

A&E PERSPECTIVES



HEALTHY BUILDINGS START WITH HEALTHY MATERIALS

Designers are pushing for more transparency when it comes to what building materials are made of.

There are millions of building products on the market. A single building can easily include hundreds of materials, both inside and out, and each one of those materials contains



BY MINDI CAULLEY
WEBER THOMPSON

a variety of chemicals and is sometimes comprised of multiple material types as well.

So why hasn't material transparency been a hot topic in the green building community? Well, it is starting to be.

The International Living Future Institute's Living Building Challenge has been a pioneer in breaking down the walls of manufacturers' proprietary processes and product components through its Declare labels.

As the market has become more curious about what exactly buildings are made of, manufacturers have started to realize that keeping their product ingredients undisclosed gives the appearance that there is something to hide.

The Declare label encourages the industry to prove how green they really are, by publicly declaring what is in their projects, thus creating some friendly competition amongst manufacturers to help drive the market. It is

important to note, though, that having a manufacturer Declare their product does not mean it is healthy, it just lifts the veil so we can see what's inside.

The issue that remains is that there is no one standard control to manage a building's material health. Without being able to scientifically quantify the sum of a building's material toxicity, the process of selecting healthy materials remains challenging.

While it has been proven that chemicals like formaldehyde, phthalates and other common toxins found in building products are harmful to human health, the long-term impact on building occupants is not fully known. The risk is present, but varying factors make it difficult to document and quantify the effects.

The design industry needs to exercise precaution and stop specifying materials with red-listed ingredients when possible, while manufacturers work to prove their products are safe before they hit the market instead of relying on consumers and regulators to prove harm after exposure.

The full picture

When looking at the full picture of material health, products need to be analyzed for not just the impact they have on building occupants, but also the effect on the health of those involved in its production, installation, reuse



Weber Thompson hosted the kickoff event for the Healthy Materials Collaborative during the 2016 Seattle Design Festival. The event attracted manufacturers, specifiers, end users and other professionals.

PHOTO BY KIRSTEN CLEMENS/WEBER THOMPSON

and disposal. Are we asking workers to expose themselves to hazardous work conditions with potentially negative long-lasting effects? By looking at a product's life-cycle analysis, these important factors are taken into consideration in a holistic manner.

One roadblock is not always having a healthy material that meets specific performance criteria. For instance, luxury vinyl tile is a widely used flooring that performs well in high traffic settings such as health care, retail and multifamily buildings. The negative environmental impact of vinyl has been well documented, but there is not an ideal alternative that can stand up to luxury vinyl tile's long-term durability.

Until manufacturers are able to fill this void, designers will be forced to specify materials that are "less bad" as opposed to healthy.

So, how does one balance healthy with practical and functional?

One way to accelerate our learning curve is through project work. Weber Thompson is designing a Living Building Pilot project through the city of Seattle — a core and shell office building in the heart of Fremont. In exchange for increased height and floor area ratio, the project team will deliver a Living Building Petal Recognition project, with a focus on three Petals, one of which is materials.

The process of vetting materials to make sure they do not contain toxins called out by the program's Red List is one requirement of the Materials Petal. It requires re-thinking how the design team specifies products, as the basis of design requires manufacturers and products to be identified earlier in the project

than usual, in order to vet products by contacting manufacturers directly.

While it is a long road, this process will help us make more informed and sustainable choices in future projects. This is in contrast to simply identifying systems or generic materials and product types, as is common in schematic design and design development.

Some projects that have gone through this before, such as the Bullitt Center, freely share their as-built product list with the public (see bullittcenter.org). This kind of transparency helps raise industry knowledge, provides support for healthier building products, and in some cases motivates manufacturers to incorporate new less-toxic formulations that were explicitly created for a one-off project into their general product offerings.

Push for healthy materials

At Weber Thompson we are asking manufacturers to help make the process of selecting healthy materials a little less complicated. We have sent letters to the vendors (who call on us for product presentations and continuing education) stating our sustainability goals in regards to healthy materials and asking for product transparency and complete disclosure in regards to the products we specify.

We are opening up a dialog and making it clear that healthy materials are something we value. Our library is also being reorganized and relabeled through the Mindful Materials program, a design industry initiative started by HKS Architects that provides a common platform for manu-

facturers to communicate transparency and give information on their building products.

These measures will help our designers make informed choices when specifying materials, and further prioritize healthier materials within our firm.

We are not alone in this effort. Nationally, the American Institute of Architects has highlighted materials as a core issue, locally addressed in a professional education series at AIA Seattle called Materials Matter (that runs October through February).

Also at the local level, there is a group of building industry professionals called the Healthy Materials Collaborative pushing for transparency and material health. The HMC is creating a dialogue with a variety of local perspectives on how we can work together to create healthier buildings. Working together with strength in numbers and the weight of some large architecture firms, the HMC can break down barriers to healthy, sustainable buildings.

Discussing the change that needs to happen to create healthy buildings is not enough. To create healthier buildings, designers must apply progressive materials requirements to building projects, be advocates with product representatives, vendors and manufacturers, and demand transparency. If we don't, who will?

Mindi Caulley is the resource coordinator at Weber Thompson. She is a Certified Sustainable Building Advisor and LEED Green Associate with seven years of experience in sustainable design. She is active with the Healthy Materials Collaborative.



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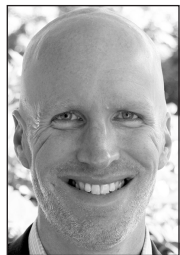
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INTERVIEWING FOR THAT BIG JOB? HERE ARE 5 TIPS

Be aware, AEC selection panels use impromptu scenarios to see if teams can think on their feet.

As selection panels look for ways to differentiate between highly qualified AEC teams during interviews, impromptu scenarios have become one of the “make or break” deciding factors.



BY SCOTT JOHNSTON
JOHNSTON TRAINING GROUP

That’s because while teams can prepare and practice content for their presentation, only a team’s spontaneous response to solving a problem gives the panel an idea of how the team will react to the unexpected challenges that occur on every project.

According to Port of Seattle’s Ralph H. Graves, senior director of capital development: “Scenarios challenge the proposers, individually and collectively, to depart from their prepared presentation and think on their feet. It gives us a chance to observe the interaction of personalities and skills on the team. An opened scenario is a great opportunity for a team to really distinguish themselves and make our selection choice an easier one.”

Getting to your answer

Many teams spend precious

preparation time reviewing past interviews with the client and trying to “guess” the unknown scenario. What teams don’t often realize is that the solution to the scenario is only a small part of what panels are looking for.

Panels want to see how the team functions under pressure, whether they clarify key pieces of information before they decide and act, whether they gloss over emergency or safety issues, and whether the team can turn the expertise claimed in the formal presentation into workable ideas.

Kyle Richardson, OAC Services’ senior program manager, says preparation for scenarios is key: “Figuring out the process for how you’re going to handle that curveball in advance is critical. Who is the go-to on the team? Can we figure out why the client is asking this particular question? How does the team work together to answer the question completely? Do we know what we don’t know?”

Here are five key strategies that will help you master impromptu scenarios for AEC interviews:

1 Stop guessing. You can’t know what the surprise challenge will be, but you can decide how you will organize, develop and deliver an answer. The project manager is key here — he or she must be the driving force and find a way to include everyone who is on the team. What about

that decision-making process you described during the interview? Now’s your chance to show it in action.

2 Ask before you jump. The question or scenario you get will probably be complicated or multi-part. It’s critical that teams show the panel they fully understand every aspect of the issue at hand — and that they will clarify anything they don’t understand before using the client’s time and money. When teams rush off to solve problems as quickly as possible without fully understanding the task, panels view them as more likely to fail. It’s the difference between being a “box checker” and a true strategic partner.

3 Keep your eyes on the prize. It’s normal to devote the limited time you have just to answering the question. However, teams that win go one step further — they connect their answer to the long-term client needs (that they identified in the preparation process). This means more than just tacking on “...so we can fin-

ish on time and within budget” to your answer. For example, a team that was interviewing for a hospital improvement project determined that the client need involved enabling patients with cancer to get the treatment they needed without disruption. They answered questions from the perspective of a patient who needed to go to and from the hospital smoothly to get critical chemotherapy.

4 Speak from your role. During a pressure-packed answer to an impromptu scenario, it’s normal to want to get your two cents in. But if everyone starts piling on, the team will come across as disjointed. To add to what another team member is saying, speak from your role. Here’s an example: “As the structural engineer, I’d like to add another reason we are recommending you locate the foundation here instead of there...”

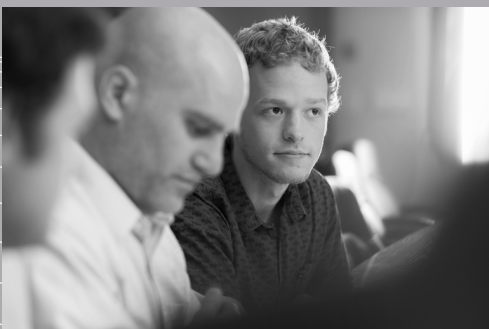
5 Focus on the future. When confronting an impromptu scenario, teams often default to a laundry list of how many

times they’ve done something similar before. That’s information the panel usually already knows from the proposal. What the panel is looking for is how the firm will apply the knowledge gained. Instead of saying something like “we’ve built six of those buildings before,” use language such as “during the six times we have built that type of structure, the most important thing we learned that applies to your project is...”

With so many qualified AEC firms seeking projects, the difference between first and second place is often a nose. Firms that can master spontaneous scenarios often give themselves a winning edge, because the client understands their processes and believes the team members can work together.

Scott Johnston leads the Johnston Training Group Strategic Writing, Presentation Skills and Interview Coaching programs that enable professional services firms to differentiate themselves and win more work.

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ON THE COVER

Rolluda Architects designed the new USDA Forestry Sciences Lab at Oregon State University. To see how Rolluda and other architects and engineers are doing, turn to page 15.

PHOTO FROM ROLLUDA ARCHITECTS

DJC TEAM

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ART TREE DEPICTS U DISTRICT PROJECT'S COMMUNITY LINK

LHI's Marion West building has 49 units for homeless youth and low-income workers, plus a food bank partly supplied by a rooftop vegetable garden.

A tree is growing on Roosevelt Way. The artwork of renowned local artist Nikki McClure adorns the newly opened Marion West building in Seattle's University District. Larger than life — the metal water-jet design measures 32 feet wide by 14 feet high — the artwork represents everything this development means to its community.



BY MICHELE WANG
RUNBERG
ARCHITECTURE
GROUP

Describing the art installation, McClure said, "I thought about how an apple tree ages and is taken care of by many people over a long period of time. It represents care, habitat and support."

The Marion West is all this and more to its community — providing food justice, affordable housing and investment in social equity.

Neighborhood needs

The four-story Marion West

provides 20 units of housing for formerly homeless young adults, 28 units of workforce housing, and an on-site manager's unit. The building houses a street-level food bank and coffee shop to provide food justice and job training. The food bank includes a teaching kitchen, and a 7,400-square-foot rooftop deck is dedicated to the production of food. Social services are also provided on-site.

Developed by the Low Income Housing Institute, the project includes key partnerships with YouthCare (serving the homeless young adults), the University District Food Bank and Street Bean (operating the coffee shop).

In an era of rapidly rising housing costs, the project allows those who would otherwise be pushed to outlying neighborhoods to remain in the University District, where they may already feel a sense of community and can easily access employment, health care, education opportunities, healthy food choices and job training.

The Marion West accomplishes this proudly, making a visible design statement that invest-

The building houses a food bank and coffee shop that provides job training for young homeless adults.



PHOTOS FROM RUNBERG ARCHITECTURE GROUP

ment in the community should be celebrated.

Respecting history

Located adjacent to the historic University Branch Public Library, the design respectfully angles

its mass back from the street, opening up to the library's lawn. The Street Bean coffee shop is strategically located at the corner adjacent to this lawn and includes large roll-up glass doors on its south side to take advantage of sunny days.

The building colors represent a modern response to the historic library, with its pale white base and play of blue-green accents. The food bank, with its glassy storefront, comes forward to meet the street with a complementary angle of its own to cre-



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Nikki McClure created this artwork that symbolizes the support needed for an apple tree as it ages.



ate a grocery-store-like shopping experience.

A home for services

For more than 30 years, the University District Food Bank operated out of an 800-square-foot church basement behind an anonymous door. With its space tripled in size, the food bank today realizes its goals of providing barrier-free access to healthy food in an experience that emphasizes choice and dignity.

With its own rooftop food production, the food bank can now be assured of a supply of fresh produce. When construction costs forced the food bank to

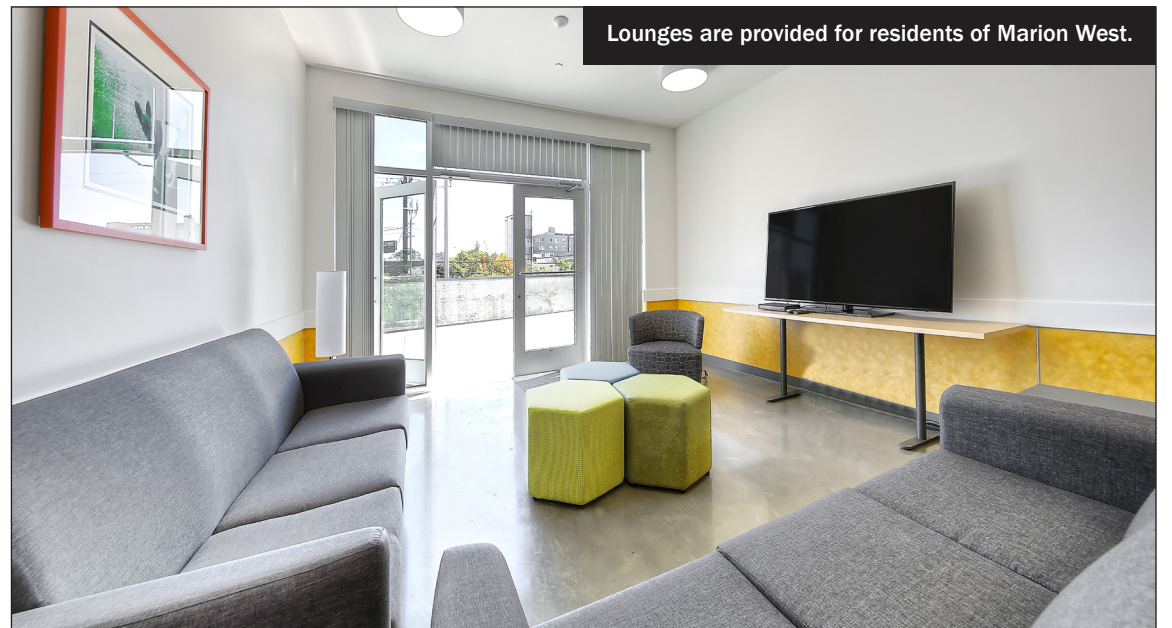
eliminate the galvanized metal planters, the food bank mobilized its volunteers to assemble 2,000 milk crates into planters.

Operating the corner cafe, Street Bean is a nonprofit organization focused on providing job training for young adults on the streets. The group focuses on both the specific skills needed to be a great barista as well as the soft skills needed to maintain any type of long-term employment, such as communication, self-governance, collaboration and work ethic.

Street Bean supports the community on multiple levels — providing a welcoming place anyone may enjoy a good cup of coffee while supporting at-risk young adults.

YouthCare is an organization dedicated to bringing homeless youth off the streets and preparing them for life. The young adults living on the second floor of Marion West were previously homeless and are now transitioning to independent living. Residents are required to work or attend school and pay only 30 percent of their income in rent. The residences include a computer lab, classroom, community kitchen, laundry and counseling offices for YouthCare's support services.

On the top two floors, LIHI provides 29 studio units of affordable housing, for individuals and couples making 40-60 percent of area median income. For a two-person household in 2016, this would be \$28,920 to \$43,380 per year. For a single person, this would be \$25,320 to \$37,980 per year. Apartments were awarded on a lottery basis, with rents



Lounges are provided for residents of Marion West.

ranging from \$570 to \$890 per month.

Seattle's current housing and livability discussion is centered on affordability. Yet, this discussion would be incomplete if it did not acknowledge the historic racial inequities of Seattle's past. Sharon Lee, LIHI's executive director, chose to spotlight a simple citizen, Marion West, who with her husband, Ray, took a stand against segregation in the University District.

Legacy of social justice

Marion and Ray West are an interracial couple who met while attending the University of Washington in the 1940s. In 1952, they purchased an old fraternity building in the University District to rent

to African American students and raise their family. The purchase had to be in Marion's name only as Ray, an African American, was prohibited from owning property in the University District.

Eventually their family was forced to leave the neighborhood due to the bitter enmity of neighbors, including a burning cross on their lawn in 1958. Marion and Ray, who passed away in 1992, continued to remain active in housing and employment justice issues throughout their entire lives, with groups such as the Christian Friends for Racial Equality and Seattle CORE, precursors to the activism of the 1960s.

Half a century later, at the building's grand opening last June, Marion West inspired all

those in attendance with her keen sense of social awareness: "I speculate that the people who will live here will have a few cracks in their lives. By giving them this ground to stand on they will have an opportunity to fill in those cracks and help create a more equitable society."

This brings us back to the poetry of the apple tree and the themes of "care, habitat and support." The Marion West embodies the care of the various partnerships in developing this project, the enrichment of the habitat and community that the project will provide, and the support of the people whose lives are touched by this project.

Michele Wang is a principal at Runberg Architecture Group.

MARION WEST TEAM

Developer

Low Income Housing Institute

Architect

Runberg Architecture Group

Consultants

Susan Black Associates, Quantum Consulting Engineers, Coughlin Porter Lundeen, Rushing Co., AES

General contractor

BNBuilders

Metal artwork fabricator

2K Metal Works

A NEW ENGINEER'S GUIDE TO CONSULTING IN CENTRAL WASHINGTON

Taylor Dayton has learned a few lessons in her first year on the job.

A little over a year ago, I moved my life from the eastern shore of Virginia to Washington after completing a master's degree at Virginia Tech. After some initial shell shock from Hollywood misrepresenting my new home state as one giant, uniform ecosystem of dense firs and towering misty mountains, I have come to love living and working in north central Washington.

BY TAYLOR DAYTON
ASPECT CONSULTING

That's not to say the journey has been turbulence-free. There is no clear guidance on how to transition from academia to consulting engineering. I found myself stumbling through a dynamic world of new tools, clients and fieldwork — doing so with far more enthusiasm than practical experience.

Layer that uncertainty on top of the unique set of challenges that working in north central Washington presents, and it made for a series of encounters that I can only laugh at, looking back. Here are a few memorable moments from my early days on the job.

Mastering tools of the trade

"Thanks for setting up my phone, Mark!"
As our systems administrator headed out with a wave, I turned and eyed my new desk phone. So this was destined to be my first test as a consulting engineer — the bane of all millennials, holding a phone conversation.

"Aspect Consulting. This is Taylor Dayton speaking," I whispered to my desk, testing the weight and flow of each word. Unsatisfied, I tried again.

"This is Taylor Dayton from



Taylor Dayton constructs and installs a lake staff gauge in the remote Alpine Lakes Wilderness region.

CONSULTING — PAGE 8

PHOTO FROM ASPECT CONSULTING



TERRY AVENUE BUILDING | © MICHAEL WALMSLEY PHOTOGRAPHY



ARBORA COURT: LIVING WITH DIGNITY

In Seattle's University District, an exciting new project is underway. Congratulations to Bellwether Housing, University Christian Church and the rest of the Arbora Court project team on the ceremonial groundbreaking of this much-anticipated apartment building. Thanks to you, over a hundred low-income families will soon call this dignified building home.



Rendering by Weber Thompson



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CONSULTING

CONTINUED FROM PAGE 6

Aspect Consulting. How can I help you?" I paused, letting that sink in. "Better, but too formal."

Before I could rehearse my third shot, my phone began ringing. Time for a defining moment: my first call as a consultant. I took a deep breath, picked up the phone, and rushed through an astoundingly incomprehensible, "This is Aspect and Taylor is speaking."

What is wrong with me?

"Hello, Anne. I see here that you offer pet cremation services."

Anne? Caught entirely off guard, I managed a response that rivaled my introduction. "Um, what?"

"Pet cremation. My cat just passed away and I see here that you perform pet funeral services."

I leaned back in my office chair, briefly glanced out my open office door, and considered asking my nearest coworker if we really did have a pet cremation branch to the business. Environmental, geotechnical, water resources, and caring send-offs for your fuzzy loved ones. Not recalling that particular phrase from my first day of training, I called an audible.

"Sorry, ma'am. You may have the wrong number. I just got this number today, so

it's possible the pet cremation service has changed numbers."

"Thank you, dear."

I placed my phone back on its stand, heart racing. It didn't take long for the screen to again light up with the same number ringing through.

This is going to become a thing.

Establishing a client base

Smoke hung low in the valley as I led the charge through the marshy, waist-high grass. I heard my client's voice through the undergrowth. "Now, I know there are at least two wellheads out here somewhere. I just don't remember exactly where..."

"We'll find them, sir. It's no problem."

It was a little bit of a problem. The area we had to search could potentially take most of the day to canvas. After a good hour of tromping around the marsh, my body decided that it was as good a time as any to develop a spontaneous grass allergy. I began sneezing uncontrollably. By the 10th sneeze, blood began pouring from my nose in a flood.

I made eye contact with my client, both of us silently regarding each other in the

sea of tissue-less undergrowth. For the second time in as many days, I called an audible.

"I am so sorry, but we're both just going to have acknowledge that I am about to wipe all this blood on my sleeve like a 5-year-old and that it will be there all day."

Building hands-on experience

I leaned in, studying the cobbled metal structure for some semblance of what I knew should be a wellhead and the supporting infrastructure.

"My granddad put this in years ago." A few feet behind me, a local orchardist was explaining the history of the well. In my hand, I held a stack of papers describing the nature of his water rights, praying that he wouldn't ask any questions outside the scope of my three and a half days of water law expertise.

Reaching out, I tapped a rusted pressure gauge with my finger, bits of blue coating flaking off and falling into the field. Curious at the absence of a pressure reading when I could hear a pump running somewhere in the general area, I laid a palm flat against the pipe, feeling for the telltale vibration of flowing water.

"Funny story, the last time I was out here working on this pump, the bit of grounding metal must have broken away. That's what burned away most of my eyebrows and turned the tips of my fingers black. Luckily, Juan found and kicked me off before I got completely fried."

Eyes wide, I slowly removed my hand from the casing and took a generous step back to continue my inspection from afar.

Whether it's sharing a moment of mutual surprise with a rattlesnake in a field or gracelessly failing to escape a canal when your waders spring a leak, every unexpected adventure has become a piece of who I am as an engineer. This is the greatest aspect of professional development, and it can never be taught in a classroom. As consultants, we set out every day to solve a diverse set of problems that are often considered unsolvable. Every momentary stumble is an opportunity to see the problem from a slightly different angle.

Taylor Dayton, Engineer-in-Training, is a water resources engineer working out of Aspect Consulting's Wenatchee office.

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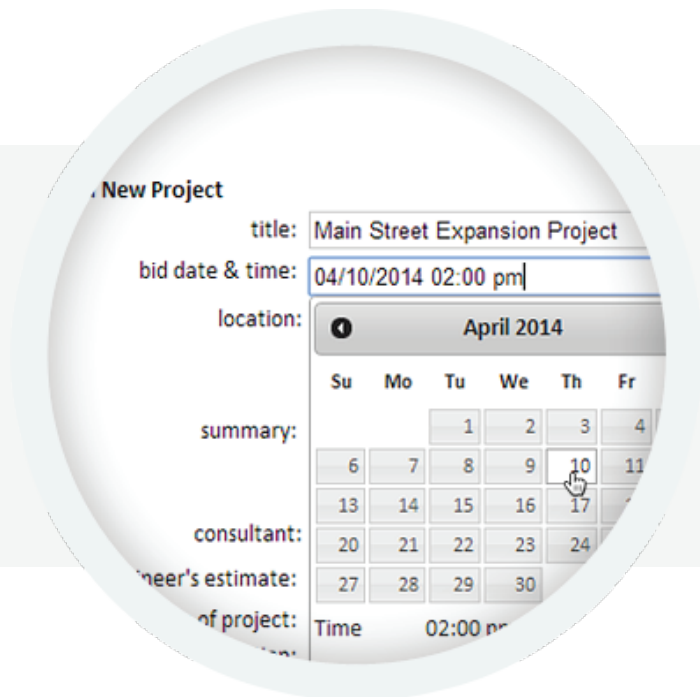
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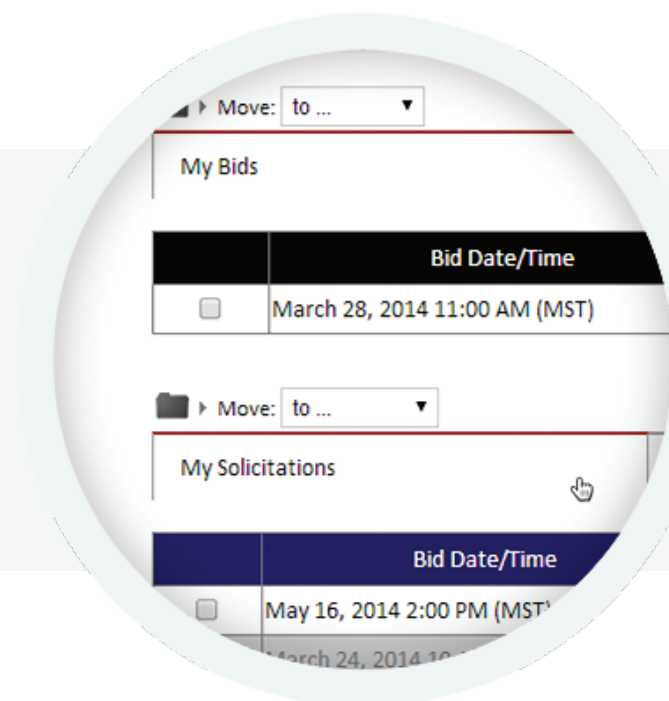
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NATIONAL CRISIS GROWS AS INFRASTRUCTURE CRUMBLES AWAY

By using vigorous design approaches and methods, we can help make the next wave of infrastructure more resilient, affordable and safer.

Our national infrastructure is failing. Bridges, dams, roadways, energy grids and more are deteriorating before our eyes, and yet many outside the engineering industry may not even be aware of the potential infrastructure disasters looming on the horizon.

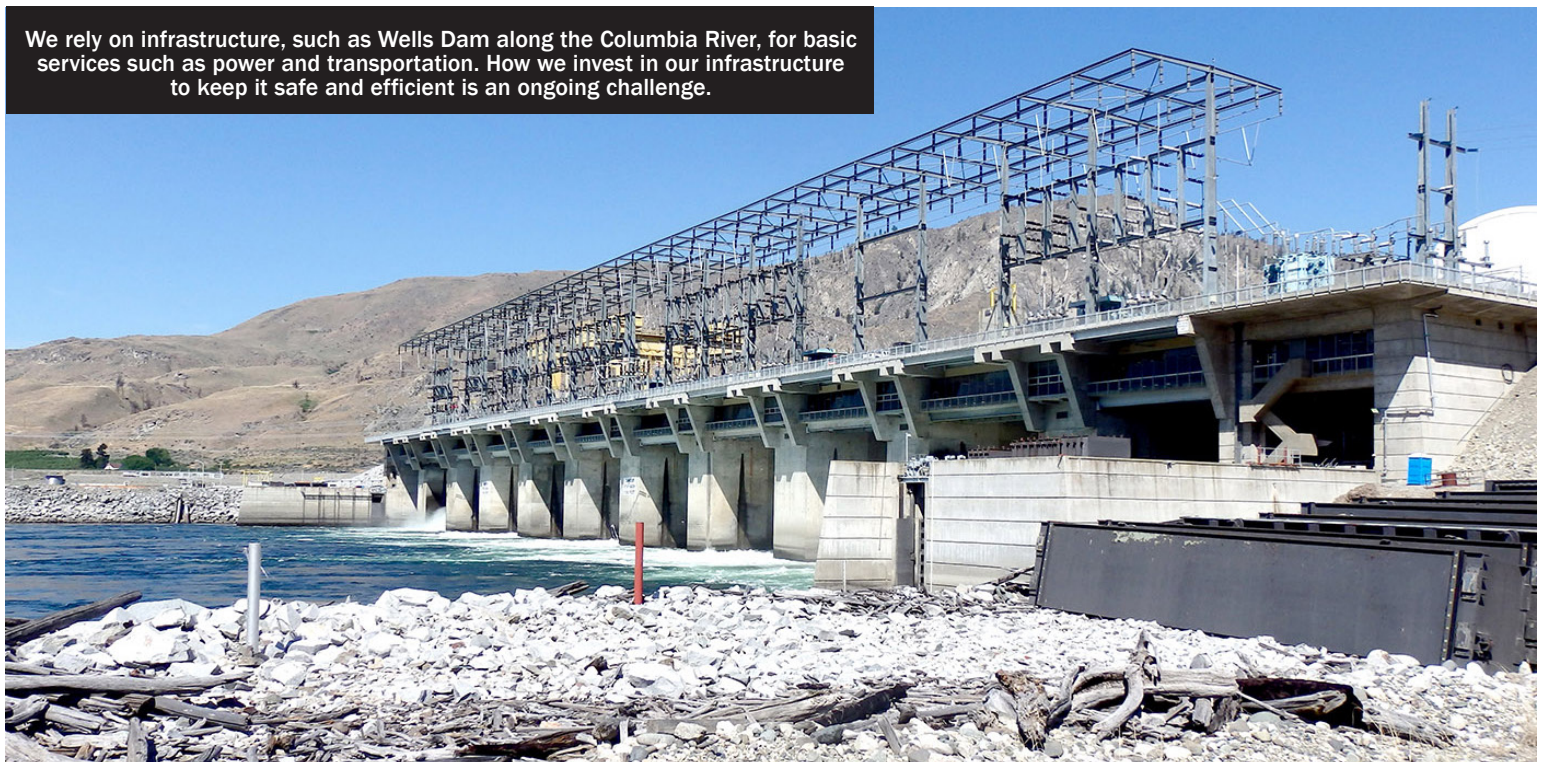


BY KING CHIN
GEOENGINEERS

Engineering professionals like myself bear some degree of responsibility. Firstly, we need to do a better job of informing the public of the risks facing infrastructure, and the investment needed to mitigate them. Secondly, we need to reevaluate traditional safety-analysis approaches and embrace new analytical methods, such as performance-based engineering (PBE), so that we can improve the long-term reliability of new and existing infrastructure designs as our aging structures are retrofitted or replaced.

We can never make our infrastructure perfectly safe, but by shifting our approach, we can make it more resilient.

We rely on infrastructure, such as Wells Dam along the Columbia River, for basic services such as power and transportation. How we invest in our infrastructure to keep it safe and efficient is an ongoing challenge.



PHOTOS COURTESY OF GEOENGINEERS

The current state of infrastructure in the United States is the result of several related factors. Broadly speaking, federal and state governments haven't

invested enough in the upkeep, repair and replacement of the transportation, utility and energy infrastructure that we so often take for granted.

Our infrastructure is ranked 15th globally by the World Economic Forum and unless increased funding is approved, there's a risk of falling even further behind. Much of our current infrastructure was built during the post-New Deal boom of the 1930s, 40s and 50s, and now is in desperate need of replacement or overhaul. The American Society of Civil Engineers estimates that we need to invest \$3.6 trillion in infrastructure before 2020 in order to make the U.S. safe and competitive with other developed nations.

We're also facing an increasingly unpredictable world. Destructive weather events are becoming more frequent, putting more stress on our aging structures than they were designed to withstand. Designing infrastructure for 100- or 500-year storm events may no longer be advisable if recurrence rates are increasing.

Although traditional force-based and factor-of-safety analysis approaches are often still the required regulatory standards, those with an eye toward the future should consider alternative approaches to risk-based analysis and designs.

Using a performance-based approach to risk replaces absolute factor-of-safety standards with a more robust strategy for building resilient infrastructure. PBE evaluates the reliability of the design by considering a variety of real-world loads and conditions a structure is expected to face instead of just one design load and condition.

This can also lead to increased

efficiency and decreased cost. Funds which might have been needed to build a structure to a rigid, and sometimes unnecessary, factor-of-safety standard can be reallocated to address more meaningful risks.

No prediction can be perfect. PBE is probabilistic. By predicting a structure's performance, we can evaluate risk factors over its entire life cycle and incorporate the consequences of various types of structural failure. These estimates of the annual probability of failure for a given structure, and associated consequences, give infrastructure owners and managers valuable data they can use to make safety and business decisions.

With a grounding in these more vigorous design approaches and methods, we can help make the next wave of infrastructure built in the U.S. resilient, affordable and safer.

Resilience through design

In many areas of the country, including the Puget Sound region, aging infrastructure such as dams and bridges are particularly vulnerable to earthquakes. Performance-based engineering finds a natural application in the area of seismic risk analysis and design. Of course, the specifics of any particular project should determine the approach, but generally speaking PBE can offer the following advantages:

- Reduced cost
- More reliable prediction of the intended seismic performance
- Accommodation of novel con-

BUMGARDNER

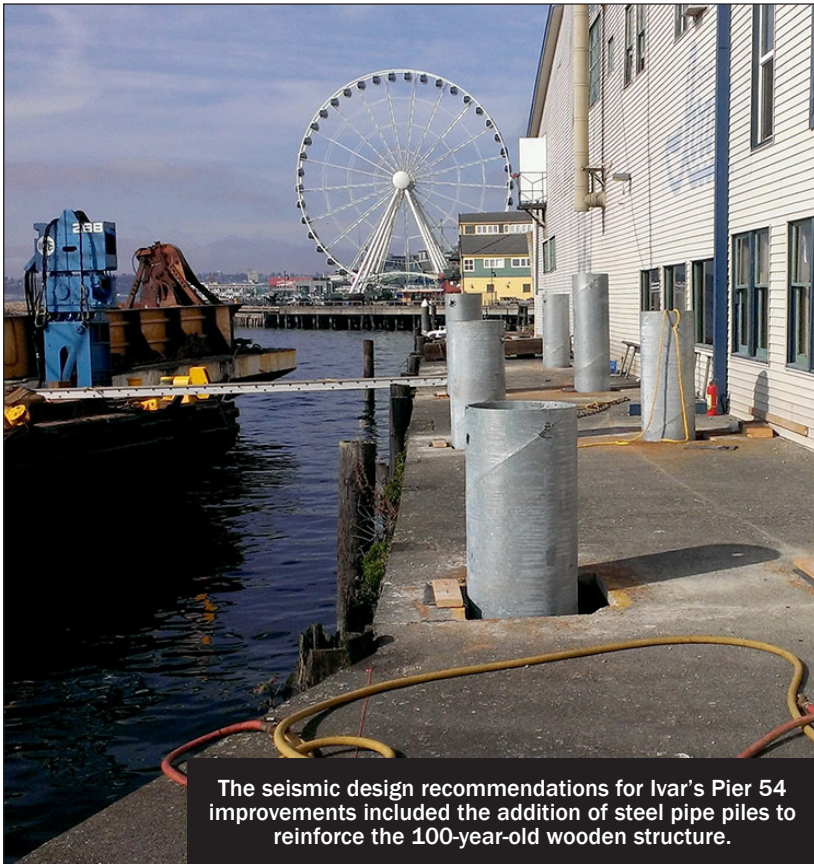
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193 apartments over a 25,000 sf PCC.



The seismic design recommendations for Ivar's Pier 54 improvements included the addition of steel pipe piles to reinforce the 100-year-old wooden structure.



By taking a performance-based engineering approach at Pier 54, the GeoEngineers team was able to model the interaction between wood and steel piles with the potentially liquefiable soil in which they would be anchored.

struction materials or structural systems

- Accommodation of unique architectural or environmental features that might not fit within a typical framework

PBE can be especially valuable when dealing with soft ground sites in seismically active regions.

Working at soft ground sites can be very challenging for engineers. Soft soil is vulnerable to liquefaction, meaning saturated granular soil can destabilize and actually behave as a liquid under certain conditions, such as earthquakes.

In these more complex conditions, conventional force-based and factor-of-safety analysis approaches often aren't adequate to develop a design that performs satisfactorily. In order to reliably evaluate the performance of an engineered system in soft soil, a performance-based engineering approach and analysis is key.

An excellent example is my recent work on the seismic renovation of Pier 54 on the Seattle waterfront. It's a 100-year-old wooden pier, and, realizing it was vulnerable to earthquake damage, the owner contracted with Reid Middleton and GeoEngineers to reinforce the pier against seismic activity.

A traditional factor-of-safety modeling approach wasn't possible for the pier because it would have had to reconcile existing wooden piles with the new steel piles being used for reinforcement — two structures with very different stiffness and loading characteristics. Instead, our team used a performance-based engineering strategy for the model, which allowed us to consistently analyze how the two types of piles would interact. GeoEngineers then introduced various types of earthquakes

into the model to simulate the soil/pile interaction in each case.

Of course, conventional seismic analysis methods can still be used for soft soil sites. But often the nuances of soil-structure interaction are difficult to accurately predict with a one-size-fits-all approach.

When combined with advanced numerical modeling techniques, PBE can provide much deeper predictive insight into how a structure might react to specific stressors, and ultimately help the U.S. achieve a more robust and resilient infrastructure network moving forward.

Looking ahead

We are making some small steps in the right direction. Just last month Congress passed the Water Resources Development Act of 2016, which addresses dam, waterway and water system infrastructure. Primarily, it authorizes the Army Corps of Engineers to begin renovation work on a wide variety of projects, and allocates \$9 billion to help fund work on inland waterways, dams and levees. This is great, but it's a drop in the ocean compared to the estimated \$3.6 trillion in necessary funding.

We must also recognize that no amount of money can make our infrastructure perfectly safe. We always face risks for any dam, bridge or other structure. Instead of thinking about safety, which is difficult to measure and quantify, we should be striving for resiliency.

If we use engineering methods such as PBE, we can achieve structures designed with specific tolerable risks in mind. Structures resilient enough to withstand what nature may throw at them, and with carefully managed con-

sequences if failures do occur.

The more attention we can bring to our collective infrastructure challenges the better. This isn't just an engineering problem, it's an American problem. Investing now in new or overhauled infrastructure,

while using the best possible approaches to design it safely, will pay dividends over the coming century. It's an investment in our future — and one we must make soon, before it's too late.

King Chin is a geotechnical

engineer with GeoEngineers who has been providing geotechnical services for projects across the U.S. and around the world since 1998, with an emphasis in performance-based engineering on soft ground sites and in seismic regions.

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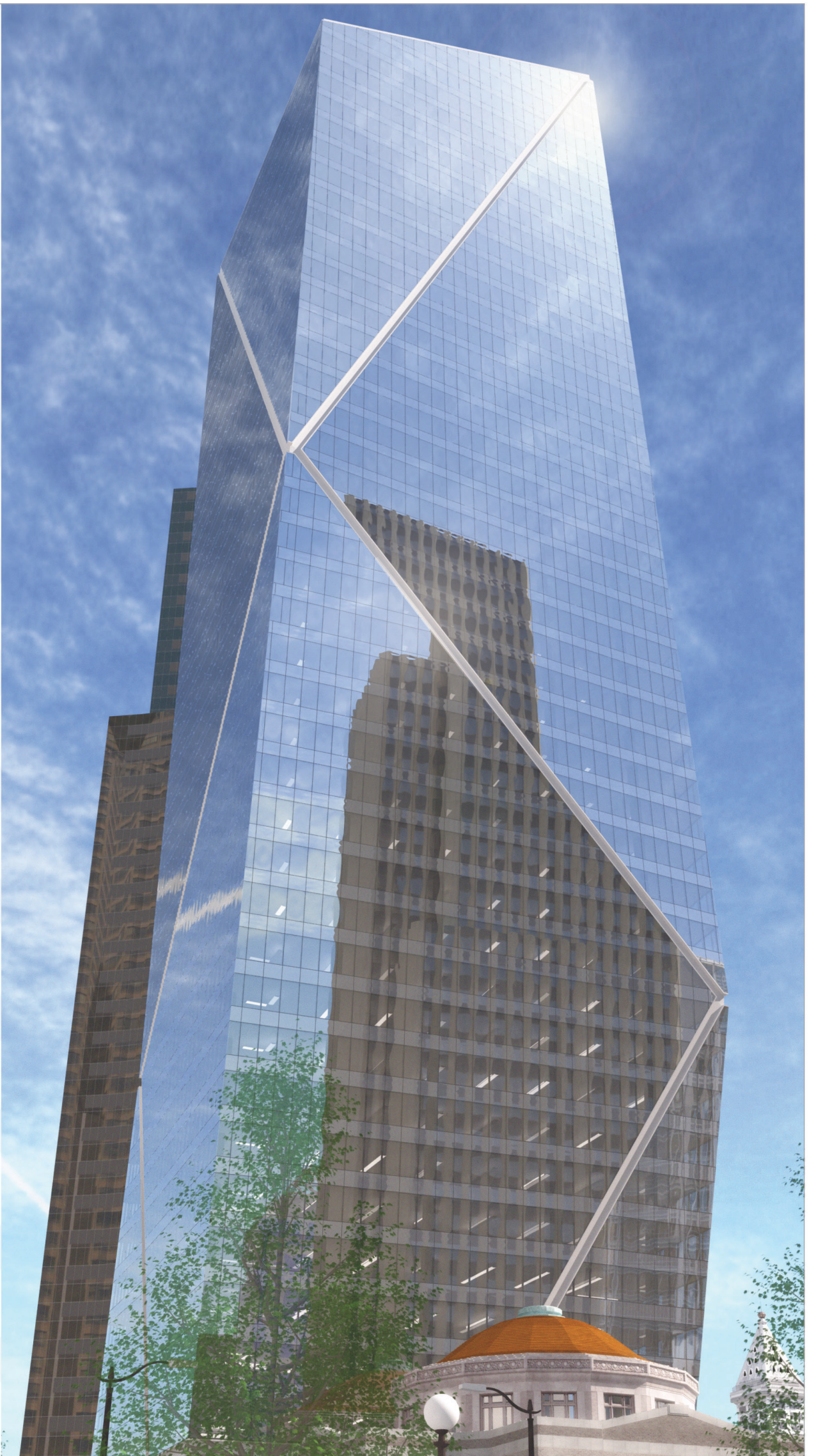
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Office Lobby



Private tenant lounge



IS PASSIVE HOUSE THE SOLUTION TO OUR CLIMATE CRISIS?

Key design breakthroughs center on the skeleton, skin and respiratory systems of buildings.

The message from scientists is clear: The planet is on a finite greenhouse gas budget and the longer we wait to reduce emissions, the faster we'll have to reduce later to avoid catastrophic climate change.



BY TIM WEYAND
NK ARCHITECTS

Time is of the essence. While we have made remarkable progress over the past decade in delivering more energy-efficient buildings, we are moving too slowly given the urgency of the climate crisis. According to the U.S. Energy Information Agency's 2014 projection for building energy use, efficiency gains will be offset by the 60 billion square feet that will be added to U.S. building stock between 2005 and 2030.

That's not good enough. If we're serious about our climate goals, we need to bend the building energy use curve downward.

The good news is that we — architects, engineers and builders — can transform building energy performance today. Passive House (aka Passivhaus) design and construction, for example, can reduce overall energy consumption by up to 75 percent and launch the built environment toward the Zero Net Carbon goal recently announced by the World Green Building Council, Architecture 2030 and others. And we can do this cost-effectively and predictably.

Never mind the gap

Ever since the New Buildings Institute published its 2008 paper documenting the performance gap between modeled and actual energy use of LEED buildings, the predictability of performance in LEED and other high-performance buildings has been the topic of much study and debate.

There is no such debate with Passive House performance. The consistent finding is that Passive House modeling (via the Passive House Planning Package or PHPP) is highly correlated with actual building performance.

Research from Germany bears this out. Data from independent researchers, shared by Passivhaus Institut, compares the heat consumption of four developments: three Passive House settlements and one non-Passive House settlement (though still fairly energy efficient.) Their findings:

1 Passive House radically outperforms conventional energy-efficient buildings, by up to 80 percent in heat consumption.

2 Occupant behavior varies widely. It is normal to see a swing in energy use of around 50 percent for identical units within a settlement. The S-curves that emerge for each development illustrate the variance between energy "misers" and energy "hogs" across functionally identical units within a community.

3 Passive House modeling has strong predictive power. The PHPP model's predicted heating consumption for the three Passive House settlements is nearly identical to the actual average heating consumption of each.

Predictable performance

Passive House models are highly correlated with actual building energy performance for two reasons.

First, the data inputs for the PHPP performance model exactly correspond to the actual building materials and assemblies used in a Passive House project. And these assemblies control convection, conduction, radiation, and the movement of heat, air and moisture.

Second, Passive House quiets the volatility (measured in temperature deltas, moisture gradients and air leakage rates) that we see in non-Passive House buildings. Energy models of stable systems are more accurate than energy models of volatile ones. So, the quiet and comfortable interior environment in a Passive House is a boon for both the occupant and the modeler.

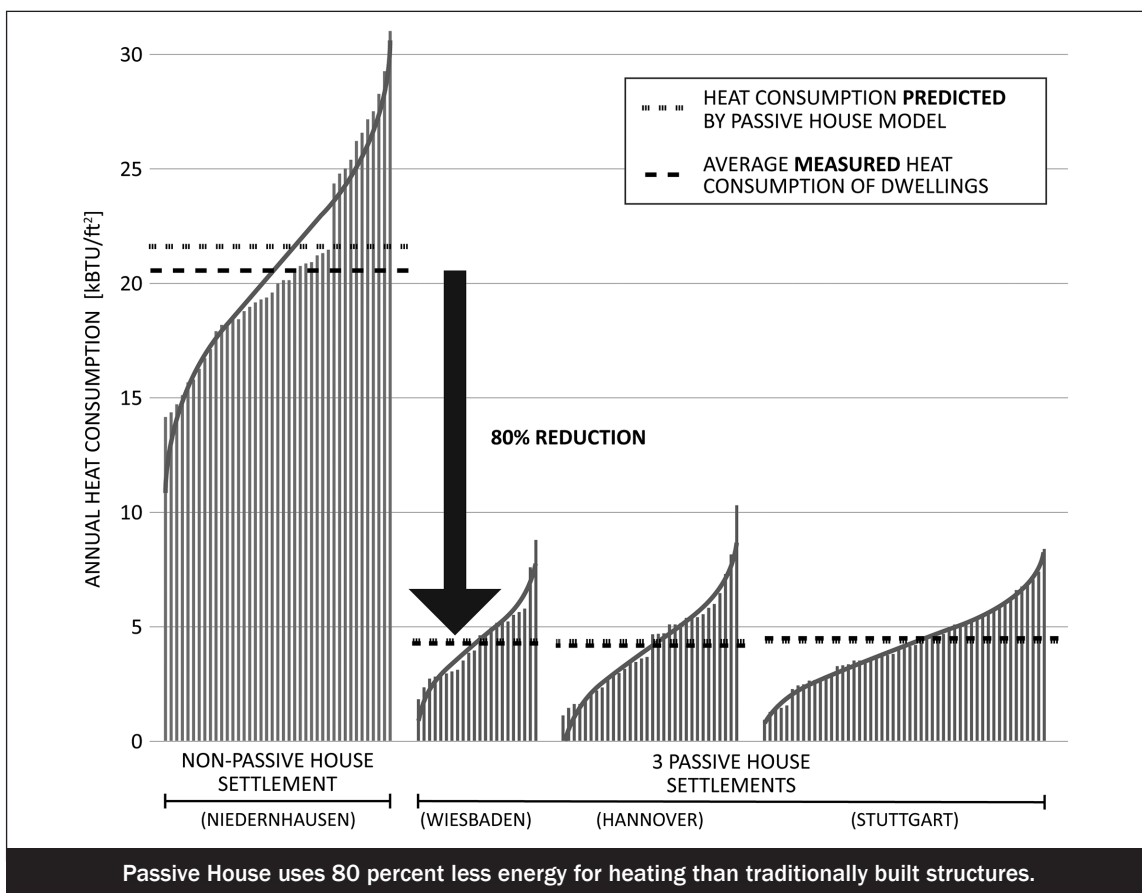
The key design breakthroughs of Passive House center on the skeleton, skin and respiratory system of buildings.

SKELETON

For centuries we have ignored the thermal (and condensation) implications of the structural elements of our buildings, blithely allowing beams to jut through walls without a care for the energy transferred through these thermal bridges. In fact, steel beams thrusting through otherwise decent exterior walls can still be seen as a signature architectural gesture today.

But even far less egregious examples of thermal bridging, like wood studs in a wall, dramatically reduce the overall performance of the building envelope.

If not detailed properly with thermal breaks between inside and outside, the skeleton of a



SOURCE: PASSIVHAUS INSTITUT/REDRAWN BY NK ARCHITECTS

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SENIOR DESIGNERS, NEW ARCHITECTS LEARN FROM ONE ANOTHER

Maintaining a mix of multiple generations of architects under one roof begets a host of benefits.

During the past few decades, the architectural workplace has undergone a dramatic series of shifts in its processes, tools, approaches and capabilities, making for some interesting new dynamics in a workforce often comprised of seasoned experts and recently graduated designers alike.



BY PHIL GIUNTOLI
COLLINSWOERMAN

At CollinsWoerman, we enjoy a very diverse workforce, with a 50-plus year gap between some of our most senior designers and youngest professionals. Maintaining an effective mix of multiple generations of architects under one roof begets a host of benefits. I'm often more interested — and inspired — by what a millennial colleague thinks is a great idea. And the learning opportunities extend both ways.

The specific ways in which architectural drawings are produced now through software such as Revit and CAD variants are a vast departure from the methods prevalent at the beginning of my career. Previously, an architect using a parallel bar and an oversized sheet of paper, tools that might sound primitive by today's standards, could eas-

ily engage colleagues walking by in an instant exchange of ideas.

It was a collaborative approach; feedback came from multiple sources, largely depending on who was wandering around the office at any given time.

CollinsWoerman's Anne Ball, a recent hire who joined the firm after interning here, is launching into her career at a markedly different time.

Despite the shift away from frequent interpersonal communication, Ball offers, "People are actually very aware of when changes are made to drawings in the digital model — it's how the interface of the software is set up. The level at which you're communicating is predominantly non-verbal, which I think is really fascinating and creates a new set of dynamics than the previous norm."

New tech versus old

The new paradigm has, without question, accelerated the pace of design for each phase of a project, largely due to the types of tools now in use and the expectations the client has developed as a result. But aside from faster turnaround and increased availability for communication, the way in which concepts are presented is vastly different.

Physical, three-dimensional models were formerly the end-all-be-all of methods to convey design concepts to the client.

But within the span of my own career, this process has been increasingly improved.

Having largely transitioned from physical models to 3-D rendered drawings and complete 3-D immersive environments, the rise of a new technology in the design profession is once again poised to bring new benefits and peculiarities of its own. Virtual and mixed-reality visualization and design processes have already been implemented at CollinsWoerman, and will no doubt be prevalent across the field in the near future.

While VR has its benefits, there's still plenty to be learned from the old-fashioned way of doing things.

"Being able to hold a material sample is, at this point, far more realistic than seeing it in a virtual realm," Ball says. "We're getting very close to actually being there, to seeing exterior and interior textures in different lighting conditions, but it's not quite the same yet."

"Architecture embodies how people interact and use all their senses in space," she says. "It's important to use technology as a tool but not to rely on it as a crutch, because at the end of the day, we're designing spaces to better physical environments for real people."

No matter the generation, many of us agree that clients benefit greatly from the ability to visualize what was once confined to an architectural elevation or floorplan, or a small-scale model.

"A floorplan is used internally to communicate space, but to some clients without the technical background, a rendering is so much more effective," Ball

says. "People can interact with architecture no matter what occupation or demographic, but it's easier to understand a 3-D world versus having to read a set of plans."

One such example is CollinsWoerman's work on Swedish Hospital's Issaquah campus, when one of our most experienced medical planners had been trying, using old tools, to explain to people that, "the machines go here, this is over here, here's the control room." Yet when colleague Leif Pearson used SketchUp to build a three-dimensional version of the room, suddenly the reaction became, "Oh, could you actually move this here?"

It was easy. And it became more real.

But, the methods of old certainly have their time and place.

CollinsWoerman assistant principal Tim Bissmeyer, who has 15 years of experience planning and designing commercial and healthcare facilities, feels that despite the variety of digital tools available, the client-designer relationship hasn't significantly changed.

"A computer-generated image, even if it's a fancy rendering, sometimes has no emotion behind it," Bissmeyer says. "It can feel pretty lifeless. The hand-drawn stuff evokes more emotion, so we often find that we can provide the best of both worlds by using modern, computer-based tools in conjunction with hand drawings and more classic techniques."

Multiple value systems

Revisiting my initial thoughts on the benefits of an age-diverse

workforce, I hold that there's a richness in people from different generations looking at the same problems and bringing different value sets to the table due to their different perspectives in life.

To me, that's one of the greatest things: It's important to understand multiple value systems. At CollinsWoerman, we don't compartmentalize people because of their age and experience. We give people responsibility commensurate with a person's ability to accept that responsibility.

"It's a fantastic opportunity to be able to work with your superiors and to be able to teach one another," Ball says. "There's a lot to also learn and contribute. Gaining knowledge and experience comes not only from the tools that I interface with, but also from working with people my age as well as colleagues 40-plus years my senior."

Much has changed in the way we do business over the past several decades. While there have been many improvements in our workflows and capabilities, and certainly in the ways in which we communicate, there is great value melding them with the processes and traditions of yesteryear, allowing us all to benefit from the added perspective and knowledge that accompanies them.

Phil Giuntoli, a principal with CollinsWoerman, leads CollinsWoerman's healthcare team and has completed projects for nearly every healthcare provider in the Puget Sound region.

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SURVEYS

MCKINSTRY

Specialty: Mechanical and electrical contracting; energy and facility services

Management: Dean C. Allen, CEO; Cheryl Di Re, chief administrative officer; Ash Awad, chief market officer; Ron Johnson, COO

Founded: 1960

Headquarters: Seattle

2015 revenues: \$572 million

Projected 2016 revenues: N/A

Projects: Allen Institute, a 270,000-square-foot research facility in Seattle; comprehensive retrofit of Pacific Tower in Seattle

Ash Awad is chief market officer for McKinstry, which has 1,700 staff and union employees in 12 states. Awad answered questions from the DJC about his firm and trends in the industry.

Q: What can designers, developers and government do to make Seattle more livable and sustainable?

A: Sustainable cities hinge on one key ingredient: collaboration. Each player in a new development has a role to play. We need local government to set high standards for new buildings while still allowing for flexibility when developers look to push the envelope. We need developers to be willing to take a leap on cutting-edge projects and still be able to turn a profit at the end of the day. And designers need to dream big, but stand by their projects as they transition into day-to-day operations.

For example, we recently received confirmation that Stone34, Brooks Running's new headquarters, passed the city's "performance period" for the city's Deep Green Pilot program. The building met strict energy and water reduction targets, verified over a one-year period by McKinstry's energy management team, in exchange for an expanded floor-to-area ratio. Each member of the project team took on a financial risk to guarantee the building's performance.

Q: Which project or two are you most proud of in 2016?

A: We had the good fortune to participate in two groundbreaking projects this year: the Allen Institute and the Pacific Tower renovation in Seattle.

The Allen Institute is a 270,000-square-foot research facility designed to reflect the institute's guiding principles: team science, big science and open science. The integrated design-build team leveraged BIM and lean principles to resolve project challenges and meet the developer's goals for preservation and sustainability. The result

is a state-of-the-art research facility that is comfortable, efficient, versatile and beautiful. The building is Certified Salmon Safe, and targeting LEED gold.

Pacific Tower has been given a new lease on life with a comprehensive retrofit led by McKinstry and Mortenson Construction. The building is now a hub for community services organizations, anchored by Seattle College's dental and medical technician schools. Highlights include the nation's first community clinic staffed by a dental school, the Smart Building Center, and FareStart's expanded catering service.

Q: What three things should a developer do to create a highly energy-efficient and sustainable high-rise that is cost effective?

A: It starts during design, but doesn't end when the occupants move in.

Designers should run a lifecycle cost analysis on the systems that will go into the building. Such an analysis takes into account first costs, expected maintenance and repair costs, productivity or health benefits, and energy consumption costs.

Collaborative delivery models, like design-build or integrated project delivery, help reduce costs and speed up the schedule. These models drive collaboration early in the construction process and help iron out issues before they become prohibitively expensive to fix. During construction, prefabrication and lean construction methods play a big role in making jobsites safer and more efficient.

Finally, occupant engagement after the keys have been handed over helps maintain the building's expected performance. That includes ongoing energy management, feedback loops for tenants such as dashboards or visual art (like Stone34's lobby feature), and regular building tune-ups.

Q: What challenges and trends are you seeing?

A: We have an immense amount of knowledge capital in this region and a remarkable environment for sustainable development. We consistently set the bar for the rest of the nation when it comes to energy efficiency — a fact we may take for granted, but one that's all the more remarkable given our consistently low utility rates.

Our challenge is to continue to establish a healthy balance between "carrot" and "stick" regulation. For example, Pacific Tower is the first building to



McKinstry and Mortenson Construction retrofitted Pacific Tower in Seattle.

PHOTO BY CHARLIE SCHUCK

go through the city's alternate code path, which allowed it to meet strict energy targets and still adhere to historic building requirements. The project team could take advantage of this flexible regulation as long as they would prove, over the next few years, that the building met these energy targets.

We need more teams to deliver projects that push the market — and we need the regulatory support to do it.

Q: Where will growth come

from locally in the next few years?

A: Two things aren't going to change in the near future: our region's drive for energy efficiency and sustainability, and our growing population. These two trends are linked; people are moving here in part because of our collective dedication to sustainability and the city's "green" outlook.

We can count on these trends even when the construction industry slows during the next cyclical downturn. We lived that

during the Great Recession, when our energy efficiency business kept growing even as new construction ground to a halt.

We've maintained a steady pace of growth at McKinstry, one that matches our belief in building a purposeful company that can weather downturns and still thrive during good times. Our diversified offerings allow us to find growth opportunities even as others slow down. We expect a similar trend over the next few years.

PASSIVE HOUSE

CONTINUED FROM PAGE 13

building can undermine energy performance, yet thermal bridging is either ignored or incompletely accounted for by many modeling protocols and by many designers.

Passive House is the gold standard of thermal bridge-free design, dramatically improving energy performance, predictably.

SKIN AND RESPIRATORY SYSTEM

In a Passive House, building envelope and ventilation function together as a system. Airtight construction is central to this system because it limits the movement of air, and the heat and moisture that air carries, through the building envelope. This dramatically reduces the loss of thermal energy from buildings, especially when combined with a thick sweater of insulation. It also protects the integrity of building assemblies, limiting the movement of moisture into wall cavities where it can cause mold and rot.

Equally important are the health implications of this

approach. Airtight construction stops random, uncontrolled air leaks through cracks in building materials and enables designers to bring filtered fresh air in through balanced ventilation with heat recovery. This approach delivers superior indoor air quality to building interiors. (This is why the 2017 Washington Code will require DOAS, or Dedicated Outdoor Air Systems, in commercial buildings.)

The heat recovery of ventilation air brings major energy performance benefits as well. And because the airtight envelope eliminates random air and heat leaks, the system becomes easier to model: predictable energy performance.

At what cost?

I'm often asked, what does Passive House cost? What's the premium?

It really depends on the building typology and program, of course. And if Passive House is tacked on late in project development as an afterthought it can

be expensive. But when part of an integrated design approach, Passive House's "premium" can be negligible.

Recently released data from the Pennsylvania Housing Finance Agency illustrates the point. In 2015 and 2016, the agency received 179 project proposals for Low Income Housing Tax Credits: 59 of those proposals were for Passive House projects and 120 were for conventional buildings. The average projected construction cost for the Passive House buildings was \$171/square foot, compared to \$168/square foot for the conventional projects. That's a difference of just 1.8 percent.

Revolutionary efficiency, predictable performance and negligible cost premium? That sounds like a pathway to move our industry from being part of the climate problem to being part of the climate solution. And not a moment too soon.

Tim Weyand is CEO of NK Architects in Seattle.

SURVEYS

INNOVA ARCHITECTS

Specialty: Architecture, civil and structural engineering, land use planning and interior design for these markets: housing, aquatics and recreation, industrial distribution and manufacturing, and federal Department of Defense

Management: Paul McCormick, CEO; Jim Tsang, president; Geoff Anderson, principal; John Patterson, director of Department of Defense projects; Brian Ludwig, director of industrial development; Helene Dersham, interior designer; Dale Yeager, director of planning and land use

Founded: 2010

Headquarters: Tacoma

2015 revenues: \$3.8 million

Projected 2016 revenues: \$4 million

Projects: McCarver Heights, a 104-unit apartment in Tacoma set to begin construction in 2017; Algona City Hall & Community Center, also slated for construction next year

Innova opened toward the end of the Great Recession. It now has a staff of 20, but CEO Paul McCormick said it works on projects that are typical of a much larger firm. This is because its leaders owned or were principals or managers in large firms.

McCormick said Innova has big plans to grow. Here are his answers to a few questions from the DJC:

Q: You've worked on a number of industrial projects. What's new in that market?

A: The Puget Sound industrial sector has been booming for four years. In 2012 and 2013 national real estate investment trusts partnered with local developers to develop speculative space. That was needed to launch the slow market as local developers were not willing to take the risk.

Today, the space has been filled and developers are building with more confidence and are taking more risks because the pace and size of the leases has picked up.

Innova provides engineering and architectural design and entitlement services to developers in this sector. Last summer, Innova had 11 designed projects under construction and 11 in design. Those projects were leased to companies that include Milgard Manufacturing, Helly Hansen, Pet Foods Experts, Washington Tractor/John Deere and Food Lifeline.

Q: What challenges and trends are you seeing?

A: For the industrial sector, the trend is to continue building more space. The challenge is to find good land in the right places, and at the right prices to make projects financially feasible. Innova

Innova designed Algona City Hall & Community Center, which should start construction next year.



RENDERING BY INNOVA ARCHITECTS

assists owners and developers in creating successful projects by helping them obtain permitting approvals on challenging sites that previously were thought to be undevelopable, for instance because of steep slopes, wetlands or adverse zoning.

Innova has the relationships to sometimes put business owners who want new buildings or to lease more space together with developers to jump-start projects. Those are the two most risky items for developers: not finding tenants for their new buildings or not getting government approvals in time to meet critical deadlines.

Q: What will be the hottest market in Pierce County in the next few years?

A: Housing is and will continue to be. The apartment market is booming, especially in Tacoma.

Innova has had a Tacoma-based affiliated real estate company for the last nine years that develops, owns and operates apartments, a market that has exploded since 2015. Rents have risen to the point that new development makes sense.

Innova's development company plans to begin construction on two projects in Tacoma in 2017: McCarver Heights and 85 apartment units at 1940 Yakima Ave. Other developers also plan to start building apartment projects next year.

Federal Department of Defense work at Joint Base

Lewis-McChord is another sector that has grown over the last few years, and we expect it to continue to grow. Innova has ongoing open-ended contracts for design work at the base.

Q: Your firm does a lot of different types of projects. Has that helped or hindered you?

A: Our diversity has been an asset. Innova's vision is to work in multiple market sectors, with different managers championing each sector. In 2016, our revenues are nearly split between private and public projects. This makes for great company stability when one sector crashes, but the others remain strong.

Our team members have worked for decades in what we call our areas of specialization: housing, federal defense work, industrial, aquatics and recreation.

Q: What can designers, developers and government do to make Tacoma more livable and sustainable?

A: Tacoma is already amazingly livable and is becoming more sustainable each day. Any other perceptions about it stem from a false understanding of what Tacoma is today.

The city and the many agencies and public and private groups who live and work in Tacoma have improved it in the last 15 years so it is one of the most opportunistic cities I can think of. Tacoma offers the Sounder

train to Seattle, a light rail link from the Tacoma Dome area into downtown every 15 minutes, and the soon-to-be-expanded Martin Luther King mixed-use district.

The UW Tacoma campus has 4,800 full-time students and expects to expand to 7,500 over

the next four years. New apartment projects to open in the next 12 to 24 months in Tacoma include: phase two at Proctor Station, Stadium Vue35, Stadium Apartments at 102 N. G St., and Marc on the Ave. at Sixth and Alder.

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SURVEYS

ROLLUDA ARCHITECTS

Blueline Group was a consultant on the Six Oaks apartment and retail project in downtown Bothell.



IMAGE FROM THE BLUELINE GROUP

THE BLUELINE GROUP

Specialty: Civil engineering
Management: Ken M. Lauzen, principal
Founded: 2003
Headquarters: Kirkland
2015 revenues: About \$5.5 million
Projected 2016 revenues: About \$6.5 million
Projects: Piper's Glen, an 83-lot subdivision for Toll Brothers in Bothell; Spilman Avenue improvements for the city of Carnation; Six Oaks, 203 units over retail in downtown Bothell for MainStreet Property Group

Blueline Group principal Ken M. Lauzen answered questions about his firm and industry trends.

Q: In the last year, have you shifted Blueline's core mission to respond to changes in the economy?

A: We have not shifted our focus, but we have engaged a couple of national recruiting agencies to help add staff, we have expanded our commercial development services, and we have added planning and landscape architecture services.

Q: Are you finding more work from public or private sources?

A: Plus or minus 75 percent of our work is in the private sector and plus or minus 25 percent in the public sector. We have strategically sought out more public work since the recession to enhance our market diversity.

Q: Has the regional housing boom benefited Blueline?

A: Extremely, as much of our private sector work is design

of residential subdivisions and short plats.

Q: With your workload increasing, are you hiring?

A: Our workload has increased every year since 2010 — we were named one of PSBJ's Fastest Growing Private Companies on the Eastside three years in a row — and we have increased our staff level 400 percent during that time. We are continuing to look for and hire talented individuals but it has become increasingly difficult in such a strong market.

Q: What technological advances have made you more efficient?

A: We have moved most of our software to subscription-based models, which allows us to employ the latest software to complete our work. We have also implemented an internal unified messaging system, which allows employees to better communicate via phone, email and instant messaging whether they are inside or outside of the office.

Lastly, we have successfully implemented our first full-time remote employee in California, which is allowing us to overcome some of the challenges, such as traffic and long commuting times, formal office hours, etc., of the traditional brick and mortar office model.

Q: Are municipalities more willing to enhance their budgets to pay for important civil and infrastructure work?

A: Yes.

Specialty: Master planning, programming, architectural design and construction support for education, government, transportation, housing, light-industrial, religious and cultural projects

Management: Alex Rolluda, principal and president

Founded: Rolluda Architects, 2002; Rolluda + Scott Architects, 1996–2002

Headquarters: Seattle

2015 revenue: \$4.6 million

Projected 2016 revenue: \$3.25 million

Projects: Samuel E. Kelly Ethnic Cultural Center, University of Washington; Cascade Elementary School, Ferndale School District; USDA Forestry Sciences Lab, Oregon State University

Rolluda Architects designed the USDA Forestry Sciences Lab at Oregon State University.



PHOTO FROM ROLLUDA ARCHITECTS

Alex Rolluda, principal and president, answered questions about his firm and the industry.

Q: Have you seen an uptick in your overall business?

A: Yes. Though our projected revenue for 2016 is estimated to be less than last year the overall number of projects has increased.

Q: What areas of your business have performed well?

A: There has been an increase in our K-12 work, I believe largely due to the robust economy and the passing of school bond issues. There have been substantially more projects advertised (RFQs) in the DJC, providing us with more opportunity to win projects.

Municipal and transportation-related projects have increased in our office for existing and new clients. The establishment of new office buildings for Google, Weyerhaeuser, Amazon and now Facebook to the Seattle downtown area brings a large influx of people requiring expansion to existing transportation systems and public utilities, as well as housing.

Q: How has public sector work for your firm been in the last year?

A: We have found that the public sector work for our firm has increased this past year.

Q: Have you used any innovative or new sustainability methods or designs?

A: We incorporate sustainability from the outset of projects, allowing for integrated design solutions at a lower cost. Well thought-out design decisions to waste reduction, energy use, siting, efficient use of resources; and providing high-quality (interior) environments. Common-sense sustainable designs have

included:

- Locally sourced materials, renewable, recycled, recyclable materials whenever possible
- Low-VOC paint in specifications, use of rubber flooring, recycled countertops
- Look at repair versus replacement options in terms of life-cycle costs
- Low-maintenance materials that do not require toxic cleaning materials
- Good design extends renovation cycle (and reduces waste)
- Timeless, durable low-maintenance finishes that won't need to be replaced quickly

Q: What were the challenges with using those methods, if any?

A: Many of our clients have established material standards and specifications. It can be challenging introducing new alternative materials and finding installations that have been put to the test of time for owner review.

Q: With 24 design professionals, do you plan to change your staff size?

A: We are looking to hire two more design professionals before the end of the year — one junior-level designer and one senior-level architect.

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SURVEYS

HUTTEBALL & OREMUS ARCHITECTURE

Specialty: School design and planning

Management: Principals Kevin Oremus, Bill Chaput and Steve Busig

Founded: 1995

Headquarters: Kirkland

2015 revenues: N/A

Projected 2016 revenues: N/A

Projects: Puget Sound Skills Center Health Sciences Building, Burien; Anacortes High School, Anacortes; Marysville-Pilchuck High School Food Commons, Marysville

Principals Kevin Oremus, Bill Chaput and Steve Busig responded to questions about their projects and trends in the education sector.

Q: What are a few of the hallmarks of the projects you design?

A: We create unique educational facilities that give students ownership of their learning.

Currently, at Anacortes High School the student-centered learning environment includes manufacturers, robotics and inventors labs, providing students with access to the types of program-specific facilities that allow them to explore a multitude of career path choices.

At Marysville-Pilchuck High School, the design for the new Food Commons incorporates a student store for students who wish to explore business and marketing applications.

Integration of non-traditional curriculum into traditional curriculum is becoming more prominent, and we embrace the opportunity to give our clients the spaces that will bring the most success to their students.

Q: Which recent project are you most proud of and why?

A: An exciting project we are working on is the Puget Sound Skills Center Health Sciences Building opening in fall of 2017.

Along with host district Highline Public Schools, five other surrounding districts send their students to this center to gain professional experiences in trades such as nursing, fire and emergency, dental, and more.

The Health Sciences Building will double capacity of the nursing and dental programs, decreasing the wait lists for these programs. Providing students with a state-of-the-art facility, filled with professional equipment and practicing professionals, (will give them) access to invaluable opportunities. The design will welcome current students, attract prospective students and provide a professional building to encourage all attending students to adopt a professional attitude and outlook

Puget Sound Skills Center Health Sciences Building is slated to open in 2017. Students will study trades such as nursing, dental care and emergency response.

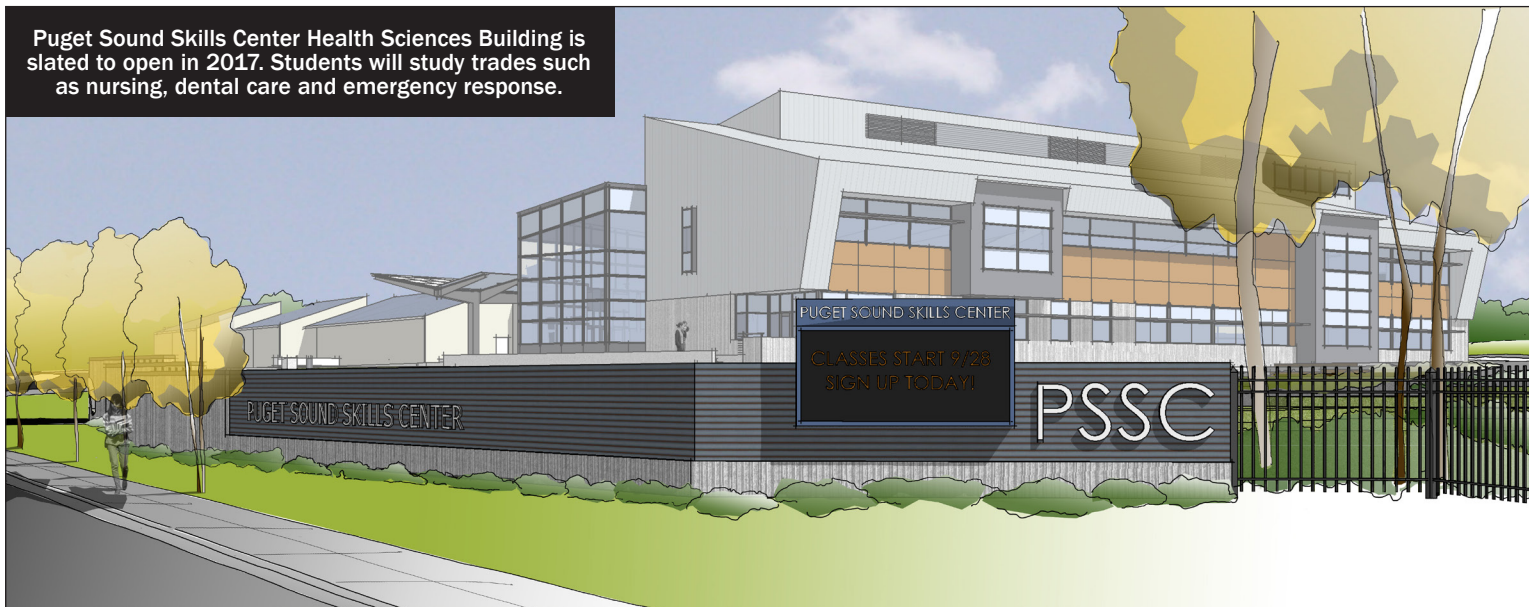


IMAGE BY HUTTEBALL & OREMUS ARCHITECTURE

as they transition to health care professionals.

Q: What are some changes in the educational sector over the past few years?

A: Districts now understand that students and teachers need more than just classrooms. Learning styles have evolved from passive to active learning. There is more emphasis on creativity, originality, performance and innovation in modern day classrooms.

With this realization, districts have a holistic view when approaching the design of new schools. Breakout spaces, student-only conference rooms, cyber bars and other spaces are being used to augment the classrooms and to enhance collaborative learning by students.

Today's students are also learning through mobile devices such as laptops and tablets. Our designs are incorporating more outlets and charging cubbies to provide the support students need to keep their devices properly charged.

We have also seen that community members are more involved than ever before. They are part of the process from the beginning, participating in community meetings to express their opinions about student needs as well as community needs. Their pride of their community shines through as they help us design a facility that is functional both during and beyond school hours.

Q: What are common misconceptions about the school design and building process?

A: We tend to find that the biggest misconception is the price tag that comes with building or modernizing a school.

Schools carry a lot of financial burden to support the multitude of programs that are offered.

With an increase in the number and types of programs offered comes an increase to the cost of the building.

We work closely with our district partners to prioritize wants and needs and balance them with the budget, ensuring the best educational environment

will be built for their students.

Q: What's a big business concern looking ahead to 2017?

A: Our ability to work mobile and remotely for the benefit of our employees and our clients.

Our service-driven work model requires that we spend more

time on site and away from the office during all project phases. To improve our efficiency, performance and provide flexibility when needed, our staff relies on mobile technologies to maintain their work flow and communicate with both consultants and clients.

“THE ONLY CERTAINTY IS UNCERTAINTY ITSELF.”

With apologies to Pliny the Elder—who uttered the words above in 67 A.D.—certainty can be a certainty. Our relationships with capital sources, coupled with our unparalleled experience in investment sales, mortgage banking and loan servicing, help us remove doubt from the equation. Perhaps it's because the real estate market in ancient Rome didn't amount to much, but we think our sages are way better than their sages.

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SURVEYS

COLLINSWOERMAN

Specialty: Commercial, mixed-use, health care, multifamily/residential, and science and technology projects; architecture, interior design, urban planning and sustainability

Management: Co-founders Arlan Collins and Mark Woerman; principals Phil Giuntoli, Steve Moddemeyer and Tim Bissmeyer

Founded: 1988

Headquarters: Seattle

2015 revenues: N/A

Projected 2016 revenues: 15 percent over 2015 revenue

Projects: Urban Union office building, South Lake Union; Swedish Hospital, Issaquah; 47+7 apartments, U District

CollinsWoerman principal and co-founder Mark Woerman discussed what's new with the firm, what forces are shaping the local market, and why climate change will become a bigger issue for designers. He also talked about the role of manufactured building systems developed by his company, Sustainable Living Innovations, or SLI.

Q: What are the most challenging and intriguing projects you are working on?

A: The most challenging project would have to be Kirkland Urban. It's the multi-phased, mixed-use redevelopment of the former Kirkland Parkplace center in downtown Kirkland. When completed, the project will have over 2 million square feet of offices, retail, grocery, residential and parking uses.

One of the most intriguing projects we're working on is The Greenline. It's the repositioning of the iconic former Weyerhaeuser headquarters in Federal Way. Bringing new life to this special building is a unique honor.

Q: How has the firm's workload changed over the past year or two? How's 2017 shaping up?

A: Like everyone in Seattle, we've been busy. Over the past several years we've seen growth in each of our marketplaces. We've been fortunate that our planning work and SLI-related projects have expanded our practice geographically, and we see 2017 being another strong year for our firm.

Q: What forces will shape the local market over the next few years?

A: Seattle is changing fast. We're shifting from a major U.S. city to a global hub for business, research and technology. Competition and foreign investment will keep real estate prices high

and drive densities and costs up.

Living and doing business in our area will continue to get more expensive, and that broadens the geographic definition of being close-in for both individuals and companies.

Businesses will continue to adapt to the needs of a changing workforce, and the space allocations for each worker will go down. More people in less space will impact our infrastructure and increase our transportation challenges.

Retailers will continue to find their footing as consumers weigh their options for selection, convenience and experience.

Culturally, it's a great time for our area and growth in the arts and entertainment segments should parallel increasing disposable incomes as social media breaks down the barriers to building a customer base.

Q: How widespread will multi-family modular projects become locally?

A: We believe that manufactured building systems will play a major role in Seattle's future. We stand behind this conviction by investing significant time and resources in the development of our proprietary manufactured building system known as SLI.

The 47+7 project in the U District is our proof of concept for not only the technology, but also of the market's receptivity to innovative solutions. Our technology isn't modular. Rather it's a system of fully integrated parts that can be configured to respond directly to any site or project program.

Q: What are some pros and cons of such systems?

A: The advantages of modular, prefab or manufactured systems should be reduced construction time, increased quality and overall cost savings. This is hard to do as evidenced by the minimal number of successfully completed examples in this and other markets. The disadvantages of these systems tend to be a lack of flexibility and inability to satisfy mid- and high-rise building requirements.

While we think the SLI system will have its place in the market, we're glad that others in the design and construction industry continue to pursue innovative ways to deliver buildings.

Q: What's an industry trend that more people should know about?

A: Everyone who works in the built environment is going to find themselves facing questions about how well their proj-

CollinsWoerman is designing interior renovations of the former Weyerhaeuser headquarters in Federal Way.



PHOTO BY EZRA STOLLER, COURTESY OF SOM

ects will perform over time given that climate change creates extreme uncertainty about future conditions. Designing for current weather extremes is short-sighted at best. Govern-

ment agencies and building owners will increasingly seek resilience-based solutions where performance is measured by how quickly built systems adapt and recover from

chronic or sudden adverse events.

We are also seeing how virtual reality is no longer the domain of the gaming world and is rapidly becoming an essential design tool.

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Photo: Tucker English

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Congratulations to Lowe Enterprises and the rest of the project team on delivering First Hill's newest condominium tower. With impressive sales rates, an alluring design, and glowing press, it's a building the whole city is celebrating.



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