DESIGNING FOR HOMEOWNER WELL-BEING
ARCHITECTS TODAY need to be more than just great designers in order to succeed, especially in their own practices. With more than 90% of our time spent indoors, the impact of a structure on the well-being of its inhabitants is becoming increasingly important. This eBook highlights how notable architects are incorporating well-being into their practice by harnessing light and exploring new modes of certification. We hope it’s a useful resource for meeting demand for wellness-focused spaces.

Alex Bachrach, Publisher
ARCHITECTURAL RECORD
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IN 2015, the New York transit system opened its first new subway station in 25 years; the city of Toronto hosted the Pan Am and Parapan Am Games; the YMCA opened a new facility in Grand Rapids, Michigan; and a San Antonio school for deaf children won a design award for redefining what a learning place can be. What united these disparate events was an underlying commitment to including as wide a range of users as possible: in other words, to universal design.

In the United States, one out of every five adults lives with a disability, according to the Centers for Disease Control and Prevention. The most common disability is a mobility limitation (defined as serious difficulty walking or climbing stairs) reported by one in eight adults, followed by disability in thinking or memory, independent living, vision, and self-care.

Over the course of our lives, we are all likely to experience some limitation of our abilities, whether due to injury or illness, frailty in body or mind as we age, or just trying to get around...
with a child in a stroller. Throughout these changes of circumstance, universal design—which the not-for-profit research and advocacy group Global Universal Design Commission (GUDC) defines as “a process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation”—goes beyond mere accessibility. Its aim is to improve the quality of life.

“When universal design really works,” says Susan Ruptash, a principal at Toronto-based Quadrangle Architects, “people don’t say, ‘Wow! This is accessible.’ They say, ‘Wow! This is fabulous.’”

Both people with disabilities and those without are appreciating the new 34th Street/Hudson Yards subway station, a centerpiece of New York’s redevelopment plan for Manhattan’s far west side. The city’s subway system is more than a century old, and many of its stations are notoriously difficult to navigate. But here, ease of use and inclusive design were key planning concepts. “With this new station in the system, we had the opportunity to integrate all users,” says Beth Greenberg, principal with Dattner Architects, design architects for the project.

The station, designed for a peak hourly capacity of 30,000 commuters, is 125 feet below street level, and the configuration of the descent showcases the inclusive concept. A pair of glass-enclosed inclined elevators, a first in New York’s transit system, travel parallel to the station’s banks of escalators down the long

New York’s newest subway station is 125 feet underground. However, the trip from the street to the platform is broken into a series of gradual descents.
slope from upper to lower mezzanines, enabling passengers with a disability (or stroller, or large load) to experience what Greenberg describes as “a shared quality of movement.”

“Equitable use,” in which an environment provides the same means of use for all users—identical whenever possible; equivalent when not—is one of the primary principles of universal design, according to the Center for Universal Design at North Carolina State University. The idea is that a well-designed environment avoids isolating or stigmatizing any group of users, or privileging one group over another. In fact, the Hudson Yards elevators are so unlike the secondary paths to which less thoughtful design often directs disabled users that the elevators’ speed is set low to deter people who don’t need them from riding just for fun.

Prioritizing universal design from the outset of a project maximizes the chance of garnering the greatest benefit. The inclined elevators, for example, not only foster equity, they also provide an economical solution to a construction challenge: by using the same tunnel as the escalators, the inclined elevators eliminate the need to drill out the separate—and in this case expensive—vertical and horizontal tunnels that would have been needed for a conventional elevator.

Other examples of compound benefits at the station include clarity of way-finding, in which spatial form makes clear which way passengers should go, so that signage becomes supplementary. A 35-foot-wide central platform, the widest in the New York subway system, provides enhanced safety and ease of
maneuverability for passengers with and without mobility challenges.

While New York’s new subway station demonstrates the compound advantages of universal design for mobility and inclusion in everyday life, facilities for the Pan Am and Parapan Am Games held last summer in Toronto demonstrated the ability of universal design not just to accommodate thousands of spectators, athletes, volunteers, and officials at a once-in-a-lifetime event, but also to leave a lasting legacy of awareness and inclusion. “People are seeing the Parapan athletes as incredible athletes first and foremost,” says Quadrangle’s Ruptash, who acted as universal design consultant for the planning, design, and compliance of the Games’ four new-build facilities. “The beauty of these high-profile events is that they really raise the bar.”

The largest of the Games’ new facilities, the CIBC Pan Am and Parapan Am Aquatics Centre and Field House (the Pan Am Sports Centre), designed by NORR, includes a multilevel fitness center, two 50-meter-long swimming pools, a dive tank, four competition-size gymnasiums, and a 41-foot climbing wall. The facility is also home to an institute dedicated to the training of high-performance athletes and para-athletes.

Inclusion at the Pan Am Sports Centre begins from the
moment of arrival, with a choice of accessible parking spots: larger ones to accommodate mobility-aided passengers who need extra room to transfer from their vehicle, and standard-sized spaces for distance-limited passengers using a cane or walker. The welcome continues with a main reception desk integrating counters of different heights. High-contrast and tactile signage, wide corridors and doors, elongated power controls for doors permitting operation with an elbow or foot, contrasting and glow-in-the-dark strips for a clearer view of stair edges, and double handrails for visitors of all heights promote ease of movement throughout the building.

Flexibility and choice are fundamental tenets of universal design. At the Pan Am Sports Centre, athletics facilities offer gender-specific and family changing rooms. Roll-in showers (both communal and private), accessible fixtures, and good lighting design ensure that the facilities are easy to use and navigate. Ramps, lifts, and transfer benches provide options for entering a pool independently. Spectators with a disability can enjoy seating locations at all ticket rates without having their views blocked when excited fans jump to their feet.

The Mary Free Bed YMCA has no stairs. Instead, a colorful ramp (right) connects its two levels. At the Pan Am Sports Centre (top), good lighting is one of many features that makes the facility easy to use and navigate.
Most architects would agree that universal design is important. But resources and incentives for creating inclusive environments haven’t always been widely available. To remedy that, the GUDC has developed a universal design certification standard. Based on a decade of research, stakeholder consultation, and testing, the certification standard is scheduled to launch later this year. “Our goal was to create a set of universal design standards which exceeded minimum compliance, could be voluntarily adopted, and would spur innovation,” says Peter Blanck, GUDC chairman.

The performance-based standard will comprise over 600 flexible and interactive strategies from which designers select the ones relevant to their project’s goals. Each strategy will be linked to design resources, including supporting research and best practices. Project teams will have the option to certify their achievement by self-certification or third-party audit.

In December 2015, the Mary Free Bed YMCA became the first project to achieve certification in the pilot for GUDC guidelines. “The concept wasn’t so much about designing a facility for persons with disabilities,” says Michael Perry, executive vice president at Progressive AE, architects for the project. “It was really to change the mindset: to design focused on everybody.”

The 116,000-square-foot, $31 million LEED-certified facility in Grand Rapids, Michigan, includes two gymnasiums, two pools, two group fitness and indoor-cycling studios, an indoor track, climbing wall, tennis courts, playing fields, a greenhouse, teaching kitchen, learning farm, and access to a rapid bus line. In the Y’s central, clerestory-lit volume, a bright yellow ramp forms a promenade between the building’s two floors. There are no stairs. “Often, when you walk into a building, the vertical circulation creates an immediate separation,” says Perry. “Here, we don’t segregate.”
Following up on this initial gesture of inclusion, the building provides a way-finding system designed for multiple age groups and cultures, color schemes and lighting conditions to provide cues to people with all types of visual ability, and hearing loops to enhance functionality for hearing aids and cochlear implants. In pool areas (which often have poor acoustics), acoustic wall panels make a comfortable environment for people with and without hearing aids. Indoor and outdoor spaces accommodate diverse needs with fitness equipment specially designed for wheelchair users, ergonomic and barrier-free changing facilities, self-operated transfer stations for entering and exiting the swimming pools, hard-surface trails, and a wheelchair softball field.

Perhaps no group has more to gain from inclusive environments than children, particularly children with a disability. At the Sunshine Cottage School for Deaf Children, in San Antonio, winner of a 2015 AIA chapter design award, primary school children learn in an environment in which every design decision was considered for its impact on their ability to hear.

Sunshine Cottage has occupied its new building since 2010, but it has been helping hearing-impaired kids since 1947. “Can you succeed without a building like this? You can,” says Belinda Pustka, the school’s executive director. “But it’s so much easier now—we aren’t always fighting with the building to be successful. After more than five years here, I can say, ‘the facility facilitates.’”

The school’s new campus comprises five structures: one for administration, one for elementary classes, another for parents and infants, and two for early-childhood education. Facilities include 20 classrooms, dedicated rooms for music and art, kitchen space and science labs, a gymnasium with a full-size basketball court, an occupational-therapy room for speech therapists, and three age-appropriate playgrounds. The campus also includes an amphitheater, outdoor classrooms, a nature trail, and playing fields.
Children with impaired hearing concentrate a huge amount of mental energy on listening. To make learning easier for them, the architects’ primary objective was to increase the environment’s signal-to-noise ratio—in other words, to amplify sounds that mean something (signals), and to eliminate those that don’t (noise).

Strategies included siting the building to minimize traffic noise, designing an acoustically tight building envelope, locating mechanical rooms so that they don’t introduce ambient noise into the occupied spaces, and designing the HVAC system with large ducts so that the air would move slowly and quietly inside them. Light fixtures that wouldn’t hum were selected. Electrical rooms were painted with electromagnetic shielding paint to prevent silent frequencies’ affecting hearing implants. And to get the most—or rather the least—bang for the acoustic buck, panels were applied to walls rather than ceilings. The resulting quiet, says Greg Papay, a partner at Lake Flato, the project’s architects, “makes us understand how valuable a great acoustical environment is to everyone.”

With the signal-to-noise ratio optimized, the architects’ next objective was to give the children’s hardworking senses some rest. Textures, colors, and materials were selected to harmonize with the adjacent landscape. Ample daylight, views to the outdoors, and settings for outdoor learning were designed to engage the senses in ways that would be restorative.

“Schools often edge designers toward primary colors and a cacophony of shapes and sizes, but focusing on the needs of hearing-impaired kids required us to eliminate the extraneous,” says Papay. “We found that a lot of universal design overlaps with what we would do to make a really great learning environment anyway.”

Katharine Logan is an architectural designer and a writer focusing on design, sustainability, and well-being.

Continuing Education

To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read “Level Playing Field,” review the supplemental material at architecturalrecord.com, and complete the online test. Upon passing the test, you will receive a certificate of completion, and your credit will be automatically reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found online at continuingeducation.bnpmedia.com.

Learning Objectives

1 Define the term “universal design.”
2 Outline strategies for designing for people with diverse disabilities, including those with limited mobility or impaired sight or hearing.
3 Discuss the benefits of universal design for nondisabled users.
4 Describe the recently launched certification system for universal-design projects.

AIA/CES Course #K1603A

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DESIGNING FOR ALL

AS AN increasingly popular buzzword, universal design has sometimes been misinterpreted as designing for unique needs like aging or limited mobility. But when done right, it should take individuals of all ages and abilities into account. When it improves the human experience, design can help people live better.

The owners of Lifespan Design Studio set out to do just that. Based in Loveland, Ohio, this universally focused design firm was founded by architect Douglas Gallow Jr. and his wife, gerontologist Ellen Gallow. The firm specializes in designing homes and senior community centers that help people age successfully. “It’s all about our different and constantly changing abilities as we all age through the lifespan,” said Douglas Gallow Jr. “For us, that’s called design. It’s not universal design. It’s not design for aging. It’s just design, and that’s the way we think.”

There’s no such thing as average

An early work experience inspired Ellen Gallow to work toward finding better design solutions for older adults. After studying gerontology, the sociology of aging, at the Scripps Gerontology Center at Miami University of Ohio, she began her career working...
in a senior community center and ultimately served as the center’s director. She recalls a talented artist in her mid-80s who regularly volunteered at the center to teach classes who could not open the door to the building because it was so heavy and difficult to manage. “She would literally have to ring a doorbell that we had installed for her benefit so we could let her in when she came to teach classes,” said Ellen Gallow. “Early on, it registered with my brain—that is a big deal. She shouldn’t have to suffer that inconvenience and indignity.”

And it’s not just some older adults who might struggle with a heavy door. “A frail older adult, a small child, and a teen with a broken arm might all find it impossible to manage, although they’re at different places in their lifespan,” said Douglas Gallow. “You can’t just think about it from an aging standpoint. You have to think about what people’s different abilities are and how the physical environment hinders that experience.” His comment highlights a point from his firm’s website: that most buildings were built for the “average” person. The problem is, most people aren’t average.

Take this example from aeronautics: Elements of the Air Force cockpit were designed after taking the average measurements of thousands of airmen, but researchers later realized not one of those people actually matched the average. By designing something for an average pilot, it actually fit nobody. Performance suffered because pilots were not fitting well into the regulation cockpits. To address this, engineers and
contractors created new, adjustable equipment designed to fit multiple shapes and sizes of pilots, and performance improved as a result.

Since most people aren’t “average,” shouldn’t we design products and systems that accommodate as many people as possible? Douglas Gallow thinks so. “We think every design decision can be made to better provide a quality of life,” he said.

**Asking the right questions**

In her time at Marvin, senior product manager Brenda Brunk has spent over two decades researching and building products from start to finish. Over the course of her career, she’s found that regardless of a person’s age or ability, everyone wants a product that’s easy to operate. “We really try to look at who’s going to interact with that product,” said Brunk. “How do we make this product easy and universal for everyone to use?”

For example, many homeowners struggle with trying to reach the check rail or lock on single hung windows, especially when windows are located over a kitchen sink or otherwise not easily accessible. It can be so challenging to close them that some homeowners have had to get creative with their solutions and work around the operational limitations, using long poles to ensure that they can even reach the lock.

The idea for Lift Lock, one of Marvin’s latest innovations, began with commercial projects, where windows can be extremely large. Lift Lock moves the locking mechanism on a single hung window from the check rail to the bottom of the sash, creating easier access to open the window. Once they started considering all audiences, Marvin’s team found that the appeal went beyond commercial and could help homeowners, too. “We started to realize that this would have more residential appeal than we initially thought,” said Bill Boyd, senior marketing product manager.

As more homeowners discover Lift Lock, feedback has been overwhelmingly positive. It’s another example of universal design that makes life easier for everyone. “It solves problems, yet it’s so simple a design,” said Boyd.

**Design to suit evolving needs**

It’s easy to only think about one’s current stage of life, but considering every stage of a human lifespan during the design process makes the results better for everyone. “There is no us and them in this conversation whatsoever,” said Douglas Gallow. “There’s only us.” Fortunately, forward-thinking architects and product designers are taking the necessary steps to implement design that works for all, helping us prepare for life’s inevitable changes with optimism.
CONTINUING EDUCATION: WELL BUILDING STANDARD

THE PICTURE OF HEALTH

A new certification system for buildings places the occupant at the center of sustainable design.

BY JOANN GONCHAR, AIA

A BUILDING can promote the well-being of its occupants in a variety of ways—just ask any architect. Some will say it should be free of toxic chemicals. Others might argue that the design should discourage occupants from being too sedentary. Still others will maintain that a building must foster ways for its users to be productive and happy. Now a new certification program called WELL is available. This set of health-centered guidelines could help architects and other professionals define more precisely the relationship between wellness and the built environment.

At the San Francisco offices of Fahr, LLC, Mark Horton Architecture and Leddy Maytum Stacy Architects addressed WELL’s requirements for biophilic elements by placing epiphytes, which grow without soil, on the walls.

PHOTOGRAPHY: © BRUCE DAMONTE
No doubt there are design teams and clients who question the need for another rating system or an additional plaque to hang on the wall. But advocates maintain that even though LEED provides credits for attributes like daylighting and good indoor air quality, WELL is a complementary system that responds to a distinct set of problems. “It deals with issues that LEED tackles only obliquely,” says Bill Browning, founding partner of research and consulting firm Terrapin Bright Green. “LEED is about the building,” he elaborates, “while WELL is about the experience of the occupants in the building.”

The tool for measuring, certifying, and monitoring the features of the built environment that further human health is the brainchild of Paul Scialla, a former Goldman Sachs partner. In 2007, he founded Delos—a research, consulting, and development company that he describes as a “wellness real-estate” business. He saw opportunity in combining real estate, “the world’s largest asset class,” with health and wellness, “its fastest-growing industry,” he explains.

The leadership of Pittsburgh’s Phipps Conservatory and Botanical Gardens decided to seek WELL certification for a new administration building after completion of construction. Because the structure already had features like a centrally placed, daylit, and visually appealing stair, only minor modifications were needed.
Delos first developed WELL as a proprietary system in collaboration with medical and health professionals. But to further advance its goals, Scialla decided to offer it as a publicly available standard. And, to administer it, he established the International Well Building Institute (IWBI) as a public benefit company, or B-Corp, a type of for-profit entity recognized in many states that includes having a positive impact on society in its mission. Last October, after a multistage peer-review process, the institute released version 1.0 of WELL, which is tailored specifically to offices. Standards for other building types are in the works.

According to IWBI, three pilot projects have so far been certified, and projects totaling more than 10 million square feet, in buildings located throughout the world, are on the path to certification. Although this figure is dwarfed by the number of LEED buildings—almost 60 million square feet were certified in the month of April alone—the WELL tally is impressive, considering that it is still so new.

Road To Wellness
In its 216 pages, WELL 1.0 outlines recommended practices, organizing them into seven categories: air, water, nourishment, light, fitness, comfort, and mind. Within each of these are strategies, or in WELL lingo, “features,” which can be applied to a building project or space to promote the health of the human body, including its cardiovascular, immune, and respiratory systems. Some of the U.S. Green Building Council and HOK are partners on the William Jefferson Clinton Children's Center project in Haiti, which is now in design development. The team has committed to achieving LEED Platinum and WELL certification for the facility, which will deploy passive and renewable strategies.
these strategies are designated as “preconditions,” meaning they are required for certification, while others are voluntary measures, or “optimizations,” that can help a project surpass basic certification and achieve a Gold or Platinum rating.

Sources say that WELL 1.0 catalogues what goes into the making of a healthy environment. The document “teases apart the various aspects of wellness,” rendering its concepts both “accessible and actionable,” says Beth Heider, chief sustainability officer at construction and development company Skanska USA. She served as a peer reviewer, as did Terrapin’s Browning.

Many of the 102 features outlined by the standard depend on the space’s configuration, its finishes and furnishings, and mechanical systems, and therefore fall directly under the purview of the design and construction team. For example, there are requirements for walls and ceilings to have minimum light reflectance values in order to promote alertness, ultraviolet lamps incorporated into cooling systems to prevent mold growth, and ergonomic furniture. But other strategies, such as those limiting the amount of sugar in drinks available on the premises, housekeeping protocols relying on

More than 90 percent of employees based in CBRE’s new Gensler-designed WELL-certified offices in Los Angeles (above, right) say their new home contributes to their health and well-being.

nontoxic and hypoallergenic products, and policies intended to encourage physical activity, like reimbursement for gym membership, clearly come under the purview of the client or tenant.
Some of the features are ahead of available technology. Aliza Skolnik, a senior associate with consulting engineering firm ESD, cites an optimization that calls for sensors continuously monitoring and displaying noise levels. There is no sensor suited for that purpose yet on the market, explains Skolnik, who is among the first group of provisional WELL APs, or accredited professionals (she will be eligible for full AP status after passing an exam to be offered for the first time this fall).

Designers from Mark Horton Architecture and Leddy Maytum Stacy Architects (LMS) encountered a similar problem when they renovated a floor in a 1920s office building in San Francisco’s financial district. The client was Fahr LLC, which oversees several organizations owned and managed by environmentalists Tom Steyer and Kat Taylor. In addition to WELL, the architects for the recently completed project are seeking certification under the Living Building Challenge (LBC)—a standard whose stringent requirements include a prohibition against using materials that contain any one of 22 chemicals on a so-called “red list.” The dual certification goal complicated furniture selection for the offices, especially since a compressed schedule, with less than two months for design, allowed little time for the vetting of materials. “If 12 chairs met the red list, WELL’s ergonomic requirements eliminated 11 of them,” says Adam Franch, project architect from LMS. Horton believes that programs like WELL and LBC will provide manufacturers with an incentive to broaden the range of compliant products. “All of this momentum will eventually change the market,” he predicts.
The Price Of Health

The certification process, which includes an on-site assessment for the testing of air, water, and lighting quality, will be managed by the Green Business Certification Institute (GBCI)—the organization (formerly the Green Building Certification Institute) that is also responsible for LEED certification. Fees for registration and commissioning vary depending on a project’s size and type, but for a tenant improvement project smaller than 50,000 square feet, the total would be $8,300. IWBI charges additional fees for the audit, which begin at $4,000.

The cost of actual compliance is a bit less clear-cut. Michelle Moore, an IWBI strategic adviser, points out that with only three certified projects so far there isn’t enough data for a comprehensive analysis. However, she expects low incremental construction costs, especially for those projects also targeting LEED. “Project teams that have figured out integrated design know that sustainability is about different decisions, not necessarily about more expensive ones.” She recommends putting the two rating systems’ checklists side by side to identify areas of overlap and pinpoint which credits or features entail additional investment. To aid this process, WELL 1.0 includes appendices that compare it with both LEED and the Living Building Challenge.

Onno Zwaneveld, an executive at real-estate services and investment company CBRE, says WELL features for his company’s new Gensler-designed office on two floors of a 26-story building in downtown Los Angeles added 1.7 percent to the construction budget over the cost of its LEED Gold certification. The space, which received its WELL certification in November 2013, includes advanced air filtration and water purification, lighting intended to minimize the disruption of the body’s circadian system, and ergonomic furniture such as stand-up desks.

Similarly, Josh Gould, CEO of RNL, the architect for a 229-unit condo complex in Denver, anticipates its premium for WELL compliance to be “just a few percentage points” when compared to a more conventional apartment building. Slated for completion in the fall of 2017, the structure will have a number of features intended to encourage physical activity, including a 12-story tower with a glass-enclosed stair. The architects hope that the views the stair will provide of the surroundings will entice residents to use them rather than the elevator. Gould expects WELL certification to enlarge the pool of prospective buyers.

It goes without saying that it is easier to incorporate WELL if the goal is set early in the planning and design process. But it is possible to achieve certification even if that decision is made after the completion of construction. That’s what the Phipps Conservatory and Botanical Gardens in Pittsburgh did with its Center for Sustainable Landscapes (CSL), a 24,000-square-foot administrative building executed by local architecture firm The Design Alliance. Completed in late 2012, the structure is LEED Platinum and Living Building Challenge–certified. It received its WELL Platinum certification in October.

In order to meet WELL standards, Phipps made only minimal changes to the building, which had been designed with many health-promoting aspects including ample daylight and a strong connection to the outdoors. Phipps added more ventilation to a
copier room and swapped in ergonomic furniture. It also implemented a few changes to operating procedures and policies. These involved enhancing its already green cleaning practices, supplying break rooms with fresh fruit, and making Fitbits available to employees.

Greater Good
Fans of the new standard hope it will advance the discussion of health and architecture into the public realm. However, some worry that, for the moment at least, an environment that promotes wellness is perceived as a luxury. “We need to make sure we divorce healthy buildings from a level of amenity,” says Claire Maxfield, director of the San Francisco office of Atelier Ten, an environmental design consultancy that was a peer reviewer of WELL’s lighting sections. “I’m sure even IWBI would say so,” she adds.

And in fact, Scialla maintains that he is absolutely dedicated to a standard that can be broadly employed. He says this goal will be furthered by IWBI’s B-Corp status, which includes a commitment to contribute 51 percent of net profits from certification fees to philanthropic entities and investment that focuses on health and wellness. Among the rating system’s many current pilot projects is the William Jefferson Clinton Children’s Center—an orphanage in Port-au-Prince, Haiti, which is a collaboration between the U.S. Green Building Council and HOK. Details regarding another pilot project—an affordable-housing complex in New York—are expected to be announced soon. WELL isn’t just for luxury apartments or class-A offices, says Scialla: “It is appropriate for any project type at every cost level.”

Continuing Education
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Additional information regarding credit-reporting and continuing-education requirements can be found online at continuingeducation.bnpmedia.com.

Learning Objectives
1. Explain the goals of WELL.
2. Outline the structure of WELL 1.0 and explain how it helps define the relationship between human health and the built environment.
3. Discuss how WELL differs from more established green building-rating systems such as LEED.
4. Discuss the challenges that the certification process poses for design teams.

AIA/CES Course #1506
DESIGNING FOR THE POWER OF LIGHT

How harnessing light can lead to happier and healthier homes
Today, people are looking for ways to live healthier and happier—and they expect their homes to be part of that quest. We often look to designers and architects to help create positive home environments, and these experts are increasingly considering light as an important tool to boost happiness.

Research indicates that increased exposure to light makes people more productive and improves their sense of well-being, therefore improving overall wellness. [1] It’s no surprise, then, that homeowners and architects alike are exploring ways to bring more natural light into homes.

“Your mind may not realize it, but your body wants that feeling of getting back to nature.”
Manny Gonzalez, FAIA, LEED AP

Biophilic design: a return to evolutionary psychology
To understand the impact of light in a home, it helps to explore the concept of biophilic design. Biophilic design incorporates evolutionary psychology in the design of spaces. We’ve always sought certain elements to feel safe, secure and in the most optimal emotional state—ingrained in us from the earliest days of living on terrain like meadows and the savanna. [2]

Gazing outside inspires a direct connection to the healthy, natural state that people experienced when they spent most of their time outdoors. “The feeling of being in nature stays with you, even while inside looking at trees, a garden, or patio,” said Manny Gonzalez, FAIA, LEED AP, principal and board of
directors at KTGY, a Los Angeles-based architecture firm.

**Exposure to light makes us feel better**

The concept of biophilia comes to life when we consider the body’s response to daylight. Daylight affects the health of our circadian rhythms, also known as our internal sleep/wake cycle. [3] These rhythms are primarily regulated by light and darkness in an environment and are recognized by a third type of receptor in our eyes. [4]

The same idea is at work in our homes. The more exposure to the outdoors and light, the better we feel. “All of these things tie into healthy living, the ability to get the sleep that you need, the wellness everyone is trying to get,” said Gonzalez.

**“Sunshine suits”**

Conversely, research has shown that a lack of exposure to light can actually make us sick, and some countries have already begun addressing their citizens’ right to light. In Japan, skyscrapers and intense urban density led to the concept of “nissho-ken,” which translates to “a right to sunlight.” After a string of “sunshine suits,” more than 300 Japanese cities adopted “sunshine hour codes,” specifying penalties that developers must pay for casting shadows.

The Japanese were early to realize the impact of sunlight on health and happiness—crucial when you consider that we spend up to 97 percent of our time indoors.[5] All the more reason to bring light into the home, since we may not get outside much to experience it.
create a functional, healthy and inspiring light-filled home. Architects also take siting into account—understanding the land and placing windows for maximum natural light. Choosing a design style that prioritizes large expanses of glass and unobstructed views, like in Marvin’s new Modern product line from the Signature Collection, can also offer the opportunity to design with light as a focal point.

Light considerations in design
What exactly does it mean to design around natural light? “Being able to control the lighting, whether it’s the natural light that you have, the UV rays that you get through a window, visibility and window coverings—all those things start tying together when you’re creating the proper environment,” said Gonzalez.

Window styles, configurations and glazing can all work together to create a functional, healthy and inspiring light-filled home. Architects also take siting into account—understanding the land and placing windows for maximum natural light. Choosing a design style that prioritizes large expanses of glass and unobstructed views, like in Marvin’s new Modern product line from the Signature Collection, can also offer the opportunity to design with light as a focal point.

Modern homes tend to have more windows and narrower frames, increasing the capacity for light to pass through and offering better views. When Marvin created its new Modern product line, it offered homeowners an opportunity to embrace the principles of modern design—a concept that is closely intertwined with exposure to light.

“Our goal was to create a designed experience that offers minimal sightlines and large expanses of glass, providing seamless, clutter-free visuals that make engaging with the outside world easy. This enables homeowners to achieve what they seek in their home—connection, restoration and freeness.”

Christine Marvin, Director of Corporate Strategy + Design
Emotional and physical benefits
When a home’s design embraces and enhances the benefits of natural sunlight through deliberate choices that strengthen our connection to the outdoors, those much-desired feelings of well-being are a natural result.

“If you do a good job as an architect, the resident won’t even know that they’re experiencing biophilic design,” said Gonzalez. “They don’t even think about it—it just feels good.”

A weekend place owes its calm presence to its highly crafted use of granite walls and slate roofs.

BY PILAR VILADAS
PHOTOGRAPHY BY JEFF GOLDBERG/ESTO
Since Rick Joy started his practice in Tucson, in 1993, he has been creating buildings that deftly balance modernist formal rigor with sensitivity to place. His houses have ranged from rammed-earth desert structures such as the Adobe Canyon house in Patagonia, Arizona (2005), to a Vermont farmhouse in Woodstock, a record house (April 2009), where the shingled roof and side walls contrast with the stone shear walls at each end—a striking yet seamless blend of contemporary form, rich materials, and local tradition.

That approach is at the heart of his recent Bayhouse, a spacious single-story residence set on two acres of

The detailing of the stone corners and recessed windows of the screened porch deftly articulates the thick planar walls.
waterfront property in a small coastal town known for its picturesque charm. The clients, a mature couple, wanted a modern house, but the town favors traditional architecture for new buildings. “I knew that Rick would design something modern that would be a good neighbor,” the wife says. So Joy and his studio looked for cues in the historic houses of the Northeast, with their clapboard or shingled walls and pitched roofs that shed snow, but didn’t take them literally.

Rather than use painted clapboard, for example, the architects clad the house in varying lengths of 4-inch-high, 5-inch-deep white granite, with flush vertical joints and raked horizontal ones to evoke clapboard’s forms and rhythms. (The clients also wanted stone for its ability to insulate the house from the noise of summer boating activities.) The steeply pitched slate roof is another reference to the past, but its asymmetrical hipped form and exaggerated height are contemporary moves, Joy explains, that were ultimately based on “a desire to create daylit spaces for the living and kitchen/dining areas.”

To achieve that, the architects created two

The entrance to the house admits visitors into the vestibule before they take a turn and enter the living area.
Here the Douglas fir-clad interior, pyramidal skylight, and granite chimney bring to mind the vocabulary of Louis Kahn. The space is all the more dramatic because of the water view.

light monitors with clerestory windows surrounded by a parapet at the top of the roof. These belvederes bring light into the lofty, open-plan public areas within. An inverted copper pyramid inside each monitor reflects daylight onto the pitched, 28-foot-high wood ceilings. Joy is not a fan of direct daylighting: “Don’t light up the architecture,” he says: “light up the life.” (Electrical lighting was designed by Claudia Kappl, Joy’s wife and associate, and a
A second pyramidal skylight dramatizes its interior. In the bedroom wing, a hall with Venetian plaster walls (above) frames the view of the bay.
partner with her husband in Concept Lighting Lab.)

The granite chimney of the fireplace separates the living room on one side and the kitchen/dining area on the other, with both looking out to the calm waters of a bay. Adjacent to the kitchen at the west end of the house is an enclosed porch, while the east end contains three bedrooms and three and a half bathrooms. In contrast to the soaring spaces of the living and kitchen/dining areas, this wing, with its walls of troweled white plaster, has 9-foot ceilings. The bedrooms are laid out in a pinwheel plan around a central gallery, which displays works by contemporary photographers. This space offers a view through the living areas, while the corridors that branch off it look to the outdoors.

The house’s front facade was carved out to create what Joy calls a “car porch” at the entry, with a bronze railing, like a ballet barre, running along the wall to aid passengers who need a little help getting out of a car. That exterior alcove’s Spanish cedar wall, says project senior designer Matt Luck, “reveals the soft core” of the house, with its sustainably harvested Douglas fir–lined entry, living, and kitchen/dining areas.

As dramatic as the house’s outlines and main interior spaces are, its details are what make the building “an exercise in refinement,” as Joy puts it. At the corners of the exterior, the ends of the flame-finished granite pieces are burnished and buffed, creating a subtle contrast of textures, while the top surfaces of the granite window sills slope toward their centers in a gentle V to help drain water. The asymmetrical angles of the roof became “a
self-inflicted design challenge,” says Joy, with conventional courses of slates impossible.

Instead, the architects created eight different shingle sizes and devised a set of patterning rules that produced a seemingly random effect. Combined with the slate’s natural color variations, the resulting surface is both subtle and complex. And then there is what can’t be seen: gutters hidden between the edges of the roof and walls, revealing themselves only when they span the stone walls (water drains into pipes that are concealed in the house’s corners) or the entirely invisible geothermal pumps that provide air-conditioning and heat for the radiant floors.

The plantings, by Michael Boucher Landscape Architecture, are natural and informal, reflecting the desire of both the architect and clients that they fit into the beachfront setting. Though the house clearly stands out from its more conventional neighbors by virtue of its unusual roof and the precision of its materials and detail, the design “attempts to be a good citizen, identifying with the spirit of the place,” notes Joy, without trying to imitate them. Not only has he created an elegant but unpretentious house, he has met his own goal of making architecture that is “at once emotional, existential, and super-well crafted.”

Pilar Viladas, a former design editor at The New York Times, writes about design and architecture.
A WINDOW TO BETTER LIVING

Four Projects That Embody Patterns of Biophilic Design
Research shows that views of nature aren’t just beautiful, they’re healing, too.

Most people agree that nature views filled with greenery, trees, and lakes or oceans are calming and restorative, but they might not know that the reason for this is tied to our evolutionary psychology. Going back to our days living on the meadow and savannah, humans have sought certain elements to feel safe, secure, and emotionally balanced. Design that intentionally connects people to nature—a practice commonly referred to as biophilic design—incorporates materials found in nature, daylight, and views to the outdoors to improve well-being. Considering that we spend over 90 percent of our time indoors, buildings designed to maximize the calming effects of nature are needed now more than ever.

From siting that prioritizes a view of the setting sun or lush vegetation, to the creation of cozy spaces of refuge, to incorporating materials and elements of nature indoors, and more, the following four projects embody the core elements of biophilic design.
Tinkerbox, Hudson Valley, New York

Designed with materials inspired by nature and grounding views that connect with the outdoors, architect Marica McKeel, Principal, AIA, Founder of Studio MM and her husband Brock designed a private retreat that maximizes views to the south-facing façade, where the sun sets in the evening.

Expansive windows create an intimate connection to the wooded landscape, and a bench seat below a Marvin corner window assembly provides a space of refuge while making the barrier between outside and inside disappear. Sitting at ground level, an expansive deck offers another opportunity to enjoy the surrounding wooded landscapes.

Pleated House, Door County, Wisconsin

This house by architect Sebastian Schmaling, AIA, of Johnsen Schmaling Architects boasts a modest size, natural materials, and an earthy color palette that exist in harmony with the surrounding deciduous and coniferous forest.

With little other visual clutter, the thin profiles of the Marvin windows become clean, crisp picture frames that draw the eye outside. Throughout the home, smaller, strategically placed windows are used to draw daylight into the interior spaces and individually frame curated views of the forest.

“We were trying to create a very neutral interior backdrop against which you see the ever-changing foliage, the colors, the light, the shadows,” says Schmaling.
Nomadic Shack, Galloway Bay, Saskatchewan
Designed and built by Nomadic Shack, this 2,400-square-foot cabin was prefabricated off-site to allow installation on a piece of land so remote that it would have made traditional building practices impossible.

The cabin focuses on natural materials, including a reclaimed barn wood exterior from Montana and a ceiling made of snow fence from Wyoming. Large Marvin windows frame unimpeded views in all directions, allowing a prairie-like view to envelop inhabitants.

Courtyard Residence, Downers Grove, Illinois
Chicago-based firm Kuklinski + Rappe Architects designed the interior spaces in their Courtyard Residence project to look out onto serene, landscaped areas. The home includes a “cloister” that runs along a main courtyard, offering a calming view for family members with special needs.

“The exterior spaces offer sensory experiences: A low concrete wall radiates warmth to the adjacent sitting area, a fountain with shallow basins allows soaking
of hands and feet, a courtyard offers a small lawn and flowering tree, and a patio with an outdoor fireplace gives way to rolling, grass-covered berms,” says Scott A. Rappe, AIA, LEED AP.

Marvin windows clad in Cascade Blue echo the deep color of the sky, and transom windows are placed around the perimeter of the living area to allow a view to the outdoors from any position.
HANGING GARDENS

Dense foliage and simple rectangular forms evoke an ancient wonder.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY PAÚL RIVERA

The entrance on the street (below) appears unassuming amid planting, which softens the clustered volumes clad in blue limestone. Light monitors (top) pop up among the roof’s dense flora.
I wanted the architecture to be taken over by lush planting,” says Sebastian Mariscal (a Design Vanguard winner, record, December 2007) about the 7,400-square-foot house he designed in the hills of La Jolla, California. The location is a good choice for such botanical immersion. The picturesque town, near San Diego, edges the Pacific Ocean with bluffs and sandy beaches and is known for its sunny weather, not to mention the abundance of palm and eucalyptus trees.

The effulgent vegetation enveloping this site owes much to Marcie Harris Landscape, a firm that consulted with Mariscal on several projects during his 13 years in San Diego before he moved his practice to Boston in 2012. The greenery lustily invades an assemblage of rectangular and square connected blue limestone-clad volumes stretched along the ridge of the half-acre property. At his Phoenix House nearby, Mariscal had draped the exterior concrete board-form walls with vines (a record house, April 2014); in this case, the planting is even more prevalent, with jasmine pandorea cascading from the roof gardens, softening the gray-white stone walls. The fragrance emanating from these hanging plants makes you appreciate another aesthetic dimension.

The front of the house hugs the street with an abundance of Brisbane box and Silversheen pittosporum, so you have to look
carefully to spot the “humble” entrance, as Mariscal calls it. “Too many houses here are designed for curb appeal,” he says about La Jolla’s fanciful polyglot of residential styles. “But we didn’t want that.” Not surprisingly, Mariscal’s designs evoke the solidity of materials and massing, alternating with voids, of Louis Kahn’s Salk Institute several miles away, and even the stuccoed white planes of Irving Gill’s architecture in downtown La Jolla.

While the house appears to be one-story high from the front, that perception shifts at the back, where the main level is expressed as a strong rectilinear bar, extending along the west elevation and edged by an expansive mahogany-and-cable balustrade. Another floor is tucked below it where the slope drops, with the entirety looking out on a verdant golf course—“a lawn we don’t have to mow,” says owner Kayvon Agahnia. Beyond it are views of the Pacific.

The house sits high enough on the steep slope to command this vista, but other houses are perched even higher along the street’s vertiginous ascent. “That is why I wanted to create a fifth facade,” says Mariscal about the thickly overgrown roof gardens and terraces. “This is for the neighbors looking down from above.”

The slightly meandering entry sequence brings you through a gate into an open court, where a mahogany gangplank bridges a koi pond to the vestibule and a small internal courtyard planted with slender China Doll trees. But this is only the setup for what is to come: just ahead, the living and dining area rises dramatically
upward to a 15-foot-high mahogany ceiling and expands out to the drop-dead view of the golf course and the ocean to the west. Here a 50-foot-wide expanse of glass sliding walls is free of columns, owing to a steel beam spanning the length of the space in this hybrid wood-frame, cast-in-place concrete, and steel structure. The living and dining area, demarcated by meticulously detailed mahogany cabinetry and backed by a gridded wood screen, is behind you as the glass walls to the outdoor deck of Mangaris wood slide away, blurring any distinction between inside and out.

“We often gather here, especially at sunset,” says Kayvon, who, along with his wife, Maite, was so enraptured by the natural panorama, they located their bedroom at the northern end of the deck. Bedrooms for the two children, now almost grown, occupy this wing as well, where the spaces are treated as clustered units, to break down the scale of the large residence. Two light monitors push up above the flat roof planes like periscopes to bring daylight into an internal corridor. Near the two monitors is a suite, facing east, with its own small patio, for Kayvon’s mother. Originally, it was reserved for the children as a playroom. “The design can evolve as the family evolves,” says Mariscal. A distinct

The interior courtyard affords privacy to the guest bedroom behind it.
The living and dining areas open onto a wood deck. Sliding glass doors under an elongated steel beam create a column-free space 50 feet long.
but connected pavilion on the northwest corner is reserved as an art studio for Maite, an abstract painter and photographer. The 17-foot-high cubiform space also accommodates her office on a mezzanine.

Outdoor steps from the studio lead down the west side to the floor tucked under the main level and bolstered by concrete retaining walls and caissons. Most of this floor is devoted to casual recreation space. “Our kids love to entertain here,” says Maite, “and I can have receptions for those coming to see my art.” In a gym on the south end, Kayvon, a triathlete, can work out. Despite
having a narrower deck than the floor above, both spaces still partake of the ultimate in relaxation—the rolling landscape (with a few golf carts).

On top of the residence are roof gardens, one with a wood deck and beach sand. While the weight of the soil for growing white yarrow and dwarf mat rush and other foliage required beefing up the wood joists, the payoff is greater than the combined visual and olfactory sensations. The gardens not only insulate the interior from the sun’s heat but absorb most of the rainwater runoff. In addition, photovoltaic panels on the studio and garage roofs provide 95 percent of the house’s electricity, adding to the sustainability efforts, along with natural ventilation, which the family often uses in lieu of air-conditioning.

Kayvon is not only a client. He is also an investment partner in Mariscal’s practice for various development and design projects the studio is executing in Boston and Mexico (where the Mexican-born designer keeps a second office). When the client/partner is asked how well Mariscal adhered to the budget and schedule with the house, Agahnia deadpans, “When architects give you estimates on time and money, just multiply by three and you’ve got it.” Maite, who initially wasn’t sold on the idea of sandblasted concrete floors in the living/dining room, says, “I went along. I have a blind trust in Sebastian. He’s never arrogant, and he’s always calm, a therapist as well as architect.”

The clients are effusive about how the house turned out. “I wake up loving the house,” says Kayvon, “and I go to sleep loving the house.” Maite adds, “It is modern, organic, and timeless.”

“Luxuriant vegetation is always going to make architecture better,” he says. He has a point, but there are other elements that help considerably, such as his play of masses and voids and use of materials. And, of course, the view.

credits

ARCHITECT: Sebastian Mariscal Studio – Sebastian Mariscal, principal; Mauricio de la Peña, project manager; Javier Gracia, construction supervisor
ENGINEER: DCI Engineers (structural)
CONSULTANT: Marcie Harris Landscape Architecture (landscape)
GENERAL CONTRACTOR: RLP Development
CLIENT: Kayvon and Maite Agahnia
SIZE: 7,400 square feet
COST: withheld
COMPLETION DATE: January 2018

SOURCES
BLUE LIMESTONE: Gem International
CHANDELIERS: Ligne Roset
PV SYSTEM: Alternative Energy Application
AN ACCESSIBLE HOME PROMOTES A LIFETIME OF WELL-BEING

Tucked in a Chicago suburb, the Courtyard Residence celebrates the outdoors while responding to the needs of each family member.
When envisioning the perfect home for their family, Kiley and Jim agreed that accessibility was paramount—access to the outdoors, and access for their daughters, Langley and Boelyn, who have special needs and rely on their wheelchairs to get around. After purchasing a narrow lot in Downers Grove, Illinois, the couple reached out to Chicago-based firm Kuklinski + Rappe Architects to design a residence that would serve their daughters, their son Huck, and their own various needs. Crafted to adapt to the family’s lifestyle over the years, the home will provide lifelong health and happiness.

It just so happened that the parameters that Kiley and Jim presented resonated with architect Scott Rappe. “They spoke about the future and the uncertainty around how their daughters would develop. So

Walnut floors run throughout the home, creating a seamless transition between the living room and open kitchen. Clerestory windows not only allow light to permeate the space, but also cater to Langley’s and Boelyn’s perspectives as they lie on their backs.
“The kitchen is the nerve center of the house,” says Rappe. A professional-grade kitchen was a must for Kiley, a culinary professional. Working in the center of the main living space, she is able to watch the kids in the main courtyard, children’s courtyard and the back yard.
that, right away, keyed into an interest [at our practice] in looking at how homes are used over the long term,” he says. They approached the challenge of the site first—long and compressed, it suggested a floor plan that placed rooms on either side of a corridor in order to create accessible spaces. Rappe, however, discarded this idea. “This conventional approach, while pragmatic, would have produced a dull, lifeless house.”

Instead, Rappe chose to lengthen the plan and carve out outdoor spaces from the home’s footprint, allowing interior spaces to look out onto serene, landscaped areas—hence the name Courtyard Residence. The solution provides privacy and natural light, and facilitates a better relationship with the dwelling. As Rappe explains, “The long,
Large sliding doors allow the dining area to flow into the courtyard.
dark corridor of the conventional approach was instead transformed into a ‘cloister’ running along the main courtyard, which offers a contemplative experience, rather than just a distance to be traversed.”

In a home so permeable to the outdoors, the choice of windows and doors carried significant weight. For Rappe, selecting Marvin was a no-brainer. “They have very high-performing products,” he explains, “and they offered us thin sight lines, high insulation values, and a high degree of predictability and reliability.” Also crucial was the ability to accommodate Langley and Boelyn. “It was really important for us that all of our entrances were accessible,” says Jim. “The low-profile [sills] allowed us to have great, open windows with terrific views, and the ability to wheel the girls in and out very easily across them.”

The placement of the windows takes Langley and Boelyn into account as well. “The girls spend a lot of time on their backs because they can’t sit up naturally,” says Kiley, “so they’ll play on the floor and look up.” Thoughtfully positioned openings ensure that wherever they are, the girls have a view of the outdoors.

While the Courtyard Residence offers communal spaces for the family to gather, it also caters specifically to each member in other moments. An office sequestered near the front entry allows Jim to work without interruption. A centrally placed, professional-grade
kitchen avails itself to Kiley—a chef and culinary educator. Huck, who is 13 years old, enjoys a private bedroom that connects to the family room, children’s courtyard, and back yard—and he can invite friends over to shoot hoops in the lower-level game room. Finally, aside from the accessible design of the house overall, Langley and Boelyn have dedicated rooms that facilitate around-the-clock care.

“Having a home that was designed for our needs was a big relief,” says Jim. “It’s not until you’re in an environment that has been designed around all of those needs that you just appreciate every little bit.”

This story was originally published on Dwell.com, photography by Tom Harris Photography.
Dwell Home Tour: An Accessible Home Promotes a Lifetime of Well-Being For the Whole Family
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