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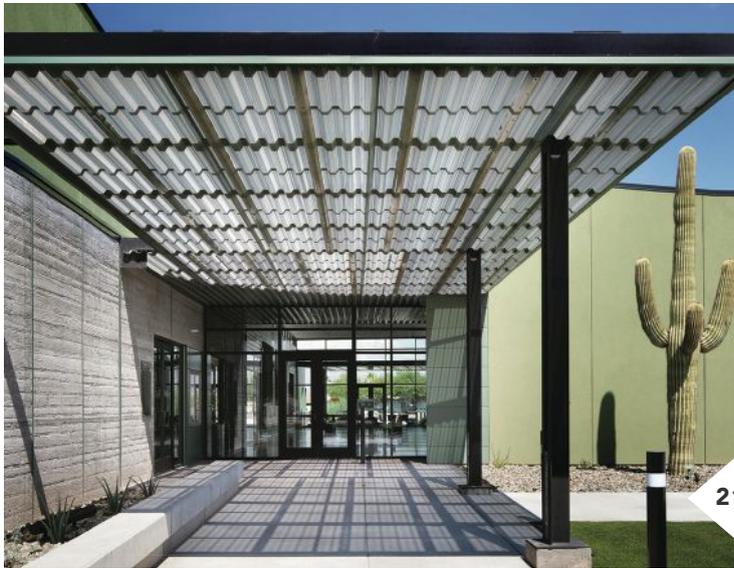
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## CONTINUING EDUCATION

**Bigger windows, more glass: Efficient, safe, and inspiring**

**p.46**



2014-2017, 2019-20  
JESSE H. NEAL  
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**ON THE COVER:** Geberit's Sigma10 Series flush plates, Nanawall's SL84 folding glass wall system, and Simpson Strong-Tie's Yield-Link moment connection are among the 75 Top Products for 2020. Check out the full report starting on page 21.

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**E-CONTENTS**

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**Long Beach, Calif.'s new Civic Center includes the 93,500-sf Billie Jean King Main Library, designed by Skidmore, Owings & Merrill and completed in 2019.**

### **TAX SHORTFALLS NIP GOVERNMENT PROJECTS IN THE BUD**

During most economic downturns, the government sector serves as a source of stability. Manufacturers and utilities must continue to design, build, operate, and maintain facilities to keep the country safe and functioning. But not since the Great Depression have such propositions been tested as they have been during the coronavirus pandemic. With tax revenue evaporating as a result of COVID-19-related business shutdowns, state budget shortfalls from this fallout could total a cumulative \$555 billion over the states' fiscal years 2020-2022.

[BDCnetwork.com/Govt20](https://www.bdcnetwork.com/Govt20)

### **AIA COURSE: HISTORIC WINDOW REPLACEMENT**

From the stained glass windows that

welcome variegated light into cathedrals to the steel-framed geometric designs of Art Deco and the bold leaded glass of the Prairie style, windows have served to define the character of buildings and spaces since the advent of glazed fenestration. Read this AIA course from Hoffmann Architects' Rachel Palisin, PE, and Richard Off, AIA, and take the exam to earn 1.0 AIA learning units.

[BDCnetwork.com/HistoricWindows2020](https://www.bdcnetwork.com/HistoricWindows2020)

### **AGILITY IS THE GAME-CHANGER IN THE POST-COVID WORLD**

There has been a fundamental shift in how human beings live, work, and play. The built environment must shift in response, writes VIATechnik's Danielle Dy Buncio, who highlights fresh market research on the future of AEC.

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# COVID-19 STALLS A DECADE OF NONRES CONSTRUCTION GROWTH

**Last year's optimism about growth in the nonresidential building sector has been overwhelmed by a novel coronavirus whose persistent spread raises questions about business prospects for next year and beyond.**

Construction spending will be off by 8.1% in 2020 and 4.8% in 2021. That's the consensus among nine market watchers—ranging from the Associated Builders and Contractors to IHS Economics—whose projections were aggregated in the American Institute of Architecture's (AIA) mid-year Consensus Construction Forecast, released in July.

With the exceptions of health-care and public safety, every major building category is expected to lose ground this year and next, according to AIA's report. This trend would end an almost decade-long expansion in construction spending.

Things weren't looking much better as summer turned to fall, and colder weather presaged greater risk from viral infection. The total value of construction put in place as of September 2020, \$794.3 billion, was down 4.4% from the same month in 2019, according to Census Bureau estimates. The office building category alone was off 15.4%. Education, the largest nonresidential building sector, declined 4.8%.

A recent poll that *BD+C* conducted of 171 architects, engineers, and contractors reflects these broader outlooks. Half of those polled reported that their firm's revenue was less, compared to 2019. Nearly one-third of the AEC respondents gauged their firm's financial health as "weak or very

weak." Two-fifths of the survey's respondents describe 2020 as a "mediocre" or "poor" business year. More of the same in 2021 is expected by 31.1%.

But it's not all gloom and doom out there. More than one quarter of respondents says their firms have found market penetration points that have allowed them to generate more revenue than in 2019. A surprising 28.3% of survey respondents rated 2020 as an "excellent" or "very good" business year for their AEC companies. About the same portion is anticipating 2021 to be similarly robust, with 37.3% expecting revenue increases next year.

With construction projects being de-

**Half of those polled by *BD+C* reported that their firm's revenue was less, compared to 2019. Nearly one-third of the AEC respondents gauged their firm's financial health as "weak or very weak."**

layed or postponed because of the virus, competition has ratcheted up. Nearly 60% of respondents characterize their markets as "intensely" or "very" competitive. And there has been very little relief in materials prices during the pandemic: nearly three-quarters of respondents—73.1%—expect prices to keep rising next year. One-fifth thinks prices will level off.

For more on the *BD+C* 2021 Forecast Report, visit [BDCnetwork.com/21forecast](http://BDCnetwork.com/21forecast).



# MEET BD+C'S 40 UNDER 40 CLASS OF 2020

 Congratulations to the winners of **BD+C's 40 Under 40 Class of 2020**.

These 40 AEC professionals are being recognized for their career achievements; passion for the AEC profession; involvement with industry organizations; and service to their communities.

For full profiles of all 40 winners, visit [BDCnetwork.com/40Under40-2020](http://BDCnetwork.com/40Under40-2020).

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Global Health Sector Engineering Lead,  
Canada  
Stantec

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Project Architect  
Liollio Architecture

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Sustainability Manager  
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# POPULOUS SURVEY SHOWS TRAVELERS HAVE CONCERNS ABOUT FLYING, BUT ARE READY TO RETURN TO THE AIRPORT

➔ **Populous, with Qualtrics**, has released the results of a national survey that can help owners and operators of airports understand how COVID-19 has influenced passengers' expectations and fears during travel. With responses from nearly 2,200 people age 18+ who have taken at least five trips over the last 18 months for business or leisure, the survey revealed data and potential solutions to an array of concerns, including security check-

points, food and beverage purchases, gate boarding, and arrivals. Overall, business travelers were the dominant group of respondents planning to travel in 2020 at 84%, over leisure travelers, of which only 71% planned to travel this year. In general, 79% of all respondents were comfortable going to an airport with the proper protection and protocols in place, such as wearing masks and social distancing, and limiting the number of passengers in the concourse.

Among the top concerns impacting passenger trust and confidence were the ways staff and passengers will behave. Nearly 70% of travelers were concerned with someone around them having COVID-19, with a close 66% concerned about others not following CDC guidelines. The majority of business and leisure travelers were also concerned about specific areas around the airport; seating locations being first, with security checkpoints a close second.

Other key findings:

- More travelers are driving their own car to the airport, increasing the need for parking and pickup and drop-off areas.
- About two-thirds of travelers are concerned with maintaining social distancing while going through security, and 84% are willing to use a phone app for a timed entry experience.
- Areas where passengers wait to board the plane are worrisome to travelers due to lack of social distancing.

[BDCnetwork.com/PopulousSurvey](http://BDCnetwork.com/PopulousSurvey)



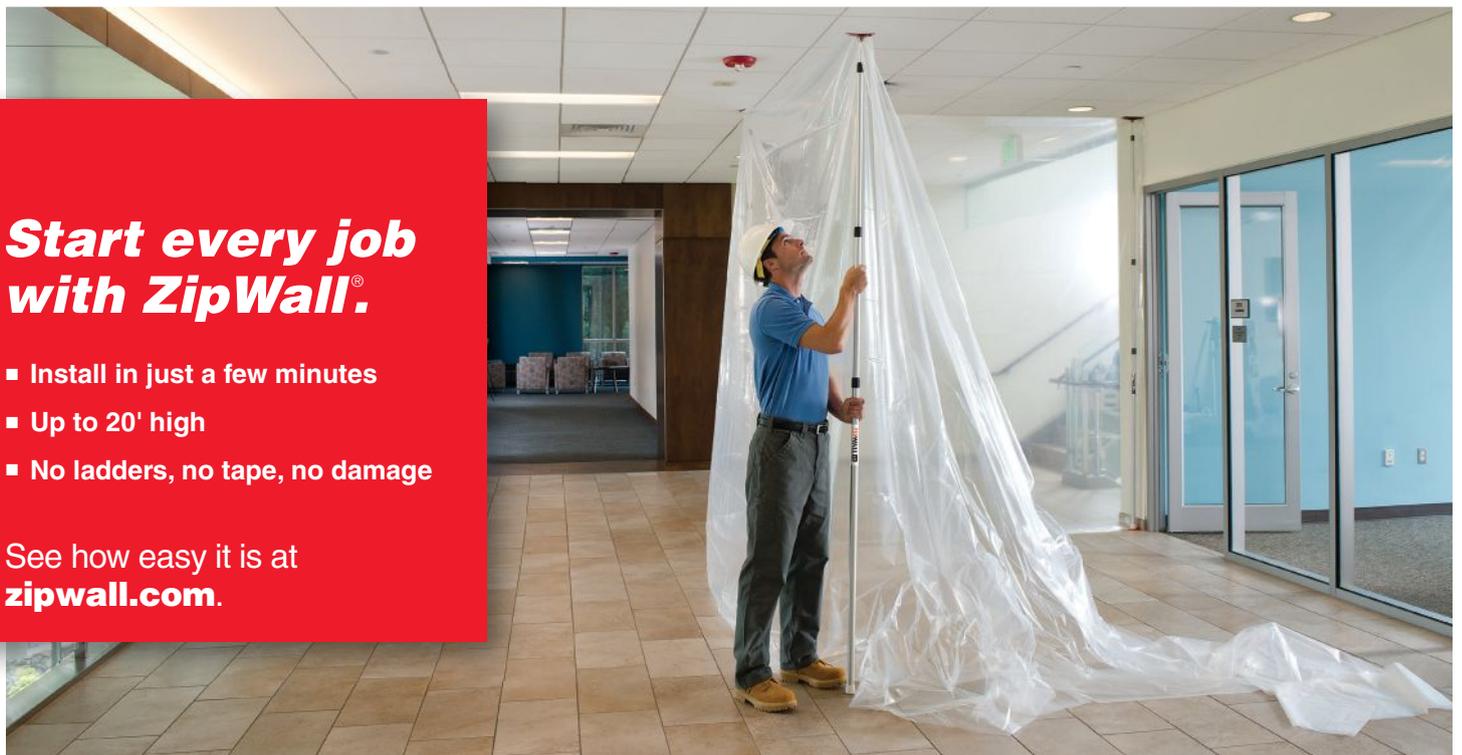
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# VETERANS DAY MARKS THE OPENING OF THE MUSEUM OF THE UNITED STATES ARMY



**The National Museum of the United States Army (NMUSA)**, a cultural institution that is the first to tell the story of the oldest branch of the United States military, opened on Veterans Day. Located 20 miles outside of Washington, D.C., the facility is designed to serve as a center of education, and the symbolic front door of the Army. The museum focuses on the individual soldier, not battles or wars, to tell a centuries-long narrative of honor, sacrifice, and valor.

The LEED Silver-certified museum, designed by Skidmore, Owings & Merrill, spans 84 acres across the Fort Belvoir Military Installation in Virginia and comprises a series of pavilions for exhibits and special events. The building leverages the site's natural topography and rests atop

a plateau to evoke a sense of monumentality. SOM's design and planning for the future of the site includes a quiet memorial garden, a parade field and grandstand, and an Army Trail with interpretive stations.

Symbolism is at the core of the museum's design. The symbolic experience begins with the access road, which offers a glimpse of the stainless steel-clad museum through the trees and across a long meadow. The museum rises to 100 feet at its peak, and its façade is composed of a regular grid of laser-cut stainless steel panels that establish a sense of rigor and discipline that are central to the design. At the corner of each pavilion, recessed glass panels alternate with painted aluminum fins to add a sense of dynamism.

The complex lies on a

three-foot grid system with every joint and edge of the building falling on each subdivision with precision, meaning the aluminum fins are spaced 18 inches apart to fall exactly on the edges of the panels.

Inside, the symbolism continues with stainless steel pylons sharing individual soldier stories and leading visitors from the promenade, through the vestibule, and into the exhibition hall. The grand lobby, which can be used as an event space, includes the Department of the Army's emblem inscribed on the terrazzo floor and a black granite wall that lists every campaign from the Army's history. Above, a coffered ceiling with 22 rows of translucent, laminated glass panels match the colors of the campaign streamers from the Army's past.

Flanking the lobby are

retail shops, a cafe, the first of three landscaped terraces, and exhibition spaces, including a 300-degree theater. A monumental staircase leads visitors to additional exhibition spaces on the second floor.

Glass and wood thresholds connect each pavilion to signify transitions between spaces and provide views outside. On the third floor, a wood-clad Veterans' Hall serves as an event space supplementing the lobby. The Veterans' Hall connects to the Medal of Honor Garden. Here, a 10-foot-tall black granite wall is engraved with the names of every medal recipient.

Sustainable features include increased insulation, improved glazing, high-efficiency LED lighting, automatic daylighting controls and occupancy sensors, and a green roof.



## BUSHWICK GENERATOR OFFICE CAMPUS WILL BE A HUB FOR INNOVATIVE COMPANIES IN BROOKLYN

Design firm HWKN has unveiled its scheme for the Bushwick Generator, a new office campus meant to embody the Brooklyn neighborhood's energy and tradition of disruptive entrepreneurship.

As part of the campus' design, the light-industrial buildings that existed on site were reimagined as part of the new building's foundation. Atop this base, HWKN designed a brick-clad, sculptural, gem-like volume that introduces a vertical focal point in the neighborhood and comprises 400,000 sf of workspace.

The design invites the surrounding neighborhood's energy inside with areas for public programming. These spaces can be used for exhibitions, performances, and social events, bringing together office tenants with community members in a bustling center that offers something to tenants and Bushwick locals alike.

To further open the building to the street, a corner of the existing light-in-



HWKN

dustrial structures is sliced off at the base, creating a triangular entrance that continues the faceted geometry to the ground plane and carves out space for a sidewalk plaza. Above this, a landscaped outdoor terrace activates the area where the rectangular base meets the vertical gem. This unique amenity can serve as a breakout space, an informal meeting area, or a venue for public events.

The octagonal floor plates can be flexibly subdivided, allowing the building to host businesses ranging from startups and growth-phase companies to established industry leaders. The building's form creates distinctive interior work environments with 270-degrees of exposure, flooding each floor with daylight and panoramic views of Brooklyn and Manhattan.

## AFFORDABLE HOUSING PROJECT WILL FEATURE A MASS TIMBER FRAME

McEvoy Apartments, a new 100% affordable housing development in San Jose, Calif., will comprise two 12-story towers over a podium, rooftop gardens, a courtyard, and gathering areas. The project will be built using a mass timber frame with a traditional lateral system.

One of the towers will include 141 apartments geared toward families in one-, two-, and three-bedroom units while the second tower will provide 224 studios for working individuals and couples.



McEvoy Apartments has been designed to meet LEED Platinum certification and with the goal of being viewed by everyone who lives in the community as an iconic development that bridges and connects communities. The transit-oriented development is located

near the San Jose Diridon Station.

First Community Housing, a nonprofit housing group, is developing the project, which is slated to begin construction in early 2022. SERA Architects and Lendlease will design and build the project.

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## TRENDSETTING PROJECTS



### BIG DESIGNS HYPERLOOP CERTIFICATION CENTER FOR VIRGIN HYPERLOOP

BIG is designing the Hyperloop Certification Center (HCC) on an 800-acre site in West Virginia. The HCC is the next milestone to demonstrate the operation of the Hyperloop system as a commercial product. The project attempts to turn infrastructure into architecture by fundamentally tying the architecture of the HCC to the physical infrastructure of the transportation system.

The 800-acre HCC site will include a welcome center, a six-mile certification track, a pod final assembly facility, a product development test center, and a training center for operations, safety, and maintenance. In order to create a physical interface, the elevated vacuum tube wraps around itself and descends as a gentle ramp, ending in an airlock that allows for safe entry and exit for the pods.

The main structural system for the building is shared with the vacuum tube. For greater lateral stability, the corners have been reinforced with a radius on top and bottom and frames with pill-shaped cutouts.

The pill-shaped loop of the tube forms the exterior façade of the facility, and the support structure gets extended toward the interior as a sequence of concrete frames with filleted corners for lateral support. Roof, floors, and glass façades are infilled between the frames and form a simple warehouse-like structure that organizes the program as a continuous loop around a central courtyard.

The outdoor courtyard can be used for assembly and testing of pod components, large gatherings, and as a social space for the staff. It also provides visual connections between the different departments and references the courtyard of Virgin Hyperloop's LA campus.



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EPISODE 62

## THE EVOLVING VIRTUAL OFFICE

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EPISODE 61

## ARCHITECTURAL STEREOTYPES

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## TRENDSSETTING PROJECTS



ADAM HUNTER / LMN ARCHITECTS



### WASHINGTON STATE UNIVERSITY'S NEW PLANT SCIENCES BUILDING OPENS

The new \$66 million Plant Sciences Building has officially opened on the Washington State University campus in Pullman, Wash. The 82,437-sf building is the latest addition to the V. Lane Rawlins Research and Education Complex. It will support Washington's \$51 billion food and agriculture industry by providing a modern research venue for faculty and students in the Institute of Biological Chemistry, WSU's Molecular Plant Science Program, and portions of the Departments of Horticulture, Plant Pathology, and Crop and Soil Sciences.

The building's exterior reimagines the red-brick campus vernacular in a new architectural approach using a high-performance precast concrete façade panel system clad with a sculpted, red-brick veneer. These panels comprise structure, insulation, weather barrier, interior, and exterior finishes within a single prefabricated component.

The facility will be a social and interdisciplinary heart for the research complex. It is designed for flexibility and hosts infrastructure for a variety of research needs. At the western entry, the building's cantilevered composition frames a new grand entry for the whole complex.

A four-floor staircase encourages vertical circulation and provides visual connection between floors. At every level, centralized social spaces link circulation elements with the REC's central spine, designed to fuel spontaneous collaboration within the communal core.

The interior arrangement of laboratories is designed to support efficient and flexible research. The modular laboratories can be easily rearranged to respond to the changing needs of research throughout the building. Offices to the north of the laboratories for principal investigators are interspersed with open work areas for graduate researchers.

The project was designed and constructed by the design/build team of Skanska and LMN Architects.

ROBIN HILL



FENTRESS ARCHITECTS



### FENTRESS-DESIGNED MIAMI BEACH CONVENTION CENTER EXPANSION, RENOVATION OPENS

The expansion and renovation of the 1.4 million-sf Miami Beach Convention Center has recently completed.

The project was designed with the goal of making the Miami Beach Convention Center the most technologically-advanced center in the U.S. and to provide upgraded show needs and increase the potential for the city to market the center on an international basis. Achieving this goal involved complex renovations and replacements of virtually all the building's electrical and mechanical operating systems.

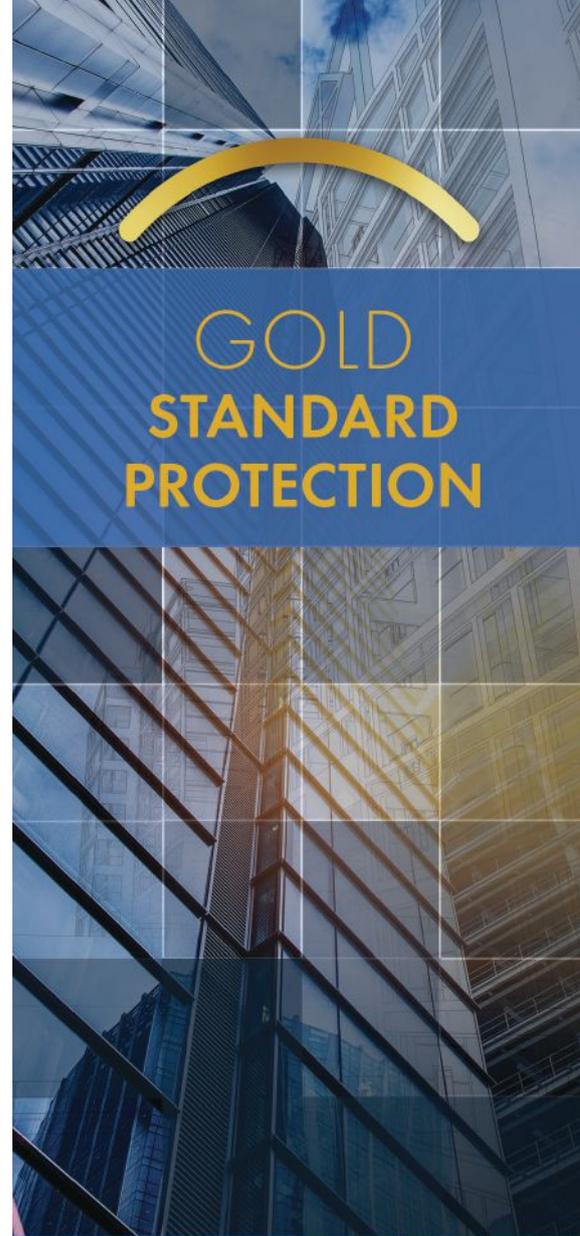
The project includes a new 60,000-sf ballroom and 127,000 sf of new meeting spaces. The completed project will accommodate 500,000 sf of exhibit hall space with increased power and improved IT connectivity capacities, increased ballroom and meeting areas, and renovated back-of-house spaces.

Additionally, over six acres of parking

lot space has been transformed into space for a public park and landscaping and infrastructure improvements, including a tropical garden, game lawn, shaded areas, veterans plaza, pavilion, and a water feature.

The renovation concepts were inspired by modern designs incorporating natural elements of the ocean, beach, and underwater life. Waves, manta rays, and coral reefs were studied as part of the design process. The building envelope is designed with linear forms that create a curvilinear undulation inspired by ocean waves.

The façade has hurricane-resistant connections meant to withstand even the largest storms. The project was built with the future in mind by using steel construction with composite metal decks for raised floors in the case of rising sea levels. The interior design finishes emulate receding water, sea foam, and patterns relating to various typed of local coral reef.



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# 75

# TOP PRODUCTS

BD+C readers and editors select their top building products from the past year in our annual 75 Top Products report.

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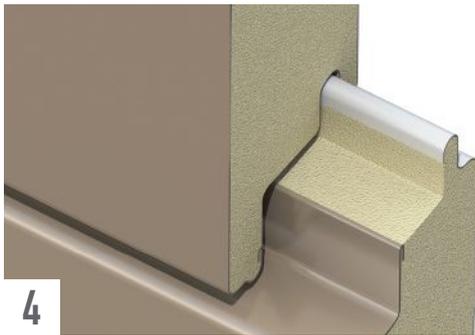
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### 1. \ LACOBEL T WARM GREY SPANDREL BACK-PAINTED DECORATIVE GLASS

The Lacobel T Warm Grey Spandrel, the latest in AGC's portfolio of back-painted decorative glass, provides architects and designers with a fully opaque, neutral-colored spandrel that complements the aesthetics of most low-e coatings used today. Lacobel T Warm Grey Spandrel withstands thermal shock, resists both impact and scratches, and will never fade, as its temperable paint is fused into the glass. The glass is pre-painted, so fabricators can easily cut and temper the product, enabling them to more easily manage production and inventory. The product is Cradle to Cradle Certified Silver.

**AGC GLASS NORTH AMERICA** | CIRCLE NO. 800

### 2. \ MIDTOWN THIN STONE

The Midtown thin-clad brick collection provides a modern aesthetic similar to linear brick, with two slim face rises, in long lengths. The units can be installed with or without mortar depending on the desired look. The stone can also be laid separately (one size,

continuously) or the two sizes can be combined. The maker's Natural Process technology uses only natural materials (plus color pigments) to create stone products with the natural aesthetics and durability of quarried stone.

**ARRISCRAFT** | CIRCLE NO. 801

### 3. \ ACFOAM-HD COVERBOARD-FR

Atlas Roofing's latest polyiso roof insulation, ACFoam-HD CoverBoard-FR, is a lightweight cover board option that can help achieve a UL Class A fire-rated roof assembly when used over combustible wood roof decks. It can achieve UL Class A fire ratings using only one layer, saving labor and materials. The insulation is comprised of Atlas' ACFoam closed-cell polyisocyanurate (polyiso) foam core integrally bonded to inorganic ACFoam-III coated glass facers.

**ATLAS ROOFING** | CIRCLE NO. 802

### 4. \ VERSAWALL H+ INSULATED METAL PANEL

The latest expansion to Centria's Versawall product line, the Versawall

H+ insulated metal panel is comprised of a galvanized steel face and foam insulation, making it strong but lightweight. Available in modules of 30 and 36 inches and in two- and three-inch thicknesses, the panels can be manufactured in a wide variety of finishes and colors. The panels are ideal for large-scale buildings that have lower, wider profiles, such as warehouses, schools, and shopping centers.

**CENTRIA** | CIRCLE NO. 803

### 5. \ CUPACLAD 101 LOGIC

Cupa Group's CupaClad 101 Logic is a comprehensive, easy-to-install rain-screen system, complete with concealed attachments, which results in natural slate being the main aesthetic of the building's exterior façade. By offering optimal visual balance, CupaClad 101 Logic portrays natural slate's texture and sheen, while also complementing each project's other building materials. CupaClad 101 Logic is durable, easy to maintain, and has proven lifecycle savings.

**CUPA GROUP** | CIRCLE NO. 804



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## 6. \ TYVEK ROOF PROTECTOR EDITORS PICK

This synthetic roofing underlayment protects roof decks from wind and water with a lightweight, durable weather barrier. Its slip-resistant surface makes it suitable for steep slope roofing applications, under asphalt shingles or metal cladding. The barrier features a high strength to weight ratio and tear-resistant material, which eases installation and improves performance. Rolls provide 1,000 sf of coverage.

**DUPONT BUILDING ENVELOPE** | CIRCLE NO. 805

## 7. \ TIMBERLINE HDZ SHINGLES EDITORS PICK

Timberline HDZ Shingles offer the industry's first wind warranty for roofing shingles with no maximum wind speed limit. To meet the requirements for the warranty, roofing contractors must install the shingles with four qualifying GAF accessories, as well as the company's LayerLock technology. LayerLock mechanically fuses the common bond between overlapping shingle layers for added strength. To speed installation, GAF designed an oversized nailing area.

**GAF** | CIRCLE NO. 806

## 8. \ WATSONTOWN BRICK

Watsonstown Brick manufactures full lineups of face brick, lightweight face brick, brick pavers, and vehicular paving brick in a variety of textures, colors, and styles—from matt to tumbled to knife cut. Mudbox, one of Watsonstown's oldest textures, is made with fine clays that are first given a slurry coating, and then coated with sand for a rustic look. Mudbox Watex adds texture to Mudbox for an irregular appearance.

**GENERAL SHALE** | CIRCLE NO. 807

## 9. \ DENSDEFY ACCESSORIES

Georgia-Pacific has expanded its DensElement Barrier System with the launch of DensDefy Accessories, which includes liquid flashing and a transition membrane. DensDefy Liquid Flashing seals and protects against water intrusion for transitions between substrates and unwanted air movement in new or existing wall assemblies as part of the DensElement Barrier System. The fast-cure product eliminates the need for joint reinforcing tape, reducing overall

preparation time. DensDefy Transition Membrane is a flexible, self-adhering membrane used to maintain continuity of the above-grade, water-resistant barrier and air barrier at complicated transition areas of the DensElement Barrier System. It is ideal for gaps greater than one inch, resulting from transitions between dissimilar materials, vertical expansion joints, or at the base of a rough opening.

**GEORGIA-PACIFIC** | CIRCLE NO. 808

## 10. \ BRONZE COLLECTION METAL FABRIC

GKD Metal Fabrics has unveiled new patterns and expanded enhanced collections of metal mesh products. Its Bronze Collection now offers a complete portfolio of rigid/PC metal fabric. Its Helix and Ellipse weaves now are available in cost-effective aluminum materials. The pattern of a new rigid metal fabric called Choptank (pictured) has smaller open areas. Ripple and Tigris—previously custom weaves—are now part of GKD's standard product offering.

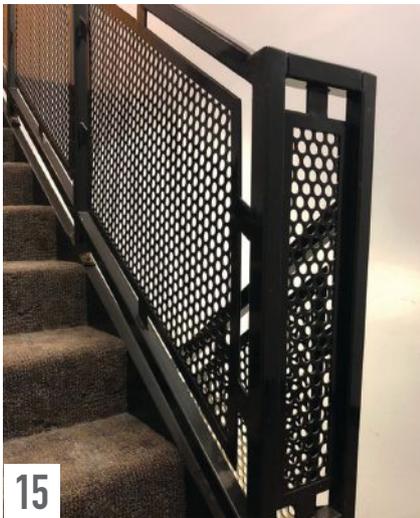
**GKD METAL FABRICS** | CIRCLE NO. 809



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### 11. \ METRO BRICK

This kiln-fired thin brick is manufactured following stringent guidelines for use in all types of brick veneer applications and construction types, from schools to hospitals to hotels. Thin brick like MetroBrick uses 70% less resources to manufacture than full bed brick, says the maker. The product



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line is available in a variety of sizes, colors, textures, and blends, and can be customized to match existing buildings.

**IRONROCK** | CIRCLE NO. 810

### 12. \ ASPYRE COLLECTION

James Hardie's Aspyre Collection pairs the thick, distinctive profiles of the company's Artisan siding with the smooth, geometric of its Reveal Panel System. The result is a collection that allows architects and builders to create a range of design styles, from traditional to ultra-modern. The  $\frac{5}{8}$ -inch-thick Artisan siding profiles cast deep shadow lines to create strong horizontal and vertical definition. Reveal panels can be installed horizontally or vertically, and can be cut to size on-site. Two trim profiles:

Reveal Recess accentuates deep channels, while Surround trim adds dimension and emphasizes height.

**JAMES HARDIE** | CIRCLE NO. 811

### 13. \ OMEGA-LITE ACM PANELS

Architecture firm Vocon specified Omega-Lite ACM panels to clad The Quarter, a 194-unit luxury apartment complex in Cleveland's Ohio City neighborhood. RC Glass installed 27,000 sf of the product on the five-story mixed-use development using Laminators proprietary 1-Piece, Tight-Fit system. The panels give The Quartet a Class A fire rating and meet NFPA 285, Miami-Dade Product Control, and Florida Product Approval requirements.

**LAMINATORS** | CIRCLE NO. 812

### 14. \ PERFORATED COIL ANODIZED ALUMINUM PRODUCTS

Lorin Industries has updated its coil anodized aluminum for perforated aluminum products to include new hole patterns, including a square pattern. The cost-effective coil anodizing process protects the aluminum while also improving its aesthetic properties and durability. Perforated anodized aluminum is gaining popularity in various architectural and construction applications for its benefits, like screening sunlight, particulates, noise, and rain. Lorin perforated anodized aluminum can be installed with standard electric hand tools. Once sized for installation, most panels are lightweight enough to install without a crane.

**LORIN INDUSTRIES** | CIRCLE NO. 813

### 15. \ MCNICHOLS INFILL PANELS

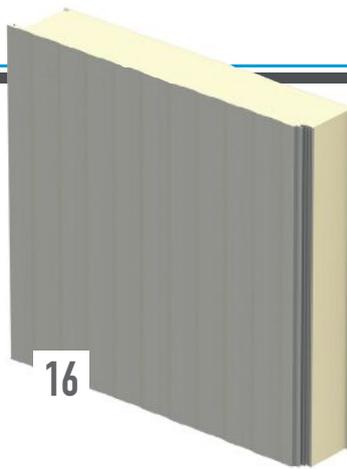
Engineered for balconies, façades, partitions, railings, and signage, Infill Panels from McNichols offer a range of perforated metal, expanded metal, and wire mesh options. The durable, low-maintenance panels are cut to exact specifications and frame pieces by welding angle, flat bar, and U-edging along the perimeter to create a precise, sturdy structure.

**MCNICHOLS** | CIRCLE NO. 814

## 16. \ 8-INCH COLD STORAGE PANELS

Metl-Span expanded its line of cold storage panels with an 8-inch product. Two inches thicker than the thickest profile in the company's current line of cold storage panels, the 8-inch panel provides among the highest insulating values on the market, according to the maker. The panel functions as walls and ceilings in new and retrofit construction.

**METL-SPAN** | CIRCLE NO. 815



## 17. \ PAC-CLAD 7.2 PERFORATED

Two entry canopies at the Eloy (Ariz.) City Hall create a distinctive shading element and added texture to the facility. SmithGroup specified PAC-CLAD 7.2 perforated panels with an Aged Copper Finish for the canopies to blend with the building's EIFS exterior walls. The west canopy extends into the interior spaces to create a signature ceiling element. "It really brings that texture and layering into the building," said SmithGroup designer Stacia Ledesma.

Photo: alanblakely.com

**PETERSEN ALUMINUM** | CIRCLE NO. 816



## 18. \ POLYFLEX G APP EDITOR'S PICK GRANULATED CAP SHEET

Polyglass' latest modified bitumen roofing membrane, the Polyflex G APP granulated cap sheet for heat-welded applications, features the company's patented FASTLap technology for speedier installation and potential labor savings. FASTLap is a granule-free end lap that allows for a more reliable seal at roll-end, says the maker. With zero granules to remove at end laps during install, Polyflex G APP adheres quicker and the result is a stronger, watertight roof system.

**POLYGLASS U.S.A.** | CIRCLE NO. 817



## 19. \ EMERALD RAIN REFRESH

Sherwin-Williams successfully leveraged the Self-Cleaning Technology developed in Loxon Self-Cleaning Acrylic Coating and applied it to the latest addition to the Emerald product line: Emerald Rain Refresh. The coating

sheds dirt upon contact with rain or water, simplifying upkeep. The self-priming application helps to save time during the painting process, and UV- and weather-resistant qualities reduce common exterior coating issues such as blistering and peeling. The product is suitable for most exterior surfaces, including wood, masonry, and concrete.

**SHERWIN-WILLIAMS** | CIRCLE NO. 818

## 20. \ STOVENEC RAINSCREEN EDITOR'S PICK

This ventilated rainscreen cladding system is comprised of glass-faced

composite panels, thermal insulation, and robust sub-construction that includes steel and aluminum brackets, mineral wool thermal insulation board, render carrier board, reinforcement plaster, reinforcement mesh, and Sto textured finish. The result is a system that combines the qualities of an engineered façade system and a sleek modern design aesthetic.

StoVentec Rainscreen Cladding panels are manufactured in a variety of shapes, with extensive color options.

**STO CORP.** | CIRCLE NO. 819

dwellings, light commercial projects, and large commercial structures, this breathable building wrap offers superior UV protection—it can be exposed for up to 12 months with no UV degradation—and tear strength up to five-times greater than other wraps on the market, says the maker. Typar MetroWrap will not support mold growth, and it can stand up to harsh chemicals and jobsite cleaning techniques.

**TYPAR** | CIRCLE NO. 821

### 23. \ TREX CLADDING

This product line adapts the proven performance and aesthetic features of Trex's composite deck boards for exterior rainscreen or open-joint façade systems. Mix and match colors and styles from the Trex Transcend square-edge deck board line to create the look of exotic wood siding. The cladded can be orientated horizontally or vertically. The board's shell is impact-, scratch-, and fade-resistant. The core is made using 95% recycled materials. Available in three lengths: 12, 16, and 20 feet.

**TREX** | CIRCLE NO. 822



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### 21. \ TAMLYNWRAP

This three-in-one water resistive barrier enhances the drainage efficiency and drying proficiency of wall assemblies. TamlynWrap is available with two air cavity gap sizes: the TamlynWrap Rain Screen 6.3 provides a 6.3mm air cavity in between the cladding and the sheathing material; TamlynWrap Rain Screen 10.1 creates a 10.1mm gap. The barriers' thick filament is uncompressible, so it can act as furring strip and reduce the installation cost and liability.

**TAMLYN** | CIRCLE NO. 820



23

### 22. \ METROWRAP

Designed for use on multifamily

### 24. \ FRESHAIR

FreshAir Smoking Detection's patented PolySens technology can monitor for, immediately detect, and prove tobacco and marijuana smoking in smoke-free apartment buildings, public housing complexes, and other high-volume residential settings. FreshAir's

detection devices plug into standard Type B outlets and are secured with tamper-proof screws. Each device can monitor up to 500 sf of space.

**FRESHAIR SMOKING DETECTION** | CIRCLE NO. 823

### 25. \ ULTRAFRESH WASHERS

UltraFresh Front Load Washers use first-of-its-kind technology to help prevent the growth of odor-causing bacteria. After the wash cycle, the system's Odorblock unit pulls in fresh air, removing moisture from the door, gasket, and basket. The washers are also protected by a unique antimicrobial technology developed exclusively for GE by Microban.

**GE** | CIRCLE NO. 824

### 26. \ THERMOREBELLION AI-DRIVEN THERMAL IMAGER

This AI-driven thermal imager detects elevated body temperature for non-invasive, preliminary screening of personnel entering a facility. The ThermoRebellion temperature monitoring solution can be rapidly deployed at the entryway of commercial buildings to efficiently identify whether personnel exhibit an elevated facial temperature. As individuals pass in front of a high-resolution, thermal imaging camera, their skin temperature is automatically detected within two seconds and displayed on an accompanying monitor. The system can also identify if individuals are wearing the required personal protective equipment needed for entering the building.

**HONEYWELL** | CIRCLE NO. 825



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**27. \ YORK YZ MAGNETIC BEARING CENTRIFUGAL CHILLER** EDITORS' PICK

The YORK YZ Magnetic Bearing Centrifugal Chiller from Johnson Controls is the first chiller optimized for performance with the R-1233zd(E) refrigerant, a low-global warming potential (GWP) refrigerant. The chiller features a variable-speed drive centrifugal compressor and a magnetic-bearing driveline to deliver high machine efficiency and a low total cost of ownership, says the maker. Magnetic bearing technology uses fewer moving parts and eliminates lubrication needs.

**JOHNSON CONTROLS** | CIRCLE NO. 826

**28. \ ELEVATOR AIRPURIFIER, HANDRAIL SANITIZER** EDITORS' PICK

In response to the COVID-19 pandemic, KONE has released several indoor air quality (IAQ) and infection control enhancement options for its elevators. The KONE Air Sanitizing System combines HEPA filtration technology with ultraviolet-C germicidal light frequency to improve the IAQ within elevator cabs. The KONE Handrail Sterilizer kills bacteria and viruses using ultraviolet-C LED technology, while NanoSeptic self-cleaning surface products minimize infection risks with high-touch areas such as elevator buttons, touchscreen surfaces, and elevator car handrails.

**KONE** | CIRCLE NO. 827

**29. \ LG AIR CONDITIONING TECHNOLOGIES**

LG offers a range of compact and lightweight air conditioning technologies that reduce space and structural requirements while meeting performance and energy efficiency requirements. Unlike traditional systems that require soffits for ductwork and large mechanical rooms for equipment, LG systems are minimally invasive to the building's envelope. The systems can help contribute up to 16 points toward LEED certification.

**LG** | CIRCLE NO. 828

**30. \ TOE-TO-GO** EDITORS' PICK

The Toe-To-Go (T2G) foot-activated call button allows for the activation of hall and car station buttons by, you guessed it, foot. The large, durable buttons sit just inches off the ground making it easy for anyone to activate with a gentle kick. The T2G system allows for easy retrofitting of existing installations and is wired in parallel to existing buttons. Available in stainless steel or PVD brass finishes with LED illumination in red, green, blue, white, or amber, the T2G has a surface-mount option for hall stations and a keypad option for the car operating panel (COP), which allows for the entire elevator ride to be a hands-free experience.

**MAD ELEVATOR** | CIRCLE NO. 829

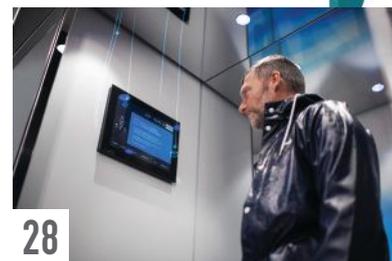
**31. \ NFB-C FIRE TUBE COMMERCIAL BOILERS**

Navien's NFB-C commercial condensing fire tube boilers feature 97.5% thermal efficiency—among the highest in the industry, according to the maker—and a stainless steel heat exchanger that is form-pressed and robotic laser-welded to minimize the number of weak points that could be prone to thermal stress and corrosion. To ease installation, the units offer top and bottom piping connections. A seven-inch color touch screen display simplifies navigation for setup, troubleshooting, and operation.

**NAVIEN** | CIRCLE NO. 830



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Surface-Mount

Flush-Mount



■ GEBERIT

GEBERIT WALL-HUNG TOILET SYSTEMS

# CREATIVITY UNLEASHED

DESIGN  
MEETS  
FUNCTION

To make a design statement, you need design accents that are bold. Geberit flush plates in exciting new finishes are just the thing. Stone, glass, or wood surfaces with black chrome, red gold, and brass accents — colors that shape a mood, a feeling, and beg to be touched. A wall-hung toilet is just a wall-hung toilet until you bring it to life with a Geberit flush plate.

Expand your creativity. Be fearless. Visit our online showroom at [geberitnorthamerica.com/showroom](http://geberitnorthamerica.com/showroom). Or get a copy of our flush plate brochure at [info.geberitnorthamerica.com/mood](http://info.geberitnorthamerica.com/mood).

CIRCLE 764



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### 32. \ INTELLI-BALANCE ENERGY RECOVERY VENTILATOR 100 CFM

Engineered for multifamily and single-family applications, the Intelli-Balance 100 energy recovery ventilator (ERV) offers customizable airflow options (50 to 100 CFM) to create balanced, positive, or negative pressure within dwellings. The ERV can help designers and builders meet ASHRAE 62.2 requirements for continuous whole-building ventilation. Intelli-Balance 100 is a cost-effective, energy-efficient solution for cold climate zones, says the maker. The system comes with a MERV 8 filter; MERV 13 replacements are available.

**PANASONIC** | CIRCLE NO. 831

### 33. \ SIVEILLANCE THERMAL SHIELD

The Siveillance Thermal Shield from Siemens quickly measures the body temperature of a person seeking to access a building and enables the results to be integrated into the video

and access systems of corporations. Thermal imaging cameras are used to measure, in a contactless way, the body temperature at a distance of up to two meters, ensuring the safety of monitoring staff. If the camera screening indicates an elevated body temperature, a second reading must be taken using a medical thermometer to confirm the finding. To ensure the highest level of accuracy, the cameras measure the body temperature near the eyes. A positive result triggers acoustic and visual alarms. The temperature is measured for each person individually to ensure accurate and reliable results. If a person shows an elevated body temperature and this finding is confirmed by a second reading obtained with a medical thermometer, the follow-up steps defined in the workflows are initiated automatically.

**SIEMENS BUILDING TECHNOLOGIES**

CIRCLE NO. 832

### 34. \ POWERFIT SOLAR PANELS EDITOR'S PICK

These thin, lightweight, flexible solar panels are designed to fit in between the seams of a metal standing seam roof to create a sleek, unobtrusive solar roof system. The panels' butyl-based adhesive backing reduces installation time by up to 50%, says the maker: just peel and stick. Sunflare solar modules have bypass diodes for each individual cell. This means when a cell is shaded, only that individual cell stops producing power.

**SUNFLARE SOLAR** | CIRCLE NO. 833

### 35. \ SMALL SPACES SUITE

Whirlpool's Small Spaces Suite gives multifamily developers, builders, and designers all the appliances that tenants would expect in a full-service kitchen—refrigerator, freezer, cooktop, dishwasher, microwave, and wall oven, all with full-size features but in a smaller package.

**WHIRLPOOL** | CIRCLE NO. 834



**VERSA-DEK® COMPOSITE**  
 Create the thinnest floor depths possible  
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**DEEP-DEK® COMPOSITE**  
 Minimize floor depth, maximize performance  
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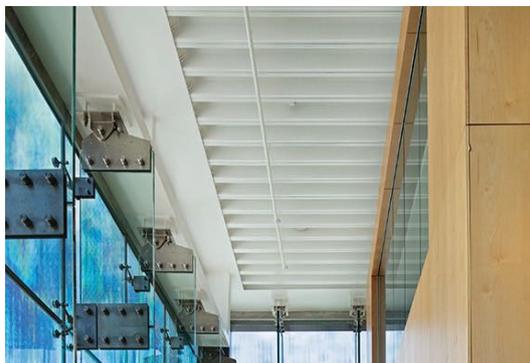


**COMPOSITE JOISTS AND DECK**  
 Attain open spans up to 60 feet  
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Photo credit: Project Pros, Inc.

**CONTROL AMBIENT NOISE**  
 Manage acoustics with composite floor deck  
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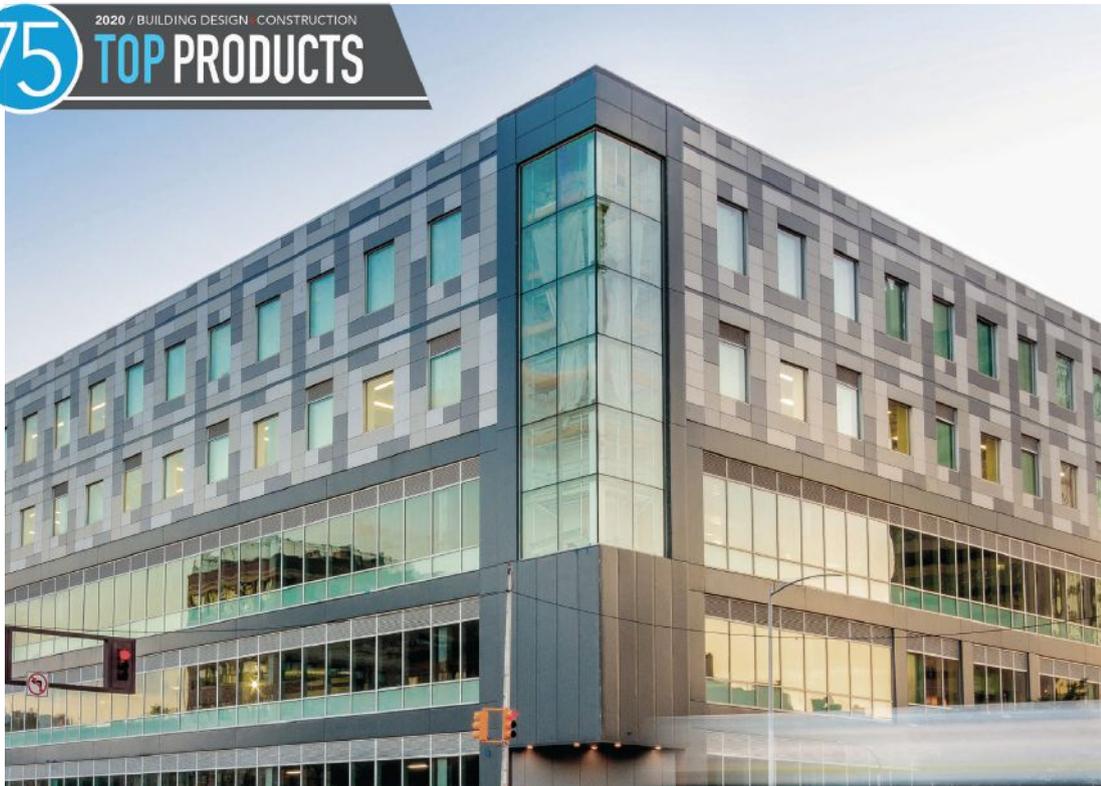


**CREATE STUNNING AESTHETICS**  
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2020 / BUILDING DESIGN / CONSTRUCTION  
**75 TOP PRODUCTS**



# 3 ways to rise above

## ACHIEVE OPEN SPANS THAT ELEVATE YOUR PROJECT DESIGNS

Create long-span, thin-slab composite floor decks that maximize living space. Manage fire and sound travel between occupied spaces. Accelerate construction. Realize cost and performance improvements. New Millennium offers three unique systems to help you rise above expectations in multi-story design and construction. **Let's build it better, together.**

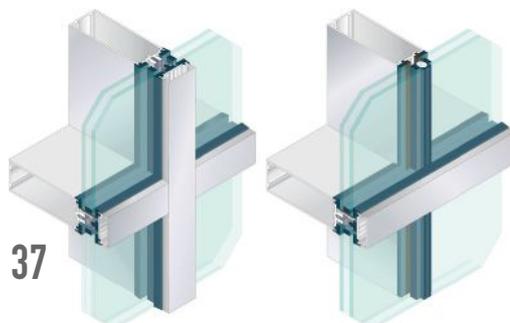
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**NEW MILLENNIUM**  
 BUILDING SYSTEMS  
 Building a better steel experience.



36



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1620UT Curtain Wall

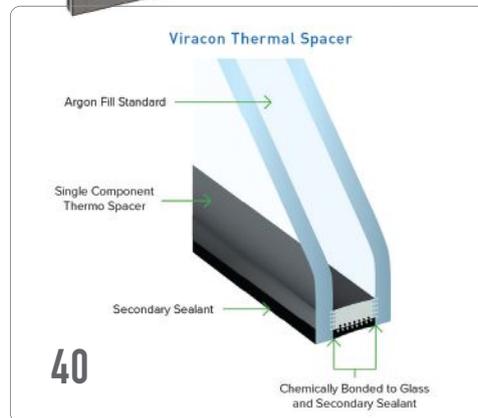
1620UT SSG Curtain Wall



38



39



40

### 36. \ MLB DUAL CAVITY DAYLIGHTING SYSTEMS

Azon's mechanical lock profile (MLP) dual cavity daylighting systems are designed for use in the most demanding climates and conditions. The dual cavity is debridged to eliminate the metal-to-metal contact. The result is a structural composite of aluminum and polymer that creates a strong thermal barrier for aluminum extrusions. The high-strength system allows for larger spans for aluminum storefronts, curtain walls, and windows.

**AZON USA** | CIRCLE NO. 835

### 37. \ 1620UT/1620UT SSG CURTAIN WALL SYSTEM

This curtain wall system features a narrow, two-inch sightline, concealed fasteners, and a two-sided vertical SSG mullion option that combine to create a clean assembly with uninterrupted sightlines. Designed for low- to mid-rise applications in climates where high thermal performing façades are required, the 1620UT/1620UT SSG Curtain Wall System comes with an engineered polymer thermal separator

and accommodates one-inch insulating glass units. Available in a range of finishes and colors.

**KAWNEER** | CIRCLE NO. 836

### 38. \ UNIQUAD ENERGY-EFFICIENT TRANSLUCENT WINDOWS

Kingspan Light + Air offers UniQuad energy-efficient, translucent windows for smaller envelope openings. The size of the company's two-panel UniQuad system was scaled to create the more modular and versatile UniQuad Translucent Windows. The system gives architects the same durability, integration, and clean look as the original system, just in a smaller size. UniQuad provides 25% greater light transmission than other daylighting products on the market, according to the maker. Available in heights up to six feet.

**KINGSPAN LIGHT + AIR** | CIRCLE NO. 837

### 39. \ SUPERLITE II-XLB 60-120 BUTT-GLAZED WALLS IN GPX ARCHITECTURAL SERIES FRAMING

To maximize views and daylight at the Target Store Lower East Side, in New York, architect Sargenti Architects and

glazier Action Storefronts specified SuperLite II-XLB 60-120 Butt-Glazed Walls in GPX Architectural Series Framing. The system features the industry's largest tested and approved clear view area of 7,980 square inches of any fire resistive glazing product up to two hours. It allowed the design team to create large, uninterrupted storefront windows to showcase Target merchandise, while meeting stringent codes for fire resistive storefront assemblies.

**SAFTI FIRST** | CIRCLE NO. 838

### 40. \ VIRACON THERMAL SPACER

This proprietary warm-edge spacer for insulating glass units consists of a black thermoplastic elastomer with integrated desiccant and a primary sealant that is chemically bonded directly to the glass and secondary sealant. The result, says Viracon, is thermal performance that is 14% better than aluminum spacers, and offers 35% better argon retention and increased stability in extreme hot or cold temperatures. The Viracon Thermal Spacer (VTS) is backed by a 12 year warranty.

**VIRACON** | CIRCLE NO. 839

# Less green. For less green.



University of Kansas Medical Center Health Education Building | Kansas City, Kansas | Helix Architecture + Design and CO Architects | Shown: Solarban® 72 Starphire® glass\*

## Find affordable clarity in the Solarban® Acuity™ low-e glass series.

Introducing Acuity™ low-iron glass – which is 60 percent less green than ordinary clear glass. The new Solarban® Acuity™ series by Vitro Architectural Glass provides the truly clear look you want with the outstanding performance of the full range of Solarban® solar control low-e coatings.

Upgrading a low-e coated clear insulating glass unit to Solarban® Acuity™ glass will typically increase the total installed curtainwall cost by only \$1–2 per square foot.

**Give a little, get it all. Request your samples at [vitroglazings.com/acuity](http://vitroglazings.com/acuity)**



\*Like Solarban® Starphire® glass, Solarban® Acuity™ glass delivers a distinctive, highly transparent low-iron aesthetic.

CIRCLE 766

41



41. \ SOLARBAN 60 LOW-E GLASS AT KINECTS TOWER

Bumgardner Architects specified Vitro Architectural Glass's Solarban 60 low-emissivity glass for the 41-story Kinects Tower, Seattle. The glass was coated with High Performance Coating's Starbright Silver Opaci-Coat-300.

With a solar heat gain coefficient of 0.39, the glass blocks 66% of total solar energy while allowing 70% of visible light to pass through. Vitrium Glass Group was the glass fabricator; Starline Windows, the glazing contractor.

VITRO ARCHITECTURAL GLASS | CIRCLE NO. 840

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42. \ YWW 50 TU THERMALLY BROKEN WINDOW WALL

The YWW 50 TU is a five-inch-deep window wall glazing system designed for use in multi-story applications. It includes a slab edge cover that yields the beauty and appearance of a curtain wall application. The glass plane is set to the front to maximize thermal performance. The system has mullion options that allow glazing from the interior or the exterior. Thermal performance is enhanced by YKK AP's patented ThermaBond Plus thermal break technology that also provides the system with dual finish capability. ThermaBond Plus is a pour and debridged process that improves the adhesion of the polyurethane material to the aluminum extrusion, optimizing the thermal break.

YKK AP | CIRCLE NO. 841

# Azon Saves Energy



Daylighting systems produced with Azon structural thermal barrier technologies — the **MLP™** or **Dual Cavity** — for aluminum windows and high performance glazing components for insulating glass, will yield a fenestration system capable of upholding the highest efficiency and sustainability standards.

- Polyurethane polymer with superior insulating properties for the best balance of energy efficiency and performance
- NEW: MLP™ (mechanical lock profile) and dual cavity designs for fenestration products used in the most demanding climates and conditions
- High strength for larger spans—industry's strongest thermal barrier for aluminum storefront, curtain wall and windows
- AZO/Tec® technical services with expertise in window design



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CIRCLE 767



1 HSW Learning Unit

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CIRCLE 768



ESR-3670  
ESL-1022

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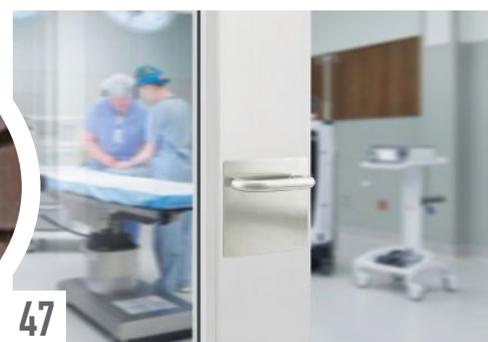
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### 43. \ ACOUSTIBUILT SEAMLESS CEILINGS

This ceiling system looks like drywall and performs like an acoustical ceiling, allowing designers to achieve a monolithic look while meeting stringent acoustic requirements. Finished ACOUSTIBuilt panels offer a smooth, non-directional, seamless visual. The installed system achieves a noise reduction coefficient (NRC) of up to 0.70 and a ceiling attenuation class (CAC) up to 48. The panels can be installed with most drywall-compatible light fixtures or diffusers.

**ARMSTRONG CEILING SOLUTIONS** | CIRCLE NO. 842

### 44. \ AURORA RESILIENT FLOORING

Aurora is a resilient rubber sheet that features a polyurethane-coated (PUR-coated), calendared-rubber wear layer that is fusion-bonded to an Ecore vulcanized composition rubber (VCR) backing. The result is flooring that provides enhanced ergonomics, comfort, and safety. The surface is hygienic due to a heat-welded installation process.

**ECORE** | CIRCLE NO. 843

### 45. \ EOSCU BIOCIDAL HARD SURFACE

EOScu from EOS Surfaces is the industry's only synthetic hard surface that is EPA-registered for public-health claims, continuously killing harmful bacteria within two hours of exposure. The preventive biocidal surface is infused with the company's proprietary copper-oxide compound, which eliminates bacteria through ions that damage bacterial cells. When bacteria and copper ions come into contact, the copper ions weaken the outer membrane of the bacteria cell through the process of oxidation. Copper is toxic to the inside of the cell and, eventually, the copper ions cause the cell to rupture. The cell then loses its vital structure, and dies. EOScu applications include work surfaces, countertops, backslashes, wash bowls, and other solid surfaces.

**EOS SURFACES** | CIRCLE NO. 844

### 46. \ DEFENSE FORCE



The Garland Company has launched Defense Force, a product line designed to either clean, disinfect, or protect

commercial facilities. The flagship product is D7, a safe and effective EPA-registered antimicrobial disinfectant that kills bacteria, fungi, germs, and viruses in minutes. D7 has demonstrated effectiveness against viruses similar to COVID-19. D7 can be easily mixed and applied to hard, non-porous surfaces with standard sprayers.

**THE GARLAND COMPANY** | CIRCLE NO. 845

### 47. \ INOX MICROARMOR

INOX offers an antimicrobial coating option for its line of stainless steel products, including door levers and pulls, deadbolts, panic devices, and push/pull plates. INOX MicroArmor Antimicrobial Coating is a powder coating infused with antimicrobial technology that is applied during the hardware's manufacturing process and works to inhibit the growth and reproduction of harmful bacteria, mold, and mildew by up to 99.9%. It contains silver ions that attach themselves to a microbe's cellular enzyme to inhibit the growth of the microbe.

**INOX** | CIRCLE NO. 846



## 48. \ MODULAR PRIVATE AND SEMI-PRIVATE OFFICES

As corporate businesses return to work, some companies are rethinking the 100% open-plan layout. KOVA Modular Office Solutions offers a range of configurations for creating private and semi-private office spaces. The modular system includes joining parts and stackable panels that easily fit together to create office fronts, conference rooms, separation walls, and soundproof privacy pods. Extra unused panels can be removed and stored away for when needed.

### KOVA MODULAR OFFICE SOLUTIONS

CIRCLE NO. 847

## 49. \ BIOPRISM SOLID SURFACE MATERIAL

BioPrism solid surface material from InPro inhibits the growth of mold and mildew so facilities can maintain the highest standards in hygiene. Ideal for use as surfaces in shower areas, restrooms, operating rooms,

and other sterile environments that get dirty quickly. The non-porous, sterile material can be used as wall protection in areas such as operating rooms, as well as material for toilet and shower partitions, trim, shower bases, and shower accessories such as soap dishes.

**INPRO** | CIRCLE NO. 848

## 50. \ LINOWALL XF2 LINOLEUM FOR WALL APPLICATIONS

Tarkett's LinoWall xf2 line of linoleum for wall applications is naturally bactericidal, and is Cradle-to-Cradle Silver certified. The phthalate-free material is available in six colors, a mix of pastels and neutral shades to provide a direct match between wall and floor. LinoWall xf2 offers surface protection for resistance and easy maintenance.

**TARKETT NORTH AMERICA** | CIRCLE NO. 849

## 51. \ FAST EDGE AND FAST EDGE PAPER DRYWALL VINYL CORNER BEADS

This line of paper and paper-free cor-

nerbeads features a sharp nose with no mud bump, and tapered legs to reduce mud usage and speed overall installation time. The nose also acts as a hinge to accommodate framing variances. Its patented mud locks keep the corner held firmly in place without the need of staples or adhesives.

**TRIM TEX** | CIRCLE NO. 850

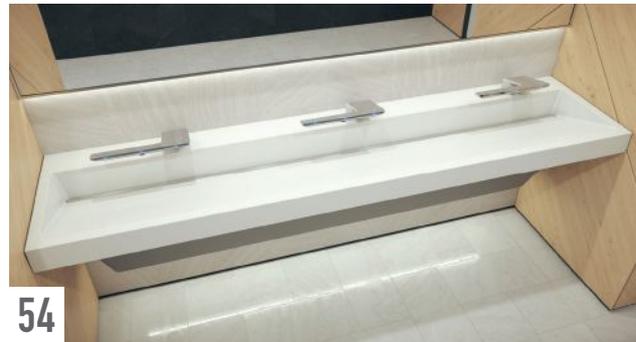
## 52. \ HIGH PRESSURE LAMINATE (HPL) ENGINEERED SURFACE

Wilsonart's High Pressure Laminate (HPL) is a durable engineered surface suitable for a range of vertical and horizontal applications, including countertops, cabinets, fixtures, shelves, architectural doors, and walls. The material is comprised of a wear-resistant overlay, decorative sheet, and impact-resistant kraft, offering lasting visual and functional durability. HPL offers an economical choice with low minimum order quantities and short lead times.

**WILSONART** | CIRCLE NO. 851



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### 53. \ ACCESSIBLE TOILET COMPARTMENT COMBINATION UNITS

Bobrick Washroom Equipment offers four new accessible toilet compartment combination units developed to achieve unambiguous compliance with multiple critical building codes. Bobrick's B-3091, B-3092, B-30919, and B-30929 units combine toilet tissue dispensers, toilet seat cover dispensers, and waste disposals in a single stainless steel unit. The units are oriented horizontally to enable maximum compliance with the 2010 Americans with Disabilities Act and 2009 and 2017 ICC A117.1 standards and the California Building Code.

**BOBRICK WASHROOM EQUIPMENT** | CIRCLE NO. 852

### 54. \ WASHBAR HANDWASHING STATION L-SHAPED DESIGN

Bradley Corp.'s next-generation WashBar clean/rinse/dry handwashing station features a thin, L-shaped design that gives the feel that the all-in-one fixture is floating above the sink. With only one connection point to the sink, the design provides more

open space for easier cleaning. The durable chrome-plated cast alloy fixture features LED lighting to visually orient the user through the hand washing process with easy-to-identify icons on top of the bar. The bowl is designed to avoid splashing.

**BRADLEY CORP.** | CIRCLE NO. 853

### 55. \ SIGMA10 SERIES FLUSH PLATES

Sigma10 Series flush plates from Geberit feature sensor technology that allows users to wave their hand to provide touch-free toilet flushing. Offering dual-flushing capabilities, the sensor technology provides optimum water savings, says the maker. Sigma10 is compatible with standard 1.6/0.8 gpf in-wall toilet systems and the low-consumption 1.28/0.8 systems. Users may simply walk away for a full flush. The touch-free Sigma10 is available with either battery or AC power and comes in seven finishes.

**GEBERIT** | CIRCLE NO. 854

### 56. \ GRAZE SMART FAUCET

The Graze smart faucet from Kohler

features voice-activated technology that dispenses measured amounts of water at the user's spoken command, from "turn the water on" to "dispense one gallon." It can fill containers to a preset level or dispense a specific quantity. The touchless faucet includes a motion sensor that turns water on and off with the wave of a hand.

**KOHLER** | CIRCLE NO. 855

### 57. \ TOUCH-FREE RESTROOM PRODUCTS FOR TEMPORARY FIELD HOSPITALS

Sloan provided its touch-free restroom products to support the conversion of Chicago's McCormick Place Convention Center (pictured) and Yale University's Payne Whitney Gym into temporary field hospitals, or COVID-19 Care Centers. With 500 beds in makeshift rooms, plumbing requirements at McCormick Place called for more than 200 Sloan sensor faucets in handwashing stations. At Yale, the project team installed Sloan sensor-operated faucets and flushometers to provide a touch-free experience.

**SLOAN** | CIRCLE NO. 856



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ArchLIGHT Summit, a bold new commercial lighting show for the architectural, specification and design communities coming to Dallas Market Center in fall 2021. Join us for two days of hands-on educational opportunities, diverse speakers and a beautiful blend of permanent and temporary exhibits from leading manufacturers in commercial, residential and hospitality lighting. Attendee registration opens April 1, 2021.



[archlightsummit.com/](http://archlightsummit.com/)

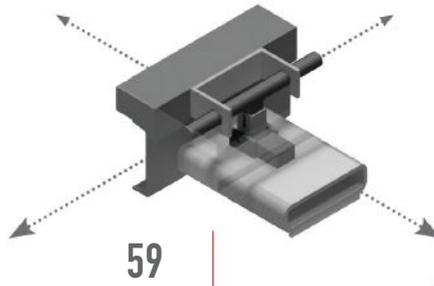
SEPT 21-22, 2021

## PARTNERS





58



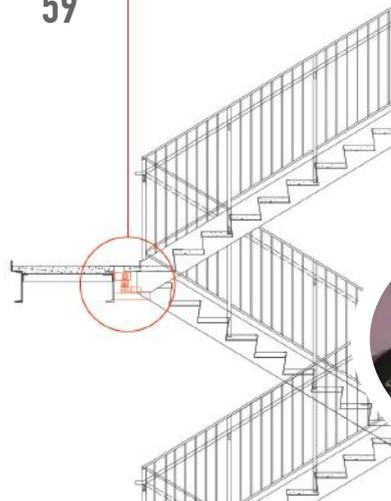
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### 58. \ GRS TAPER-LOC GLASS RAILING SYSTEM EDITORS' PICK

Designed for 1/2- to 3/4-inch monolithic tempered glass, the GRS TAPER-LOC glass railing system is the first and only ICC-approved base shoe system on the market, says the maker. The dry glaze system self-centers and plumbs the glass, all from the floor side of the railing, reducing installation time by up to 50%. Glass panels can be removed, adjusted, or replaced with ease. Designed for interior and exterior applications. Available in eight finishes.

**C.R. LAURENCE** | CIRCLE NO. 857

### 59. \ DRIFTREADY STAIRS EDITORS' PICK

Designed with patent-pending connectors that keep stairs stable at rest, yet flexible when a building moves, DriftReady Stairs accommodate seismic movement and interstory drift during seismic events. Full-scale shake table testing by the University of Nevada, Reno, showed that the stair system surpassed industry-standard interstory drift levels of 2.5%, reaching drift levels of up to 4.0%. The stairs also reduce

the transfer of damaging force back into a structure during building movement.

**CONSTRUCTION SPECIALTIES** | CIRCLE NO. 858

### 60. \ SPECTRALOCK PRO PREMIUM TRANSLUCENT GROUT EDITORS' PICK

This patented, stain-proof, high-performance epoxy grout offers a unique opaque color that diffuses light and adds vibrancy to designs. Spectralock Pro Premium Translucent Grout is crack-resistant, durable, and cleanable to the original color. It features a non-sag formula for grout joints from 1/16 to 1/2 inch, and offers 80 minutes working time at 70 F. Suitable for installations at wide temperature ranges.

**LATICRETE** | CIRCLE NO. 859

### 61. \ THIN-SLAB COMPOSITE FLOOR SYSTEMS EDITORS' PICK

New Millennium offers three proven solutions for optimizing multi-story, multifamily construction projects with thin-slab, long-span composite floor systems. The three approaches—composite joists and deck, Deep-Dek Composite, and Versa-Dek Composite—can

achieve clear spans of up to 60 feet uninterrupted by support columns. The systems also address the many factors that go into designing a high-performance and efficient structural system for multi-story, multifamily construction, including total floor depth, loads, overall aesthetics, and fire, vibration, and acoustic ratings.

**NEW MILLENNIUM** | CIRCLE NO. 860

### 62. \ FOAMULAR NGX INSULATION EDITORS' PICK

Owens Corning's Foamular NGX (next generation extruded) insulation is produced with a proprietary blowing agent that exceeds most regulatory standards without sacrificing product performance. The formulation eliminates use of the hydrofluorocarbon blowing agent HFC-134a and reduces the product's global warming potential (GWP) by 90%. It offers R-5 per inch, handles loads up to 100 psi, and has low water absorption potential. Foamular NGX is the only XPS with a limited lifetime warranty that guarantees a minimum 90% of R-value for the life of the product.

**OWENS CORNING** | CIRCLE NO. 861



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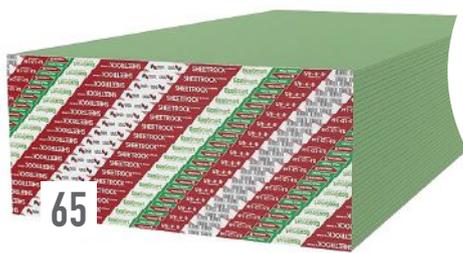
**SHERWIN-WILLIAMS.**  
Coil Coatings



63



64



65



66



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### 63. \ CAVITYROCK BLACK INSULATION BOARD EDITORS' PICK

Rockwool's Cavityrock Black is a dual-density insulation board designed to mask the insulation layer with a bonded fleece facing to create a crisp, dark aesthetic in open-joint façades. It eliminates the need for a separate masking layer that can add extra time, materials, and cost to an installation. The fleece material has been designed for exposure to the elements (weather, heat, UV), while maintaining the thermal performance, fire resistance, and moisture control of Rockwool stone wool insulation.

**ROCKWOOL** | CIRCLE NO. 862

### 64. \ YIELD-LINK MOMENT CONNECTION EDITORS' PICK

Simpson Strong-Tie's Yield-Link moment connection is designed to simplify and streamline structural steel connections made in the field, without compromising structural strength. The connection requires no field welding, resulting in reduced onsite labor costs, licensing fees, and construction time.

By eliminating field welding, Yield-Link also removes the need for field weld inspections. Fewer fabricated steel elements and field connections are required with Yield-Link, says the maker.

**SIMPSON STRONG-TIE** | CIRCLE NO. 863

### 65. \ SHEETROCK BRAND ECOSMART PANELS EDITORS' PICK

USG's Sheetrock Brand EcoSmart Panels feature a noncombustible gypsum core that is encased in 100%-recycled face and back papers that form a high strength-to-weight ratio composite design. The panels meet Architecture 2030 Challenge for Products in three areas: up to 25% less global warming potential (GWP), up to 25% less water used in the manufacturing process, and up to 20% reduction in transportation fuel energy. Contains 100% USDA certified biobased content and up to 94.6% recycled content.

**USG** | CIRCLE NO. 864

### 66. \ TERRACE FLOATING STAIR SYSTEM

Viewrail's Terrace floating stair system has no visible means of support as it

rises from one floor to the next. Terrace treads are connected to the riser with no nosing and no exposed metal. The staircase is pre-cut and pre-drilled so there is no need for onsite welding and drilling. The box treads come in Hard Maple, Red Oak, Wheat Oak, White Oak, Walnut, American Cherry, and Hickory. Terrace railing options include clear glass, cables, and rods.

**VIEWRAIL** | CIRCLE NO. 865

### 67. \ STEEL FRAME MAGNETIC DOOR KIT 3070 EDITORS' PICK

This self-closing magnetic door fits standard 3x7-foot commercial steel frame doors to maintain a better dust seal during reconstruction and renovation projects. Magnetic strips snap the door panel directly onto the steel frame of the doorway. The strong self-closing magnets allow workers hands-free access to their jobsite while maintaining the dust seal. The ZipWall Steel Frame Magnetic Door Kit 3070 features a flame-retardant door panel and a clear plastic window.

**ZIPWALL** | CIRCLE NO. 866

VIRACON VRE - 4725

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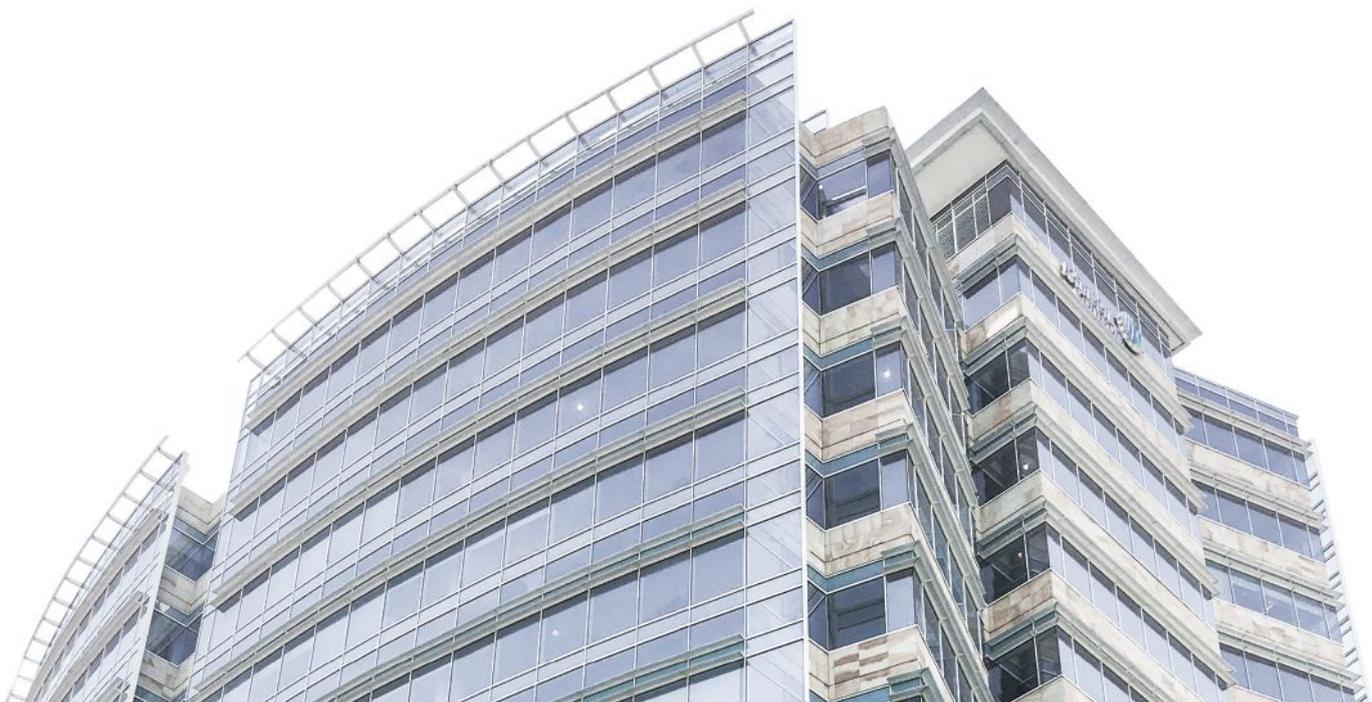
WHEN VLT IS 47% WITH A SHGC OF .25,  
**CUSTOMER SATISFACTION IS**  
**110%.**

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**VIRACON®**  
GLASS IS EVERYTHING™





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**68. \ SCHLAGE CONTROL MOBILE-ENABLED SMART LOCKS**

Allegion's Schlage Control mobile-enabled smart locks (bit.ly/3az5YR0) come with Bluetooth mobile credential compatibility for multifamily properties. Kastle Systems and STRATIS, two independent multifamily ecosystem providers, have been integrated to the new platform. The design gives property managers greater choice in selecting third-party access management software.

**ALLEGION** | CIRCLE NO. 867



69

**69. \ ROCKWOOD HANDS-FREE DOOR PULLS**

To minimize everyday skin-to-surface touchpoints in buildings, ASSA ABLOY offers its Rockwood collection of hands-free door pulls. The arm and foot pulls are easy-to-install, cost-effective options for hands-free door operation. They also complement ADA standards and regulations. The stainless steel pulls can be installed on wood, metal or aluminum doors.

**ASSA ABLOY** | CIRCLE NO. 868



70

**70. \ ACDSV ACOUSTICAL AUTOMATIC SMOKE VENT**

This automatic smoke vent provides the highest level of protection against exterior noise intrusion on the market, according to its maker. The Type ACDSV Smoke Vent is designed to provide fire and smoke protection for applications where exterior noise intrusion is undesirable, such as in auditoriums, concert halls, and theaters. It carries an OITC-46 sound rating to guard against low-frequency outdoor sounds such as traffic and airplane noises, and an STC 50 sound rating. The product has also received an ISO-140-18 sound rating when tested against rainfall sound.

**THE BILCO COMPANY** | CIRCLE NO. 869



71

**71. \ AC85 ACOUSTIC CASEMENT WINDOW**

The AC85 Acoustic Casement Window from Crystal Window & Door Systems



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delivers acoustical sound reduction ratings of STC 57 and OITC 46, making it especially suitable for multifamily buildings near airports, rail lines, highways, and heavily trafficked city streets. The aluminum frame window is available in either the combined in-swing/out-swing casement or the fixed-window style.

**CRYSTAL WINDOW & DOOR SYSTEMS**

CIRCLE NO. 870

**72. \ SWITCH TECH ELECTRONIC ACCESS CONTROL TECHNOLOGY**

**EDITORS' PICK**

The Switch Tech platform from dormakaba allows building owners and facility managers to convert traditional mechanical access doors to digital access units in minutes without having to replace the door hardware. The solution involves replacing the mechanical lock cores within the hardware with an electronic lock core—a five-minute process, says the maker. Users then install the Switch Tech mobile app to take full control of the doors. Ideal for retrofitting electronic control into existing doors on interior rooms, closets, and cabinets. Works with all types of locks, including cylindrical and mortise.

**DORMAKABA** | CIRCLE NO. 871

**73. \ PUREVIEW MOVABLE GLASS WALL SYSTEM**

The PureView Glass Wall Partition from Modernfold is designed to offer balance between aesthetics, functionality, and durability. PureView includes double-brush top and bottom seals for draft management, and foot-operated face and end panel interconnecting floor bolts for maximum convenience and security. Straight, angled, and segmented configurations are available to fit a variety of space division needs for many architectural settings, including banks, offices, lobbies, interior storefronts, and arena skyboxes. Finish options include anodized aluminum and more than 170 powder coat colors.

**MODERNFOLD** | CIRCLE NO. 872

73



#### 74. \ STORMDEFEND TTH350 EDITOR'S PICK DOOR SYSTEM

Insulgard Security Products' Storm-defend TTH350 is the first glazed aluminum door system certified by UL to meet critical standards for use in tornado and hurricane storm shelters mandated by the 2015 International Building Code, including in the 250-mph wind zone. The door also meets UL 752 levels 1-3 for bullet resistance. It is available as a single or double unit. The TTH350 can be paired with the company's line of Stor-

74



stormdefend windows to create brighter, more welcoming shelter spaces than the bunker-like storm shelters of old.

**INSULGARD SECURITY PRODUCTS** | CIRCLE NO. 873

#### 75. \ SL84 FOLDING GLASS EDITOR'S PICK WALL SYSTEM

With a frame profile intersection of just 99mm (3<sup>7</sup>/<sub>8</sub> inches), the SL84 aluminum framed system is the

75



slimmest folding glass wall on the market. It is also one of the most thermally efficient aluminum-framed systems available. Its patented Bi-ionic Turtle thermal break utilizes continuous seals along the face of each panel frame, and two levels of insulating thermal breaks provide optimal defense from heat or cold. Maximum panel sizes can reach heights up to 11 feet, six inches and widths up to three feet, seven inches.

**NANAWALL** | CIRCLE NO. 874

## ARCHITECTURAL DOG PARK PRODUCTS



PLAY EQUIPMENT



WATER FOUNTAINS



PET WASTE STATIONS



FUN AGILITY

# BIGGER WINDOWS, MORE GLASS: EFFICIENT, SAFE, INSPIRING



ERIC LUGNEL, COURTESY SPACESMITH

For the headquarters of MarketAxess on three floors of 55 Hudson Yards in New York City, open exterior glass expanses and a three-story-tall floating staircase with modern glass balustrades and guardrails welcome visitors.

## LEARNING OBJECTIVES

After reading this article, you should be able to:

- + **DISCUSS** the opportunities for health and psychological benefits of increased glazing.
- + **DESCRIBE** the trends leading to large glass panel sizes and the design and implementation strategies to ensure occupant comfort, energy efficiency, and wellness.
- + **LIST** considerations for the use of advanced glazing technologies and in particular fire-rated glass, fenestration, and interior partitions.
- + **COMPARE** the qualitative and quantitative performance considerations for building interior spaces in terms of wellness, energy usage, or other operations impacts.

A memorable political punchline last year for building teams involved how windows would shrink to tiny sizes and perhaps even disappear should the wrong candidates be elected. The joke was lost on most professionals. The fact is, more than ever, openness and copious daylight remain among the most desirable characteristics for end-users in a range of building types. This means applying bigger openings, jumbo sizes, and more glass everywhere—including in ways that help improve energy performance, life safety and wellness, and overall quality of experience.

Recent studies show why these investments in expanding glazing can be so valuable. In one

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CIRCLE 772



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ROEHNER + RYAN, COURTESY STUDIO.MA



**For the headquarters of a law firm in Phoenix, interior glazed partitions and interior windows allow daylight from operable skylights and windows to cool and illuminate the net-zero ready facility.**

survey published in the journal *Human Factors* ([bit.ly/2INwy0G](https://bit.ly/2INwy0G)), office occupants “that have more open and natural views rated their room satisfaction more highly.” A study in *Building and Environment* shows offices with access to daylight and views measurably improve cognitive performance and satisfaction while also reducing eyestrain. Our understanding of these dynamics is better, yet the latest research findings are nothing new. For a long-range perspective, a U.S. National Bureau of Standards study from 1975 ([bit.ly/2IO8rPp](https://bit.ly/2IO8rPp)) addresses “the windowless situation” then affecting schools, factories, housing, offices, and hospitals seeking to reduce first costs or save energy, yet also raising psychological issues. In the wake of the

oil embargo, the authors wrote, “The current need for energy conservation has forced some fundamental re-evaluation of building design.”

Thanks to data and analytics used routinely today to model and predict building performance, new and remarkably subtle approaches are being used to create façades and interior glass assemblies that allow more visible light transmission (VT) while reducing undesirable heating by direct sunlight, measured as solar heat gain coefficient (SHGC), or energy losses caused by radiating energy (emissivity) and direct conduction. Key measures of glass system performance include:

- **U-factor**, the rate of conduction of non-solar heat flow by building enclosure elements including curtain wall, windows, and skylights.
- **Air leakage**, the rate of air movement around a glazed opening such as a window, door or storefront subjected to a specific pressure difference.
- **Light-to-solar-gain (LSG) ratios**, which compare SHGC and VT as a measure of the relative efficiency of glazing materials in transmitting daylight while blocking heat gain.

A proliferation of in-house-developed and third-party simulation software tools are supporting building team efforts to better evaluate and design glazed assemblies with finely tuned control of all these variables. One team of sustainable design researchers at Harvard’s Graduate School of Design developed an early base system called DIVA-for-Rhino around 2009 that more recently advanced to studies by a group of 14 architecture firms, engineering firms, and façade manufacturers. The resulting simulation software ([solemma.com/ClimateStudio.html](https://solemma.com/ClimateStudio.html)) can relatively quickly determine annual illuminance, glare, and thermal comfort distributions in building spaces designed for using daylight and artificial illumination.

Software like this can also automate reporting for certifications such as daylight requirements or credits in Living Building, LEEDv4, and other widely used eco-standards. Building teams can test and archive design ideas as well: At a conference on tech-driven, bioclimatic architecture, cutting-edge simulation tools were demonstrated as part of the drive for a greener, more resilient future. Presenting on her own headquarters design, AIA COTE Award juror Christiana Moss, FAIA, discussed how daylighting and thermal performance modeling

“help create highly sustainable, forward-looking environments that inspire culture, communities, and transformation at scale.” Moss also showed how extensive use of glass on projects was consistent with highly efficient and net-zero energy designs for both institutional and commercial applications.

### **BIGGER OPENINGS, JUMBO SIZES**

This tendency is growing among the most influential today, as building teams innovate with new, larger monolithic glass panel sizes and more operable openings. The new Santa Monica City Hall East building in California, for example—a first municipal building nationally to achieve Living Building Challenge status—is wrapped completely in glass with large openings and 209 operable windows. The building team led by constructor Hathaway Dinwiddie, architect Frederick Fisher & Partners, and engineer and Living Building consultant Buro Happold, employs clever cooling and heat-control strategies to help ensure net-zero building operations for the 50,200-sf facility. Critical to achieving these lofty goals, according to Amber Richane, project manager for the City of Santa Monica, was the use of adaptive envelope design, integral shading, and high-performance glass.

For larger expanses, such as in the city hall extension, new technologies for glass finishing and coating expand capacity for larger panel sizes. One recent example in Wichita Falls by Vitro Architectural Glass ([bit.ly/36LXvK5](http://bit.ly/36LXvK5)), a jumbo coater for MSVD on varied glass substrates and panel thicknesses, expands capabilities for not only larger coated glass sizes but also novel platforms for low-emissivity (low-e) coating development for solar control, and “to accelerate development of advanced, high-performance coatings that maintain their neutral appearance when viewed from any angle.”

New output like this everywhere from China to Chile increases availability of low-e glass, often at lower costs, helping facilitate more jumbo glass sizes in projects at all levels, from the budget-minded to the decidedly high end.

One low-income housing development, the 86,000-sf Dr. Muriel Petioni Plaza Senior Apartments, is a mixed-use facility for seniors and the first locally—in New York City’s Harlem—to achieve LEED, thanks to its ample unit windows, high-performance mechanical systems, rainwater harvesting, and green roof.



COURTESY, SAFETY FIRST

Distinguished from other affordable works for seniors, the building offers ample roof terrace space, amenity spaces, and distinctive façades with south-facing sunshades to cut solar heat gain, all adding more interconnections between residents and community while still meeting stringent jurisdictional standards.

Developed by Jonathan Rose Cos. with owner Harlem Congregations for Community Improvement or HCCI and with architecture by Body Lawson Associates Architects and Planners (BLA) and building led by contractor Lasberg Construction, the \$24 million project reflects a movement toward using more glass within the context of passive-design principles.

“For our affordable housing developments under way now, passive design is the key to reducing operating costs, using enclosures with a thick blanket of insulation and better-performing glass specs,” says BLA principal Victor Body-Lawson, AIA. “Along with those highly insulated envelopes, fenestration can modulate sunlight coming in so occupants operate smaller heating and cooling systems, and MEP systems have smaller air blowers and other components, all further reducing environmental impact.”

The eight-story building, according to HCCI, with a two-bedroom super’s unit serves 63 one-bedroom units for low-income seniors over the age of 62 years earning no more than 50%

**For a cleanroom facility dedicated to nanobio-electronics work, a fire-rated glass partition system allows for visibility to key operations areas while meeting all life safety requirements at the Joint School of Nanoscience & Nanoengineering in Gateway University Research Park, Greensboro, N.C.**

COURTESY CETRARUDDY



Using earth-toned bronze glass specified for optimal efficiency and daylight transmission, the tower One Madison in New York City offers full-height curtain wall with operable panels for wellness-oriented openness essential to market-rate multifamily buildings.

of area median income, or AMI, a key measure used in the apportionment of affordable housing funds in many U.S. cities.

In other urban projects, selective uses of larger glass openings are seen as encouraging public engagement and interaction, including

in many “attainable housing” offerings in infill lots. For example, the design for a new rental and retail building called The 955 in San Francisco, led by Unisource Development, is “intended to break down barriers to promote community among residents as well as the neighborhood,” says architect Lada Kocherovsky, AIA, the principal of Page & Turnbull and incoming president of CREW San Francisco. “Nestled in the historic district, the 955 Post multifamily residential project takes design cues directly from the rhythms of the neighborhood architecture and interprets them in a contemporary visual vocabulary, emulating forms, materials and textures.”

With a sixth-floor setback and large punched-out windows using low-e glass panels and thermally broken frames above a high-efficiency storefront system at street level, the prominent mixed-use residential project in the city’s downtown Lower Nob Hill district will accommodate 69 new housing units on eight stories, including 17 on-site affordable apartments and ground-level retail spaces.

### FROM HIGH-END TO HISTORIC

For the adaptive reuse or preservation of historic buildings, selective uses of high-performance glazing benefits historic environments. Examples include windows and daylighting for the 1930s Hooper Community Center at the

Webb Schools in Claremont, Calif., with new, energy-saving glass in historic frames, replaced windows and complementary light shelves along with a new cupola with clerestory. For the Carson Block Building, a landmark structure in Eureka, Calif., reimaged as a cornerstone of the community’s cultural and commercial life, the Roman-inspired arched windows and terra cotta carvings are matched by completely rebuilt tall glass storefronts.

“In historic buildings, any glazed openings were typically designed to bring in natural ventilation and provide daylight/views,” says architect John D. Lesak, AIA, FAPT, principal with Page & Turnbull, Los Angeles. “Windows tend to define the historic character of building.” Depending upon the era of construction and use of the building, the ratio of glass-to-wall can vary widely, he says, and treatment of historic windows should be approached in a hierarchical manner:

- First, preserve and retain the window.
- Second, repair the window as needed to make it function as intended.
- Third, upgrade the window in a way that retains the historic character.

The last step often includes such steps as replacing the glazing, adding high-performance film to the existing glass, installing weatherstripping, and adding supplemental glazing, such as a storm window. “Only as a last resort, if repair is infeasible, do we replace windows. Ideally, windows are replaced ‘in-kind,’ but if that is not an option, select the highest-performing systems that match the character of the original in terms of operation, layout, glass color, and VT, as well as profile and shape of frame elements, position in the wall, and the like,” he says, pointing to the Greek Theatre in Los Angeles, where repair and in-kind replacement were infeasible.

At the high end, an expected turn toward more punched-out openings is instead evolving into more health-oriented reasons to incorporate even greater glazing expanses. According to the WELL Building Standard (standard.wellcertified.com/light/right-light), “Exposure to adequate levels of sunlight is critical for health and well-being, for effects ranging from visual comfort to potential psychological and neurological gains.” Additionally, measurable physiological benefits accrue from “the quality of light provided by the sun,” not to mention literally glowing reviews by building occupants—and

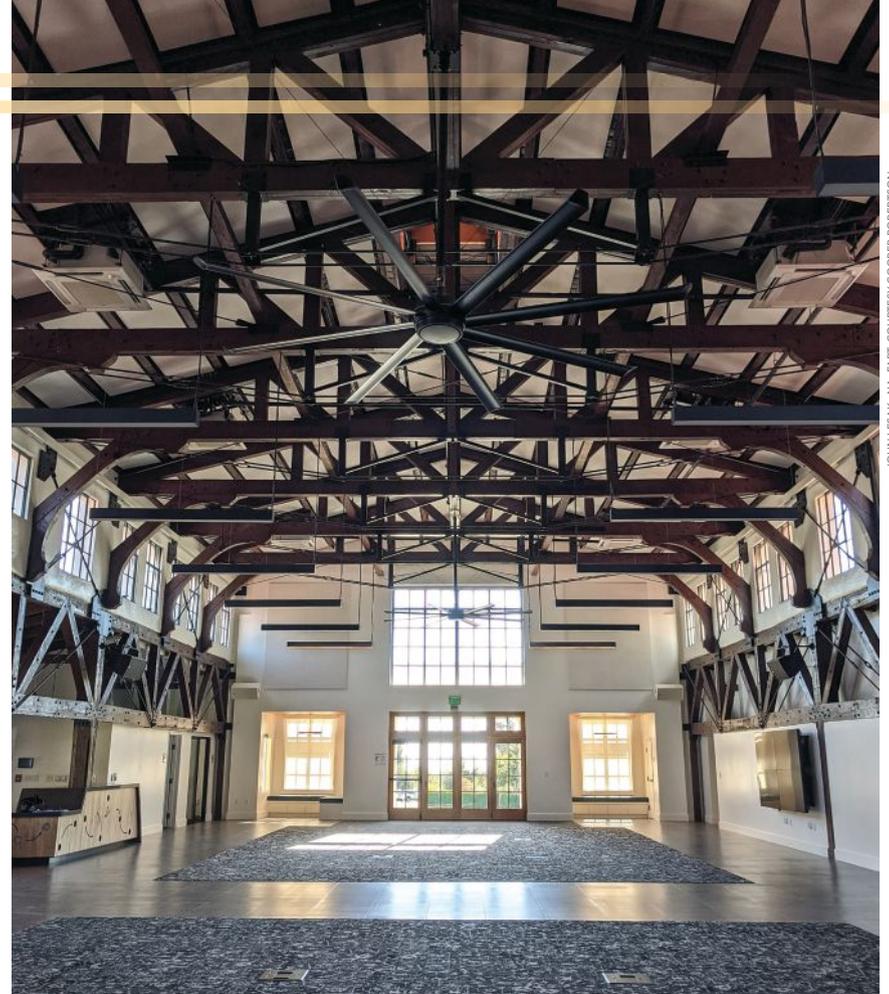
premiums in rents and sale prices for multifamily buildings.

“What we consider to be luxury living is changing rapidly and decisively during the challenges of COVID-19,” says architect John Cetra, FAIA, Founding Principal of CetraRuddy. “Living environments that respond to a newly emerging definition of luxe include multifamily interiors for ‘inside-out living’ in open, floor-to-ceiling glass homes with wraparound terraces.” Cetra cites examples including the 35-story 200East59 in Manhattan, developed by Macklowe and Centurion and constructed by Gilbane, where 67 residences offer the fully wrapping terraces and a sense of seamless indoor/outdoor living space. High-efficiency, low-e glazing modulates interior LSG and VT.

### FIRE-RATED GLAZING

Larger fenestration sizes are also increasingly used in applications traditionally reserved for opaque walls, thanks to glazing technologies engineered for protection against fire as well as its dangerous radiant heat. These fire-rated glass panels and assemblies allow for larger glass areas and opening sizes but with significant limitations depending on opening size, glazing material performance, and the intended occupancies and function. For example, glass ceramics and other fire-protective glazing such as specialty tempered and wired products are subject to restrictions in areas and application types outlined in the descriptive tables in the International Building Code’s seventh chapter. Glazings that do not block radiant heat may not be used in certain assemblies, even if the enclosures adequately block smoke and flames.

According to code experts and manufacturers, including SAFTI FIRST ([safti.com/articles/limitations](http://safti.com/articles/limitations)), building teams apply fire-protective glass products only as large as the maximum sizes tested and meeting a number of specific restrictions. For example, interior separations may use 20- to 45-minute fire-protection-rated glazing only where permitted in fire barriers rated to 1 hour, for use in “incidental use areas or mixed occupancy separations, or in fire partitions.” These applications are limited to 25% of the wall area. Another common application, in the transoms and sidelights of fire door assemblies, incurs a limitation of a maximum



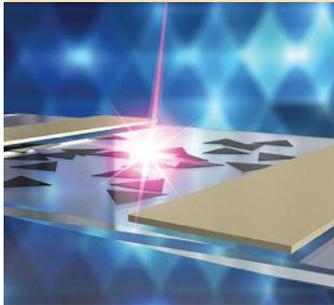
JOHN LESAK, AIA, FAPT, COURTESY COOPER ROBERTSON

45-minute rating.

For building façades and exterior walls, 20-minute to 90-minute ratings are possible for fire-protective glazing in fire windows, defined as “a window constructed to resist a fire of known standard intensity for a specified time.” The fire ratings depend, however, on the fire separation distance and occupancy type as given in section 705 of the International Building Code (IBC). A final consideration for fire-protection-rated glass usage is for fire door vision panels or lites, limited 100 square inches in size for fire-protection ratings of 60, 90, or 180 minutes. Alternatively, fire resistive glazing obviates the IBC size and application limitations for fire protective materials, because they meet ASTM E-119 testing for blocking radiant heat, allowing uses up to the maximum size tested for all 60-minute to 120-minute applications, including stairwell walls, façades, and interiors.

Applied properly, the fire-protective and fire-resistive glazings open wide the doors to design. In one reconstruction project, a team including Corgan and the specialty contractor Infinite Glass and Metal created a new observation deck experience as part of a \$165 million redevelopment of the Empire State Building. A glass elevator brings visitors to the 102nd floor

**For historic structures such as the Hooper Student Center at the Webb Schools in Claremont, Calif., the building team combined new efficient glass in historic frames with new windows, light shelves, and a cupola with clerestory windows.**



## SMART GLASS FOR SMARTER BUILDINGS

**T**he category of glazings collectively termed “smart glass” are adding to the interior and enclosure applications. New techniques developed for smart glass include

thin films ([bit.ly/35F3aIP](http://bit.ly/35F3aIP)) that can display augmented reality (AR) information in compatible devices or convert solar energy into electricity, or both. Similarly, ultra-thin photodetectors—used in many smartphones—hold promise for glazings with automated sensing properties ([optics.org/news/11/11/17](http://optics.org/news/11/11/17)), according to Corning, which collaborated with Penn State’s Materials Research Institute on a novel way to integrate the light detectors with the manufacturer’s chemically strengthened Gorilla Glass.

While glazings with instant smarts will one day grace building façades and interior partitions, current commercial applications are focused on optimizing daylight, according to Brad Pfahler, Project Manager with Studio Ma.

“We are working on residential and institutional projects exploring very high-performance solutions such as net-zero energy and water, and advanced techniques are necessary to get to net zero, and one of the options is electrochromic glass,” says Pfahler.

through a glass shaft, opening to panoramic views of Manhattan’s skylines. Constructed with a curtain wall using fire-rated frames and glazing, the historic high-rise’s elevator surround demonstrates the potential of transparency, visibility, and even energy efficiency in a memorable public space experience designed for fire and life safety. The glazing is a close-to-colorless low-iron float glass in panels with clear intumescent interlayers, with visual qualities similar to typical float glass. Narrow-profiled curtain wall mullions and corners clad with stainless steel carefully hew to the interior aesthetic and the classic architecture.

## ENERGY EFFICIENT INTERIORS

With a motto of “glass everywhere,” building

teams influenced by projects like the observatory have created interior experiences that not only open up vistas and communication but also share daylight and, in some cases, controlled heat to reduce energy consumption.

The approach has shown promise even in extreme desert environments. For a Phoenix-based law firm seeking to adaptively reuse an existing commercial structure, for example, a building team including Caliente Construction, engineers Pangolin Structural and Peterson Associates, and architect Studio Ma maximized both envelope openings and interior glazed partitions in converting a 6,100-sf structure. With skylights, openable windows, and workspaces demarcated by custom glass walls and doors as well as interior windows, The Phoenix Law Group also enjoys a workplace with much greater energy efficiency than comparable buildings in the climate zone.

“The reimagined building needed to feel and operate as one large open office with strong visual connections among staff members, while also accommodating private offices where the firm’s lawyers conduct sensitive, confidential work,” says Christopher Alt, RA, Studio Ma’s Co-founder and Principal. Using energy and daylight modeling to inform their design outcomes, the architects also studied the detailing of black-framed glass partitions to carefully controlled acoustics while allowing daylight and openness indoors and views to the outside. A set of operable skylights illuminates the spaces and circulates fresh air by means of stack effect, a technique that draws ventilation air and circulates cooler air toward work areas, where needed, and flushes hot air out of the roof. The façade’s large glass openings are protected by a continuous exterior assembly of modern wood louvers.

Workplace building teams have developed these ideas for a range of climate zones and occupancies, according to Elisabeth Post-Marner, LEED AP, WELL AP, Principal with design firm Spacesmith. “Today we are able to build effective open interior spaces where the end-users actually benefit. This user-focused approach now often starts with planning of adjacencies to ensure that workstations and collaboration areas such as huddles receive natural light,” says Post-Marner, who is also past president of the IIDA’s New York chapter.

Other recent projects reflecting these ideas include the headquarters for MarketAxess and

for another law firm, Boies Schiller Flexne, designed by Schiller Projects, an interiors specialist, collaborating with Spacesmith as architect for the project. Built by contractor Structure Tone to plans created with the engineer Silman (structures) and AMA (mechanical and electrical) with the HDLC Architectural Lighting, the law firm in an urban office building centers on glass-enclosed partner offices with glazed partitions demarcating well-illuminated conference rooms placed in strategic locations. Drawn from research on the best way to support the law firm, the result maximizes glass-wrapped offices and primary meeting rooms with sleek glass partitions lending daylight to huddle areas, smaller rooms, break areas, and open work zones.

For these open interiors, the building teams employ glass materials such as switchable glazings, decorated glass panels, and fritted or film-applied applications that benefit interior occupancies by enhancing communication, tuning

available illumination, and offering responsiveness to changing environmental conditions.

The same holds true for the exterior glazing selection process, says John Ivanoff, Associate Principal in façade consulting with strategy and engineering firm Buro Happold, while the potential for energy impact is significantly more momentous. "For energy conservation, it is important to study thermal and solar transfer, optimized window-to-wall ratios or WWRs, and opportunities to integrate photovoltaic systems," says Ivanoff, whose recent projects include the glass-topped adaptive reuse of the historic Tammany Hall building. "In some projects with very energy-intensive occupancies such as laboratories, Buro Happold finds that façade design has limited impact on overall energy use. However, facade design and glass selection can have a very significant impact on peak cooling loads in these situations, as well as occupant comfort."

Just as one might have suspected in 1975.+

#### EDITOR'S NOTE

This completes the reading for this course. To earn 1.0 AIA learning units, take the exam posted at [BDCnetwork.com/Glazing2020](http://BDCnetwork.com/Glazing2020).

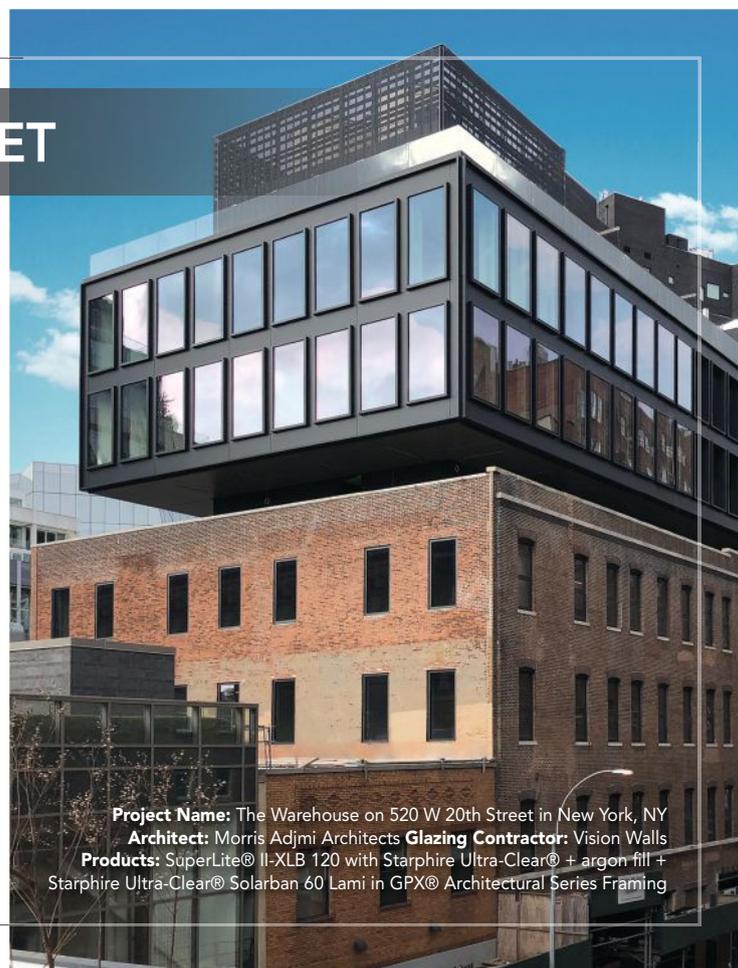
## MIRACLE ON 520 W 20TH STREET

The architects at Morris Adjmi wanted large, 11-ft. tall glass walls to highlight the breathtaking views for the reimagined Warehouse in New York City's growing architectural wonderland of Chelsea. However, the building was on a zero lot line, mandating 2 hour fire walls. SAFTI FIRST, the leading USA-manufacturer of advanced fire rated glazing systems, made this dream a reality by supplying **SuperLite II-XLB 120**, the largest tested and listed 2 hour fire resistive glazing available today. The inclusion of low-iron glass ensured superior clarity and aesthetic continuity with the adjacent non-rated windows. The fire resistive units incorporated high performance glazing with an argon fill for energy efficiency and occupant comfort.



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Read the full case study at [www.safti.com/casestudy](http://www.safti.com/casestudy)



**Project Name:** The Warehouse on 520 W 20th Street in New York, NY  
**Architect:** Morris Adjmi Architects **Glazing Contractor:** Vision Walls  
**Products:** SuperLite® II-XLB 120 with Starphire Ultra-Clear® + argon fill + Starphire Ultra-Clear® Solarban 60 Lami in GPX® Architectural Series Framing

# MEET THE 2020 RECONSTRUCTION AWARD WINNERS

16 U.S. building projects were honored with 2020 Reconstruction Awards. / By BD+C Staff

[BDCnetwork.com/Recon2020](https://BDCnetwork.com/Recon2020)

## PLATINUM AWARDS



**HOLY BLOSSOM TEMPLE RENEWAL, TORONTO**  
Submitting firm: Diamond Schmitt Architects  
Photo: Tom Arban Photography



**TAMMANY HALL, NEW YORK**  
Submitting firm: CNY Group  
Photo: Christopher Payne/ESTO



**THE POST OFFICE, CHICAGO**  
Submitting firm: Gensler  
Photo: Eric Laignel Photography

## GOLD AWARDS



**WYOMING CAPITOL  
SQUARE, CHEYENNE**  
Submitting firm:  
JE Dunn Construction  
Photo: Rachel Girt/Girt  
Communications



**ENID A. HAUPT CONSERVATORY PALM DOME RESTORATION, BRONX N.Y.**  
Submitting firm: New York Botanical Garden; Photo: Marlon Co.

For coverage of all  
16 Reconstruction Award  
winners, visit  
[BDCnetwork.com/  
Recon2020](https://BDCnetwork.com/Recon2020)

## SILVER AWARDS



### 401 PARK, BOSTON

Submitting firm: Elkus Manfredi Architects  
Photo: Connie Zhou



### HISTORIC ALAMEDA HIGH SCHOOL RESTORATION AND SEISMIC UPGRADE, ALAMEDA, CALIF.

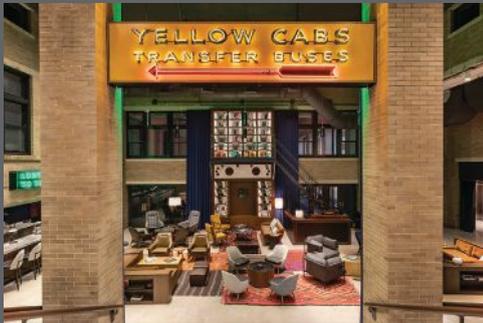
Submitting firm: Quattrocchi Kwok Architects  
Photo: Tim Maloney, Technical Imagery Studios



### POLHEMUS MEMORIAL CONDOMINIUM, BROOKLYN, N.Y.

Submitting firm: BKS Architects  
Photo: Amy Barkow

## BRONZE AWARDS



### CENTRAL STATION HOTEL, MEMPHIS, TENN.

Submitting firm: Robins & Morton  
Photo: VRX Studios



### STEMMLER HALL RENOVATION, UNIVERSITY OF PENNSYLVANIA

Submitting firm: Ballinger  
Photo: Todd Mason, Halkin Mason Photography



### HISTORIC MANHATTAN SURROGATE'S COURTHOUSE SKYLIGHT RECONSTRUCTION, NEW YORK

Submitting firm: Urbahn Architects  
Photo: Ola Wilk, Wilk Marketing Communications



### THE MARYLAND THEATRE, HAGERSTOWN, MD.

Submitting firm: Grimm + Parker Architects  
Photo: Sam Kittner



### THE SAZERAC HOUSE, NEW ORLEANS

Submitting firm: Ryan Goozee General Contractors  
Photo: Grisha Tarasov, IMOTO Photo



### THE SPOKANE RIVERFRONT PARK U.S. PAVILION, SPOKANE, WASH.

Submitting firm: Hill International  
Photo: Kelly Beck

## HONORABLE MENTION



### NORMAN HALL REHABILITATION, UNIVERSITY OF FLORIDA, GAINESVILLE, FLA.

Submitting firm: Walker Architects  
Photo: David Johnston, Johnston Photography



### ESPERANZA HEALTH CENTER, PHILADELPHIA

Submitting firm: Brawer and Hauptman Architects  
Photo: Don Pearse Photographers

# Wide Awake and Ready

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## LET'S TALK

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— David Shreiner, 9-27-20

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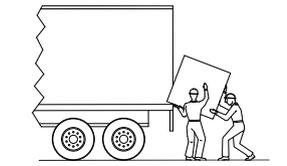
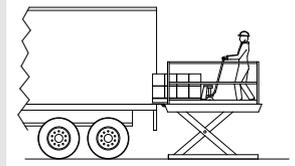
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# NO COVID ALLOWED IN THESE SPACES

This air curtain disinfects and purifies the air of viruses, VOCs, and particulates.

## IN AN EFFORT TO COMBAT THE COVID-19 PANDEMIC,

Berner International has developed the PureAir Package, an air purification system for air curtains that complements the building's indoor air quality and disinfection efforts by deactivating viruses, killing bacteria, and neutralizing a space's airborne VOCs. It is the industry's first air curtain to include needlepoint bipolar ionization (NPBI) technology.

The system works by creating positively- and negatively-charged ions that are distributed by the air curtain and attach to microscopic airborne particulates. The positive and negative ions break down gases such as VOCs and odors and also pull hydrogen out of viruses, bacteria, and mold that deactivates or kills them. Then, the polarized particles' electrical attraction and subsequent agglomeration facilitates their entrapment in the air curtain's intake air MERV 8 filter.

When the door is open, the air curtain operates as both an air curtain and an air purifier. When the door closes for longer than 60 seconds, the air curtain automatically transitions to Pure Mode for continuous NPBI ion distribution throughout the space with one of its lowest, quietest speeds. The Pure Mode



BERNER INTERNATIONAL

The PureAir Package works by creating positively- and negatively-charged ions that are distributed by the air curtain and attach to microscopic airborne particulates. The ions break down gases like VOCs and pull hydrogen out of viruses.

setting distributes a minimum ion density of 787 ions per square inch within a minute for reliable pathogen disinfection of the space. Pure Night mode runs the system at a high speed, de-stratifying the air in the room and purifying it prior to occupancy periods.

The PureAir Package is currently available on Berner's Architectural High Performance 10 air curtain, which is designed for separating environments at main entrances in retail, restaurants, hospitality, healthcare, education, and other commercial and industrial facilities. The package includes the NPBI module; a washable one-inch-thick aluminum mesh

MERV 8 particulate filter; a one-speed 1/2-hp electronically commutated motor; and a factory-installed Intelliswitch with Pure Mode operation.

The Intelliswitch is a programmable digital controller that includes a time clock, time delay, built-in

thermostat, 10-speed fan control, and other integrated customizable features. The platform uses a wireless controller to connect the Intelliswitch to the Berner App, which also allows Berner factory technicians to help local contractors troubleshoot service.



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10  Owner/Developer/Manager

11  College/University

12  Corporate Real Estate

13  Government/Military/Utility

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#### OTHERS ALLIED TO THE FIELD

90  Other (please specify) \_\_\_\_\_

### 3. Which category best describes your job title?

(Check one box only.)

10  Architect/Designer/CAD-BIM Specialist

20  Building Owner/Property Developer

30  Construction Professional

40  Engineer/Engineering Manager

50  Facility, Building, Property or Asset Manager

60  Specifications Writer

70  Other Company or Firm Management

90  Other (please specify): \_\_\_\_\_

### 4. Which of the following building types does your firm own, manage, design or build? (Check ALL that apply.)

A  Airport/Transportation

B  College/University

C  Correctional Facilities/Courthouses

D  Cultural Facilities

E  Data Centers/Mission-critical

F  Government/Military

G  Hospitals/Healthcare

H  Hotels/Resorts/Casinos/Restaurants

I  Industrial/Warehouses

J  K-12 Schools

K  Multifamily Housing

L  Office Buildings

M  Religious/Places of Worship

N  Retail Shopping/Malls/Big Box

O  Senior Housing/Assisted Living

P  Sports/Recreation/Stadiums

99  None of the above

### 5a. Do you buy, specify, approve or recommend the following building systems, products, services or equipment for your projects?

Yes  No

### 5b. Which building products, systems, services or equipment do you buy, specify, approve or recommend? (Check ALL that apply.)

01  Structural Systems - Concrete, Steel, Wood, Brick + Masonry

02  Building Envelope Systems - Cladding, Glass, Insulation, Windows and Doors, Moisture Control, Architectural Metals

03  Interior Systems - Ceilings, Flooring, Gypsum, Kitchen + Bath, Paints + Coatings, Hardware, Daylighting, Wall Coverings, Furniture, Furnishings, Shades

04  Building Systems - Building Automation, Lighting, Electrical, HVAC, Plumbing, Security, Life Safety, Fire Protection, Sun Control, Elevators + Escalators, Solar + Wind

05  Computer Systems - Laptops, Tablets, Software, BIM, CAD, Printers

### 6. Current Projects (Check ALL that apply.)

A Is your firm directly involved in any phase of renovation or reconstruction projects?  Yes  No

B Is your firm directly involved in green building or sustainability projects?  Yes  No

C Is your firm using BIM (building information modeling) in projects?  Yes  No

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DINING AREA

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ELEMENTARY

 **AIA** Document B101  
Standard Form of Agreement Between Owner and Architect

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in the year \_\_\_\_\_  
(In words, indicate day, month and year.)

BETWEEN the Architect's client identified as the Owner:  
(Name, legal status, address and other information)