobal.com, Portland, OR	6	725	725
\$100-200 million	05	07	W&W Glass LLC wwglass.com, Nanuet, NY	1	55	200
	06	08	Walters & Wolf* waltersandwolf.com, Fremont, CA	7	-	-
	07	06	Crown Corr Inc. crowncorr.com, Gary, IN	4	400	400
	08	12	Massey's Plate Glass & Aluminum Inc. masseysglass.com, Branford, CT	3	200	300
	09	11	Architectural Glass & Aluminum aga-ca.com, Livermore, CA	3	350	350

The Top 50 Glaziers industry ranking, now in its 28th year, is the longest-running glass industry ranking. Companies on this list represent what editors believe to be the largest glazing firms serving the United States, ranked by gross sales volume. Sales volume information for 2019 was contributed by the companies. For those few companies that did not submit sales information, editors used independent sources to determine the most accurate ranking. If your company belongs on this list, or you want to update its information, contact Norah Dick, associate editor, at ndick@glass.org. It is only with the cooperation of industry companies that we can provide the most accurate ranking possible.

LIST

Rank	Previous Rank	Company	U.S. Locations	Full-time Employees	Total Employees	\$
10	-	Flynn Group of Companies flynncompanies.com, Toronto, Canada	34	5,500	5,500	\$100-200 million
11	09	Binswanger Glass binswangerglass.com, Memphis, TN	61	869	892	
12	-	Yuanda USA Corp. yuandacn.com, Chicago	5	20	20	
13	10	Karas & Karas Glass Co.* karasglass.com, Boston	2	90	147	\$50-100 million
14	14	Pioneer Cladding & Glazing Systems Inc. pioneerglazing.com, Mason, OH	6	302	302	
15	32	Dynamic Glass LLC dynamicglass.com, Houston	3	280	280	
16	16	TSI Corp. tsicorporations.com, Upper Marlboro, MD	1	200	200	
17	13	seele Inc. seele.com, New York	1	14	21	
18/19	18	RynoClad Technologies Inc. rynoclad.com, Ontario, CA	2	200	200	

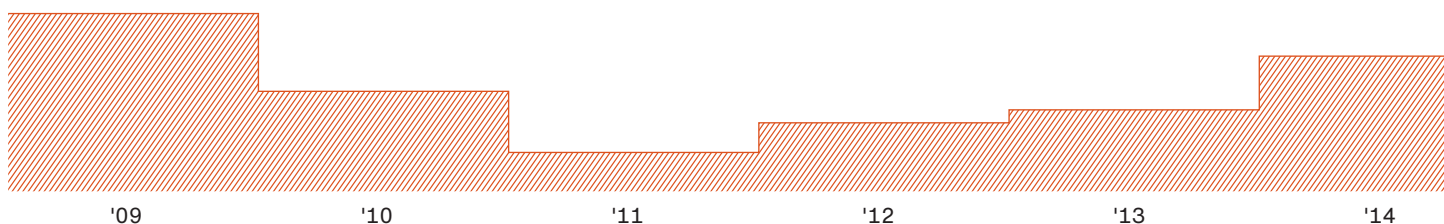
*annual sales volume is an estimate, not confirmed by the company.

\$	Rank	Previous Rank	Company	U.S. locations	Full-time Employees	Total Employees
\$50-100 million	18/19	15	Ventana Design-Build Systems ventana.vc, Chicago	3	32	32
	20	17	Architectural Wall Systems LLC archwall.com, Des Moines, IA	2	115	115
	21	20/21	Giroux Glass girouxglass.com, Los Angeles	5	223	227
	22	20/21	Above All Store Fronts aboveallstorefronts.com, Hauppauge, NY	1	190	190
	23	29/30	Cherry Hill Glass Co. cherryhillglass.com, Branford, CT	1	150	175
\$40-50 million	24	22	Admiral Glass Co. admiralglass.net, Houston	2	172	172
	25	33	Ajay Glass Co. ajayglass.net, Canandaigua, NY	2	125	125
	26	43	Tepcoglass LLC tepcoglass.com, Dallas	3	155	210
	27/28	41/42	SPS Corp. spscorporation.com, Apex, NC	2	88	95
	27/28	23/24	Haley-Greer Inc. haleygreer.com, Dallas	2	120	120
	29/30	41/42	Vision Enclosure Walls Inc. vewus.com, Dallas	1	15	100
	29/30	26	Ranger Specialized Glass Inc. rangerglass.com, Houston	2	125	125
	31	31	Alexander Metals Inc. alexandermetalsinc.com, Nashville, TN	1	86	86
\$30-40 million	32	25	Kensington Glass kensingtonglass.com, Ijamsville, MD	3	196	197
	33	34	Crawford-Tracey Corp. crawfordtracey.com, Deerfield Beach, FL	2	131	131
	34	47	Momentum Glass momentum-glass.com, Spring, TX	2	138	138

Rank	Previous Rank	Company	U.S. locations	Full-time Employees	Total Employees	\$
35		ACE Glass aceglass.net, Little Rock, AR	2	123	153	\$30-40 million
36	40	National Enclosure Co. nationalenclosure.com, Ypsilanti, MI	3	30	70	\$20-30 million
37		Metropolitan Glass Inc. metroglass.com, Denver	1	85	85	
38		Denison Glass & Mirror Inc. denisonglass.com, Denison, TX	1	160	160	
39	48	Synergi LLC synergillc.com, Elkridge, MD	2	61	70	
40	38	Koch Corp. (Strong Tower Building Envelopes) kochcorporation.com, Louisville, KY	1	38	86	
41		Horizon Glass & Glazing Co. horizonglass.net, Denver	1	119	120	
42	44	Specified Systems Inc. specifiedsystems.com, Canonsburg, PA	2	39	84	
43	28	Egan Co./InterClad eganco.com, Brooklyn Park, MN	4	75	75	
44	49/50	AFI Glass & Architectural Metal Inc. afiglass.com, Poughkeepsie, NY	1	35	40	
45		Austin Glass & Mirror Inc. austinglass.com, Austin, Texas	1	77	79	\$Under 20 million
46	45	R&R Window Contractors Inc. rrwindow.com, Easthampton, MA	1	75	76	
47		H.J. Martin and Son Inc. hjmartin.com, Green Bay, WI	2	930 (51 in glass and glazing division)	930	
48		Key Glass Inc. keyglass.com, Bradenton, FL	1	54	54	
49		U.S. Glass Inc. usglassco.com, Sacramento, CA	1	48	48	
50	46	Wind Ready windready.com, Miami Gardens, FL	1	70	70	

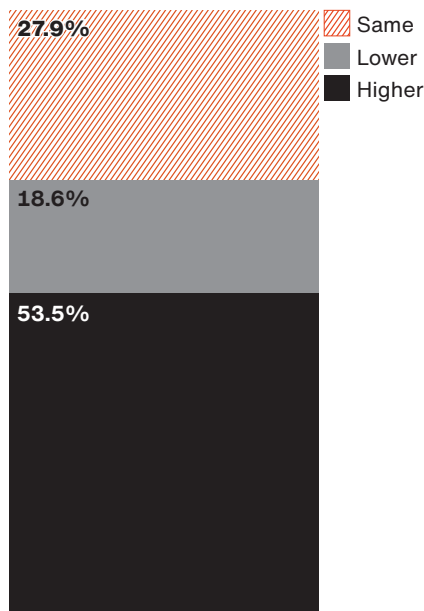
SALES AND MARKETS

As of press time, the U.S. is experiencing a recession due to the economic fallout of the COVID-19 pandemic. The severity and length of that recession, and the nature of economic recovery, remain to be seen. However, the 2020 Top 50 survey indicates that glazing firms entered the year with healthy backlogs and strong sales, building on a decade of market growth and advancement.



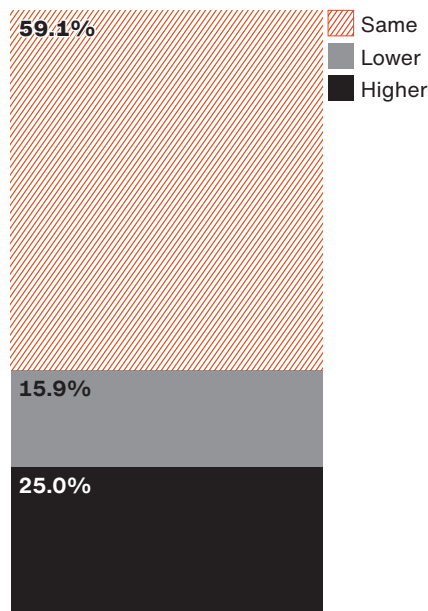
How does your backlog compare to the previous year?

A majority of Top 50 respondents, over 50 percent, reported a higher backlog in 2019 than the previous year. About a third reported that their backlog remained about the same as the previous year.



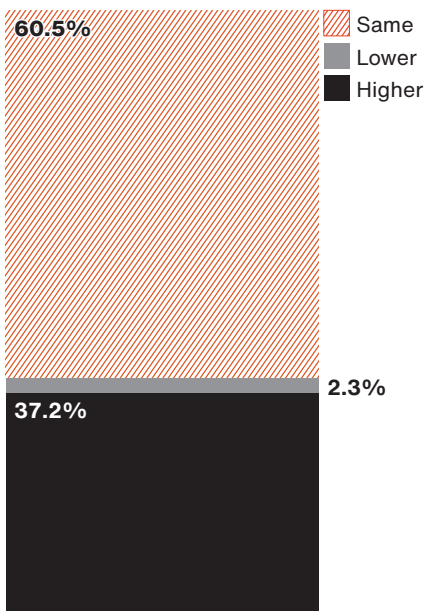
How did profit margin in 2019 compare to the previous year?

Twenty-five percent of companies said profit margins increased in 2019, compared to 31 percent in 2018. About 16 percent of respondents reported that margins decreased in 2019, up slightly from 7 percent of 2019 respondents.



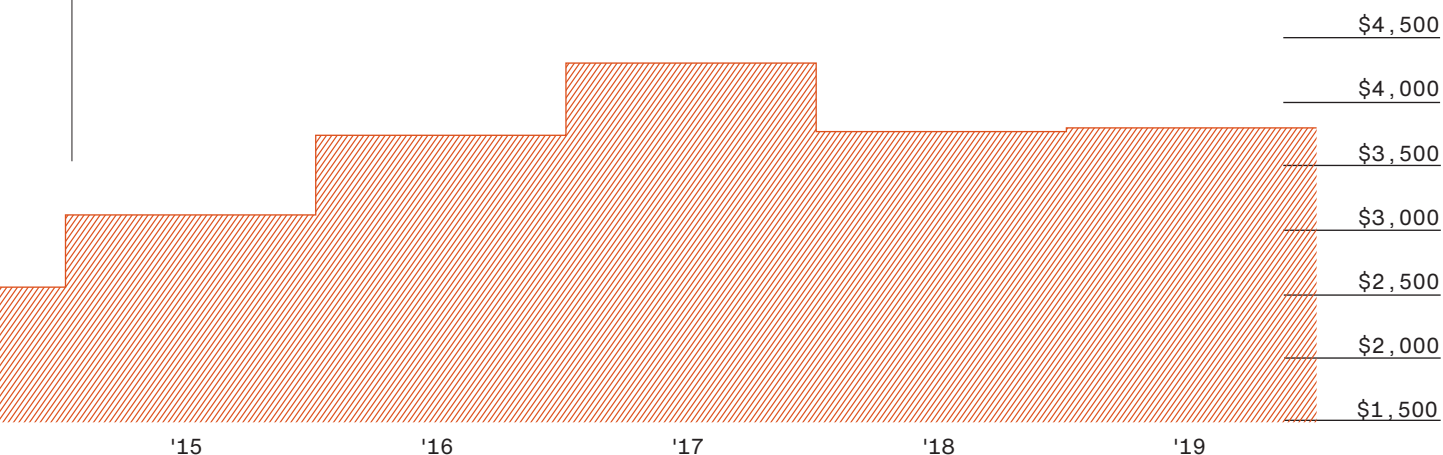
How did bid levels in 2019 compare to the previous year?

Bid levels remained steady in 2019, with a significant majority of respondents, 60 percent, saying that they were about the same as the previous year. Thirty-seven percent reported higher bid levels, and only 2 percent lower.



Total gross sales, 2009-2019 (in millions)

Combined gross sales for Top 50 companies continued to grow in 2019, showing a 0.9 percent year-over-year increase. Post-recession Top 50 sales peaked in 2017, with combined sales of \$4.3 billion, dipping in 2018 to \$3.7 billion.



TOP 50 GLAZIERS

Construction Segment While market segments are likely to rearrange next year, given the disruption in commercial work and the commercial industries that glaziers work in, Top 50 Glaziers showed continuity in the construction markets for 2019.

Top 50 companies reported office building construction as the largest market segment in 2019, at 33 percent. Responses remained similar across the different market segments, with institutional work showing a small increase from 2018.

†High-rise apartments, condos

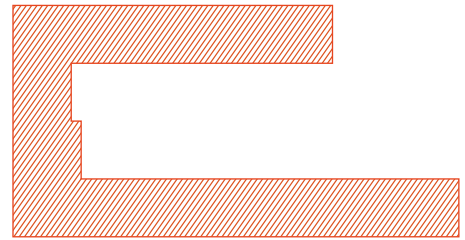
**Includes sports facilities/stadiums, museums, convention centers, houses of worship*

Commercial: Office buildings **33%**

Commercial: Hotels **6%**

Commercial: Retail **7%**

Commercial TOTAL 46%

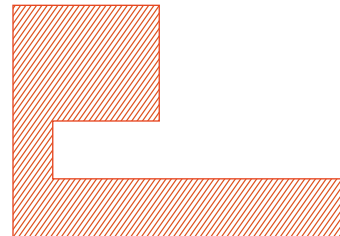


Institutional: Education **15%**

Institutional: Health Care **15%**

Institutional: Government **4%**

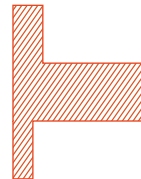
Institutional TOTAL 34%



Transportation **3%**

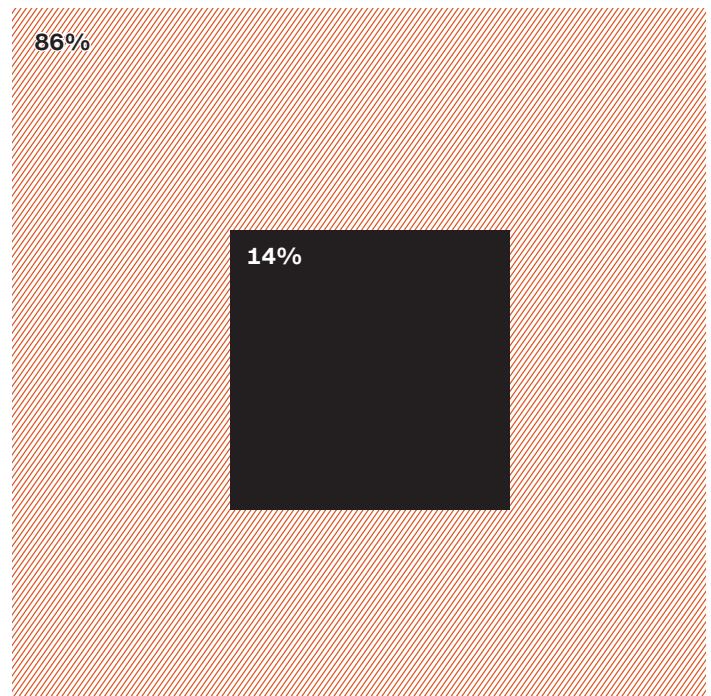
Multifamily housing[†] **14%**



Other* **2%**



What percentage of your commercial business is new construction/renovation?

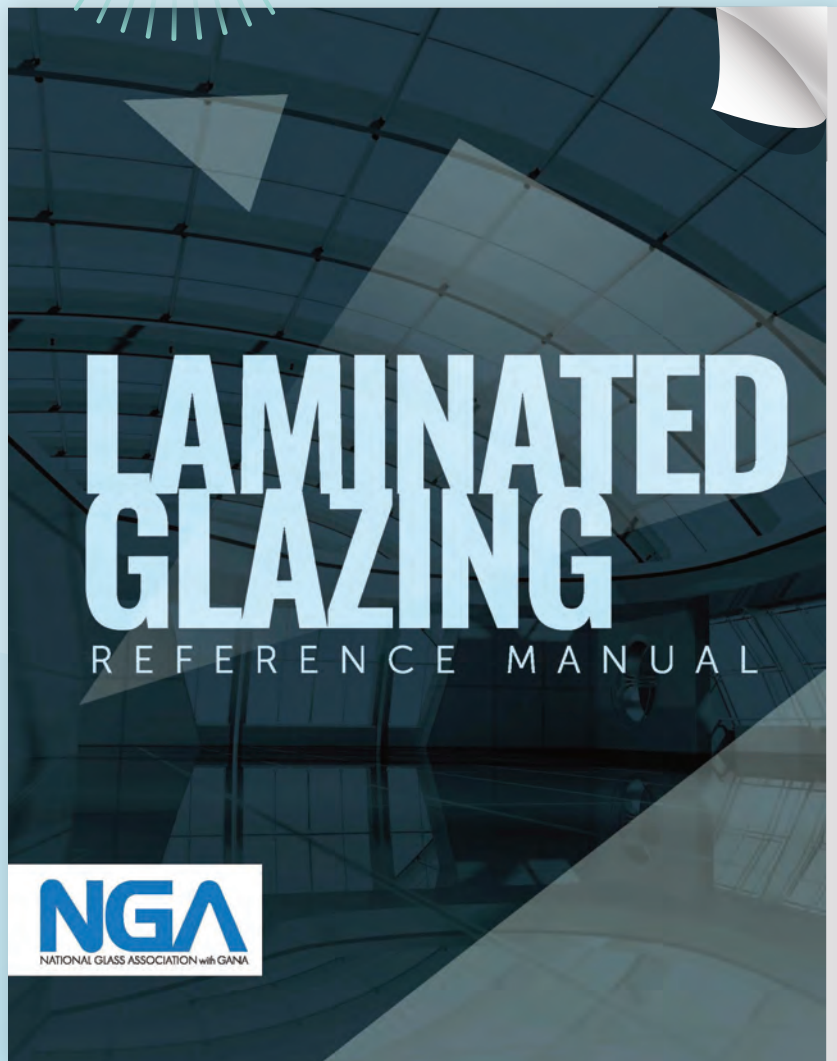
The market breakdown between new construction and renovation also remained similar in 2019; Top 50 Glaziers reported that an 86 percent average of their projects were allocated to new construction in 2019, up slightly from 83.5 percent the previous year.



 New construction
 Renovation

NEW
FOR
2019

The most up-to-date descriptions on glass
and glass performance, plus applications in:



- ✦ Hurricane resistance
- ✦ Solar control
- ✦ Photovoltaics
- ✦ Sound control
- ✦ Structural performance
- ✦ And more

Your must-have guide to clarify
and assist in properly selecting
and specifying laminated
architectural glazing materials.

Written for:

- ✦ Architects
- ✦ Engineers
- ✦ Component manufacturers
- ✦ Laminating glass installers

DIGITAL OR HARD COVER

\$35.00
NGA MEMBER

\$70.00
NON-MEMBER

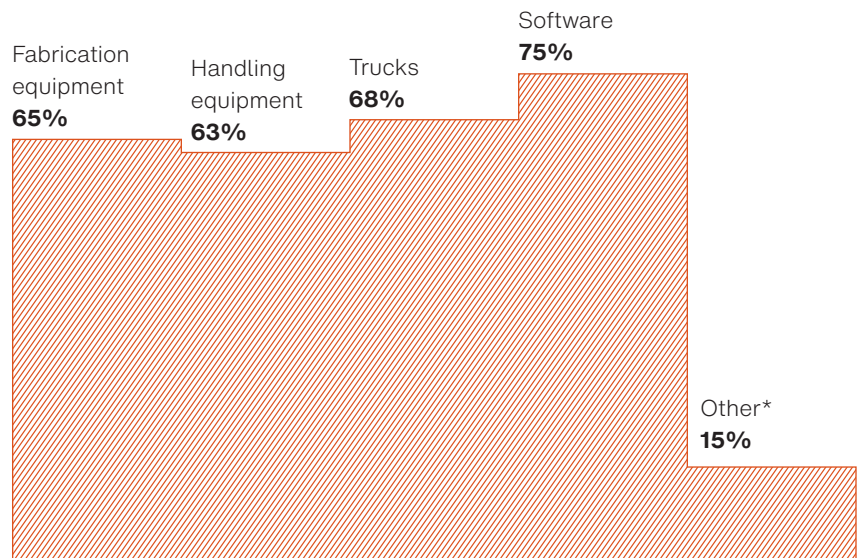
ORDER ONLINE: GLASS.ORG

PRODUCTS AND TECHNOLOGY

Top 50 companies continue to innovate and expand their fabrication and design capabilities. They are meeting demands for increased use of prefabricated systems, investing in new equipment and making strides to move toward 3D modeling.

Has your company made capital acquisitions in the past year? A

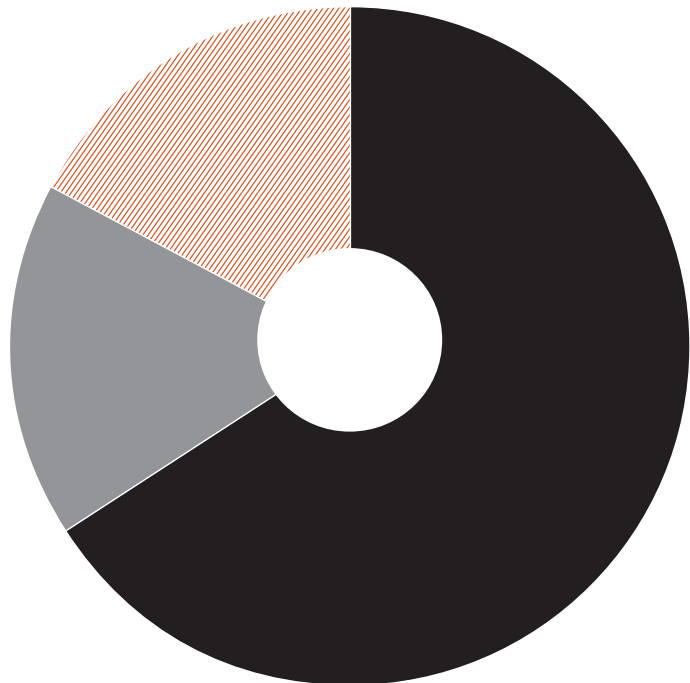
strong majority of reporting companies made capital acquisitions in 2019 in several key categories. Three quarters of firms invested in software, suggesting the significant spread of IT infrastructure among companies. Half of Top 50 Glaziers reported using some kind of software, with Revit and Rhino, both 3D modeling software, topping the list. Software used also included those not specific to construction work, including Microsoft Suite and CRM, customer relationship management software which helps companies track interactions with customers. In addition to software, 68 percent of companies invested in trucks, 65 percent in fabrication equipment and 63 percent in handling equipment.



Is your company doing any 3D

modeling/BIM? A significant majority, 66 percent, of Top 50 Glazier respondents said that they do 3D modeling and/or building information modeling in-house, and another 17 percent say that they plan to do so in the future. Respondents said some of the major benefits provided by the systems were better coordination with other trades and improved accuracy, especially for complex geometric designs. Challenges included the cost of the software and the need to train staff to use it.

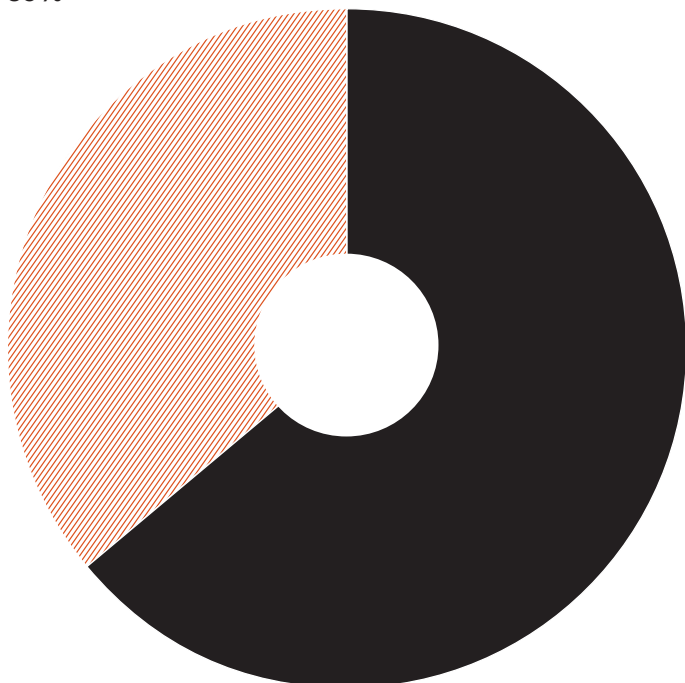
■ Yes **66%**
■ No **17%**
▨ No, but planning to do so **17%**



Are you fabricating unitized curtain wall in-house?

A majority of Top 50 Glaziers, 64 percent, report that their companies are fabricating unitized curtain wall in-house. Prefabrication is not without its challenges; respondents said finding storage and space for units was a major challenge, as well as finding skilled workers to fabricate the systems.

■ Yes **64%**
▨ No **36%**



A D V A N C E D

FIRE-RATED GLASS AND GLAZING MANUFACTURERS PUSH FOR PERFORMANCE, SECURITY

P R O T E C T I O N





In the previous decade, fire-rated glass and glazing has evolved from a more standard code-required building product to a multifunctional solution that meets a growing range of performance and aesthetic demands, while meeting life-safety requirements. Manufacturers today increasingly provide fire-rated glass and glazing solutions that are larger, more complex and better able to meet additional performance requirements for thermal efficiency, daylighting, impact safety and more.

Although fire-rated systems remain a code-driven product, the evolution in fire-rated solutions reflects increased demand from the building community to have the products do more in terms of both performance and aesthetics. “Glazing is such a critical aspect of a building’s design and performance. Fire-rated is a very focused part of that segment, but we are no longer insulated from the issues that confront our non-rated counterparts,” says Tim Nass, vice president of sales, Safi First. “If we don’t pay attention to the greater trends at hand, we will be left in the dust.” ▶

Left: For the Roux Center for the Environment at Bowdoin College in Brunswick, Maine, architects from Cambridge Seven Architects (C7A) balanced fire-safety mandates with the thermal, energy and daylighting requirements for the project’s LEED Platinum certification. It was necessary to ensure the exterior façade on the Roux Center’s exit stairwell provided fire resistance while improving light transfer and views—both of which are essential to LEED Platinum certification. To achieve these goals, C7A incorporated the 2-hour-rated Fireframes SG Curtainwall Series with Pilkington Pyrostop glass firewall by TGP for the stairwell’s exterior façade. Photo courtesy, TGP, © Jeff Goldberg/Esto.

HOW HAS THE FIRE-RATED GLASS AND GLAZING MARKET EVOLVED IN RECENT YEARS?

Below: The Ottawa International Airport recently underwent a renovation that included replacement of its fire-rated windows. The previously installed fire-rated steel windows were corroding, and the small glass openings were detracting from the overall design of the building envelope, according to officials from Aluflam. The company supplied the Aluflam 60-minute aluminum curtain wall to meet both fire-safety and aesthetic requirements.

Fire-resistive glass

In recent years, fire-resistive glass and glazing products have gained traction. Fire-resistive products block smoke, flames and radiant heat, while fire-protective products are designed to prevent spread of smoke and flames, but not heat. In the fire codes, fire-protective glazing is limited in size and application, while fire-resistive is not. “The codes evolved and the demand for fire-resistive systems with the ability to limit the transfer of radiant energy rose. The fire-rated market segment shifted from loose lites of glass to highly

complex, multi-functional systems in about 24 to 36 months,” says Nass.

Aesthetic solutions

Increasingly, designers seek fire-safety solutions that blend seamlessly with non-fire-rated products on a building. “The architectural community is continually looking to us to limit the amount of concessions previously required when designing with fire-rated glass and framing. This has led to a lineup of products that are no longer viewed as design limitations, but rather design assets,” says David

Vermeulen, North America sales director, Technical Glass Products.

Related to this trend is an increase in property-line installations, says Peter Lindgren, president, Aluflam North America. “[We’re seeing] more and more applications on the exterior due to property line infringements. This creates a greater need for our products to conform to the standards of our non-rated counterparts,” he says.

Performance and daylighting

In addition to aesthetics, architects also look to fire-rated glass and glazing to meet the daylighting and performance demands of non-fire-rated products. “As architects rely more on passive fire protection that provides daylight and other design benefits, product lines have diversified to meet specific project performance parameters,” says Kevin Norcross, general manager, Vetrotech Saint-Gobain. ►



WHERE IS THE FIRE-RATED GLASS MARKET HEADED?

-

Thermal performance

Demands for better thermal performance will continue. “As we continue to get pulled to the exterior of the building due to property line requirements or other concerns, attention is being paid to the ancillary performance concerns, primarily thermal performance,” says Safti First’s Nass. “As the performance codes become more stringent, the building community will want to see the impact of transparent fire barriers on their projects.”

Security

“Developers and owners have to consider ways to keep their building’s occupants safe,” says Nass. “This market segment is rapidly evolving, and our discussion surrounding security in traditionally non-secure buildings has gone up immensely.”

Adds TGP’s Vermeulen, “Today’s buildings face unprecedented life-safety and security threats. So, whether a product helps delay intruders or protects against high winds and wind-borne debris, you can expect the need for fire-rated glazing products that perform on multiple levels to only grow.”

Larger sizes

The trends of the non-fire-rated glass market are reflected in those for the

fire-rated segment, beginning with the push to larger glass sizes. “We continue to see the more-glass trend drive questions from architects and customers,” says Vermeulen. “At the top of the list is: ‘What is the largest piece of fire-rated glass I can get?’”

More versatile framing

Related to the trend toward larger sizes is a move to better sightlines and slimmer framing profiles. “The trend is toward more versatile framing options. It’s an area where design professionals are really looking to the fire-rated glazing industry

for innovation, as frame profile shape impacts the quality of sightlines and sets the aesthetic tone. This is one reason why you can expect to see a spike in fire-rated glazing systems with a frameless look, like butt-glazed or silicone-glazed assemblies,” Vermeulen says.

Thinner glass

Rob Botman, general manager for Glassopolis, says he also sees a push for thinner glazing units. “No one wants 1-inch- or 2-inch-thick glass in their fire-rated doors anymore,” he says. ▶



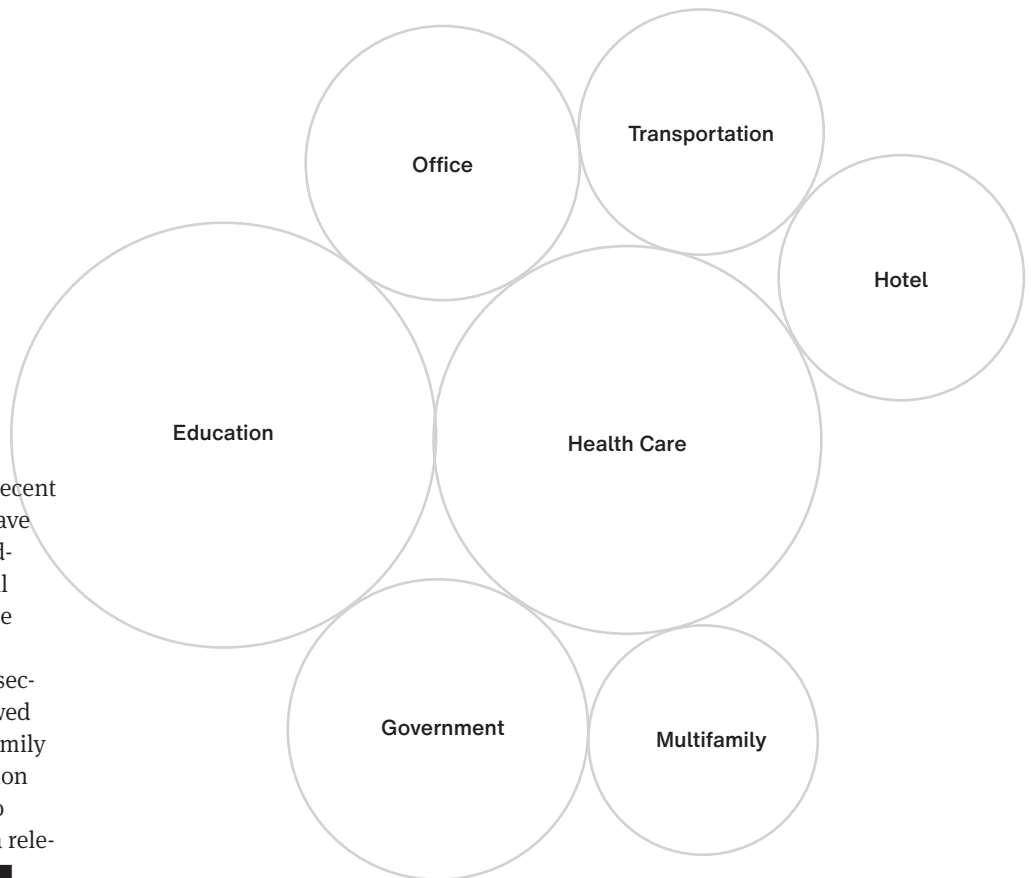
Above: The Starbucks Reserve Roastery in Chicago features a four-story mural in the building’s exit stairwell by local artist Euliojio Ortega. To allow the mural to be visible through multiple floors and meet fire-rated code requirements, the architects redesigned the 2-hour-rated stairwell using transparent, floor-to-ceiling butt-glazed glass walls with large-size fire-resistive glass panels. To meet all the design and code requirements, the architects selected fire-resistive, ASTM E-119 rated SuperLite II-XLB 120 by Safti First with Starphire Ultra-Clear glass for its optical clarity, large panel sizes and butt-glazing capabilities. The accompanying entry system features Safti First’s GPX Builders Series Temperature Rise Door with fire-resistive, ASTM E-119-rated SuperLite II-XL 90 with Starphire Ultra-Clear glass.



WHERE ARE FIRE-RATED PRODUCTS BEING USED?

While fire-rated glass and glazing products have evolved greatly in recent years, the application locations have remained fairly consistent. According to manufacturers, institutional construction continues to drive the fire-rated market.

The education and health care sectors lead fire-rated projects, followed by government and office. Multifamily residential, hotel and transportation capture smaller market shares. No manufacturers reported retail as a relevant segment for fire-rated glass. ■



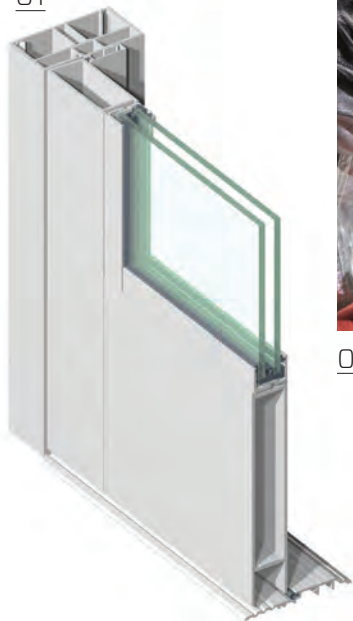


Top left: When the Mall of America in Bloomington, Minnesota, was building its new transit center, the Metro Transit authority relied on architect Snow Kreilich to design a fire-resistive assembly to transform a once dark and utilitarian passenger station into an open, code-compliant hub for the state's largest passenger terminal. To meet project goals, Vetrotech provided glazing contractor Envision Glass more than 3,000 square feet of Contraflam and Contraflam Structure 60 IGU, as well as VDS framing assemblies, doors and curtain wall. Photo by Gaffer Photography.

Above: The Quarry is a large multifamily residential complex in Eagan, Minnesota. It is a lifestyle community with many common amenities, and the mix of residential and common spaces requires fire separations. Architects chose Schott Pyran Platinum fire-rated glass from Glassopolis for the project, meeting fire-rated requirements and achieving a modern open look, according to Glassopolis officials.



01



02

03



SHOWCASE

PROTECTIVE GLAZING

01. Hurricane doors

Tubelite Inc.'s ForceFront Storm hurricane/impact architectural entrance door systems offer an expanded choice of approved hardware. These new door systems are suited for low- and mid-rise buildings in regions with hurricanes and storms. Engineered for compliance with HVHZ Wind Zone 3, large missile impact, these door systems also meet large missile impact glazing requirements for C, D, and E missile per Testing Application Standard 201 and ASTM E1886-13a and E1996-17.

800/866-2227 | TUBELITEINC.COM

02. Fire-rated ceramic

Schott Pyran Platinum, distributed by Glassopolis, is a large glass ceramic sheet measuring 51 by 99 inches that is a suitable platform for building various protective glazings, say officials. Pyran Platinum has stand-alone fire-protective and optical properties, and can also be combined with films or laminates to produce versions that are tailored to specific fire-rated applications.

800/262-9600 | GLASSOPOLIS.COM

03. Bullet-resistant doors

Full Vision Bullet Resistant Doors, supplied by C.R. Laurence, feature a built-in continuous geared hinge to optimize security and reduce visible hardware. The slim-profile doorframe and door latch are made for use with a single panel of bullet-resistant acrylic, which produces unobstructed views. The system, which is designed for interior applications, offers Level 1 or Level 3 ballistic protection per UL 752 testing standards.

800/421-6144 | CRLAURENCE.COM

04



04. Security interlayer

Saflex Clear interlayer adds security features to laminated glass, which is designed to be versatile in both preventing injuries and rapid entry while protecting the building interior. Laminated glass made with Saflex Clear PVB interlayer helps ensure glass stays in place, and resists entry or penetration in cases of bomb blasts, ballistic attack, forced entry or vandalism.

419/705-6857 | SAFLEX.COM

**You need it right
& you need it now.
SAF, your choice for
aluminum sheet,
extrusions, architectural
metal, fabrication &
aluminum finishing.**

**NOW Serving the
Midwest from
INDY!!**



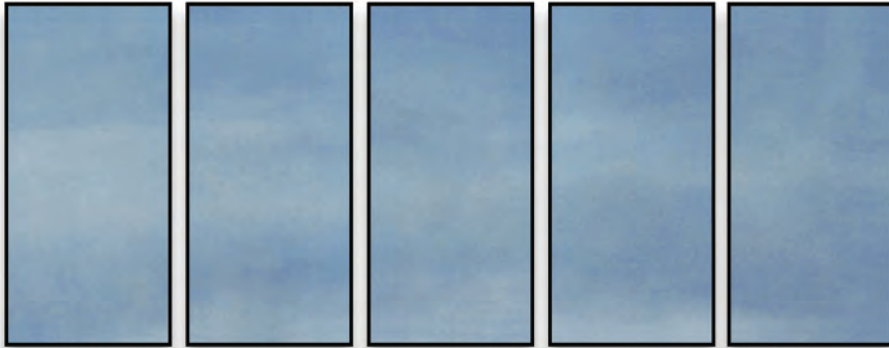
visit our galleries at www.saf.com/saf-gallery

- ✓ **NO FREIGHT** on extrusion or sheet orders over 100 lbs.
- ✓ **Next Day Out Extrusions Service**
- ✓ **State-of-the-art Anodizing, Paint & Powder Finishing Services Coast-to-Coast**
- ✓ **Column Covers, Metal and ACM Panels**
- ✓ **Cost-saving, Color-consistent Coil Anodizing**
- ✓ **The only extruded Aluminum Cornice System with Arch & Radius profiles**

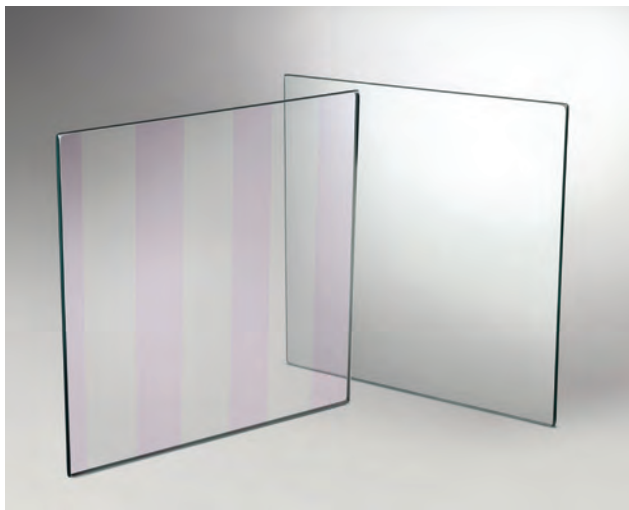


Order at [www. SAF.com](http://www.SAF.com)
Call SAF Atlanta-GA: 800-241-7429
Call SAF West-CA: 866-660-6627
Call SAF Midwest-IN: 800-357-9016

01



02



03

01. Performance coating

Viracon introduced its coating, VRE-4725, featuring neutral to graphite reflected tones, 47 percent visible light transmission, and a 0.25 solar heat gain coefficient. The coating can be combined with a broad selection of other fabrication options. It can be applied to a variety of tinted substrates to alter the exterior aesthetics and further improve solar performance and glare reduction, according to the company. It can be applied on the same surface as digital print or silkscreen.

800/533-2080 | VIRACON.COM

02. Bird glass

Guardian Bird1st glass offers a balance of solar performance, aesthetics and bird safety. A UV stripe coating on the first surface is virtually invisible to the human eye in dry conditions and visually signals an impending barrier to birds and helps prevent collisions. Views remain clear, unlike traditional ceramic frit solutions, all while helping protect birds. Paired with select Guardian SunGuard low-emissivity coatings, Bird1st glass meets LEED Pilot Credit 55.

855/584-5277 | GUARDIANGLASS.COM

03. Windows and doors

Kolbe Windows & Doors' VistaLuxe Collection with the addition of the all-aluminum VistaLuxe AL Line—the original collection—has been reintroduced as the VistaLuxe WD Line. This line offers clean lines and multiple units to create large expanses of glass with an extruded aluminum exterior for low-maintenance durability, and a warm wood interior.

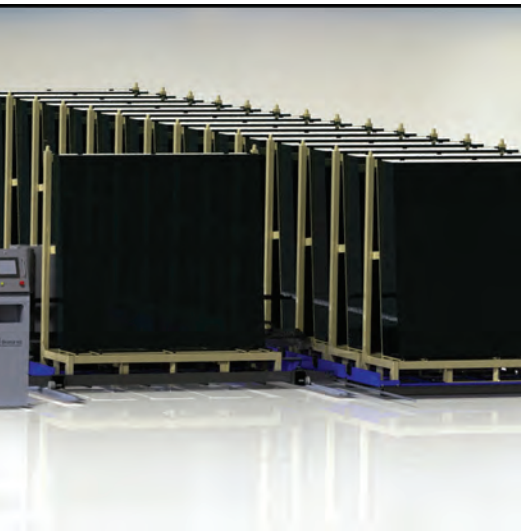
715/842-5666 | KOLBEWINDOWS.COM

04. Hands-free doors

Hands-free door openers from Stylmark are designed to work with latchless doors. These openers are suitable for restaurants, casinos, hotels and other environments where restrooms have a lot of daily foot traffic. Openers are manufactured from anodized aluminum and are customizable.

800/328-2495 | STYLMARK.COM

04



05

05. Rack system

Bromer introduced its Returnable Steel Rack Shuttle System. The system is built in North America and is entirely controlled and monitored with a user-friendly touch screen for fast access to different types of glass. It reduces or eliminates downtime manipulation and can be controlled with many optimization programs, according to the company.

450/477-6682 | BROMERINC.COM

Silver coating (*not pictured*)

Cardinal Glass Industries launched Quad LoE-452, a true four-layer silver coating with solar control and the lowest emissivity within the Cardinal Glass family of low-E coatings, say officials. Quad 452 comes standard with Neat+ glass, creating a combination of superior performance and naturally cleaner glass. Quad 452 has a solar heat gain coefficient of 0.22, a visible transmittance of 52 percent, and a 2.30 light-to-solar-gain ratio.

952/229-2600

CARDINALCORP.COM/QUAD

glasstec

INTERNATIONAL TRADE FAIR FOR GLASS
PRODUCTION • PROCESSING • PRODUCTS

DÜSSELDORF | GERMANY

YOU'RE CRYSTAL CLEAR

From energy generation, CO2 reduction, effective production, processing and refining technologies to groundbreaking glass products and applications. Glass: the transparent high-tech material with brilliant prospects for the future. Find concentrated expert knowledge on the latest glass developments, research and projects in the think tank at the glasstec conference.

glasstec-online.com

For show information: Messe Düsseldorf North America
Tel. (312) 781-5180 _ info@mdna.com
www.mdna.com
For hotel and travel arrangements: TTI Travel, Inc.
Tel. (866) 674-3476 _ info@ttitravel.net

**Messe
Düsseldorf
North America**



Thibault

Fenestration and Glazing Industry Alliance

The Fenestration and Glazing Industry Alliance hired

Nathalie Thibault, who will serve the organization as Technical Manager, Glass Products and Canadian Industry Affairs. Throughout 2020, Thibault will shadow FGIA Glass Products and Canadian Industry Affairs Director Marg Webb to prepare to take on her duties upon Webb's retirement in early 2021.

Eastman Chemical Co.

The board of directors of Eastman Chemical Co. elected *Charles K. Stevens III* as a director. Stevens is the retired executive vice president and chief financial officer of General Motors Co. After a 40-year career with General Motors, Stevens retired as chief financial officer in September 2018. As CFO,

Stevens led GM's global financial and accounting operations from 2013.



Bruce

Kalwall Corp.

Kalwall Corp. promoted *Kevin Bruce* to national sales manager North America, panels and accessories division.

Bruce will oversee Kalwall's sales and support team for its direct and distributor sales network in North America. He is charged with leading strategic planning, as well as personnel decisions. Bruce replaces Jim Andrus, who is retiring after 40 years at Kalwall.



Carroll

American Insulated Glass

American Insulated Glass appointed *Charles "Chip" Carroll* as sales manager for the recently

acquired A. L. Smith Glass fabrication

facility in Maryland. Carroll will be responsible for sales throughout the Mid-Atlantic region.

Shower Doors & More Inc.

Tyler Giacin joined Shower Doors & More Inc. as production manager. In his new role, he will assist in the continued growth of his family's glass fabrication company.



The Gomms

The Glass Guru

The Glass Guru welcomed the organization's newest owners to the franchise network. *Michael*

and *Valarie Gomm* completed their initial franchise training at The Glass Guru's North American headquarters in Roseville, California. The Gomms will launch their franchise location in Wichita, Kansas.

HEAVY GLASS DOOR

DESIGN GUIDE



NGA
NATIONAL GLASS ASSOCIATION with GANA

THE AUTHORITATIVE MANUAL ON GLASS ENTRANCE SYSTEMS

RECENTLY UPDATED TO THE LATEST STANDARDS

A must-have resource for architects, fabricators and contractors who require technical information and application suggestions for fully tempered, heavy glass storefront and entrance design.

ORDER YOUR COPY TODAY!

\$45.00
NGA MEMBER

\$90.00
NON-MEMBER

ORDER YOUR COPY NOW

GLASS.ORG

Petersen Aluminum Corp.

Petersen Aluminum Corp. hired *Grant Henry*, a representative who is part of the firm Building Enclosure Specialist Team Hawaii, to represent Petersen's PAC-CLAD products. Henry is based in Honolulu and Maui.



Ulrich

Safti First

Safti First welcomed Archon Fenestration Technologies LLC to its growing network of sales representatives.

Archon Fen-Tech started representing the Kansas, Missouri and Nebraska territories for Safti First. Archon Fen-Tech also represents Viracon, Tubelite, PRL Glass Systems Inc. and Skyline Skylite LLC. Principal *Doug Ulrich* is a 32-year veteran in the architectural glass and architectural aluminum industry.



Neal

SDC

SDC hired *Les Neal* as its business development manager, Central Region, responsible for all major accounts,

distributors, and security and hardware representatives. Neal is responsible for all major accounts, distributors, and security and hardware representatives in the Central territory encompassing Minnesota, North Dakota, South Dakota, Wisconsin, Iowa, Nebraska, Kansas, Missouri, Illinois, Indiana, Oklahoma, Arkansas, Texas—excluding El Paso—Louisiana, Mississippi, western Tennessee, Ohio, Kentucky, West Virginia and western Pennsylvania.



Thomas

RazorGage

RazorGage named *John Thomas* as national sales manager for North America. RazorGage manufactures

automated stop/pusher systems as well as optimizing cutoff saw systems.

Thomas brings with him 25 years of experience in the metal-working machinery and fenestration machinery

industries. Prior to joining RazorGage, he served as the national sales manager for Italmac USA, and before that, he served in the same role with Omga Inc.

Ensinger Building Products

Ensinger Building Products, a subsidiary of Ensinger GmbH Group in Germany, appointed *Peete J. Kikerpill* as the new West Coast sales representative

for Ensinger Building Products North America. Kikerpill succeeds former West Coast representative Mike Gainey. Kikerpill is a resident of Southern California.



ADD A MIRRORMATE FRAME + INCREASE PROFIT

Measure mirror & order online from 65 styles.
Covers clips & fits any mirror.
Ships in 3 days, installs in minutes.
Your clients will love you for it.

**BECOME A
DEALER**

MirrorMate®
F R A M E S

mirrormate.com/dealer
dealer@mirrormate.com
(704) 390-7375



Classifieds

Glass Magazine®'s classified ad section provides a convenient, cost-effective way to reach our 39,318 unique and verified print and digital subscribers. The deadline for the August issue is June 16. For more information or to submit your ad for a price quote, e-mail: classifieds@glassmagazine.com. New equipment/product ads are prohibited.

BUSINESS OPPORTUNITIES

CONTRACT INSTALLATION COMPANY

54-year-old commercial glazing company in Indiana is looking for a partner that specializes in commercial installation. We specialize in schools and have the ability to greatly expand with a qualified partner. Contact tkeusch@keuschglass.com.

AGENTS / DISTRIBUTORS

Well-established Italian company with long experience on fabrication of glass washing machines and well known in the US and Canadian markets is looking for Agents or Distributors in North America and Canada. For those who would be interested please email: Fiorella Quaranta at fiorella@quarantasnc.com.

FOR SALE

X-RAY LEADED GLASS

McGrory Glass, Inc. can provide x-ray leaded glass products cut to size within 24 hours. Laminated/safety x-ray glass is also stocked for immediate availability. E-mail: xray@mcgrory.com. Ph: 800/220-3749 Fax: 856/579-3233 www.mcgrory.com

BUSINESS FOR SALE

BUSINESS FOR SALE

Glass & Mirror Installation and Replacement. Pacific NW, Estab. 1964. \$800,000 annual revenue. Contact fred@thequincygroup.net

FLORIDA GLASS FIRM FOR SALE

Mid-sized glass and aluminum firm, established in 2006. Main focus on commercial work, but can be used for any type of glass. Average projects are \$150K to \$300K with gross receipts for past 3 yrs averaged 1.5 mil. Owner is sick and is retiring. Trucks, tools and negotiated inventories for \$550K. Available real estate has options upon request. Serious inquiries email: Glass4SaleOrlando@gmail.com

FOR SALE 47 YEAR OLD ESTABLISHED BUSINESS

42 years at current location on Oregon Coast, Excellent clientele base, Commercial/Residential. A growing market with new developments on the rise. Asking \$169,900 for vehicles, tools, and stock. Building for sale or lease by owner. Gross sales for 2017-445K, 2018-450K, 2019-535K. Serious inquiries: randall@siuslawglass.com

GLASS SHOP FOR SALE

Full-service shop with extensive client list on St. Thomas USVI. Owner retiring after 32 years. 275K or best offer. Contact marty@islandiarealestate.com

BUSINESS FOR SALE

3-man glass shop 40 years on Florida East Coast. Average gross sales over \$500M per year. Owner may finance. Business \$175M. 772/287-0080

Established 1988, Indianapolis. Profitable & Respected Glass Company. 585K in annual sales. Owner needs to retire after 31 years. Steven Swartz: Broker 317/777-1999 or stevsellsindy@gmail.com

USED EQUIPMENT



GLASS FABRICATION MACHINERY

Top selection of:

- Glass Tempering Furnaces
- CNC Water Jets
- Edging/Beveling
- EVA/PVB Laminating
- CNC Glass Cutting Tables
- CNC Milling/Routing
- Automatic Drilling
- Glass Handling
- Glass Washing
- Used equipment

Your complete source for true "value" with over 700 machines currently in operation.

www.ervinsales.com

Ph: 916/933-8367



CANADIAN EQUIPMENT SALES YOUR INSULATED GLASS EQUIPMENT SPECIALIST.

We sell a wide variety of new and used equipment for the window and glass industry.

FINANCING AVAILABLE

Check our new and
easy-to-use website!
canadianequipmentsales.ca

Call Us Today!
(587) 839-9108



YOUR INSULATED GLASS EQUIPMENT SPECIALIST.

We offer NEW & USED equipment for the glass & window industries. We also consign used equipment.

FINANCING AVAILABLE

Check our new website!
ameracanequipment.com

Call Us Today!
(855) 669-9108
(303) 669-9108

NEW & USED GLASS MACHINERY

[vince@](mailto:vince@americanglassmachinery.com)

americanglassmachinery.com
americanglassmachinery.com

PH: 724/348-8450

BUSINESS SERVICES

Established: 1996

Services: Highly detailed and accurate, shop drawings and engineering exclusive to the contract glass and aluminum industry. Any manufacturer's products drawn.

Hours/address: M-F, 8 am to 5 pm, 8126 Foxdale Drive, Norfolk, VA 23518



Contact: 757-587-1898, adisales@accuratedrafting.com

More information: www.accuratedrafting.com
(drawing examples available there)

Pricing: Contact ADI for a no cost, formal quotation with completion date.

Principals: Bill Pilcher and Tony Wood

KS Drafting & Design, LLC

FAST, AFFORDABLE SHOP DRAWINGS, & DESIGN SERVICE

Full service drafting firm providing high quality, accurate, on time, and on budget shop drawings within the glass, and glazing industry. Providing shop drawings, and engineering services for projects located all over the country. Engineers licensed in all 50 states.

Recent shop drawing projects can be emailed or mailed upon request.

If your looking for high quality and personal service, then we are the drafting firm for you. Please contact us for a free, fast, competitive, shop drawing, and/or engineering quote.

Kyle Schneck
Phone: (717) 228-7114
kyle@ksdraftingdesignllc.com
ksdraftingdesignllc.com
7035 Woodsman Dr.
Harrisburg, PA 17111
7am – 7pm EST, Mon.-Fri.

SHOP DRAWINGS

Quality drawings, low prices, short lead times, exterior and interior scopes, all manufacturers. Email: pricing@landmarkglazingservices.com

EMPLOYMENT SERVICES



Give us a call for the results you deserve!

5825 Ellsworth Ave.
Pittsburgh, PA 15232

1-800-875-6268
412-954-0000

FAX 412-954-0030

www.holampcoresources.com

patti@hlcinternational.com
gary@hlcinternational.com

HELP WANTED



Now Hiring Independent Glazing Sales Reps. Please email Bradley@starlightskylights.com for more information.

WANTED

WANTED: GLASS

...used, surplus, or obsolete inventories of tempered and insulated glass panels. Call Damon w/repurposed MATERIALS, 303/321-1471.

CONSULTANT SERVICES



Full Service Consulting Programs

- Marketing
- Sales
- Codes
- Operations
- Research
- & so much more!

solesourceconsultants.com | info@solesourceconsultants.com

Suppliers Guide

ARCHITECTURAL FINISHES

ANODIZING



Stylmark Inc.
6536 Main St. NE
Minneapolis, MN 55432
US: 800/328-2495
Phone: 763/574-7474
Fax: 763/574-1415
E-mail: info@stylmark.com
www.stylmark.com

NGA

COLOR COATING

GlassKote USA
Phone: 866/664-8833
E-mail: info@glasskoteusa.com
www.glasskoteusa.com

NGA

ARCHITECTURAL GLASS/FLAT GLASS

GENERAL



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV



Glassfab Tempering Services, Inc.
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@glassfabUSA.com
www.GlassfabUSA.com

ADV



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA

ANTI-REFLECTIVE



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

BENT

Go to category BENT GLASS

BLAST RESISTANT



RAY-BAR
USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV

NGA

Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com

ADV

NGA

BULLET RESISTANT



RAY-BAR
USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA

Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com

ADV

NGA

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV

NGA



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com

ADV

NGA

BURGLARY RESISTANT



RAY-BAR
USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA

CHEMICALLY STRENGTHENED



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)

ADV

NGA

COLOR COATED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

DECORATIVE

Go to category DECORATIVE GLASS

DISTRIBUTORS



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

NGA

SGC International Inc.
6489 Corvette Street
Commerce, CA 90004
US: 866/802-8682
Phone: 323/318-2998
Fax: 323/318-2999
E-mail: sgccjames@yahoo.com; hennysgc@gmail.com
www.sgc-usa.com
(See our ad on page 73)

DYNAMIC GLAZING



Innovative Glass Corp.
eGlass® - Smart Glass Solutions
Plainville, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com

ADV

NGA

FIRE-RATED

Vetrotech Saint-Gobain Fire-Rated Glass and Framing
2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com

ADV

NGA



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

NGA



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com

ADV

NGA



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



RAY-BAR
USA
Fastest Fire Glass and IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA

NGA



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV

NGA



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com

ADV

NGA

FIRE-RATED: IMPACT RESISTANT



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com

ADV

NGA



RAY-BAR
USA
Fastest Fire Glass and IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA

NGA



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV

NGA



Technical Glass Products

8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com

ADV
NGA

FLOORS



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV
NGA

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

GLARE REDUCING, FINISHED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

HANDRAILS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

HEAT SOAKED



Glassfab Tempering Services ADV
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

HEAT-STRENGTHENED



Glassfab Tempering Services ADV
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

INSULATING

Go to category INSULATING
GLASS, PRODUCTS,
COMPONENTS & EQUIPMENT

LAMINATED

Go to category LAMINATED
GLASS & EQUIPMENT

LEAD

Amerope Enterprises Inc.

150 Commerce Rd.
Boynton Beach, FL 33426
US: 800/327-3320
Phone: 561/737-3730
Fax: 561/737-3721
E-mail: claire@amerope.com
www.amerope.com

NGA



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



RAY-BAR
USA

NGA

Fastest X-Ray Glass
and IGU's Available
US: 800/444-XRAY
Fax: 800/333-XRAY
E-mail: sales@raybar.com
www.raybar.com

LOW-EMISSION

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

LOW IRON



GGI

101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

OVERSIZED



Glassfab Tempering Services ADV
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

PATTERNED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA



GGI

101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

POINT-SUPPORTED SYSTEMS

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

PRIVACY: ELECTRICALLY SWITCHABLE

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Innovative Glass Corp.

eGlass® - Smart Glass Solutions
Plainview, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



SECURITY



RAY-BAR
USA

NGA

Security, Ballistic Glass
and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

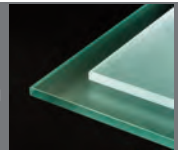
ADV
NGA



CRYSTAL ULTRA CLEAR GLASS

SGC Low iron glass products are the perfect
choice for beauty and energy efficiencies

Ultra Clear Low Iron Glass



- Ultra Clear Low Iron Glass
- Low Iron Satin Etched Glass
- Low Iron Copper Free Mirror
- Flat Tempered Glass
- Bent Tempered Glass
- Safety Laminated Glass
- Anti-reflective Coated Glass
- Low-e Coated Glass
- Digital Printing Glass
- Silkscreened Glass
- Insulated Glass Units



www.sgc-usa.com
Tel: (323) 318-2998; 1-866-802-8682
Fax: (323) 318-2999 email:sgciusa@gmail.com

SILKSCREENED



Glassfab Tempering Services ADV
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obc.com

ADV
NGA

SOLAR CONTROL



Innovative Glass Corp.

eGlass® - Smart Glass Solutions
Plainview, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



Suppliers Guide



CRISTACURVA
ADVANCED TECHNOLOGY GLASS

Curved Glass & Specialty

- Curved
- Structural
- Safety
- Over-sized
- Digital Printing
- Silkscreened
- Insulated Units

✉ sales@cristacurva.com

Toll Free: 1-866-827-6049

www.cristacurva.com

CURVED GLASS CREATIONS

SPECIALIZING IN:

- LAMINATED SAFETY GLASS
- HEAT STRENGTHENED
- INSULATED UNITS
- ANNEALED
- EXPEDITED LEAD TIMES

FROM STOCK CURIO CABINET GLASS TO SPIRAL STAIRCASE GLASS WE DO IT ALL

www.CurvedGlassCreations.com
Toll Free (888) 288-9129
Fax (954) 917-0040



PRELCO

Prelco Inc.
94 Cartier Blvd.
Riviere-du-Loup, GQ G5R 2M9
Canada
US: 800/463-1325
Phone: 418/862-2274
Fax: 418/862-8181
E-mail: sales@prelco.ca
www.prelco.ca

TEMPERED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Glassfab Tempering Services **ADV**
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@glassfabUSA.com
www.GlassfabUSA.com



PRELCO

Prelco Inc.
94 Cartier Blvd.
Riviere-du-Loup, GQ G5R 2M9
Canada
US: 800/463-1325
Phone: 418/862-2274
Fax: 418/862-8181
E-mail: sales@prelco.ca
www.prelco.ca

Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obc.com

TRANSLUCENT

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

VARIABLE TRANSMITTENT



Innovative Glass Corp.
eGlass® - Smart Glass Solutions
Plainville, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com

WIRED



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



RAY-BAR **NGA**
USA
Fastest Fire Glass and IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

X-RAY SHIELDING

Amerope Enterprises Inc. **NGA**
150 Commerce Rd.
Boynton Beach, FL 33426
US: 800/327-3320
Phone: 561/737-7370
Fax: 561/737-3721
E-mail: claire@amerope.com
www.amerope.com



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



RAY-BAR **NGA**
USA
Fastest X-Ray Glass and IGU's Available
US: 800/444-XRAY
Fax: 800/333-XRAY
E-mail: sales@raybar.com
www.raybar.com



Technical Glass Products **ADV**
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com

BATH ENCLOSURES & RELATED ITEMS

GENERAL



Glassfab Tempering Services **ADV**
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@glassfabUSA.com
www.GlassfabUSA.com



American Shower Door **NGA**
6920 E. Slauson Ave.
Commerce, CA 90040
US: 800/421-2333
Phone: 323/726-2478
Fax: 323/726-7469
E-mail: sales@americanshowerdoor.com
www.americanshowerdoor.com

ENCLOSURES: CURVED



Precision Glass Bending Corp. **ADV**
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)

ENCLOSURES: GLASS STALLS



Oldcastle BuildingEnvelope* **ADV**
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obc.com

HARDWARE



Frameless Hardware Company
4361 Firestone Blvd.
South Gate, CA 90280
US: 888/295-4531
Fax: 323/336-8307
E-mail: info@fhc-usa.com
www.fhc-usa.com

Oldcastle BuildingEnvelope* **ADV**
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obc.com

SHOWER DOORS

Oldcastle BuildingEnvelope* **ADV**
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obc.com

BENT GLASS

GENERAL

Cristacurva
4822 Southerland Rd.
Houston, TX 77092-3024
Phone: 866/827-6049
Fax: 866/833-0906
E-mail: sales@cristacurva.com
www.cristacurva.com
(See our ad on this page)

Curved Glass Creations
4100 Powerline Rd., Ste. T-2
Pompano Beach, FL 33073
US: 888/288-9129
Phone: 954/917-0039
Fax: 954/917-0040
E-mail: info@curvedglasscreations.com
www.curvedglasscreations.com
(See our ad on this page)



Precision Glass Bending Corp. **ADV**
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



Standard Bent Glass Corp. **NGA**
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com

BENT/CURVED GLASS



Precision Glass Bending Corp. **ADV**
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)

DECORATIVE



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com



INSULATING



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com



LAMINATED



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com



SAFETY



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



SPANDREL



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



TEMPERED



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



TEMPERED/LAMINATED



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com



TEMPERED/LAMINATED



Precision Glass Bending Corp.
P.O. Box 1970
3811 Hwy. 10 West
Greenwood, AR 72936-1970
US: 800/543-8796
Phone: 479/996-8065
Fax: 800/543-8798
E-mail: sales@e-bentglass.com
www.e-bentglass.com
(See our ad on page 75)



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com



COMPUTER SOFTWARE

ACCOUNTING

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail: sales@mainstreetcomp.com
www.mainstreetcomp.com



BUSINESS

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail: sales@mainstreetcomp.com
www.mainstreetcomp.com



CALL CENTERS

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail: sales@mainstreetcomp.com
www.mainstreetcomp.com



CAPACITY PLANNING



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



ESTIMATING



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



GDS Storefront Estimating
2033 San Elijo Ave. #221
Cardiff by the Sea, CA 92007
Phone: 858/538-4375
Fax: 858/538-4376
E-mail: sales@gdsestimating.com
www.gdsestimating.com
(See our ad on this page)



FABRICATION



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



GLASS CUTTING



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



INSULATING GLASS



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



INVENTORY



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail: sales@mainstreetcomp.com
www.mainstreetcomp.com



The World Leader
in Custom Fabricated

BENT GLASS

• SAFETY TEMPERED • INSULATING
• ANNEALED • SAFETY LAMINATED
• HEAT-STRENGTHENED

Radius or Irregular Bends
Sizes up to 96" x 130"
1/8" to 3/4" Thickness

Architectural, Interior,
Solar & Transport

Clear, Tinted, Low-E,
Reflective, Acid-Etch,
Low-Iron or Specialty

Polished Edges, Holes,
Notches, and Cuts

Precision Glass Bending

(800) 543-8796 • FAX (800) 543-8798
www.e-bentglass.com
Guardian SunGuard Select™ Fabricator

INVOICING



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail: sales@optima-america.com
www.optima-america.com



Fenestration software
made simple

EASILY CREATE
• Drawings • Reports
• Quotes • Cut Sheets

FREE TRIAL

858.538.4375
gdsestimating.com/try

Suppliers Guide

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

MEASURE SHEET

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

MOBILE TECH APP

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

OPTIMIZATION



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail:
sales@optima-america.com
www.optima-america.com

NGA

PAYMENT PROCESSING

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

POINT OF SALE

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

PRICING



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail:
sales@optima-america.com
www.optima-america.com

NGA

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

PRODUCTION



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail:
sales@optima-america.com
www.optima-america.com

NGA

QUALITY CONTROL



Optima North America Inc.
7860 Grenache, Ste. 200
Montreal, QC H1J 1C3
Canada
Phone: 514/645-8998
Fax: 514/645-8558
E-mail:
sales@optima-america.com
www.optima-america.com

NGA

SCHEDULING

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

DECORATIVE GLASS

GENERAL



McGRORY GLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com

ADV

ACID ETCHED



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

NGA



McGRORY GLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

CERAMIC FRIT: COLORED



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

ADV

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA

CERAMIC FRIT: PATTERNED

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA

COLOR COATED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

DECORATIVE INTERLAYERS



Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com

ADV

NGA

DICHROIC

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

DIGITAL DIRECT PRINTING



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com

ADV

NGA

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV

NGA



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com

ADV

NGA

LAMINATED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Standard Bent Glass Corp.
P.O. Box 469
Butler, PA 16003-0469
US: 800/634-9252
Phone: 724/287-3747
Fax: 724/283-9836
www.standardbent.com

ADV

NGA

PAINTED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com



SAFETY

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

TEXTURED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

DOOR HARDWARE & RELATED PRODUCTS

GENERAL

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

NGA

Strybuc Industries
2006 Elmwood Ave.
Building 102-C
Sharon Hill, PA 19079-0767
US: 800/352-0800
Phone: 610/534-3200
Fax: 610/534-3202
E-mail: cservice@strybuc.com
www.strybuc.com

NGA



ACCESS CONTROL

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

BUMPERS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

CLOSING DEVICES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

DEADBOLTS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

HINGES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

KICK PLATES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

LATCHES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

LOCKS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

OPENING DEVICES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

PANIC DEVICES

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

PIVOTS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

PUSH/PULL

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

SLIDING GLASS DOOR



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA

STOPS & HOLDERS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

SWEEPS

JLM Wholesale Inc.
3095 Mullins Ct.
Oxford, MI 48371
US: 800/522-2940
Phone: 248/628-6440
Fax: 800/782-1160
E-mail: sales@jlmwholesale.com
www.jlmwholesale.com

ADV
NGA

VISION PANEL FRAMES



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



RAY-BAR
USA
Fastest Fire Glass and IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA

DOORS & RELATED PRODUCTS

GENERAL



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

ADV



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA

ALUMINUM

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA

BALCONIES: HIGH-RISE BUILDINGS

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA

BIFOLD

Solar Innovations® Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail: skylight@solarinnovations.com
www.solarinnovations.com

ADV
NGA



BLAST RESISTANT



RAY-BAR
USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA



BULLET RESISTANT



RAY-BAR
USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA



ENTRANCE SYSTEMS: METAL

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

ADV
NGA



FIRE-RATED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com





The GM 2000-26

Set
2000 lb.
glass 26'
high, with
control &
precision.

34" wide
to fit
through
a 3' door!

518-796-2179
j.nudi@ergorobotic.com
ErgoRobotic.com

RAY BAR

RAY-BAR
USA
Fastest Fire Glass and
IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com

NGA



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com

ADV
NGA



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com

ADV
NGA

Vetrotech Saint-Gobain Fire-Rated Glass and Framing
2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com

ADV
NGA

FOLDING

Solar Innovations® Architectural
Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



GLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



INSULATING GLASS

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



PIVOT

Solar Innovations® Architectural
Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



RAILINGS



Frameless Hardware Company
4361 Firestone Blvd.
South Gate, CA 90280
US: 888/295-4531
Fax: 323/336-8307
E-mail: info@fhc-usa.com
www.fhc-usa.com

SECURITY



RAY-BAR
USA
Security, Ballistic Glass
and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com



SLIDING GLASS

Solar Innovations® Architectural
Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



STOREFRONTS & ENTRANCES

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

REBCO Inc.

1171-1225 Madison Ave.
Paterson, NJ 07509-2248
US: 800/777-0787
Phone: 973/684-0200
Fax: 973/684-0118
E-mail: sales@REBCOinc.com
www.REBCOinc.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail:
vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



TEMPERED GLASS DOORS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



FILMS/COATINGS

ARCHITECTURAL

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

DECORATIVE

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

ELECTRICALLY SWITCHABLE



Innovative Glass Corp.
eGlass® - Smart Glass Solutions
Plainview, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

SAFETY & SECURITY

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com

SOLAR CONTROL—WINDOW TINTING



Innovative Glass Corp.

eGlass® - Smart Glass Solutions
Plainview, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



WATER RESISTANT/PROTECTIVE

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com

GLASS HANDLING, PACKAGING & STORAGE

CRANES



Microcranes, Inc.
10000 NE 7th Ave Ste 330-A
Vancouver, WA 98685
Phone: (360) 768-5104
Fax: (360) 326-7228
Email: info@microcranes.com
Website: www.smartrigcranes.com

HANDLING EQUIPMENT



Ergo Robotic Solutions
P.O. Box 503
Glens Falls, NY 12801
Phone: 518/796-2179
E-mail: j.nudi@ergorobotic.com
ErgoRobotic.com
(See our ad on this page)



GLASS TOOLS & SUPPLIES

GENERAL



Frameless Hardware Company
4361 Firestone Blvd.
South Gate, CA 90280
US: 888/295-4531
Fax: 323/336-8307
E-mail: info@fhc-usa.com
www.fhc-usa.com

ABRASIVES

Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



BITS: DIAMOND

Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



Diamut America
4110 Meadow Oak Drive
Charlotte, NC 28208
877/9 DIAMUT
Phone: 877/934-2688
E-mail: tooling@diamut.com
www.diamut.com



Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



IGP Tools
1477 Connelly Springs Rd.
Lenoir, NC 28645
US: 800/438-7542
Phone: 828/728-5338
Fax: 828/728-9613
E-mail: c.osborne@igptools.com
www.igptools.com



COOLANT



IGP Tools
1477 Connelly Springs Rd.
Lenoir, NC 28645
US: 800/438-7542
Phone: 828/728-5338
Fax: 828/728-9613
E-mail: c.osborne@igptools.com
www.igptools.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



DRILLS



Diamut America
4110 Meadow Oak Drive
Charlotte, NC 28208
877/9 DIAMUT
Phone: 877/934-2688
E-mail: tooling@diamut.com
www.diamut.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



GLASS PROCESSING FLUIDS

Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



POLISHING COMPOUNDS



IGP Tools
1477 Connelly Springs Rd.
Lenoir, NC 28645
US: 800/438-7542
Phone: 828/728-5338
Fax: 828/728-9613
E-mail: c.osborne@igptools.com
www.igptools.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



TAPES

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com

WHEELS: DIAMOND



Diamut America
4110 Meadow Oak Drive
Charlotte, NC 28208
877/9 DIAMUT
Phone: 877/934-2688
E-mail: tooling@diamut.com
www.diamut.com



Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



IGP Tools
1477 Connelly Springs Rd.
Lenoir, NC 28645
US: 800/438-7542
Phone: 828/728-5338
Fax: 828/728-9613
E-mail: c.osborne@igptools.com
www.igptools.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



WHEELS: POLISHING



Diamut America
4110 Meadow Oak Drive
Charlotte, NC 28208
877/9 DIAMUT
Phone: 877/934-2688
E-mail: tooling@diamut.com
www.diamut.com



IGP Tools
1477 Connelly Springs Rd.
Lenoir, NC 28645
US: 800/438-7542
Phone: 828/728-5338
Fax: 828/728-9613
E-mail: c.osborne@igptools.com
www.igptools.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



INSULATING GLASS PRODUCTS, COMPONENTS & EQUIPMENT

GENERAL



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com



Prelco Inc.
94 Cartier Blvd.
Riviere-du-Loup, GQ G5R 2M9
Canada
US: 800/463-1325
Phone: 418/862-2274
Fax: 418/862-8181
E-mail: sales@prelco.ca
www.prelco.ca



Erdman Automation
1603 S. 14th St.
Princeton, MN 55371
US: 866/376-6177
Phone: 763/389-9475
Fax: 763/389-9757
E-mail:
eac@erdmanautomation.com
www.erdmanautomation.com



McKeegan Equipment & Supply
8411 Ronda Dr.
Canton, MI 48187
Phone: 734/459-5870
Fax: 734/459-9837
E-mail:
sales@mckeeganequip.com
www.mckeeganequip.com



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



FABRICATING EQUIPMENT SPECIALIST

MUNTIIN/SPACER RADIUS FORMER
COMPUTERIZED/PNEUMATIC NOTCHERS
SUNBURST LAYOUT TABLE SYSTEM
SAWS-BLADES
MUNTIN/SPACER PUNCHES
FISHMOUTH EQUIPMENT



EQUIPMENT & SUPPLY
734-459-5870 FAX 734-459-9837
WWW.MCKEEGANEQUIP.COM

AIR SPACERS

Helima Helvetion International Inc
P.O. Box 1348
Duncan, SC 29334-1348
US: 800/346-6628
Phone: 864/439-6600
Fax: 864/439-6065
E-mail: tmccall@helimasc.com
www.helima.de



AIR SPACERS: WARM EDGE

Helima Helvetion International Inc
P.O. Box 1348
Duncan, SC 29334-1348
US: 800/346-6628
Phone: 864/439-6600
Fax: 864/439-6065
E-mail: tmccall@helimasc.com
www.helima.de



EQUIPMENT: OVENS

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



MUNTIN BARS

Helima Helvetion International Inc
P.O. Box 1348
Duncan, SC 29334-1348
US: 800/346-6628
Phone: 864/439-6600
Fax: 864/439-6065
E-mail: tmccall@helimasc.com
www.helima.de



UNITS: DOUBLE

Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



Suppliers Guide

UNITS: TRIPLE

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



LAMINATED GLASS & EQUIPMENT

GENERAL



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail: info@interlayersolutions.com
www.interlayersolutions.com



PRELCO

Prelco Inc.
94 Cartier Blvd.
Riviere-du-Loup, GQ G5R 2M9
Canada
US: 800/463-1325
Phone: 418/862-2274
Fax: 418/862-8181
E-mail: sales@prelco.ca
www.prelco.ca



American Shower Door
6920 E. Slauson Ave.
Commerce, CA 90040
US: 800/421-2333
Phone: 323/726-2478
Fax: 323/726-7469
E-mail: sales@americanshowerdoor.com
www.americanshowerdoor.com



Amerope Enterprises Inc.

150 Commerce Rd.
Boynton Beach, FL 33426
US: 800/327-3320
Phone: 561/737-7370
Fax: 561/737-3721
E-mail: claire@amerope.com
www.amerope.com



Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



EQUIPMENT: AUTOCLAVE

Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



EQUIPMENT: AUTOMATED

Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



EQUIPMENT: NON-AUTOCLAVE



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



EQUIPMENT: OVENS & PRESSES



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



EQUIPMENT: VACUUM SYSTEMS



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



GLASS CLAD POLYCARBONATE

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



HURRICANE GLASS

SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



INTERLAYER



Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail: info@interlayersolutions.com
www.interlayersolutions.com



MIRRORS

Go to category **MIRRORS & RELATED PRODUCTS**

NON-REFLECTIVE: CLEAR

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

POLYCARBONATE LAMINATES

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail: info@interlayersolutions.com
www.interlayersolutions.com

SAFETY

Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail: info@interlayersolutions.com
www.interlayersolutions.com

WIRED



Glassopolis

We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



MACHINERY & EQUIPMENT

GENERAL



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



Erdman Automation

1603 S. 14th St.
Princeton, MN 55371
US: 866/376-6177
Phone: 763/389-9475
Fax: 763/389-9757
E-mail: eac@erdmanautomation.com
www.erdmanautomation.com



ASSEMBLY

Mueller TB Technologies AG

Laubisruetistrasse 72
CH-8712 Staefa
Switzerland
Phone: 905/427-3400
Fax: +41-44-926-6774
E-mail: info@ejindustries.ch
www.muller.ch



BENDING



Casso-Solar Technologies

506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail: sales@cassosolartechnologies.com
www.cassosolartechnologies.com



BEVELING



Lattuada North America Inc.
6967 Wales Rd., Ste. F
Northwood, OH 43619
Toll Free: 844/243-4486
Phone: 567/249-4486
E-mail: info@lattuada-na.com
www.lattuada-na.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



CENTRIFUGE

Glassline Corp.

28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



CNC CUTTING

Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



COATING



Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



CUTTING

Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



DECORATING



Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



DIGITAL TEMPLATES



Prodim USA
7454 Commercial Circle
Fort Pierce, FL 34951
888/229-3328
Phone: 772/465-4000
Fax: 772/465-8700
E-mail: info@prodimusa.com
www.prodim-systems.com

DRILLING



Lattuada North America Inc.
6967 Wales Rd., Ste. F
Northwood, OH 43619
Toll Free: 844/243-4486
Phone: 567/249-4486
E-mail: info@lattuada-na.com
www.lattuada-na.com



Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



DRYING



Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



EDGING



Lattuada North America Inc.
6967 Wales Rd., Ste. F
Northwood, OH 43619
Toll Free: 844/243-4486
Phone: 567/249-4486
E-mail: info@lattuada-na.com
www.lattuada-na.com



Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



FURNACES

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



GRINDING & POLISHING



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



Lattuada North America Inc.
6967 Wales Rd., Ste. F
Northwood, OH 43619
Toll Free: 844/243-4486
Phone: 567/249-4486
E-mail: info@lattuada-na.com
www.lattuada-na.com



HEATING ELEMENTS

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



INSPECTION SYSTEMS

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



INSULATING GLASS

Go to category INSULATING GLASS PRODUCTS, COMPONENTS & EQUIPMENT

LAMINATING

Go to category LAMINATING GLASS & EQUIPMENT

LASERS: MARKING

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



LEHRs

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



PAINTING

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



PHOTOVOLTAIC PANEL EQUIPMENT MFG. SYSTEMS

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



SCREEN PRINTING



AWT World Trade Inc.
4321 N. Knox Ave.
Chicago, IL 60641
Phone: 773/777-7100
Fax: 773/777-0909
E-mail: sales@awt-gpi.com
www.awt-gpi.com

Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



SEAMING

Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



MACHINES IN STOCK NOW!

Wheels, Drill Bits & More

Jordon Glass
 Jordonglassmachinery
 (305) 482-0116 • sales@jordonglass.com

SPRAYING

Casso-Solar Technologies
506 Airport Executive Park
Nanuet, NY 10954
Phone: 845/354-2010
Fax: 845/547-0328
E-mail:
sales@cassosolartechnologies.com
www.cassosolartechnologies.com



TEMPERING




Xinglass (Hangzhou Glass Technology Co., Ltd.)
8831 Blue Royale Ln.
Fairfax, VA 22031
US: 800/868-0307
Phone: 302/489-9583
Fax: 302/231-2195
E-mail:
sales@xinglassamerica.com
www.xinglass.com
www.xinglassamerica.com



Jordon Glass Machinery
6320 NW 99th Ave.
Doral, FL 33178
US: 800/833-2159
Phone: 305/482-0116
Fax: 305/482-0119
www.jordonglass.com



Suppliers Guide



MÜLLER TECHNOLOGIES
EQUIPMENT FOR THE ASSEMBLY OF
THERMAL BREAK PROFILES
For windows, doors, curtain walls

Müller TB Technologies AG
Switzerland
Agent for North America:
E.J. Industries Ltd.
Phone: 905 427-3400
info@ejindustries.ca



Marc Prevost Machinery

3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



VACUUM TABLE HOLDDOWN



AWT World Trade Inc.
4321 N. Knox Ave.
Chicago, IL 60641
Phone: 773/777-7100
Fax: 773/777-0909
E-mail: sales@awt-gpi.com
www.awt-gpi.com

WASHING



Lattuada North America Inc.
6967 Wales Rd., Ste. F
Northwood, OH 43619
Toll Free: 844/243-4486
Phone: 567/249-4486
E-mail: info@lattuada-na.com
www.lattuada-na.com



Marc Prevost Machinery
3875 St-Jean Baptiste Blvd.
Montreal, QC H1B 5V4
Canada
Phone: 514/640-4040
Fax: 514/640-5454
E-mail: info@mpm.ca
www.mpm.ca



WATER JET CUTTING

Glassline Corp.
28905 Glenwood Rd.
P.O. Box 147
Perrysburg, OH 43552
Phone: 419/666-5942
Fax: 419/666-1549
E-mail: sales@glassline.com
www.glassline.com



Stylmark Inc.
6536 Main St. NE
Minneapolis, MN 55432
US: 800/328-2495
Phone: 763/574-7474
Fax: 763/574-1415
E-mail: info@stylmark.com
www.stylmark.com

NGA

METAL PRODUCTS

GENERAL



Niles Aluminum Products
1434 S. 9th St.
P.O. Box 607
Niles, MI 49120-0607
Phone: 269/683-1191
Fax: 269/683-8664
E-mail:
jeff@nilesaluminum.com
www.nilesaluminum.com

NGA

ALUMINUM EXTRUSIONS



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com



Stylmark Inc.
6536 Main St. NE
Minneapolis, MN 55432
US: 800/328-2495
Phone: 763/574-7474
Fax: 763/574-1415
E-mail: info@stylmark.com
www.stylmark.com

NGA

BENDING EXTRUSIONS



Niles Aluminum Products
1434 S. 9th St.
P.O. Box 607
Niles, MI 49120-0607
Phone: 269/683-1191
Fax: 269/683-8664
E-mail:
jeff@nilesaluminum.com
www.nilesaluminum.com

NGA

METALS: ARCHITECTURAL



Niles Aluminum Products
1434 S. 9th St.
P.O. Box 607
Niles, MI 49120-0607
Phone: 269/683-1191
Fax: 269/683-8664
E-mail:
jeff@nilesaluminum.com
www.nilesaluminum.com

NGA

METALS: CURVING



Niles Aluminum Products
1434 S. 9th St.
P.O. Box 607
Niles, MI 49120-0607
Phone: 269/683-1191
Fax: 269/683-8664
E-mail:
jeff@nilesaluminum.com
www.nilesaluminum.com

NGA



Stylmark Inc.
6536 Main St. NE
Minneapolis, MN 55432
US: 800/328-2495
Phone: 763/574-7474
Fax: 763/574-1415
E-mail: info@stylmark.com
www.stylmark.com

NGA

MIRRORS & RELATED PRODUCTS

GENERAL



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

ADV

ACID ETCHED

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

ANTIQUE



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com



DETECTION/SAFETY & SECURITY

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

WARDROBE DOORS



Stylmark Inc.
6536 Main St. NE
Minneapolis, MN 55432
US: 800/328-2495
Phone: 763/574-7474
Fax: 763/574-1415
E-mail: info@stylmark.com
www.stylmark.com

NGA

SEALANTS & ADHESIVES

SILICONE



Frameless Hardware Company
4361 Firestone Blvd.
South Gate, CA 90280
US: 888/295-4531
Fax: 323/336-8307
E-mail: info@fhc-usa.com
www.fhc-usa.com

SERVICES

METAL BENDING



Niles Aluminum Products
1434 S. 9th St.
P.O. Box 607
Niles, MI 49120-0607
Phone: 269/683-1191
Fax: 269/683-8664
E-mail:
jeff@nilesaluminum.com
www.nilesaluminum.com

NGA

TRAINING PROGRAMS



Interlayer Solutions Inc.
6440 Boul. Henri Bourassa E.
Montreal, QC H1G 5W9 Canada
US: 855/873-1404
Phone: 514/326-4003
Fax: 514/326-9982
E-mail:
info@interlayersolutions.com
www.interlayersolutions.com

WEB SERVICES

Mainstreet Computers Inc.
330 Charles St.
Belleville, MI 48111
US: 800/698-6246
Phone: 734/699-0025
Fax: 734/697-8228
E-mail:
sales@mainstreetcomp.com
www.mainstreetcomp.com

ADV

SKYLIGHTS & OVERHEAD GLAZING

GENERAL



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com

ADV



Oldcastle BuildingEnvelope®
More Than 85 Manufacturing and
Distribution Locations in 25 US
States, 4 Canadian Provinces, 3
European Countries and 3
Australian States.
US: 866-OLDCASTLE
(653-2278)
www.obe.com

ADV
NGA

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



COMMERCIAL

Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



CONSERVATORIES

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



CUSTOM



Innovative Glass Corp.
eGlass* - Smart Glass Solutions
Plainville, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



OPENING ROOF SYSTEMS

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



SLOPED GLAZING SYSTEMS

Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



SOLAR GREENHOUSES

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



SUNROOMS

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



SPECIALTY GLASS PRODUCTS

GENERAL



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



WOOD STOVE REPLACEMENT



Glassopolis
We Put Glass Contractors First
Fast Quotes. Fast Delivery
Phone: 800/262-9600
Fax: 800/872-9601
E-mail: sales@glassopolis.com
www.glassopolis.com



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com



STOREFRONTS & CURTAIN WALLS

GENERAL



Glassfab Tempering Services
1448 Mariani Ct.
Tracy, CA 95304
US: 800/490-3860
Phone: 209/229-1060
Fax: 209/229-1061
E-mail: info@GlassfabUSA.com
www.GlassfabUSA.com



Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



CURTAIN WALLS



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com



CURTAIN WALLS: UNITIZED

Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



CURTAIN WALLS: WOOD

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



FOLDING GLASS WALLS

Solar Innovations* Architectural Glazing Systems
31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail:
skylight@solarinnovations.com
www.solarinnovations.com



ENTRANCES: CUSTOM



GGI
101 Venture Way
Secaucus, NJ 07094
US: 800/431-2042
Phone: 201/553-1850
Fax: 201/553-1851
E-mail: sales@generalglass.com
www.generalglass.com



REBCO Inc.
1171-1225 Madison Ave.
Paterson, NJ 07509-2248
US: 800/777-0787
Phone: 973/684-0200
Fax: 973/684-0118
E-mail: sales@REBCOinc.com
www.REBCOinc.com

MUNTIN GRIDS

Bacon & Van Buskirk
801 S. Neil St. NGA
Champaign, IL 61820
US: 800/747-6471
Phone: 217/356-6471
Fax: 217/352-7267
E-mail: info@bamuntins.com
www.bamuntins.com
(See our ad on this page)

STOREFRONTS & ENTRANCES



SAFTI FIRST™ Fire Rated Glazing
100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Oldcastle BuildingEnvelope*
More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com

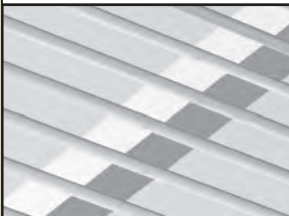


BACON'S ARCHITECTURAL



MUNTINS
Custom Extruded Aluminum Applied
Muntin Grids for Storefront and Curtainwalls

www.bamuntins.com



SUNSHADES
Horizontal Louver Brise Soleil SunShades
for Storefront and Curtainwall

www.basshades.com



Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com



WINDOW HARDWARE & RELATED PRODUCTS

GENERAL

Strybuc Industries
2006 Elmwood Ave.
Building 102-C
Sharon Hill, PA 19079-0767
US: 800/352-0800
Phone: 610/534-3200
Fax: 610/534-3202
E-mail: cservice@strybuc.com
www.strybuc.com



SHIMS

Grove Structural Shims
17 Marguerite Ave.
P.O. Box 240
Leominster, MA 01453
US: 800/72-GROVE(47683)
Phone: 978/534-5188
Fax: 978/840-4130
E-mail: sales@groveproductsinc.com
www.groveproductsinc.com



Suppliers Guide

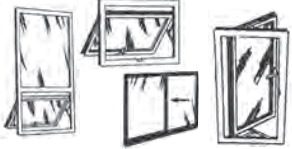
Liberty Glass & Metal Industries



Toll free: 800-843-2031
Fax: 860-923-9662
www.lgminc.net



2" Projected Window Systems Specifically Designed for Commercial Applications



Commercial Rated Windows

WINDOWS

GENERAL



Oldcastle BuildingEnvelope®
A CRG COMPANY

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



ALUMINUM

Liberty Glass & Metal Industries

339 Riversdale Dr.
N. Grosvendordale, CT 06255
Phone: 800/843-2031
Fax: 860/923-9662
E-mail: info@lgm.net
www.lgminc.net
(See our ad on this page)

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



ARCHITECTURAL

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



BLAST RESISTANT

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



BULLET RESISTANT

RAY BAR

RAY-BAR

USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



DOUBLE HUNG

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



FIXED

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



FIRE-RATED



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

RAY BAR

RAY-BAR

USA
Fastest Fire Glass and IGU's Available
Phone: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Technical Glass Products

8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



HURRICANE RESISTANT

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



IMPACT RESISTANT

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com



Technical Glass Products

8107 Bracken Place SE
Snoqualmie, WA 98065
Phone: 800/426-0279
Fax: 800/451-9857
E-mail: sales@fireglass.com
www.fireglass.com



SAFTI FIRST™ Fire Rated Glazing

100 N. Hill Dr., Ste. 12
Brisbane, CA 94005-1010
US: 888/653-3333
Phone: 415/824-4900
Fax: 415/824-5900
E-mail: info@safti.com
www.safti.com



Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110
Auburn, WA 98001
Phone: 888/803-9533
E-mail: vetrotech.sales@saint-gobain.com
www.vetrotechusa.com



LEAD X-RAY

Amerope Enterprises Inc.

150 Commerce Rd.
Boynton Beach, FL 33426
US: 800/327-3320
Phone: 561/737-7370
Fax: 561/737-3721
E-mail: claire@amerope.com
www.amerope.com



McGRORYGLASS

McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

RAY BAR

RAY-BAR

USA
Fastest X-Ray Glass and IGU's Available
US: 800/444-XRAY
Fax: 800/333-XRAY
E-mail: sales@raybar.com
www.raybar.com



NUCLEAR SHIELDING

Amerope Enterprises Inc.

150 Commerce Rd.
Boynton Beach, FL 33426
US: 800/327-3320
Phone: 561/737-7370
Fax: 561/737-3721
E-mail: claire@amerope.com
www.amerope.com



McGrory Glass Inc.
1400 Grandview Ave.
Paulsboro, NJ 08066
Phone: 800/220-3749
Fax: 856/579-3233
E-mail: sales@mcgrory.com
www.mcgrory.com

RAY BAR

RAY-BAR

USA
Fastest X-Ray Glass and IGU's Available
US: 800/444-XRAY
Fax: 800/333-XRAY
E-mail: sales@raybar.com
www.raybar.com



SECURITY

RAY BAR

RAY-BAR

USA
Security, Ballistic Glass and IGU's
US: 800/444-9729
Fax: 800/333-9729
E-mail: sales@raybar.com
www.raybar.com



SINGLE HUNG

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



SPECIALTY



Innovative Glass Corp.

eGlass® - Smart Glass Solutions
Plainville, NY 11803
Phone: 516/777-1100
Fax: 516/777-1106
E-mail: info@eGlass.com
www.innovativeglasscorp.com



Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



THERMAL BREAK

Oldcastle BuildingEnvelope®

More Than 85 Manufacturing and Distribution Locations in 25 US States, 4 Canadian Provinces, 3 European Countries and 3 Australian States.
US: 866-OLDCASTLE (653-2278)
www.obe.com



TILT/TURN

Solar Innovations® Architectural Glazing Systems

31 Roberts Rd.
Pine Grove, PA 17963
US: 800/618-0669
Phone: 570/915-1500
Fax: 570/915-6083
E-mail: skylight@solarinnovations.com
www.solarinnovations.com



Reader Response Center

Advertiser	Page	Phone	Website or email address
A+W Software	18		a-w.com/us
Bacon & Van Buskirk	83	800/747-6471	bamuntins.com
Banner Solutions	33	888/362-0750	bannersolutions.com
Cardinal Glass Industries	14-15		cardinalcorp.com/452
Cristacurva	74	866/827-6049	cristacurva.com
Curved Glass Distributors	74	888/288-9129	curvedglasscreations.com
Erdman Automation	29	763/389-9475	erdmanautomation.com
Ergo Robotic Solutions	13, 78	518/796-2179	ergorobotic.com
GDS Estimating	75	858/538-4375	gdsestimating.com
GGI	11A, 31	800/431-2042	generalglass.com
GlassBuild America	87	866/342-5642 ext. 142	glassbuild.com
Glassfab Tempering Services	2	800/490-3860	glassfabusa.com
Glasswerks	20	888/789-7810	glasswerks.com
Grove Shims	21	978/534-5188	groveshims.com
Guangdong Kin Long Hardware Products Co. Ltd.	16		kinlong.com
Heavy Glass Door Design Guide	68	866/342-5642 ext. 127	glass.org/store
JLM Wholesale	27	800/522-2940	jlmwholesale.com
Jordon Glass Machinery	81	800/833-2159	jordonglass.com
Kawneer Company Inc.	25		kawneer.com
Laminated Glazing Reference Manual	55	866/342-5642 ext. 127	glass.org/store
Liberty Glass & Metal Industries	84	800/843-2031	lgminc.net
Lisec America Inc.	35		lisec.com/configurator
McKeegan Equipment & Supply	79	734/459-5870	mckeeganequip.com
Messe Düsseldorf	67		glasstec-online.com
Mirror Mate Frames	69	704/390-7375	mirrormate.com/dealer
Mueller Technologies AG	82	905/427-3400	muller.ch
MyGlassClass	47	866/342-5642 ext. 145	myglassclass.com
MyGlassTruck	20	800/254-3643	myglasstruck.com
NGA Glass Conference	39	866/342-5642 ext. 178	glass.org
Petersen Aluminum Corp.	7	800/722-2523	pac-clad.com
Pilkington	9	800/221-0444	pilkington.us
Precision Glass Bending Corp.	24, 75	800/543-8796	e-bentglass.com
Pulp Studio	5	310/815-4999	email: sales@pulpstudio.com
Roto North America	19	800/243-0893	rotonorthamerica.com
SAF - Southern Aluminum Finishing	65	800/241-7429	saf.com
SAFTI First	3	888/653-3333	safti.com/sc45
Schuco USA L.P.	17		schuco-usa.com
Security Lock Distributors	23	800/847-5825	seclock.com
Seele	37		email: info.us@seele.com
SGC International Inc.	73	866/802-8682	sgc-usa.com
Solar Innovations	38	570/915-1810	solarinnovations.com
St. Cloud Windows	32	800/383-9311	stcloudwindow.com
Viracon	88		viracon.com
Western Trailers	36	888/344-2539	westerntrailer.com

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

PULP STUDIO ENGAGES DESIGNERS WITH GLASS SAMPLES

Decorative glass has the potential to make a big statement, but the collaboration between designer and decorative glass fabricator may start at a small scale, specifically with a glass sample, or a small version of the decorative glass product that a client might be interested in using. Glass samples can act as a jumping-off point for a design collaboration, says Bernard Lax, founder and CEO of Pulp Studio.

Getting started

"Once a glass product is selected for visual or performance characteristics, it will many times initiate the conversation between the designer and the supplier to build the specification. The development of that specification can then become a collaboration between us and the design firm," says Lax.

While the studio has a large selection of stock sample products, there's a significant demand for custom products, says Lax. As a result, the company is working on at least 50 custom samples daily, with a delivery timetable of less than five working days, he says.

Managing timetables

Although important to the design pro-



cess, Lax also recognizes the investment of time, money and labor they represent. "We accept that samples are an everyday way of our life. Many other companies find that producing samples is disruptive to their production, and that would be an accurate statement even for us," he says.

The process also requires careful management of schedules and lead times. "The largest challenge is always the timetable," says Lax. "Pulp sends out up to 200 samples a day between resource samples, approval samples and prototypes. Getting all these samples shipped, along with the recording of the project documentation, is a fast-moving process. Running our sample department as an independent entity that has a staff

of nine people is also our largest single expense as a company."

How samples get made

To create their samples, the company has a dedicated 'factory within a factory.' "In our proactive approach to samples, we committed to have an independent Micro Factory within our facility that only produces samples," says Lax. "This Micro Factory has every machine that we use for our normal production, such as a small double edger, a sample autoclave, a small water jet, etc. The factory produces their own sample inventory. This allows for more efficient production of samples with a more expeditious commitment from our team." ■

SEPT
15-17
2020
Las Vegas, NV

GlassBuild
A M E R I C A
THE GLASS, WINDOW & DOOR EXPO

NGA
NATIONAL GLASS ASSOCIATION with GANA

FORWARD FOCUS: WHAT'S NOW, WHAT'S NEXT IN GLASS & FENESTRATION

GlassBuild America and COVID-19 FAQs

Q: IS GLASSBUILD AMERICA HAPPENING THIS YEAR?

A: Yes. GlassBuild America is still scheduled for Sept. 15-17, 2020, in Las Vegas. It may look different as we incorporate measures to ensure public safety, but right now, we're planning for the show to go on until and unless we're told it cannot.

Q: HOW ARE YOU PROCEEDING WITH THE SHOW AMID TRAVEL RESTRICTIONS AND DISTANCING MANDATES?

A: By doing everything we can to understand what we can and can't do between now and September. This is informed by the following:

- GlassBuild America is still four months away. Our vendors and others have all told us, "that's too far

away to predict what can or can't happen." And so, we proceed as planned.

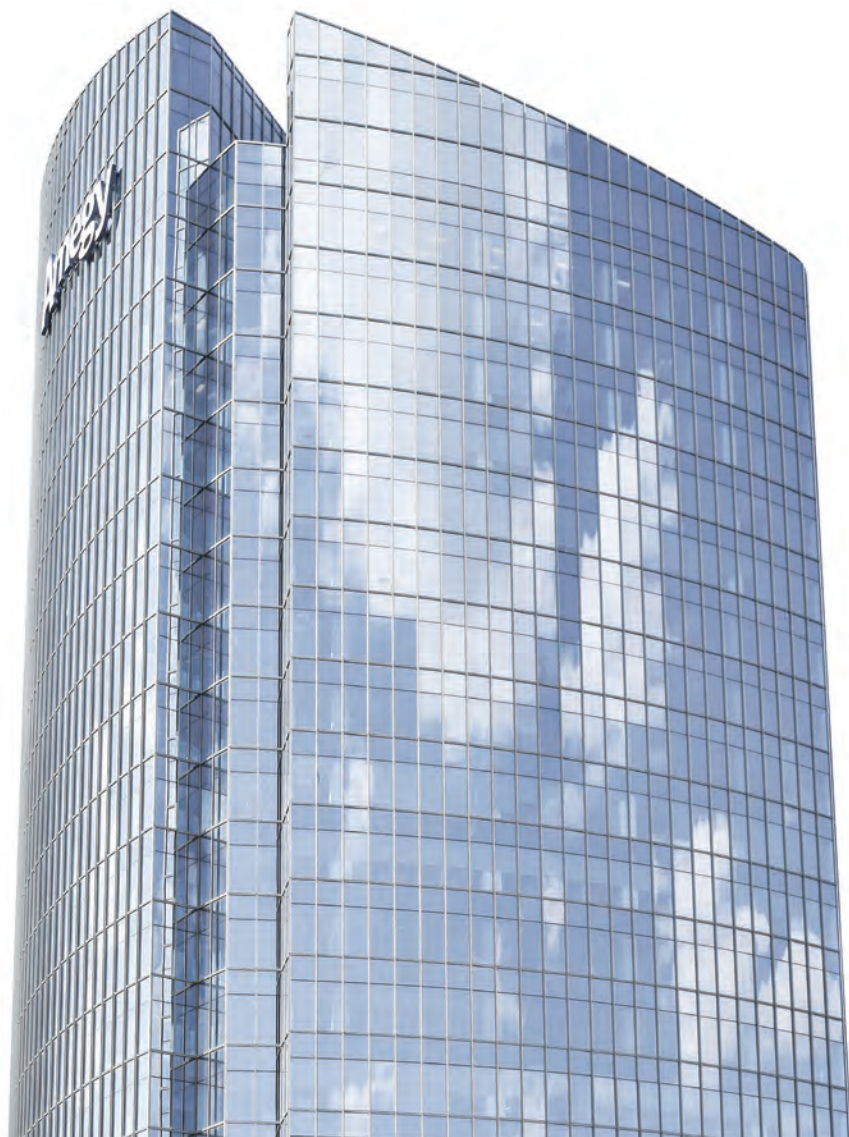
- GlassBuild America may present the only in-person opportunity on this continent for buyers to find processing, fabrication, handling, installation, education and product solutions for the remainder of this year.
- Customers are still signing up for remaining booth space on the floor, and others are finalizing their booth payments.
- Cities, convention centers and every other entity connected to the trade show business is laser-focused on hygiene to reassure customers and protect revenues.
- We're following CDC guidance on when and what to do with respect to all travel.

FOR THE MOST UP-TO-DATE INFORMATION, VISIT [GLASSBUILD.COM](https://www.glassbuild.com)

VIRACON VRE - 4725

REMARKABLE PERFORMANCE. EXCEPTIONAL TRANSPARENCY.

COMING SOON TO A SKYLINE NEAR YOU.



INTRODUCING THE NEWEST
ARCHITECTURAL LOW-E
COATING IN VIRACON'S MOST
POPULAR COATING FAMILY.

When it comes to meeting all of your aesthetic and high performance requirements, Viracon just introduced another stunning option: VRE-4725 is the newest Low-E coating to be added to the VRE family of coatings. Offering a bright neutral appearance with low reflectivity and optimal performance, it will soon become a skyline favorite. VRE-4725 delivers a VLT of 47% and a SHGC of 0.25 when coated onto clear glass. Learn more at viracon.com.



VIRACON®

GLASS IS EVERYTHING™