



# CONTRACTOR GOES HYDROPHOBIC TO TURN GREEN TO GOLD

The “green” customer of the future actually is more of a gold-ish color. As in, LEED Gold.

In fact, the green customer of the future is already here today, in the present. And it has a whole new set of demands and expectations.

“When you’re talking about the future of smart building, you’re not just talking about using the most environmentally friendly products and building methods on the market,” says Byron Chilleme, senior project manager with Bovis

Lend-Lease. “It’s about the ability to turn a building over faster. That brings more value to the client because construction costs fall and they can, in turn, use the facility in less time.”

In other words, green doesn’t just mean eco-friendly. It also means cost-friendly, both in terms of materials savings and the ability to generate revenue. As such, more contractors today are researching newer building methods that not only qualify for points under programs such as LEED, but also streamline the construction schedules to move projects along faster.

## EMBRACING NEWER MATERIALS

The obvious challenge, though: how can these contractors be sustainable and accelerate construction without sacrificing structural integrity? The answer could dwell in newer materials that have yet to achieve widespread use. Growing pressures to produce more eco-friendly structures may be just the push contractors and architects need to embrace these materials.

Bovis Lend Lease, for example, is among a growing number of large firms taking a second look at integral concrete-waterproofing methods as a way to streamline schedules while providing sustainability benefits. When integral methods were introduced decades ago, the common knock was that—while simpler to apply—they weren’t true waterproofing solutions, as they provided only a concrete additive.

Recent advancements in integral admixtures are persuading construction teams to give them another shot to help them meet the needs of increasingly green-conscious clients. Keys to the newer solutions are higher-performance additives, coupled with service that ensures joints are properly sealed and the inevitable cracks in concrete are addressed. The stringent, long-term performance warranties that are included also serve to offer contractors a higher comfort factor in their vendor’s commitment.

By Jim Hill



## CONSTRUCTION SCHEDULE SHAVED

In Bovis’ case, the firm shaved approximately a month off the construction schedule for the Thomas Jefferson School of Law’s new downtown San Diego campus using an integral, concrete-waterproofing admixture. The Hycrete admixture eliminated the need for the external membranes typically used to waterproof concrete. Membrane installation can be a very time-consuming process, as it requires near-perfect

conditions to apply, often bringing the overall construction process to a halt. Dosing the concrete with an admixture during the mixing stage, however, eliminates that lengthy step and provides a “pour-and-you’re-done” approach that simplifies the overall waterproofing process.

## IDEAL APPROACH FOR PROJECT

The integral approach was even more ideal considering the below-grade shotcrete application used to apply the concrete for TJSL. Shotcrete velocity often damages fragile cast-in-place membranes, which renders its waterproofing capabilities null. By waterproofing during the mixing stage, Bovis also eliminated the risk of membrane damage to ensure the waterproofing system remained intact.

Additionally, eliminating the membranes was especially key for this project because TJSL is aiming for LEED Gold certification.

“As a school that models creativity and innovation in its program of legal education, it was so appropriate for Thomas Jefferson School of Law to choose an innovative product that assisted the school in securing its LEED Gold status,” says TJSL Dean Rudy Hasl.

Membranes can sometimes contain toxic chemicals, volatile organic compounds (VOCs), and other non-renewable contents that bond to the concrete after being applied. This makes the concrete infinitely more difficult to recycle and often forces membrane-treated concrete straight to landfills.

Not exactly something that will earn points, so to speak, with the U.S. Green Building Council.

“There’s so much more consciousness of sustainability and building green, and when you’re trying to earn credits like LEED points, every detail counts,” says Alagie Sanyang of Bovis, who managed the LEED process for the TJSL project.

## ABOUT the AUTHOR

Jim Hill is senior technical sales manager for Carlstadt, New Jersey-based Hycrete Inc. He has 14 years of experience in the waterproofing and construction products industry, including membrane and flooring solutions. He is a previous member of the Construction Specifications Institute.

## CERTIFIED CRADLE-TO-CRADLE

The Hycrete admixture, in contrast to membranes, is certified Cradle-to-Cradle by McDonough Braungart Design Chemistry (MBDC) and is recyclable along with the concrete. As a result, TJSL expects to earn the industry's first LEED point for "Membrane-Free Construction."

Of course, green isn't the sole motivation for using these emerging materials. In the end, the materials still must live up to their core functions. For TJSL, the integral waterproofing needed to protect the below-grade structure—which sits about 40 feet below grade into the water table—from brackish water and corrosive salts. Hycrete, originally invented by a scientist developing solutions for NASA, tests at less than 1-percent absorption under BSI-1881 122 to meet hydrophobic concrete performance standards. The key differentiator with this specific hydrophobic admixture is its water-based properties that make it greener for the people and the environment, as opposed to ammonia-based alternatives.

All told, Bovis Lend-Lease used Hycrete to waterproof approximately 2,300 cubic yards of concrete and eliminate 25 tons of non-renewable materials, 9 tons of polymers, and 36 tons of landfill debris. Along with these environmental benefits, the approach saved \$187,000 in material costs—a 32-percent improvement over traditional waterproofing approaches.

Another less-publicized but equally important benefit of the integral rout is corrosion inhibition. The molecules of the admixture used at TJSL chemically bond to the steel rebar to prevent corrosion, thereby enhancing the overall building lifecycle.

## BENEFITS AND RECOMMENDATIONS

All of these benefits ultimately beg the question: why do many of these materials have yet to achieve widespread adoption compared to more-cumbersome, less eco-friendly products such as membranes?

Ironically, the cure for breaking skepticism in the construction industry is increased usage in projects. For contractors who might be wary of investing in relatively newer, greener materials, one solution is to use these materials in small parts of larger projects.

Specific to concrete waterproofing, contractors should ensure their materials meet very strict criteria. It's recommended the solution should:

- Be truly waterproof (or hydrophobic) and not just integral
- Include a service element that ensures the solution is properly installed and maintained throughout the construction schedule
- Reduce foot traffic on the site to improve overall safety
- Meet the minimum BSI-1881 122 standards
- Include a strong performance warranty with minimal exclusions, typically for 10 years

Bovis, for example, had specifically used Hycrete in previous projects before recommending the admixture for TJSL. Additionally, the admixture has been used by other contractors for a variety of projects ranging from elevator pits, to slabs on grade, to concrete water fountains, to green roofs, podiums, and parking decks.

"Once you have evidence it works," Chilleme says. "It becomes an easier sell to the architect."

And at that point, it's as green as "gold." ■



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