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## \* Blood, Sweat & Tears:

An Iowa Town Revives  
the Last Frank Lloyd  
Wright-designed  
Hotel in the World

+ More Hospitality &  
Entertainment Projects

\* TREND ALERT:  
what's in  
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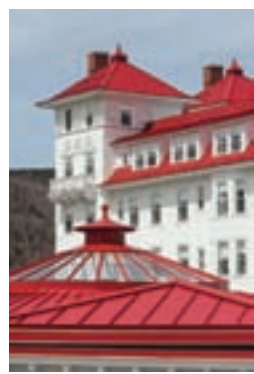
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- Deadwood Mountain Grand Casino and Resort, Deadwood, S.D.



← cover

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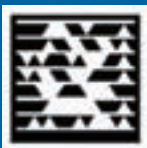
## Survives the Rush



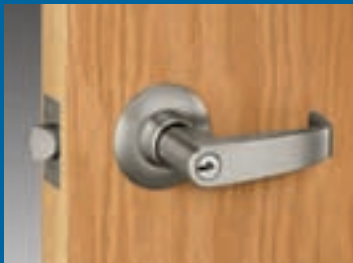
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## UP CLOSE AND PERSONAL

I'm not usually lucky enough to tour the buildings I write about for the magazine. In the case of this issue's cover story—the Frank Lloyd Wright-designed Historic Park Inn Hotel in Mason City, Iowa—the luck that seemed to follow the restoration project itself (read about it on page 28) also may have helped me.

To fully experience the hotel, I called to make a reservation for the night my tour was taking place—a Friday in late January—and was told there was only one room left, which I took. I found out later I was traveling to Mason City the weekend of nearby Clear Lake, Iowa's Winter Dance Party. The annual event, which is held at the Surf Ballroom, commemorates the musical legacies of Buddy Holly, Ritchie Valens and J.P. "The Big Bopper" Richardson, who died in a plane crash after performing at the Surf Ballroom in February 1959. I thought it was pretty lucky I was able to reserve a room less than two weeks before the Winter Dance Party in a historically significant hotel with only 27 rooms!

Consequently, Scott Borcharding, IIDA, principal and interior designer for the restoration architect, Bergland + Cram, Mason City, and Jean Marinos, finance director for the non-profit Wright on the Park, which owns the Historic Park Inn Hotel building, graciously spent hours with me recalling unique stories about the restoration. Unfortunately, not every detail made it into the story, but I thought you might find the following interesting:

- Just as when the hotel was constructed in the early 1900s, the restoration team was composed of mostly local contractors, subs and artisans, which Marinos attributes to the project's success. She says: "Everybody on the board, Bergland + Cram and Henkel Construction are friends. We live in the same community; we know each other; we like each other. There were times when we didn't like each other! But, in the end, we appreciated each other's efforts and commitment."
- During my tour, Borcharding, Marinos and I ran into six Winter Dance Party attendees who were self-described architecture aficionados. The tourists were very impressed by the restoration and verbally patted Borcharding and Marinos on the back for saving the hotel in such a fantastic way.
- I would wholeheartedly recommend staying at the Historic Park Inn Hotel, not only for the historic experience, but also because it was one of the quietest and most comfortable hotels I have stayed in. I didn't hear any traffic noise, slamming guestroom doors or dings from the elevator. I did, however, notice the original wood flooring under the carpet in my room squeaked—a nice preservation of the building's character.
- My travel companion and I ate at the 1910 Grille in the hotel. Our entrees were delicious. I've been trying to recreate my grilled salmon served on a lemon, spinach and tomato risotto while my friend commented that his New York strip was among the best steaks he has had in his life—and he is what I would call a beef snob.

There is still so much more to the story of the Historic Park Inn Hotel. I urge you to make the trip to Mason City and tour the hotel for yourself. (Find information about tours at [wrightonthepark.org/hotel/tours](http://wrightonthepark.org/hotel/tours).) While you're in town, you can visit the boyhood home of Meredith Willson, composer of *The Music Man*, and visit Music Man Square museum; experience the largest collection of Prairie School-style houses in the Rock Crest-Rock Glen Historic District; as well as visit the nearby Surf Ballroom, which still looks as it did that fateful night in 1959. Happy travels!

**CHRISTINA KOCH**  
Editor in Chief

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## CONTRIBUTING WRITERS



**Aaron Liles**, LEED AP, is director of construction for C1S Group, a full-service professional engineering and construction firm based in Dallas. Because the national firm specializes in design-build, Liles writes about the benefits of design-build for commercial renovation and restoration projects in “Business”, page 20.



**Craig DiLouie** is an educator and journalist specializing in the lighting industry. He is Lighting Certified by the Austin, Texas-based National Council on Qualifications for the Lighting Professions and writes a blog for the industry, [www.lightnowblog.com](http://www.lightnowblog.com). In “Component”, page 46, DiLouie writes about how product regulations have targeted least-efficient fluorescent and HID lighting options.



As product marketing manager with LEESON Electric, Grafton, Wis., **Cheryl Higgins** has been keeping a close eye on the Washington, D.C.-based U.S. Department of Energy’s Small Motor Rule, which requires “small” motors to be more efficient and takes effect in March. Learn how the ruling will affect buildings in “Energy”, page 50.



**KJ Fields**, who writes about design, sustainability and health from Portland, Ore., tackles the renovation of the former Sheet Metal Workers National Pension Fund Building in Alexandria, Va., in “Residential”, page 54. Today, the 60-unit condominium building meets demand for grand, one-level living on the Potomac River.



**Jim Wirick**, AIA, LEED AP BD+C, is a principal of Irvine, Calif.-based LPA Inc., one of the largest architectural firms in California. In “Historic”, page 62, he writes about the firm’s recent renovation of the Arboretum in Garden Grove, Calif.—an Orange County landmark. LPA applied sustainable design to achieve a balance between the needs of the church and flawless preservation.

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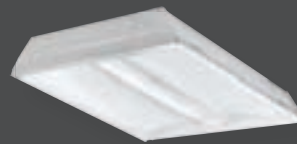


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Scott Borcharding, IIDA, principal and interior designer for Bergland + Cram, Mason City, Iowa, and Jean Marinos, finance director for the non-profit Wright on the Park, share insight about the Historic Park Inn Hotel, the last remaining Frank Lloyd Wright-designed hotel in the world, which is located in Mason City.



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## NREL Finds Interconnection Delays with Solar Installations



The Washington, D.C.-based Energy Department's National Renewable Energy Laboratory has gathered and analyzed data for more than 30,000 solar photovoltaic installations across the U.S. to better understand how interconnection regulations

align with actual project completion timelines. The findings indicate that interconnection process delays are common, ranging from several days to months. Streamlining the application review and final authorization processes can ultimately benefit utilities and solar consumers by reducing the time and cost associated with going solar. ¶ "We now have a clearer understanding of the different process elements associated with connecting a PV system to the grid, such as how long it takes to review and approve an application for interconnection, how long it takes to construct and inspect a system, and how long it takes to get final authorization from the utility," says Kristen Ardani, an NREL solar technology markets and policy analyst and the report's lead author. "This report represents the first data-driven evaluation of how PV deployment timeframes compare to state regulations in key solar markets." ¶ The authors of the report, "Understanding Processes and Timelines for Distributed Photovoltaic Interconnection in the United States" ([www.nrel.gov/docs/fy15osti/63556.pdf](http://www.nrel.gov/docs/fy15osti/63556.pdf)), examined PV project data across 87 utility territories and 16 states. They found that for the residential and small commercial

(less than 50 kilowatts) systems sampled, it took an average of 63 total business days (median 53) from the date a PV installer submits an interconnection application to when the utility grants permission to operate. However, there is wide variation around these values, ranging from less than one week to more than six months. System construction represents the fastest part of the process, taking an average of four business days (median two). Interconnection application review and approval accounted for the most time of any single process examined in this analysis, requiring an average of 27 business days (median 18) to complete. ¶ The report also provides state-level findings based on an analysis of five states with active solar markets—Arizona, California, Colorado, New Jersey and New York. The research suggests states with more stringent interconnection timeframe regulations might reduce overall project length. However, such regulations do not necessarily limit timeframes to the targets specified by interconnection standards. ¶ The impetus and data for this project were identified through stakeholder discussions facilitated through the Distributed Generation Interconnection Collaborative (DGIC), a working-group consortium of more than 100 members. NREL facilitates DGIC with support from the Solar Electric Power Association, Washington; Electric Power Research Institute, Palo Alto, Calif.; and Western Area Power Administration, Lakewood, Colo., to foster knowledge sharing about distributed PV interconnection practices, research and innovation.

## ASHRAE, USGBC AND IES EXPLORE BIOMASS REQUIREMENTS DEVELOPMENT

The development of biomass requirements is being explored by Atlanta-based ASHRAE; the Washington, D.C.-based U.S. Green Building Council; and New York-based Illuminating Engineering Society for inclusion in their co-sponsored green building standard.

ASHRAE/IES/USGBC Standard 189.1, "Standard for the Design of High Performance Green Buildings", contains minimum requirements for the siting, design and construction of high-performance green buildings in support of reducing building energy, resource consumption and other environmental impacts. To that end, the standard contains requirements for the use of renewable-energy systems, such as solar, wind and geothermal.

The Standard 189.1 Committee recently considered a proposal to add biomass to the definition of renewable-energy systems, which was submitted by an interested individual from outside the committee. In this context, biomass includes organic material, such as wood and crop waste, that can be burned to generate thermal energy.

At ASHRAE's 2015 Winter Conference held recently, the committee voted not to accept the proposal to simply add the word biomass to this definition. However, in its response to the proposal, the committee stated that it intends to work on a definition of biomass and requirements for the use of biomass to meet the renewable-energy requirements of the standard.

Although the proposal from the committee must first go through the ASHRAE standards development procedures and public review, the committee is committed to developing a technically sound and responsible approach to include biomass as a renewable. Chair Andy Persily notes the standard currently has no restrictions on the use of biomass as an energy source; however, it does not allow biomass to be used to meet the renewable-energy requirements.

To learn more about actions regarding ASHRAE standards, visit [www.ashrae.org/listserv](http://www.ashrae.org/listserv). There, ASHRAE provides subscriptions to a variety of listserves, including one for Standard 189.1.

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# TRUE Teamwork

WRITTEN BY | AARON LILES, LEED AP

The Design-Build Process Facilitates Successful Renovation Projects

**T**he success of a renovation project hinges on taking a design for what a building can become and executing that vision through the construction process to transform the building into its new form. Uniting the design and construction efforts into one unit creates a seamless process and removes the disconnect between the design vision and the constructed reality that can ruin a renovation project. This is an important objective of the design-build method of building construction. Design-build is a project-delivery system used in conjunction with a single contractual entity for design and

construction. Design-build minimizes risk for facility owners and reduces the construction schedule by overlapping the design and construction phases of a project.

The design-build process offers many advantages compared to using the traditional design-bid-build process for facility renovation or new construction because design-build brings organization to complex and fast-track projects. This is an important benefit for retrofit and renovation projects, which are typically more complicated than new construction. In addition, design-build

*(continues on page 22)*



PHOTOS: C15 GROUP



The collaborative nature of design-build allows contractors to have input about systems used in a facility.

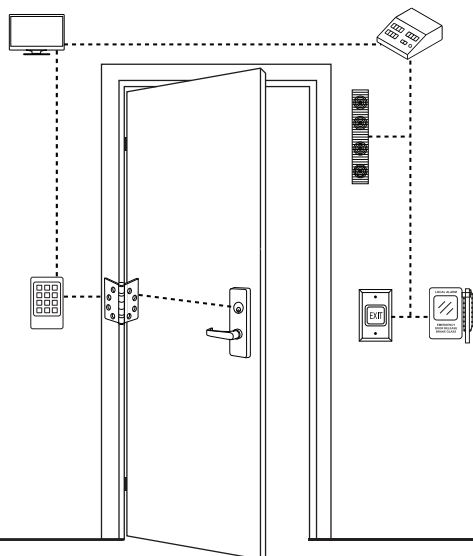


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## DESIGN-BUILD ALLOWS THE COLLECTIVE, COLLABORATIVE TEAM TO THINK OUTSIDE THE BOX WHEN UNUSUAL SITUATIONS EMERGE AND COME UP WITH NEW IDEAS TO SOLVE PROBLEMS.

saves facility owners money and time compared to traditional construction delivery methods.

For example, “Project Delivery Systems: How They Impact Efficiency and Profitability in the Buildings Sector”, a SmartMarket report published in 2014 by New York-based McGraw Hill Construction, surveyed architects and contractors who have worked with multiple project-delivery systems, including design-build. Of those surveyed, 48 percent reported cost savings from 5 to 9 percent, and 19 percent of respondents reported saving 10 percent or more using design-build. (View the report at [bit.ly/1zfrFej](http://bit.ly/1zfrFej).) Meanwhile, the Design-Build Institute of America, Washington, D.C., reports an average cost savings using design-build of 6 percent on its “Design-Build Fact Sheet” ([bit.ly/18Uc7Y8](http://bit.ly/18Uc7Y8)).

One reason for this is that with a single point of responsibility, valuable input regarding constructability, material usage and overall logistics can be incorporated into the design document. Furthermore, when the designer is also responsible for construction, the related costs—whether for materials or design fees—tend to be taken into account earlier in the process.

Time saved in a construction job is also money saved and design-build



A former factory in Dallas is being reborn as a concert venue using design-build.

accomplishes this because construction can begin before all the design work is complete. Of course, using design-bid-build, the design must be done before the project can go out for bid, slowing down the process. Design-build projects are completed in 10 to even 30 percent less time. Not only does the overlap of design and construction save time, but the process is more efficient. Having one firm involved from start to finish adds an inherent efficiency and diminishes the chances for details to fall through the cracks, which can create delays and cost overruns. Owners appreciate that a faster completion means the building is ready

for occupancy and can start delivering ROI sooner.

**COLLABORATION IS** an important component of design-build, which creates an integrated team, allowing for more open communication and the opportunity to even improve the design process. Design-build establishes a culture of integration and collaboration between parties during the earliest phases of a project. With the design and construction teams working as one, there is increased flexibility to address changes and adapt to unforeseen conditions as the project commences. Construction projects always include challenges, but with design-build there is no finger pointing. Instead, the team comes together to work on solutions. As a result, there are usually fewer change orders using design-build and implementing changes that do occur is dramatically simplified.

Facility owners specifically appreciate the contractual benefits provided by design-build. Remember, the design-build team works under a single contract with the project owner for both design and construction services. Using the traditional design-bid-build approach means

*(continues on page 24)*



### Design-Build Pitfalls to Avoid

All construction projects are like minefields with hidden problems facility owners want to avoid, and this is true of design-build projects, as well. Here are a few challenges an owner using design-build for the first time may encounter:

- ✦ Lack of checks and balances between the architect and contractor when one entity is “wearing both hats”
- ✦ Accelerated process can limit the owner’s opportunity to compare different designs
- ✦ Loss of control and reduced owner involvement in the design process
- ✦ Danger of design-build becoming “build-design” if one side gets ahead of the other
- ✦ Lack of project definition and scope prior to construction because the designs are not finalized until after construction had begun

Fortunately, one of the strengths of the design-build process is collaboration between all parties involved. Open and frank communication among constituencies will mitigate any of these possible problems and lead to a successful design-build renovation project.

7:45 P.M.

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## [BUILDING OWNERS] APPRECIATE THAT COMPLEX PROJECTS ARE EASIER TO MANAGE IF THERE'S A SINGLE POINT OF RESPONSIBILITY, OR, IN THE VERNACULAR, 'THERE IS ONE THROAT TO CHOKE'.

owners must deal with two contracts: one for design and then another for construction. This results in additional administrative and legal work, as well as related costs. Often, with the traditional approach, the information provided in the design documentation is insufficient to bid and build the project. This results in disputes, claims and change orders. Suddenly, owners find themselves in the middle of the finger pointing between the designer and contractor. Owners who are caught between these disputing parties are at greater legal risk and can find themselves in what is sometimes called a "liability gap."

With a single contract for design and construction, the majority of responsibil-


ity for the completeness, accuracy and integration of the design and construction processes transfers to the design-build entity. This takes the owner out of the middle of conflicts, reducing risk and liability. In addition, the collaborative nature of design-build and the ability to coordinate and optimize the design and construction processes serves to maximize the quality and reliability of the design documents while minimizing conflicts during construction.

### THE BENEFITS OF DESIGN-BUILD

are evident for any construction project, whether it's a new build or a renovation, but there are particular design-build advantages for retrofit projects. Facility

renovations are almost always unique, one-off projects with individual challenges and conditions. Design-build allows the collective, collaborative team to think outside the box when unusual situations emerge and come up with new ideas to solve problems. In addition, the design team can get real-time input on the field conditions and constructability of a facility. This is an important advantage in older and historic structures where documentation of existing conditions is limited or non-existent. This input from the field can also assist the design team in determining the staging and logistics required for the project, enabling them to schedule these in advance.

*(continues on page 26)*



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Design-build accelerates the renovation process because construction can begin before the design work is completed. In a retrofit project, this means the designs related to infrastructure, such as electrical and other utilities, are completed first and this work commences while the next phase of design begins. As the construction and design work advance simultaneously, existing conditions are assessed in the


field and the information is reported to the team ahead of the design, thus eliminating or reducing many alterations or changes to the completed design. As construction continues, designers specify and order finishing products, which are delivered in time for installation.

The design-build process also facilitates applying sustainable practices to a renovation project. With an integrated

team, it is possible for construction and trade contractors to provide input on sustainable measures or systems to apply to a building. Often these contractors have specific understanding of sustainable materials that could be used in a particular project. They may also have creative ideas regarding the adaptive reuse of existing materials or building components.

**DESIGN-BUILD CONTINUES** to grow in acceptance as a viable method for construction and renovations in non-residential buildings. Between 2005-13, the use of design-build increased 10 percent, according to the DBIA. Design-build has held steady as the project-delivery method of choice in 40 percent of non-residential construction projects for three years. Design-build has proven to be especially popular with large and complex projects valued at \$10 million or more, according to the DBIA's "Design-Build Project Delivery Market Share and Market Size Report", which was prepared in 2014 by Norcross, Ga.-based Reed Construction Data and Norwell, Mass.-based RSMMeans Consulting.

Building owners are embracing design-build to save money and time on construction projects. They also appreciate that complex projects are easier to manage if there's a single point of responsibility, or, in the vernacular, "there is one throat to choke". In addition to commercial property owners, municipalities and other government entities are learning they can save tax dollars and complete projects faster with design-build and they are loosening the reliance on design-bid-build that has predominated in this sector for decades.

The design-build project-delivery system is improving the construction and renovation process for property owners in the private and public sectors. Lower risk, combined with faster project delivery at a reduced cost are benefits few facility owners can resist. The ability for designers to anticipate field conditions by starting construction before completing their designs makes design-build particularly well suited to complicated building renovation and retrofit projects where unknown conditions can lead to expensive change orders. This is why design-build is becoming the construction method of choice for an increasing number of facility operators. 



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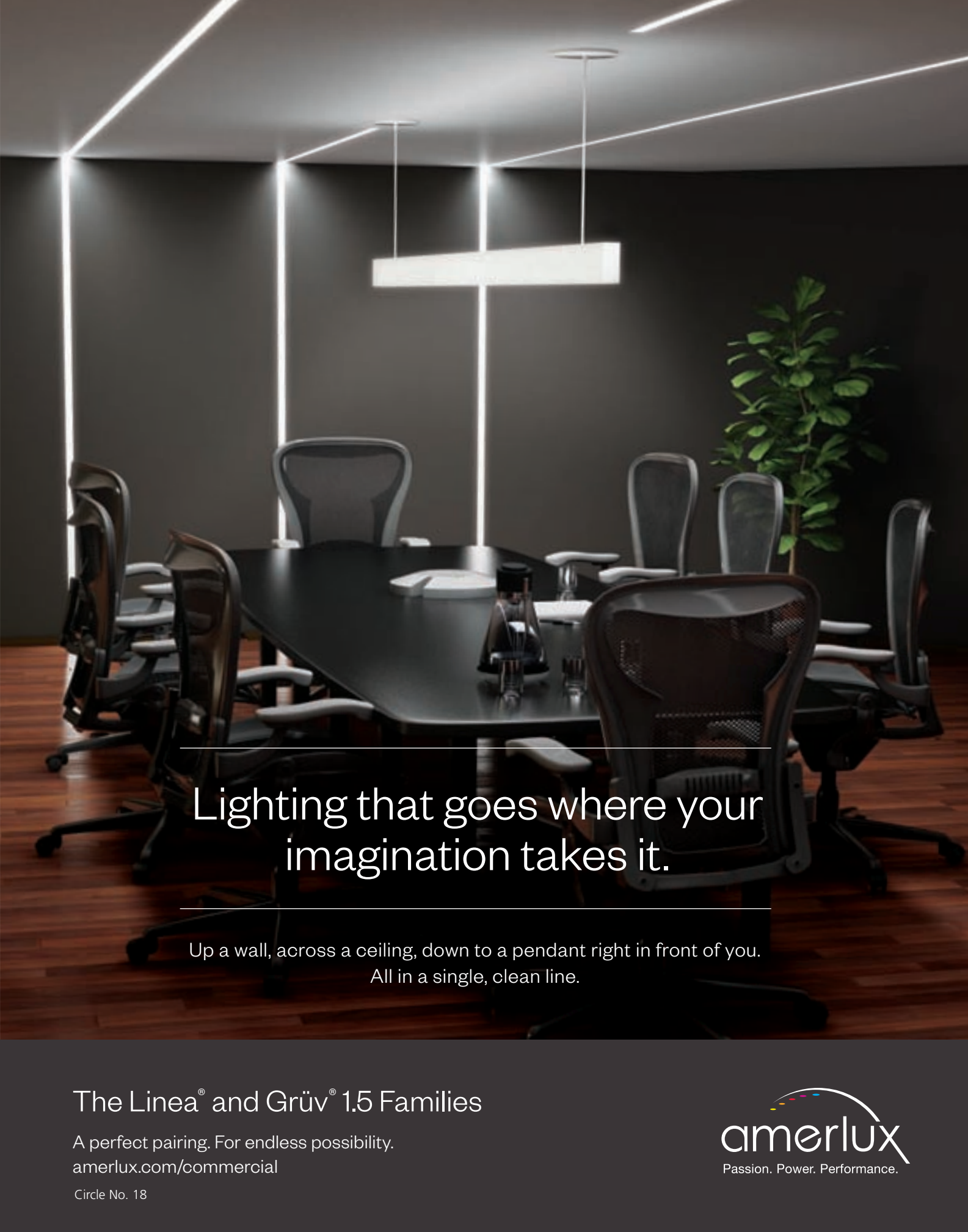
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# BELIEVING 'WRIGHT' IN WHAT'S

Mason City, Iowa, Citizens Restore the World's Last-remaining Frank Lloyd Wright-designed Hotel and Receive Unexpected Help Along the Way

WRITTEN BY | CHRISTINA KOCH



**"THE THING ALWAYS HAPPENS THAT YOU REALLY BELIEVE IN, AND THE BELIEF IN A THING MAKES IT HAPPEN."** —*Frank Lloyd Wright, American architect*

**W**right's famous quote fittingly adorns a wall of plaques honoring the design and construction team, financial institutions and donors who believed in the restoration of the Historic Park Inn Hotel. Located in Mason City, Iowa, a city of approximately 28,000 people that also is the hometown

of Meredith Willson, the playwright and composer of *The Music Man*, the Historic Park Inn Hotel gives Mason City another claim to fame.

Opened to the public in 1910, it is the last-remaining hotel in the world designed by Frank Lloyd Wright. Unfortunately, the hotel's checkered past and the fact that

it had been abandoned for more than 30 years nearly ensured its doom.

If it hadn't been for a committed group of citizens who recognized the architectural jewel their city had and tirelessly sought funding (about \$20 million), the restoration of the hotel probably would never have come to fruition. Thanks to



“Several people since the opening of the hotel have said, ‘I was really against this in the beginning ... but it’s really **made a huge difference** in our downtown’. —*Jean Marinos, finance director, Wright on the Park*”

PHOTOS: AARON THOMAS, UNLESS OTHERWISE NOTED

their efforts, however, a dedicated restoration team consisting of local building professionals and skilled artisans successfully recreated Wright’s original intent—often with little to guide them—with more than a little luck and many unexpected discoveries along the way.

### Dubious Past, Uncertain Future

In the early 1900s, Mason City attorneys James Blythe and J.E.E. Markley were board

members of the local City National Bank, which was booming thanks to an economy steeped in farming and meatpacking, as well as brick and tile manufacturing. The bank was planning an expansion, and the attorneys saw an opportunity to build the new bank, create law offices for themselves and build a hotel—all in one building. Coincidentally, Markley’s daughters were attending private school in Spring Green, Wis., the hometown of Frank Lloyd Wright’s mother and a place where Wright

spent his childhood summers. Wright actually had designed a building for the private school, and Markley was impressed with the design.

Wright was commissioned by the attorneys and came to Mason City to oversee construction of the City National Bank and Park Inn Hotel. The building would be located on prime property in the downtown area; the bank side would have an entry on the east street while the hotel entrance would overlook Central Park to



The second floor ladies' parlor personifies Wright's goal to bring natural light into every public space. French doors lead onto a small patio.



The law library contains a unique wave in the ceiling, visible where the wall and ceiling meet in the center of this photo. The design team decided to embrace the wave as part of the building's character and to pay homage to Wright's affinity for pushing the boundaries of building materials.

the north. In a strange turn of events, in 1909, Wright abandoned his family in Oak Park, Ill., and moved to Europe with another client's wife. The scandal nearly brought the construction of the bank/hotel project to an end. Fortunately, one of Wright's associates was able to oversee the building's completion. It's unclear whether Wright ever returned to Mason City to see the finished project. If he did return, citizens didn't care.

"It's my opinion that enough people were disgusted with that part of Wright's private life that when the hotel opened, the citizens of Mason City were just happy it was done," explains Scott Borchering, IIDA, principal and interior designer for the restoration architect, Bergland + Cram, Mason City. "They probably said 'We're not going to glorify anything about that place'."

The future was just as unkind to the property. Less than 10 years after the Park Inn Hotel opened, a new hotel (that today is senior housing) was built a couple blocks away and offered private baths with

each room; the Park Inn Hotel offered only shared bathrooms, making it a less desirable place to stay. Then, the 1920s brought a farm crisis that led to City National Bank's bankruptcy and closure. Over the years, the bank space was remodeled into retail and office space several times, allowing it to continue to serve the city. Meanwhile, the hotel struggled.

"In the late 1960s to the '70s, things really turned. Mason City's downtown was deteriorating," explains Jean Marinos, finance director for the non-profit Wright on the Park, which owns the Historic Park Inn Hotel building. "One of my friends remembers her mom would never let her walk on the side of the street the hotel was on because evidently there was a lot of stuff going on there that was not necessarily good."

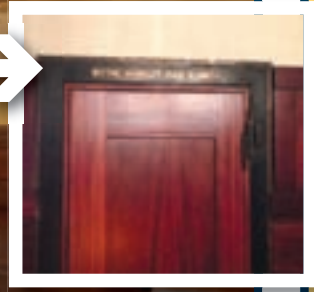
Before it was abandoned in the 1970s, the hotel briefly served as apartments. Then, its basement slowly deteriorated because of water and mold, and pigeons moved into the upper floors. Frank Lloyd Wright's design became an eyesore.

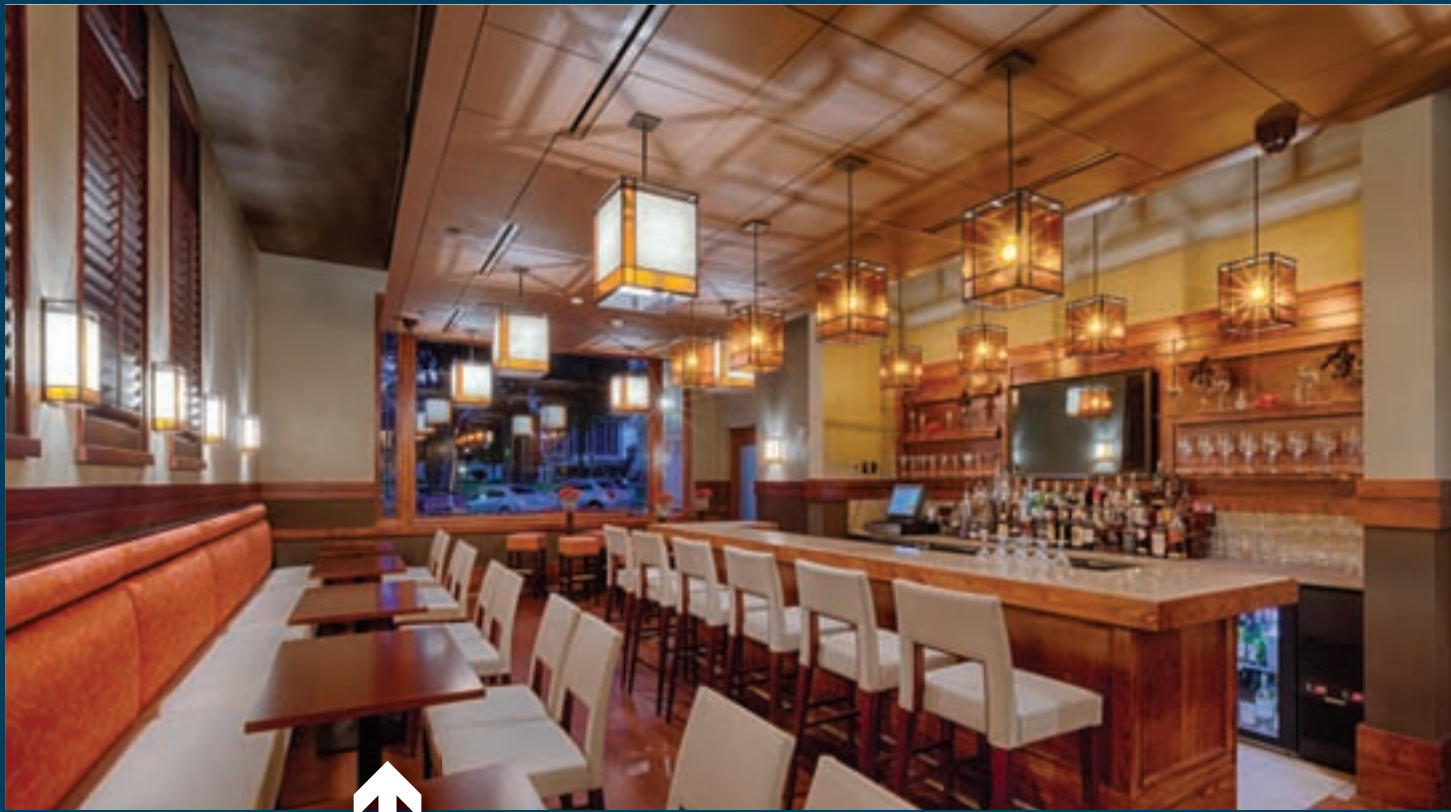


The 1920s farm crisis led to City National Bank's bankruptcy and closure. Over the years, the bank space was remodeled into retail and office space several times, allowing it to continue to serve the city.



Guests are often found enjoying coffee in the law lounge, which leads to Blythe and Markley's offices and library. The space, which features mahogany paneling and custom light fixtures, still contains the original entrance to the law offices, as seen in the inset.





The five-star 1910 Grille is housed in what Wright's original drawings designated as a newspaper office.

While removing layers of drywall in the former bank building, the contractor discovered reflective material in the mortar joints of the brick piers between the windows, something that hadn't appeared on Wright's drawings. Sunlight that comes in through the clerestory windows hits this reflective glass in the columns and causes it to shimmer and change colors during the day.



"Back in 2004, I was mayor of Mason City and a lot of people came to me and said we need to do something about the hotel," Marinos recalls. "The building was owned then by the Mason City Foundation, which restored Meredith Willson's boyhood home and was building Music Man Square. They were trying to stabilize the building and raise the money."

When the Mason City Foundation realized its mission should remain focused on Meredith Willson, its members backed off the stabilization of the hotel, and Marinos saw an opportunity for economic development. "I saw the hotel restoration as a way to make our downtown more viable," she says. "I called for a group of citizens to come together and help us save this hotel."

Several citizens stepped forward and helped create Wright on the Park. Marinos chose not to run for re-election and became president of the non-profit. It took

five years for the group to put the financing together—applying for grants and state and federal historic tax credits, seeking bridge loans through the unlikely collaboration of several banks and holding fundraisers—while dealing with naysayers in town.

Borcherding recalls: "People would ask why we were putting so much money into this when our downtown is dying and there's nothing to do [in town]. They wanted to spend money some other way but it wasn't that easy. We were always optimistic and we told ourselves, 'We're going to prove you wrong'. We knew enough about Frank Lloyd Wright, and we had a pretty good indication of what his properties do for other areas."

As Borcherding and Marinos expected, the hotel and event space (in the former bank portion) today are a huge success, attracting visitors from all 50 states and many foreign countries, as well as being the catalyst to downtown façade improvements and new businesses being established in Mason City. "Now there's even talk of a big-name hotel being built on the other side of Central Park, which will bring in conferences to complement what our hotel can offer," Marinos says.

### Unexpected Guidance

Bringing the hotel back to its 1910 design was always important to Wright on the Park. And, like any historic-preservation project receiving tax credits from a state historic-preservation office and the Washington, D.C.-based National Park Service,

*(continues on page 34)*





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## Historic Hotel Palomar, Philadelphia, Pa.

**THE CHALLENGE** - The 156,650-square-foot, 25-floor art deco Hotel Palomar Philadelphia was originally constructed in 1929 and, following its acquisition by Kimpton® Hotels and Restaurants in 2008, was renovated to elevate the energy efficiency and overall sustainability of the property.



**THE SOLUTION** - Designed to meet the HVAC demands of all guest rooms, meeting rooms, common areas and the Hotel Palomar's restaurant, the new 210-ton mechanical system design incorporated more than 300 ClimateMaster heat pump units, including 293 horizontal Tranquility® 20 Single-Stage (TS) Series units and 8 Tranquility Vertical Stack (TRM) Series units. This high-efficiency water-source system was installed in place of the building's original and antiquated boiler heating to provide more comfortable, flexible and individually controllable heating and cooling. Each guest room was equipped with a smart digital thermostat capable of communicating occupancy status to the subsequent ClimateMaster units, and automatically adjusting operation based on whether a guest is in the room.

**THE RESULTS** - The renovation was completed in October 2009, and has resulted in several green building milestones for the property and Kimpton at-large. This includes becoming Kimpton's eleventh adaptive reuse property, and the first hotel in Philadelphia to earn a LEED Gold certification from the USGBC in September 2010. The property's director of engineering has noted that with the ClimateMaster units, the hotel has seen a significant reduction in energy use over the years, as well as elevated guest comfort and satisfaction.

Learn more about the Hotel Palomar renovation and ClimateMaster's HVAC solutions for a wide variety of applications at [ClimateMaster.com/PalomarPhilly](http://ClimateMaster.com/PalomarPhilly).



Buildings in the early 1900s were **practically designed on a napkin** as far as notation and details. In comparison, when we reissued construction documents to do this project, we had close to 120 pages. —*Scott Borcharding, IIDA, principal and interior designer, Bergland + Cram*

the Historic Park Inn Hotel had to adhere to many restrictions in its public spaces. The hotel lobby, skylight room, mezzanine, second-floor ladies' parlor, the law offices and corridors were required to be returned to their original intent. "When you walk down the guestroom hallways, you will see doors that don't have knobs on them and that is to replicate the experience of the hallways as they were originally," Borcharding notes. "Once you go in the guestrooms, you don't see these doors because they're buried in the wall."

To achieve the original intent, more than a little detective work was required. Borcharding notes there were few photographs to rely on and only 23 pages of Wright's original drawings, provided

by the Scottsdale, Ariz.-based Frank Lloyd Wright Foundation, which owns and manages Wright's intellectual property.

"The drawings had been scanned and photocopied, so we started losing quality," Borcharding recalls. "Buildings in the early 1900s were practically designed on a napkin as far as notation and details. In comparison, when we reissued construction documents to do this project, we had close to 120 pages. We had some exterior photographs and postcards to rely on, but for the interior we only had one photo from the 1930s. In a lot of places, we had to rely on what we knew about Wright's style and what we gathered from the common spaces."

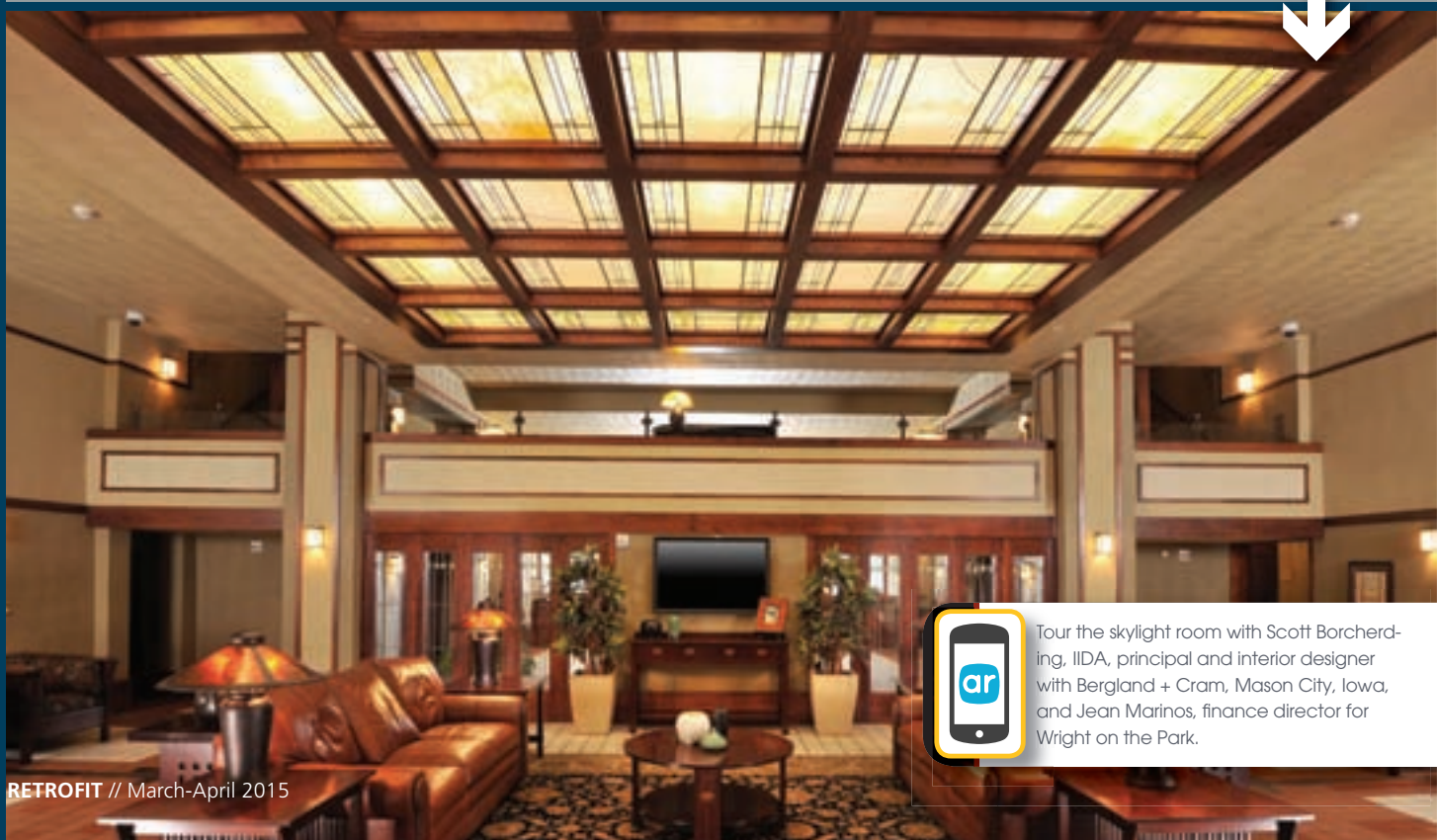
The lack of drawings wasn't the only challenge. The building was in horrible

structural condition and not only because of years of neglect. "Wright always pushed the boundaries and limits of building materials," Borcharding notes. "The only evidence we had of the mezzanine were his original drawings. At one point we wondered if it was even part of the original construction. It didn't appear in that one interior photograph from the '30s. Only after some demolition did we discover the original beam pockets, so we knew it had been there, but it probably failed miserably. It had a span of maybe 20 feet with no columns underneath it."

The team began to uncover more details of Wright's original design as it removed layers of remodeling that had taken place

*(continues on page 36)*

The original art glass panels that appear in the skylight room were found in the ceiling of a local doctor's home. The doctor and his wife donated them to the Frank Lloyd Wright Conservancy and the conservancy donated them to the Historic Park Inn Hotel. In addition, the design and construction team wondered whether the lobby's mezzanine had ever existed. It appeared in Wright's original drawings but not in a referenced interior photograph from the 1930s. After some demolition, the team discovered the original beam pockets.



Tour the skylight room with Scott Borcharding, IIDA, principal and interior designer with Bergland + Cram, Mason City, Iowa, and Jean Marinos, finance director for Wright on the Park.



*Tectum Interior Wall Como Park Zoo,  
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Long before financing for the restoration was in place, Bergland + Cram learned a portion of a light fixture from the Park Inn Hotel was being auctioned in Chicago. The design team asked the auction house to measure and photograph the fixture so it could be reproduced. Today, the replicated fixtures appear at the front of the bank, now ballroom, and the hotel.

over decades. For example, as the contractor removed layers of drywall in the bank building, he discovered reflective material in the mortar joints of the brick piers between the windows. The contractor called Borcharding and the late Martha Huntington, the lead architect on the project, and they went to look at it.

“This glass embedded in the mortar was unknown to us; there was no notation on the drawings whatsoever,” Borcharding says. “It started at the ceiling and moved down the mortar joints until it hits the stone band in the bank building. The brick below that stone band had been removed in the ‘30s when they put all the plate glass windows in for retail display. We asked ourselves, ‘Would Wright have had glass go all the way down to the floor?’”

The team consulted Wright experts and everyone concluded Wright wouldn’t have taken the embedded glass any lower than where it currently appeared. “The sunlight that comes in from the ballroom’s clerestory windows hits this reflective glass in the columns and it just has this sparkle and shimmer,” Borcharding says. “It’s an

iridescent glass, so it changes color during the day as the sunlight comes through the clerestory windows, but the light never hits the bricks below that stone band so there wouldn’t be a need for embedded glass in the mortar there.”

In addition, Marinos likes to say finding and acquiring the building’s missing elements was more than a little “serendipitous.” “There’s quite a list of things that would just showed up and we had so many people who were willing to donate things back to us,” Marinos says. “The 25 beautiful art glass panels in the skylight room were found in the ceiling of a doctor’s home in the Rock Crest-Rock Glen area. The doctor and his wife donated those to the Frank Lloyd Wright Conservancy and the conservancy donated them to us when the building was finished. Those panels are worth probably \$700,000 to \$800,000!”

[Editor’s Note: The Rock Crest-Rock Glen Historic District in Mason City contains the largest collection of Prairie School-style houses in the world. One home in the district—the Stockman House—actually was designed by Frank Lloyd Wright.]

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“We had a couple pieces of glass come back from Des Moines that somebody’s relative had salvaged from the Dumpster when they were thrown out,” Borcharding adds. “The clerestory windows of the bank/ballroom had iron grilles on them in the original design but only a handful of them remained. The rest of them had been removed in the ’30s when the bank was severely altered. A good portion of those grilles made it to Clear Lake, which is just 8 miles to the west. They had become a fence on somebody’s lake-shore property. Thankfully, the owner was willing to donate them to the project.”

## Modern Amenities

Despite its mission to recreate Wright’s design, the team was challenged to ensure the historic spaces still met the expectations of 21st-century guests. For example, the original corridors were wood flooring. To minimize noise, the design team received approval from the preservation board and park service to lay wall-to-wall carpet over the wood. To maintain historical accuracy, Borcharding and his colleague Dana Thomas, IIDA, opted to use a wool-blend carpet. [Editor’s Note:

In an odd coincidence, Wright designed the 1902 Dana-Thomas House, which stands in Springfield, Ill.]

“Probably two years before the project was completed, Dana and I were working on all the custom patterns for the carpet in the corridors and ballroom,” Borcharding recalls. “We started taking motifs that Wright used in the building and manipulating those a little into the patterns that we used in different areas. The carpet has performed fantastically, as far as wear and cleanability. The unfortunate part was that there was no manufacturer in the United States for wool-blend carpet.”

In fact, the carpet was woven in Egypt and narrowly escaped the Egyptian Revolution of 2011 in which millions of protestors demanded the overthrow of President Hosni Mubarak. Although the carpet made it out of Egypt days before the revolution began, the ship on which it was being transported broke down. In a stroke of luck, the ship was able to limp to shore, avoiding yet another delay for the carpet installation.

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photo: Bill Baxley



← The 43 original 10-by-10-foot guestrooms have been transformed into 27 rooms with modern amenities to meet the needs of the 21st century traveler. Unlike the original design, each room has its own bathroom with radiant-floor heating, as well as WiFi access and smart controls to operate the lighting. Where necessary, custom-fabricated windows replicate Wright's original design.

in the hotel with six additional guestrooms above the former bank, now the ballroom. Offices previously were located in this space. Each room features bathroom radiant-flooring heating, WiFi access and smart controls to operate the lighting.

"There are 27 unique rooms in the hotel," Borcherding says. "They're all fitted out the same way but their shapes are different. Wright on the Park along with the hotel operator decided very early on that we would have one historic suite, which is set up the way Wright had designed it. It's a 10- by 10-foot guestroom and then another 10 by 10 guestroom with a small area in between that has the commode and an original claw-foot bathtub."

During the restoration, traditional lighting options were installed. The hotel operator, Stoney Creek Hospitality, has since installed CFLs in all the guestrooms to help minimize the utility bill. Fortunately, Wright was "a genius with capturing daylight," Borcherding notes.

"A Wright expert that came to Mason City pointed out one of Wright's goals was to have natural lighting in every public space," Borcherding adds. "The law lounge has French doors to a small patio. The skylight room obviously has a one-of-a-kind skylight in it; the bank/ballroom has the clerestory windows; the banking offices had skylights in them. Daylighting was a nice attribute of a lot of his designs."

Heating and cooling is provided by a European system that minimized the square footage needed to keep guestrooms comfortable. "At one time, we explored a geothermal system, but in Mason City bedrock is not very deep," Borcherding observes.

As would be expected, the original single-pane windows are drafty. "We have done interior storm windows to try to alleviate some of that," Borcherding notes. "We've added radiant floor heat to the ballroom because we knew that was going to be a large space and as voluminous as it is, we had to keep the heat at a lower level."


## Beyond Expectations

Condé Nast *Traveler* named Mason City among the 14 best cities for architecture lovers in 2012 thanks to The Historic Park Inn Hotel, the Wright-designed Stockman House and the Rock-Creek Rock-Glen Historic District of Prairie School-style homes. Recognition like this and the improvements the Historic Park Inn Hotel has brought to Mason City have helped change naysayers' minds.

"I've had several people since the opening of the hotel who have said, 'I was really against this in the beginning and I couldn't see where you were going to spend this money but it's really made a huge difference in our downtown,'" Marinos says. "When we opened the ho-

tel for brief tours, we had people lined up two blocks long, four or five deep, waiting to see inside."

Borcherding is rewarded when he overhears positive talk about the hotel in town. For him, the Historic Park Inn Hotel has been the highlight of his career thus far. "I can't even tell you how fun this project was," he says. "It was certainly not an easy project and definitely a very emotional project. I knew Frank Lloyd Wright experts would eventually tour the facility with a critical eye. I worried a little about their reaction. Fortunately, it's all been really positive."

Although she is too modest to admit it, Marinos has created a legacy as mayor of Mason City and through her leadership with Wright on the Park. By bringing back the Historic Park Inn Hotel, she has strengthened the community and set it on a path toward a dynamic future. "For the longest time, I think people in Mason City didn't have a sense of pride about who they were," she says. "It's kind of hard to instill that without something to spark it. The restoration of the hotel has really sparked a lot of other things that are going on, too. If you come to town and see some of the building they're doing out west to bring people into Mason City and some of the good stuff that's happening downtown, we're going in the right direction." 

As owner and steward of the Historic Park Inn Hotel, Wright on the Park is responsible for all future preservation efforts of the hotel building. Financial contributions through memberships and donations will help ensure the continued viability of Frank Lloyd Wright's work. For more information, call (641) 423-0689 or e-mail [info@wrightonthepark.org](mailto:info@wrightonthepark.org).



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## MONTE CARLO RESORT AND CASINO | Las Vegas

### »» Retrofit Team

LIGHTING DISTRIBUTOR: NEDCO Supply, Las Vegas, [www.nedco.com](http://www.nedco.com)

### »» Materials

The lighting distributor and manufacturer worked with resort representatives to choose the LED-8045 as a replacement for existing halogen lamps. LED retrofit lamps were available, which allowed the resort to maintain the original fixtures and lighting design. The lamps' UL certification ensures they meet regulatory criteria. In addition, custom-color lamps with a warm white light were developed to improve the guest experience.

LIGHTING MANUFACTURER: Light Efficient Design, [www.led-llc.com](http://www.led-llc.com)

### »» The Retrofit

The Monte Carlo Resort and Casino, one of 10 MGM resorts on the Las Vegas Strip, replaced 96 500-watt halogen lamps with 50-watt LED lamps in its Street of Dreams. The busy retail area composes 8,950 square feet.

Cost efficiency and a dramatic decrease in watt usage have been achieved—two goals of the project. Resort management estimates project payback was achieved in less than four months. "It's an amazingly quick recovery," says Chris Magee, executive director of Sustainability for MGM Resorts International. "The new lamps not only save wattage, they have enabled us to brighten up the area without dramatically changing the look and feel of Street of Dreams."



PHOTOS: LIGHT EFFICIENT DESIGN





PHOTOS: W.S. TYLER

## WESTIN CLEVELAND DOWNTOWN

### » Retrofit Team

DESIGN-BUILD CONTRACTOR: Marous Brothers Construction, Willoughby, Ohio, [www.marousbrothers.com](http://www.marousbrothers.com)

### » Materials

The building's exterior facelift features a fusion of multicolored lights and Dolga-Trio architectural design mesh, which allowed the designers to mask the parking facilities that span the second through fifth floors. Replacing the previous brick and metal cladding with an architectural wire mesh provided a textured and unique look. Seventy panels stretch about 300 feet and are 60- to 70-feet high. Each panel has its own LED light, which is lit with an infinite number of colors.

Dolga-Trio was customized to create different openings in one continuous panel for the Westin application. The design team wanted a more dense version to cover the openings in the garage area and a more open version for the area in front of the ballroom. Areas of the façade were also customized to incorporate signage attachments.

After connecting the mesh at the top of the area, installers simply rolled the product down to its final position. The lightweight mesh was then fastened at the bottom of the installation using a flat tension profile and clevis assembly system.

ARCHITECTURAL DESIGN MESH MANUFACTURER: W.S. Tyler, [www.tylerdesignmesh.com](http://www.tylerdesignmesh.com)

### » The Retrofit

Driven by dynamic population growth, the Cleveland downtown area has realized extensive revitalization efforts during the past 20 years. According to Forbes, there is more than \$350 million currently invested in the area's redevelopment. This flurry of activity and promise of things to come enticed Sage Hospitality to the area. A hotel with a rich history and the city's second largest with nearly 500 rooms, Westin Cleveland Downtown (formerly the Crowne Plaza Hotel) was the perfect target for Sage's efforts in the region. Previously host to movie stars, politicians and presidents, the hotel would once again realize its place as four-star accommodations.

As part of its directive to return the Westin to an elite property, Sage identified critical infrastructure issues, established a design approach and allocated budget for the proposed improvements. The Marous Brothers Construction team integrated a number of fresh aspects into the 14-month, \$74 million, 500,000-square-foot renovation project. The major transformation included new mechanical and safety systems, lighting, guestrooms, a restaurant and fitness center. Many existing features, such as the elevator controls, guestroom interiors and common areas, experienced major aesthetic and system overhauls, as well.

PHOTOS: ENGLERT INC.



## OMNI MOUNT WASHINGTON RESORT | Bretton Woods, N.H.

### » Retrofit Team

ROOFING CONTRACTOR: Rodd Roofing, St. Johnsbury, Vt., [roddroofing.com](http://roddroofing.com)  
 OWNER'S REPRESENTATIVE: NV5, formerly Consilium Partners LLC, Denver, [www.nv5.com](http://www.nv5.com)

### » Materials

The renovation's goal was to update and insulate the existing signature red metal roofs. A primary concern was choosing a product that would be durable and resistant to weather, including some of the highest wind speeds and coldest winter temperatures recorded in the continental U.S.

The project began when steps were taken to winterize the property. Extra layers of insulation were installed, attic flooring laid and various roof penetrations that opened to the sky were eliminated. Continuously vented spaces over the extra insulation in the roof and walls cool the roof surfaces, reducing the possibility of ice formation. An elaborate network of internal roof drains and catch basins was installed, multiple roof-piercing vent pipes were consolidated, and curbs were added at roof perimeters to keep water from running over the edge. Freezing water was redirected to the internal drains.

Meanwhile, a red, 1 1/2-inch mechanically seamed standing-seam roof was installed. The Kynar 500 PVDF-coated metal roof is Florida building code-compliant and Dade County-tested for wind uplift. It was rollformed onsite with a Metalman rollforming machine.

1300 SERIES PROFILE STANDING-SEAM ROOF AND METALMAN ROLLFORMER  
 MANUFACTURER: Englert Inc., [www.englertinc.com](http://www.englertinc.com)

### » The Retrofit

Although the hotel had been added to the National Register of Historic Places in 1978 and designated a National Historic Landmark in 1986, the last time a completely new roof was put on the entire building was in 1955. The hotel's 5-story towers and major portions of the roof had been copper, which was originally green but had been painted red to imitate Spanish tile. Portions were reroofed in 1999.

The roof and the hotel were run as a summer vacation attraction until skiing and other winter sports became more popular in the region and guests began staying year round. Consequently, heat escaped from the main hotel into the attic spaces that were not insulated, making the snow melt and slide, which created massive, heavy icicles. Some were 6-feet-plus long and when they fell, they sometimes pierced the flat roof below.

Rodd Roofing has worked with hotel management during many decades, providing emergency service and maintenance. The contracting company's knowledge and attention to detail led the hotel to contract with Rodd Roofing once a full roof replacement became necessary. Working closely with the owners and architects, Rodd Roofing worked tirelessly to overcome shortfalls in the original 1900s construction and incorporate 21st century design elements.

## HOTEL PALOMAR PHILADELPHIA, A KIMPTON PROPERTY

### » Retrofit Team

MECHANICAL SYSTEM DESIGNER: Exp (formerly X-nth), San Diego, [www.exp.com](http://www.exp.com)

MECHANICAL CONTRACTOR: Tracey Mechanical Inc., Newtown Square, Pa., [traceymechnical.com](http://traceymechnical.com)

MANUFACTURER'S REPRESENTATIVE: Sass, Moore & Associates, Woodbury, N.J., [www.sassmoore.com](http://www.sassmoore.com)

### » Materials

The hotel renovation included replacement of the property's old boiler water heater with a water-source heat-pump system. Encompassing all guestrooms, meeting and commercial spaces, common areas and the Hotel Palomar's restaurant, the new 210-ton mechanical system design incorporated more than 300 heat-pump units, including 293 horizontal Tranquility 20 Single-Stage (TS) Series units and eight Tranquility Vertical Stack (TRM) Series units.

"These units offered an innovative solution for the project, particularly for the guestrooms, in which individual, quiet control of the heating and cooling system was important," explains Todd Sorbo, an Exp principal.

"Retrofitting a historic building into a modern hotel has its challenges," notes Jim Kohler, project manager with Tracey Mechanical. "But the new heat-pump system that we put into place was a good fit for the needs of the hotel, especially in regard to improving energy efficiency while needing to work within the constraints of an existing and historically protected infrastructure."

Each guestroom in the hotel was equipped with a smart digital thermostat that communicates to a control board in the in-room unit to sense occupancy. If a room remains unoccupied for so many hours, the thermostat will shut off the pumps to reduce unnecessary energy usage. That, in combination with the highly efficient MERV-11 filters and the chemical-free water-treatment system in the units, helps the hotel achieve optimal energy performance.

"For many hotels, HVAC can be the No. 1 issue with inefficiencies," says Rod Temistocle, area director of engineering for Kimpton Hotels. "With the units we currently have in place, Hotel Palomar has seen a significant reduction in energy use."

WATER-SOURCE HEAT-PUMP MANUFACTURER: ClimateMaster, [www.climatemaster.com](http://www.climatemaster.com)

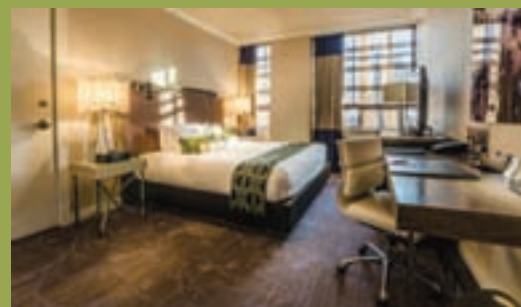
### » The Retrofit

Among myriad practices to reduce waste, minimize toxins and conserve resources across all business functions, Kimpton Hotels and Restaurants maintains its own set of EarthCare green-building guidelines, including employing energy-efficient lighting and HVAC systems. Additionally committed to "maintaining substantive, meaningful goals for energy reduction," the company has also examined ways in which to elevate energy efficiency across its historic building properties.

This was recently reflected in the company's transformation of the Hotel Palomar Philadelphia, which had become antiquated in its mechanical operations and overall energy efficiency. The 156,650-square-foot, 25-floor Art Deco hotel was originally constructed in 1929 and housed an architect's office, thus earning it the title of "Architect's Building." Following its acquisition by Kimpton in 2008 and transition into the boutique hotel it is today, the building was slated for an extensive renovation that included several initiatives to vastly improve the energy efficiency and overall sustainability of the property.

Typical to a historic renovation of this scope, the mechanical and construction teams enlisted by Kimpton management were faced with some notable challenges, including working within the tight constraints of the bustling City Center location of the property. The project demanded creativity, ingenuity and the use of high-quality, reliable products and systems, to achieve an ultimate goal of earning LEED certification from the U.S. Green Building Council, Washington, D.C.

In addition to its water-source heat-pump system, the property installed more energy-efficient, double-paned windows; replaced toilets and sinks with low-flow systems; changed all lighting to CFL and LED bulbs; and used recycled and sustainable materials.





## DEADWOOD MOUNTAIN GRAND CASINO AND RESORT | Deadwood, S.D.

### » Retrofit Team

ARCHITECT: Lund Associates Ltd., Rapid City, S.D.

GENERAL CONTRACTOR AND METAL PANEL INSTALLERS:  
Heavy Constructors and Gustafson Builders, Rapid City,  
[www.heavyconstructorsinc.com](http://www.heavyconstructorsinc.com)

### » Materials

The revitalization project features 560,000 square feet of 26-gauge, 2.5-inch corrugated, galvanized metal panels. No additional finishes or colors were used in the interests of allowing the exterior to age naturally over time.

The metal panels offer a long lifespan of 50 years or more, are 100 percent recyclable and contain a high percentage of recycled material.

METAL PANEL MANUFACTURER: Metal Sales Manufacturing Corp.,  
[www.metalsales.us.com](http://www.metalsales.us.com)

### » The Retrofit

Built in 1906 as a gold ore and slime processing plant for the Homestake Mining Co., the building's renovation not only returns it to its former glory, but also offers modern resort luxuries to its guests. Visitors can enjoy the Mountain Grand casino in a city that once reveled in the riches of the gold rush and continues to provide cultural and economic value today.

"Despite working during a harsh South Dakota winter, the project ran smoothly with the help of the metal panels' manufacturer's excellent sales and technical support team," says Bob Heibult, building division manager on the project. "The sales team helped us identify the metal wall panel we needed to duplicate the building's original early-1900s aesthetic."

The Deadwood Mountain Grand Casino and Resort was completed in April 2013.



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# THE LAW ON LIGHTING

WRITTEN BY | CRAIG DILOUIE, LC

## Product Regulations Target Least-efficient Fluorescent and HID Options

**D**uring the past 15 years, the Washington, D.C.-based U.S. Department of Energy has enacted increasingly stringent product energy regulations taking on lighting's most venerable workhorses—incandescent lamps, high-intensity discharge (HID) lamps and ballasts, and fluorescent lamps and ballasts. In short, the least-efficient and lowest-cost options are steadily being removed from the market in favor of more-efficient options that reduce consumer energy costs.

Typically, regulations create an energy-performance standard for a defined lighting category and require covered products to satisfy the standard or cease being manufactured and imported. Building owners and managers may continue to use what they have on hand, and distributors may be able to sell their inventories until those are exhausted. The industry typically has three years from the regulation's date of issuance to prepare.

Energy regulations improve baseline efficiency in a category, reducing operating

## Commercial Buildings Tax Deduction Extended

On Dec. 19, 2014, President Obama signed the **Tax Increase Prevention Act**, which contains extenders for 50-plus tax relief provisions. Of particular interest in the lighting industry is a one-year extension of 179D, the Commercial Buildings Tax Deduction.

This accelerated tax deduction allows building owners or tenants to write off the complete cost of upgrading a building's interior lighting, HVAC/hot-water systems, and building envelope, capped at \$1.80 per square foot, in the year the new equipment is placed in service. A partial deduction is allowed for upgrading only interior lighting and deducting the complete cost, capped at 60 cents per square foot. The Interim Lighting Rule provides a simpler method for claiming a deduction for an interior lighting upgrade, capped at 30 to 60 cents per square foot on a sliding scale based on savings of 25 to 40 percent below ASHRAE/IES 90.1-2001 while meeting other requirements, such as bilevel switching.

The exception is warehouses: The lighting system must reduce lighting power density by at least 50 percent to earn a deduction of up to 60 cents per square foot. If the building is publicly owned, the owner may designate the designer or other project participants as recipients of the deduction.

The Tax Increase Prevention Act specifically states that the 179D deduction is retroactively extended through Dec. 31, 2014, meaning qualifying projects completed in 2014 can claim the deduction.

To learn more, visit [www.efficientbuildings.org](http://www.efficientbuildings.org).

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costs, while typically increasing average initial cost. Practitioners should advise their customers about new regulations and the benefits of a lighting upgrade while checking with manufacturers to confirm availability of compliant alternatives. Owners often face a choice of replacing non-compliant components individually as part of maintenance or all together as a retrofit. A retrofit is often desirable to ensure consistent lighting quality; make optimal replacement decisions; address other issues, such as lighting quality; gain economies of volume purchasing and applicable rebates; and avoid mismatched components that can cause poor performance.

This article provides a brief tour of the regulatory environment in the lighting industry, focusing on fluorescent and HID product regulations and how they are impacting availability in the nonresidential market.

### Fluorescent Lamps and Ballasts

Federal regulations eliminated a majority of magnetic fluorescent lamp ballasts from the market between 2005-10. Specifically, this included magnetic ballasts designed to operate 4- and 8-foot F40T12, F34T12, F96T12, F96T12/ES, F96T12HO and F96T12HO/ES lamps.

Subsequent regulations expanded and strengthened the energy standards (based on a new metric) while adding a required ballast power factor of 0.90+ for nonresidential use. The rules, which took effect Nov. 14, 2014, cover seven classes of T12, T8 and T5 fluorescent lamp ballasts but primarily impact availability of T12 ballasts.

Many T12 electronic ballasts complied with the rules while some were discontin-

ued and others reengineered. Notably, T12 magnetic outdoor sign ballasts are largely being discontinued; T12 electronic ballasts provide an alternative.

The following are exempted:

- ◆ Dimming ballasts that dim to 50 percent or lower output.
- ◆ T8 magnetic ballasts labeled and marketed only for use in electromagnetic interference-sensitive applications (and sold in packages of 10 or fewer units).
- ◆ Programmed-start ballasts for 4-foot medium bi-pin lamps that deliver less than 140 mA to each lamp (0.71 ballast factor).

Shat-R-Shield's **LED High Bay** serves as a high-efficiency direct retrofit for antiquated HID lamps in industrial and commercial applications.



On the lamp side, regulations taking effect in July 2012 eliminated a majority of 4-foot linear and 2-foot U-shaped T12 lamps and many 8-foot T12 and T12HO lamps. Low-color-rendering (70-79 CRI) T8 lamps also failed to comply but several lamp manufacturers gained a temporary exemption for their specific products, which expired July 2014.

In January 2015, DOE issued new energy standards that will take effect January 2018. These rules will specifically impact 4-foot linear T8, 2-foot U-shaped (U-bend) T8 and 4-foot linear T5 and T5HO lamps. A significant number of 4-foot linear and 2-foot U-bend T8 lamps do not comply—largely full-wattage (32W) lamps. Alternatives include reduced-wattage (28W) lamps. Extended-life lamps



USALED's T10LB4 **LED lightbar** is a retrofit solution for T8, T12 and T5HO fluorescent lamps.

are expected to survive but may be limited to wattages lower than 32W unless manufacturers reengineer them. To save energy, owners should switch to a reduced-wattage T8 lamp or operate a full-wattage T8 lamp on a dimming control. A full range of 8-foot lamps, 4-foot T5/T5HO lamps and exempted

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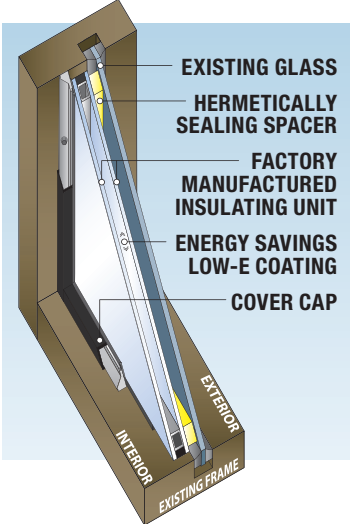
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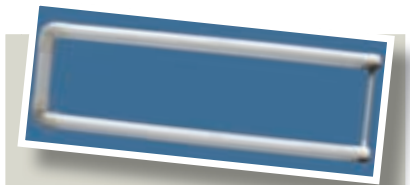
specialty lamps are expected to continue to be available.

Exemptions include:

- ◆ Lamps designed to promote plant growth.
- ◆ Lamps designed specifically for cold-temperature applications.
- ◆ Colored lamps.
- ◆ Impact-resistant lamps.
- ◆ Reflectorized or aperture lamps.
- ◆ Lamps designed for reprographic applications.
- ◆ UV lamps.
- ◆ Lamps with a CRI of 87 or higher.

### HID Lamps and Ballasts

In February 2014, DOE issued energy rules for ballasts sold as part of new metal halide lamp light fixtures, which are commonly used to light parking lots, big-box retail, warehouses and other applications. The new rules, which take effect Feb. 10, 2017, will affect availability of bal-



ELB Electronics debuted an LED T8 **U-Bend** that can cut up to 40 percent of energy when replacing existing fluorescent T8 (32W) and T12 (40W) electronic and magnetic ballasted fixtures.

lasts sold as part of 50 to 1000W light fixtures. They update previous rules that largely eliminated probe-start metal halide lamps and ballasts from new 150 to 500W metal halide fixtures.

The standards establish minimum efficiencies for light fixtures based on fixture location (outdoor or indoor), ballast type and rated lamp wattage. New efficiency standards were created for 50 to 149W and 501 to 1000W while existing standards were strengthened for 150 to 500W. Probe-start ballasts were outright banned for fixtures with 501- to 1000W-rated lamp wattages. Again, the new rules cover only ballasts sold as part of new fixtures, meaning replacement ballasts sold to service existing fixtures are not affected. The market is expected to shift to pulse-start magnetic and electronic ballasts.

In other HID regulations, the Energy Policy Act of 2005 prohibited manufacture and import of mercury vapor ballasts in 2008, although later legislation allowed specialty ballasts.




Universal Lighting Technologies' EVERLINE **Wall Pack luminaire** is designed for HID replacement or new construction.

For decades, venerable lighting workhorses, such as T12 lamps that were primarily chosen for low initial cost,



The least-efficient and lowest-cost options are steadily being removed from the market in favor of **more-efficient options** that reduce consumer energy costs.

illuminated U.S. buildings. Rising energy costs spurred development of energy-efficient alternatives. DOE has accelerated market adoption of these alternatives by steadily raising the efficiency baseline, decreasing consumer energy costs while increasing average initial cost. Regulations have pushed the baseline nearly to the maximum technology level for fluorescent lamps/ballasts and HID ballasts. In some cases, the result is a retrofit or replace-as-part-of-maintenance decision for building owners and managers. Practitioners can help them navigate their choices, so they achieve not only compliant lighting, but the most effective lighting system possible. 

## Building Energy Regulations and Retrofits

The **ASHRAE / IES 90.1-2010** energy standard, written as a model energy code for use by jurisdictions, has been adopted in some states. The 2010 version of the standard explicitly covers “maintenance-like” lamp plus ballast retrofits in indoor and outdoor applications. Specifically, if a building owner replaces lamp/ballast systems representing 10 percent or more of the connected lighting load in an indoor space or outdoor area, the owner must comply with the standard’s lighting power density limits and its automatic shutoff requirements.

If a building’s lighting is upgraded requiring significant replacement of light fixtures with new LED light fixtures, the project may be considered an alteration covered by applicable sections of whatever code is in effect, whether it is a state-specific code or one based on 90.1 or the International Energy Conservation Code.

Check the applicable code for specific requirements and visit [www.energy.codes.gov](http://www.energy.codes.gov).

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# THE SMALL MOTOR RULE

## Motors Powering Pumps, Compressors, Fans and More in Commercial Buildings Are Becoming More Efficient

WRITTEN BY | CHERYL HIGGINS

According to the U.S. Department of Energy, Washington, D.C., more than half of all electrical energy consumed in the U.S. is used by electric motors. In the U.S. alone, manufacturers spend \$30 billion annually on the electricity powering motor-driven systems. Additionally, electric motors powering manufacturing operations consume 70 percent of all the electricity used in that plant.

To address this, several years ago, the DOE conducted a technical study as to what could be done to raise the efficiency levels of “small” motors. After years of study and litigation, the Small Motor Rule (SMR) was passed; it covers two-digit NEMA frame single- and three-phase 1/4- through 3-horsepower motors in open enclosures. The new regulations take effect March 9, 2015. To better understand the ruling’s requirements, see the graph below.

Utilizing a 1 horsepower/0.746 kW, 1800 rpm, three-phase open drip (ODP) motor, the payback with the increased efficiency is 1.1 year. The current efficiency on this motor is 64.3 percent, but the new SMR requires the motor to be 77 percent efficient. View the chart below right to learn how these numbers were determined.

### Full-load Efficiency Required March 9, 2015

Motor Horsepower/ Standard Kilowatts	2 Pole	4 Pole	6 Pole
	SMR Open	SMR Open	SMR Open
1/0.75	77	83.5	82.5
1.5/1.1	84	86.5	83.8
2/1.5	85	86.5	N/A
3/2.2	85.5	86.9	N/A

The electric motor is a critical component in many plant applications. It also is used in a wide range of equipment in almost every sector of the economy—from pumps, compressors and fans to power tools, hoists and industrial vacuum cleaners, as well as automotive and aerospace applications, just to name a few.

### WHO MUST COMPLY?

- Motor manufacturers regardless of the source country
- Motor importers and private labelers
- Original equipment manufacturers (OEMs), equipment builders and importers

How will this mandate affect end users? And what’s required to comply with the new legislation?

*(continues on page 52)*

DOE - SMR Payback analysis					
1HP - 4-Pole (1800 RPM), 3 Phase, ODP					
Cost/kWH	\$0.0700	Enter electricity cost per kWH			
Hours/Day	18				
Days/Year	250				
				Payback	
		Annual Energy Cost		From Std to NEMA Premium	
		Std	SMR		
HP	kW	Effic	Effic	No Rebate	
1	0.746	\$487	\$407	1.1	

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General purpose open drip motors used in fan applications are impacted by the Washington, D.C.-based U.S. Department of Energy's Small Motor ruling.

## Impacts on Equipment

Typical manufacturing industries that utilize small electric motors and are impacted by the SMR include paper and printing machinery; HVAC blowers and fans; pumps and pumping equipment; facility maintenance equipment; packaging machinery; cleaning and floor-care equipment; service industry machinery; and material-handling equipment, such as conveyors.

An interesting and important consideration is that this mandate affects OEMs as equipment manufacturers and as motor users themselves. For example, a manufacturer in any of the previously mentioned industries also may have to purchase the motors for its own equipment, such as a conveyor, and must retrofit with new, compliant motors if and when the motor in the equipment fails. The motor manufacturers may not build non-compliant motors after March 9, 2015, but they may continue to sell them until the current inventory is depleted.

OEMs considering replacement of shaded pole or capacitor-type motors with these new emerging designs will need to re-engineer their products

and validate their motors. OEMs will incur costs to redesign their products to accommodate larger, more-efficient motors or to purchase a stockpile of replacement motors of the correct size.

Facility managers and electrical contractors are impacted by this mandate because they benefit from the energy improvements and cost reductions. However, they also must work with OEMs to make sure more efficient motors are available and replaceable.

Architects, contractors, building owners and facility managers also will be impacted by the reengineered products that utilize shaded pole and capacitor-type motors, which must comply with the efficiencies required for the SMR. Because the size of the single-phase motors will change in length, these machines and products may no longer fit into their previous space. Moreover, because of the motors' added internal materials, the price of the motors will increase, which may increase equipment prices.

## Facility Maintenance

Large facilities, like hospitals, universities, office parks and airports, for example, use boilers or furnaces. To ensure the heating systems are working at full efficiency and end users maximize the productivity of their equipment, routine maintenance and cleaning should be done. Fouled tubes are the fastest way to lose heat-exchange efficiency and can add thousands in extra fuel costs. Preventative maintenance programs for boilers improve safety, minimize downtime, decrease replacement costs, and reduce energy and water usage. Operations and maintenance costs can account for as much as 60 to 80 percent of a building's life-cycle costs. When equipment does not have to be repaired or replaced as often, that percentage drops significantly.

To implement this maintenance requires the use of portable power cleaners, which utilize ODP motors that fall under the DOE's mandate. These motors will make commercial power cleaners more efficient and will provide lower operating costs. By now, the equipment manufacturers hopefully are aware that as of March 9, motors used in this product must comply with the new SMR.

HVAC accounts for most of the motor use in many commercial buildings. The motors, fans or pumps used for HVAC thermal distribution from a building's central HVAC system may be smaller in size and less economical to replace, but, in adherence with the SMR, when these motors fail, they



The three-phase open drip motor is designed for air compressors, pumps, fans and blower duty applications, which require high breakdown torque and rugged mechanical construction.

must be retrofitted with the newly engineered high-efficiency motors.

What this means to facility managers is the motors they purchase must be higher efficiency and will cost more than the current designs. The motors can be replaced but the new physical size of them may be longer and not work on the current equipment or configuration. This could require an equipment change though this will depend on where the motor is located. An equipment change will be an expense for building owners to absorb.

Although the SMR is mandated by DOE, it also affects the U.S. government, which is the single largest user of energy in the country with all its office buildings, schools, hospitals and military bases. According to the Rosslyn, Va.-based National Electrical Manufacturers Association, 45 percent of the energy consumed by the government is used to heat, ventilate and cool buildings. Most of these HVAC systems could operate more efficiently and will do so when manufacturers of HVAC systems—blowers and fans, pumps and pumping equipment—upgrade the motors moving forward.

HVAC equipment opportunities for energy savings includes:

- Centrifugal air-handler fans
- Centrifugal exhaust fans
- Centrifugal chilled-water pumps
- Centrifugal hot-water pumps
- Cooling tower pumps
- Cooling tower fans

Building owners, contractors and facility managers may purchase equipment with motors in them that do not meet the efficiency mandate as long as the motor's date code is prior to March 9, 2015. This means even if they purchase the equipment after this date, it has to be manufactured prior to March 9.


## Challenges, Rewards

OEMs design machines that are optimized for cost, energy efficiency and performance. When the currently installed motor supplies run out, HVAC OEMs must utilize the newly mandated high-efficiency motors. However, to reduce energy consumption is to reduce motor horsepower, which may mean a redesign of the product(s). Although the horsepower may not be changing, the need to meet the higher efficiencies requires that the motors include more material. However, the motor designs will provide cooler running motors, which will be less costly to run.

Typically because of increased costs for the products, the payback takes one to two years, but

According to the U.S. Department of Energy, Washington, D.C., **more than half** of all electrical energy consumed in the U.S. is used by electric motors.

end users' energy-consumption costs will decrease when using the more-efficient motors. Additionally, equipment running continuously will optimize the best savings.

The electric motor is a critical component in many plant applications and in most equipment. In fact, more than 70 percent of electricity costs come from motors. Given this, the impact of the SMR regulation will be significant for overall energy consumption in the U.S. Therefore, it's important to be aware of the retrofits coming down the road for replacement motors and when purchasing new motorized equipment. 



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# RESHAPING

A New Approach  
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# OPINIONS

WRITTEN BY | KJ FIELDS

**S**eparated from the Potomac River's Virginia shoreline by only a public park and the recreational Mt. Vernon Trail, The Oronoco Waterfront Residences capitalize on real estate's biggest asset: location. Set in Alexandria, Va.'s Old Town, the 60-unit condominium isn't a typical high-rise box tower, however. Its bones belonged to the Sheet Metal Workers National Pension Fund Building, a U-shaped, 6-story, stepped office project that formerly housed government personnel. As part of the federal Base Realignment and Closure process, the 155,000-square-foot building ended up nearly vacant at a time when the city's plans to reclaim the underutilized waterfront were in the throes of a lengthy, and often contested, public process.

AJ Jackson, managing partner at Bethesda, Md.-based real-estate development company EYA, says the reuse of adjacent industrial parcels was the focus of the waterfront plan and The Oronoco property escaped the debate. "Our building and site was grandfathered into the plan so it wasn't up for public discussion," Jackson recalls. "I think the assumption was that it would remain an office building but that didn't make sense for a lot of reasons: It wasn't on a transit hub or in a commercial business district; it had small office floor plates with challenging circulation; and it wasn't visually appealing."

## Sound Decisions

Jackson says EYA never considered demolishing the oddly laid-out structure and starting from scratch because adaptive reuse is much quicker than new construction. Moreover, the existing square footage was greater than what the city's current zoning allowed for new buildings, so a remodel offered greater financial return on investment.

"The key thing we had to make sure of was that the city would let us move the square footage around to get the best use out of the space," Jackson says. "We took out covered colonnades around the courtyards and demolished a very large atrium lobby, and added that space to the units by extending the building with new bays and terraces."

The team took the structure down to its concrete columns to begin the renovation. The former entrance was a massive earthen berm that hid a 360-parking-space garage; the redesign removed the berm and cut the size of the garage by nearly half. It made perfect sense on paper but proved challenging in practice when the team discovered the condition of the garage's concrete was greatly deteriorated and much more work was required to graft on new bays than anticipated.

The original building was a narrow 60-feet wide, so the team welded on new decks that offered views for residences above and then enclosed the

## Retrofit Team

**DEVELOPER** // EYA, Bethesda, Md.,  
[www.eya.com](http://www.eya.com)

**ARCHITECT** // Shalom Baranes Associates,  
Washington, D.C., [sbaranes.com](http://sbaranes.com)

**INTERIOR ARCHITECT** // SR / A Interior  
Architects and Design, Chevy Chase, Md.,  
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I THINK THE ASSUMPTION WAS THAT IT WOULD REMAIN AN OFFICE BUILDING BUT THAT DIDN'T MAKE SENSE FOR A LOT OF REASONS: IT WASN'T ON A TRANSIT HUB OR IN A COMMERCIAL BUSINESS DISTRICT; IT HAD SMALL OFFICE FLOOR PLATES WITH CHALLENGING CIRCULATION; AND IT WASN'T VISUALLY APPEALING. —AJ Jackson, managing partner, EYA



under deck beneath to create additional indoor living areas for the units below. This bumped out the floor plates, making the building 65-feet wide to achieve EYA's desired residential unit size. Marrying the floors in the new layout posed difficulties, and Jackson says the structural engineer, architect, contractor and EYA collaborated very closely to make it work.

The office building had slab-to-slab heights of approximately 11 feet that hid the mechanical equipment behind drop-down ceilings. EYA's team relocated the utility lines beneath the floor instead and added insulation, which significantly decreased the utilities' noise. The line relocation also opened the space. Interior ceiling heights now rise to 10 feet, and EYA added floor-to-ceiling glass in the units to maximize views.

The generous glazing, coupled with a location on Reagan National Airport's flight path only 4-miles away, presented a conundrum. "We worked with our architect and an acoustical consultant to select low-e glass that would reduce thermal loads in the unit, provide the needed dampening to block the sound of planes and retain visual clarity," Jackson explains. "We found the right solution. From inside the units, you can watch the planes take off, land and fly past your window, but you don't hear them."

The building exterior also received a significant facelift. The original façade was comprised of bronze-painted metal panels with brown brick at the structure's base. Now an alternating rhythm of red brick (more in step with Old Town's brick colors), metal panels and glass lends a modern

flair to The Oronoco. The team retained the U-shaped structure and added a landscaped courtyard in the center. The total remodel cost, including demolition and landscaping, was approximately \$250 per square foot.

### Lines of Sight

Views to the Potomac River; Washington, D.C., skyline; and city of Alexandria were the major amenities, so decks, balconies and terraces play prominently in the project—the largest of the outdoor spaces extends 1,000 square feet. For Jackson, one of the project's most surprising features turned out to be the views away from the river. "Alexandria is built with mostly lower 4-story townhomes, which gave this 77-foot-high building sweeping views on the city side. They're much more spectacular than I

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imagined; in fact, they're absolutely remarkable," he asserts.

While zoning allowed 119 units, EYA opted for 60 larger units, ranging in size from 1,700 to 3,500 square feet. Of the 60 total units, there are more than 40 floor plans. Jackson says the variety stems from a desire to maximize each unit for its particular location. Sometimes bedrooms were moved to provide master-bedroom views and the best space dimensions or to capitalize on the most appealing deck views. "We are a very design-oriented company and we spent a lot of time collaborating on every floor plan's details," Jackson says. "In each unit, we created a little entry area that captures a great view the second you walk into the space—it might be a great view to the overall space or a sweeping one to the outdoors."

Buyers have the option of two- or three-bedroom condominiums. Some of the floor plans include a library or family room, and all units have dedicated outdoor space in the form of ground-level terraces, decks, balconies or upper-level terraces. Opaque-glazed panels between terraces and decks offer privacy screening yet allow light to permeate. Every home has a gas fireplace and some feature cleverly designed two-sided hearths that open to the exterior space so they can be enjoyed from the terrace/deck, as well.

*(continues on page 60)*

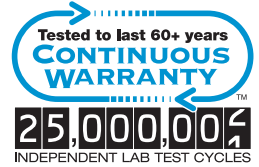
Views to the Potomac River; Washington, D.C., skyline; and city of Alexandria are the major amenities, so decks, balconies and terraces play prominently in the project—the largest of the outdoor spaces extends 1,000 square feet.

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EYA chose a boutique hotel design aesthetic with high-quality, minimalist finishes. Depending on the unit, interior appointments include hardwood flooring of oak and Brazilian ipe; quartz kitchen countertops and 14-foot-long kitchen islands; a wet bar with built-in wine cooler; and advanced home automation systems easily accessed through WiFi.


Communal amenities include a grand, 2-story lobby with concierge services; 24-hour front desk security; a fitness center with yoga room; and a bicycle storage area with a bicycle-maintenance station. With the Mt. Vernon Trail minutes away, the team created 50 bike-storage spaces that are always in high demand. Jackson says the people of Alexandria love their pets so they also added two dog-washing stations.

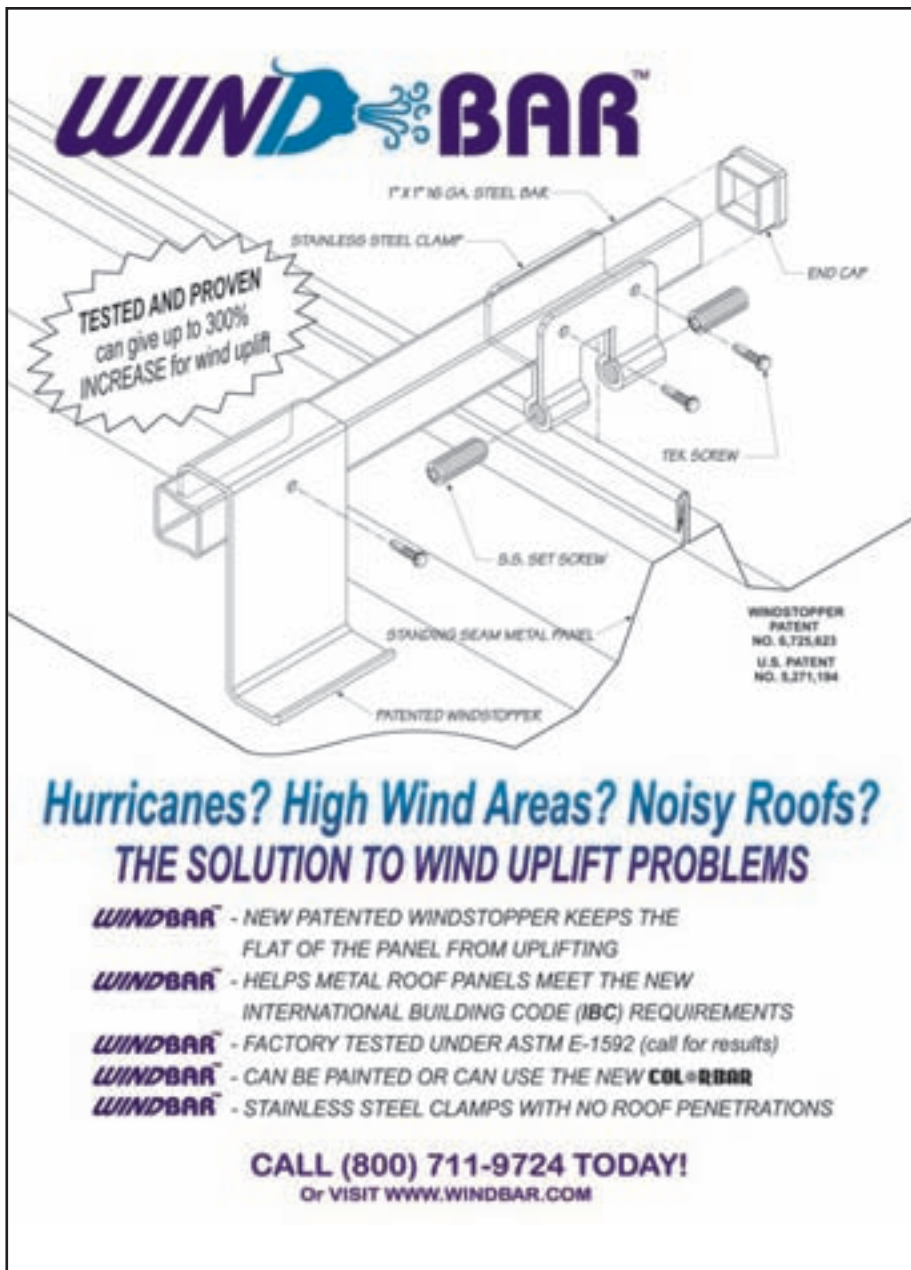
The project also has two community rooms, a kids' room with flat-screen TVs and gaming consoles; and a heated outdoor pool with a bathhouse and outdoor kitchen and entertainment area.

### Public Acceptance

The Oronoco is the first housing project along this stretch of the Potomac waterfront in 12 years and it had its share of skeptics. EYA had been building residential projects in Alexandria since the 1990s, however, and Jackson asserts that his team knew what the market was missing. "We know our customers and saw the demand for grand, one-level living on the river," he notes. "With units costing \$1.6 to \$4.5 million, we set some records in terms of pricing here, but it's proven that you can draw sophisticated clientele to these projects."

Jackson remembers some concerns voiced about residential living generating low taxes with high demand for services. Because The Oronoco attracted many empty nesters, there was no need for additional schools and no major infrastructure changes were needed as many Old Town amenities are within walking distance or a river taxi ride away. "The higher cost of the units generated a lot of tax revenue for relatively low services and the market acceptance of the project was more enthusiastic than I could have hoped for," Jackson says. "In addition, a lot of people didn't like the aesthetics of the former building and were pleased with its physical transformation."

The Oronoco turned out to be a timely win-win for Alexandria. The shoreline gained a rejuvenated and vibrant condominium community in place of an outdated, vacated building, and the project's residents are benefitting from the city's waterfront plan improvement efforts. 



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# Sacred Building the 21st Century

The Arboretum's Rehabilitation Brings Back the Original Design Intent while Integrating Modern Technology



**O**riginally designed to be cutting-edge in 1961, the 22,000-square-foot iconic Arboretum building in Garden Grove, Calif., needed aesthetic and technological updates. Irvine, Calif.-based LPA Inc. applied thoughtful design practices to bring the Arboretum into the 21st century without disturbing the architectural significance of its rich history.

Rev. Robert Schuller purchased the land in the 1950s after preaching the gospel for

six years from the Orange Drive-In Theater while churchgoers listened in their cars. Schuller is a great patron of architecture and is the only non-architect to ever serve on the Washington, D.C.-based American Institute of Architect's board of directors. He later became known for his "Hour of Power" television program. Schuller invited Richard Neutra, one of Southern California's most celebrated architects, to design the project.

The Catholic Diocese of Orange acquired the Arboretum in February 2012. It

was the original worship area for the Crystal Cathedral Ministries and is now serving as the temporary home for the relocated St. Callistus parish. The Arboretum is part of the 34-acre Christ Cathedral Campus, located in the heart of Orange County, Calif.

Partnering with the Diocese of Orange and the Christ Catholic Cathedral Corp., the entity charged with the management of the site, the design team utilized sustainable design decisions appropriately to achieve a balance between the needs of today's church and guidelines of historic

# Enters

WRITTEN BY | JIM WIRICK, AIA, LEED AP BD+C

## + Retrofit Team

**ARCHITECT** // LPA Inc., Irvine, Calif.,  
www.lpainc.com

**CONTRACTOR** // Cannon Building,  
Placentia, Calif.,  
www.cannonbuilding.com

**STRUCTURAL ENGINEER** //  
J.S. Dyer & Associates Inc., Irvine,  
jsdyer.com

**MECHANICAL/PLUMBING** //  
Syska Hennessy Group Inc.,  
San Diego, www.syska.com

**ELECTRICAL ENGINEER** //  
TK1SC, Irvine, www.tk1sc.com

**CIVIL ENGINEER** // Joseph C.  
Truxaw & Associates Inc., Orange,  
Calif., www.truxaw.com

**LANDSCAPE ARCHITECT** //  
Land Concern, Santa Ana, Calif.,  
landconcern.com

PHOTOS: LPA INC./COSTEA PHOTOGRAPHY

preservation. It was important to LPA to respect the original design intent while employing the technology available today.

Architectural historian, Barbara Lamprecht, states: "As an architectural historian, the very first thing you want to see is the preservation of the building. What excited me about the [Arboretum] project was that the Diocese, the architect and the developer all came together to say: 'Wait a minute—we have a failing structure on our hands. So what are the immediate remedies that we can take to

preserve that structure?'" She also notes that it was a very "courageous and bold" decision.

### Rehabilitation

It became the goal to not be swayed by what was attractive of the already remodeled building but rather to take the building back to what was—back to its period of significance. It became clear that this project wasn't a preservation project, where you're trying to lock it in time. Nor was it a restoration project, where you

rebuild what was originally there. It was a rehabilitation project with the desire to make the building new. Aesthetically, the design team wanted to look back. Technologically, it needed to look forward. The building has a new program, a new client and a new liturgy. Consequently, the design team took a very strong aesthetic and applied an old program, meshing those two together to become a Catholic church.

"The Catholic Church has been a great steward of art and architecture, and we



Learn about the Arboretum's rehabilitation with insight from team members and decision-makers.



are honored to continue to play this role in the 21st century," says Robert Neal, a managing partner with Hager Pacific Properties, Newport Beach, Calif., and chair of the Architectural and Renovations Committee for the Christ Cathedral Campus.

LPA's integrated design approach involved renovating the space in a way that allows Neutra's original design intent to be brought back to life—including his own palette of colors that were hand-mixed onsite—while retrofitting the building with modern technology.

One of the Arboretum's biggest challenges and priorities involved installation of the building's first-ever air-conditioning system. "Our intent for the Arboretum was to do a simple refurbishment, but we did understand the building needed desperately to be air conditioned and so that started to

lead us into a journey that took us to structural upgrades," Neal says.

The building's east and west sides are made completely of glass; solar heat gain made the interior space so warm and uncomfortable that occupants were known to wear sunglasses indoors. After much debate, it was agreed that an underfloor air-distribution system would be installed to avoid roof-mounted equipment or ventilation systems, which would mar the beautiful profile of the building. Instead, floor-level diffusers blend in with new carpet tile, providing a cool and comfortable worship space.

The building's 620 panes of glass were replaced because of tenuous connections and lack of energy efficiency. The single-pane glass, spanning from floor to ceiling and wall to wall, was replaced with dual-pane efficient glass that keeps the original



The building's east and west sides are composed of 620 panes of glass; solar heat gain made the interior space so uncomfortable occupants were known to wear sunglasses. The single-pane glass was replaced with dual-pane glass in the same modular aesthetic as the original design and an underfloor air-distribution system provides a cool and comfortable worship space.





“The lifespan of this building could be a millennium, so any upgrades need to last and need to make it as safe as possible. —Fred Helms, chief operating officer, Christ Cathedral Campus”

design intent of transparency with increased solar protection in the same modular aesthetic as the original design. All house lighting was replaced with energy-efficient LED lighting to save energy and maintenance costs.

Through structural reinforcement, the Arboretum was also voluntarily retrofitted to meet current seismic standards. “We hope these elective seismic updates will allow the building to be in service for 75 to 100 more years,” notes Fred Helms, chief operating officer of the campus. “The lifespan of this building could be a millennium, so any upgrades need to last and need to make it as safe as possible.”

With a total of nine months from design to completion, improvements were made to ensure compliance with California’s Green Building Standards Code and the American with Disabilities Act, all while retaining the celebrated aesthetics. For example, to bring stair railings to code, LPA added glass behind the existing railings so they could remain in place and still meet code requirements.


“This [is] one of the most important Catholic properties in California, if not the world,” says Father Christopher Smith, Episcopal Rector and Vicar of the Christ Cathedral. “With 1.3 million Catholics in Orange County and 4.3 million Catholics in Los Angeles, we see this campus as a great center for the church

in Southern California and these buildings will contribute mightily ... and not just here, but across the world.”

## Recognition

In 2014, the Arboretum project was awarded a Design Citation of Merit by DOCOMOMO US, the international committee for documentation and conservation of buildings, sites and neighborhoods of the modern movement. (Learn more at [www.docomomo-us.org](http://www.docomomo-us.org).) The project achieved one of its inaugural Modernism in America awards given at its annual conference. The DOCOMOMO jury called it “an exceptional restoration example of maintaining the original design and layout while upgrading for seismic and mechanical systems, which resulted in a renovation Neutra himself would be proud of if he were able to see his building today.”

This first installment in what will ultimately be a \$55 million renovation project is a premier example for all future projects, according to Neal. “We felt it very important to set the tone. And the tone would be one of excellence and also of buildings that could work with their inhabitance—that did not force their inhabitance to work within them. And I think we’ve succeeded on that.”

Additionally, LPA was charged with seismic retrofit of the Neutra-designed Tower of Hope, located at the Christ Cathedral Campus. The 13-story tower—once the tallest building in Orange County—complements Neutra’s recently restored Arboretum building. Using 21st century technology and an integrated design approach, the tower is being restored to its period of architectural significance and will allow future generations to safely enjoy a truly unique, iconic campus. 

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# STAY FOCUSED

Current Trends in Hospitality Design Are Blurring the Lines between Business and Leisure; Here's How to Keep Things in Focus



PHOTO: ERIC LAIGNEL

The world of interiors is out of focus. Everywhere you look, the lines that have traditionally divided commercial from residential spaces and business from leisure activities are blurry. Offices are designed to feel more like homes; hospitals now resemble comfortable hotels; and hotels are evolving into hybrid spaces that no longer distinguish between business and leisure travelers.

This mix of business and leisure is known in the hospitality industry as “bleisure,” a term coined by British consultancy and trend forecaster, The Future Laboratory. The term is gaining popularity—thanks in large part to the pervasiveness of mobile technology. A recent study by Herndon, Va.-based BridgeStreet Global Hospitality confirmed that 83 percent of respondents use time on business trips to explore the city they’re visiting. Additionally, the majority of respondents (60 percent) have taken bleisure trips with most respondents (30 percent) adding two vacation days to business trips.


Notably, 99 percent of hotel guests now travel with at least one device, according to a recent poll by SmartBrief. Of those, 45 percent travel with two devices and 40 percent travel with three or more. In short, technology is vital to guests whether they are on business, leisure or both, and they expect hotels to accommodate their need for connectivity.

But hospitality brands have to do more than add bandwidth to remain competitive. They need to embrace the mindset of a new generation of travelers that want to stay connected (online and in-person) and have authentic experiences in an environment with a distinct sense of place.

As the following trends illustrate, the hospitality market is changing. Here’s what you need to know to keep things in focus:

### Seamless Integration of Technology

From automated check-in kiosks to smartphones that act as room keys, hotels today are investing in technology upgrades to keep up with an increasingly tech-savvy traveler. In fact, more than half of hoteliers in a recent SmartBrief poll revealed they are focusing their



Guests are gravitating toward boutique hotels that are infused with local influences—and hospitality brands are responding. The Archer Hotel in New York by Glen & Co. Architecture is no cookie-cutter property; it is full of character and comfort.

PHOTO: ERIC LAIGNEL



Public spaces in hotels are no longer clearly defined by boundaries; open lobbies such as in the Archer Hotel seamlessly blend casual areas with food-and-beverage offerings, lending to a sense of “separate togetherness”.

technology purchases in the coming year on the guestroom.

For example, properties, such as Hampton Hotels, now are redesigning guestrooms to include connectivity panels with USB ports and charging stations on the desktop or nightstand to prevent guests from having to move furniture, according to SmartBrief. Further, services from companies, like Shodogg, offer guests the ability to sync their mobile devices with the in-room television, giving them access to their own libraries of movies, music, photos and social media.

However, while technology demands are greater than ever, they should never steal attention away from what matters most in hospitality settings: the guest.

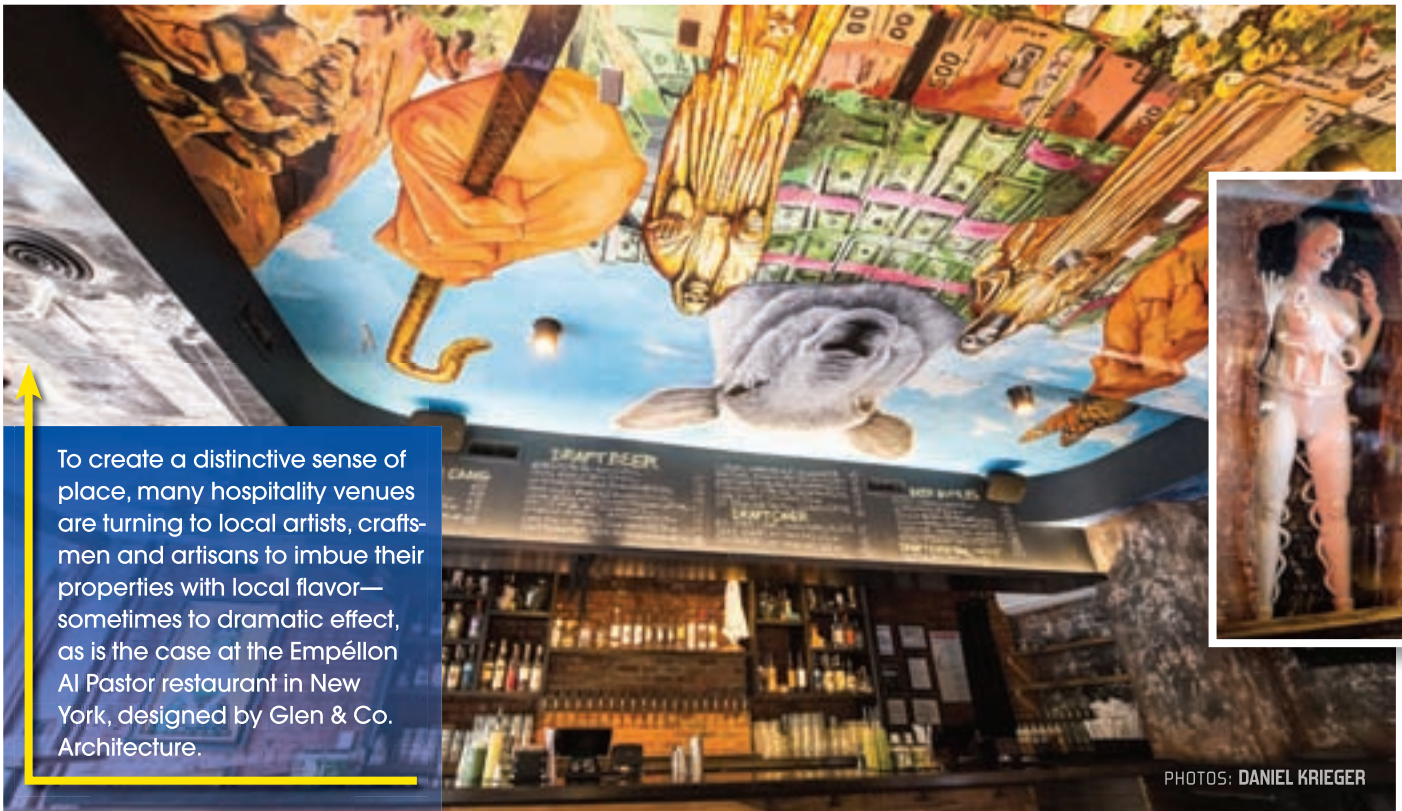
“I think the best examples we’ve seen and the way that we approach technology with hospitality environments is that it must always enhance the experience and not necessarily be the experience,” notes Teddy Mayer, director of hospitality for Gensler, New York City.

In other words, it’s important to keep things simple and not overwhelm people with massive screens or too many gadgets. “Technology, we all know, can get cumbersome and it can be over our heads at times,” says Giana DiLeonardo, partner at DiLeonardo International, Providence, R.I. “I think discreet and simple technology that’s integrated well into spaces is critical and is one of the trends of today.”

That being said, guests’ expectations of technology offerings within hotels are definitely high because they know they can (or should be able to) connect virtually anywhere.

“It’s kind of a classic situation where everybody wants [WiFi] to be at least as good as in their own home, if not better, and often expects more,” explains Brooke Taylor, director of interiors at Oakland, Calif.-based Arcsine. “If you can’t get a good WiFi signal and have really solid connectivity in a hotel experience then you’re going to be frustrated because you’re kind of like, ‘Well, I get a better one at home.’”

As a result, facility managers of hospitality properties are realizing the benefits of making technology improvements, which can sometimes be a challenge in retrofitting scenarios.



To create a distinctive sense of place, many hospitality venues are turning to local artists, craftsmen and artisans to imbue their properties with local flavor—sometimes to dramatic effect, as is the case at the Empéllon Al Pastor restaurant in New York, designed by Glen & Co. Architecture.

PHOTOS: DANIEL KRIEGER

“The hardest part is convincing owners that have spent money on projects to make substantive changes to their spaces,” says Architect and Designer Glen Coban, founder of Glen & Co. Architecture, New York City. “I wouldn’t say it’s a barrier to entry, but they’re beginning to understand that they have to invest in technology. They have to invest in certain upgrades because either the brand forces them to do it or the guests will force them to do it.”

### The New Lobby: Being Together, Separately

Making connections with others—or not—is a big part of what’s driving the design of public spaces within hospitality facilities. The lobby is becoming a social and technological epicenter, where WiFi, communal tables, charging stations and a variety of seating options are standard, according to SmartBrief. Guests can choose to work semi-privately or take advantage of networking or socializing opportunities if they so choose.

This hybrid, multi-use space is meant to foster a sense of “separate togetherness” that enables a variety of functions depending on travelers’ needs and desires. “Even



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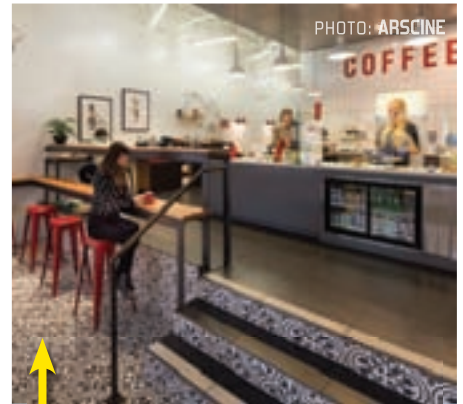


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Convenient grab-and-go food and beverage offerings, such as Modern Coffee, are increasingly popular in hotels, making the most efficient use of the floorplate.



The line between the business and leisure traveler has disappeared; 83 percent of professionals use time on business trips to explore the city they're visiting. Visitors to Oakland, Calif., might stop in to Duende Restaurant & Bodega, a hip venue designed by Arcsine.



PHOTO: ERIC RORER

To tie Baltimore's locale into the design of Apropos, the design team at EDG Architecture was inspired by the city's "legends"—Edgar Allen Poe, Seabiscuit and Babe Ruth. Baltimore's industrial roots also helped give the venue an authentic sense of space while anchoring it as a quintessential Baltimore restaurant.



though [the lobby has] become a more social space, it still has a lot to do with this idea of being alone together," Taylor explains.

To make these multifaceted environments successful, proper space planning is essential, according to DiLeonardo. "Space planning and use of space is critical in active lobbies with multiple interactions," she says. "There are intimate seating pockets and communal areas where you can conduct business. There's also grab-and-go experiences in these lobbies so you have the opportunity to grab a bite to eat and sneak away and be on your own. It's really about how you incorporate different functions within the space."

Those functions can be broken down into a three-part analogy—the living room, the kitchen and the neighborhood hub, according to Jason Dries-Daffner, senior director of architecture, EDG Interior Architecture and Design, San Francisco. "They actually have a residential correlation and it's not surprising because these are places where people feel comfortable and that are at a human scale," he says.

"These have lots of different manifestations but basically it's the idea of the living room—it's a place to relax," Dries-Daffner explains. "It doesn't matter how beautifully you decorated your living room, everyone hangs out in the kitchen. Finally, if you think about the lobby as a town piazza—it's a plaza, it's a public gathering place. It's not just a place to go through for circulation, but it's a place that you want to stop and rest and take a break, to meet friends or just to see what's going on. Like a town square or a neighborhood hub, you've got lots of choices on what to do."

## A Sense of Place

Another prominent trend shaping the hospitality industry is the move toward boutique hotels, defined as upscale, smaller properties focused on design, technology, local culture and standing out from the cookie-cutter hotel crowd, according to a recent *International Business Times* article. Major hotel brands, such as Marriott, Hilton and Hyatt, have been capitalizing on this trend. Boutique hotels comprise about 5 percent of the market, but the trend has grown 6.1 percent per year since 2009 and is expected to accelerate

through 2019, according to research firm IBISWorld.

The reasons for the success of this niche market are many, but among them are the needs of many hotel properties to differentiate their brands, as well as to give guests an authentic experience with the community they can't get from a chain hotel.

"To really get a sense of place and to feel like you had an experience that was specific to the location that you're in is important to people," Taylor suggests. "The boutique mindset has been embraced by everyone because they see how successful it is. And that's largely because it has a personality—it has a soul, and that's the appeal."

Mayer adds that many major chains are creating new boutique brands as a way not only to help them diversify, but to compete with the independents that have benefitted from this trend of localization. "Everyone wants to be in that world [because] people don't love a cookie-cutter type approach," he says. "We're always trying to figure out how to infuse a regional, or local or neighborhood perspective in all of our projects."

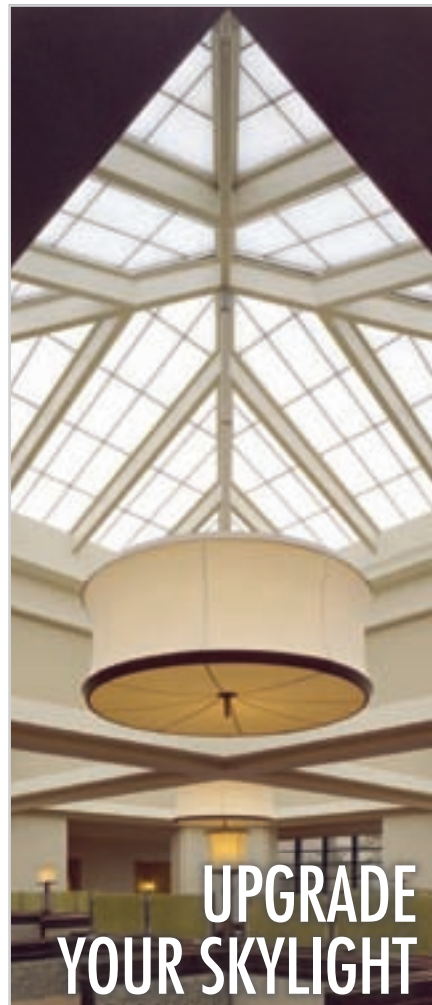
To accomplish this in practice, Taylor notes that successful boutique hotels support local artists. While this isn't new, per se, hotels are now going further than just hanging art on the walls by hiring local furniture makers, craftsmen and artisans, highlighting and celebrating the local influences of the community throughout the hotel.

## Sustainability Is a Given

Although there are still challenges to greening facilities that essentially run around the clock, hospitality clients are expecting sustainable solutions to their retrofitting needs—and opportunities abound.

As Coban observes: "Sustainability is no longer a hot-button issue. It's basically understood that we're tackling that on a day-in and day-out basis. That has become as prevalent to us as carrying a smartphone or cell phone."

According to Dries-Daffner, many properties are pursuing sustainable design during renovations because of energy-conservation regulations but also to recoup their return on investment by reducing operating costs. "That's a perfect time to take lighting design into consideration because they're swapping



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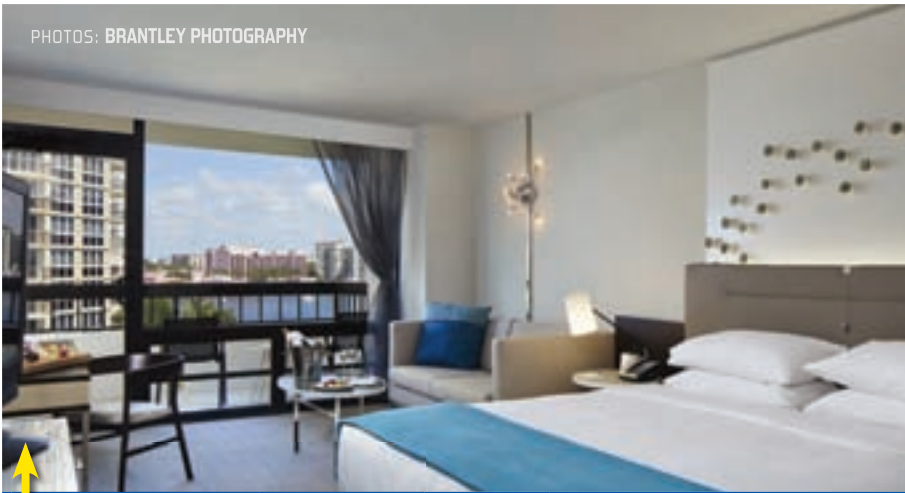
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Seamless integration of technology is imperative in hotels, like in this guest room at the Waterstone Resort & Marine by Gensler, where guests expect the same (or better) level of comfort and connectivity during their stay.



Public spaces and lobbies in hotels are becoming social and technology hubs where people can work or socialize as illustrated at the Waterstone Resort & Marina in Boca Raton, Fla., designed by Gensler.

out either the lamps or the fixtures of the whole system and it goes hand-in-glove with sustainability," he notes.

DiLeonardo concurs and suggests that retrofits are a great opportunity to address the environmental impacts of products in hotel properties. Durability and timeless design are important considerations in the retrofitting process, she says, because "when those renovations do come up it's not a wholesale change. Looking at the durability of products and being very thoughtful in what you're putting into the spaces is critical."


## Getting Back to Basics

Ultimately, one of the failings of exploring design trends like these is that they are so often short lived. What's in vogue today is often passé tomorrow. As a result, a simple, timeless approach is often the best route when it comes to renovating interiors.

"We're seeing a lot of this sort of back-to-basics kind of design where it's not too trendy; it's not trying too hard; it's easy," Mayer explains.

And in the world of hospitality, the basics always come back to one thing: the guest. Every decision to design, upgrade or renovate should be made with the guest experience in mind.

"Sometimes it's just asking the question and thinking about it in a little different way—and it's always from a standpoint of the guest experience," Coban says. "How do they navigate their way through the lobby or to the guestroom from the time they get off the curb into the building? What do we want the guest to see?"

Whatever it is, make sure it's in clear focus. 

## No Substitute for the Personal Touch

While the high-tech trend is still in full swing and technology upgrades are key to a successful hotel property, it's important to remember that even the best applications can't substitute for good old-fashioned customer service. Besides, everyone needs to unplug every so often and be catered to, and there's no better place to do that than in a hospitality setting that's designed well.

"I think that there's definitely a careful balance that we're all still trying to tread," notes Brooke Taylor, director of interiors at Oakland, Calif.-based Arcsine. "While technology offers lots of convenience and we all love it ... you want to be able to escape it, too. For example, not having a person check you in—there's a lot of mixed feelings on that and it goes back to the essence of hospitality. It's a personal touch;

it's being taken care of; it's being welcomed; it's being cared for—and an iPad isn't going to do that for you."

Teddy Mayer, director of hospitality for Gensler in New York City, echoes that sentiment, noting, "No matter what the technology is, no matter how seamless it becomes, you always want to be able to make that really personal connection with your guest."



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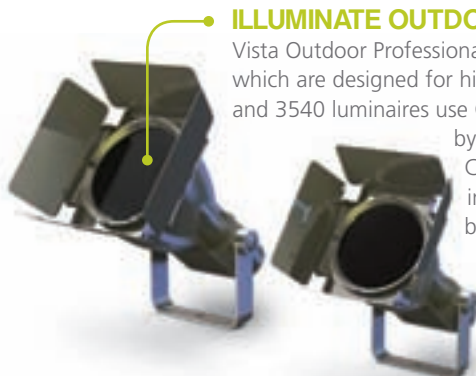
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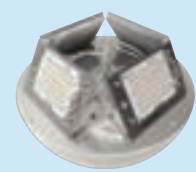
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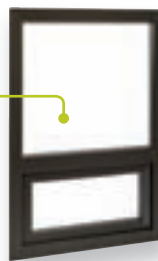
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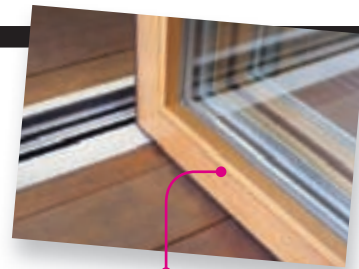
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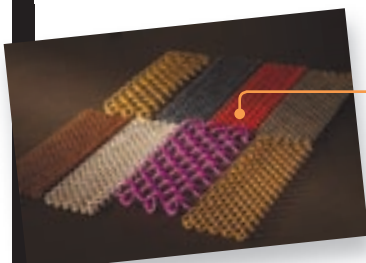


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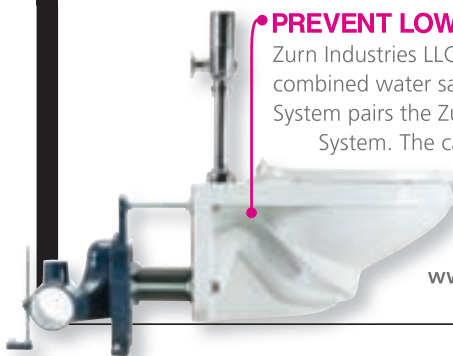
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# STEEL ANCHORS SAVE A 16th CENTURY CASTLE

Astley Castle in Warwickshire, England, recently was awarded the Riba Stirling Prize for Architecture after an intensive renovation. The prize is the United Kingdom's most prestigious architectural award and is judged upon original, imaginative and well-executed designs that meet the needs of their users and inspire those who use and visit them.

CINTEC International, which has an office in Baltimore, specializes in structural masonry retrofit strengthening, repair and preservation. The firm teamed with architects and engineers from Mann Williams, Bath, England, and Protectahome, Newport, England, to restore the castle. CINTEC assisted with the first phase of restoration, which included structural repairs and stabilization of the remaining walls prior to rebuilding. CINTEC's patented steel anchors were used to stitch together and strengthen the walls.

A diamond drill helped to insert the steel anchors into the building. Once in place, grout was pumped into a special sleeve surrounding the anchor, and air was pumped out. Cores removed during this process were retained and reused where the anchors were installed, leaving an almost invisible repair. The work has ensured the survival of the original walls. Today, the ancient castle stands as a luxury holiday home, which can be rented for up to £2,500 per week (approximately \$3,842).

"The restoration work on Astley Castle was an impressive enterprise. Anyone who saw the castle prior to its transformation could have been forgiven for thinking it a hopeless ruin," says Peter James, managing director, CINTEC International. "To be awarded the Riba Stirling Prize demonstrates the true extent of its transformation. It has now been turned into a structurally stable building that will stand the test of time and can be enjoyed by many people in its reincarnation as a holiday home." 



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