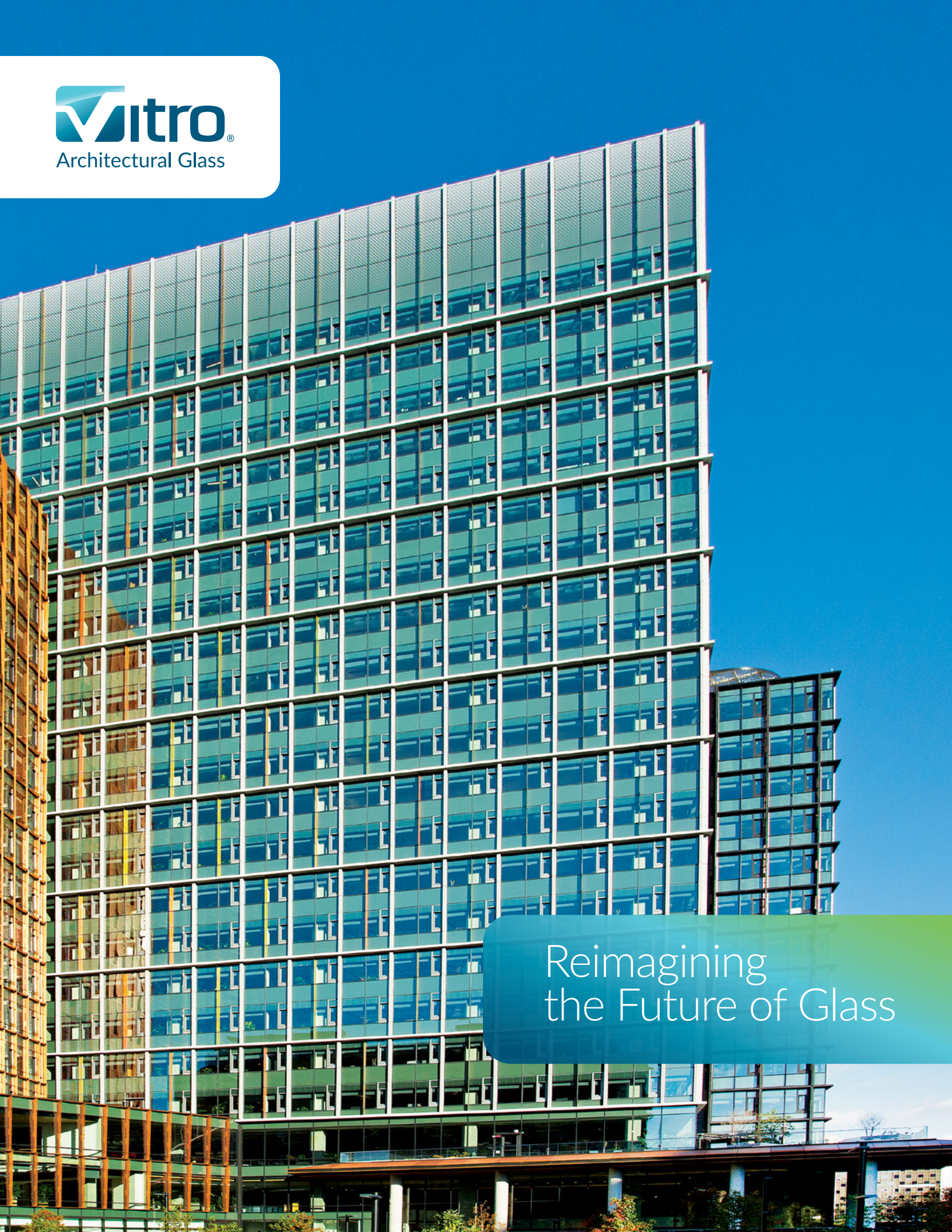
Vitro®
Architectural Glass



Reimagining the Future of Glass

Shaping a Future of Brighter, Bolder and More Sustainable Buildings

Advancing Glass Innovation

For over a century, Vitro has been shaping skylines worldwide with its signature architectural glass, featured on some of the most iconic buildings. We collaborate closely with architects, building owners, contractors, glass fabricators and glaziers to deliver industry-leading products that effortlessly combine bold design and energy efficiency. These strong partnerships also drive continuous improvement. Backed by thousands of dedicated team members, we continue to push the boundaries of glass technology and production, paving the way for the future of glass.

A Greener Future

We're proud to lead in glass innovation, starting with sustainable manufacturing. Our latest Environmental Product Declarations (EPDs) show our Global Warming Potential (GWP) ranks in the Top 20% Low Embodied Carbon (LEC) materials and meets the "Most Preferred" product standard across all Vitro plants. But we're not stopping there. We're working to further reduce our GWP through efficient batch material use, furnace upgrades, energy-efficient lighting, equipment regulation and supplier improvements. Our patented oxy-fuel furnace technology also cuts energy use by up to 20% and greenhouse gas emissions by 50%.

We. Are. Vitro.

We are North America's largest and most trusted glass manufacturer and are well known for producing some of the industry's most widely specified products. These include high-performance *Solarban*® low-emissivity (low-e) glasses, *Starphire Ultra-Clear*® glass, and a wide selection of tinted glasses.

As a global leader in glass manufacturing, we continually set industry benchmarks in solar control, color neutrality and both optical and spectral performance. Over the years, our Research and Development team has secured more than 500 patents, reflecting the company's dedication to advancing glass technology. At the heart of this innovation is the Vitro Glass Technology Center, located near Pittsburgh, Pennsylvania, where approximately 200 employees work to shape the future of glass.

We remain focused on enhancing our sustainable production practices and developing even more energy-efficient glass solutions highlighted by recent advancements such as *VacuMax*™ Vacuum Insulating Glass (VIG) and *BirdSmart*® Bird Safe Glass. By collaborating closely with customers and partners, Vitro also delivers expert service and support to ensure projects meet or exceed ever-evolving standards and expectations.

Collaborating for Success

We believe true success stems from the strength of our partnerships. Built on a foundation of trust and shared vision, our relationships unlock limitless opportunities for glass capabilities. Whether you're collaborating with one of our National Architectural Managers or any other member of the Vitro team, we will go above and beyond as your dedicated partner to help you gain a competitive edge.

Learn more at vitroglazings.com

Table of Contents

Product
BirdSmart® Bird Safe Glass

Location
Pittsburgh, PA — USA

Photographer
Scott Witalis

This Glass Is for the Birds. *BirdSmart*® Bird Safe Glass.

With four first-surface, laser-etched bird-friendly dot patterns and a *Solarban*® low-e coating on the second surface, *BirdSmart*® Bird Safe Glass reduces bird collisions and provides excellent energy efficiency.

BirdSmart®
Speck 6 Inline 2x2

Bird's Eye View

BirdSmart® glass improves visibility for birds without compromising modern aesthetics. When paired with a *Solarban*® low-e coating, *BirdSmart*® glass achieves peak energy performance without impacting Visible Light Transmittance (VLT) or Solar Heat Gain Coefficient (SHGC).

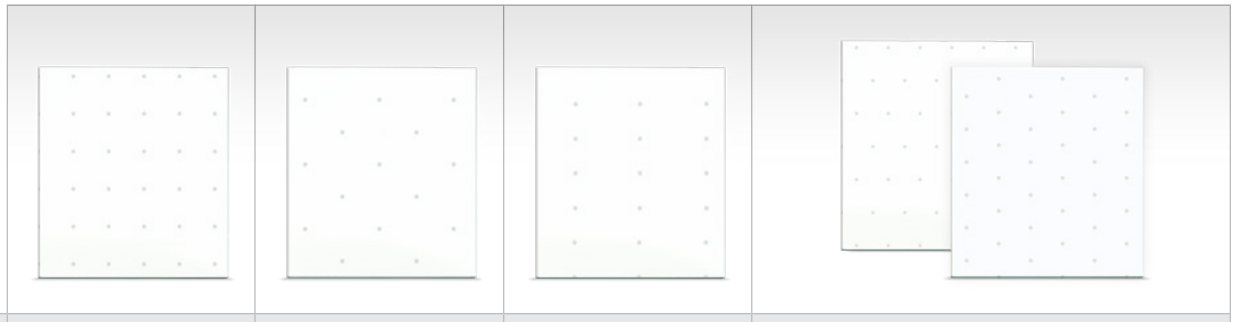
A Greener Process

Manufactured using a non-caustic, laser etching process, *BirdSmart*® glass is an affordable and sustainable solution that has received American Bird Conservancy (ABC) tunnel testing approval and ensures compliance with building codes and regulations.

Manufactured exclusively at Vitro's Wichita Falls plant, now you can get your bird-safe glass in one fell swoop.

Pattern Options

BirdSmart® glass features four precision laser-etched 6mm dot patterns on the first surface:



Spec Name	***BirdSmart*® Speck 6 Inline 2x2***	***BirdSmart*® Speck 6 Shift 2x4**	***BirdSmart*® Speck 6 Inline 2x4**	***BirdSmart*® Speck 6 Shift 2x2**
Threat Factor	20	25	25	20
Pattern Dimensions	2" x 2"	2" x 4" with 2" offset	2" x 4"	2" x 2" with 1" offset

*Complies with Canada's CSA A460: 19 Bird-friendly building design requirements

Fabrication

BirdSmart® glass patterns can be laser-etched on the first surface of several Vitro products, including clear glass, *Starphire*® glass, *Acuity*® glass and a range of Vitro tinted glasses. It can also be manufactured with or without a low-e coating. *BirdSmart*® glass can be ordered in sizes up to *Titan*™ glass (130x240 inches) and can be ordered in packs as small as one, ensuring both versatility and convenience.

Flying Directly to You

BirdSmart® glass is manufactured at Vitro's Wichita Falls, Texas, facility with *Solarban*® low-e glass, ensuring an efficient supply chain and enabling direct shipping to reduce transit times, accelerate delivery and enhance cost-effectiveness. Get your bird-friendly, American-made, *BirdSmart*® glass in one fell swoop.

BirdSmart®
BIRD SAFE GLASS

Learn more at **vitroglazings.com/birdsmart**

Lafayette College
Markle Hall

Products
VacuMax™ Vacuum Insulating Glass
AviProtek® *#217* with
Solarban® 90 Glass

Location
Easton, PA — USA

Architect
ALMA Architecture LLC

Vitro Certified® **Fabricator**
Glass Enterprises Inc.

Glazing Contractor
National Glass and Metal Co., Inc.

General Contractor
DVP Construction Group

Photographer
Jim Cunningham

Next-Generation *VacuMax*™ Vacuum Insulating Glass (VIG)

Add Extraordinary Insulation to Any Configuration.

Thanks to its innovative insulating technology, *VacuMax*™ VIG provides thermal insulation performance that is three to five times better than conventional insulating glass units (IGU) and up to 20 times better than monolithic glass. With its extraordinary R-values, *VacuMax*™ VIG delivers energy savings and reduced carbon emissions due to decreased HVAC use and subsequent Btu usage, and the unit's slim construction and light weight allow it to be incorporated into virtually any traditional glazing system, window frame or curtainwall application.

Performance Benefits

VacuMax™ VIG units deliver thermal insulation performance that is three to five times better than conventional insulating glass and up to 20 times better than monolithic glass, providing energy savings and reduced carbon emissions.

VacuMax™ VIG *Solarban*® 70 Performance Data			
U-Value	**R-Value**	**VLT %**	**SHGC**
0.05	20.0	66	0.26

With wall-like center of glass R-values of up to R20, *VacuMax*™ VIG delivers the ultimate in thermal insulation performance.

VacuMax™
Vacuum Insulating Glass

Learn more at **VacuMaxVIG.com**

Aesthetic Improvements

VacuMax™ VIG has been updated with a new design that eliminates the vacuum port and allows for a hidden getter for enhanced aesthetics that don't compromise the performance of the VIG unit.

Built for the Long Term

With its proprietary metal alloy edge seal system, *VacuMax*™ VIG has exceptionally long life compared to other VIG products and delivers superior resistance against thermal expansion or contraction caused by extreme indoor/outdoor temperature differences.

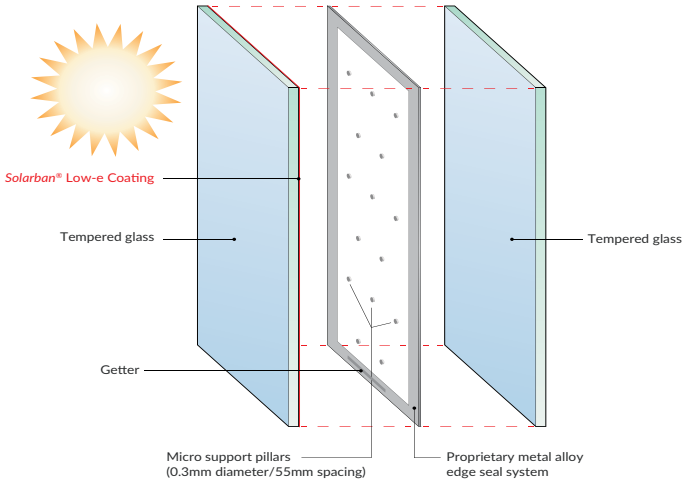
Improved Acoustics & Condensation Performance

VacuMax™ VIG also delivers increased acoustic performance for dramatic noise dampening plus reduced center of glass condensation at temperatures as low as -58° F.

Perfect for a Range of Applications

VacuMax™ VIG is an ideal solution for any commercial or residential renovation or new construction project requiring extraordinary insulating performance.

Vacuum Insulating Glass (VIG) Unit



Awards

2x Product Innovation Award
Architectural Products

2x Top Product of the Year
Environment+Energy Leader

Best of Products
The Architect's Newspaper

Top 75 Products
Building Design + Construction

Pittsburgh Glass Center

Products
VacuMax™ Vacuum Insulating Glass
Solarban® 72 *Starphire*® Glass

Location
Pittsburgh, PA — USA

Architect
Indovina & Associates

Vitro Certified® Fabricator
United Plate Glass

Glazing Contractor
Southwest Aluminium & Glass

Photographer
Jim Cunningham

UC San Diego
Torrey Pines Living & Learning Neighborhood

Product
Solarban® 70 Glass

Location
La Jolla, CA — USA

Architect
HKS, Safdie Rabines Architects

Vitro Certified® **Fabricator**
Glasswerks

Glazing Contractor
Tower Glass, Inc.

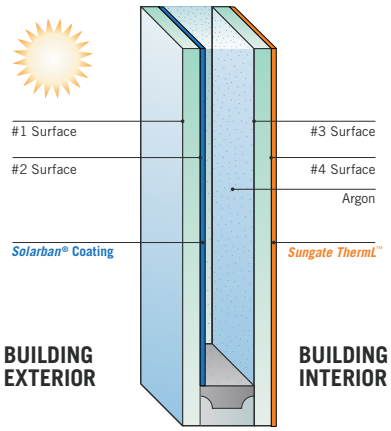
General Contractor
Clark Construction Group

Photographer
Tom Harris

**Sungate ThermL*™* glass is neutral, colorless and provides low reflectivity while offering remarkable thermal performance similar to *Solarban*® 70 glass by Vitro shown here on the UC San Diego Torrey Pines Living & Learning Neighborhood.*

Sungate ThermL™ Glass

Sungate ThermL™ glass is a low-e coating engineered specifically for use on the fourth surface of a typical one-inch insulating glass unit (IGU) that dramatically improves U-values when paired with a *Solarban*® low-e coating by Vitro on the second surface. *Sungate ThermL*™ glass enables superior thermal performance and delivers exceptional daylighting without changing the visual characteristics of the IGU because of its colorless and low reflective aesthetic.



Performance

One-inch IGU with a half-inch airspace with argon and *Sungate ThermL*™ glass on the fourth surface and *Solarban*® 70 glass on the second surface		
SHGC	**VLT %**	**U-Value**
0.23	63	0.19

One-inch IGU with a half-inch airspace with argon and *Sungate ThermL*™ glass on the fourth surface and *Solarban*® 65 glass on the second surface		
SHGC	**VLT %**	**U-Value**
0.34	68	0.20

Aesthetic

Sungate ThermL™ glass is neutral and colorless, so it looks just like uncoated clear glass while offering enhanced durability, insulation, a high VLT and remarkably low interior and exterior reflectance.

***Sungate ThermL*™ glass is ideal wherever increased insulation performance is needed and can be used in a triple IGU for even greater insulating value.**

Sungate ThermL™
U-Value Enhancing Low-e Glass

Learn more at **vitroglazings.com/sungatetherml**

More Ways to Improve U-Value

When U need improved thermal performance, Vitro has options.

Advances in low-e coatings and IGU technologies have enabled Vitro to offer more options than ever to lower U-values, improve R-values and boost thermal performance significantly. Use *Solarban*® double-silver, triple-silver and quad-silver low-e glasses in double and triple IGUs or new Vitro high-performance glass products like *VacuMax*™ VIG and *Sungate ThermL*™ glass to achieve better R- and U-values than ever before.

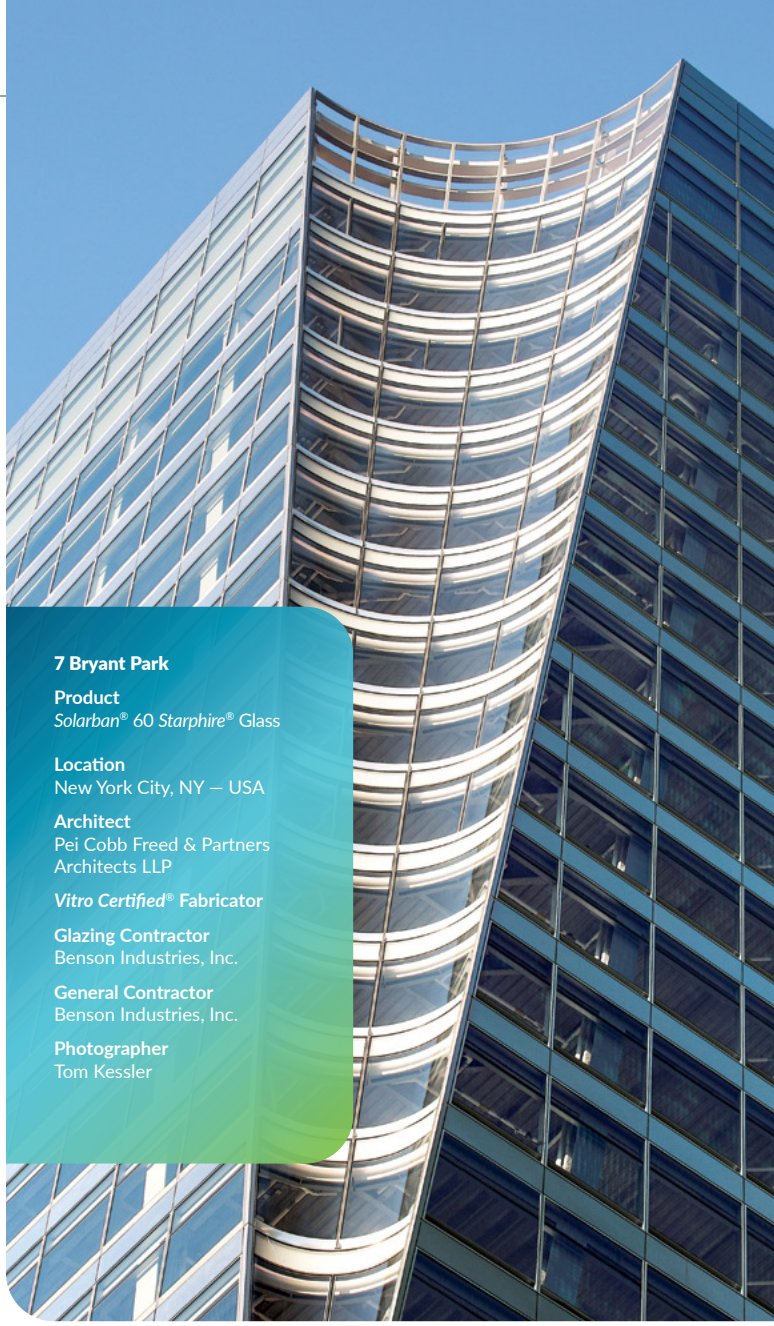
Sungate ThermL™ U-Value Enhancing Low-e Glass

Sungate ThermL™ glass retains indoor temperatures by slowing down heat transfer through the IGU by allowing for a high rate of VLT, resulting in up to a 21% improvement in U-value over using a single solar control low-e glass alone.

VacuMax™ VIG

With *VacuMax*™ VIG, thermal performance more than triples. *VacuMax*™ VIG combines vacuum technology with *Solarban*® 70 low-e glass in an IGU to deliver R-values up to R20.

Learn more about enhancing thermal performance at **vitroglazings.com/u-value**



7 Bryant Park

Product
Solarban® *60 Starphire*® Glass

Location
New York City, NY — USA

Architect
Pei Cobb Freed & Partners Architects LLP

Vitro Certified® **Fabricator**

Glazing Contractor
Benson Industries, Inc.

General Contractor
Benson Industries, Inc.

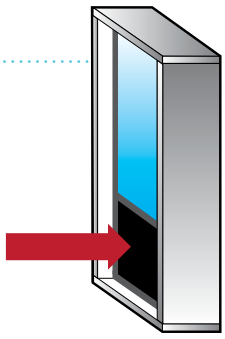
Photographer
Tom Kessler

Spandrelite™ glass can be used to replace ceramic frit coated glass (shown) or other spandrel glass materials.

Spandrelite™ Water-Based Spandrel Glass Elevates Design Vision

Spandrelite™ glass by Vitro turns ordinary façades into striking design features. Available in black, white and warm gray, *Spandrelite*™ glass hides unsightly building components for a sleek façade appearance. It resists heat, moisture, UV damage and thermal shock for lasting durability.

Shipped in its annealed state, *Spandrelite*™ glass requires heat treatment during final processing to cure the coating and enhance durability.



Designed to be opaque in order to help hide features between the floors of a building

Product
Solarban Champane™ Glass

Location
Pittsburgh, PA — USA

Photographer
Scott Witalis

Solarban Champane™ *Glass*

A Natural Fit for Modern Palettes

Solarban Champane™ glass offers crisp, warm tones with the trusted and proven thermal performance of *Solarban*® solar control, low-e glass.

- Delivers warm-neutral champagne tones created by its innovative coating, the first of its kind in the industry
- Coated on clear glass, *Starphire Ultra-Clear*® glass or *Acuity*® glass, and will be available soon on select Vitro tinted glasses
- Made exclusively at Vitro's Wichita Falls, Texas, facility and is available in sizes up to *Titan*™ glass (130x240 inches)

Performance

One-inch IGU with a half-inch airspace with argon and *Solarban Champane*™ glass					
VLT %	Visible Light Reflectance		U-Value		SHGC
	Exterior %	Interior %	Winter Nighttime	Winter Argon	
45	26	12	0.29	0.24	0.24

Please note these are preliminary performance metrics.

With mid reflectivity and a warm-neutral aesthetic, *Solarban Champane*™ glass is a natural fit that complements the soft, natural tones found in contemporary architectural color palettes.

SOLARBAN *Champane*™
CRISP, WARM-TONED LOW-E GLASS

Learn more at **vitroglazings.com/SolarbanChampane**

University of Texas at Austin
The Moody Center

Products
Solarban® 70* Glass
Solarban® 70 *Solargray*® Glass

Pages 13 & 29

Location
Austin, TX — USA

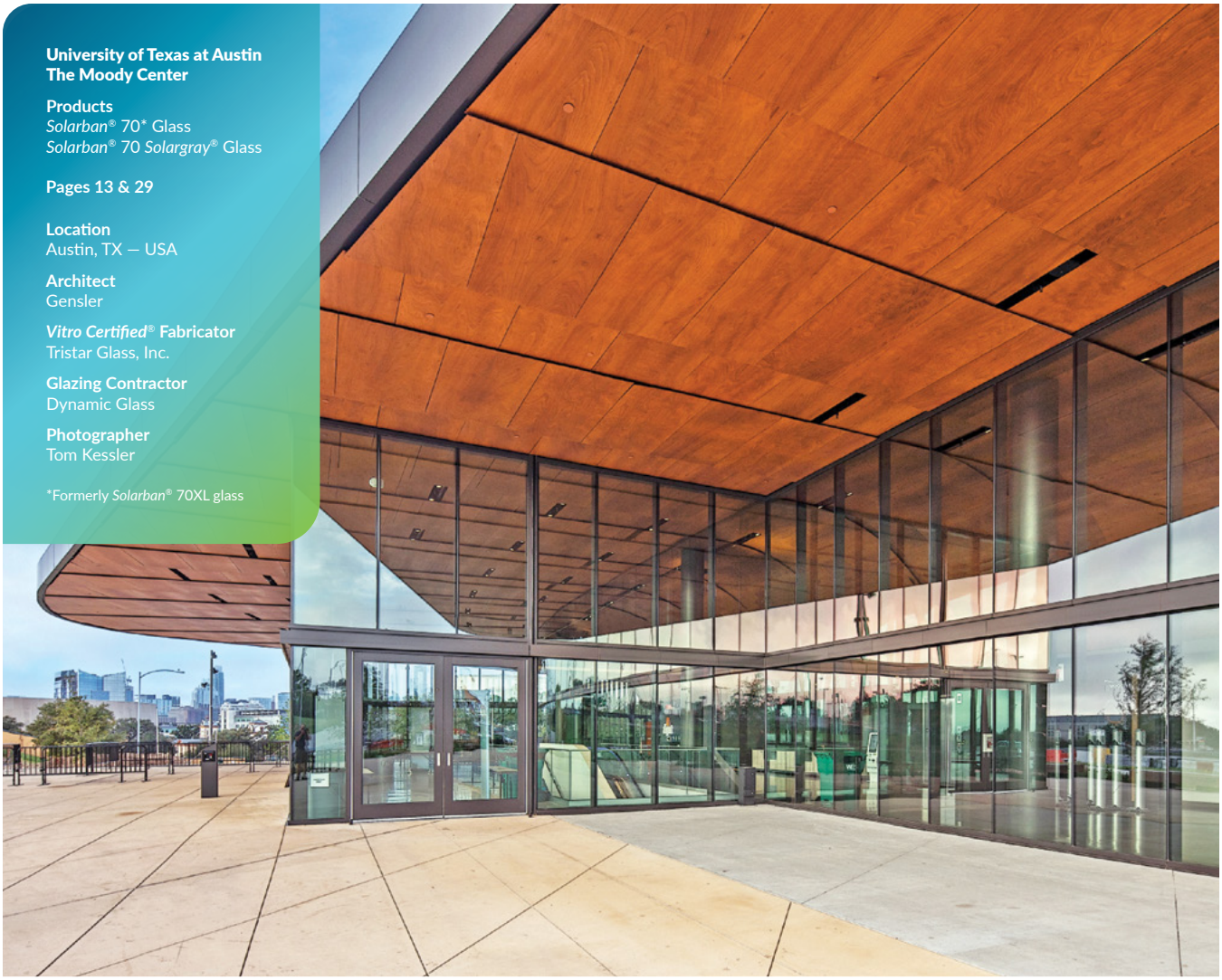
Architect
Gensler

Vitro Certified® **Fabricator**
Tristar Glass, Inc.

Glazing Contractor
Dynamic Glass

Photographer
Tom Kessler

*Formerly *Solarban*® 70XL glass



Eric J. Barron Innovation Hub

Product
Solarban® 60 *Acuity*® Glass

Page 23

Location
State College, PA — USA

Architect
Kieran Timberlake

Vitro Certified® **Fabricator**
W. A. Wilson and Sons, Inc.

Glazing Contractor
Nittany Building Spec

General Contractor
L F Driscoll

Photographer
Jim Cunningham

One Flagler

Product
Solarban® R77 *Acuity*® Glass

Page 23

Location
West Palm Beach, FL — USA

Architect
Skidmore Owings & Merril (SOM)

Fabricator
Tecnoglass S.A.

Glazing Contractor
West Tampa Glass

General Contractor
Coastal Construction Co.

Photographer
Terry Wieckert

Redefines modern design and sustainability

One Flagler, a 25-story landmark office tower in West Palm Beach, redefines modern design and sustainability. Designed by SOM, it features *Solarban*® R77 *Acuity*® glass by Vitro, which strikes the perfect balance between natural light and energy efficiency while offering enhanced clarity and breathtaking views. Paired with a striking white concrete façade, it not only elevates the building's aesthetics but also minimizes cooling costs.

Solarban® Solar Control Low-e Glass

When you want to maximize energy efficiency and lower operational carbon to meet today's sustainability standards without sacrificing aesthetics, the *Solarban*® brand of solar control low-e glasses by Vitro Glass offers unparalleled choices to help you achieve both your energy performance and design objectives.

Trusted by architects for more than six decades, you can rely on *Solarban*® glass to keep occupants comfortable and to realize your boldest visions. Best of all, *Solarban*® glass products can be combined with a wide array of low-iron or tinted glass options by Vitro for customized performance and aesthetic effects.

Possibilities, Expanded

North America's largest oversized glass coater is located at our Wichita Falls, Texas, plant. That means Solarban® *low-e glasses are available in oversized standard sizes of 130" x 204" (3.30m x 5.18m), as well as our Titan™ glass products that allow for sizes up to 130" x 240" (3.30m x 6.10m).*

SOLARBAN®
Solar Control Low-E Glass

Parkland Health and Hospital System Moody Outpatient Center

Product
Solarban® 90 *Acuity*® Glass

Page 12

Location
Dallas, TX — USA

Architect
HKS

Vitro Certified® **Fabricator**
Hartung Glass

Glazing Contractor
IWR North America

Photographer
Tom Harris

Children's of Mississippi

Product
Solarban® 90 Glass

Location
Jackson, MS — USA

Architects
HDR and CDFL Architects

***Vitro Certified*® Fabricator**
Wholesale Glass Distributors

Glazing Contractor
Capitol Glass Co, Inc.

Photographer
Tom Kessler

A NEW MEASURE OF PERFORMANCE

Solarban® 90 Glass

Aesthetic: Neutral
Reflectivity: Low

The industry's first quad-silver low-e coating, *Solarban*® 90 glass provides a neutral appearance similar to clear glass in both color and reflectance.

1-Inch IGU on Clear (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.23	51	✓	✓	✓

UCSD Pepper Canyon West Living and Learning Neighborhood

Products
Solarban® 90 Glass
Solarban® 72 *Acuity*® Glass

Location
San Diego, CA — USA

Architects
Perkins+Will

Glass Fabricator
Millet Glass Industries

Photographer
Tom Kessler

HIGH-PERFORMANCE & NEUTRAL

Solarban® 70 Glass

(Formerly *Solarban*® 70XL glass)

Aesthetic: Neutral

Reflectivity: Low

Solarban® 70 glass remains the industry's most specified triple-silver low-e coating, offering a balanced combination of VLT, solar control and clarity.

1-Inch IGU			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.27	64	✓		✓

EXCEPTIONALLY TRANSPARENT

Solarban® 72 Glass

Aesthetic: Exceptionally transparent

Reflectivity: Low

Solarban® 72 glass builds on the advances of *Solarban*® 70* glass to provide even greater levels of transparency and color neutrality with minimal sacrifice of solar control performance.

1-Inch IGU on *Starphire*® (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.28	68		✓	

1-Inch IGU on *Acuity*® (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.28	66		✓	

University of Texas at San Antonio (UTSA) National Security Collaboration Center

Product
Solarban® 70 Glass

Location
San Antonio, TX — USA

Architect
Overland Partners Architects

Vitro Certified® **Fabricator**
Glasswerks

General Contractor
Whiting Turner Construction

Photographer
Tom Kessler

RIDC Mill 19

Product
Solarban® 60 Glass

Location
Pittsburgh, PA — USA

Architect
MSR Design R3A Architecture

***Vitro Certified*® Fabricator**
Trulite Glass and Aluminum

Glazing Contractor
Gurtner & Sons

Photographer
Corey Gaffer

VERSATILE NEUTRALITY

Solarban® 60 Glass

Aesthetic: Clear, color-neutral
Reflectivity: Low

The industry's first double-silver low-e coating, *Solarban*® 60 glass is available on clear glass, low-iron glass or any Vitro tinted glass for a wide array of aesthetic choices.

1-Inch IGU on Clear (2)		Substrate Options		
SHGC	VLT %	Clear	Low-Iron	Tinted
0.39	70	✓	✓	✓

OPTIMIZED FOR *OPTIBLUE*® GLASS

Solarban® 60 *Optiblue*® Glass
(Formerly *Solarban*® z50 Glass)

Aesthetic: Neutral, steel blue-gray
Reflectivity: Low

Solarban® 60 *Optiblue*® glass adds a unique aesthetic to the *Solarban*® 60 glass family, offering low exterior reflectance, excellent solar control and high VLT.

1-Inch IGU with Clear		Substrate Options		
SHGC	VLT %	Clear	Low-Iron	Tinted
0.32	51			✓

Solarban® 70 *Optiblue*® Glass
(Formerly *Solarban*® z75 Glass)

Aesthetic: Steel blue-gray
Reflectivity: Low

Solarban® 70 *Optiblue*® glass excels at controlling glare, offering ample VLT and superior solar control.

1-Inch IGU with Clear		Substrate Options		
SHGC	VLT %	Clear	Low-Iron	Tinted
0.23	46			✓

A MODERNIZATION OF A POPULAR LOW-E COATING, WITH EVEN BETTER PERFORMANCE

Solarban® 65 Glass

Aesthetic: Clear, color neutral
Reflectivity: Low

Expertly engineered to maximize energy efficiency and enhance occupant comfort, *Solarban*® 65 solar control low-e glass significantly reduces heating and cooling costs, offering a smart, sustainable solution for modern buildings.

Solarban® 65 glass offers a crisp, neutral aesthetic similar to *Solarban*® 60 glass and is engineered to block 65% of solar heat energy while allowing 70% of visible light to pass through.

1-Inch IGU on Clear (2)		Substrate Options		
SHGC	VLT %	Clear	Low-Iron	Tinted
0.35	70	✓	✓	

Solarban® 65 glass is engineered to meet today's stricter code standards and sustainability goals while still offering a clear, color-neutral look.

Solarban® 60 Glass

Solarban® 65 Glass

Congress Square

Product
Solarban® 60 *Starphire*® Glass

Location
Boston, MA — USA

Architect
Arrowstreet

***Vitro Certified*® Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Cheviot

Photographer
Tom Kessler

Adidas HQ Expansion

Products
Solarban® R67 Glass
Solarban® 60 *Acuity*® Glass

Location
Portland, OR — USA

Architect
LEVER Architecture

Vitro Certified® **Fabricator**
Vitrum Glass Group

Glazing Contractor
Culver Glass

Curtain Wall Designer & Fabricator
Enclos

Photographer
Tom Kessler

NEUTRAL-REFLECTIVE

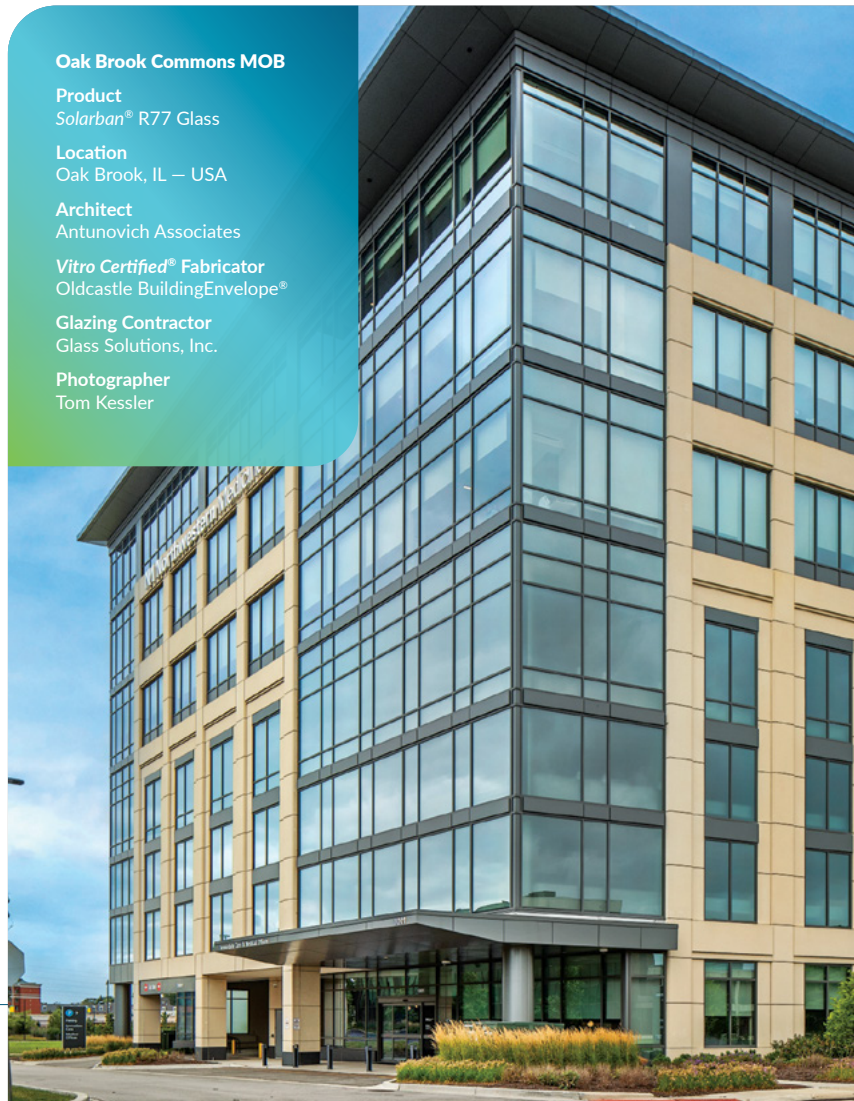
Solarban® R67 Glass

(Formerly *Solarban*® 67 Glass)

Aesthetic: Crisp, neutral
Reflectivity: Moderate

Solarban® R67 glass combines excellent solar control performance with a neutral coating that provides commercial buildings with a crisp, clean and soft reflective exterior appearance.

1-Inch IGU on Clear (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.29	54	✓	✓	✓



Oak Brook Commons MOB

Product
Solarban® R77 Glass

Location
Oak Brook, IL — USA

Architect
Antunovich Associates

Vitro Certified® **Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Glass Solutions, Inc.

Photographer
Tom Kessler

One River North

Products
Solarban® R100 *Acuity*® Glass
Solarban® 72 *Acuity*® Glass (Podium)

Location
Denver, CO — USA

Architect
MAD Architects

Glass Fabricator
Millet Glass Industries

Glazing Contractor
Alliance Glazing Technologies

Photographer
Tom Kessler

NEUTRAL-REFLECTIVE

Solarban® R77 Glass

Aesthetic: Crisp, neutral
Reflectivity: Moderate

Solarban® R77 glass has higher reflectivity than *Solarban*® R67 but lower than *Solarban*® R100, a perfect choice for façade and curtainwall designs that capture the sky and surrounding environment.

1-Inch IGU on Clear (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.25	47	✓	✓	✓

NEUTRAL-REFLECTIVE

Solarban® R100 Glass

Aesthetic: Cool blue-gray
Reflectivity: High

Solarban® R100 glass is a neutral-reflective low-e glass with excellent solar performance and light transmittance.

1-Inch IGU on Clear (2)			Substrate Options		
	SHGC	VLT %	Clear	Low-Iron	Tinted
	0.23	42	✓	✓	✓

Lincoln Yards — Parcel G

Products
Solarban® 90 *Acuity*® Glass
Solarban® 60 *Starphire*® Glass

Pages 14, 19 & 23

Location
Chicago, IL — USA

Architect
Gensler

Vitro Certified® **Fabricators**
Oldcastle BuildingEnvelope®

Glazing Contractor
Midstates Glass

General Contractor
Power Construction

Photographer
Terry Wieckert

A cutting-edge workplace

1229 West Concord at Lincoln Yards is a cutting-edge workplace designed for innovative companies developing medical solutions. This state-of-the-art facility offers flexible floor plans, modern amenities, conference areas and expansive outdoor spaces. Its advanced design incorporates *Solarban*® 60 *Starphire*® glass and *Solarban*® 90 *Acuity*® glass by Vitro, which provide superior energy efficiency, enhanced natural light and outstanding clarity. These high-performance glass solutions create a bright, comfortable environment while reducing energy costs.

Starphire Ultra-Clear® Glass

Brilliance and clarity that conventional clear glass can't match.

THE CLEAREST. THE ORIGINAL.

Offering pure, undistorted transmitted color, without the green hue inherent in conventional clear glass, *Starphire Ultra-Clear*® glass represents the ultimate achievement in highly transparent low-iron glass technology. As the benchmark in the industry, *Starphire*® glass is produced in a variety of thicknesses for vision glass, safety glass and security glass, point-fixed glazing and other specialty and decorative applications. *Starphire*® glass provides an unprecedented option for curtainwall glass applications, offering brilliant clarity, true-to-life views of the outdoors and vibrant colors that conventional coated, insulated or laminated glass simply can't match.

EXTRA-HEAVY GLASS

Starphire® glass maintains its signature azure blue edge, clarity and true color transmittance even in increasing thicknesses or when laminated into multiple layers. Architects can specify *Starphire*® extra-heavy glass in thicknesses of up to 3/4-inch (19mm) for heavy glass applications, such as entrances, storefronts and security glazing with unique designs for added visual interest.

APPEARANCE
87%
Less Green
than Clear Glass

PERFORMANCE
7% ↑
Higher VLT
than Clear Glass in
1/2-Inch Thickness

AVAILABILITY
Extra heavy
Starphire® glass
is available up to
3/4"
(19mm)

STARPHIRE
ULTRA-CLEAR® GLASS

Amazon HQ2
(Mets and Metropolitan Park)

Product
Solarban® 72 *Starphire*® Glass

Location
Arlington, VA —USA

Architect
ZGF Architects

Vitro Certified® **Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Harmon Inc

General Contractor
Clark Construction Group Inc.

Photographer
Jim Cunningham

SoFi Stadium

Product
Starphire® Glass

Location
Inglewood, CA — USA

Architect
HKS

***Vitro Certified*® Fabricator**
Glasswerks

Glazing Contractor
Harris Glass Company

Photographer
Jim Cunningham

INTERIOR APPLICATIONS

Decorative Applications

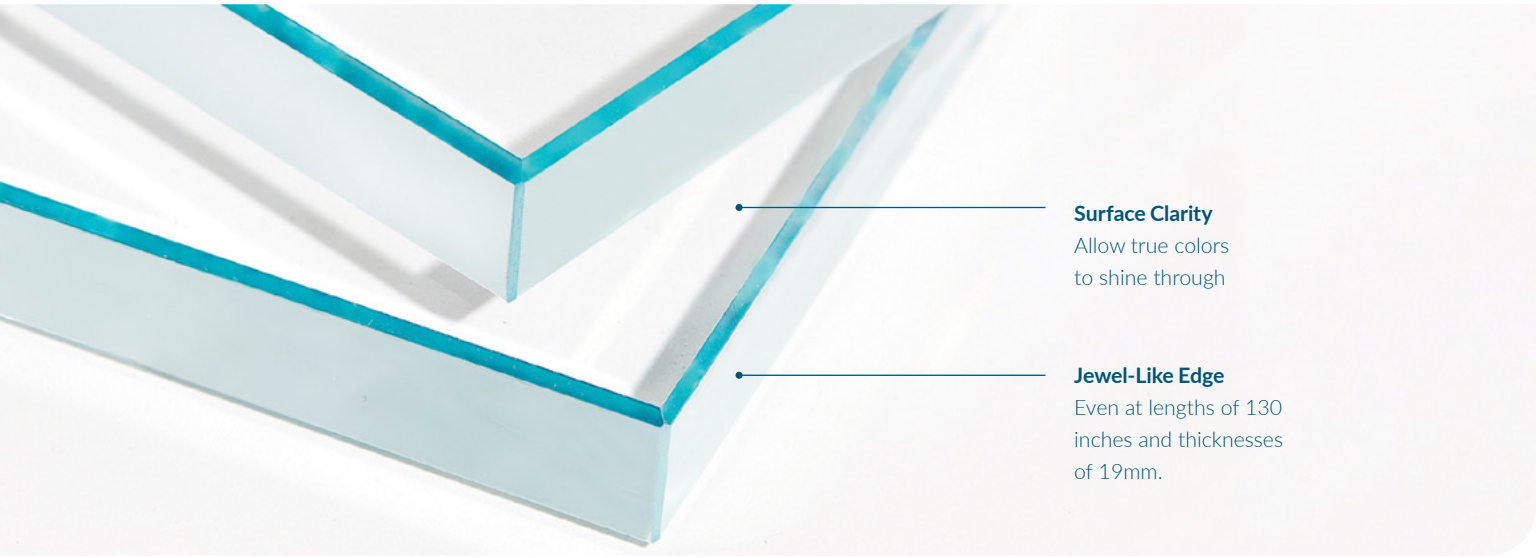
For sparkling clarity and visual excitement, *Starphire*® glass has no equal. The design possibilities are boundless with decorative *Starphire*® glass, which renders colors and patterns in their truest forms. Use *Starphire*® glass with a variety of techniques such as digital printing, dichroic lamination, acid etching and more — even on laminated or heavy glass — to create brilliant visuals.

The *Starphire*® Glass Edge

For interior applications where the glass edge is exposed — such as partitions, entrances, handrails and balustrades — *Starphire*® glass maintains its signature azure blue edge, even at lengths of 3.30m (130") and thicknesses of 19mm (0.75"). Review the *Starphire*® Edge Color Guide at vitroglazings.com for more information.

Functional Beauty

Starphire® glass provides a unique combination of performance and visual impact ideal for functional pieces such as doors, partitions, stairs and handrails. For security applications, *Starphire*® glass can be tempered or laminated for safety and extra strength — while still delivering unparalleled color transmission.



Surface Clarity
Allow true colors to shine through

Jewel-Like Edge
Even at lengths of 130 inches and thicknesses of 19mm.

STUNNINGLY CLEAR AT ANY THICKNESS

At any thickness, *Starphire Ultra-Clear*® glass transmits ample visible light to deliver visual excitement and create a sense of connectivity between spaces.

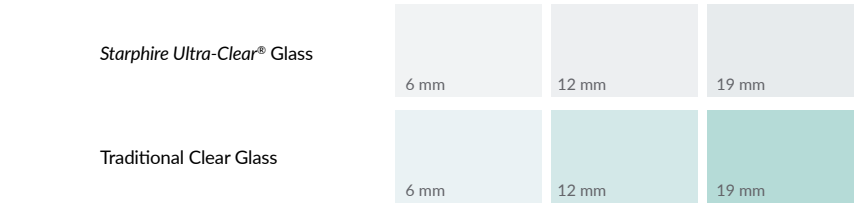
Monolithic Data

Inches	Millimeters	VLT %
1/8 to 3/8	3.2 to 10	91
1/2 to 3/4	12 to 19	90

SURFACE COMPARISON

The surface clarity of *Starphire*® glass actually becomes more apparent as the glass gets thicker, maintaining its signature clear aesthetic.

The chart below demonstrates how the thickness of the glass at its center can affect the greenish hue of traditional clear float glass in comparison to *Starphire*® glass.



No glazing product comes close to the clarity offered by *Starphire Ultra-Clear*® glass. To optimize transparent façades, curtainwalls, and commercial windows, specify *Starphire*® glass for a 2-4% improvement in VLT compared to coated conventional clear glass.

Marion Fire Station

Product
Solarban® 60 *Starphire*® Glass

Pages 8 & 15

Location
Marion, IA — USA

Architect
OPN Architects

Vitro Certified® **Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Mid-American Glazing Systems

General Construction
Christner Construction

Photographer
Cameron Campbell

FNB Tower

Products
Solarban® R77 *Acuity*® Glass
Solarban® 60 *Acuity*® Glass

Page 23

Location
Pittsburgh, PA — USA

Architect
Gensler

Vitro Certified® **Fabricator**

Glazing Contractor
PJ Dick

General Contractor
Antamex

Photographer
Jim Cunningham

May Lee State Office Complex

Product
Solarban® 72 *Acuity*® Glass

Page 23

Location
Sacramento, CA — USA

Architect
ZGF Architects

Vitro Certified® **Fabricator**
Glassfab Tempering Services Inc.

Glazing Contractor
Architectural Glass & Aluminum (AGA)

General Contractor
Hensel Phelps Construction

Photographer
Terry Wieckert

Acuity® Low-Iron Glass

Elevate aesthetics for just a modest investment, without sacrificing performance.

Where conventional clear glass was once a given—such as spandrel and vision glass applications—pure clarity is now within reach. *Acuity*® glass provides an affordable low-iron solution and joins *Starphire*® glass in the Vitro family of low-iron glass options. Available with all *Solarban*® solar control low-e coatings, *Acuity*® glass offers vivid views with minimal green cast.

When used with low-e coatings, *Acuity*® low-iron glass delivers a neutral aesthetic, improves VLT by 1-4% and gives you the SHGCs you expect from Vitro high-performance glasses—all without compromising stringent project budgets.

APPEARANCE
60% Less Green
than Conventional Clear Glass

IMPROVES
VLT by 1-4%

AVAILABLE IN
6, 8 and 10
millimeter thicknesses

SOLARBAN® *Acuity*® Series
Low-E Low-Iron Glass

***Solarban*® *Acuity*® glass is stocked at all Vitro facilities for immediate shipment with the same lead time as all *Solarban*® glass products. All configurations include uncoated *Acuity*® glass as the interior lite.**

VERSATILE NEUTRALITY

Solarban® 60 *Acuity*® Glass

Solarban® 60 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.41	73

SUPERIOR ENERGY EFFICIENCY

Solarban® 65 *Acuity*® Glass

Solarban® 65 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.36	72

EXCEPTIONALLY TRANSPARENT

Solarban® 72 *Acuity*® Glass

Solarban® 72 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.28	67

A NEW MEASURE OF PERFORMANCE

Solarban® 90 *Acuity*® Glass

Solarban® 90 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.23	53

SOFT & NEUTRAL

Solarban® R67* *Acuity*® Glass

Solarban® R67 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.30	56

*Formerly *Solarban*® 67 glass

NEUTRAL-REFLECTIVE

Solarban® R77 *Acuity*® Glass

Solarban® R77 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.25	49

NEUTRAL-REFLECTIVE

Solarban® R100 *Acuity*® Glass

Solarban® R100 (2) *Acuity*® + *Acuity*®	SHGC	VLT %
	0.23	43

The (W)rapper Tower

Product
Solarban® 70 *Solargray*® Glass

Location
Los Angeles, CA — USA

Page 13 & 29

Architect
Eric Owen Moss Architects

Vitro Certified® **Fabricator**
Glasswerks

Glazing Contractor
Steel City Glass Inc.

General Contractor
Matt Construction

Photographer
Jim Cunningham

Diamond Ridge

Product
Solarban® 70 *Solarblue*® Glass

Location
Moon Township, PA — USA

Pages 13 & 27

Architect
Next Architecture

Vitro Certified® **Fabricator**
United Plate Glass

Glazing Contractor
Specified Systems

Photographer
Jim Cunningham

Brown & Brown Headquarters

Product
Solarban® R100 *Solarblue*® Glass

Pages 17 & 27

Location
Daytona Beach, FL — USA

Architect
Reynolds, Smith & Hills

Vitro Certified® **Fabricator**
TriStar Glass Inc.

Glazing Contractor
West Tampa Glass

Photographer
Tom Kessler

Stunning architecture, expansive views

The new corporate mid-rise of Brown & Brown headquarters in Daytona Beach represents a significant post-hurricane revival effort with its stunning architecture incorporating *Solarban*® R100 *Solarblue*® glass by Vitro. With its aesthetically pleasing blue and silver façade and outstanding thermal properties, *Solarban*® R100 *Solarblue*® glass struck the winning combination, offering expansive views of the Halifax River and the Atlantic Ocean, and enhancing the workspace for up to 900 employees.

Blue & Green Tinted Glasses

A SEA OF NAUTICALLY INSPIRED TINTS

Vitro Glass offers a broad portfolio of blue and green tints that imbue buildings with exceptionally natural, environment-blending colors to support your design vision. Most of these glasses are spectrally selective in a one-inch IGU with clear glass and can be combined with *Solarban*® low-e glass coatings.

AQUA-BLUE HARMONY

Azuria® Glass

Aesthetic: Aqua-blue
Reflectivity: Low

Azuria® glass is a stunning aqua-blue glass that blends beautifully with the surrounding environment while delivering solar control and exterior reflectance similar to clear glass.

1-Inch IGU with *Solarban*® 70 (2)	
SHGC	**VLT %**
0.24	50

Coating Options	
Low-e	**Reflective**
Solarban® glass	*Solarcool*® and *Vistacool*® glasses

LIGHT-BODIED BLUE

Optiblue® Glass

Aesthetic: Light-bodied, cool blue
Reflectivity: Low

Designed to complement *Solarban*® glasses, *Optiblue*® glass is a light-bodied, neutral color tint that optimizes the performance and aesthetics of *Solarban*® glass coatings as substrates. *Optiblue*® glass provides *Solarban*® 60 with *Optiblue*® (formerly *Solarban*® z50) and *Solarban*® 70 with *Optiblue*® (formerly *Solarban*® z75) glasses with their cool-neutral appearance.

1-Inch IGU with *Solarban*® 70 (2)	
SHGC	**VLT %**
0.23	46

Nashville Airport Hilton

Products
Solarban® 70 *Optiblue*® Glass
Solarban® 90 Glass

Location
Nashville, TN — USA

Architect
Rabun Architects

Vitro Certified® **Fabricator**
Tristar Glass Inc — Grand Prairie

Glazing Contractor
McInerney & Associates, Inc.

General Contractor
Crain Construction

Photographer
Jim Cunningham

UCI Middle Earth Housing Expansion

Product
Solarban® R67* *Solexia*® Glass

Location
Irvine, CA – USA

Pages 17 & 27

Architect
Mithun

***Vitro Certified*® Fabricator**

Glazing Contractor
Kovach Building Enclosures

Photographer
Tom Kessler

*Formerly *Solarban*® 67 glass

A PLEASANT GREEN

Atlantica® Glass

Aesthetic: Emerald-green
Reflectivity: Low

Atlantica® glass has a pleasant emerald green aesthetic and delivers excellent daylighting.

1-Inch IGU *Atlantica*® + *Solarban*® 70 (3)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.28	48	NA	NA

***Solarban*® low-e coatings are not available on *Atlantica*® and *Pacifica*® tinted glass.**

SOOTHING LIGHT-GREEN

Solexia® Glass

Aesthetic: Light green
Reflectivity: Low

Solexia® glass is a soothing, light green tinted glass that has provided high light transmittance and aesthetic options to architects and building owners worldwide for decades.

1-Inch IGU with *Solarban*® 70 (2)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.26	56	*Solarban*® glass	NA

SPARKLING LIGHT-BLUE

Solarblue® Glass

Aesthetic: Light sky-blue
Reflectivity: Low

Solarblue® glass offers a vibrant light sky-blue aesthetic with low reflectivity.

1-Inch IGU with *Solarban*® 70 (2)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.22	41	*Solarban*® glass	*Solarcool*® glass

DEEP BLUE

Pacifica® Glass

Aesthetic: Deeply saturated true-blue
Reflectivity: Low

Pacifica® glass offers a stunning deeply saturated true-blue tint with good solar control.

1-Inch IGU *Pacifica*® + *Solarban*® 70 (3)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.22	31	NA	*Solarcool*® and *Vistacool*® glasses

***Solarban*® low-e coatings are not available on *Atlantica*® and *Pacifica*® tinted glass**

Gray & Bronze Tinted Glasses

FROM WARM NEUTRALS TO PRIVACY GLASS

Vitro Glass offers an expansive series of bronze and gray tinted glasses ranging from very neutral, light-transmitting aesthetics to rich, dark glasses that limit transmittance. They all can create distinctive looks that blend well with a variety of architectural elements and can be paired with *Solarban*® low-e glass coatings for optimum performance.

Noorda College of Osteopathic Medicine

Product
Solarban® 70 *Solargray*® Glass

Location
Provo, UT — USA

Architect
MHTN Architects

Vitro Certified® **Fabricator**
Trulite Glass and Aluminum

Glazing Contractor
Jones Glass

Photographer
Tom Kessler

Attleboro High School

Product
Solarban® 60 *Optigray*® Glass

Location
Attleboro, MA — USA

Architect
Kaestle Boos Architects Inc.

***Vitro Certified*® Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Lockheed Window Corp

Photographer
Ed Wonsek

ULTRA-NEUTRAL GRAY

Optigray® Glass

Aesthetic: Warm light gray
Reflectivity: Low

Optigray® glass is designed to complement *Solarban*® solar control low-e glasses and maximize light transmittance and clarity.

1-Inch IGU with *Solarban*® 70 (2)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.23	46	*Solarban*® glass	NA

A CLASSIC NEUTRAL

Solargray® Glass

Aesthetic: Cool medium gray
Reflectivity: Low

Solargray® glass has a classic, neutral aesthetic favored by many designers and maintains VLT of 32% in a one-inch IGU with *Solarban*® 70 glass.

1-Inch IGU with *Solarban*® 70 (2)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.19	32	*Solarban*® glass	*Solarcool*® glass

A RICH CONTRAST

Graylite® II Glass

Aesthetic: Dark gray
Reflectivity: Low

Graylite® II glass delivers glare control and distinctive color contrast when paired with a Vitro low-e glass in a one-inch IGU.

1-Inch IGU with *Solarban*® 70 (3)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.11	6	*Solarban*® glass	NA

WARM, HARMONIZING BRONZE

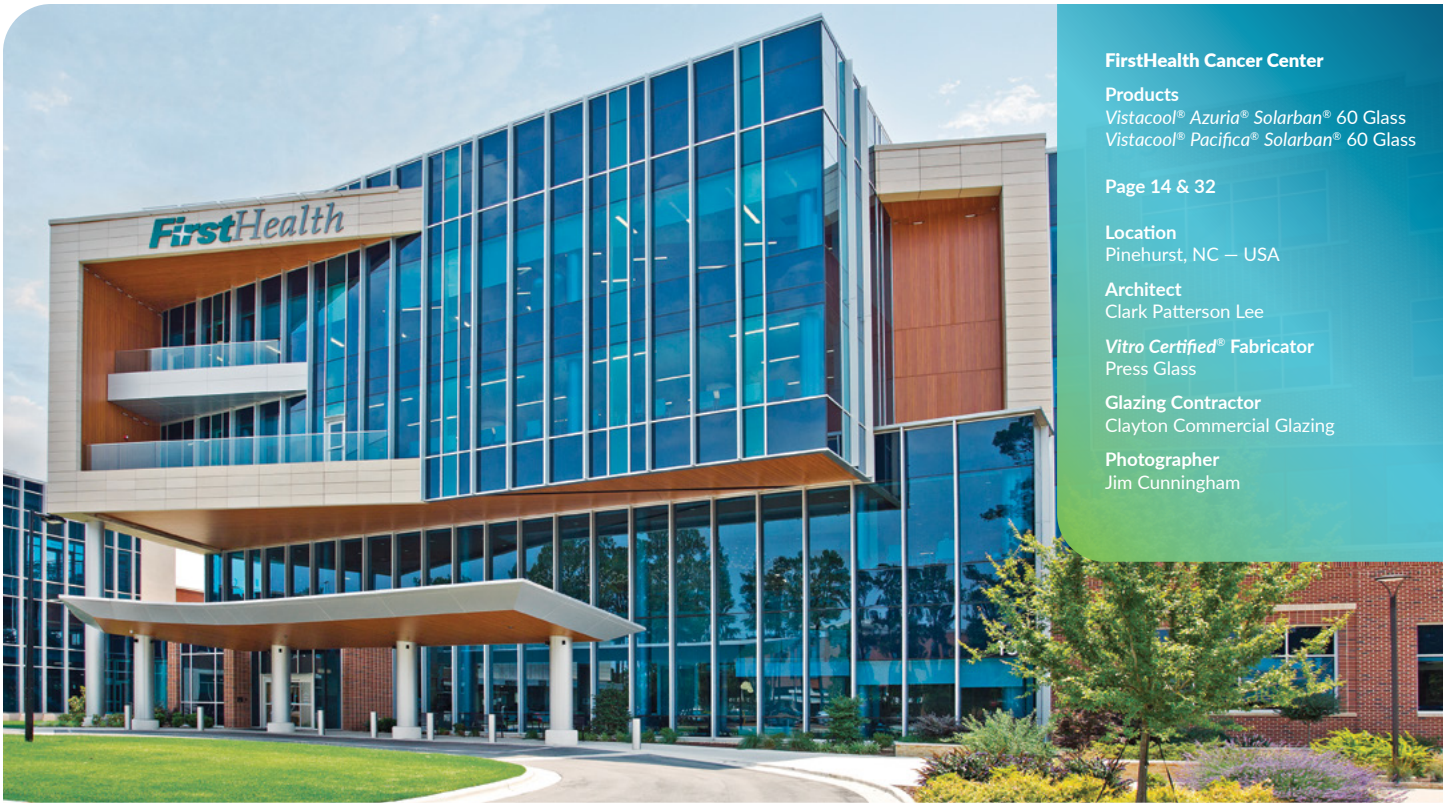
Solarbronze® Glass

Aesthetic: Warm bronze
Reflectivity: Low

Solarbronze® glass complements a range of hues from adjacent building materials and still offers VLT of 39% in a one-inch IGU with *Solarban*® 70 glass.

1-Inch IGU with *Solarban*® 70 (2)		Coating Options	
SHGC	VLT %	Low-e	Reflective
0.20	39	*Solarban*® glass	*Solarcool*® glass

Data is based on center-of-glass performance, in a one-inch IGU with clear glass, of representative factory production samples. Actual values may vary due to the production process and manufacturing tolerances. All tabulated data is based on NFRC methodology using the LBNL Window 7.3 software.



FirstHealth Cancer Center

Products
Vistacool® Azuria® Solarban® 60 Glass
Vistacool® Pacifica® Solarban® 60 Glass

Page 14 & 32

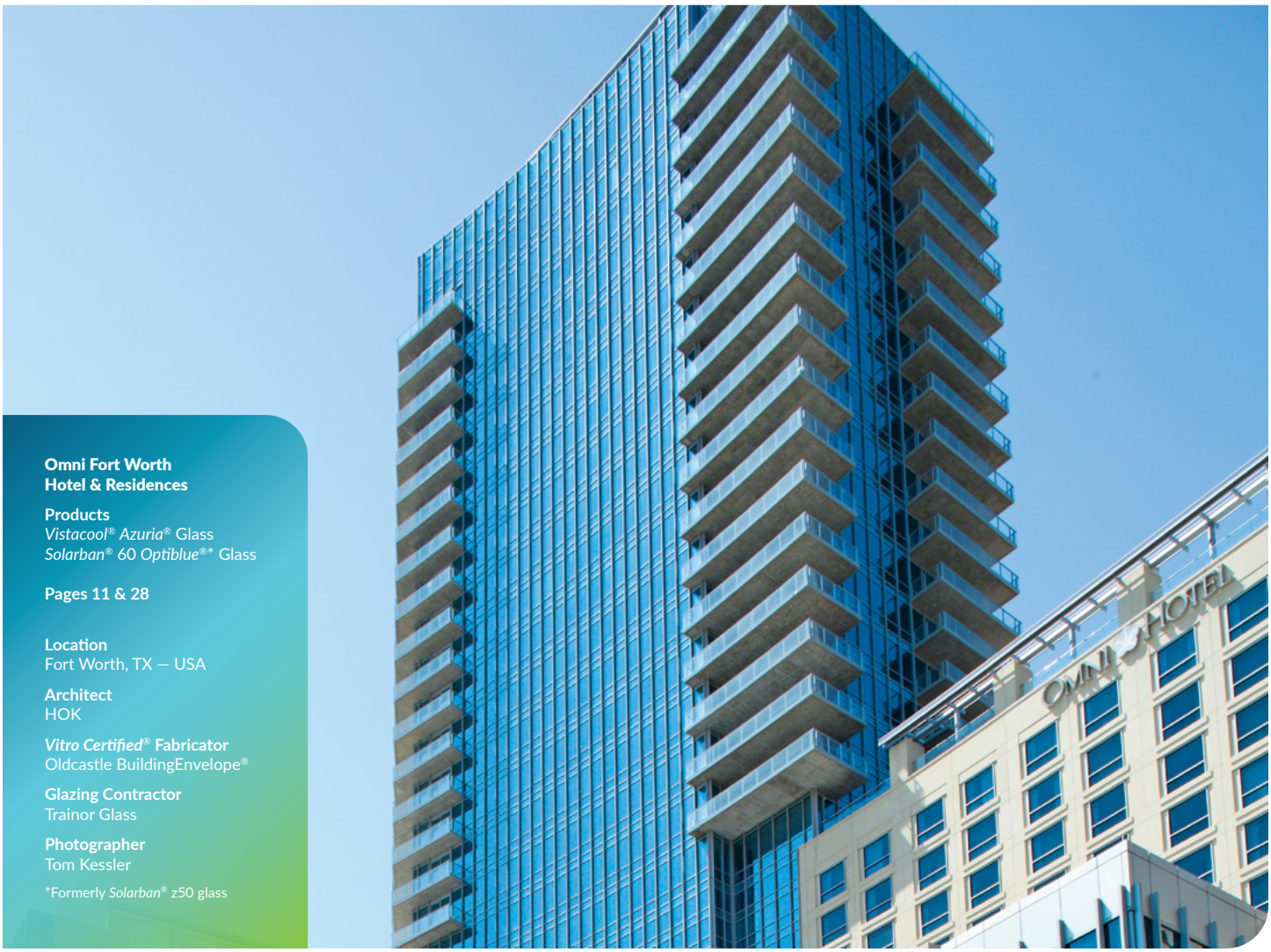
Location
Pinehurst, NC — USA

Architect
Clark Patterson Lee

***Vitro Certified®* Fabricator**
Press Glass

Glazing Contractor
Clayton Commercial Glazing

Photographer
Jim Cunningham



Omni Fort Worth Hotel & Residences

Products
Vistacool® Azuria® Glass
*Solarban® 60 Optiblue®** Glass

Pages 11 & 28

Location
Fort Worth, TX — USA

Architect
HOK

***Vitro Certified®* Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Trainor Glass

Photographer
Tom Kessler

*Formerly *Solarban®* z50 glass

Tower 6

Products
Vistacool® *Pacifica*® Glass
Solarban® 60 Glass
Solarban® 60 *Pacifica*® Glass

Pages 14, 27 & 32

Location
Allentown, PA– USA

Architect
Spillman Farmer

***Vitro Certified*® Fabricator**

Glazing Contractor
National Glass & Metal

General Contractor
Serfass Construction

Photographer
Jim Cunningham

A beacon of modern architecture and sustainability

Tower 6 in downtown Allentown, PA, stands as a beacon of modern architecture and sustainability. Its design incorporates *Solarban*® 60 glass by Vitro, which enhances energy efficiency by minimizing solar heat gain and maximizing natural light. The addition of *Solarban*® 60 *Pacifica*® glass by Vitro provides a subtle, appealing aesthetic with a sky-blue tint that adds sophistication while maintaining energy control. *Vistacool*® *Pacifica*® glass by Vitro enriches the building's façade with its reflective and iridescent quality, delivering a visually stunning exterior.

Vistacool® Subtly Reflective Color-Enriched Glasses

The *Vistacool*® family of subtly reflective, color-enriched glass offers high VLT with a softer, less mirror-like look than traditional reflective glass. Designed with a durable second-surface-only coating, *Vistacool*® comes in two tints—*Azuria*® for an aqua-blue look or *Pacifica*® for a true-blue look—and can be paired with *Solarban*® low-e glass coatings.

RICH, AQUA-BLUE

Vistacool® *Azuria*® Glass

Vistacool® (2) *Azuria*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.26	20%	42

DEEP, TRUE-BLUE

Vistacool® *Pacifica*® Glass

Vistacool® (2) *Pacifica*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.22	11%	26

Winthrop P. Rockefeller Cancer Institute

Products
Azuria® Glass
Solarban® 60 Glass
Vistacool® Glass

Location
Little Rock, AR — USA

Architect
Cromwell Architects Engineers Inc.

***Vitro Certified*® Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
BHN Corporation

Photographer
Keith Norman

Solarcool® Reflective Glasses

For more than 50 years, Vitro's proven and highly durable *Solarcool*® reflective coated glasses have enhanced the appearance of thousands of buildings and the comfort of occupants. When applied to the first surface of an IGU, *Solarcool*® glass produces a reflective, metallic sheen. On the second surface, *Solarcool*® coatings add reflectivity and enrich the color of five Vitro tinted glasses.

When combined in a one-inch IGU with *Solarban*® 60 glass, *Solarcool*® reflective glasses offer an expansive palette of appearance and performance options with SHGCs ranging from 0.15 to 0.18 and exterior reflectance of up to 19%.

AQUA-BLUE

Solarcool® *Azuria*® Glass

Solarcool® (2) *Azuria*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.17	19%	21

WARM BRONZE

Solarcool® *Solarbronze*® Glass

Solarcool® (2) *Solarbronze*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.18	14%	17

RICH BLUE

Solarcool® *Pacifica*® Glass

Solarcool® (2) *Pacifica*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.15	10%	13

MEDIUM GRAY

Solarcool® *Solargray*® Glass

Solarcool® (2) *Solargray*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.17	11%	14

LIGHT SKY-BLUE

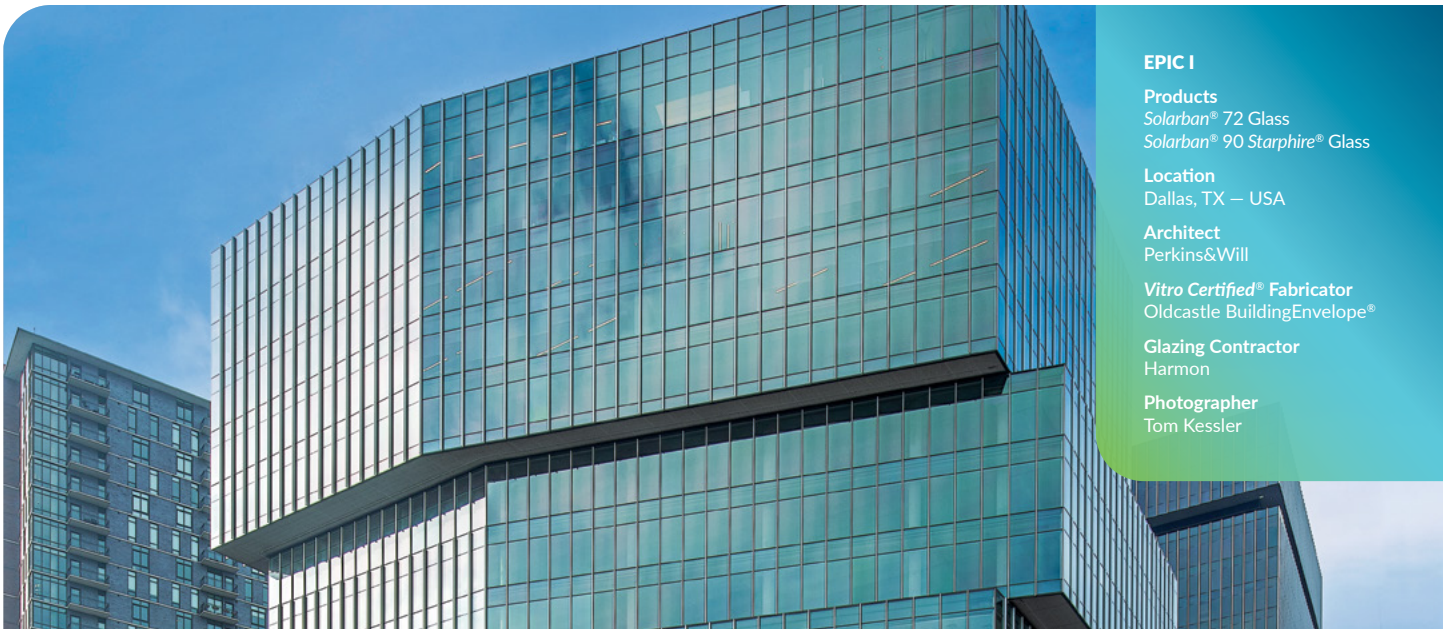
Solarcool® *Solarblue*® Glass

Solarcool® (2) *Solarblue*® + *Solarban*® 60 (3)			
	SHGC	Exterior Reflectance	VLT %
	0.18	14%	17

Data is based on center-of-glass performance, in a one-inch IGU with clear glass, of representative factory production samples. Actual values may vary due to the production process and manufacturing tolerances. All tabulated data is based on NFRC methodology using the LBNL Window 7.3 software.

Insulating Glass Unit Performance for 1-inch (25 mm) units with 1/2-inch (13 mm) airspace and two 1/4-inch (6 mm) lites								
Glass Type Outdoor Lite: Coating if Any (Surface) Glass + Indoor Lite: Coating if Any (Surface) Glass		Visible Light Transmittance (VLT)[2] %	Visible Light Reflectance[2]		(Btu/hr•ft²•°F) NFRC U-Value[3]		Solar Heat Gain Coefficient (SHGC)[4]	Color Rendering Index (CRI)[5]
			Exterior %	Interior %	Winter Nighttime	Winter Argon		
Uncoated								
	CLEAR Glass + Clear	79	15	15	0.47	0.45	0.70	95
	ACUITY® + ACUITY®	82	15	15	0.47	0.45	0.78	98
	STARPHIRE® + STARPHIRE®	84	15	15	0.47	0.45	0.82	99
	SOLEXIA® + Clear	69	13	15	0.47	0.45	0.50	86
	ATLANTICA® + Clear	60	10	14	0.47	0.45	0.40	84
	AZURIA® + Clear	61	11	14	0.47	0.45	0.39	77
	SOLARBLUE® + Clear	50	9	13	0.47	0.45	0.49	84
	PACIFICA® + Clear	38	7	13	0.47	0.45	0.36	72
	SOLARBRONZE® + Clear	47	8	13	0.47	0.45	0.51	95
	OPTIGRAY® + Clear	56	10	13	0.47	0.45	0.52	94
	SOLARGRAY® + Clear	40	7	13	0.47	0.45	0.46	93
	GRAYLITE® II + Clear	8	4	12	0.47	0.45	0.22	85
Coated								
SOLARBAN® 60 Solar Control Low-e Glass								
	SOLARBAN 60 (2) Clear + Clear	70	11	12	0.29	0.24	0.39	95
	SOLARBAN 60 (2) ACUITY + ACUITY	73	11	12	0.29	0.24	0.41	97
	SOLARBAN 60 (2) STARPHIRE + STARPHIRE	74	11	12	0.29	0.24	0.41	98
	SOLARBAN 60 (2) SOLEXIA + Clear	61	9	12	0.29	0.24	0.32	90
	SOLARBAN 60 (2) AZURIA + Clear	54	8	11	0.29	0.24	0.28	78
	SOLARBAN 60 (2) SOLARBLUE + Clear	45	7	11	0.29	0.24	0.29	94
	SOLARBAN 60 (2) SOLARBRONZE + Clear	42	7	11	0.29	0.24	0.28	95
	SOLARBAN 60 (2) OPTIGRAY + Clear	50	8	11	0.29	0.24	0.30	94
	SOLARBAN 60 (2) SOLARGRAY + Clear	35	6	10	0.29	0.24	0.25	95
	ATLANTICA + SOLARBAN 60 (3) Clear	53	8	10	0.29	0.24	0.31	84
	PACIFICA + SOLARBAN 60 (3) Clear	34	6	9	0.29	0.24	0.25	72
	GRAYLITE II + SOLARBAN 60 (3) Clear	7	4	8	0.29	0.24	0.13	84
SOLARBAN® 60 Solar Control Low-e Glass on OPTIBLUE®†† (formerly SOLARBAN® z50 Glass)								
	SOLARBAN 60 (2) OPTIBLUE + Clear	51	8	11	0.29	0.24	0.32	91
SOLARBAN® 65 Solar Control Low-e Glass								
	SOLARBAN 65 (2) Clear + Clear	70	14	15	0.29	0.24	0.35	96
	SOLARBAN 65 (2) ACUITY + ACUITY	72	15	15	0.29	0.24	0.36	98
	SOLARBAN 65 (2) STARPHIRE + STARPHIRE	73	15	15	0.29	0.24	0.36	99
SOLARBAN® 70 Solar Control Low-e Glass† (formerly SOLARBAN® 70XL Glass)								
	SOLARBAN 70 (2)† + Clear	64	13	14	0.28	0.24	0.27	91
	SOLARBAN 70 (2) SOLEXIA + Clear	56	11	14	0.28	0.24	0.26	85
	SOLARBAN 70 (2) AZURIA + Clear	50	10	13	0.28	0.24	0.24	69
	SOLARBAN 70 (2) SOLARBLUE + Clear	41	8	13	0.28	0.24	0.22	81
	SOLARBAN 70 (2) SOLARBRONZE + Clear	39	8	13	0.28	0.24	0.20	93
	SOLARBAN 70 (2) OPTIGRAY + Clear	46	9	13	0.28	0.24	0.23	89
	SOLARBAN 70 (2) SOLARGRAY + Clear	32	7	13	0.28	0.24	0.19	89
	ATLANTICA + SOLARBAN 70 (3) Clear	48	9	11	0.28	0.24	0.28	81
	PACIFICA + SOLARBAN 70 (3) Clear	31	6	10	0.28	0.24	0.22	69
	GRAYLITE II + SOLARBAN 70 (3)†	6	4	10	0.28	0.24	0.11	81
SOLARBAN® 70 Solar Control Low-e Glass on OPTIBLUE®†† (formerly SOLARBAN® z75 Glass)								
	SOLARBAN 70 (2) OPTIBLUE + Clear	46	9	13	0.28	0.24	0.23	87
SOLARBAN® 72 Solar Control Low-e Glass								
	SOLARBAN 72 (2) ACUITY + ACUITY	67	13	14	0.28	0.24	0.28	94
	SOLARBAN 72 (2) STARPHIRE + STARPHIRE	68	13	14	0.28	0.24	0.28	95
SOLARBAN® 90 Solar Control Low-e Glass								
	SOLARBAN 90 (2) Clear + Clear	51	12	19	0.29	0.24	0.23	92
	SOLARBAN 90 (2) ACUITY + ACUITY	53	12	19	0.29	0.24	0.23	94
	SOLARBAN 90 (2) STARPHIRE + STARPHIRE	54	13	20	0.29	0.24	0.23	95
	SOLARBAN 90 (2) SOLEXIA + Clear	44	10	19	0.29	0.24	0.22	86
	SOLARBAN 90 (2) AZURIA + Clear	39	9	19	0.29	0.24	0.21	75
	SOLARBAN 90 (2) OPTIBLUE + Clear	37	8	19	0.29	0.24	0.20	88
	SOLARBAN 90 (2) SOLARBLUE + Clear	32	8	18	0.29	0.24	0.19	81

Insulating Glass Unit Performance for 1-inch (25 mm) units with 1/2-inch (13 mm) airspace and two 1/4-inch (6 mm) lites								
Glass Type: Outdoor Lite: Coating if Any (Surface) Glass + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)[2] %	Visible Light Reflectance[2]		(Btu/hr•ft²•°F) NFRC U-Value[3]		Solar Heat Gain Coefficient (SHGC)[4]	Color Rendering Index (CRI)[5]
		Exterior %	Interior %	Winter Nighttime	Winter Argon		
Coated							
SOLARBAN® 90 Solar Control Low-e Glass (Continued)							
SOLARBAN 90 (2) SOLARBRONZE + Clear	31	7	18	0.29	0.24	0.18	94
SOLARBAN 90 (2) OPTIGRAY + Clear	36	8	19	0.29	0.24	0.20	90
SOLARBAN 90 (2) SOLARGRAY + Clear	26	6	18	0.29	0.24	0.17	90
ATLANTICA + SOLARBAN 90 (3) Clear	39	13	12	0.29	0.24	0.26	82
PACIFICA + SOLARBAN 90 (3) Clear	24	8	11	0.29	0.24	0.21	69
GRAYLITE II + SOLARBAN 90 (3) Clear	5	4	11	0.29	0.24	0.11	82
SOLARBAN® R100 Neutral-Reflective Low-e Glass							
SOLARBAN R100 (2) Clear + Clear	42	32	14	0.29	0.25	0.23	93
SOLARBAN R100 (2) ACUITY + ACUITY	43	33	13	0.29	0.25	0.23	92
SOLARBAN R100 (2) STARPHIRE + STARPHIRE	44	33	14	0.29	0.25	0.23	93
SOLARBAN R100 (2) SOLEXIA + Clear	36	25	13	0.29	0.25	0.21	83
SOLARBAN R100 (2) AZURIA + Clear	32	21	13	0.29	0.25	0.19	72
SOLARBAN R100 (2) OPTIBLUE + Clear	30	19	13	0.29	0.25	0.20	86
SOLARBAN R100 (2) SOLARBLUE + Clear	26	15	13	0.29	0.25	0.19	79
SOLARBAN R100 (2) SOLARBRONZE + Clear	25	15	13	0.29	0.25	0.18	95
SOLARBAN R100 (2) OPTIGRAY + Clear	29	18	13	0.29	0.25	0.20	89
SOLARBAN R100 (2) SOLARGRAY + Clear	21	12	13	0.29	0.25	0.17	89
SOLARBAN® R77 Neutral-Reflective Low-e Glass							
SOLARBAN R77 (2) Clear + Clear	47	25	16	0.29	0.24	0.25	94
SOLARBAN R77 (2) ACUITY + ACUITY	49	26	16	0.29	0.24	0.25	95
SOLARBAN R77 (2) STARPHIRE + STARPHIRE	50	26	16	0.29	0.24	0.25	98
SOLARBAN R77 (2) SOLEXIA + Clear	41	20	16	0.29	0.24	0.23	87
SOLARBAN R77 (2) AZURIA + Clear	36	17	16	0.29	0.24	0.21	76
SOLARBAN R77 (2) OPTIBLUE + Clear	34	15	16	0.29	0.24	0.21	90
SOLARBAN R77 (2) SOLARBLUE + Clear	30	13	16	0.29	0.24	0.20	83
SOLARBAN R77 (2) SOLARBRONZE + Clear	28	12	16	0.29	0.24	0.19	96
SOLARBAN R77 (2) OPTIGRAY + Clear	33	15	16	0.29	0.24	0.21	93
SOLARBAN R77 (2) SOLARGRAY + Clear	23	10	15	0.29	0.24	0.18	93
SOLARBAN® R67 Neutral-Reflective Low-e Glass (formerly SOLARBAN® 67 Glass)							
SOLARBAN R67 (2) Clear + Clear	54	19	16	0.29	0.24	0.29	92
SOLARBAN R67 (2) ACUITY + ACUITY	56	19	16	0.29	0.24	0.30	94
SOLARBAN R67 (2) STARPHIRE + STARPHIRE	57	20	16	0.29	0.24	0.30	95
SOLARBAN R67 (2) SOLEXIA + Clear	47	16	16	0.29	0.24	0.25	85
SOLARBAN R67 (2) AZURIA + Clear	42	13	16	0.29	0.24	0.23	74



EPIC I

Products
Solarban® 72 Glass
Solarban® 90 *Starphire*® Glass

Location
Dallas, TX — USA

Architect
Perkins&Will

***Vitro Certified*® Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Harmon

Photographer
Tom Kessler

Insulating Glass Unit Performance for 1-inch (25 mm) units with 1/2-inch (13 mm) airspace and two 1/4-inch (6 mm) lites								
Glass Type Outdoor Lite: Coating if Any (Surface) Glass + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)[2] %	Visible Light Reflectance[2]		(Btu/hr•ft²•°F) NFRC U-Value[3]		Solar Heat Gain Coefficient (SHGC)[4]	Color Rendering Index (CRI)[5]
		Exterior %	Interior %	Winter Nighttime	Winter Argon		
Coated							
SOLARBAN® R67 Neutral-Reflective Low-e Glass (formerly SOLARBAN® 67 Glass) (Continued)							
SOLARBAN R67 (2) OPTIBLUE + Clear	39	12	15	0.29	0.24	0.25	88
SOLARBAN R67 (2) SOLARBLUE + Clear	34	10	15	0.29	0.24	0.23	81
SOLARBAN R67 (2) SOLARBRONZE + Clear	32	10	15	0.29	0.24	0.22	95
SOLARBAN R67 (2) OPTIGRAY + Clear	38	12	15	0.29	0.24	0.24	90
SOLARBAN R67 (2) SOLARGRAY + Clear	27	8	15	0.29	0.24	0.20	90
VISTACOOL® and SOLARCOOL® with SOLARBAN® 60 Solar Control Low-e Glass (3)							
VISTACOOL (2) AZURIA + SOLARBAN 60 (3) Clear	42	20	24	0.29	0.24	0.26	78
VISTACOOL (2) PACIFICA + SOLARBAN 60 (3) Clear	26	11	23	0.29	0.24	0.22	73
SOLARCOOL (2) AZURIA + SOLARBAN 60 (3) Clear	21	19	29	0.29	0.24	0.17	85
SOLARCOOL (2) SOLARBLUE + SOLARBAN 60 (3) Clear	17	14	29	0.29	0.24	0.18	92
SOLARCOOL (2) PACIFICA + SOLARBAN 60 (3) Clear	13	10	29	0.29	0.24	0.15	80
SOLARCOOL (2) SOLARBRONZE + SOLARBAN 60 (3) Clear	17	14	29	0.29	0.24	0.18	85
SOLARCOOL (2) SOLARGRAY + SOLARBAN 60 (3) Clear	14	11	29	0.29	0.24	0.17	91
SUNGATE THERML™ U-Value Enhancing Low-e Glass							
SOLARBAN 60 (2) CLEAR + SUNGATE THERML (4) Clear	69	10	11	0.23	0.20	0.38	95
SOLARBAN 60 (2) ACUITY + SUNGATE THERML (4) ACUITY	71	11	11	0.23	0.20	0.40	97
SOLARBAN 60 (2) STARPHIRE + SUNGATE THERML (4) STARPHIRE	73	11	11	0.23	0.20	0.41	98
SOLARBAN 65 (2) CLEAR + SUNGATE THERML (4) Clear	68	14	14	0.23	0.20	0.34	96
SOLARBAN 65 (2) ACUITY + SUNGATE THERML (4) ACUITY	71	14	14	0.23	0.20	0.35	98
SOLARBAN 65 (2) STARPHIRE + SUNGATE THERML (4) STARPHIRE	72	14	14	0.23	0.20	0.36	99
SOLARBAN 70 (2) CLEAR + SUNGATE THERML (4) Clear	63	13	13	0.23	0.20	0.27	91
SOLARBAN 72 (2) ACUITY + SUNGATE THERML (4) ACUITY	65	13	13	0.23	0.20	0.27	94
SOLARBAN 72 (2) STARPHIRE + SUNGATE THERML (4) STARPHIRE	66	13	13	0.23	0.20	0.27	95
SOLARBAN 90 (2) CLEAR + SUNGATE THERML (4) Clear	50	12	18	0.23	0.20	0.23	92
SOLARBAN 90 (2) ACUITY + SUNGATE THERML (4) ACUITY	52	12	18	0.23	0.20	0.23	94
SOLARBAN 90 (2) STARPHIRE + SUNGATE THERML (4) STARPHIRE	52	12	18	0.23	0.20	0.22	95

† *Solarban*® 70 (formerly *Solarban*® 70XL) for annealed applications is applied to low-iron glass; heat treated applications will require either clear or low-iron glass depending on manufacturing process.

†† *Optiblue*® is a unique substrate by Vitro Glass designed for use with several *Solarban*® coatings.

1. Data is based on center of glass performance of representative factory production samples. Actual values may vary due to the production process and manufacturing tolerances. All tabulated data is based on NFRC methodology using the LBNL Window 7.3 software.
2. Transmittance and Reflectance values based on spectrophotometric measurements and energy distribution of solar radiation.
3. U-Value — A measure of the insulating characteristics of the glass or how much heat gain or loss occurs through the glass due to the difference between indoor and outdoor temperatures and is measured Btu/hr•ft²•°F. The lower the number, the better the insulating performance. This number is the reciprocal of the R-value. Winter argon represents the winter nighttime U-value performance when the cavity is filled with a 90% argon/10% air/gas mixture.
4. Solar Heat Gain Coefficient (SHGC) — Measures how well a window blocks (or shades) the heat from sunlight. SHGC is the fraction of solar radiation transmitted through a window or skylight, as well as the amount that is absorbed by the glass and reradiated to the interior. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits and the greater the shading ability. The SHGC is similar to the Shading Coefficient (SC), but also accounts for absorbed, converted and inwardly radiated solar energy.
5. Color Rendering Index (CRI) is a measurement from 0 to 100 of how accurately a color is reproduced under certain lighting conditions, relative to natural light. A value of 100 would indicate an unobstructed view. For glass, the color rendering index is calculated using the LBNL Optics 6 software following EN410 methodology, which is defined as the "change in color of an object as a result of the light being transmitted by the glass.

University of Pennsylvania — New College House

Product
Solarban® 70 Glass

Page 13

Location
Philadelphia, PA — USA

Architect
Bohlin Cywinski Jackson

***Vitro Certified*® Fabricator**

Glazing Contractor
National Glass & Metal

Photographer
Jeffrey Totaro

70 Santana Row

Product
Solarban® 70 Glass

Page 13

Location
San Jose, CA — USA

Architect
WRNS Studio

***Vitro Certified*® Fabricator**
Glassfab Tempering Services

Glazing Contractor
Walters & Wolf

Photographer
Tom Kessler

Furthering Sustainable Performance. Every Day.

Vitro Architectural Glass is dedicated to continuously raising the industry standard for sustainability and innovation. In line with our mission:

- All our architectural glass products meet the Low Embodied Carbon (LEC) glass standards established by the U.S. General Services Administration (GSA)
- We were the first U.S. float glass manufacturer to have our entire product offering recognized by the *Cradle to Cradle Certified*® program
- We were the first North American glass manufacturer to publish third-party verified Environmental Product Declarations (EPDs) for our products

Low Embodied Carbon glass. All products. All plants. All the time.

Lowering Carbon Emissions in the Built Environment

As architects aim to create more sustainable buildings, the focus on embodied carbon has become key to assessing a project's carbon footprint. This shift balances reducing operational carbon—emissions from a building's energy use—with embodied carbon, which includes emissions from manufacturing and installing construction materials.

Low-emissivity (low-e) coatings like *Solarban*® glass (pg. 11) and *Sungate ThermL*™ glass (pg. 6), as well as advanced glazing solutions like *VacuMax*™ VIG (pg. 4), play a crucial role in reducing the carbon impact of buildings as they significantly improve U-values, enhance energy efficiency and support sustainability goals.

Embodied Carbon and Glass

One of the most important metrics to evaluate embodied carbon in glass is the Global Warming Potential (GWP). Most of the embodied carbon in glass comes from the energy-intensive process of heating melting furnaces to 3,000° F, a temperature needed to transform raw materials into flat glass. Our continued efforts to lower GWP include:

- More efficient use of batch material
- Implementing furnace efficiency
- Installing energy-efficient lighting
- Regulating equipment
- Driving supplier improvement

Another significant factor in lowering GWP is our patented oxy-fuel furnace technology, which melts raw materials by carefully mixing pure oxygen (instead of air) with natural gas.

LEED® Support

We have a long history of helping architects incorporate the core principles that are now part of the LEED rating system. Our products contribute to LEED certification in at least seven categories.

Explore how we can guide your project toward earning valuable LEED credits at vitroglazings.com/leed

Low-e coatings can cut energy loss through windows by

35%

saving

1.5 quads of energy

annually in the U.S.

Vitro's patented

oxy-fuel technology

reduces energy consumption in glass-melting furnaces by as much as

20%

and greenhouse gas emissions by

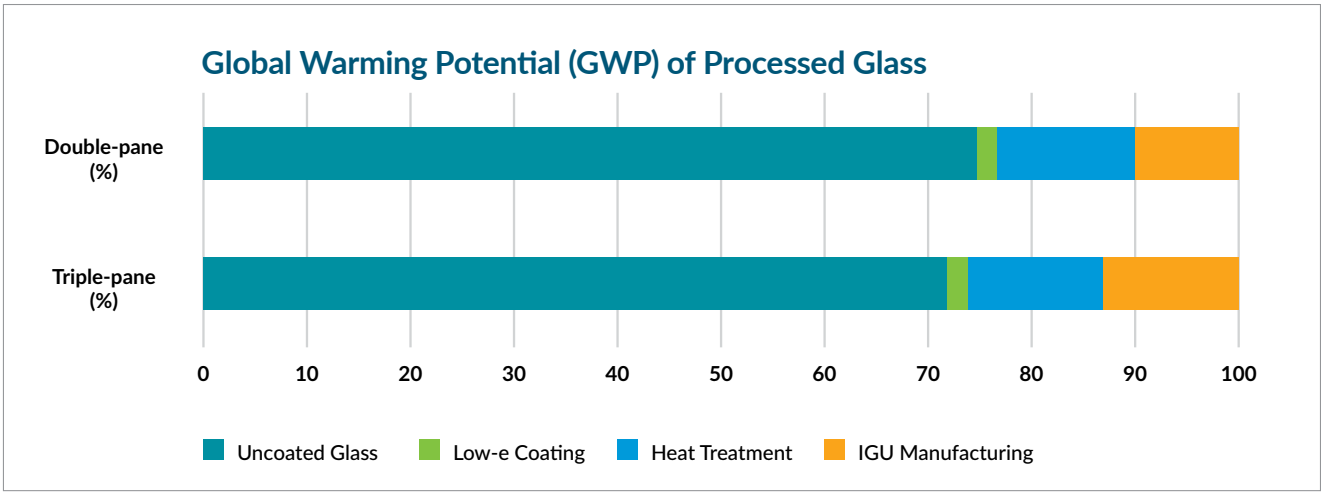
50%

Vitro products are featured in over

90

LEED certified buildings globally

Sustainability Model



Of the embodied carbon in an IGU, approximately 78% comes from manufacturing the flat glass lites. Of the remaining, 12% is accounted for in the IGU fabrication process, and 10% is attributed to the heat treatment of low-e coatings.

We are committed to environmental preservation. Guided by our Safety, Health, Environment and Energy Policy, we implement initiatives like glass recycling, an energy-efficient management system and renewable energy use at facilities.

Our commitment extends to corporate responsibility through a Code of Ethics and Conduct, which emphasizes human rights, ethical business practices, community support, environmental protection and positive relationships with governments. These actions reflect our dedication to making a lasting impact on society and the planet.

To learn more about Vitro's efforts to create a more sustainable built environment, visit vitroglazings.com/sustainability

Sustainability Support

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archresources@vitro.com

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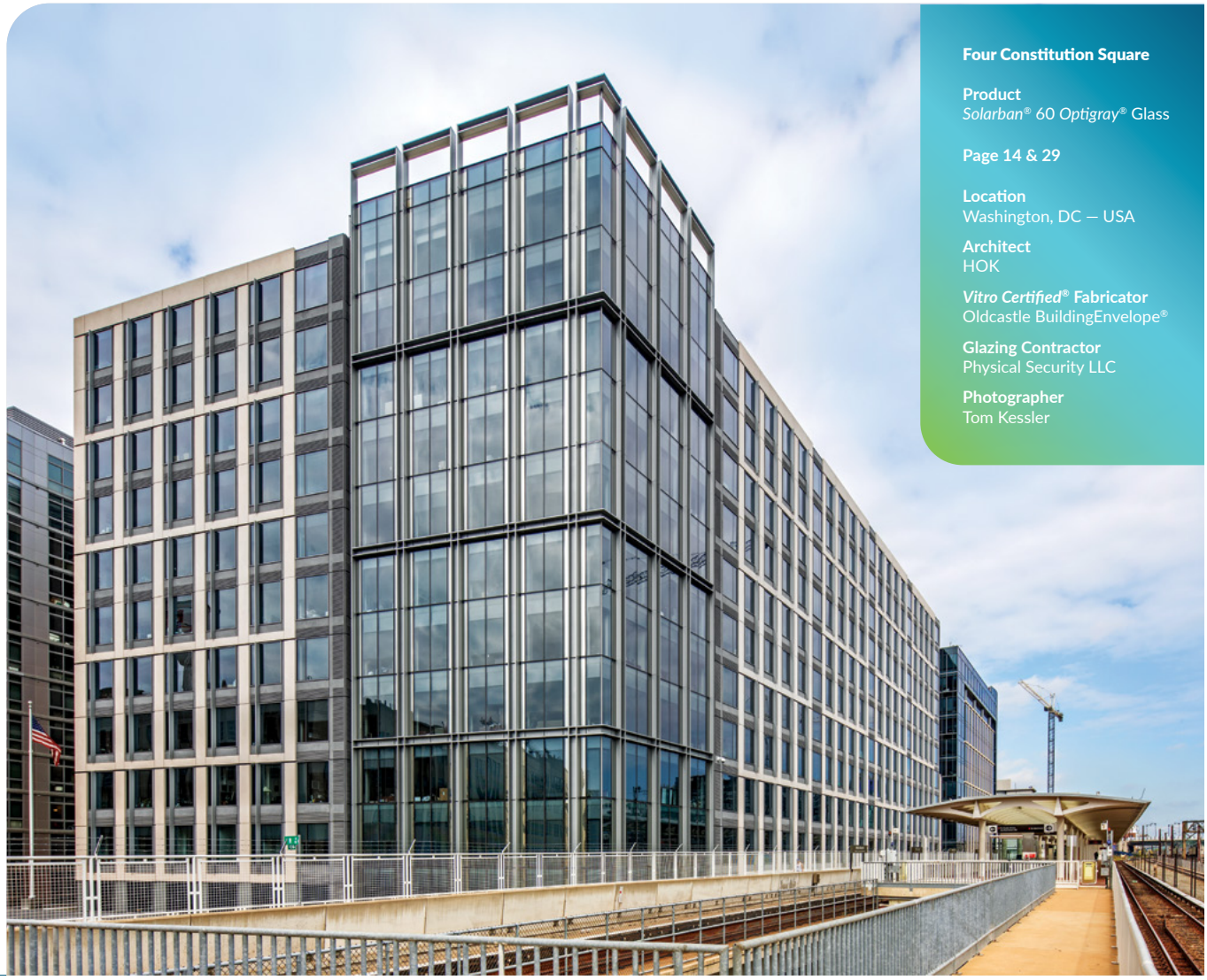


Four Constitution Square

Product
Solarban® 60 *Optigray*® Glass

Page 14 & 29

Location
Washington, DC — USA

Architect
HOK

Vitro Certified® **Fabricator**
Oldcastle BuildingEnvelope®

Glazing Contractor
Physical Security LLC

Photographer
Tom Kessler

Vitro Certified® Network

Regional Sourcing. Superior Products. Unmatched Service.

Your projects require glass fabricators that understand the nuances of commercial magnetron sputtered vacuum deposition (MSVD) glass fabrication—and the expectations of glaziers and building owners. That's why every member of the *Vitro Certified*® Network must pass a demanding annual vetting process, which provides you with a selection of only the most experienced, knowledgeable fabricators throughout North America and beyond.

Vitro Certified® Network members are audited annually and evaluated across more than 100 criteria, from storage and handling to recordkeeping and product support. That means every member has the tools necessary to ensure a quality product, delivered on-time and on-budget.

As the exclusive source of the full range of high-performance *Solarban*® solar control low-e glass products, *Vitro Certified*® Fabricators provide high-quality Vitro glass where and when you need it. For consistent quality, regional availability and enhanced lead times, the *Vitro Certified*® Network delivers.

Network Members

Vitro Certified® Fabricators

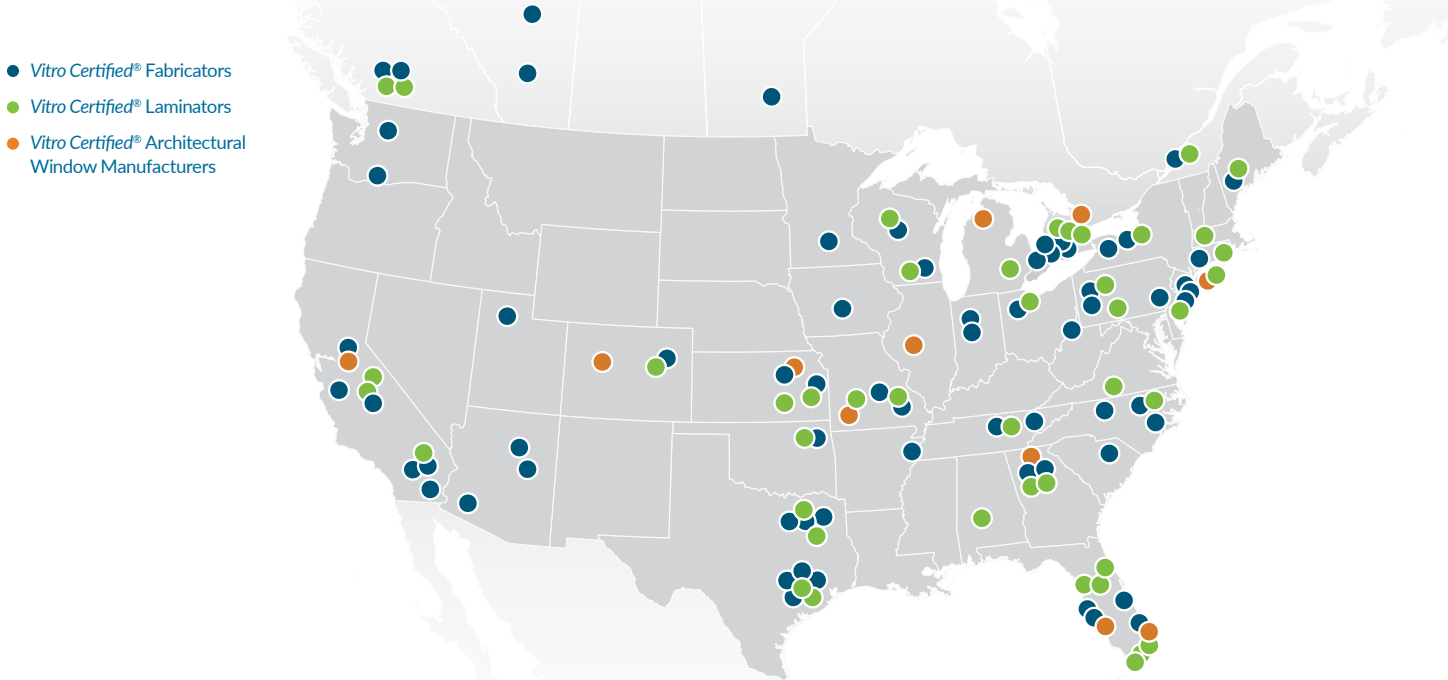
Vitro Certified® Laminators

Vitro Certified® Architectural Window Manufacturers

Vitro Certified® International Fabricators

Vitro Certified® International Laminators

All members of the *Vitro Certified*® Network can enroll unique or high-profile projects in the *Vitro Concierge Program*®, a priority glass scheduling and delivery program.



Glass Design Resources

Vitro Architectural Glass provides the industry's most extensive resources for glass research, product selection and specification, offering unmatched support for your architectural needs.

Online Tools

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Performance Comparison Tool
vitroglassfinder.com

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Model energy use and carbon emissions (both embodied and operational) in a range of standard buildings in North America.

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Vitro
Architectural Glass

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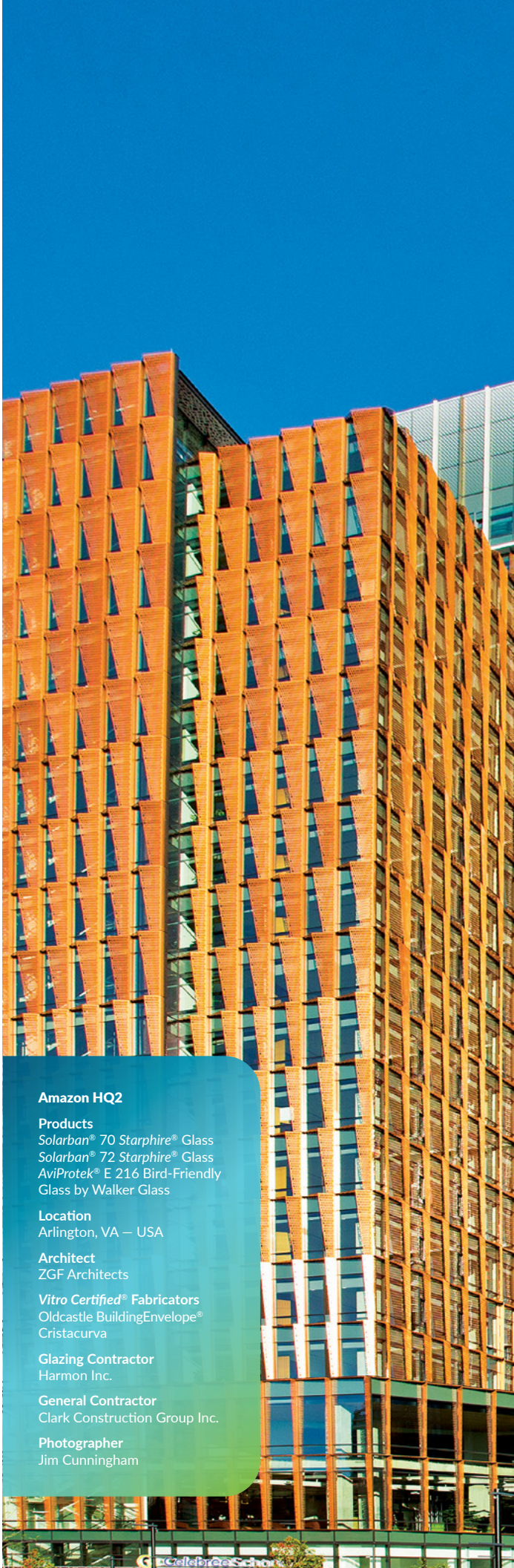

Amazon HQ2

Products
Solarban® 70 *Starphire*® Glass
Solarban® 72 *Starphire*® Glass
AviProtek® E 216 Bird-Friendly Glass by Walker Glass

Location
Arlington, VA — USA

Architect
ZGF Architects

***Vitro Certified*® Fabricators**
Oldcastle BuildingEnvelope®
Cristacurva

Glazing Contractor
Harmon Inc.

General Contractor
Clark Construction Group Inc.

Photographer
Jim Cunningham

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