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Motoring Forward:

An Art Deco Building's Adaptive Reuse as Office Space Echoes Detroit's Recovery + More Office Projects

TREND ALERT: waterless & low-flow fixtures

THIS ISSUE IS INTERACTIVE!

See Page 12

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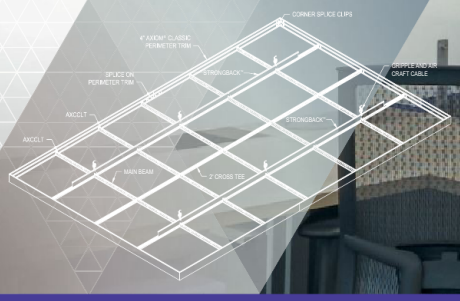

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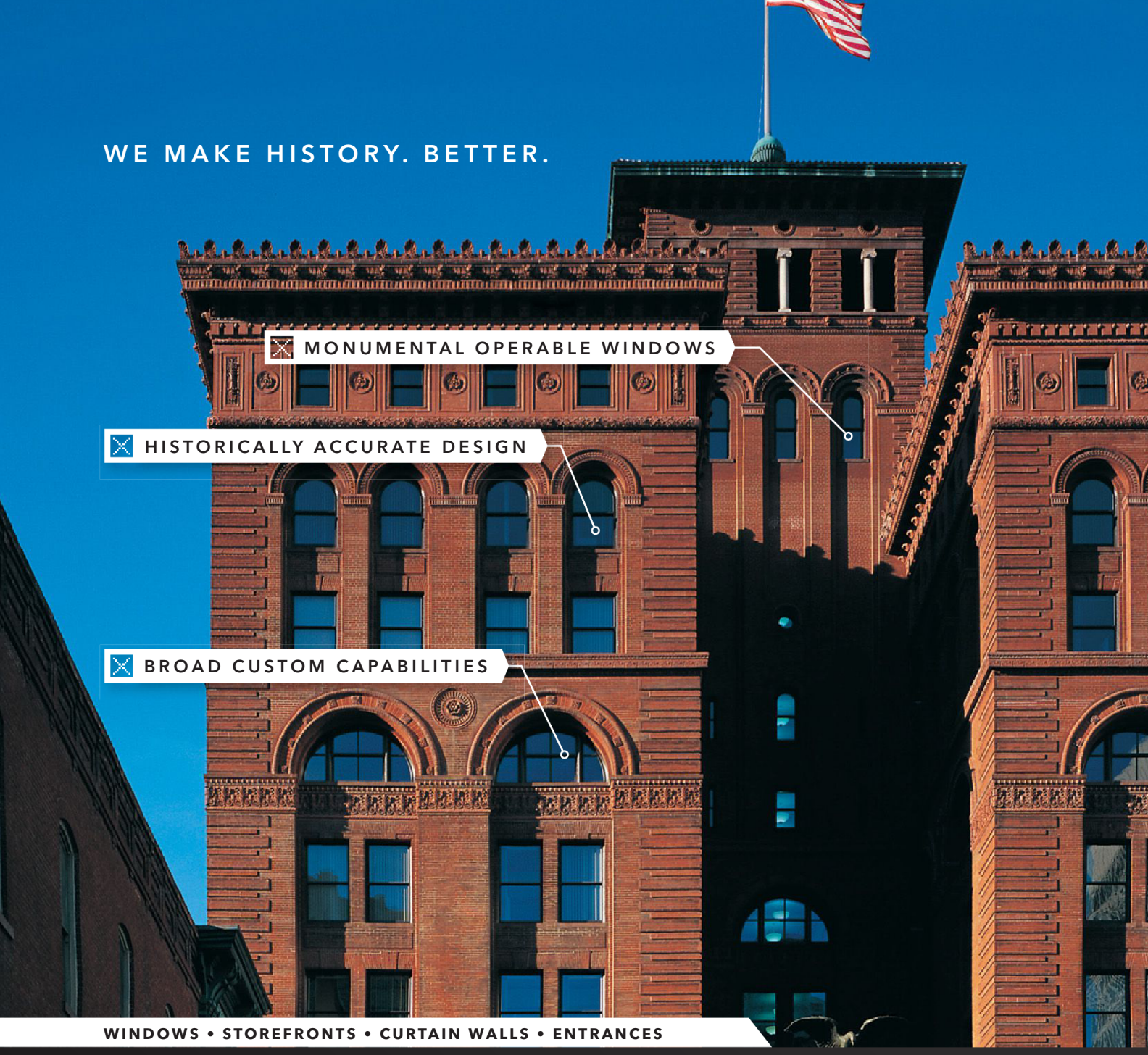

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WOODTRENDS ADDS TO THE ACOUSTICS AND AESTHETICS OF THE NEW YORK STATE POLICE ACADAMY

OVERVIEW

The New York State Police Academy was originally constructed in 1967 with minimal concern around acoustic performance. The primary goal of this renovation was to use the full knowledge of acoustical design, materials and technology to create a space that users could enjoy for many years into the future

This project incorporates 5,696 square feet combining WoodTrends (by Sound Seal) wood veneered acoustical Topline wall and ceiling panels and Sound Quality (by Sound Seal) fabric wrapped acoustical wall panels. The renovation project was designed to create aesthetically pleasing finishes along with exceptional acoustic performance.

PRODUCT

The wall and ceiling materials included reflective and absorptive types of WoodTrends wood veneer panels and Sound Quality fabric wrapped panels. The thickness of the elements varied from 3/4" to 4" however, the vertical plane on the face of the walls remain unchanged due to the concealed blocking being varied in depth. Sound Quality S-2100 High Impact Fabric wrapped fiberglass insulation boards were used to be absorbent where necessary but also S-3000 Reflective Fabric wrapped sheets of solid Medium Density Fiberboard (MDF) were used to act as a reflective surface, allowing a seamless transition between the two variations on the same surface.

Cherry wood veneer Topline panels and planks in addition to solid cherry millwork trims were used throughout the project to create a timeless look. The absorptive Topline panels have a perforation spacing of 14/2 (14 mm wood & 2 mm groove space) with 2 inches of fiberglass insulation mounted behind, thus achieving an NRC rating of .75. The design pattern of a 3/4" black reveal between the wood veneer panels required the panels to be fabricated with a variety of recessed edge profiles to meet several types of wall conditions.

Four extraordinarily large and reflective wood veneer ceiling clouds were designed to hang above the center stage. These clouds were constructed at 8' wide by 16' long. With the clouds having both convex and concave curves, it required complex and custom fabrication

INSTALLATION

The early stages of the project required the space to be "gutted" which revealed that the 22 foot high masonry block sidewalls were not adequately braced to meet current code requirements. The design team was able to incorporate steel columns for the wall bracing to be hidden inside the new wood veneer pilasters on the two sidewalls.

The four large wood veneer ceiling clouds had to be made and delivered in 4 individual sections versus pre-assembly off site. This was necessary to access the inside of the building for final assembly.

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Colors: Silver, Copper Penny, Cardinal Red, Award Blue, Patina Green
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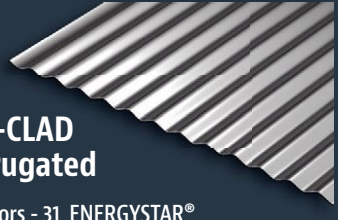
-Art Lubetz, principal, Front Studio Architects



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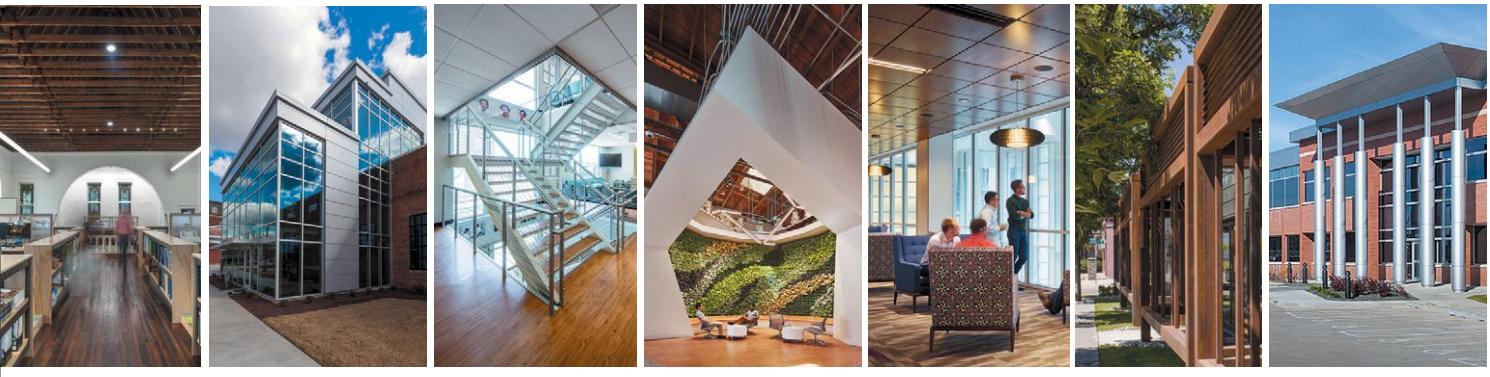
feature projects

URBAN REVIVAL

An Art Deco building's adaptive reuse as office space echoes Detroit's recovery.



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PERUSE OFFICE PROJECTS FROM AROUND THE COUNTRY:

- Kronberg Wall Architects, Atlanta
- Lambert Architecture + Construction Services, Columbia, S.C.
- Healthcare for the Homeless Houston
- La Kretz Innovation Campus, Los Angeles
- Grant Thornton Tower, Chicago
- Glidewell Investments & Insurance Group, Missoula, Mont.
- Landry Design Group, Los Angeles

cover

COVER PHOTO: **JUSTIN MACONOCHIE, MACONOCHIE PHOTOGRAPHY**

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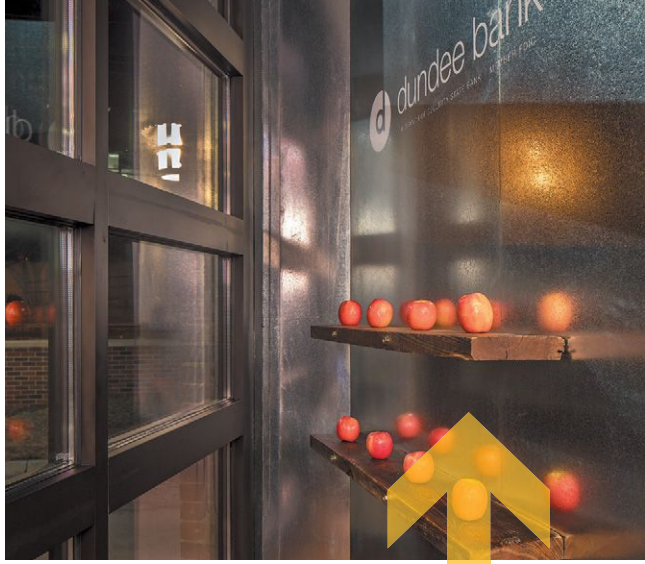

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pointofview

BEAUTY IN THE UTILITARIAN AND ABANDONED

I attended college about three hours from my Iowa hometown. The trip home was a fairly boring, straight stretch on one highway surrounded mostly by cornfields and sprinkled with the occasional small town. Fortunately, I had friends headed in the same direction, so we often carpooled to break the monotony. Every trip, we pointed out two abandoned gas stations along the stretch. One of them amused us because graffiti artists had made the 1-story station's boarded-up windows their favorite canvas. There was something new to read or critique each time we passed. The other gas station intrigued us because of its unique look; it essentially resembled a house and my friends and I thought it was adorable despite its state of disrepair.

As the years passed, somebody else saw the beauty in the latter gas station, which I now know was built in 1931 in the Tudor Revival style. It was beautifully restored and reopened as a café that serves homemade soups, sandwiches and nearly every kind of pie. Three antique gas pumps stand in front of the café, reminiscent of its original use. The building now is listed on the National Register of Historic Places.

For obvious reasons, I couldn't help but think of that gas station when Dundee Bank's Blackstone Branch crossed my desk. In 2014, the bank purchased a 1930 Tudor Revival gas station in the Blackstone District of Omaha, Neb., to open a second branch. The bank's leaders saw the building as a perfect opportunity to demonstrate their intention of helping to rehabilitate the neighborhood, which once was home to Omaha's wealthiest residents. "It's part of Dundee Bank's mission and part of their brand to help preserve neighborhoods and make them stronger," explains Bryan Zimmer, AIA, principal with AO*, the Omaha-based architect on the project. Read the story about the restoration of this unique gas station in "Transformation", page 68.

Unfortunately, nobody saw the beauty in the 1-story graffiti-covered gas station along the stretch of highway from my college to hometown. I recently drove past and noticed only a concrete slab remains on the site. Until I saw what Princeton, N.J.-based Joshua Zinder Architecture + Design (JZA+D) was able to accomplish with a similar-looking 1930s modernist-style former Amoco station, I didn't see the beauty in that graffiti-covered station either. Now I can't help but think of the missed opportunities; you'll see why in "Transformation", page 60.

In the article, Joshua Zinder, AIA, NCARB, LEED AP BD+C, and Mark A. Sullivan, AIA, NCARB, LEED AP, write about the conversion of the gas station to the third location for Nomad Pizza: "One aspect of conversion that our team was most passionate and excited about was the notion of preserving and incorporating the structure's original features. The bold lines, flat roofs and deep overhangs representative of the 1930s modernist style were just the beginning: The station's three service bays invited our imaginations to run wild with possibilities." I love how enthusiastic Zinder and Sullivan are about what others would likely call an eyesore.

These disparate gas stations are such beautiful reminders of the endless opportunities available across our nation—even along highways in the most utilitarian of structures—to celebrate buildings' histories while upgrading them to meet our current and future needs. I'll never look at another boarded-up gas station the same!

CHRISTINA KOCH
Editor in Chief

ATTEND *retrofit*'s INAUGURAL CONFERENCE

retrofit is hosting its first conference Oct. 12, 2017, at Chicago's Navy Pier. See our house ad on page 47; read the news item on page 20; and visit www.retrofitconference.com for more details and to register now for early-bird pricing. Follow us on social media for timely updates. We look forward to seeing you in Chicago!

THIS ISSUE IS INTERACTIVE!

Download the free Layar Augmented Reality app. (The QR code will help you find the app.) Then, hover over pages 41, 59, 65, 69, 85 and 92 with a smartphone or tablet and watch videos that bring the content to life.

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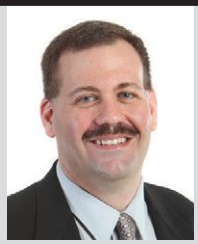
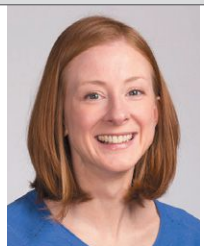


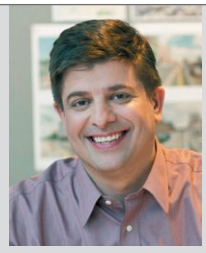
Nathan M. Gillette, AIA, LEED AP O+M, CEM, is director of Natura Architectural Consulting, Grand Rapids, Mich., and a ***retrofit*** editorial advisor. He works with clients to successfully implement and manage energy-efficiency and sustainability projects. As such, Gillette shares insight about "building energy drift", the concept of buildings not performing as intended, which can lead to 10 to 30 percent "drift" in energy costs. Read all about it in "Business", page 22.

In the "Cover Story", page 26, **KJ Fields**, a Portland, Ore.-based ***retrofit*** contributor, writes about Detroit-based DTE Energy's expansion into a 1938 Art Deco building adjacent to its corporate campus. The diversified energy company's renovation of the facility will catalyze future growth in the area.

Paul Bertram, FCSI, CDT, LEED AP BD+C, GGP, is president of PRB Connect, Orlando, Fla. His current work includes advocacy for resilient high-performance buildings, energy efficiency and deep-energy-retrofit multifamily housing projects. In "Component", page 50, he discusses the benefits of panelized cladding for existing buildings.



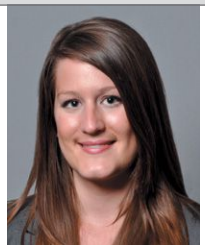
Rebecca Emanuel, IIDA, LEED AP, NCIDQ, is an associate and lead interior designer with Boston-based Wilson Butler Architects. She has designed award-winning interiors for hospitality, entertainment and academic clients, including the historic theater restoration of the Altria Theater, Richmond, Va. Read about the project in "Historic", page 54.



Zinder

Sullivan

Joshua Zinder, AIA, NCARB, LEED AP BD+C, is founding principal of Princeton, N.J.-based Joshua Zinder Architecture + Design (JZA+D), and **Mark A. Sullivan**, AIA, NCARB, LEED AP, is JZA+D's studio director. The duo write in "Transformation", page 60, about Nomad Pizza's newest location, which is uniquely housed in a refurbished 1930s modernist-style Amoco station.



As Chicago-based JLL's Mid-Atlantic marketing director, **Amanda Zank** shares the story of Tradepoint Atlantic's marketing center in "Inspiration", page 90. The 1,400 square feet of office space is housed inside upcycled shipping containers. The center is helping transform the former steel-production site in Baltimore into a multi-modal, multi-commodity terminal.

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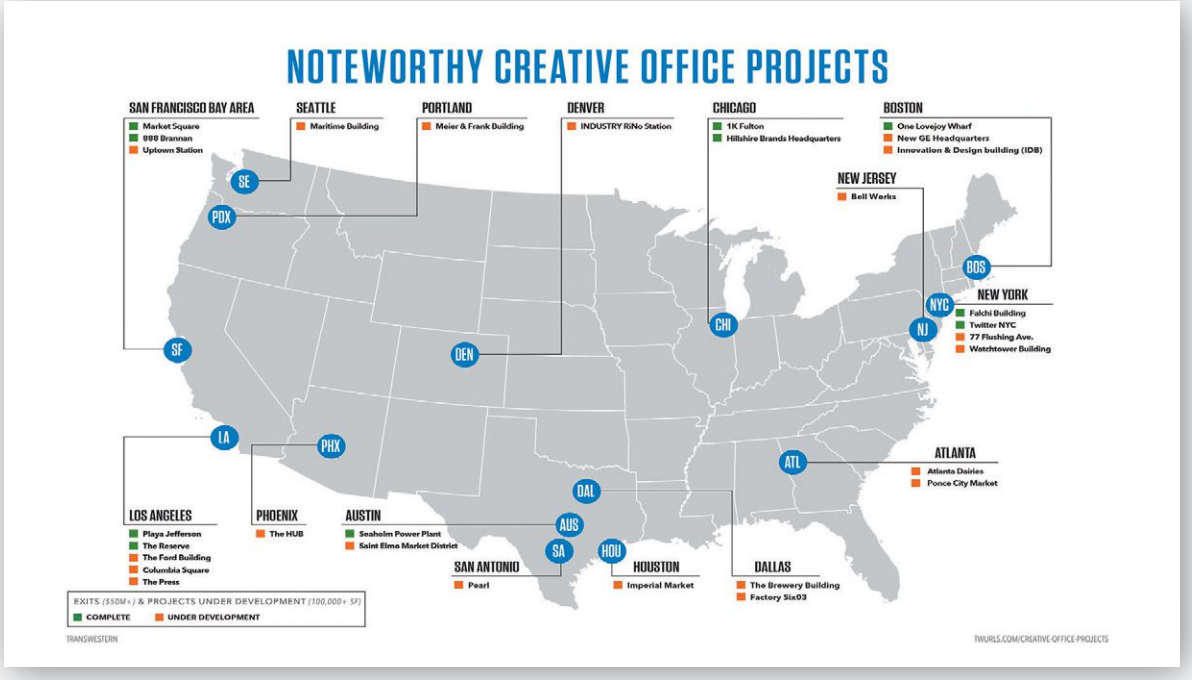
NEWS

Creative Office Projects Generate Returns for Investors

Houston-based Transwestern has released a report, "Creative Office Projects: Adaptive Reuse Generates Staggering Returns for Investors", which examines a number of office projects that have generated substantial returns for investors upon completion. The adaptive reuse developments span Boston; Chicago; Los Angeles; New York; Phoenix; San Francisco; and Austin, Texas. The report also highlights 20 additional large creative office projects currently underway across the country. ¶ Michael Soto, director of research in southern California and co-author of the report, explains that though creative office conversions are not new, what is different this cycle is the sheer volume of creative office exits nationally at core/core-plus pricing that have occurred during the past five years—with the buyers being major institutional investors or well-known owner/users. ¶ "The conversion of a property from industrial or retail use to creative office has become an increasingly popular value-add strategy for investors," Soto says. "Two trends are fueling demand for this type of differentiated office product: One, technology, advertising, media and other companies trying to attract millennials are interested in the characteristic features of creative office space—open floor plans; natural lighting; common spaces; and amenities, such as cafés and rec rooms. And two, tenants are returning to cities, where they can take advantage of live/work/play environments." ¶ Based on favorable exit pricing of some major creative office projects around the country, this type of value-add strategy—on this large scale—is now being considered by developers, via direct investment or joint-venture partnerships with equity partners. Conversely, stabilized creative office properties are on the radar of many national and international institutional buyers that are paying traditional trophy Class A pricing for these types of properties, usually based on the creditworthiness of the tenant, as well as the location of the project. ¶ The report cautions, however, that many of these projects were acquired and developed under very different economic conditions than exist today. ¶ "Rising land, building and construction costs—especially in hot neighborhoods—may add more risk when compared to a few years ago, when we were at a different point in the real-estate cycle," explains Sandy McDonald, director of research in Chicago and co-author of the report. "In addition, adaptive reuse often comes with hidden costs and potentially expensive future property modifications." ¶ Moreover, the popularity of the creative office concept means that there is more inventory in the market today. Landlords that own existing office buildings or are doing ground-up development are realizing they must consider strategic property enhancements and creative office-associated tenant amenities to stay competitive in the marketplace. ¶ To view the complete report, visit twurls.com/creative-office-projects.



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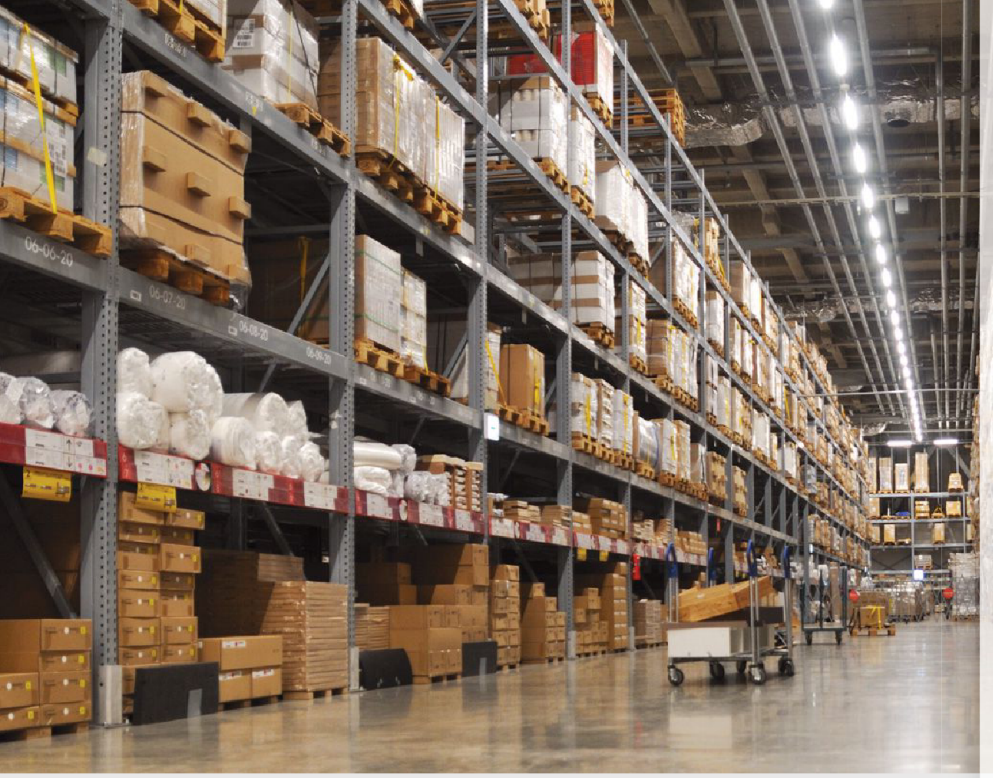

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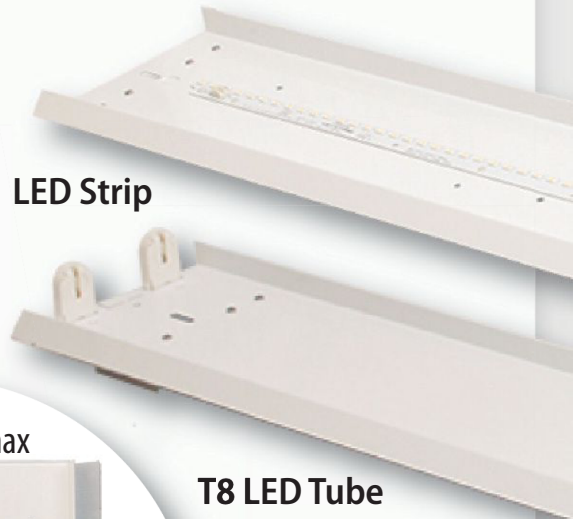

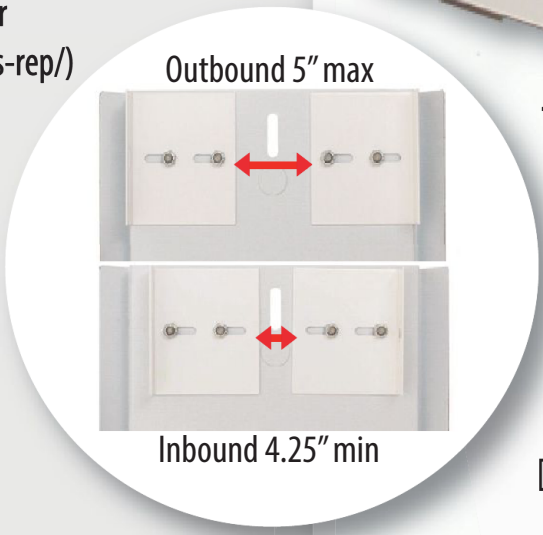

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NEWS

retrofit TO HOST INAUGURAL CONFERENCE

retrofit CONFERENCE'17

retrofit magazine will host its inaugural retrofit conference, Oct. 12 at Chicago's Navy Pier.

The magazine's staff and trusted advisors have solidified three educational themes for the one-day event. CEUs will be offered to attendees. In addition, the opening and lunch keynotes will motivate attendees about the benefits of energy efficiency and adaptive reuse in the built environment.

Each of the three educational sessions will feature a panel of three speakers who will present for 20 minutes on the following topics:

- **SESSION 1** Benchmarking: Speakers will address Chicago's benchmarking regulation and the tools to assist in meeting its requirements.
- **SESSION 2** Financing: PACE, local incentives and other funding mechanisms for retrofitting will be covered.
- **SESSION 3** Building Envelope: The speakers will discuss why commissioning is important and talk about scalable, repeatable enclosure systems.

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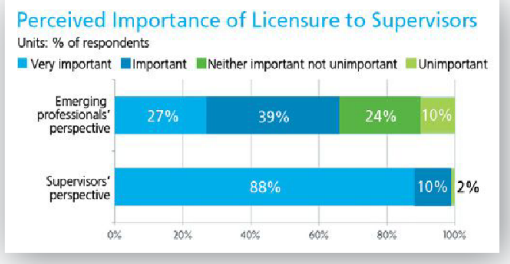
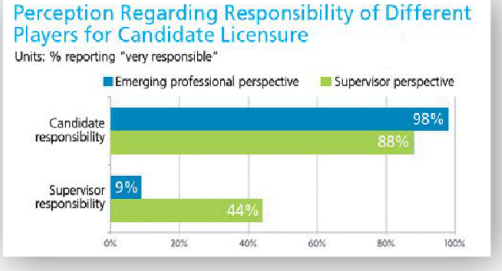
OPINIONS ABOUT ARCHITECTURE LICENSURE DIFFER



Architects who supervise emerging professionals—and those budding practitioners they oversee—have very different opinions about getting a license, according to a new national survey commissioned late last year by NCARB, the National Council of Architectural Registration Boards, and the American Institute of Architects, both of which are headquartered in Washington, D.C. Conducted by Keymar, Md.-based The Rickinson Group, the survey's input from 1,380 respondents has recently been released. ¶ A clear majority of the supervising architects, 88 percent, say it is "very important" for emerging professionals to obtain licensure. However, only 27 percent of those emerging practitioners agree. ¶ In another area of disparity, 44 percent of supervisor architects feel they're "very responsible" for preparing their employees for licensure. But only 9 percent of licensure candidates hold supervisors to that same standard. Even more telling, one-quarter of survey respondents say their supervisors are "not very" or "not at all responsible" for preparing them for licensure. ¶ Among the survey's most valuable findings is evidence of the sharply diverging perceptions about how well supervisors are helping licensure candidates. For example, almost all supervisors (97 percent) believe they help their employees by serving as "role models" who demonstrate best practices. Of the emerging professionals, only 63 percent agree with this statement. ¶ Discover more findings from the survey at blog.ncarb.org/blog/trends-licensure-support-architecture-firms.



DRIFTING AWAY

Maintain Buildings Properly to Avoid 10 to 30 Percent 'Drift' in Energy Costs

WRITTEN BY | NATHAN M. GILLETTE, AIA, LEED AP O+M, CEM

In a perfect world, buildings would perform as well as they did the day they were built. Unfortunately, it doesn't work that way. Mechanical parts wear out, settings change, qualified maintenance staff turns over, the list goes on. In time, we experience a phenomenon in our buildings called building energy drift. Simply stated, without tuning up our buildings now and then, we run the risk of discovering they are not performing as intended. The consequence is higher operational costs, higher utility bills and the need for capital replacements.

One thing is certain in the green-building world, a highly energy-efficient building operated inefficiently will not perform to peak capability. The first major study done on the anticipated energy performance of buildings certified under LEED for New Construction was undertaken in 2008 by the New Buildings Institute, Portland, Ore. The study, which can be found at bit.ly/2ohASG8, highlighted that many of the buildings were performing as intended, but 25 percent of the buildings were performing significantly worse than anticipated.

Not all buildings age the same way or have the same level of maintenance. Proactive preventative maintenance and upgrades often give way to reactive replacement. The reality is that there can be as much as a 10 to 30 percent drift of energy costs in a building over time if not maintained properly.

A Tuneup for Buildings

Commissioning is the process that we

(continues on page 24)

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TOO OFTEN TODAY WE ARE REACTIVE RATHER THAN PROACTIVE WHEN IT COMES TO MAINTAINING OUR BUILDINGS.

use to check the performance of our buildings. It is a third-party verification procedure to ensure that building systems are operating as the design team intended. The building owner typically hires a commissioning agent to act on his or her behalf to investigate the building and report on findings. Commissioning agents are generally mechanical engineers or building-energy experts that have a credential from a reputable commissioning trade group, such as the Building Commissioning Association, Beaverton, Ore.

The commissioning process involves detailed examination of the mechanical, electrical and plumbing systems of a building to determine if they are functioning as designed. Issues that can be discovered range from fans connected so they run in reverse rotation, HVAC controls out of sequence, HVAC systems that call simultaneously for heating and cooling, and pumps running in reverse rotation. Mechanical equipment can wear out over time or have components improperly replaced.

The human element is also a cause of decreased energy performance in our buildings. Maintenance and operations staff may not receive proper training on the equipment or knowledge is lost when staff turnover occurs. Implementing a staff training program and regular refresher courses may help prevent errors.

In every instance of commissioning in which I have been involved, the energy savings discovered pays back the cost of the commissioning agent's fees in less than one year. Mistakes get made in the construction process every day, most not intentionally. But if these mistakes are not discovered and corrected, you may be paying extra in utility costs for years to come.

Building-management Systems

Everyone knows the adage, "you can't manage what you don't measure". In the past, sophisticated building-management systems (BMS) were needed to monitor HVAC and electrical equipment and give real-time feedback and trouble indications. The problem is these types of building-management systems are not common in small buildings. Thankfully, it's becoming easier to measure performance of building systems through advanced technology.

The cost to install a BMS was not practical for a small building with more simplistic mechanical and electrical equipment. Retrofitting was not generally an option because of the need to run complex electrical and data wiring in hard-to-reach places. However, several manufacturers are now making BMS systems specifically geared toward retrofitting smaller buildings using equipment sensors with wireless technology. The equipment sensors send a wireless signal to a data-collection box connected to the internet, and real-time equipment performance feedback and trouble reports are generated. Some systems will send trouble alerts directly to a cell phone when a piece of equipment operates outside of the set points. Getting real-time feedback about how building systems are performing has never been easier.

Preventative Maintenance

Another way to keep tabs on building performance is to implement a thorough preventative maintenance plan. Too often today we are reactive rather than proactive when it comes to maintaining our buildings. We wait until something is broken before replacements happen or only make repairs that may prevent system failure and occupant discomfort.

Implementing a preventative maintenance program requires a thorough understanding of the existing condition and expected useful life of the building equipment. A preventative maintenance plan will help a building owner to properly budget for the repairs and replacements over time rather than be surprised when a piece of equipment breaks down unexpectedly.

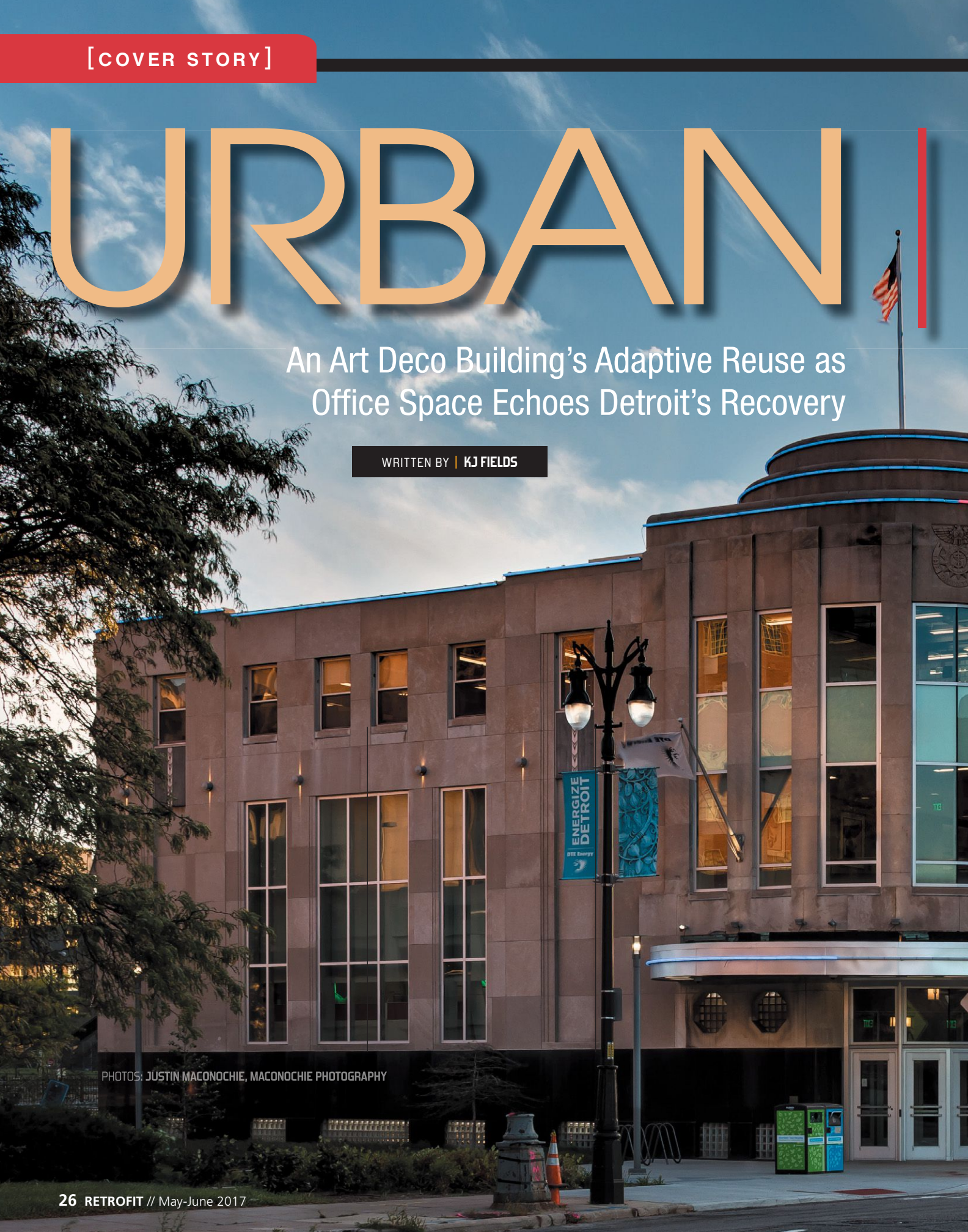
Buildings can be expensive to operate. When we're not paying attention to the efficiency of our buildings, utility and operational costs have a tendency to creep up. The key to keeping away the dreaded building energy drift is a proactive commissioning and preventative maintenance approach that will address immediate issues and plan for future repairs and replacements. Hiring a qualified commissioning agent to examine your building is one of the smartest things you can do to help keep energy and operational costs in check.

IN EVERY INSTANCE OF COMMISSIONING IN WHICH I HAVE BEEN INVOLVED, THE ENERGY SAVINGS DISCOVERED PAYS BACK THE COST OF THE COMMISSIONING AGENT'S FEES IN LESS THAN ONE YEAR.

URBAN

An Art Deco Building's Adaptive Reuse as Office Space Echoes Detroit's Recovery

WRITTEN BY | KJ FIELDS



PHOTOS: JUSTIN MACONOCHIE, MACONOCHIE PHOTOGRAPHY

REVIVAL

The core of Detroit is abuzz with new development energy. In 2013, the city gained national infamy when its leaders declared a financial emergency and subsequently filed for bankruptcy. Despite the turmoil, DTE Energy, a Detroit-based diversified energy company with more than 10,000 employees, expanded its corporate campus west of the downtown business district.

Michael Decoster, associate at Detroit's Hamilton Anderson Associates (HAA) says his firm helped DTE examine its options. "They had plans to renovate their 20-story office tower, which would displace occupants floor by floor during the remodel. A 1938 Art Deco building adjacent to campus had been vacant for six years and we evaluated the feasibility of DTE acquiring the property and best use of the space," Decoster recalls.

VISUAL IDENTITY

DTE purchased the adjacent building, which had served as the Salvation Army's home for more than 70 years. The iconic 26,000-square-foot structure has four levels (including a lower level) with a 3-story rotunda that perches over the sidewalk at the street corner.

The building had never been listed as a historic

Retrofit Team

ARCHITECTURE, LANDSCAPE ARCHITECTURE // Hamilton Anderson Associates, Detroit, hamilton-anderson.com

- Michael Decoster, architect
- Carrie DaVia, Patrick Taylor and Chris Riggert, landscape architects

MECHANICAL/ELECTRICAL ENGINEERING // Peter Basso Associates, Troy, Mich., www.peterbassoassociates.com

STRUCTURAL ENGINEERING // SDI Structures, Ann Arbor, Mich., sdistructures.com

CONSTRUCTION MANAGER // Brinker Group MBE, Detroit, brinkergroup.com

MILLWORK // Wally Kosorski & Co. Inc., Clinton Township, Mich., (586) 791-1100

landmark, which offered HAA flexibility in the redesign. The exterior's unique Art Deco character was intact, however, so HAA restored the building's front and side façades to their original appearance and added marquee lighting to highlight the structure at night.

The back façade had no glazing and faced a parking lot and street, so the team added a photovoltaic array to showcase the energy company's mission and commitment to sustainability. At the front corner, the renovation replaced the rotunda's tall glass block with clear, low-e coated, high-efficiency glass to create a stronger visual connection to the building's surroundings and bring more natural light into the interior.

INTERIOR TRANSFORMATION

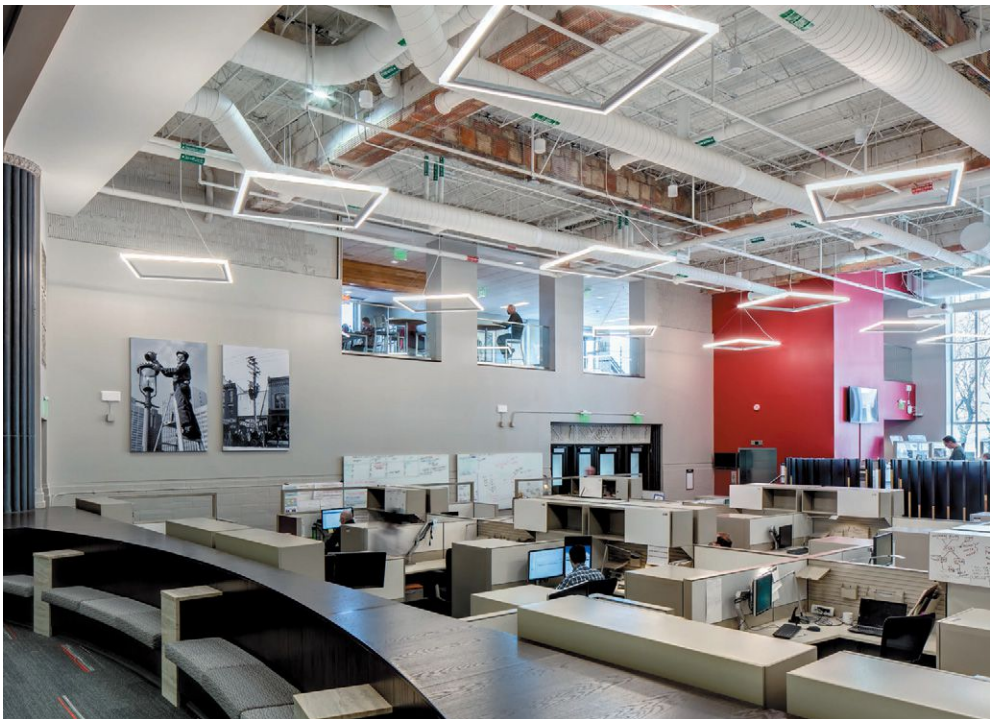
Numerous interior remodels had taken place over the decades. A large auditorium space dominated the first floor, and the third floor had been made into a single-resident occupancy hotel. To serve 150 employees from DTE's information technology department, the lower level, first floor and third floor were turned into office space while the second floor/mezzanine became the break room and conference/collaborative spaces.

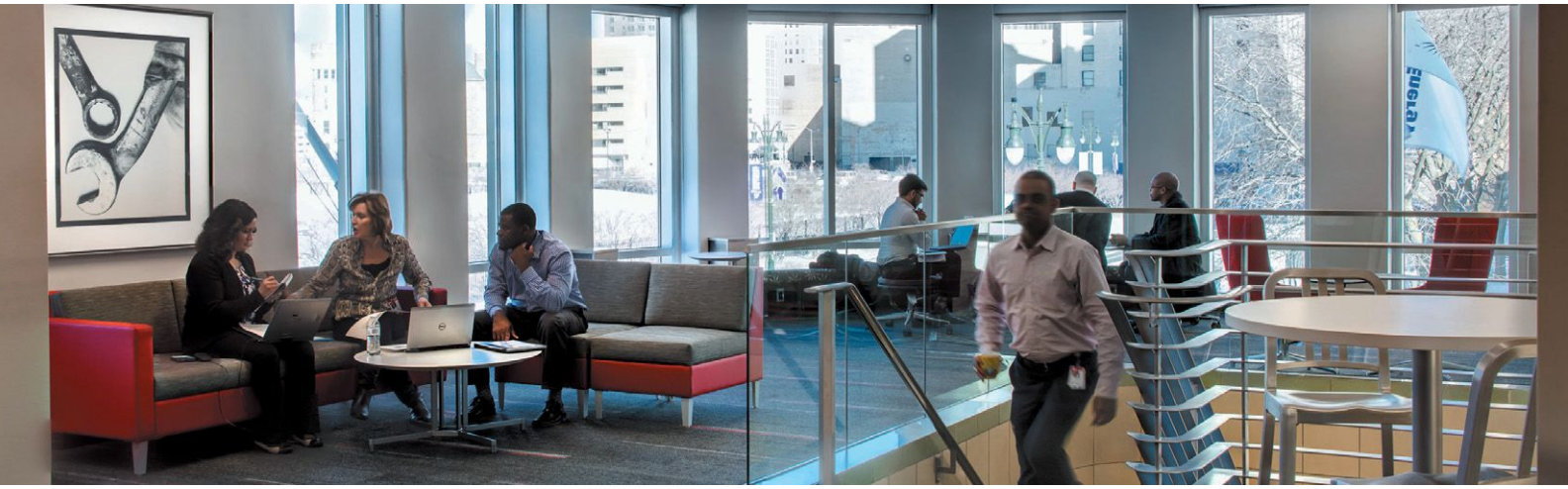
Because the new office space would cover four levels, HAA had to incorporate an elevator shaft for accessibility. The team examined varying places to insert an elevator and even considered putting it outside. The least expensive and least impactful option was to use the mass of the rotunda and build an elevator shaft behind it.

"We found an area in the space plan where we could insert the elevator enclosure," Decoster describes. "There was no structural issue with the elevator's load because we cut a hole in the first and third floor to access the lower level and second-level mezzanine, then built a block wall around to create the elevator shaft."

Street access leads to a staircase that descends to the lower level or rises to the lobby. The lobby was the one interior area where many historic materials remained in top condition and HAA kept it virtually intact. The team restored the terrazzo flooring, wall tiles and decorative ceiling.


WOMEN
MEN





> You don't see a lot of buildings constructed with this level of quality and detail.—*Michael Decoster, associate, Hamilton Anderson Associates*

To create a partition in the office space, wooden doors from the building's former life as a hotel were cut into sections and designed into a wave-like pattern that mirrors the building form outside.

An Art Deco stone carving of the Last Supper above a set of interior lobby doors was removed and returned to the Salvation Army. HAA replaced the space with a clear glass transom.

"You don't see a lot of buildings constructed with this level of quality and detail," Decoster asserts. "We tried to save and reuse viable historic features and materials whenever we could, but when it wasn't possible we juxtaposed the historic with contemporary elements."

INVENTIVE FLOOR PLAN

The first level's auditorium created two challenges. The impressive space had 18-foot ceilings, which were not conducive to an office environment. HAA needed to add workplace lighting that served occupant needs. The designers suspended contemporary open-square light fixtures that hang 12 feet above the floor. "We wanted to bring down the scale of the space for the occupants so they wouldn't feel like they were in a cavern," Decoster explains. "The fixtures provide the right illumination for the office workers and intimate a ceiling plane."

The auditorium had a sloping floor over two-thirds of the space that could not be reused for an open office space plan, but HAA's analysis found that removing the entire floor was too costly. The team devised a way to retain the same amount of floor space needed for DTE's office program by dividing the space into two sections. They installed a flat, raised floor over the sloped area and built a raised platform on the back third.

There is a 30-inch drop between the two office sections, which are separated by a few stairs. The divided space is visible from the mezzanine so HAA borrowed third-floor materials to create a protective partition. "We cut wooden doors from the former single-residency occupant hotel into sections and designed it into a wave-like pattern that mirrors the building form outside.

HAA pulled from DTE's extensive archive of historic Detroit photos and placed the images on walls throughout the interior.

Materials

ELEVATOR // KONE Corp., www.kone.com

WINDOWS // YKK AP, www.ykkap.com

GLASS // PPG, www.ppgideascapes.com

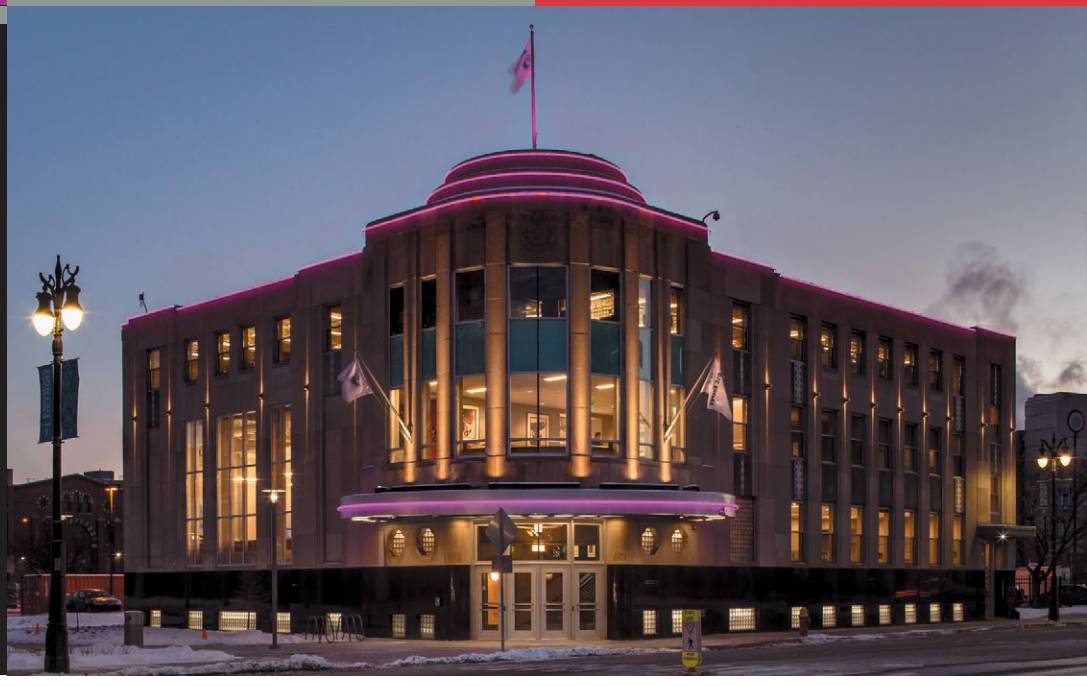
GYPSUM BOARD AND ACOUSTIC CEILING TILE // USG, www.usg.com

OPEN-SQUARE LIGHT FIXTURES (FIRST FLOOR) // Zenith Lighting, zenithlighting.com

OFFICE FURNITURE // Allsteel, www.allsteeloffice.com

CARPET // Interface, www.interface.com

HVAC // Daikin, www.northamerica-daikin.com



It offers visual interest to that partition wall, giving the space some character and whimsy," Decoster says.

The stage became three glass conference rooms and a curved seating area facing them. Light-colored marble from the basement's original bathroom partitions was reused as partitions in between the upholstered bench seats. The conference rooms interior-facing glass walls are shaded with an opaque square treatment for privacy while allowing natural light to filter in. The square pattern recalls the original glass block retained on the lower-level offices and select windows.

"As we redesigned the interior spaces to maximize the efficiency and flexibility of a new office space, the key was to open up the spaces, bring enough light inside and highlight spots of color," Decoster notes. "To enhance a sense of community between levels, we cut openings in the mezzanine that look onto the first floor and near the elevator to look down into the lower level."

Red accents on walls, conference glass, furnishings and carpet areas lend a contemporary atmosphere to the space.

SYSTEMS' PLACEMENT

New mechanical and technology systems that support an active office environment were housed behind the stage to avoid installing equipment on the roof. A cooling tower was placed outside the building. Ductwork and distribution systems are hidden behind vertical wood slats.

The third floor is U-shaped space that wraps around an exterior light court. It had very low ceiling heights leaving no room for ductwork. The designers brought fresh air from the second-floor ceiling up to the third floor through vents placed near the work zones, similar to a displacement ventilation system.

Hotel rooms were removed on the third floor to create open office areas. "With the low 8-foot ceiling heights and long narrow corridors, we exposed the roof deck to create a 10-foot-high volume," Decoster explains. "It's an illusion that gives the occupants a greater sense of space."

HAA pulled from DTE's extensive archive of historic Detroit photos and placed the images on walls throughout the interior. "We wanted to respect the building's historic character and its place in the city while bridging that with a modern aesthetic," Decoster says. "In addition to providing needed offices for DTE, the project serves to catalyze future growth in the area."

Detroit Overcomes Financial Turmoil

After declaring a financial emergency and subsequently filing for bankruptcy in 2013, Detroit has been steadily redeveloping and reinventing itself. In 2014, owners of the Detroit Red Wings hockey team announced plans to build the currently coined Little Caesar's Arena and a 50-block sports and entertainment district to connect downtown and midtown. Slated to open in the fall, the arena also will be the new home of the Detroit Pistons NBA basketball team. Corporate development in downtown has risen in recent years, as well, with businesses like Quicken Loans relocating its headquarters to the city's center.

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KRONBERG WALL ARCHITECTS | Atlanta

Retrofit Team

ARCHITECT: Kronberg Wall Architects, Atlanta, kronbergwall.com

GENERAL CONTRACTOR AND CARPENTRY: Gibson Construction Co., Alpharetta, Ga., www.gibsonconstructioncompany.com

MEP: Proficient Engineering, Norcross, Ga., proficientengineering.com

STAINED-GLASS AND STORM WINDOWS: JD's Glassworks, Atlanta, www.jdglass.com

STRUCTURAL ENGINEERING: Stability Engineering, Decatur, Ga., stabilityengineering.com

Materials

One of the most significant elements Kronberg Wall Architects' wished to preserve in the former church was the stained-glass windows. The plexiglass that had been installed to protect them had yellowed and considerably obscured their color and beauty. The windows were originally troffer windows but had been nailed shut and their hardware painted over many times. To preserve their utility, the windows were restored and reframed by a professional. The casings were redesigned to allow the lower windows to slide up, providing daylight in the building. The U.S. National Park Service, Washington, D.C., stipulated the profile of the runner could not be visible from the street, so considerable effort was made to achieve this. Finally, new storm glass was fitted to the windows to protect the stained glass and provide extra insulation for the building.

To accentuate the stained-glass windows, the design team chose a predominantly neutral palette of colors and materials. The only other brilliant color in the space is found in the carpet with the colors hand selected to mirror the light streaming through the stained glass. These pops of color in the carpet are used to create paths of interest throughout the space, as well as playful patterns one discovers as one explores the space. Within each work pod, when the light shines through the stained-glass window a certain way, the colors of the glass fall in perfect synchronicity with the color patterning of the carpet.

CARPET MANUFACTURER: Shaw Contract, www.shawcontract.com

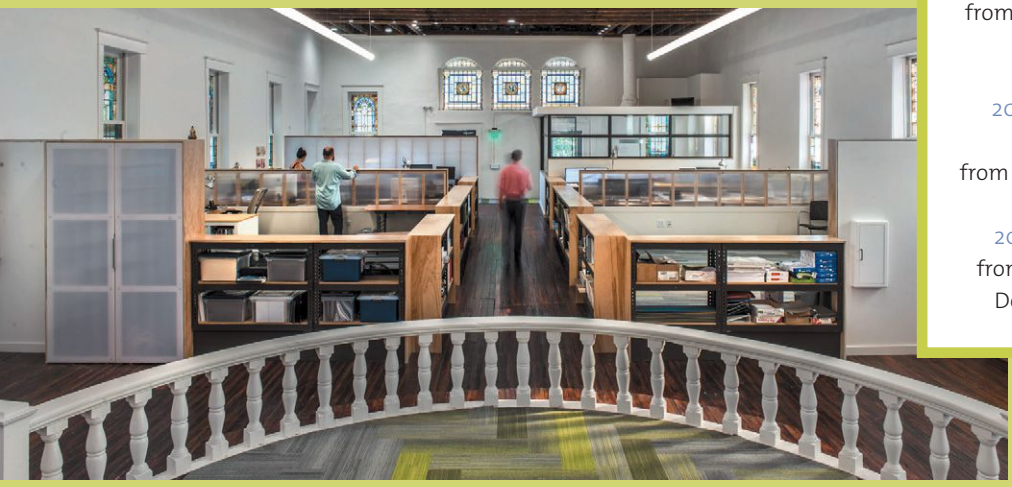
The Retrofit

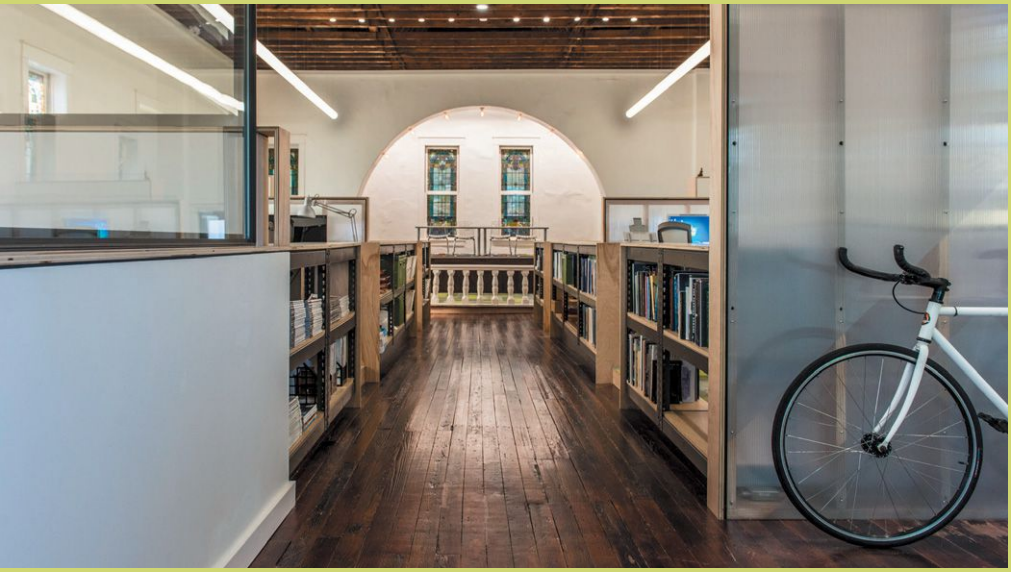
Formerly the site of Bearden Temple AME Church, which was built in 1922, Kronberg Wall Architects' new office space is a contributing building to the Historic District of Reynoldstown.

When the building was acquired it was on the verge of demolition because of the perceived difficulties associated with the adaptive reuse of a building with a sloping floor in the sanctuary. To solve this problem, the design team created workspaces that float on top of the historic floor and are constructed to maintain a level top while adjusting to the sloping floor below. The team left the chancel area intact; it is used as a focal point for the design and an area suited to speaking events for the firm. In fact, it was a critical design goal to provide a space that could be shared by the community for lectures, community gatherings and even concerts by local musicians.

Kronberg Wall Architects' sought to be good stewards of the historic landmark and continue to maintain a building that portrays the rich architectural and cultural legacy organic to the Reynoldstown community. The firm also endeavored to meet LEED criteria. Not only did the project allow Kronberg Wall Architects to exhibit the firm's design, planning and preservation principles to its clients, it also allowed the team to save a building that was an important piece of its community's history.

PHOTOS: FREDRIK BRAUER





[AWARDS]

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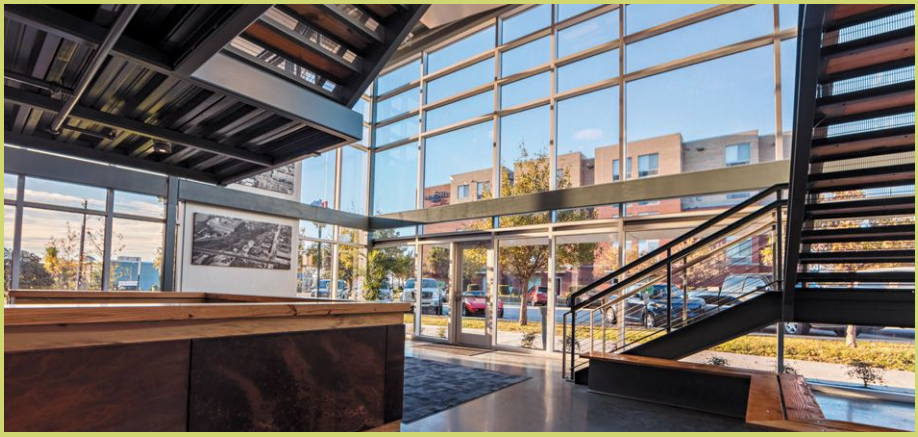
PHOTO: JOSH BOLTINHOUSE



» Retrofit Team

ARCHITECT: Lambert Architecture + Construction Services, Columbia, www.lambertarchcs.com

GLAZIER: Independent Glazier Connection Member Ace Glass Inc., Vineland, N.J., www.aceglass.com

GENERAL CONTRACTOR: McCrory Construction, Columbia, www.mccroryconstruction.com

» Materials

Architect Josh Boltinhouse, AIA, LEED AP, specified SunGuard SNX 51/23 glass for an iconic stair tower visible from the street, all existing window locations, and new expanses of glass that overlook the city and nearby Congaree River.

The glass creates a contemporary feel that sets off structural elements of the legacy buildings, including red brick walls and white stucco surfaces. Natural light permeates deep within the space while solar heat gain is managed to keep indoor temperatures comfortable. Reduced HVAC loads enabled the team to select a more discreet mechanical system to enhance the building's aesthetic.

SunGuard SNX 51/23 glass brings a visible light transmission of 51 percent and a low solar heat-gain coefficient of 0.23.

SUNGUARD MANUFACTURER: Guardian Glass, www.guardianglass.com

INDEPENDENT GUARDIAN SELECT FABRICATOR: Aldora Aluminum and Glass Products, www.aldora-architectural.com

ALUMINUM SUPPLIER: Oldcastle BuildingEnvelope, www.oldcastle.com

» The Retrofit

When the firm outgrew its former space across the river, Lambert Architecture + Construction Services set out to renovate

(continues on page 38)

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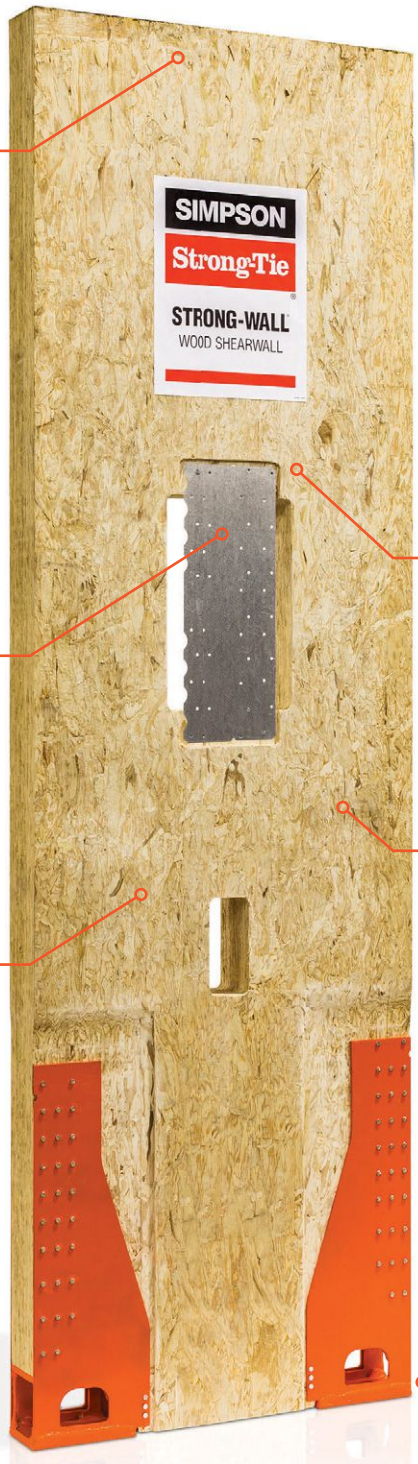

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a 1930s-era cigar and candy store and adjacent warehouse into office space. The firm sought to create a modern office space–bright, open, comfortable and energy-efficient while respecting the character of the existing architecture.

"We wanted glass that would showcase the building's historic features while creating a modern office space that is comfortable and full of natural light," Boltinhouse explains. "Guardian SunGuard SNX 51/23 glass delivered with exceptional energy performance and clarity–and without added tint or reflectivity that might distract from our design."

"I was considering a known glass product with high efficiency and light transmission," he remembers. "Then my Guardian representative recommended SNX 51/23, a new SunGuard glass that matched those performance points with the added benefit of very low reflectance. Rather than creating a monolithic look, we wanted to see right into the space and show off its historical character."

Boltinhouse says of the results: "The people who work here love this space. It's beautiful and comfortable in all seasons, and it represents the work of Lambert Architecture + Construction Services really well."

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PHOTOS: SLYWORKS PHOTOGRAPHY

HEALTHCARE FOR THE HOMELESS HOUSTON

» Retrofit Team

ARCHITECT AND ENGINEER: Page, Houston, pagethink.com

» Materials

Not only did the multimillion-dollar renovation allow Healthcare for the Homeless Houston (HHH) to quadruple the size of its headquarters, it also enabled the health-care nonprofit to increase the number of people it serves. However, with more space comes more foot traffic. The design team sought products from five different flooring companies with the goal of finding a wood or wood-look flooring capable of withstanding a lot of foot traffic and use, as well as exuding a comforting residential aesthetic.

After receiving samples from all five vendors, the design team at Page selected Parterre as its flooring partner for the renovation project, purchasing more than 2,200 square feet of premium vinyl plank product. Designers chose Parterre's flooring not only for its stylish appearance, but also its proven track record of withstanding wear and tear from heavy foot traffic. Because it would be the first thing a client would see upon visiting the clinic, designers decided to use Parterre's luxury vinyl plank product in all reception and waiting areas, including the stairways on the second and third floors of the building.

Natural Oak from Parterre's InGrained Resilient Plank collection was selected because of its warm and natural wood look. Ami Robinson, interior designer at Page, said the design team was pleased with the flooring solution, as well as the accessibility and depth of knowledge of Parterre's Sales Representative Kip Altstaetter. "We looked at options provided by a few other manufacturers, but we selected the Parterre product because of how it looked and felt within the space," Robinson notes.

FLOORING MANUFACTURER: Parterre Flooring Systems, parterreflooring.com

» The Retrofit

HHH is a non-profit organization that provides long-term care for a growing population of vulnerable and marginalized homeless men, women and children. Founded in 1999, HHH began as a small two-room clinic situated in the corner of a crowded day shelter but, over the years, it was forced to adapt in size and scope in response to immense growth in the population it serves. In 2012, HHH hired Page to help design its new headquarters in an existing 3-story building, which was once the home of the Seafarer's Union. The renovated space offers 20,375 square feet of clinic and office support areas.

The renovation project involved substantial changes to the exterior of the existing building and all three interior floors. The challenge from the outset was to completely transform the outdated downtown building into a welcoming and comfortable place where clients felt they were being taken care of and not simply hustled through the facility. Leaders of the non-profit expressed one of the biggest goals of the design project was to ensure the new space didn't feel like a bus station.

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› Retrofit Team

ARCHITECT: John Friedman Alice Kimm Architects (JFAK), Los Angeles, www.jfak.net

STRUCTURAL ENGINEER: Mackintosh & Mackintosh, Los Angeles, mackintosh-mackintosh.com

MEP AND SUSTAINABILITY ENGINEER: Buro Happold Consulting Engineers, Los Angeles, www.burohappold.com

LANDSCAPE ARCHITECT: AHBE Landscape Architects, Los Angeles, www.ahbe.com

CIVIL ENGINEER: VCA Engineers Inc., Alhambra, Calif., vcaeng.com

TECHNOLOGY/AV/ACOUSTICS: Waveguide, Los Angeles, www.waveguide.com

SPECIFICATIONS: Yagade Consulting Inc., Santa Clarita, Calif., (661) 297-7911

CODE: AON, Los Angeles, www.aon.com

COST ESTIMATION: Del Amo Construction, Torrance, Calif., www.delamoconstruction.com

GENERAL CONTRACTOR: USS Cal Builders LLC, Stanton, Calif., usscalbuilders.com

» Materials

The project features innovative green technologies on display, including 37 Solatube Daylighting Systems.

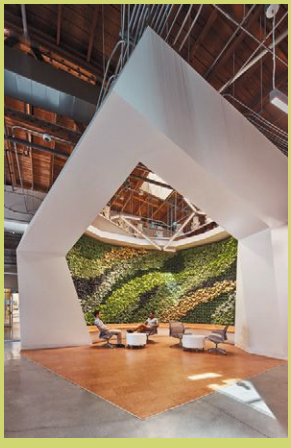
DAYLIGHTING SYSTEMS MANUFACTURER: Solatube, solatube.com

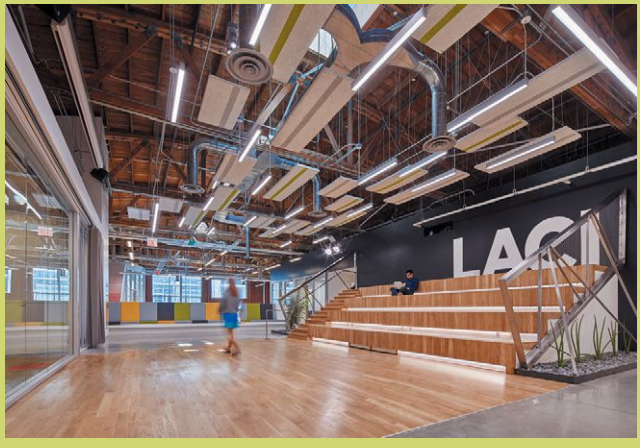
» The Retrofit

La Kretz Innovation Campus (LKIC) is an interdisciplinary hub where entrepreneurs, engineers and policymakers innovate to support Los Angeles' green economy. The campus comprises 3.2 acres, including a transformed 61,000-square-foot warehouse in the vibrant Arts District. Los Angeles Department of Water and Power facilities, offices, conference rooms, labs, prototyping workshops and an event space accommodating up to 140 seated people exist in hand with photovoltaic-shaded parking, graywater filtration and a microgrid system.

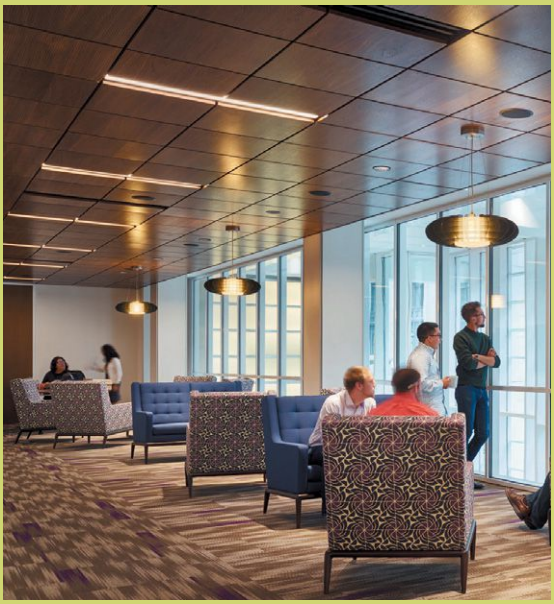
The adaptive reuse of the building encompasses a full seismic retrofit, and the building's exterior keeps its character. In contrast, the interior is designed to be modern, clean, flexible and adaptable, utilizing an economical but dynamic materials palette. The design features a "village" concept with a "loop" that connects the existing eight warehouse bays and a variety of semi-open and closed workspaces. The existing structure's simplicity backdrops unexpected moments created by faceted walls, jewel-like skylight "funnels" bringing natural light to landlocked spaces and a "living wall" in the lobby.

In its flexibility, accommodation of different types of programs and transformation of existing building stock, LKIC sets a high standard for urban revitalization. The building conforms to the new CAL-Green environmental standards, and LEED Platinum status is anticipated.





PHOTOS: BENNY CHAN, FOTOWORKS



PHOTOS: TECHNICAL GLASS PRODUCTS

GRANT THORNTON TOWER | Chicago

» Retrofit Team

ARCHITECT: Stantec Architecture, Chicago, www.stantec.com
GLAZIER: Glass Concepts LLC, Chicago, glassconceptschicago.com
GENERAL CONTRACTOR: Leopardo Cos. Inc., Chicago, leopardo.com

» Materials

Introducing daylight into the office tower was "problematic due to the codes regarding separation of the lobby from the tenant space," explains Ken Novak, NCIDQ, associate, Stantec Architecture.

The architects had given up on the idea of daylight flooding the space until they found curtainwall frames and fire-resistive-rated glass. "The system provided the fire rating needed with an all-glass look," says Sean McEneaney, president, Glass Concepts LLC.

The project team replaced an 84-foot-long drywall partition with approximately 821 square feet of two-hour fire-resistive Fireframes Curtainwall Series frames and Pilkington Pyrostop fire-resistive-rated glass from Technical Glass Products (TGP). By changing an opaque wall into a clear one, the result is a welcoming, light-filled space that is "very popular and one of the showstoppers in the building," Novak notes. "The TGP system allows design ideas, such as ours, to become reality."

In addition to the fire-rated system's look and performance, Novak explained that working with TGP helped streamline the project in several ways. First, because the system has been used in other Chicago projects, "that goes a long way to getting City Hall to sign off." Second, one of the challenges with converting the drywall partition to glazing was the need to accomplish the work 20 feet above an active office building lobby. "By working with Leopardo, Glass Concepts and TGP, we came up with an innovative solution to install the system backward, so all the work could be done on the second floor instead of working in lifts for months and months on overtime at great expense."

CURTAINWALL AND FIRE-RATED GLASS MANUFACTURER: Technical Glass Products (TGP), www.fireglass.com

» The Retrofit

When Grant Thornton LLP, the world's sixth-largest accounting firm, moved its U.S. headquarters to the former Chicago Title & Trust Center in 2015, "its lease was saddled with a very dark, almost unusable area on their most important floor," Novak recalls.

The second floor of the now-named Grant Thornton Tower in Chicago's Loop would be the "town square" for the firm. The space, which Grant Thornton representatives hoped to use as a gathering place for employees and clients, had no access to daylight. It was essentially a long, dark corridor. Stantec's design vision opened up a gypsum-covered, fire-resistive wall to allow copious light into the space, as well as provide visibility to the lobby below and out to the Thompson Center and City Hall across the street.

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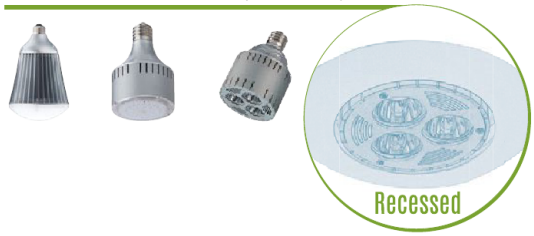

POST TOP/BOLLARD (36 models)

WALL PACK/SHOE BOX (25 models)

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GLIDEWELL INVESTMENTS & INSURANCE GROUP | Missoula, Mont.

Retrofit Team

ARCHITECT: Eric Hefty & Associates, Missoula, www.erichefty.com

PANEL INSTALLER: Sapphire Construction, Florence, Mont., (406) 880-2749

Materials

Approximately 2,000 square feet of RHEINZINK Flat Lock Tiles were installed on the building. The 0.08-millimeter panels were finished in prePATINA graphite-grey.

"I like the RHEINZINK material but had never used it before," says Eric Hefty, architect. "The use of the zinc was an easy sell with the owner. I've worked with them before and we have an excellent relationship. The design drawings didn't adequately show the beauty of the materials and everyone was even more excited when they saw the new building."

To give the building greater dimension, Hefty designed unfinished steel frames on the exterior as an accent component with a steel wainscoating around the base. "The steel and RHEINZINK fit together really well," Hefty says. "It's a great combination of materials."

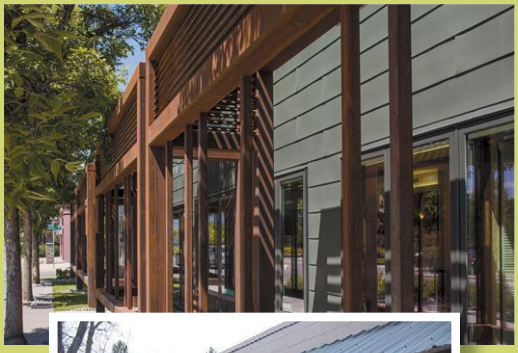
FLAT LOCK TILES: RHEINZINK, www.rheinzink.us

FABRICATOR AND PANEL DISTRIBUTOR: Sheet Metal Supply, www.sheetmetalsupplyltd.com

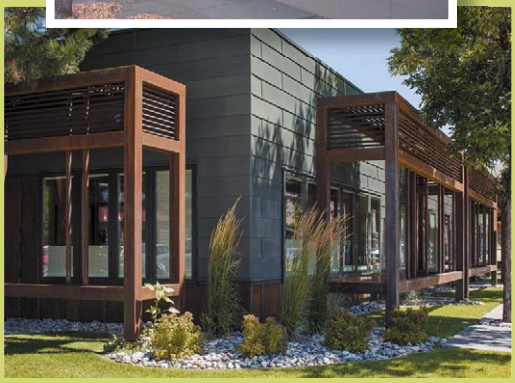
The Retrofit

The contemporary new home of Glidewell Investments & Insurance Group barely resembles the 1960s concrete-block structure that preceded it. Hefty created a design that met his client's desire to present a modern, stylish appearance. "They were expanding and wanted an impressive look," Hefty says.

The 10,000-square-foot building is located in an emerging area of the city and qualified for tax relief from Missoula's redevelopment agency. "The city approved the project as soon as we presented it to them," Hefty recalls. "Zinc is a great material to work with. The patina gives it a life of its own. I think this is the only building in town that has zinc on it. I anticipate there's going to be more as other people see it."



PHOTOS: RHEINZINK



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OPENING KEYNOTE: Jason Roberts, chair of the Better Block Foundation board of directors. In 2010, Jason organized a series of "Better Block" projects, converting blighted blocks in southern Dallas into temporary walkable districts with pop-up businesses, bike lanes, café seating and landscaping. Better Block now is an international movement.

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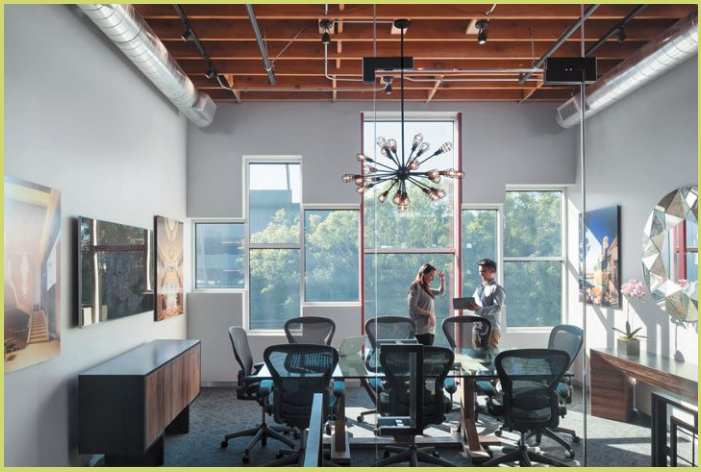

PHOTOS: SAGEGLASS

LANDRY DESIGN GROUP
Los Angeles

Retrofit Team

ARCHITECT: Landry Design Group, Los Angeles

Materials

SageGlass dynamic glass was installed at the offices of Landry Design Group, an award-winning architecture design studio, to solve issues with west-facing glare. The building, which was originally an animal hospital, was renovated into a high-end office space tailored to meet the firm's needs for cutting-edge design, as well as maximum functionality.

Landry Design Group chose to install SageGlass dynamic glass for its ability to prevent heat gain and glare, as well as connect employees to the natural environment so they can experience the biophilic impact of nature, including stress reduction and increased clarity of thought.

DYNAMIC GLASS MANUFACTURER: SageGlass, www.sageglass.com

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Circle No. 29

The PROOF is in the PANEL


PHOTO: KINGSPAN

High-performance, Low-carbon, Deep-energy Retrofit **Panelized Systems** Are the Future for Energy-efficient Buildings

WRITTEN BY | **PAUL BERTRAM, FCSI, CDT, LEED AP BD+C, GGP**

Defining a deep-energy-retrofit (DER) project depends on the scope of work. However, in general terms, improving existing building energy efficiency by 50 percent or more would be considered a success. How that 50 percent is achieved is a more complex topic driven by several factors with energy-cost savings at the top of the list.

During the last three years, I have been engaged in strategy concepts for DERs. It all started with Boston's Castle Square multifamily housing DER project where I learned about the process of designing and delivering a target Energy Use Intensity of 72 percent below baseline. In conversations with Heather Clark, the visionary project leader, principal of Boston-based Biome Studio, and Bruce Hampton, partner at Elton+Hampton Architects, Roxbury, Mass., I learned an essential element to achieving the EUI in this project was a super insulated envelope.

The design specified an R-40 envelope for a building built in the '60's with no insulation. Recladding the building was a major factor in working toward the aggressive EUI goal. The cladding for this project was a 5-inch R-40 insulated metal panel. There were other energy-saving elements—R-5 windows, a new boiler system connected to hydronic baseboards, internal air sealing between demising walls, energy-efficient lighting and a solar water-heating rooftop system to name a few—but the envelope accounted for more than 30 percent of the target goal. Interesting benefits of incorporating an exterior

(continues on page 52)

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— **JORY M. WALKER, AIA**
PRINCIPAL ARCHITECT
Beecher Walker Architects
Salt Lake City, Utah

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PHOTO: KINGSPAN

Insulated metal panels (IMPs) were attached to the existing brick façade during the Castle Square DER. Note the mineral wool added in the cavity between the IMPs and existing brick. This system was designed with analysis from a building-science professional. Even with scalable repeatable models, each building will have its own set of unique properties that require building-science analysis and recommended design solutions.

LEARN MORE

For more information about panelized systems in retrofit and new construction, visit the following websites:

ASSOCIATIONS

AMERICAN IRON AND STEEL INSTITUTE || www.steel.org

APA—THE ENGINEERED WOOD ASSOCIATION || www.apawood.org

EIFS INDUSTRY MEMBERS ASSOCIATION || www.eima.com

METAL CONSTRUCTION INDUSTRY || metalconstruction.org

PRECAST/PRESTRESSED CONCRETE INSTITUTE || www.pci.org

MANUFACTURERS

ADVANCED EXTERIOR SYSTEMS || advancedexteriorsystems.com/panelizedwallsystems.html

ATLAS STRUCTURAL SYSTEMS || atlasway.ca/en/page/panelized_wall_systems

CENTRIA || www.centriaperformance.com/products/wall_panel_systems.aspx

COMPOSITE PANEL BUILDING SYSTEMS || compositepanelbuildingsystems.com

DRYVIT || www.dryvit.com

EAST COAST PANELIZED WALL SYSTEMS || www.eastcoastpanelizedwalls.com

KINGSPAN || www.kingspanpanels.us

KWIK-BUILD PANELS || kwikbuildpanels.com

MORGAN BUILDING SYSTEMS || www.morganpanelized.com/index.htm

panelized system is that it delivered faster construction time and allowed tenants to stay in the building with minimal disruption. In addition, one year after the recladding was complete, Castle Square was using 58 percent less gas for heat compared to pre-renovation conditions.

[Editor's Note: To learn more about the Castle Square DER, see our November-December 2012 issue, page 38 or retrofit magazine.com/bostons-big-der. Read about the project's energy-cost savings in our March-April 2014 issue, page 42 or bit.ly/2ohU6LQ.]

Benefits of Panelized Systems

The Off-Site Construction Council (www.nibs.org/?page=oscc) of the National Institute of Building Sciences, Washington, D.C., defines off-site construction as the planning, design, fabrication and assembly of building elements at a location other than their final installed location to support the rapid and efficient construction of a permanent structure.

Insulated metal panels, like those used in the Castle Square project, are just one type of exterior cladding system constructed off site. Exterior Insulation and Finish Systems (EIFS) can be built off site and brought to a job site. Custom steel and prefabricated wood-framed assemblies can be assembled off site to include specified air, moisture, thermal and structural performance functional requirements based on climate zones and relative code requirements. From a design/aesthetic perspective, there are a variety of façade skins that can be applied to these panelized systems, such as aluminum composite material, thin- and full-size brick, and other materials.

Off-site construction incorporates specific quality assurance/quality control programs that include routine inspection and testing protocols by trained personnel for delivery of the specified assembly. This greatly reduces latent defects commonly associated with multiple trades utilized in site-built construction.

These off-site-built panelized systems include material assessment and specifications for specific testing/compliance requirements. Products are also modeled for hygrothermal and thermal performance. Project specifications may include functional performance site mockups and/or laboratory mockups for validation of the models. Obviously, laboratory models do not accurately represent field conditions but provide data for the building team to make more informed decisions on systems.

Beyond the benefits to the building itself, contractor and real-estate developer M.A. Mortenson Co. found cost and construction-efficiency benefits in panelized systems. For example, in its prefabrication study (www.mortenson.com/company/news-and-insights/prefab-study), Mortenson reported an exterior panelized wall reduced scheduling by 41 days, created indirect savings of $2.4 million and direct cost savings of 3.7 percent, as well as reduced labor by 5,000 hours.

New York Promotes Panelized Systems

New York's Gov. Andrew Cuomo's vision to modernize the state's energy system while bringing economic growth to New York has culminated in the Reforming the Energy Vision (REV) program (rev.ny.gov). One of the three primary REV goals is to reduce energy consumption in buildings by 23 percent from 2012 levels.

The New York State Energy and Research Development Authority (NYSERDA), which is overseeing the REV program, believes insulated panelized systems are an ideal solution for improving energy efficiency of hundreds of thousands of square feet of multifamily housing with no insulation. NYSERDA is seeking scalable, repeatable models of various DER solutions. Ideally, predictive modeling and validation of the modeling are desired for consideration in demonstration projects.

However, because of recladding's longer paybacks (10 to 20 years or more), funding becomes a challenge. The state of New

This EIFS panelized system with a brick façade may be adhered or mechanically fastened to approved substrates.

York is providing seed money for improvement of existing multifamily low-income housing, which is a major target for DER upgrades. The seed money should attract various options for financing the rest of the DER.

The Future of Panelized Systems

The concept of panelized systems is certainly not new. In their book *refabricating ARCHITECTURE: How Manufacturing Methodologies are Poised to Transform Building Construction* (published in 2003), Stephen Kieran and James Timberlake use examples from other industries to demonstrate the benefit of transitioning architecture to an integrated approach, involving technology, materials and production methods. For example, the authors discuss how Boeing builds the chassis and components of its aircraft off site, then brings these components together in one location for final assembly. Boeing also used off-site construction to build the Space Station, which consists of approximately 70 separate major components and hundreds of minor ones. The first time the components were put together was in outer space. If something this complex can be done in outer space, the construction industry should be adopting components, like panelized systems.

Successfully adopting and implementing prefabrication and using panelized systems requires change. One of the biggest barriers to change as it relates to prefabrication is not technology, it's culture, per a report (bit.ly/2nTv9so) released by FMI, a Raleigh, N.C.-based consultant. Some constructors who have tried to incorporate prefabrication/panelized systems are not as successful because they are trying to fit this model into how they have been building for years. The culture change has to come from the top and the complexities will take time to master but the benefits of faster build speeds and cost savings are worth the exploration.

Attend a Building Envelope Session During *retrofit*'s Inaugural Conference

Author **PAUL BERTRAM** will lead a panel of experts in a discussion about the building envelope and its impacts on existing buildings' energy efficiency during the *retrofit* conference 2017, Oct. 12, at Chicago's Navy Pier.

Bertram will be joined by the following panel:

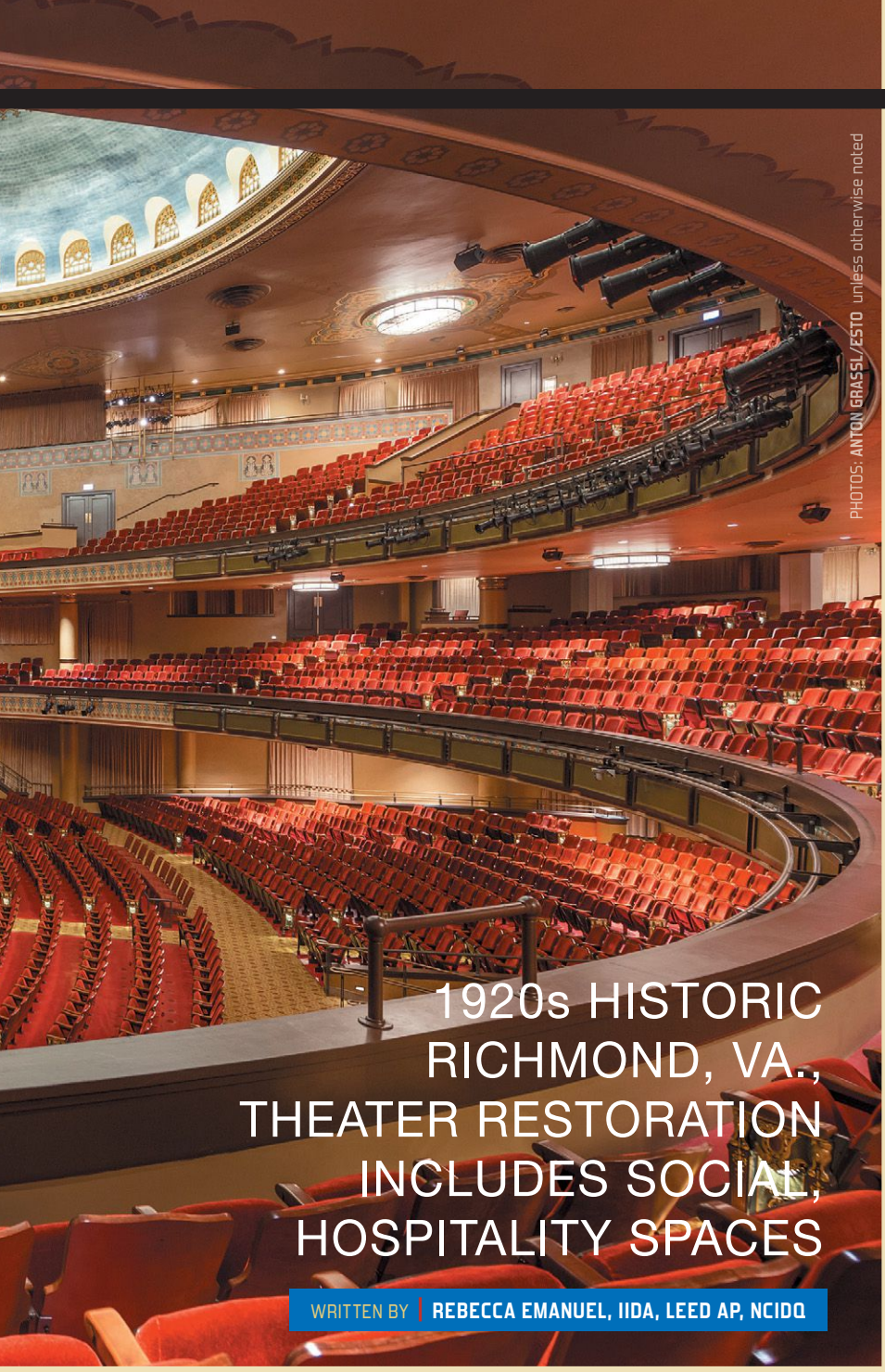
- **RICK TONIELLI**, LEED AP, is senior energy efficiency program manager at ComEd. In that role, he directs the ComEd Retro-Commissioning and Monitoring-Based Commissioning Programs and oversees marketing and outreach to commercial real-estate customers.
- **AUBREY SWIFT**, AIA, CEM, QCxP, LEED AP, is director of Design Integration, dbHMS. He has more than 30 years' experience as a technical architect with proven LEED consulting and sustainable design skills to guide the integration of engineering and architectural designs to optimal solutions.
- **BRIAN STROIK** is a recognized industry leader in the construction of energy efficient, sustainable and durable buildings. Stroik is a frequent speaker on the subjects of commissioning the building enclosure (BECx), quality in construction, and mock ups / first run studies. He holds several industry positions and affiliations.

Learn more about the *retrofit* conference and register at www.retrofitconference.com.

LONG LOVE AFFAIR

For generations of theatergoers, the 3,600-seat Altria Theater in downtown Richmond, Va., was where they first saw a Broadway road show; heard Frank Sinatra, Elvis Presley or Duke Ellington perform; and marveled at the stage sets of "The Nutcracker". The theater was popularly called "The Mosque" through much of its history because of its distinct Moorish castle style and Moroccan details. It was the place to play and the place to be seen, becoming one of the most popular theater venues in Virginia for generations.

The building was originally designed in a Moorish Revival style by architects Marcellus Wright Sr., Charles M. Robinson and Charles Custer Robinson for the Shriners' ACCA Temple and opened in 1927. In addition to staging performances of all genres, the massive 180,000-square-foot building hosted the Shriners' community events, conventions and social activities. Forty-two hotel rooms; multiple event spaces; a swimming pool; billiard rooms; an ornate, Egyptian-décor ballroom in the basement; and a three-lane bowling alley were included in the original building



PHOTOS: ANTON GRASSL/ESTO unless otherwise noted

1920s HISTORIC RICHMOND, VA., THEATER RESTORATION INCLUDES SOCIAL, HOSPITALITY SPACES

WRITTEN BY | **REBECCA EMANUEL, IIDA, LEED AP, NCIDQ**

program. However, as many Richmonders moved out of the city and into the suburbs, the Altria Theater began to lose its luster. A 2002 citywide arts master plan initiated by the city and developed by Wilson Butler Architects, Boston, envisioned a bold program to revitalize four downtown venues, including the Mosque and other cherished but aging performing arts spaces throughout the city.

Working in collaboration with the Richmond Performing Arts Alliance, Wilson Butler Architects completed a $63 million, phased renovation of the historic downtown Richmond icon. The design team restored the Altria Theater to its original 1920s grandeur while upgrading and expanding the building's hospitality spaces, performance venues, life-safety systems and patron amenities.

Partially funded by state and federal historic tax credits, the interior and exterior renovations bring this historic theater into the 21st century while respecting the original architecture and community mission. The new Altria Theater provides

RETROFIT TEAM

ARCHITECT // Wilson Butler Architects, Boston, www.wilsonbutler.com
- Bruce Herrmann, principal in charge
- Rebecca Emanuel, interior designer
- Peter Cameron, project architect
- Josh Stiling, project designer

THEATER CONSULTANT // Theatre Projects Consultants Inc., Norwalk, Conn., theatreprojects.com/en

CODE CONSULTANT // Jensen Hughes, Framingham, Mass., www.jensenhughes.com

ACOUSTIC CONSULTANT // Jaffe Holden Acoustics, Norwalk, www.jaffeholden.com

COST CONSULTANT // Daedalus Projects Inc., Boston, daedalusprojects.com

CONSTRUCTION MANAGEMENT // Gilbane-Christman Associates

STRUCTURAL ENGINEERING CONSULTANT // Dunbar Milby William Pittman & Vaughn PLLC, Richmond, Va., www.dmwpv.com

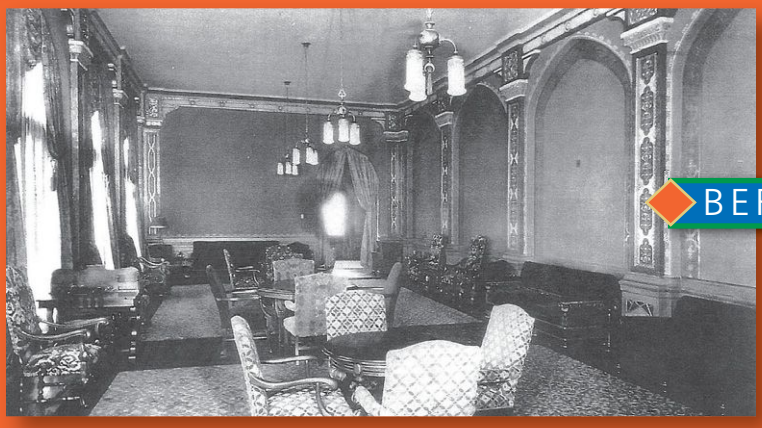
MEP CONSULTANT // Peters, Tschantz & Associates Inc., Akron, Ohio, www.ptaengineering.com

HISTORICAL RESTORATION PAINTING // Evergreene Architectural Arts Inc., New York, evergreene.com

LIGHTING CONSULTANT // HLB Lighting, Boston, hlblighting.com

EXTERIOR RESTORATION // Building Conservation Associates Inc., Newton Centre, Mass., www.bcausa.com

OWNER // SMG, West Conshohocken, Pa., smgworld.com



BEFORE

PHOTOS: COURTESY WILSON BUTLER ARCHITECTS

space for pre- and post-performance activities in several restored "parlor rooms" and in the 16,000-square-foot Grand Ballroom.

"The Altria Theater truly is a treasure and a one-of-a-kind experience," says Scott Wilson, AIA, director at Wilson Butler Architects. "The opportunity for us was to create a genuinely memorable patron experience and to provide new discoveries for patrons to find each time they come."

MASTER PLANNING

The city of Richmond purchased the building in 1940 and, after a restoration project in 1994-95, the name was changed to the Landmark Theater. The 2002 citywide arts master plan led the way to a decade of reinvestment in arts programming, facilities and partnerships. This concerted effort by more than 15 collaborating arts and cultural groups (symphony, theater, ballet) to revitalize the performance spaces of downtown Richmond began a reawakening of not only these concert halls and theaters, but of the city district itself.

BEFORE

For the Landmark Theater, the overarching goals of the renovation were to improve the audience performance experience, create excitement and expand the revenue opportunities of the space. It was a challenge to integrate state and federal historic tax requirements into the issues dictated by modern building codes and 21st century patron expectations. The design team had to wrestle with the limitations placed on design changes and comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

HISTORIC RESTORATION

The building's 5-story façade, a landmark cherished by three generations, was meticulously refurbished. Its historic terra-cotta details, decorative tile work, and lobby fountain were authentically restored using existing plans, historical photographs, and multiple meetings

MATERIALS

CARPET // Brintons Carpets Ltd., www.brintons.net

TEXTURED WALL FINISH // Tobias Green Interior Wall Finishes, www.tobiasgreenwallfinishes.com

RESTROOM FLOOR TILE // Provenza by EmilCeramica S.p.A., www.emilgroup.it/provenza

BACK BAR ACCENT TILE // Onix Mosaico, Onix USA LLC, www.onixmosaico.com

BACK BAR ANTIQUE MIRROR // Pulp Studio, www.pulpstudio.com

ADMIN OFFICE CARPET TILE // Mohawk Group, www.mohawkgroup.com

ADMIN OFFICE FLOOR TILE // Crossville Inc., crossvilleinc.com

HOUSE CURTAIN AND ACOUSTIC DRAPERY // Rose Brand, www.rosebrand.com

DECORATIVE METAL GRILLES // KEES Inc., www.kees.com

TOILET PARTITIONS // DuPont Corian, www.dupont.com

PAINT // Sherwin-Williams, www.sherwin-williams.com

LIGHTING // Crenshaw Lighting, www.crenshawlighting.com

and discussions with the Virginia Department of Historic Resources, Richmond. Interior light fixtures, paint, tiles, and finishes were restored based on historic photographs and research to bring these ornate features back to their original 1920s grand appearance. At other locations, rooms, such as the grand lounges and the Egyptian-styled Grand Ballroom, were restored based on research and recreation.

"To be involved in the thoughtful transformation of a significant historic and iconic treasure was equally challenging as it was rewarding," says Pete Cameron, AIA, associate at Wilson Butler Architects. "From infusing new life into a historical marquee to integrating improved acoustics and lighting was an incredible process."

The coloring of the Grand Tier's recently restored mural inspired an intricately patterned, colorful carpet designed in collaboration with the team's artist. Furnishings were inspired by their predecessors: opulent, colorful and sumptuous. Fountains and lush pools that were once a maintenance nightmare were reimagined with textured and backlit blue glass to replace water and ensure patron safety. Each room has a different furnishing color scheme or "set" in the tradition of a theatrical production.

PERFORMANCE SPACES

The auditorium, lobbies, rest areas, and concession spaces were improved for patron comfort, circulation and overall experience. The redesign nearly doubled the number of restrooms while renovating the existing ones. Two new passenger elevators were "threaded" through six floors. The artists' experience and technical support of shows were upgraded via theatrical lighting, audiovisual systems, stage rigging, stage flooring and refurbished dressing rooms. The theater's vintage wooden seats were refurbished with cushioned backs and bottoms with richly colored, crimson velour.

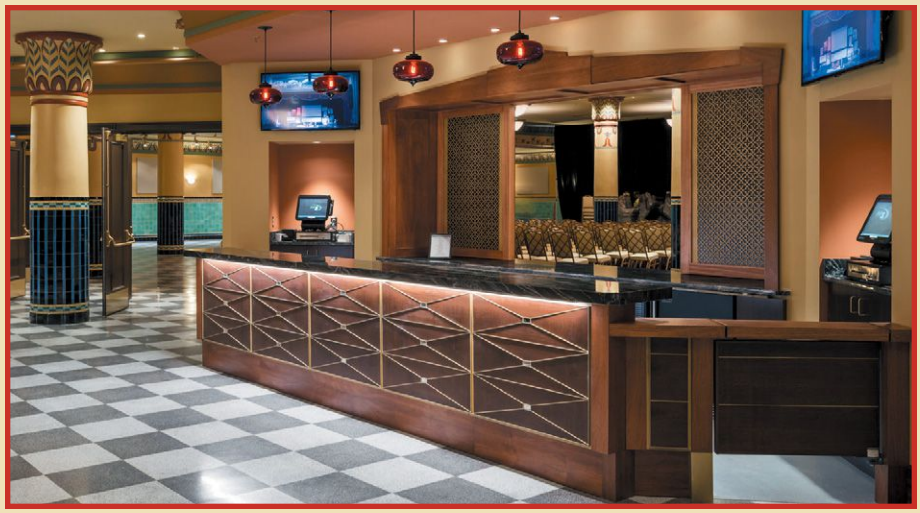
Two new programmable marquees take advantage of the latest technology to bring a modern touch to the historic theater and raise public awareness of current and upcoming shows. In addition, a marquee is suspended over the new box office on Main Street to define the ticket sales area.

HOSPITALITY SPACES

The entry lobby, second-level Grand Lobby and seating areas, patron parlors, new bars, and new Subscriber Lounge provide areas of mingling and conversation before, during and after the show. These restored and renovated spaces afford unique opportunities to create an unforgettable patron experience. Whether sharing a laugh with a cast member during a pre-performance meet and greet, grabbing a drink in the lounge, or enjoying an after-show pastry at the 1927 Café & Bakery, these experience spaces redefine the theater for a new generation.

"As hospitality and experience designers, the Altria Theater offered us so many square feet—grand spaces, parlors and lobbies—that allowed us to create memorable places for guests," Cameron notes. "The goal was to make patrons talk about their visit, not just the show."

Beyond the performance spaces, the gracefully restored Egyptian-styled Grand Ballroom includes a new pre-function lobby with a bar and full-service kitchen capable of providing food for up to 700 guests. The Grand Ballroom is a popular event space, attracting weddings, parties, business

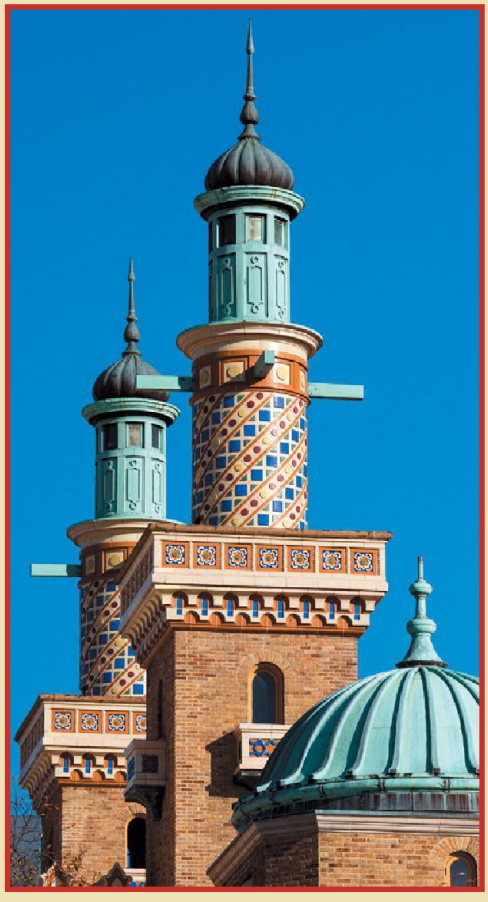


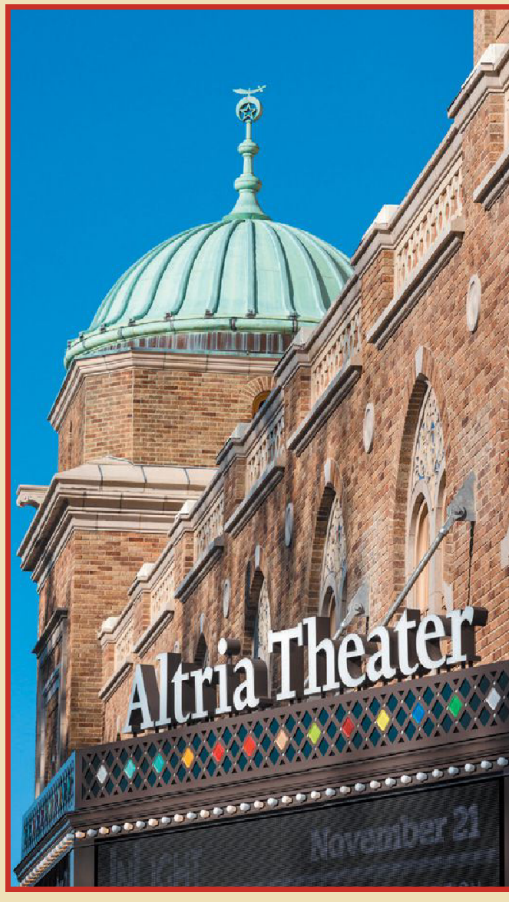
meetings and conferences at times when the theater would otherwise be dark. Before, during and after the show, patrons can enjoy the opportunity to hang out and socialize.

ENERGIZING DOWNTOWN RICHMOND

The restoration, renovation, and reopening of the Altria Theater provides an essential arts and entertainment anchor for new retail, restaurant and residential development in downtown Richmond. The theater's proximity to the Virginia Commonwealth University campus and other downtown arts, cultural and educational organizations is generating new and creative collaborations.

Since the restoration of the Altria Theater and the other downtown theaters was completed, the city of Richmond has emerged as a fast-growth, high-demand urban success story. Zillow named Richmond the nation's fourth-hottest housing market in 2016. More than 50 downtown development projects are transforming this riverfront city, and the arts and culture attractions are drawing newcomers from all around the world.





PHOTOS: MICHAEL SLACK, COURTESY JOSHUA ZINDER ARCHITECTURE + DESIGN unless otherwise noted

DIAMOND in the ROUGH

A NEW PIZZA RESTAURANT UNIQUELY RECAPTURES THE LOOK OF ITS GAS STATION PREDECESSOR

PHOTO: JEFF TRYON, COURTESY EDENS

Driving along this country's major highways and through its cities and towns, one can't help but encounter vacant buildings of all kinds, often boarded up and left unoccupied for years. Many of these vacated structures are fueling and service stations, closed because of high oil prices and competition from large retailers, such as Costco and Walmart, which now sell gasoline at a discount. According to data reported in *The New York Times*, between 1991 and 2012, more than 50,000 service stations nationwide shut down for various, mostly economic, reasons.

WRITTEN BY | **JOSHUA ZINDER, AIA, NCARB, LEED AP BD+C, AND MARK A. SULLIVAN, AIA, NCARB, LEED AP**

As these properties age and sit empty, their owners face the challenge of deciding what to do with them. They can renovate and try to identify a lessee, or they may consider simply tearing down the structure. Many will see demolition as the most economically viable solution because there may not be many investors interested in opening a service station in a location where the same business type has already failed.

Architects and designers, on the other hand, often see hidden potential in these unused structures—potential that requires an eye for adaptive reuse possibilities. As it happens, with regard to a vacant fuel and service station in Princeton, N.J., not far from our architecture studio, this was exactly the experience of the design team of which

After

Before

During

PHOTOS: COURTESY JOSHUA ZINDER ARCHITECTURE + DESIGN

After

THE CONVERSION OF THE STATION INTO A HOSPITALITY VENUE STANDS AS A MODEL FOR OTHERS TO EMULATE.

we were a part. The former Amoco station had been sitting empty for some time, and it stood out as a unique opportunity. The structure is an elegant example of the 1930s modernist-style, certainly worth preserving, and located adjacent to an active shopping center. After the building had been on our radar for some time, we reached out to the building's owner group to discuss possible new uses.

EXPERIENCE AND OPPORTUNITY

To many it may seem odd to consider transforming an old gas station into any kind of hospitality venue, especially food service. But our firm's combined expertise and significant portfolio of successful adaptive reuse projects made the task seem very doable. Discussions with the owner touched on a variety of possible new uses for the structure. One aspect of conversion that our team was most passionate and excited about was the notion of preserving and incorporating the structure's original features. The bold lines, flat roofs and deep overhangs representative of the 1930s modernist style were just the beginning: The station's three service bays invited our imaginations to run wild with possibilities. We were hoping for an opportunity to update the space with sustainable design elements and modern efficiency while preserving as much of the original character as possible and accentuating it with color and architectural flourishes. It was our hope to transform this "diamond in the rough" into a suitable location for a thriving business.

Retrofit Team

ARCHITECT OF RECORD //
Joshua Zinder Architecture + Design, Princeton, N.J., www.joshuazinder.com

OWNER/DEVELOPER //
EDENS, Boston, edens.com

LANDSCAPE ARCHITECTURE/ DESIGN CONSULTING //
Groundswell Design Group, Philadelphia, www.groundswelldesigngroup.com

ARCHITECT, INTERIOR //
Steven S. Cohen Architect P.C., Princeton, www.stevencohenarchitect.com

SITE/CIVIL ENGINEERING //
Bohler Engineering, Albany, N.Y., bohlerengineering.com

MEP/FP ENGINEERING //
GnP Design Group, Bensalem, Pa., gnpdesigngroup.com

STRUCTURAL ENGINEERING //
SE2 Engineering LLC, Conshohocken, Pa., (610) 828-1550

GENERAL CONTRACTOR //
Elrath Construction, Yardley, Pa., www.elrathconstruction.com

DESIGN CONSULTANT TO NOMAD PIZZA //
Stokes Architecture, Philadelphia, stokesarch.com

While discussions with the owner continued (even through a change in ownership), Stalin Bedon and Tom Grim, the owners of Nomad Pizza in Philadelphia and Hopewell, N.J., were looking for a location to open a third restaurant. The pair had a history of working with unique structures: Nomad Pizza started out as a food truck enterprise, specifically a 1949 REO Speedwagon truck outfitted with a wood-burning oven imported from Italy. Princeton seemed the perfect fit for a new restaurant location, and Bedon and Grim were not daunted by the prospect of transforming a former gas station.

The conversion project began with planning updates to the structure's shell. This was challenging for several reasons, not least because the exterior of the building had started to deteriorate. Salt and other elements caused significant damage to existing structural columns, as well as to the garage doors. Our team recommended mitigating this damage by including in construction the installation of new steel and reinforcements to the foundation. We also carefully assessed the original roof to determine whether the existing wood-plank frame could support the weight of the roof-installed mechanical equipment necessary for a restaurant facility. We specified tapered insulation over the existing wood substrate with a cooling white-colored EPDM membrane overlay.

PROGRAMMING AND DESIGNING

The design team was determined to deliver a venue appropriate for food service that

THE ORIGINAL ORIENTATION OF THE BUILDING HAS BEEN REVERSED SO THE RESTAURANT'S FRONT NOW FACES A SHOPPING CENTER RATHER THAN THE STREET AS THE SERVICE STATION HAD. FOR THE FAÇADE, THE MATERIALS PALETTE INCLUDES WESTERN RED CEDAR PLANK, STOREFRONT SYSTEMS AND LARGE GLASS PANELS, USED TO CLOSE OFF THE OLD SERVICE BAYS ON THE STREET-FACING SIDE.

|Materials|

ALUMINUM STOREFRONT // Kawneer 451T, www.kawneer.com

EXTERIOR WOOD // Western Red Cedar, www.realcedar.com

AWNINGS // Durasol, Genius model, www.kedurasol.com

GARAGE DOORS // Arm-R-Lite, Electra model glass/aluminum overhead doors, www.arm-r-lite.com

would celebrate the structure's modernist character and original purpose. This required replacing the existing concrete slab, which was in poor condition and, as the floor of a working garage, had been in regular contact with motor oil and gasoline. Additionally, the slab needed to be elevated to address some of the property's drainage requirements.

Discussions with the property owner resulted in a decision to reverse the original orientation of the building so that the restaurant's front would face the shopping center rather than the street as the service station had. For the façade, the materials palette included western red cedar plank, storefront systems and large glass panels, used to close off the old service bays on the street-facing side. The design team was careful to harmonize the compositions of the front and back elevations by matching the heights of the aluminum mullions. Decisions like these were made collaboratively and with careful attention to project cost and to preserving—even recapturing—the building's original look from the 1930s.

To leverage the aesthetic precedent, the design also called for new overhead garage doors on the restaurant's front, which would be opened in warmer months to extend the dining area onto the patio. The New Jersey climate required sufficient insulation for the dining room

(continues on page 66)

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to be comfortable during winter months, for which the solution was to specify specialized overhead doors. The glass and aluminum replacement doors include insulation for energy efficiency and noise attenuation. The result is a cozy dining room in the winter and, in summer, a sprawling dining area that extends onto the patio. An awning installed over the patio provides shelter against the rain for up to 40 guests.

COMPLYING WITH CODES

When building occupancy is being changed, design teams may encounter fire code issues, especially when the occupancy increases. In the case of Nomad Pizza, the patio area raised this issue. Because total occupancy determines whether sprinklers are required, the numbers would determine whether the building would need to be sprinklered, which would mean installing expensive and unsightly water supply lines overhead, even under the awning. Code officials eventually determined that, with the patio area in use less than half the year, a sprinkler system would not be needed. For projects involving a change of use—as in adaptive reuse—which might increase the occupancy, design teams should be equipped to deliver solutions that satisfy code requirements by retrofitting needed elements into the existing structure when necessary.

There were other code-related challenges, as well. For example, Princeton's zoning regulations for structures require approval for mechanical systems visible from the outside. The rooftop-installed mechanical equipment presented a potential stumbling block, even after the kitchen vent and stack were located where they would be the least prominent. To disguise what was still visible of the exhaust components and a makeup air unit, we specified a louvered aluminum screenwall that met the local prescriptive requirements for appearance.

The structure's small footprint did present one major obstacle for food service: There was little room for the installation of a walk-in refrigerator. The design team and clients agreed the best solution

THE DESIGN TEAM WAS DETERMINED TO DELIVER A VENUE APPROPRIATE FOR FOOD SERVICE THAT WOULD **CELEBRATE THE STRUCTURE'S MODERNIST CHARACTER** AND **ORIGINAL PURPOSE**.

would be to position the refrigerator in front of the restaurant to one side of the patio, where it would be easily accessible. But to avoid having the unit be an eyesore, the team agreed on a small bumped-out addition, covered in western red cedar plank that would echo the cladding specified for the rear façade. This workable solution required a minor zoning variance (for the additional square footage added to the building) and one compromise: Kitchen staff need to go outside to reach the walk-in. The only alternative was a connecting door that would have eliminated several counter seats for patrons, so this minor inconvenience for staff represents a trade-off against a potential loss of revenue.

Adaptive reuse projects like Nomad Pizza represent opportunities for architects, designers, their clients and the communities in which they operate. By salvaging entire unused existing structures, we can simultaneously reduce a project's budget, shorten its construction schedule, mitigate the project's environmental impact by reusing large quantities of structural material and preserve a piece of characteristic architecture that may be locally beloved.

Although it may be overstating the case to say that this former gas station is "locally beloved," its preservation and reuse have received across-the-board praise from Princeton's community leaders and residents. The conversion of the station into a hospitality venue stands as a model for others to emulate, and we hope it will lead to exciting opportunities for entrepreneurs and architects nationwide to explore and utilize unexpected locations—including many thousands of former fueling stations.

Neighborhood Rescue

REHAB OF A 1930 GAS STATION DEMONSTRATES THE NEW OWNER'S MISSION TO REVITALIZE A HISTORIC DISTRICT

WRITTEN BY | **CHRISTINA KOCH**

RETROFIT TEAM

ARCHITECT/INTERIORS // AO*, Omaha, Neb., www.aoomaha.co

- Bryan Zimmer, AIA, principal
- Keith Herrman, AIA, project architect
- Nicole Malone, project designer

OWNER // Dundee Bank, Omaha, www.dundeebanking.com

HISTORIC RESEARCH CONSULTANT // Restoration Exchange Omaha, www.restorationexchange.org

STRUCTURAL ENGINEER // TD2 Co., Omaha, www.td2co.com

MEP // Morrissey Engineering, Omaha, www.morrisseyengineering.com

GENERAL CONTRACTOR // Dicon Corp., Omaha, www.dicon.com

DECONSTRUCTION TEAM // Johnson Deconstruct, Omaha, johnsondeconstruct.com

ROOFING CONTRACTOR // Stonebrook Roofing, Lincoln, Neb., www.stonebrookroofing.com

PHOTOS: **KESSLER PHOTOGRAPHY** unless otherwise noted

In 1908, Henry Ford introduced the Model T. Often called the Tin Lizzie, the car was designed with lightweight sheet steel, so anyone could afford their own. By the 1910s, gasoline-powered cars overtook the market (edging out steam- and electric-powered vehicles), requiring the petroleum industry to produce more gasoline than kerosene and coal oil. As more cars entered our nation's modest roadways, access to gasoline was essential.

Consequently, for at least the past 100 years, gas stations have been located on prime real estate. According to the Washington, D.C.-based National Park Service, "Surviving historic stations are physical reminders of the transportation revolution and the influence of increased mobility on the landscape. They are a reflection of car culture, pop culture, corporate standardization, and an era of customer service that today seems quaint."

NPS notes in the 1920s and '30s, oil companies and entrepreneurs began building stations customers would accept in their neighborhoods as a way to gain customer trust and loyalty. To minimize complaints about gas stations in residential areas, several companies designed facilities resembling houses. For example, Pure Oil preferred English Cottage designs while Standard Oil favored Colonial Revival stations.

One such neighborhood that required a certain look for its gas station was the Blackstone District of Omaha, Neb. In the early 20th century, the area attracted the city's wealthiest people and boasted luxurious mansions, a thriving business district and a street car. In 1930, Cleveland-based National Refining Co., which produced White Rose Gasoline, built a station in the Blackstone District that resembled a Tudor Revival-style home with a steep-sloped roof and turrets. The company added service bays for car maintenance to further engrain itself into the neighborhood.

As the years passed, the Blackstone District's wealth became a memory. The White Rose Service Station shuttered in the 1980s and reopened as an Italian restaurant before closing again. McFoster's Natural Kind Café was the last business to occupy the space before closing in 2014. When Jeff Royal, the president of Dundee Bank, a division of Security State Bank, which is headquartered in Ansley, Neb., spotted the former service station, he recognized an opportunity to demonstrate the bank's intention to help revitalize the Blackstone

View a video about Dundee Bank's Blackstone Branch, 2017 winner of Restoration Exchange Omaha's BUILDING PRESERVATION AWARD.

MATERIALS

WALK-OFF CARPET // Forbo Flooring, www.forbo.com

CARPET // Bolyu, www.bolyu.com

VINYL BASE // Johsonite, www.johnsonite.com

TILE // Florida Tile, www.floridatile.com

SOLID SURFACE // Dupont, www.dupont.com

LAMINATE // Formica, www.formica.com, and Nevamar, nevamar.com

MARKER BOARDS // Deko, www.dekomarkerboards.com

PAINT // PPG, corporate.ppg.com

PLUMBING FIXTURES // Kohler, www.kohler.com; Briggs, briggsplumbing.com; and Elkay, www.elkay.com

INTERIOR LIGHTING // Halo, www.cooperindustries.com; Tango, www.tangolighting.com; Focal Point Lights, focalpointlights.com; Solovanti, www.solavantilighting.com; Prudential Lighting Co., www.prulite.com; and Acuity Controls, www.acuitybrands.com

EXTERIOR LIGHTING // Lithonia Lighting, www.lithonia.com

REPLICATED EXTERIOR WALL SCONCES // St. Louis Antique Lighting Co., slalco.com

MECHANICAL // Mitsubishi, www.mitsubishicomfort.com

UPHOLSTERED WALLS // Recovery Room Hot Rod Interiors, recoveryroomrodinteriors.com

CUSTOM STEEL FURNITURE // Polynomial Metal Fabrication, www.polynomial.co

CUSTOM RECLAIMED FURNITURE AND STAIR TREADS // Reclaimed Enterprises Inc., www.reclaimedenterprises.com

FURNITURE // Herman Miller, www.hermanmiller.com

EXTERIOR ALUMINUM STOREFRONTS // 451 TCG from Kawneer, www.kawneer.com

RESTORED STEEL WINDOWS WITH INTERIOR ALUMINUM STORMS // Kawneer

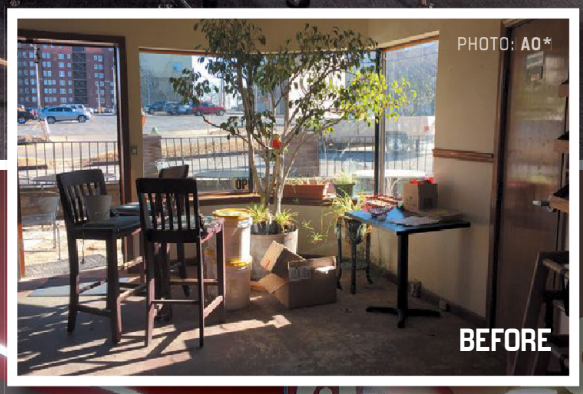
SKYLIGHTS // FS from Velux, www.velux.com

BRICK AND CAST STONE SITE WALL // Nebraska Brick, www.nebraskabrick.com, and Pacific Clay, pacificclay.com

EXTERIOR RAILING // Alumi-Guard Inc., www.alumi-guard.com

EXTERIOR DRIVE-THRU CANOPY ROOFING // S-Deck from Berridge Manufacturing Co., www.berridge.com

INFILL TERRA-COTTA ROOF TILE // Ludowici, www.ludowici.com



> WE WANTED TO BRING THE BUILDING BACK TO THE CHARACTER IT HAD AS A GAS STATION WHILE MEETING THE NEEDS FOR THE BANK AND DOING A MODERN LAYOUT WITHIN THE HISTORIC CONTEXT OF THE GAS STATION.
>
> *— BRYAN ZIMMER, AIA, PRINCIPAL, AO**

District. With the help of Omaha-based AO* (Architectural Offices), the iconic station soon would become the second location of Dundee Bank.

A PASSION FOR ADAPTIVE REUSE

AO* was the lead architect on Dundee Bank's main branch in Omaha's Dundee neighborhood within the former Buffett & Son Grocery Story. (Warren Buffett worked there in his formative years.) AO* also helped Dundee Bank's parent company, Security State Bank, complete a historic-tax credit project in Ansley.

Bryan Zimmer, AIA, an AO* principal, says adaptive reuse of existing buildings goes hand in hand with Dundee Bank's philosophy. "It's part of Dundee Bank's mission and part of their brand to help preserve neighborhoods and make them stronger," he explains.

Zimmer and Royal noticed the White Rose Service Station in 2014 while meeting about a building Dundee Bank had purchased across the street. Royal noticed the unique looking service station and asked Zimmer what he thought. "We could tell it was abandoned," Zimmer recalls. "It sits at a 45-degree angle between two of the busier streets in Omaha and is iconic. I told him we had to do it."

The Blackstone District itself is centrally located between three of the largest employers in Omaha: Mutual of Omaha, the University of Nebraska Medical Center and Kiewit Construction Co.—all Fortune 500 companies. "It just really baffles me, but somehow we let that area degrade and kind of go vacant for a while," Zimmer says. "However, in the last five years, two developers have really renovated a lot of the properties and made it a vibrant little district."

A NEW PROGRAM

Although the former White Rose Service Station was in good structural condition, it was a mess, according to Zimmer, because it had been a restaurant for so long.

To transform it into a bank branch, AO* essentially had to start over with the building's layout. "All the restaurant stuff had to be removed," Zimmer says. "There were some pretty poor additions that were on the back of the building for coolers and things restaurants need that we tore off."

The 3,200-square-foot building includes a 200-square-foot basement, which the design team thought would be suitable for computer equipment. The 1,600-square-foot main floor would accommodate day-to-day banking transactions, such as the teller line. The 1,400-square-foot second floor, which was built in the '80s for the Italian restaurant, helped make the building viable for Dundee Bank. "The second floor gave us enough square footage to justify the amount of effort it took to redo the building," Zimmer notes. The second floor features private banking areas, as well as a conference room.

Zimmer says the goals for the design were pretty simple, "We wanted to bring the building back to the character it had as a gas station while meeting the needs for the bank and doing a modern layout within the historic context of the gas station."

To receive federal historic tax credits for the project, the historic research consultant, Restoration Exchange Omaha, filled out NPS' Part 1 Evaluation of Significance document and, consequently, discovered historic photographs and drawings of the White Rose Service Station that had been published in a service-station magazine. (The team completed NPS' Part 2 and 3, as well, and utilized the Nebraska Historic Tax Credit program, which matches the NPS funds.)

"We then had photos showing clay tile walls and the clay tile floor," Zimmer explains. "The drawings were pretty generic, but they kind of showed the general layout and why the windows were placed as they were—so the service manager could stand in his office and see both bays of service for the cars and the gas pumps outside."

The team began by removing walls that had been added over the years. They also revealed the original clay tile on the interior walls. "The conference room walls are the historic clay tile," Zimmer states. "We took all the drywall and wood studs down and we scraped off all the glue and left those walls exposed."

Around the existing historic steel windows throughout the first floor, the team exposed 6 inches of clay tile. "You get the idea that the clay tile is everywhere, but we only exposed it at the windows," Zimmer says. All windows were cleaned, repaired and repainted, including a few windows that were discovered during construction. The owners of the 1980s Italian restaurant that occupied the space had removed the original garage bays and replaced them with decorative panels on the north and partial-height windows on the south. AO*'s team specified new aluminum windows reminiscent of the original service bay garage doors.

The conference room features carpet to help with the acoustics of the clay tile walls. "We also installed these tuck-and-roll car-interior-looking panels on the walls," Zimmer mentions. "They're kind of a nod back to car rumble seats of the past. We actually hired a company that does car-restoration work to make those."

To improve the energy efficiency of the building, spray-foam insulation was installed in the attic and a variable refrigerant flow heat pump with heat recovery maintains the building's heating and cooling.

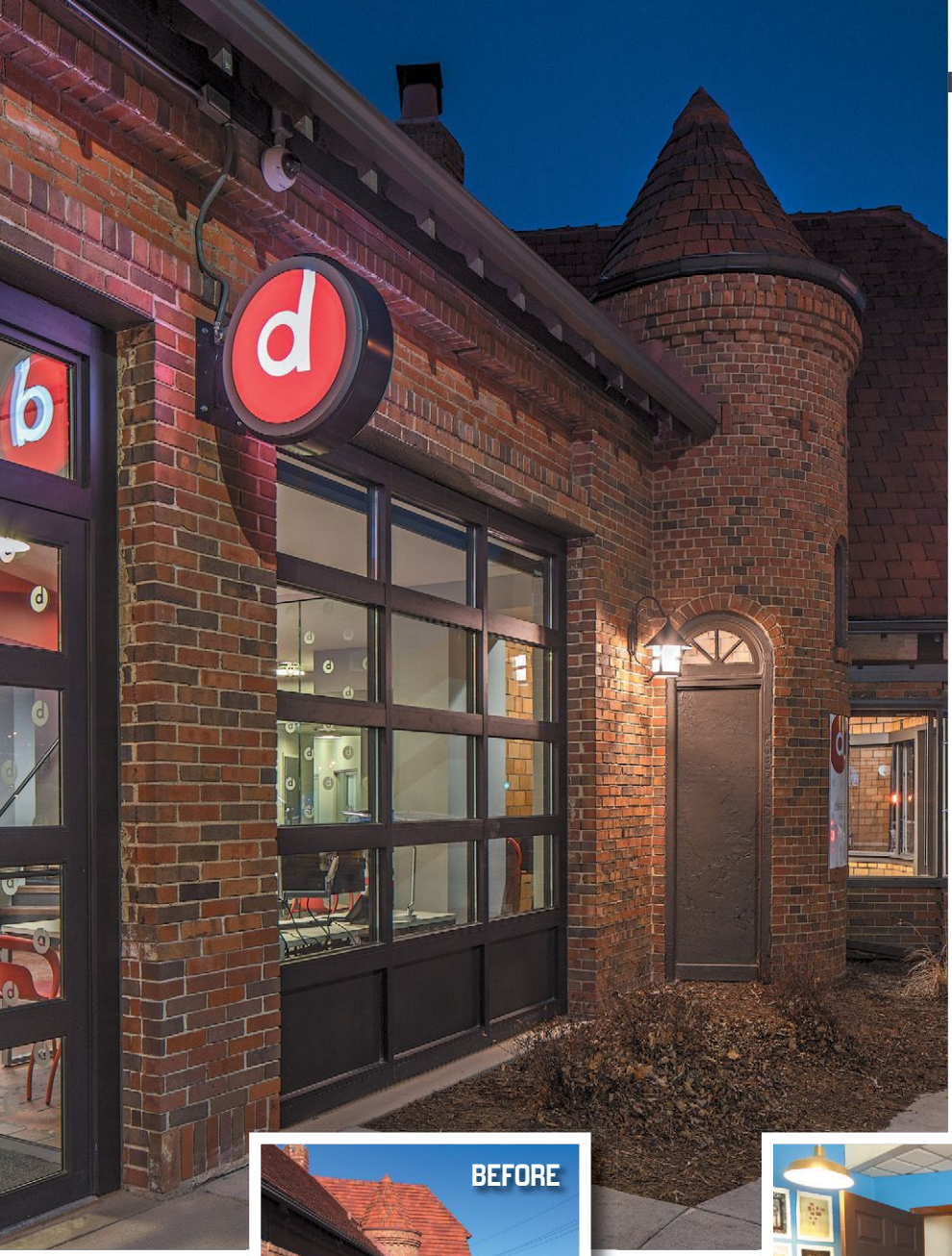
LED lighting was specified throughout the space. On the exterior, the team was required to recreate historic wall sconces. Zimmer recalls: "When Dundee Bank bought the building, there were at least three of these light fixtures still existing. By the time they closed on the building, the fixtures were gone. We had to have them rebuilt."

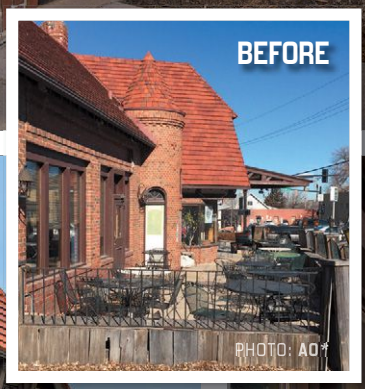
UNIQUE STORIES

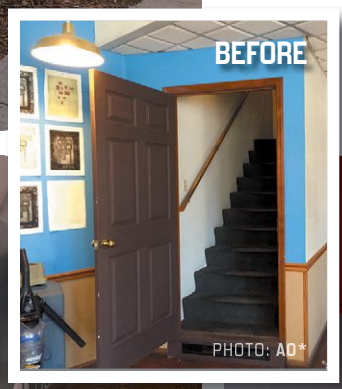
Typically, existing buildings generate stories of challenges and difficulties. Although the renovation of Dundee Bank's new branch had its share of tests, fortunately, there were more stories to inspire others to follow the bank's lead. For example, the service station's original clay tile roof was in great condition. The roofing contractor removed the tiles and placed them on pallets before installing new underlayment and flashing. Then, the existing tiles were reinstalled. "That's very doable with those tiles," Zimmer notes. "They don't degrade. As long as they're not cracked, you can put the tile back on the roof."

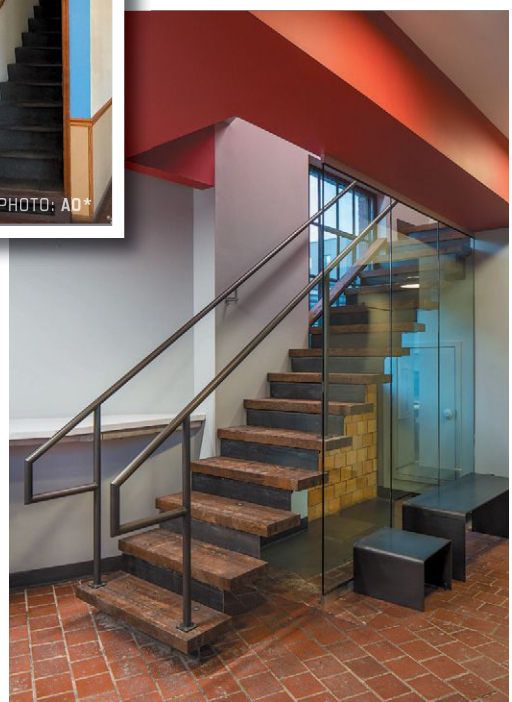
To create a drive-thru for bank customers, Dundee Bank had to purchase three adjacent houses, which were deconstructed rather than torn down. "We saved or sold all the historic windows if they were savable, the doors, the frames and more," Zimmer recalls. "Two conference tables were made from the historic lumber of those houses and are in the bank now."

To Zimmer, the entire year-and-a-half project was memorable, but he says he'll never forget the moment he and Dundee Bank's president discussed the former White Rose Service Station while meeting about the project across the street. "I remember looking at it and thinking what this building could actually become," Zimmer points out. "It was like a spark of lightning. I knew we had to do it. I'll never forget that."









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TO FLUSH OR NOT TO FLUSH

Waterless and Low-flow Fixtures Offer Big Savings but Their Success in Older, Existing Buildings Requires Important Steps

WRITTEN BY | ROBERT NIEMINEN

PHOTOS: SLOAN

In today's environmentally conscious era, water conservation isn't an option; it's a given, especially as it relates to water use in commercial buildings. In fact, as reported in our September-October 2014 issue, page 80 or bit.ly/20aVza6, global demand for fresh water will exceed supply by 40 percent by 2030 "with potentially calamitous implications for business, society and the environment," according to a study on water scarcity by international auditor KPMG.

As such, addressing water scarcity is an issue that requires thoughtful intervention, especially in arid climates like California that have experienced severe drought conditions in recent years. To that end, the Golden State in 2015 enacted sweeping legislation (Executive Order B-29-15) mandating emergency regulations that improve the efficiency of water appliances, including toilets and faucets in new and existing buildings.

These newly adopted standards changed the required maximum flow rates for the following water appliances:

- Urinals from 0.5 gpf to 0.125 gpf.
- Residential faucets from 2.2 gpm to 1.2 gpm.
- Kitchen faucets from 2.2 gpm to 1.8 gpm with possible capability to increase to 2.2

The Los Angeles Convention Center installed 18 Sloan Hybrid Urinals (HYB-1000 models) to help save thousands of gallons of fresh water each year. With the help of Sloan's urinal products in the convention center, the building achieved a LEED Gold rating.

Leaving one urinal or toilet as high-flow helps reduce main waste line clogging because it lets a little more water clean out the pipes. This is particularly important in older buildings with old cast-iron pipes that may clog more easily.

The Corning-Painted Post Area School District in Painted Post, N.Y., now features battery-operated sensor flushometers and Sloan urinals as part of a complete retrofit project.

gpm. Public lavatory faucets shall not exceed a flow rate of 0.5 gpm.

Although water efficiency mandates are certainly well-intended and may be required in extreme cases, such as in California, there are unforeseen consequences with such measures, especially for existing buildings with plumbing that was never designed to handle drastic reductions in water flow.

Less Is Not Always More

In an effort to address water conservation in commercial buildings, the market has responded with a variety of waterless urinals and other low-flow fixtures that promise to significantly reduce consumption—and they do. Further, with the LEED v4 rating system containing prerequisites and credits for Water Efficiency (WE), many facility executives have upgraded their existing facilities to these more efficient fixtures. So what's the problem?

According to the Alliance for Water Efficiency (AWE), Chicago, research indicates the combination of significantly reduced wastewater flows from a wide array of high-efficiency fixtures, appliances and equipment might result in drainline transport problems in some buildings. In its report, "The Impacts of High-Efficiency Toilets on Plumbing Drainlines and Sewers," AWE notes the problems with high-efficiency fixtures stems from drastically reduced wastewater flows caused by large-scale or severe water-use restrictions, such as those seen in California and Australia. As a result, "some types of building drainage configurations, such as an isolated commercial restroom with very low-volume, high-efficiency toilets, urinals, and faucets located at the far end of a building, in some cases may not always have sufficient liquid flows to transport solid waste at a normal rate," the report notes.

Also known as "dry drain," this phenomenon can occur in buildings where continual reductions in water render drain flows insufficient to effectively transport solid waste away from the building, resulting in health and safety issues from drain blockages. While the majority of plumbing systems in existing buildings can handle the retrofits to high-efficiency fixtures, older buildings will likely experience more problems than newer ones, in which drain sizes can be reduced to increase pressure and slopes can be adjusted accordingly. In other words, the efficacy of low-flow fixtures depends on the building and its plumbing system, which vary significantly by age, materials, design and quality of the installation.

In fact, in its 2016 report, "The Drainline Transport of Solid Waste in Buildings—Phase 2.0," the Plumbing Efficiency Research Coalition (PERC) found in its testing a significant decrease in drainline transport performance between the 4.8 Lpf/1.28 gpf and the 3.8 Lpf/1.0 gpf Flush Volumes. Based on those results, PERC does not recommend the use of 3.8 Lpf/1.0 gpf toilets (or less) in commercial applications that have long horizontal drains and that do not provide additional long duration flows from other sources to assist with the drainline transport of solid waste. (Note: This recommendation only applies to the

ADDRESSING LOW-FLOW PLUMBING PROBLEMS

To address potential problems with plumbing blockages in concert with using low-flow or waterless fixtures, there are a number of considerations facility managers need to make before settling on a solution. According to the Chicago-based Alliance for Water Efficiency, a few potential remediation steps for solid-waste transport problems in building drainlines with very reduced flows (though not yet tested nor recommended) include:

- Develop a better understanding of how sanitary drainline system components and variables, such as pipe slope, flow volume, and flow rate from plumbing fixtures and appliances affect solid waste transport down drainlines and into sewers.
- In existing buildings, determine the minimum wastewater flow requirements for solid waste transport in the building's drainline prior to the installation of new high-efficiency appliances, fixtures and other water-using equipment. For example, commercial buildings with isolated high-efficiency toilets with long, isolated and horizontal drainline runs to the sewer may be potential trouble spots that will require adjustments to the plumbing system.
- Rectify problematic building drainline flows by targeted adjustments to flows and composition, possibly including any or all of the following:
  - Installation of one or more higher-volume fixtures at the beginning of an isolated drainline (farthest from the sewer) to provide additional flows to help move solid waste down the drainline.
  - Installation of a timer on the automatic flush valve for one or more high-efficiency toilets and/or urinals installed at the farthest end of the isolated horizontal run. These timed, extra flushes will provide periodic surges of water to facilitate solids transport down the drainline and to the sewer.
  - Changing the type of toilet paper provided in restrooms. Toilet paper products vary considerably in their composition and rate of disintegration in wastewater, which in some cases affects solid-waste transport.
- For new buildings, project carefully water and wastewater flow requirements when water-efficient equipment, appliances and fixtures will be installed. Be sure to use updated flow specifications—not necessarily standard design criteria that may be outdated—when specifying pipe sizes, as approved by the code or other authority having jurisdiction.
- Develop new design criteria and sizing requirements for water and sanitary drainline pipes in buildings with multiple sources of reduced flows.

> I think when you want to consider going low flow or waterless it's about occupant and user education—that's from somebody who's using it. You've got to educate them.
>
> —*Ryan Adrian, P.E., mechanical engineer, HDR*

An installed retrofit urinal.

installation conditions noted above and does not apply to residential dwelling unit applications.)

Does this mean waterless or low-flow fixtures are the sole cause of plumbing headaches in existing facilities? No, not necessarily; but they could be a factor. As AWE is careful to point out: "To be clear, plumbing research engineers and related professionals do not attribute water-efficient toilets alone to be the source of potential future waste transport problems in building drainlines and sewers. Problematic plumbing designs, isolated horizontal drainlines, and significantly reduced flows from multiple other fixtures and appliances would likely also have to be present for stoppages to occur."

Lessons from the Real World

At Duke University, Durham, N.C., the desire to install waterless and low-flow fixtures in its facilities more than 10 years ago stemmed from responsible water management but also from the convenience of being able to retrofit the fixtures with existing, rough-in dimensions, as well as for aesthetics, according to John Noonan, Duke's vice president of Facilities Management. He says the university has progressed toward lower flow-rate fixtures as the technology has improved over the years.

Although he observes that earlier models of retrofit flush valves did not offer the flushing performance and water savings, Noonan says current technology "has drastically improved performance such that now you don't have to sacrifice performance for low water use, and it's being delivered at the same cost as older, higher-flow models."

To those facility managers or building owners considering a retrofit to more efficient fixtures, Noonan offers a few words of advice before taking the plunge: As with any good project execution, he says to figure out a goal, make a plan and a budget, and stick with it. To develop that plan, facility executives should conduct a water audit and figure out where the best potential for reduction is.

"It's better to do one toilet retrofit really well than to do five retrofits on the cheap," he says. "If you do try and cut corners, your occupants will notice, you will get more service calls, and your mechanics will hate it. Secondly, in general, don't try and use old high-flow china and mate it with new, low-flow valves. Again, everyone will notice and no one will like it," Noonan observes.

When retrofitting a large bathroom with a whole series of fixtures, he says a very practical tip is to retrofit all but one of the fixtures/valves in the gang. Leaving one urinal or toilet as high-flow helps reduce main waste line clogging because it lets a little more water clean out the pipes. This is particularly important in older buildings with old cast-iron pipes that may clog more easily, Noonan says.

Ryan Adrian, P.E., mechanical engineer at global architecture, design and engineering firm HDR, Lincoln, Neb., agrees and recommends that maintenance staff look for systems or modifications that allow for intervals of continuous flow to clean out

(continues on page 80)

Retrofit from manual to sensor.

Sloan offers the widest variety of easy-to-use install retrofit products designed to convert manual flushometers to sensor activated. Installation is quick and easy, without having to disconnect the flushometer from the stop and fixture.

TOP MOUNTED

SOLIS® Solar-powered, with battery backup
ECOS High efficiency, battery-powered
G2 Standard, battery-powered

SIDE MOUNTED

DFSM Dual flush, battery-powered with TMO
SFSM Single flush, battery-powered with TMO
SMOOTH Over-the-handle, battery-powered with TMO
SMO Standard, battery-powered

It is easy to upgrade your commercial restroom and see the benefits of hands-free activation, improved hygiene and additional water savings.

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Circle No. 38

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> The efficacy of low-flow fixtures depends on the building and its plumbing system, which vary significantly by age, materials, design and quality of the installation.

pipes and deal with blockage issues that may result from low-flow fixtures.

"You don't need a lot of flow, you just need short intervals of continuous flow," Adrian notes. "Find a way to put water in a pipe once a week for a couple of minutes and the system should work well."

HDR has been field testing low-flow fixtures in its headquarters office for the past year where it has been experimenting with a "hybrid" urinal from a major fixture supplier to determine if there's any validity to the claims about pipe blockage from low-flow fixtures. The hybrid fixtures use a waterless cartridge and a solenoid valve behind it for maintenance flushing, which HDR does every 72 hours.

"What you hear a lot is that you have the pipes that back up, and they build up and they calcify inside there. This product was brought to us, and we wanted to see if it really did debunk the myth of the buildup in the pipes," Adrian explains.

Consequently, HDR installed two hybrid units in restrooms on heavily trafficked floors (85 to 100 people) where the fixtures are sure to get a lot of use. Adrian says HDR wanted to know if the hybrid technology worked better than waterless or standard low-flow fixtures, as well as to stay on the cutting edge of available technology.

The result?

"We haven't seen any issues with flushing or odors, which is the big one. There's been no noticeable difference," Adrian says. "From that standpoint, I would say the technology is absolutely working."

Although HDR has yet to pull the urinals off the wall to determine if buildup is occurring, Adrian says the hybrid units have been a "win" from an operational perspective, as well as an aesthetic one.

"I think the technology is working from just a visual standpoint because people didn't realize what they were so they thought they could just flush stuff down it like the old ones," he says.

That's presented some maintenance headaches, Adrian admits; some people have placed items in the urinals that can damage the cartridge, which costs about $40 each to replace. However, the recurrence of such incidents has declined as people are educated about the product, which Adrian says is crucial to implementing any new fixtures.

"I think when you want to consider going low flow or waterless, it's about occupant and user education—that's from somebody who's using it. You've got to educate them," he says. "If you don't educate them on what's going in, and you just change it on day one and say, 'Use it,' you're probably going to get a lot of pushback and things aren't going to go very well."

At the end of the day, the question isn't whether your facility upgrades to completely waterless, low flow or some hybrid technology in between. What matters is that in your water-conservation efforts, you evaluate your facility's usage, plumbing system, local regulations, and available fixtures—and educate users—to ensure efficiencies are gained effectively and your money isn't going down the drain.

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Circle No. 39

SOLAR PANELS INTEGRATE INTO ROOF SYSTEM

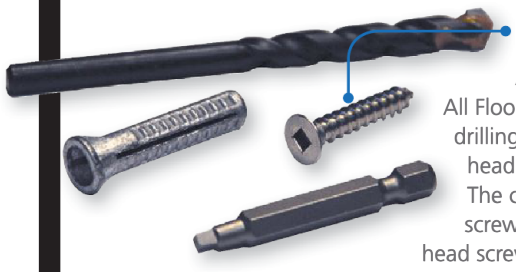
GAF has released the DecoTech Roof-Integrated Solar System, which can be installed by roofing contractors. Designed to provide an attractive, low-profile alternative to typical rack-mounted solar panels, the DecoTech System is integrated directly into the roof system. GAF uses premium solar panels to optimize power output. Robust flashing and a black perimeter shield reduce the risk of leaks and animal intrusion while creating a monochromatic profile that helps blend the Deco Black panels into the roof for maximum aesthetic appeal.

www.gaf.com // Circle No. 40

STATEMENT LED LIGHTS BOAST PERFORMANCE

Hubbell Lighting's Litecontrol has introduced the Inde-Pendants 32L, a family of decorative ring and cylinder fixture combinations that provide the aesthetic appeal of discrete decorative pendants with the benefits of LED technology. The family gives lighting specifiers and designers the flexibility to choose from three primary styles—Cylinder and Ring, Cylinder or Ring. The Cylinder includes concentric layers of light with a frosted and clear glass effect. The extruded Ring, which incorporates unique illumination technology, highlights the minimalistic form factor that houses an internal flexible LED source designed for maximum performance output.

www.litecontrol.com // Circle No. 41



SCREWS ARE UPDATED BASED ON CUSTOMER FEEDBACK

After receiving customer feedback, Protect-All Flooring has upgraded the #8 screw to a self-drilling stainless-steel screw. The 1 1/4-inch hex head screw is self-drilling with a hex head driver. The company also added a #12 stainless-steel screw to its line. It is a 1 1/4-inch counter sunk head screw with a square drive, along with a 5/16-inch concrete bit, square drive bit and lead anchor. These screw sizes join the #10, 2-inch stainless-steel (counter sunk head) screw with a Square Drive, along with a 5/16-inch concrete drill bit, square drive bit and lead anchor.

www.protect-allfloooring.com // Circle No. 42

EFFICIENTLY HEAT LARGE, OPEN SPACES

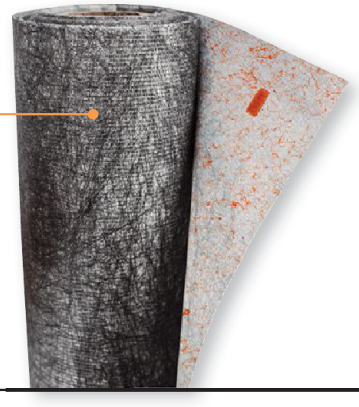
Cambridge HTHV Space Heating Systems are designed to meet a building's heat and air load requirements. The Blow-Thru design, with 160 F maximum temperature rise and discharge temperature, delivers usable heat and thermal comfort with minimal temperature variation throughout the heated space. The high-efficiency space heater is suited for large commercial and industrial buildings. In addition, discharge air from the S-Series Space Heater provides large volumes of fresh, warm air flowing throughout the building, which eliminates higher ceiling temperatures and uncomfortable drafts. The S-Series Heater utilizes 100 percent fresh air to dilute contaminants generated within the building.

www.cambridge-eng.com // Circle No. 43

HOUSE WRAP SHEDS MORE WATER

TYPAR Drainable Wrap has the ability to shed more bulk water than traditional house wraps and offers the added efficiency of an integrated drainage plane while providing durability. The science behind the wrap is a layer of multi-directional polypropylene fibers that diverts bulk water from exterior wall cavities and drains it away from the assembly, preventing the potential damage caused by mold and rot. The highly efficient TYPAR Drainable Wrap helps shed water while meeting or exceeding current code requirements per ASTM E2273.

www.typar.com // Circle No. 44

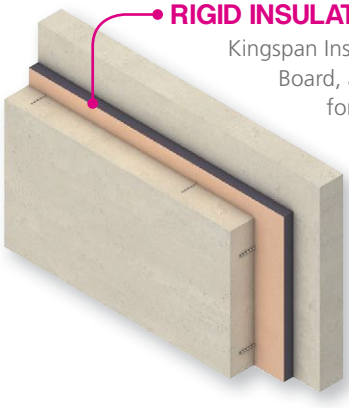


METAL PANELS FEATURE VARYING RIB PATTERNS, WIDTHS

Petersen Aluminum has added seven Highline products to its Precision Series line of metal wall panels. The wall panels feature varying rib patterns and widths for creative architectural effects in commercial, institutional, residential and many other applications. The new Highline panels are 1 3/8-inch deep, resulting in dramatic building exteriors and deeper shadow lines than the original Precision Series HWP, which is 7/8-inch deep. Options include 12- or 16-inch widths, a no-clip panel, or clip-fastened panel to accommodate thermal expansion and contraction. The steel or aluminum panels, which can be installed horizontally or vertically, can be specified with perforations or applied as equipment screens.

www.pac-clad.com // Circle No. 45

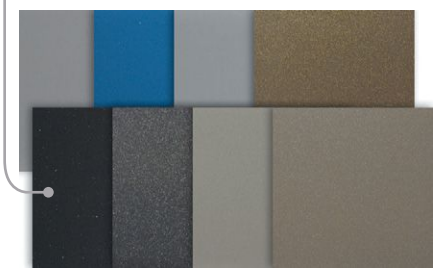
RIGID INSULATION IS IDEAL FOR CONCRETE WALLS



Kingspan Insulation has introduced the Kooltherm K20 Concrete Sandwich Board, a premium performance rigid thermoset insulation that is ideal for tilt-up and precast concrete wall applications. The product's core is a premium performance rigid thermoset fiber-free phenolic insulant manufactured with a blowing agent that has zero Ozone Depletion Potential and low Global Warming Potential. It offers an R-value of 17 on 2 inches, fire and smoke performance, and is unaffected by air infiltration. Kingspan Kooltherm K20 Concrete Sandwich Board is available in standard sizes or can be ordered in custom lengths. It is available in R-values ranging from 13.5 to 40.

www.kingspaninsulation.us // Circle No. 46

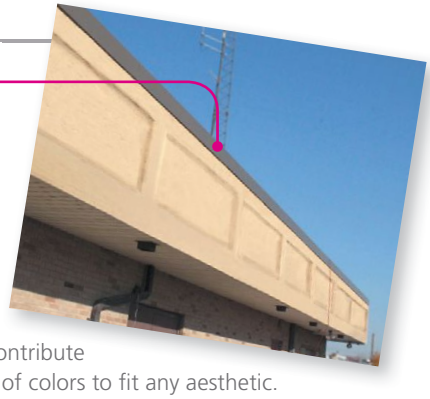
METAL WALLS SHIMMER WITH PVDF COATING SYSTEM



CENTRIA has introduced the Celestial Effects Coating System to its line of polyvinylidene fluoride (PVDF) coating systems. The coating system showcases deep, radiant colors that shimmer in the light, making exterior walls stand out while offering gloss retention on a variety of metal substrates, including aluminum, hot-dip galvanized and Galvalume. The coating system resists fading, chalking, dirt and stains, so projects retain their intended vibrant façade. Celestial Effects is also available for coil and extrusion applications.

www.CENTRIAPerformance.com // Circle No. 47

METAL EDGE SYSTEM IS FLASHLESS



Garland's R-Mer Force flashless metal edge system eliminates the need for flashing plies that would ordinarily be installed at the roof's edge, saving time during installation and costs on labor and materials. R-Mer Force is anchored to exterior walls with aluminum anchors, which means there are no penetrations on the roof surface. Fascia cover pieces snap onto installed anchors, completing the installation and blocking out the elements to protect a building. Thermoplastic elastomer compression seals also contribute to the clean finish. The system is available in a wide variety of colors to fit any aesthetic.

www.garlandco.com // Circle No. 48

IMPROVE HVAC EFFICIENCY AND IAQ

enVerid Systems Inc. HVAC Load Reduction (HLR) technology captures and removes contaminants, like carbon dioxide, formaldehyde and VOCs, from indoor air while intelligently managing the flow of outside air into a building. It reduces the required HVAC capacity and size and extends the lifetime of HVAC equipment. The technology provides an average of 20 to 40 percent annual energy cost savings and enables a 60 to 80 percent reduction in outside air intake required for ventilation. It is compliant with ASHRAE Standard 62.1 and eligible for LEED credits and utility rebates. The technology easily can be retrofitted to an existing commercial building.

www.enverid.com // Circle No. 49

AIR-SOURCE VRF SYSTEM FEATURES SMALL FOOTPRINT

LG Multi V 5 is available from 6 to 42 tons with a choice of three-phase 208-230V or 460V electrical power as heat-recovery/heat-pump outdoor units. New to the Multi V line-up are the single frame 16-, 18- and 20-ton units. As a smaller and lighter solution, the Multi V 5 20 ton reduces footprint requirements and helps reduce installation costs. The product features Advanced Smart Load Control, which proactively addresses the impact of pending weather changes. The Multi V 5 also features a new biomimetic fan design, which enables the unit to operate more efficiently, increase airflow and reduce noise level.

www.lghvac.com // Circle No. 50

PROTECT JOB SITES WITH SECURITY CAMERAS

According to a National Insurance Crime Bureau report, the construction industry suffers more than $1 billion in losses each year in heavy equipment alone. That doesn't take into account small tools theft, which is more difficult to analyze. TrueLook provides construction cameras combining live job-site viewing, project time-lapsing and HD security. Its Fixed-Position cameras produce high-resolution images. These cameras are available in 12 megapixel, which is more than 4k resolution, or 5MP, twice the resolution of 1080p. Fixed-Position cameras offer a wide field-of-view and the camera will never move during security recording.

www.TrueLook.com // Circle No. 51

COIL SERIES ELIMINATES BELT-DRIVE CONCERNS

International Environmental Corp. has released its Horizontal and Vertical (HDY/VDY) Direct Drive Blower Coil Series. Accommodating a variety of applications, these models are equipped with a direct-drive EC motor, eliminating concerns associated with belt-drive systems, including mechanical drive noises. The HDY/VDY Blower Coil Series, which ranges from 600 to 3,000 cfm, features large blower wheels and a broad range of performance. It features a wide range of vertical and horizontal model sizes, chilled and hot water coils and electric heaters, and is designed to work with varying space requirements.

www.iec-okc.com // Circle No. 52

EXIT DEVICE LINE NOW FEATURES TRIM OPTION

dormakaba has expanded its 8000 Series exit device product line to include the 8H Escutcheon Trim. In after-market installations, it enhances aesthetics by covering up existing holes. The trim features a single plate connecting pieces together, providing a seamless look. It offers five functions, three lever styles and one knob style and is available in six finishes with designer and custom colors available at additional charge. The product, which accommodates multiple mounting stand-offs, easily converts from Entry (08 Function) to Storeroom (09 Function, key only removable when locked). The trim has achieved ANSI/BHMA 156.3 Grade 1 rating, is UL Listed, and is ADA and NFPA 80 and 101 compliant.

www.dormakaba.us // Circle No. 53

DIRECTLY REPLACE FLUORESCENT LAMPS WITH LED TUBES

Universal Lighting Technologies Inc. is expanding its linear LED options with EVERLINE T5HO LED Tubes. Two available power levels—25.5W and 22.5W—are direct replacement options for F54T5HO fluorescent lamps. The T5HO tubes, which increase energy savings by more than 50 percent versus standard F54T5HO fluorescent lamps, are compatible with most Programmed Start ballasts. The tubes are easy to install and offer less maintenance than traditional fluorescent with a 50,000-plus-hour lifetime at L70. They offer a CRI of 82 and correlated color temperatures of 4000K and 5000K. The wide 240-degree beam angle eliminates dark zones ensuring uniformity and accuracy of light output.

www.unvlt.com // Circle No. 54

SOFTWARE SOLUTION HELPS BETTER UTILIZE OFFICE SPACE

PointGrab, developer of the CogniPoint edge-analytics smart-sensing solution, has partnered with Serraview, a provider of workplace management and optimization software. By integrating CogniPoint with Serraview's cloud-based space planning software, the companies help organizations transform their workplaces by delivering real-time space utilization intelligence, resulting in less wasted space, increased employee productivity and better talent attraction. The solution allows organizations to track and understand how their employees work best. By utilizing advanced deep-learning neural networks technology, CogniPoint delivers the actionable analytics necessary to optimize space management, energy savings and business intelligence.

www.pointgrab.com // Circle No. 55

MATCH CARPET TO PAINT AND FABRIC

The latest carpet tile collection from Bentley—Disruptor + Teleport—features an assortment of twisted yarns, cabled and bundled, that produce depth and movement on the floor. Bentley's tool in color flexibility, COLOR-CAST, matches color from any source, including paint chips and fabric swatches. Disruptor + Teleport styles are available in 24 by 24 inch and 18 by 36 inch and utilize Antron Legacy Type 6,6 Nylon. The products, which are Cradle to Cradle, NSF 140 and CRI Green Label Plus certified, are produced in a LEED-EBOM Gold-certified manufacturing facility.

www.bentleymills.com // Circle No. 56

ADJUST HAND DRYER'S SPEED, SOUND

American Dryer has made available eXtremeAir ADA, an energy-efficient surface-mounted hand dryer that delivers ADA compliance. The eXtremeAir ADA is designed with a high-intensity single port nozzle that delivers a fast 12-second dry time with only 950W. Adjust the sound and speed of each model to provide the sound sensitivity needed for any environment. The addition of a HEPA filtration system and antimicrobial technology is designed to reduce contaminants in the air while drying. The product offers global universal voltage and a choice of a white, black or brushed stainless-steel finishes.

www.americandryer.com // Circle No. 58

Learn more about this product via a short video.

SENSOR IDENTIFIES A ROOM'S COOL, WARM SPOTS

Mitsubishi Electric US Inc. Cooling & Heating Division has introduced its CITY MULTI ceiling cassette indoor unit, featuring the 3D i-see Sensor. The sensor is mounted to the exterior panel of the ceiling cassette and continuously analyzes the thermal profile of a room, identifying cool and warm spots. When a room is occupied, the sensor identifies heat signatures and applies cool or warm air as needed. The feature may be customized to deliver air toward or away from occupants. In an unoccupied room, the sensor automatically adjusts the temperature levels and may be customized to switch to an energy-efficiency mode. The unit is available in capacities ranging from 8,000 to 48,000 Btu per hour.

www.mitsubishipro.com // Circle No. 57

Learn more about this product via a short video.

ROOF COVER BOARD IS LIGHTWEIGHT

USG Corp. has released USG Securock Brand Glass-Mat Roof Board with an UltraLight core. This roof board is up to 18 percent lighter. It can be used in mechanically attached systems and scores and snaps cleanly and easily. The roof board protects the roof system from hail and foot traffic and is fire-resistant for use as a fire barrier and thermal barrier. It provides a moisture- and mold-resistant core and facer.

www.usg.com // Circle No. 59

ACHIEVE CLASS A FIRE RATING WITH LAMINATED PANELS

NRP-FIRESTOP is a laminated panel from Parkland Performance Panels that can be adhered over painted walls, concrete block, plywood, insulating foam and unfinished drywall. A Class A (ASTM E-84) rating can be obtained even when the panel is installed over flammable substrates, such as OSB or plywood. With NRP-FIRESTOP over Dow Styrofoam, the panels passed the room corner burn (UL 1715). A wide variety of laminates are available, including veneers, metallics, marbles, pebbled textures and marker boards. Matching and contrasting moldings are available, or the panels can be installed in a seamless construction.

parklandplastics.com // Circle No. 60

MINERAL WOOL INSULATION IS ALTERNATIVE TO SPRINKLER SYSTEM

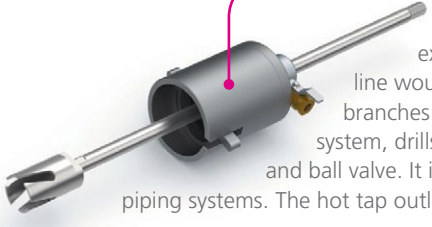
Knauf Insulation is giving architects, specifiers and insulation contractors an alternative to sprinkler systems in multifamily interstitial spaces with the introduction of Inner-Safe Concealed Space Batt Insulation. The non-combustible glass mineral wool batt insulation exceeds NFPA 13 Standard requirements. It can be installed in typical I-Joist and Open Web joist types found in multifamily projects and is available for cavity depths from 8 to 24 inches. Recent updates to NFPA code stipulate that concealed spaces filled with non-combustible insulation do not require sprinkler protection (NFPA 13, SECTION 8.15.1.2.7).

www.knaufinsulation.us // Circle No. 61

INTERIOR GLAZING OFFERS WOOD LOOK AND FIRE PERFORMANCE

Technical Glass Products' Fireframes TimberLine Series allows design professionals to bring the look of wood frames to interior glazing applications with stringent fire and life-safety performance criteria. The innovative system pairs a high-strength steel sub-frame with a real-wood veneered metal cover cap. The result is slender fire-rated frames that capture the warmth of wood, enable tall spans and serve as a barrier to radiant and conductive heat transfer. The series is combined with Pilkington Pyrostop fire-rated glass to allow for unrestricted glazing in locations where the total glazing area exceeds 25 percent of the wall. Frames are available in multiple wood species, including white maple, cherry, fir and oak.

www.fireglass.com // Circle No.62



INSTALL BRANCHES TO LIVE WATER SERVICE LINES

Aquatherm North America and McElroy have made available the Polypropylene Hot Tap Tool for exclusive use with Aquatherm polypropylene random (PP-R) pipe and fittings. Previously, a new branch line would require shutting down and draining the piping system. This new tool allows the installation of branches to a live service line, eliminating service disruption. The patent-pending design completely seals the system, drills through the pipe wall and retracts cutout pipe pieces, leaving in place a fusion-welded outlet fitting and ball valve. It is designed to provide branch lines ranging from 1- to 2-inch-nominal diameter on Aquatherm PP-R piping systems. The hot tap outlet can be used on main pipes that are at least twice the nominal size of the branch line.

www.aquatherm.com // Circle No. 63

LED PRODUCT LINE OFFERS LIGHTING FOR VARYING USES

LEDVANCE has expanded its SYLVANIA SubstiTUBE LED product line to include a dimmable glass LED T8, an LED T5HO, LED Ubend replacement for traditional fluorescent T8 lamps and DULUX L LED TT5 lamps. SYLVANIA SubstiTUBE IPS LED T8 Lamps are available in 4- and 3-foot versions delivering 1650 lumens, a 2-foot version delivering 1100 lumens and new dimmable 4-foot glass version delivering 2200 lumens. SYLVANIA SubstiTUBE LED T5HO Lamps were recognized in the recent IES Progress Report for delivering 3500 lumens using 25W. SYLVANIA SubstiTUBE DULUX L LED TT5 Lamps use 17W to deliver 2200 lumens. SYLVANIA SubstiTUBE CURVALUME IPS LED T8 Lamps are Ubend replacements for traditional fluorescent T8 lamps and offer full illumination from end to end.

www.sylvania.com // Circle No. 64

INCORPORATE EMERGENCY LIGHTING INTO EXISTING FIXTURES

Keystone Technologies' SmartSafe LED Emergency Back-up Lighting product line enables incorporation of emergency lighting capabilities into a broad range of direct-wired LED tube, fluorescent and standard LED fixtures. The SmartSafe kit includes not only the battery and LED driver, but also an LED module, making it possible to add emergency lighting to almost any LED or fluorescent light fixture and ensure reliable and continuous lighting operation in the event of a power failure. The line recently was recognized as "Best Overall Product" by the National Association of Innovative Lighting Distributors and the top product within the "Driver/Ballast" category.

www.KeystoneTech.com // Circle No. 65

DAMPERS WITHSTAND COASTAL ENVIRONMENTS

The CD50CE and TED50CE dampers from Ruskin combine the strength of stainless steel and protection of anodized aluminum to combat salt-water elements. The CD50CE is Air Movement and Control Association licensed as Class 1A and meets the IECC. The damper features low-maintenance, non-corrosive bearings and shake-proof linkage; airfoil blades for high-velocity HVAC systems, low pressure drop and quieter performance; and mechanically fastened blade edge seals. The thermal-efficient TED50CE eliminates thermal transfer and the potential for condensation. The damper also meets the IECC, features the same non-corrosive bearings and shake-proof linkage as the CD50CE, and includes twin seals to ensure no thermal path.


CD50CE

www.ruskin.com // Circle No. 66

AD INDEX

RETROFIT // May-June 2017

PHOTOS: ROBERT SEVERI

UNIQUE MARKETING CENTER CONNECTS SITE'S PAST TO ITS FUTURE

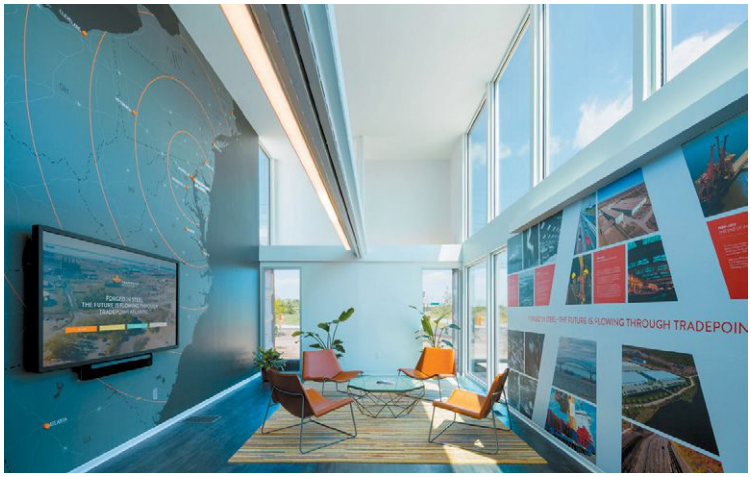
WRITTEN BY | **AMANDA ZANK**

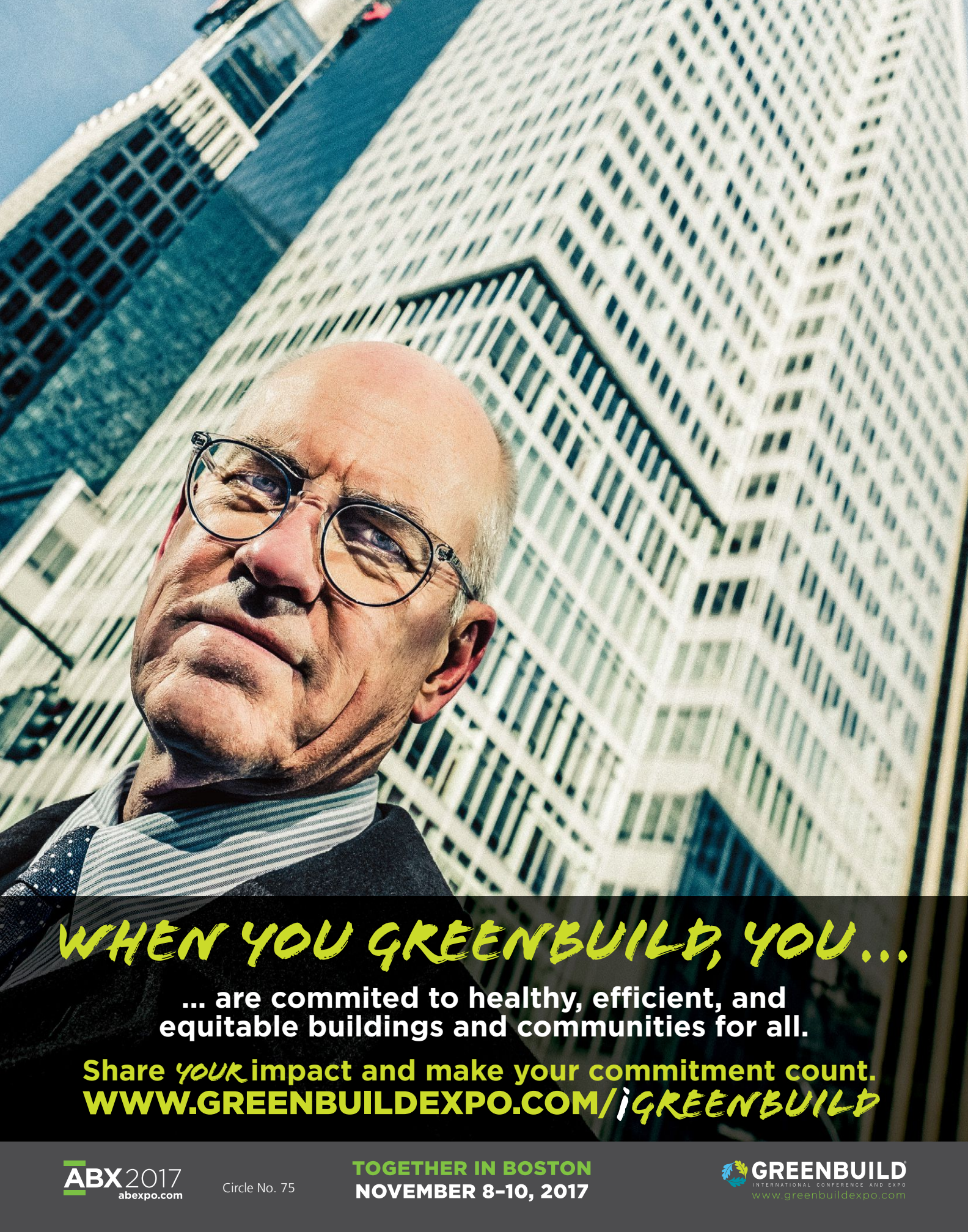
Previously a symbol of a booming industrial economy in Baltimore, the Bethlehem Steel Mill at Sparrows Point once employed 30,000 people, pushing Baltimore city's population to more than 1 million in the 1950s. The site slowly receded over time, as did the industry, and most recently was home to a number of abandoned buildings. The area, with access to rail, interstates and a seaport, was ripe for redevelopment, reimagining and a strong vision. Enter Tradepoint Atlantic—now a 3,100-acre industrial site.

To reflect the significance of this redevelopment and the commitment to this project, the Tradepoint Atlantic team and its brokerage partner, Chicago-based JLL, enlisted Gensler, a global architecture and design firm, to design a $1.3 million state-of-the-art marketing center. Playing on the transformative power of shipping, the modern, media-enhanced marketing center is housed in 1,400 square feet of office space built using upcycled shipping containers from New York-based SGBlocks.

The center serves as a dedicated space where developers and JLL brokers can share their vision for the area. The lobby hosts an exhibit on Sparrows Point history, adjacent to an interactive touchscreen display, which features customizable presentations, maps and information about the site. The public entranceway is flanked by two conference rooms, a small private office and a restroom.

"Tradepoint Atlantic is quickly becoming recognized as one of the most strategically located and important multi-modal, multi-commodity terminals in North America. Its positive economic impact will be felt far beyond the immediate site, as it once did in its storied history," says Mark Levy, executive managing director, JLL. "The new marketing center reflects not only the future impact of the area, but also pays homage to the past."

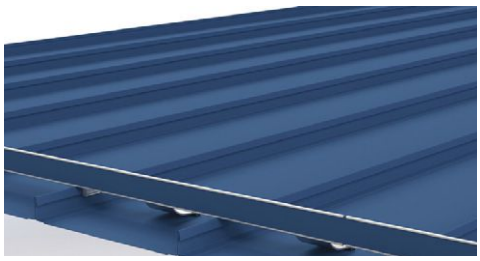




THE UNDISPUTED LEADER IN SNOW RETENTION SOLUTIONS!

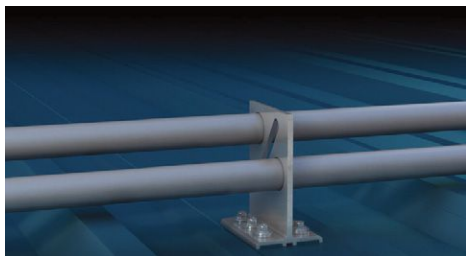
S-5!® prides itself in ingenuity, quality, and holding strength. Our innovative snow retention products are made in the U.S.A. to the highest quality standards. Lab testing and decades of heavy-duty applications prove that when it comes to preventing snow avalanches, S-5! is the best in the business, outperforming all other options on the market.

- **Proven**
- **Strong**
- **Safe**
- **Easy**
- **Versatile**
- **Warranted**
- **Engineered**



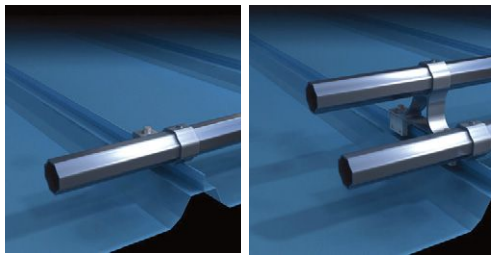
ColorGard®

Fitted with a strip of the roof material itself, ColorGard ensures a perfect color-match for the life of the roof.



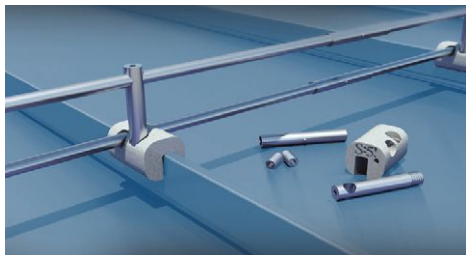
VersaGard

VersaGard™ is compatible with almost any trapezoidal, exposed-fastened profile. No messy sealants to apply! No chance for leaks!



X-Gard™

X-Gard can be designed as a one- or two-pipe system spanning up to 48". No other pipe snow retention system on the market has proven stronger than X-Gard.



SnoRail™ and SnoFence™

Up to six times the strength of adhesively-mounted devices, these systems offer a long-term, dependable solution for traditional standing seam and sheet copper roofing.

DualGard™

DualGard™ a complete, affordable system only S-5! can provide. DualGard also works with most face-attached roofs and VersaGard™.

S-5!®
The Right Way!

Call or visit www.S-5.com to find out more about S-5! Snow Retention Systems.

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