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Summer 2017



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By Michael McAuley

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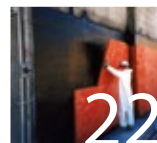
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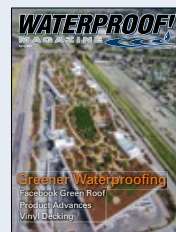
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Sustainability is changing the waterproofing industry. The green roof on Facebook's new Menlo Park, Ca., headquarters covers nine acres. See story on p.14.
Photo by Jeff Hall



We'd Like to Hear From You...

Waterproof! would like to know what you think about this issue. Let us know what you want to see featured as well as what you'd like to change. Email the editor with your comments at editor@waterproofmag.com, or write to us at:

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Be sure to include your name, address, and a daytime telephone number. Letters may be edited for publication. Unsolicited manuscripts will not be returned unless they include a self-addressed, stamped envelope.

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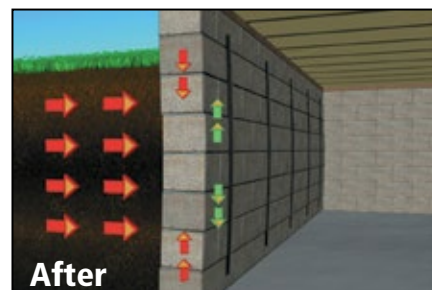
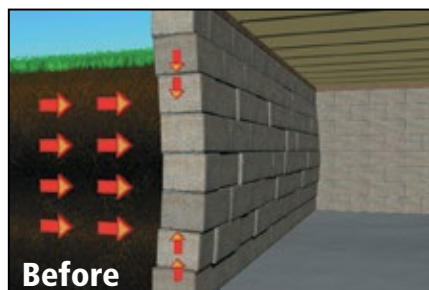
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Comment: Disruptive Innovation

Business is constantly changing. The fact is so well-known that it's almost cliché. And yet, business schools across the country have compiled hundreds of case studies detailing how once-successful corporations have fallen into crisis or even bankruptcy by refusing to accept or adapt to change.

Blockbuster Video, for example, dominated the video rental market in the 1990s. They turned down an opportunity to set up a mail-order DVD division because it would cut into existing store revenue. Similarly, Kodak declined to promote digital cameras because it would decrease film sales. Clayton Christensen, one of world's most influential business thinkers, calls the concept "disruptive innovation." Trends launch, and we can either grab hold or be left behind.

The same is true of the waterproofing industry. Single-ply membranes transformed commercial roofing a decade ago, and now spray-applied roof restoration coatings promise another revolution. The green building movement has forced companies to reformulate products and marketing methods to stay relevant. Stories on pp. 18 and 22 of this issue explain these opportunities in greater detail.

Adapting a business model to new trends may require trading short-term profits for long-term financial health, but the alternative may be even more dire.

Waterproofing contractors may feel that, as small businesses, they're at a disadvantage, but Malcolm Gladwell's latest book *David and Goliath*, explains that the underdog sometimes has more advantages than the giant. Small companies, for instance, are more nimble and adaptable than giant corporations.

I encourage readers to seek out trends and technologies poised for long-term growth, and adapt their business plans to match. This magazine, through editorial and advertising, will keep readers up-to-date on the latest developments. Paired with a small-business owners' knowledge of local markets, disruptive innovation can be the tailwind that carries your business to success. ♦



by Clark Ricks

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Executives Change at Tsurumi Pump

Early last fall, Bill Davidson, a longtime executive with Tsurumi Pump, announced his retirement.

An industry veteran with more than 30 years of experience, Davidson began his career in the industrial pump industry with a decade-long stint as district manager for ASH Pump Company from 1969 to 1978. That experience enabled him to establish Tsurumi Distributors in West Jordan, Utah. In 2008, Tsurumi Pump acquired his company, and named Davidson their North American general manager, requiring a move to their U.S. headquarters in Glendale Heights, Ill.

Davidson has also been an active member of the Society of Mining Engineers for more than 30 years.

"Bill's biggest asset is his ability to forge relationships with his partners and customers," says Glenn Wiczorek, managing director for Tsurumi. He also credits "the dedication to business ethics that Bill has over the course of his entire career."

He plans to spend his retirement in Utah, catching up with his grandchildren and discovering new hobbies. He says,



"After all these years in the pump business, I want to seek out all those things that I never had a chance to do."

With Davidson's retirement, Tsurumi has appointed Chuck Rickman as its vice president of sales. Rickman joined the company in August, and is responsible for forecasting sales, establishing pricing, and working with sales managers to



establish new distribution channels.

"Chuck's management skills are phenomenal," says Wiczorek. "But it's more than that, he strikes a great balance between passion for the work and intelligence on the job. Chuck perfectly fits with our corporate culture and has already found ways to streamline some of our internal systems."

New President and Sales Director at Koster

Last fall, Howard Kanare was promoted to president of Koster American Corp. In this role, Kanare will be responsible for the overall leadership of the company including strategic planning, product development, operations, sales, and marketing. He joined Koster in 2013 as technical director and was promoted to vice-president in 2015.



With 37 years' experience in the concrete construction field, he is a nationally-recognized expert specializing in the interaction of concrete floors and floor covering systems, and has been named by Concrete Construction magazine as one of the "Top Ten Most Influential People in the Concrete Industry." He has authored over 30 technical publications including the bestselling book, *Concrete Floors and Moisture*. He is a former officer of ASTM Committee F06 on Resilient Floor Coverings and is an active member of ASTM Committee C09 on Concrete and ACI Committee 302 on Concrete Floor Construction.

As part of the reorganization, Koster American hired Trent Denny as director of sales. Joining the company in mid-January, Denny is now responsible for strategic sales planning and marketing



as well as leading the company's nationwide sales force.

After serving in the Marine Corps, he spent 13 years at PPG Industries where he became an expert on industrial coatings, before moving to Gaco Western, where he worked as western regional manager. Now with 18 years' experience in coatings, sales, and operations management, he says, "I'm excited to have the opportunity to work for Koster and to continue growing the company."

GE Hires Roof Coating Expert

GE Performance Coatings has hired Fred Wolfe as applications development engineer for commercial roofing. Wolfe provides on-site project and technical assistance for the company's Enduris 100% silicone roof coating line.

A NACE-certified coating inspector, he has more than 20 years of experience in roof coating manufacturing, installation and consultation, and has overseen the development and application of millions of square feet of acrylic, urethane, silicone and other roofing solutions.

"Wolfe is a nationally-recognized roof and protective coating expert, with extensive knowledge of the application and quality control processes," says Peter Friedli, marketing manager at GE. "His invaluable perspective and technical experience will push our products and business further."



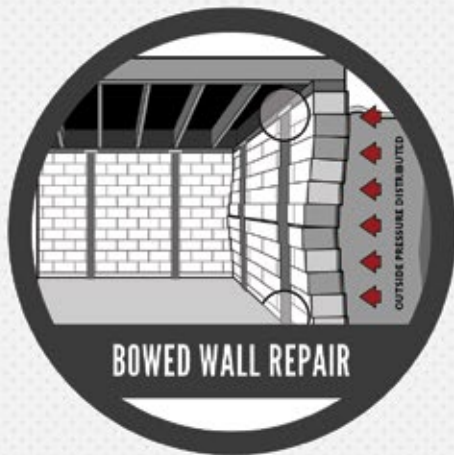


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Firestone Acquires Gaco Western

In early April, Firestone Building Products acquired Gaco Western, which markets waterproofing, silicone roof coatings, and spray foam insulation. The deal, which includes all assets and operations held by Gaco, was announced earlier this year. Financial details were not disclosed.

The acquisition enhances Firestone's position in the commercial roofing market with the addition of Gaco's silicone polyurethanes, epoxies and acrylic liquid coating. It also allows the company to expand into the residential and pedestrian deck markets.

Gaco products will continue to be sold under the Gaco brand and will continue to be made at a state-of-the-art facility in Waukesha, Wisc.

MFM Announces SubSeal Flashing Approval

MFM Building Products states that two of the company's SubSeal products officially comply with the AAMA 711-13 standard. This is a voluntary specification from the American Architectural Manufacturers Association for the minimum performance requirements for self-adhering flashing products.



Independent third-party testing reveals that both the 40-mil and 60-mil versions of SubSeal meet this standard. The high strength, high elongation

film accommodates expansion and contraction, making it ideal for sealing window openings, around doors where high use and movement will occur, and under door thresholds and anywhere high moisture content will be present.

Pro Guard Gets Approved

Pro Guard Coatings has received FM Approval on their Proflex Primer and Moisture Cure liquid rubber products. The company, which markets liquid EPDM, epoxies, urethanes and UV curable coatings, offers a broad line of specialty coatings for a variety of surfaces.

FM Approval is a third-party testing and certification service.

Soprema And Arcom Sign Agreement

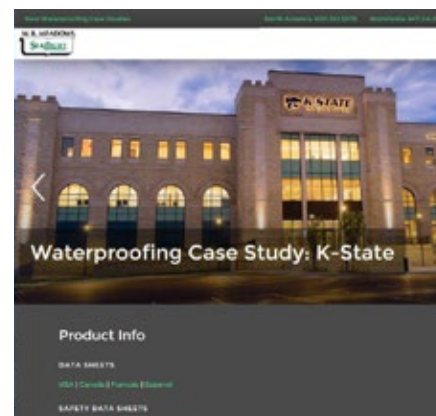
In March, Soprema announced that their line of roofing and waterproofing products are available through Arcom's software platform. Arcom publishes MasterSpec, for the American Institute of Architects (AIA), reaching over 60,000 design professionals involved in building projects.

With this new agreement, Soprema's product data and customized specifications are now more easily available to architects, engineers and design professionals. The two companies have worked together to create customized versions of the MasterSpec sections to accurately specify Soprema's unique products.

W. R. Meadows Revamps Website

W. R. Meadows has updated their website to give it a more contemporary feel, including a more immersive front page, easier navigation to product information, and an enhanced layout. The update includes enhanced mobile-friendly features, and automatically

adjusts based on the width of browser or size of mobile device.



The content visitors have come to expect is still available, but in a more accessible format, including access to product data sheets, safety data sheets, project profiles, and more.

GAF Acquires Quest

GAF, North America's largest roofing manufacturer, has acquired Quest Construction Products (QCP), the largest supplier of fluid-applied roofing systems in North America. The transaction also provides GAF with a strong presence in coating solutions for pavement and vertical surfaces.

The deal gives GAF an immediate and strong presence in the commercial roofing market.

"This acquisition combines North America's leading manufacturer and marketer of roofing products with the leading producer of fluid-applied solutions," said Bob Tafaro, president and CEO of GAF. "This acquisition demonstrates GAF's ongoing commitment to growth and leadership in the commercial roofing industry."

QCP brands now managed by GAF include the Hydro-Stop family of liquid membrane products, the United Coatings line of coating solutions, and StreetBond pavement coatings. These products will complement GAF's existing

roofing technologies and commercial solar solutions.

Kemper System Celebrates 60 Years

Kemper System America, Inc. has expanded its product lineup in the past six months, adding a line of coatings for foundation floors in April and several new lines through the acquisition of STS Coatings, Inc. in December. The company says it can serve as a single source provider for liquid-applied roofing and waterproofing systems, coatings, sealants and barrier products.

Kemper System has been a leader in cold liquid-applied roofing since Heinz B. Kemper founded the original company in 1957. He developed a novel roofing system using a cold liquid-applied resin reinforced with polyester fleece. Patented in 1969, the company is celebrating 60 years in business.

"Liquid-applied systems offer important advantages over sheet and roll products," said Richard Doornink, president and managing director of Kemper System America, Inc. "They provide seamless protection across the surface and seal difficult areas like around multiple penetrations, skylights, gutterways, fountains and behind indoor tile. They also eliminate the time and expense of installing flashing and termination bars."

He continues, "Kemper System was built on novel approaches to challenges, consistent product quality and customer service, and those continue to be the bedrock of our relationships."

The company's flagship product, solvent-free and odor-free Kemperol 2K PUR protects hundreds of millions of square feet across North America, including the Empire State Building in New York City, CN Tower in Toronto and Marketplace Tower in Seattle.

With the acquisition of STS Coatings and its four flagship brands, Kemper can now protect a wide range of projects in

a variety of climates including: new and existing roofs, white roofs, green roofs, interior and below-grade waterproofing (including reinforced and unreinforced), air/water barriers for masonry walls and foundations, construction sealants, parking garages, balconies, terraces, plazas, and historic restorations. ♦



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Light and Watertight

Simplifying The Two Essentials Of A Planted Roof

By Michael McAuley



Photo Courtesy: Jeff Hall Photography

As waterproofing professionals know, one of the most crucial jobs of any roof system is to keep water out of the building.

With this in mind, it seems one of the last things a designer would want to do is create a landscaped park on the roof, as the added weight and moisture make it tougher to achieve a watertight roof assembly.

But garden roofs are growing in popularity, with 18% growth in square footage in 2015, according to Green Roofs for Healthy Cities. Washington, D.C., led the way that year, with nearly 1.6 million sq. ft. installed. Although D.C. has held the number one spot for five years, the green roof phenomenon isn't limited to government buildings.



The finished landscaping of Facebook's garden roof.

Some of America's largest companies have installed green roofs. Ford's Dearborn, Mich., truck plant final assembly building sports one of the world's largest living roofs at 454,000 sq. ft.

In 2015, Facebook opened its MPK 20 office building in Menlo Park, California, with a nine-acre living roof featuring more than 400 trees, a half-mile walking trail and small hills and valleys.

Increasingly, green roofs are using geosynthetic materials such as geofoam to help keep planted roofs light and watertight.

Green Roof Benefits

Building owners install planted roofs for a variety of reasons, ranging from reducing environmental impacts to creating an employee amenity.

"Green roofs are a key strategy for mitigating the heat island effect in our city and for effective stormwater management," said Tommy Wells, director of the District of Columbia's Department of Energy and Environment.

In Facebook's case, the company's head of human resources and recruiting says that the park-like roof, "gives space to think."

From these statements, one might conclude that planted roofs are just the latest fad of granola crunchers. But, such roofs can deliver tangible financial benefits. Green roofs installed on

commercial and public buildings provide a 224% return on investment and 5.2% internal rate of return, according to the U.S. General Services Administration (GSA). These benefits result from lower energy and stormwater management costs, less frequent roof replacement and job opportunity creation, according to the agency.

Overcoming Challenges

Adding plants and park-like amenities to a roof increases the complexity of the roofing assembly. Garden roofs present two primary challenges for building professionals to solve: minimizing the dead load and preventing moisture intrusion.

The project team for the Facebook MPK 20 building's green roof met this two-fold need with expanded polystyrene (EPS) geofoam.

Weighing considerably less than soil, EPS geofoam is an ultra-lightweight engineered fill that can be used to create contoured landscape features such as hills

Project Statistics

Name: Facebook Headquarters MPK 20
Location: Menlo Park, Ca.
Owner: Facebook Corp.
Cost: Undisclosed
Size: 430,000 sq. ft. (9 acres)
Completion Date: 2015
Roof Assembly: American Hydrotech
Geofoam Supplier: Insulfoam

The Waterproofing Process

Facebook's green roof covers nine acres and includes a half-mile walking path and more than 400 full-size trees.

Many details of its construction are concealed behind a non-disclosure agreement, but generally followed the same waterproofing as the massive green roof at Chicago's Millennium Park. Both projects used the same garden roof system and geofoam supplier.

The process starts with putting together an assembly of components based on the designer's planting outline. Installation begins with the waterproofing, in this case a fabric-reinforced, fluid-applied, rubberized asphalt membrane from American Hydrotech. The protection layer/root barrier was installed, followed by the insulation layer and geofoam fill. This assembly is then covered with a drainage/water retention sheet and covered with a geotextile filter fabric to keep the soil in place. Then the engineered lightweight growing medium is brought in and shaped to the final contours. Finally, the plants, trees, pavers and benches are set into place.

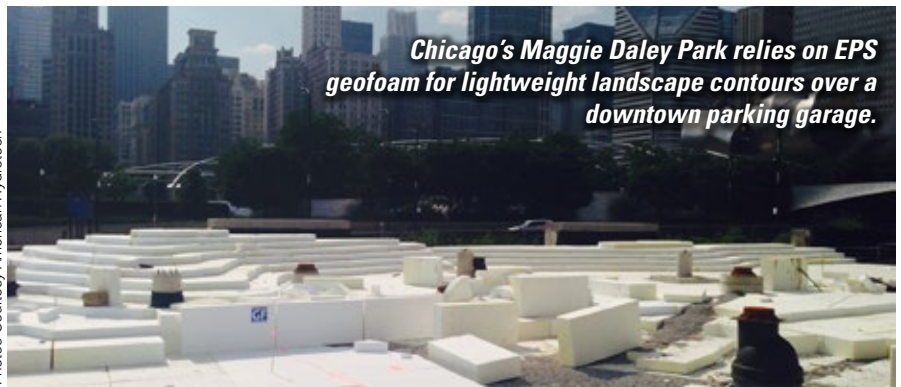
Hydrotech offers a free resource handbook to architects and design community professionals covering sustainable design, roof decks, and green roof applications.

and valleys. The material weighs from 0.7 to 2.85 lbs. per cubic foot, depending on the product type specified, compared to 110 to 120 lbs./cu. ft. for soil.

Despite its low weight, EPS geofoam is designed for strength, and has better load bearing capacity than most foundation soils. Geofoam's compressive resistance ranges from approximately 2.2 psi to 18.6 psi (317 to 2,678 lbs./sq. ft.) at a 1% deformation, depending on the product.

EPS geofoam is also effective at

Photos Courtesy American Hydrotech



Chicago's Maggie Daley Park relies on EPS geofoam for lightweight landscape contours over a downtown parking garage.

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EPS geofoam creates lightweight landscape contours on the 9-acre planted roof of Facebook's California headquarters.

addressing the second challenge of garden roofs, managing moisture absorption. The moisture performance of the various components in a green roof assembly is critical, as retained water imposes additional loads on the roof and increases the risk of water damage to the roof assembly. EPS geofoam which meets ASTM D6817 standards works well here as it only absorbs 2% to 4% moisture by volume, even over long-term exposure, and it dries quickly.

The moisture performance of EPS

has been demonstrated in extensive in-situ applications and real-world testing, including research conducted by the U.S. Army Cold Regions Research and Engineering Laboratory. After burying EPS in wetted soil for nearly three years, the lab found that the material absorbed only 1.7% moisture by volume.

In addition to enabling lightweight, durable landscape features and helping to defend against water, EPS geofoam provides thermal insulation in garden roofs. Roofing professionals have used

EPS insulation in roof assemblies for decades, as it offers the highest R-value per dollar among rigid foam insulations.

Although not what one would traditionally think of as a "roof," another prominent project in which EPS geofoam came to the rescue is Chicago's Maggie Daley Park (See story in the Spring 2016 issue.) Much of the 20-acre downtown park overlies the East Monroe Street Parking Garage. The garage lacked sufficient structure to hold the park's planned rolling hills and earthen landscape features, so the project team substituted soil with lightweight geofoam to form the ground contours. "[Geofoam] allows you the freedom to be creative," the Chicago *Sun-Times* quotes designer Peter Schaudt.

Conclusion

Although green roofs currently account for a small portion of the billions of square feet of roofs in the U.S., we can expect to see more demand for them given their aesthetic, environmental and financial benefits. High-performance materials like EPS geofoam can help provide a watertight and light green roof assembly, for long-lasting durability.

Michael McAuley is president of Insulfoam (www.insulfoam.com). McAuley has more than 20 years of experience in building material sales and production management, including 14 years at Insulfoam's sister company, Versico Roofing Systems, as the national sales manager and general manager.

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This underslab membrane protects the sensitive electronic equipment at a Verizon data center from moisture.

Photo Courtesy W.R. Meadows

Advances in Commercial Waterproofing

Waterproofing technology is advancing in all its many segments. From sump pumps to rooftops, new materials and know-how are helping create structures that are better-performing and more cost-effective than ever before.

As we emerge from the greatest recession of our lifetime, commercial construction is significantly better than it was going into the slowdown. Project timelines are tighter. Budgets are tighter. There's an unprecedented emphasis on energy efficiency in the codes, and concern over indoor air quality is high. Land prices are driving developers to "infill" lots where chemical contamination can be a major concern.

Fortunately, waterproofing manufacturers have developed new products that address these issues. Leading the way are several new classes of polymers: silicones, silanes, polyureas, and others. For instance, products are now available that offer "instant" cure times capable of achieving the desired thickness in a single pass, and the performance characteristics—adhesion, elongation, etc.—of these products are remarkable.

Advances within the electronics industry are also making an impact. Sump pumps can now automatically dial building management if a problem is detected. Rooftop leak detection systems can continuously monitor for leaks,

and can call or sound an alarm if water penetration is detected.

Brownfield Development

One aspect of today's commercial construction is that most large projects are built on previously occupied real estate.

David Leslie, director of technical services at Polyguard explains, "In previous generations, gas stations, dry cleaners, mechanic's garages, printing presses, and factories often didn't do a good job keeping contaminants contained, and they frequently left behind significant amounts of toxic residues in the soil."

These sites, known as brownfields,

are surprisingly common. The U.S. Government Accountability Office (GAO) estimates there are more than 425,000 sites across the country covering 5 million acres. Much of Manhattan, for instance, is in this situation.

"Most of these brownfields are high-dollar properties in downtown urban environments," Leslie continues. "With urban revitalization, the value of the property has risen to the point that building on these lots is desirable, and the question becomes how to address it. If we're going to tear down buildings and erect more efficient ones, how do we protect the occupants?"

Waterproofing for deep foundations is typically applied "blindsight"—directly



Photo Courtesy Polyguard

to the sheet piles or lagging—with the concrete cast in place over the membrane. A non-woven geotextile sprayed with asphalt emulsion can resist methane and other gases, but as buildings get taller, foundations get deeper and contractors find they're not dealing with vapors, but with liquids.

These are called non-aqueous phase liquids (NAPLs), and are extremely difficult to seal out. Some contaminants, such as sulfurs and oils, reduce the swelling capacity of bentonite clay. Others attack asphalt-based products. Leslie says of early efforts with self-adhered membranes, "We thought that the plastic would protect the asphalt, if we taped the seams well. But gasoline and other light NAPLs will, over time cause HDPE to swell and become less dense, and the rubberized asphalts start to dissolve."

An additional complicating factor is that the waterproofing system has to last the life of the structure, and repairs on deep blindside foundations are extremely costly. Leslie says thicker membranes and polymer enhanced bentonites do provide some measure of protection, but still aren't foolproof. "We're dealing with long periods of time," he says.

For years, the only sure option has been to excavate all the contaminated soil, burn off the contaminants at an off-site location, then truck it back to the site as backfill. Leslie says, "It's extremely costly, and doesn't get all of it out, but it gets most of it."

Polyguard has recently adapted two of their most popular waterproofing products into chemical resistant versions. Dubbed "CR", the key was finding a facer durable enough to withstand the blindside installation and the lifecycle. Then they developed a chemical resistant adhesive to seal terminations, penetrations, and transitions. The company makes chemical resistant seam tape and pre-manufactured corner boots as well.

"It's the exact same installation

Photo Courtesy: GE Enduris



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process as using our current system, just with chemical resistant products,” says Leslie. “We are now reclaiming land that had been considered previously uninhabitable.”

Rooftop Revolution

Advanced chemistry is also revolutionizing commercial rooftops.

Silicone coatings, for instance make it possible to extend the life of an aging

roof at a fraction of the cost of a complete tear-off and reroof. Obviously, this is a major breakthrough for owners. The Roof Coating Manufacturer Association (RCMA) reports that the amount of silicone roof coating sold in 2016 is double the figure from 12 months earlier.

Peter Friedli, GE Enduris marketing manager at Momentive Performance Materials, says a silicone restoration can be half the cost of a tear-off and re-roof. “While a silicone coating restoration is an excellent value for many roofs, we see a particular set of conditions where silicones should always be the right solution for the building owner,” he says. Building codes do not allow a third roof, and since many of these second roofs are single-ply—about 60% of roofing membrane sales—when these reach the end of their life expectancy, a roof coating is the most practical alternative to a tear-off.

Friedli’s company invented silicone roofing technology in the 1960s, and makes a line of 100% silicone roof coatings called Enduris, and while he says the company has other technology at their disposal—acrylics, STPU, STPE, etc.—they have chosen to focus exclusively on this technology.

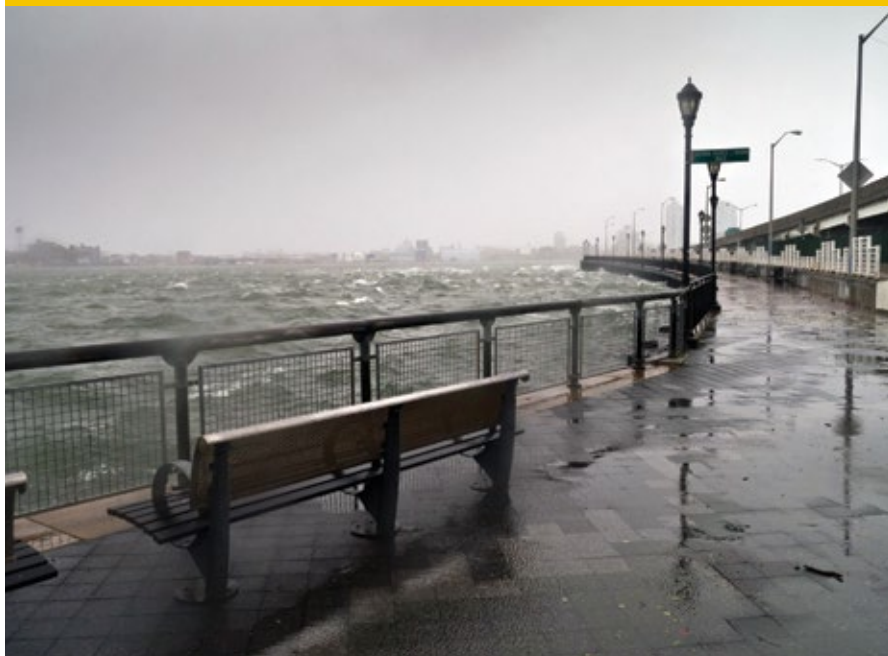
Installation is straightforward. The underlying substrate must be clean, dry and structurally sound. Typically, it’s a simple pressure wash to prep, and then crews roll- or spray-apply the product. No primers are required on any substrate, even metal, single-ply membranes, or concrete.

One notable case study is the federal Defense Logistics Agency (DLA) in Scotia, New York. The cold, snowy winters and hot, wet summers put immense stress on local buildings’ roofs, which is why they chose a silicone roof coating as a first coating in 1996. When the crew checked last summer, more than two decades of punishing weather had removed about five mils of the original 21.5 mils coating surface.

“We had a terrific first experience

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with GE Enduris,” says Dave Landry, DLA director of operations. “Twenty years later, there was no question about who we’d use.”

In the end, only 5% of the 275,000-sq.-ft. roof required repair; the rest just needed a few more mils of coating. DLA chose to cover the previous gray coating with the white GE version this time, helping to lower the amount of heat absorbed by the roof.

“Most building owners in this area spend thousands, sometimes hundreds of thousands, each year keeping their roofs intact,” says Landry. “We spend almost nothing in comparison.”

It also cut down on expenses for the installation crew. Bill Rush, who led the team that applied the coating, says, “During the seven-week project, we lost only one day to rain. If it had been an acrylic coating, we would have likely lost a week to predicted rain delay.”

He continues, “Additionally, there were two days that rain came unexpectedly from over the mountains, when the forecast was 10% chance of rain. We’d have lost 30,000 sq. ft. of acrylic product each of those two days.”

Hidden Performance

Technology is changing new construction, too. When Corgan Associates began planning a new data center for Verizon in Southlake, Texas, they recognized that one of the highest priorities would be to protect the critical sensitive electronic data equipment from moisture damage.

The high water table meant an underslab vapor barrier would be a critical part of the waterproofing design. The challenge was that miles of conduit were laid under the 40,000-sq.-ft. slab, with dozens of penetrations.

To address this challenge, they selected Precon from W.R. Meadows, which has the lowest water vapor transmission rating on the market. Precon fabric tape and pointing mastic were used to reinforce and seal difficult

areas and transitions, and a related product, Mel-Rol LM (for liquid membrane), was used to seal areas with concentrated conduit protrusions through the slab.

Conclusion

The sophistication of waterproofing products now available is creating a new level of performance and productivity for waterproofing contractors.

With today’s technology, contractors can tackle more difficult work or take on more work with the same size team or reduce labor costs. Weather-related delays can be eliminated or greatly reduced.

When designers and general contractors worry about providing maximum protection, and faster turnaround, on tighter budgets, solutions are available to meet these demands. ♦

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This massive 105-unit condo complex in Philadelphia, Pa. used Rub-R-Wall, a water-based, spray applied membrane, to seal foundation walls reaching 23 feet high. It was covered with a dimple board for drainage and backfill protection.

By Clark Ricks

GREENER WATERPROOFING

Photo Courtesy Rubber Polymer Corp.

The green building movement has raised expectations for waterproofing products. While green building certification has slowed, the shift towards eco-friendly solvents, easier recycling, and longer life cycles is expected to accelerate. Fortunately, products are available that meet green building guidelines while also speeding construction and imposing less health risk to the contractor.

Certification

Experts such as Jerry Yudelson, who has written 13 books on green building, say green building methods have gotten more popular, even though certifications have plateaued.

Yudelson says the current LEEDv4—which includes the requirement to report energy usage for the first five years of operation—is so burdensome that “many owners favor the ‘LEED certifiable’ approach that uses the LEED system for design guidance but do not to bother certifying.”

To back this claim, he cites data from 2012-2015, when LEEDv4 and its predecessor overlapped. More than 95% of the projects were certified under the cheaper and easier-to-understand LEED 2009. He says, “This does not

bode well for the future of new project registrations, now that LEEDv4 is the only LEED system available for project registrations.”

Still, improving energy efficiency continues to be a major trend. Higher efficiency standards are being mandated in the new energy codes, and designers are scrambling to keep up. The latest report from the U.S. Green Building Council, published in February, says energy use has surged to the top of the green priority list. The trend for better air barriers above grade, and increased insulation throughout the building is affecting waterproofing.

Below Grade Efficiency

Below-grade residential waterproofers were on the front edge of this trend, as building codes have required continuous insulation for below-grade living space since the 2006 IRC updates. Frequently, this is installed as rigid foam boards on the exterior of the foundation.

Solvent-based waterproofing products, however, are not compatible with foam. Manufacturers have responded by creating water-based coatings that provide the same level of protection the solvent ones do. They have several other advantages, as well.

Water-based coatings have no bad smell, and there’s no need for special ventilation. Splashes or droplets that fall directly on the skin are not harmful, and can be cleaned off with soapy water. There’s no need for special cleaning agents for the equipment or the jobsite, either. Overspray and spills can be cleaned up with water, if it’s done immediately after application.

Additionally, water-based coatings can be applied to substrates solvent based products cannot, such as damp or “green” concrete. This is a major advantage in situations where the concrete hasn’t fully cured, rain has fallen, or wet soil has been removed to expose a foundation that needs to be treated. This can create significant time savings—which often translates into improved profits for the waterproofer if schedules are tight.

Neptune Coatings makes one of these next-generation coatings. Their Wetsuit product is water-based, cold-applied, and VOC-free; yet it offers outstanding adhesion and “instant set.” More precisely, it’s 80% cured within three seconds of leaving the spray gun, allowing applicators to build up virtually any thickness in a single pass.

Other companies offer water-based waterproofing as well, such as W.R.

Meadow's Mel-Rol LM, and GMX's UltraShield WB. All of these products are water-based, offer exceptional bonding, excellent elongation and handle thermal movement as well as minor cracking.

Rub-R-Wall, sold direct to contractors by Rubber Polymer Corp., is yet another example. The water-based version offers 1100% elongation with a tensile strength of 300 psi.

"This is a single-component system that contains no asphalt," Matt Veazey, president and CEO at the company explains, "VOC's are 15 grams per liter. Really, next to zero." Je continues, "It uses premium ingredients like virgin rubber to ensure a high-end, high quality product. We feel confident that this product will offer protection well in excess of 100 years."

It's rain resistant in two hours and cures in 24 hours. Below grade, rigid foam boards and dimple drain sheets can be adhered simply by pressing them into the newly applied membrane.

Above grade, Veazey reports the product is popular as an air barrier, as the 100% rubber formula also makes the membrane self-healing if punctured.

The product was recently used on a massive 105-unit condo complex in Philadelphia, Pa. Foundation walls reach 23 feet high. "It requires specialized skills to do walls that high," Veazey says.

With products like these, general contractors can cut days from the schedule, and eliminate most weather-related delays. Waterproofing contractors can tighten their schedules and plan on doing more work in a given amount of time. Applicators will appreciate there's no VOC's, minimal odor, and easy to clean up. Yet the performance characteristics compare favorably with any other top-of-the-line coating.

Manufacturers of self-adhered membranes are also making their products greener and easier to apply.

Peel-and-stick membranes are a popular option for waterproofing in the ICF industry. ICF stands for insulated

concrete form, a hollow stackable block made from rigid foam. Blocks are stacked into walls, which are then filled with steel-reinforced concrete. They're growing in popularity, especially for green construction and insulated basements. Because the membrane must be applied to the foam, waterproofing is sometimes difficult.

To simplify the task, Protecto-Wrap

recently developed a new, primer-free version of their self-adhered membrane. It adheres to most construction surfaces—OSB, plywood, concrete, CMU, foam insulation board, ICF and metal—without needing primer or mechanical fasteners. It eliminates the time and material associated with priming, and can be applied even when temperatures drop far below zero.

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Roofs

The movement towards sustainability is also affecting roof membranes. Yudelson predicts, “The roofing industry will continue to get greener with cool roofs and green roofs in both the residential and commercial sectors.”

Cool roofs, which are coated with a white or reflective surface can provide energy savings of up to 15%. Green roofs incorporating planted vegetation can double the roof membrane’s lifespan, add insulation, reduce storm runoff, and clean the air (see case study on p. 16)

Building sustainability experts understand that the vast majority of energy and water use is due to existing structures, and the drive to reduce these needs is moving to the forefront. The USGBC reports that in 2016, their LEED for Building Operations and Maintenance was by far the most popular of the LEED rating systems, representing 53% of the total square footage certified.

Roof membrane manufacturers are addressing this shift. Polyurea and silicone roof coatings, for instance, make it possible to extend the roof life by 10-20 years and save the cost, hassle, and waste of a complete reroof.

It’s also less disruptive for occupants,

who can continue their normal day-to-day activities during restoration. Simultaneously, it reduces landfill waste and associated costs, and contributes to energy savings by meeting cool roof requirements.

Henry Company has developed a product line to address all four stages of the roof membrane life cycle: repair, restore, recover and replace. Lisa Santerian, senior marketing manager, says, “Not only do our restoration systems provide a robust weatherproofing system for the roof, they also give the building owner and contractor access to additional resources and systems designed to maintain the roof throughout the life of the building.” Henry’s liquid-applied roofing systems are based on three separate technologies—silicone, acrylic and aluminum—to meet a wide range of environmental and structural needs.

Clean Air

One final trend affecting waterproofing is the move to eliminate volatile organic compounds (VOCs). The 2016 USGBC report cited above includes a headline claiming “Building Health Equals Human Health.”

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Cool roof coatings extend the life of the roof, lower energy costs, and save the expense, hassle, and waste of a complete reroof.

Photo Courtesy Florida Quality Roofing

Residential waterproofers have responded with a range of technologies to improve air quality in below-grade spaces. Dehumidifiers and Energy Recover Ventilators (ERVs) are usually cost effective solutions for basements. In crawlspaces, contractors are shifting to total encapsulation, venting radon and other soil gases outside before they enter the living space.

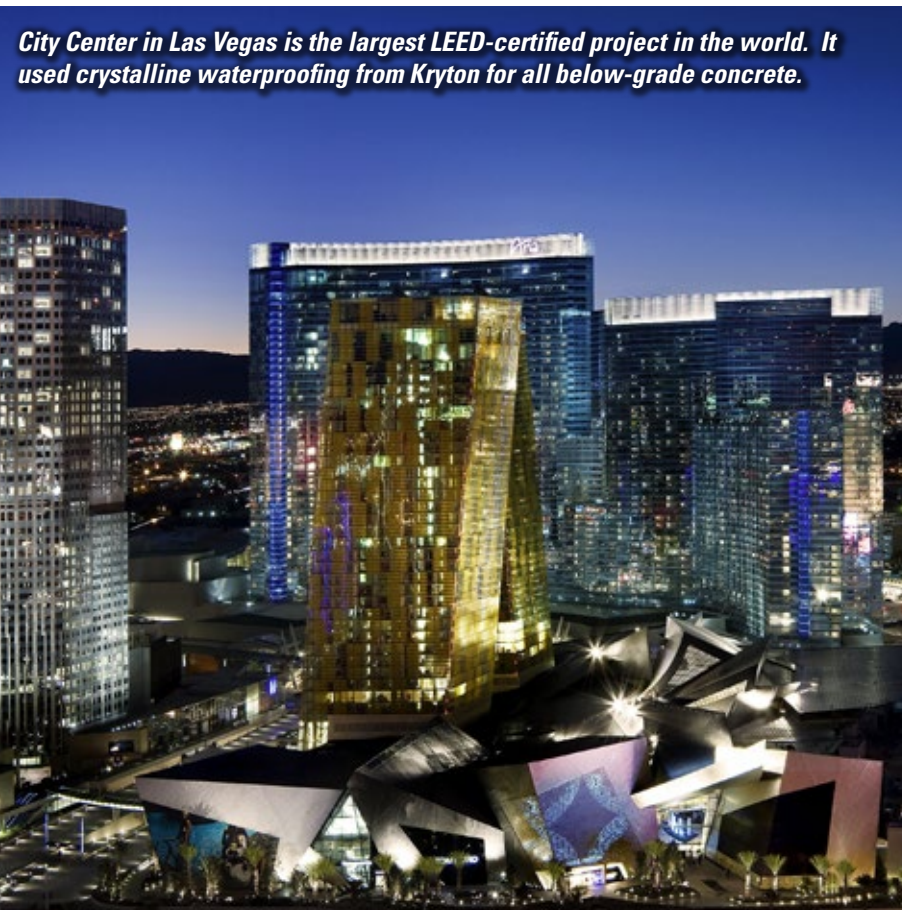
Like the commercial installers, they're also shifting to low-VOC products.

Crystalline waterproofing is one solution, possessing multiple green attributes in a single product. Lyda McClallen, at Kryton says, "Our product makes the concrete itself waterproof, so there's no membrane to deal with. It adds durability and longevity to concrete by protecting it against chemical attack and corrosion of reinforcing steel. It reduces site disturbance and waste during construction, contains no VOCs, and is safe for use with potable water. At the end of the building life cycle, while membrane coated concrete goes straight to the landfill, Crystalline-coated concrete can be recycled post-demolition, eliminating waste and helping the project leave a lighter footprint.

The Future/Conclusion

As green building materials become the new industry standard, it favors contractors and designers that are familiar with the new and better products being developed by waterproofing manufacturers.

"If a contractor is spraying the same formulation he did 20 or 30 years ago, not only is he missing out on performance, but he's missing out on the jobs he could be landing if he used more modern products," says one expert. "These new materials not only keep the environment safer, but can provide better protection, faster cure times, and more durability than older products ever could." ♦



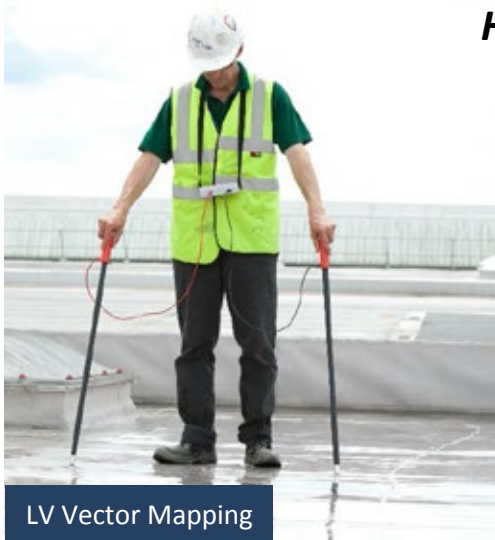
City Center in Las Vegas is the largest LEED-certified project in the world. It used crystalline waterproofing from Kryton for all below-grade concrete.

Photo Courtesy Kryton

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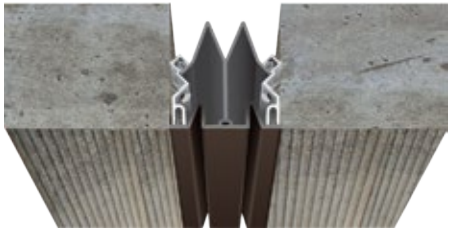
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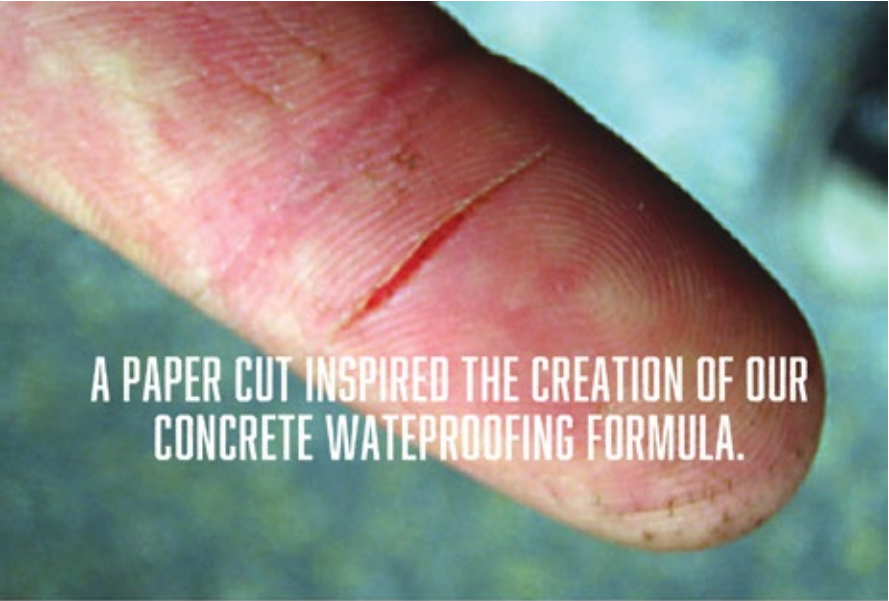
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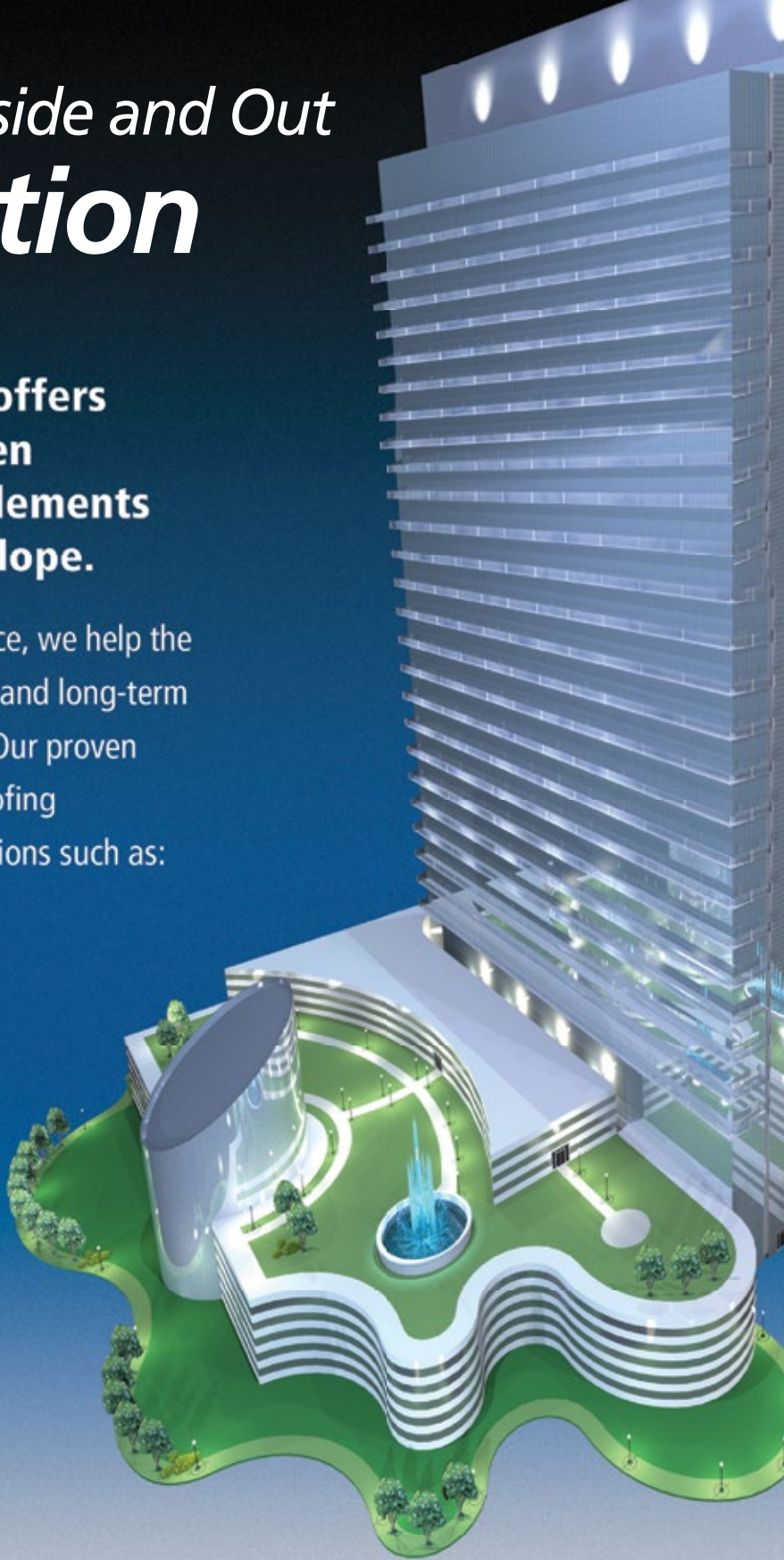
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With more than 60 years of experience, we help the design community create immediate and long-term value across the building envelope. Our proven Kemperol® membrane system for roofing and waterproofing excels in applications such as:

- Cool Roofs
- Blue Roofs
- Green Roofs
- White Roofs
- Elastomeric Roof Coatings

We think you'll agree,
we're always worth the call:
800-541-5455



inquiry@kempersystem.net • www.kempersystem.net