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THE INTERLOCKING CONCRETE
PAVEMENT INSTITUTE

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WINTER 2014

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volume 21 number 1

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The award-winning Whole Foods Market parking lot in Boise, ID.

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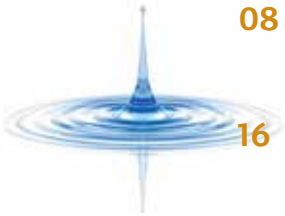

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interlockutor

David R. Smith

ICPI CELEBRATES 20TH YEAR AS INDUSTRY TURNS 40

40 Is the New 20

Interlock Design endeavors to present the best projects and practices for segmental concrete pavement design, construction and maintenance. We feature innovative projects supplied and built by ICPI members across the U.S. and Canada. Unlike some association publications, we generally avoid reporting on ICPI events; our goal is to demonstrate the range of applications and utility of segmental concrete pavements.

This issue furthers our goal. We present two technically and visually beautiful projects in opposite geographies, soils and climates to underscore that interlocking concrete and permeable interlocking concrete pavements work just about anywhere. But this issue also marks a milestone: It is the 80th one. That's right; this quarterly magazine and ICPI are both celebrating their 20th anniversary this year.

Forty years ago, interlocking concrete pavement entered the North American market. Seeing industry growth in the U.K. and Europe, the new industry here evolved from concrete product manufacturing entrepreneurs. They fostered a departure from nondescript monolithic pavement by using segmental pavement with its unique engineering functions that *define* beauty.

They introduced a pavement unfamiliar to most designers and project owners, recognizing that the pavement industry is probably one of the most difficult when it comes to readily accepting new products. Paver manufacturers had to overcome the adage of never being the first or last in construction to do anything. This notion didn't stop the interlocking concrete pavement industry in its early years, thanks to the intrepid efforts of early pioneers.

Perhaps a bigger barrier for market penetration was the entrenched, deeply institutionalized, conventional and, at that time, less expensive monolithic asphalt and concrete pavements. This barrier was due to governments at all levels owning mega-miles of these pavements for almost a century. The interlocking concrete pavement industry responded with projects and studies that addressed the shortcomings of monolithic pavements. As we enter 2014, the industry is in a great position. With today's higher prices for conventional pavements and demand for reduced stormwater runoff, interlocking and permeable interlocking concrete pavements have found a solid niche among pavement choices.

Concrete paver manufacturing technology was initially imported from Germany to Toronto in the early 1970s and rapidly expanded across Canada and into the U.S. The industry evolved from about 40 million sf (3.7 million m²) in 1984 to over a half a billion sf (46.5 million m²) today. The following presents a timeline highlighting this decades' long journey with a nod to some of the supporters along the way. The list is by no means all-inclusive of the people, companies and ICPI resources that have helped transform the market.

Continued on page 4

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evolutionary

A 40-year perspective on the industry and ICPI

1973

KNR Concrete is started by Wolf Mueller in Toronto, later purchased and renamed Unilock.

1982

610,000 sf (56,700 m²) of interlocking concrete pavement opens at the Massey Coal Terminal in Newport News, VA. The pavers are subject to high loads from coal storage piles and abrasive loads from steel-tracked bulldozers.

1983

North Bay, ON, places 150,000 sf (13,900 m²) in downtown streets and sidewalks. This project confirms the ability of concrete pavers to survive harsh winter conditions on municipal streets.

1985

The first mechanically installed, public street of 11,000 sf (1,000 m²) is constructed with interlocking concrete pavement in a historic district.

1989

The Concrete Paver Institute (CPI) is formed within NCMA to raise industry identity and provide resources for manufacturers, designers and contractors.

1990

The Port of Baltimore, MD, places 230,000 sf (21,300 m²) of pavers in a wharf area that would eventually grow to 2 million sf (185,800 m²) of pavers.

1990 – *The ASCE Journal of Transportation* publishes "Structural Design of Concrete Block Pavements" by Rada, Smith, Miller and Dr. Matthew Witczak. This paper demonstrates the application of AASHTO flexible pavement design to interlocking concrete pavements. This approach was initially developed by Dr. Witczak.

1990 – CPI hosts a focus group of prominent U.S. and Canadian pavement engineers (including Dr. Witczak) who propose steps for institutionalizing interlocking concrete pavement. Their report provides the framework for the next several decades: develop design guides; test methods, specifications and maintenance guides; do research and demonstration projects; and promote.

1990 – San Antonio, TX, places 1 million sf (93,000 m²) of interlocking concrete pavement in streets and sidewalks in its downtown. The pavement is subject to constant bus traffic.

1991

CPI issues CAD drawings of various concrete paver applications on 3.5 in. floppy disks.

1992

CPI supports bedding sand research by the Royal Military College of Canada. Results provide test methods and acceptance criteria for bedding sands in high traffic/load applications.

1992 – CPI issues its first installation training manual, *Building Interlocking Concrete Pavements*. The manual becomes the blueprint for an installer certification program developed some years later.

1993

The Segmental Concrete Systems Association is formed in Chicago, IL, later renamed the Interlocking Concrete Pavement Institute (ICPI). Sixty-six charter manufacturer, supplier and contractor members fund the upstart group.

1994

The first issue of *Interlocking Concrete Pavement Magazine* is mailed to about 7,000 readers and featured 300,000 sf (27,900 m²) in Berth 30 at the Port of Oakland, CA.

1994 – The first ICPI annual meeting is held in Atlanta, GA.

1994 – ICPI releases a new logo to convey interlocking.

1995

Interlocking Concrete Pavement Magazine first reports on permeable interlocking concrete pavements (PICP).

1996

ICPI releases Pavespec software for structural design of interlocking concrete pavements that follows AASHTO flexible pavement design methods.

1996 – ICPI introduces an installer certification program with a comprehensive student manual, course materials and instructor training. Some 15,000 contractors take the course in the coming years.

1997

The Pennsylvania Transportation Institute studies skid resistance of interlocking concrete pavements demonstrating characteristics similar to conventional pavements.

ICPI
INTERLOCKING CONCRETE PAVEMENT INSTITUTE ®

timeline

ICPI INTERLOCKING CONCRETE PAVEMENT INSTITUTE

2000

ICPI releases the first edition of *Permeable Interlocking Concrete Pavements – Design Specifications Construction Maintenance*. Three more editions are released with the latest fourth edition in 2011.

2000 – The ICPI Foundation for Education & Research is created to advance the technical and educational industry subjects with an endowment goal of $5 million.

2001

Port of Oakland, CA, pavement construction begins on 5 million sf (464,500 m²) of interlocking concrete pavement on new container terminals at Berths 55-59.

2002

2002-2004 – ICPI funds research by the University of Pittsburgh and the Veterans Administration to define interaction between different paver types on wheelchair vibration.

2003

ICPI rolls out ***www.icpi.org***.

2006

ICPI hosts the 8th International Conference on Concrete Block Paving in San Francisco, CA, with over 400 delegates.

2006 – ICPI introduces Permeable Design Pro software for PICP hydrologic and structural design.

2007

North Carolina State University completes PICP research that demonstrates positive infiltration performance and pollutant reductions.

2007 – The ICPI Foundation funds development of a website resource for landscape architecture students and professors. The site develops into ***www.paveshare.org***.

2007 – ICPI launches Hardscape North America, a new trade show for the industry.

HARDSCAPE North America

2008

ICPI moves offices to Herndon, VA, and transitions to self-management. Staff increases to eight with an annual budget of $3 million.

2009

ICPI rolls out commercial technician and PICP specialist courses.

2009 – The U.S. Environmental Protection Agency completes a permeable pavement parking lot at offices in Edison, NJ. The agency conducts long-term monitoring and maintenance.

2010

The ASCE releases standard 58-10 *Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways*. ICPI offers design software that follows this procedure.

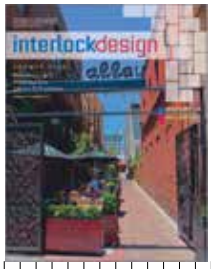
2010 – The University of Waterloo completes crosswalk performance research and design guidelines. The University of New Hampshire Stormwater Center monitors PICP for two years on their campus that yields almost 100 percent infiltration of runoff.

2012

ICPI rolls out the Advanced Residential Paver Technician course.

2012 – Green alleys are built in dozens of cities thanks to federal, state and local green infrastructure funding to reduce combined sewer overflows.

2012 – *Interlocking Concrete Pavement Magazine* is redesigned and renamed *Interlock Design*.



2013

The ICPI Foundation funds PICP structural and performance research projects in the U.S. and Canada.

2013 – The industry produces about 500 million sf (46.5 million m²) of pavers, slabs and grids, made by approximately 110 companies in the U.S. and Canada.

2013 – ICPI completes its 18th Tech Spec technical bulletin on PICP construction. All 18 bulletins covering design, construction and maintenance topics are on ***www.icpi.org***.

2013 – The ICPI Foundation funds the development of product category rules (PCRs) for segmental concrete pavements.

2014

ICPI purchases space for new offices in Chantilly, VA. The new address is 14801 Murdock Street - Suite 230, Chantilly, VA, 20151. Canadian offices continue in Uxbridge, ON.

VISIT ***www.interlockdesign.org*** for more timeline events.

Looking back, ICPI created ground for the industry to build upon. Congratulations for moving the industry forward over the past two decades.

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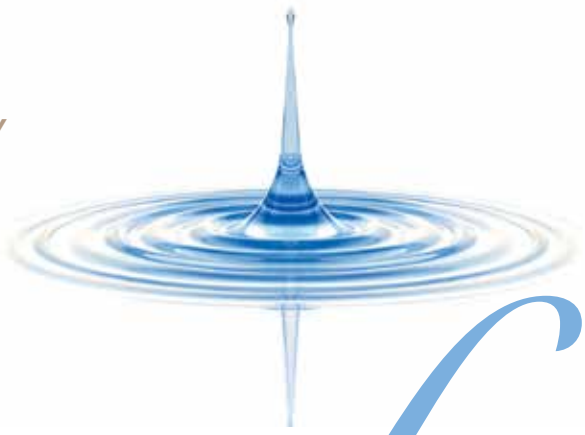


By Alicia Lasek

A perfect storm

The success of Idaho's first large-scale permeable surface in downtown Boise indicates a bright future for pavers in the Gem State.

During a hard rain in October 2012, Jeff Ward, P.E., raced to the site of a new Whole Foods Market in downtown Boise, ID. The store anchors a 5.8-acre development that has drawn much attention for its visually pleasing design, including a herringbone-patterned, permeable interlocking concrete pavement (PICP) parking lot with sustainable landscaping beds. But aesthetics were not Ward's focus on that rainy day. Upon arrival, he scanned the lot, looking for signs of standing water and runoff. The stormwater was infiltrating on contact and the site was completely puddle-free.

This was the first chance for Ward, a civil engineer at local design firm CSHQA, to see his permeable lot design perform before opening to the public in November 2012. That rainy day experience was just one of the many firsts associated with the project. The Boise Whole Foods Market store is the first in Idaho. Likewise, the 2.6-acre parking lot, consisting of almost an acre of PICP, is the first large-scale permeable surface project in Boise. The project also marked the first time for many involved to work with PICP.

A CHANGE IN PLANS

The Whole Foods Market parking lot is shared with a sustainably-designed Walgreens. Together, this project completes the first phase of River Park Place, a mixed-use development at the edge of Boise's central business district. But permeable pavement was not in the original plans, says developer Rick Duggan, director of design and construction, and partner at Schlosser Development Corp. (SDC) of Austin, TX. The lot has a high groundwater table, and the company initially explored the more

Continued on page 10

PHOTOS COURTESY OF BASALITE

CROSS SECTION:

—5.5 x 11 x 4 in. (140 x 280 x 100 mm) permeable interlocking concrete pavers

—Pattern: Herringbone

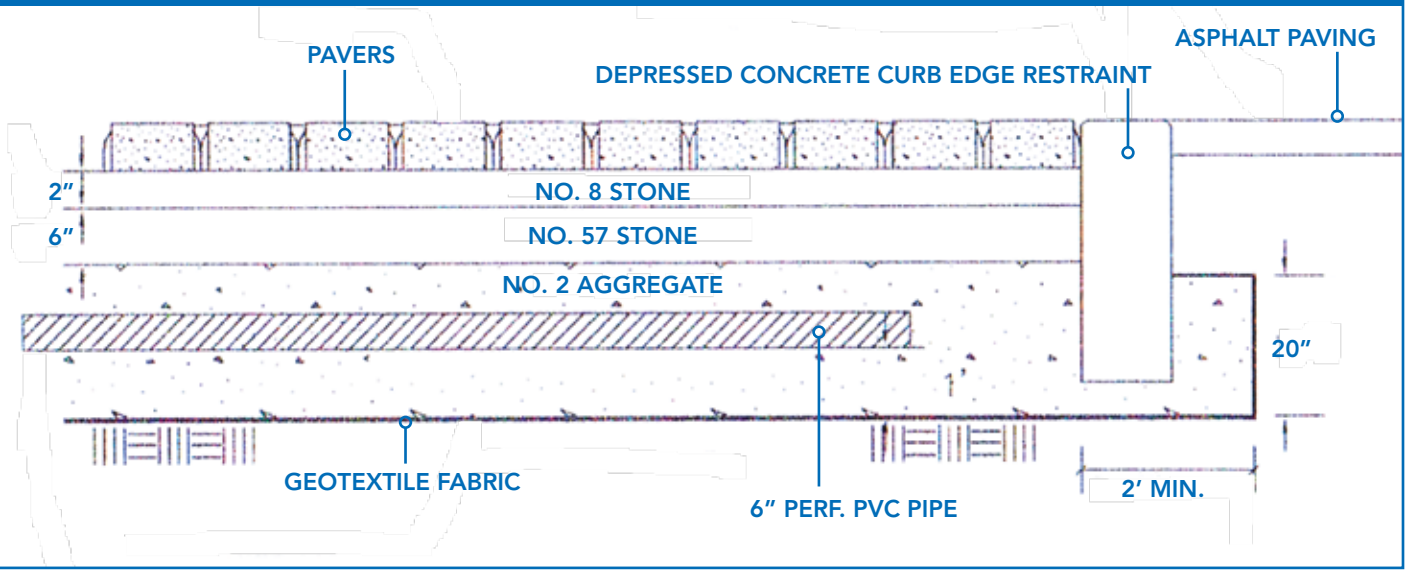
—Bedding course: 2 in. (50 mm) No. 8 aggregate

—Base/choker course: 4 in. (100 mm) No. 57 stone

—Subbase: 14 in. (350 mm) No. 2 stone

The parking lot shared by Whole Foods Market and Walgreens in the central business district of downtown Boise, ID, is the first large-scale permeable pavement installation in the state.

BENEATH THE SURFACE



traditional option of draining stormwater runoff to an offsite retention pond, about 200 yards away. But those plans were scrapped when the 2007 recession hit and the project stalled indefinitely.

By the time the project rebooted in 2012, the offsite option was off the table, says Duggan. The city's MS4 permit was up for renewal, and the U.S. Environmental Protection Agency's draft promised future restrictions on stormwater discharge to the Boise River. Faced with the need to manage 100 percent of stormwater onsite for all phases of the development, SDC now faced a space problem. "Full detention onsite would have chewed up the parking so badly that we needed to look at alternatives," Duggan says. "The solution that emerged was a permeable concrete paving system on top of 42- to 48-in. [106- to 122-cm] engineered base of rock and sand."

The system needed to handle 0.5 in. (1.27 cm) of rain per hour over its 50-year life span, a relatively light load due to Boise's high-desert climate, but requirements also necessitated that the lot contain a 100-year storm, at a projected one inch (2.5 cm) per hour. With that in mind, project stakeholders needed reassurance about water retention capabilities, possible increased liability and the impact of frequent snowplowing on the paver surface. That's when the forethought of a local supplier came in handy.

LET IT SNOW

Years earlier, the supplier set the stage for showcasing what PICP could do as a system. He first approached the city's highway department to answer questions and concerns, and then encouraged area contractors to invest in paver installation equipment and ICPI certification. The supplier also aided the city by initially installing a PICP at the Boise Watershed Environmental Education Center, which created a ready-made demonstration tool.

Duggan and his team found local contractors, ICPI-certified and equipped for PICP installation. They visited the demonstration site at the Boise Watershed Environmental Center and watched a city water truck release a torrent of 10,000 gallons onto the paver installation. "The water just disappeared; didn't puddle, didn't run off," Duggan says of the experience.

Duggan's team also visited PICP in Truckee, CA, near Lake Tahoe that had weathered five years of heavy snowstorms and snowplowing with no complications. That visit removed any concerns about snowplowing, he says. Another benefit to PICP use is that Boise does not use sand to treat icy downtown streets, which can clog PICP joints, says Ward.

This perfect storm of events and local readiness made the timing right for a large-scale permeable project in Boise, Ward explains. "Nothing of this size had been done before in Boise, and 10 years ago we probably couldn't have convinced [stakeholders] to do this, but everyone is moving in the direction of sustainable design now."

INSTALLING THE SYSTEM

With questions and concerns answered, construction started in April 2012. The design plan specified grading to direct runoff from the larger development (currently in a phase-two stage) to the parking lot's 39,000 sf (3,600 m²) of permeable pavers, including roof drainage to the paver surface and subsurface. A geotechnical engineer using ICPI guidelines designed for anticipated vehicular traffic.

The PICP is set back from the Whole Foods Market store by an asphalt drive lane. Landscape beds with native plants separate 16 PICP parking areas. Ward says one lesson learned was the amount of labor associ-

VISIT ***www.interlockdesign.org*** for more photos from this project.

ated with compaction needed along the perimeter of each stand-alone paver bed. "While the current design is aesthetically pleasing, another option would be to decrease all of that perimeter work by keeping the same total area of pavers but limiting the number of [stand-alone] areas."

The design used tan-colored pavers measuring 5.5 x 11 x 4 in. (14 x 28 x 100 mm) thick, machine installed in a herringbone pattern by local installer Northwest Hardscape Specialties. Six-inch (150-mm) wide flush containment curbs divided the pavers from the asphalt driving lanes. Raised curbs separate pavers from the landscaping beds.

The system is designed so that if flooded, water will flow away from the building foundations, says Ward, though the large PICP surface area combined with the subsurface containment makes this scenario highly unlikely. The design also allayed retailer concerns about shopping cart rattle, with much of the cart "roll" time being on the asphalt drive lanes, says Duggan.

Post-installation, the team excavated the paver system in the lot's handicapped parking stalls to install concrete, per ADA requirements. Moving, stockpiling and replacing the paver system's layers was a seamless process, Duggan says.

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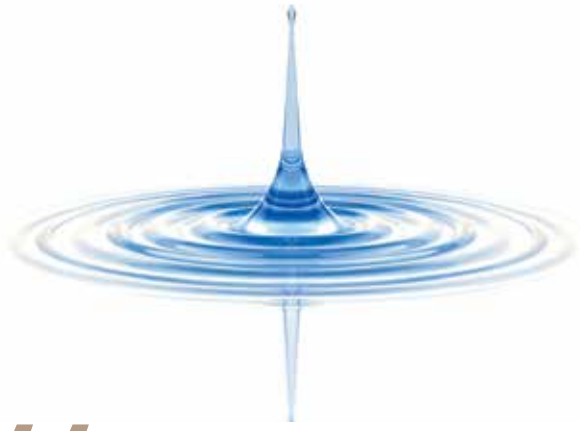
The Whole Foods Market store design, including the permeable lot, won two Green Globes awards from the Green Building Initiative, as well as the 2013 Boise Building Excellence Award in the Best Sustainable Projects category.



> We are really quite pleased with it. It turned out to be a competitive installation and it solved the problem we had to solve. We've had no issues with maintenance. It's worked."
>
> —Rick Duggan, director of design and construction, Schlosser Development Corp. (SDC)

AWARD-WINNING DESIGN

The lot performed well in its first year, weathering an icy winter that included snowplowing, says Duggan, whose company also maintains the property.

In the end, he says SDC got more than its money's worth from the paver system, which accounted for about six to eight percent of total construction costs and four percent of the $6 million in total project costs.

"We are really quite pleased with it," says Duggan. "It turned out to be a competitive installation and it solved the problem we had to solve. We've had no issues with maintenance. It's worked." The Whole Foods Market store design, including the permeable lot, won the 2013 Boise Building Excellence Award in the Best Sustainable Projects category, as well as two Green Globes awards from the Green Building Initiative "demonstrating excellent progress in the reduction of environmental impacts and use of environmental efficiency practices," according to design firm CSHQA. CSHQA was so impressed by the experience that it has since installed a similar permeable concrete paver system in its new, sustainably-designed Boise headquarters.

PERMEABLE PAVER SECTION SPECS*

Design: Pavers flanked by concrete edge restraints

Pavers: Permeable interlocking concrete pavers; 5.5 x 11 x 4 in. (140 x 280 x 100 mm)

Paver color/texture: Venice

Paver pattern: Herringbone

Cross slope: Varies from 1 to approximately 4 percent directing large event runoff to the center of the paver areas and limits bypass to the next downstream paver area.

Bedding course and joint filler: 2 in. (50 mm) thick No. 8 aggregate

Base/Choker course: 4 in. (100 mm) thick No. 57 stone

Subbase: 14 in. (350 mm) minimum thickness No. 2 stone required for structural support; 25 percent of the paver area required 17.1 in. (430 mm) thickness for storage volume.

Liner materials: 36-mil polypropylene geomembrane on all sides from just below the surface to the bottom of the No. 2 stone. Boise required liners to prevent infiltration "short-circuit," forcing the water to pass through the required layers.

Geogrid material/make: STF Synteen SF12 Biaxial Geogrid—inhibits migration of subbase aggregate into the sand subgrade.

Monitoring system: Boise required 8-in. (200-mm) perforated pipe monitoring wells with cast iron caps for the paver areas that received roof drainage by pipe rather than by surface infiltration. About two-thirds of the Whole Foods Market building, the Walgreens and the future building pad south of the Whole Foods Market building are handled this way to prevent nuisance drainage for store patrons.

Compliance requirement: 3 ft. (1 m) separation from the bottom of the subbase to the groundwater table—a Boise requirement for subsurface infiltration facilities.

*Specs courtesy of CSHQA

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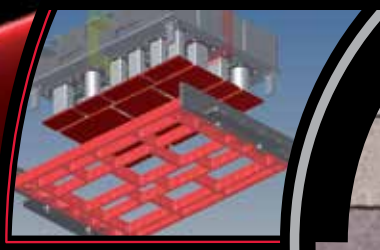

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By Meredith Landry

Beach Community *gets a* Surface Facelift

LONGEVITY, COST AND AESTHETIC APPEAL MAKE CONCRETE PAVERS THE BEST CHOICE

250,000 pavers were needed to surface the 45,000-sf (4,180-m²) parking lot of Spinnaker Condominiums in Vero Beach, FL.

When the 13-year-old asphalt parking lot at the Spinnaker Condominiums in Vero Beach, FL, needed replacement, the homeowners association considered three options: repave with asphalt, go with poured concrete or install interlocking concrete pavers.

The decision was unanimous: concrete pavers.

The deciding factors? Life cycle, cost and appearance, says Steve Smith, president of the homeowners association and a full-time resident at the 59-unit Spinnaker, located about 140 miles up the coast from Miami.

The asphalt would likely require replacement in another 13 years, compared to the pavers' average 30-year life cycle; poured concrete was beyond their budget; and the pavers are aesthetically appealing, Smith says. "All eight board members also agreed on the color and pattern of the pavers, and we never agree on anything," he says.

> "Everyone is thrilled with the final product. It's just beautiful."
>
> —Steve Smith, president of the Spinnaker Condominium homeowners association

A FORTUNATE DISCOVERY AND CHALLENGES

Smith and his board hired Gulfstream Hardscapes and Garages, LLC—an ICPI member company with an ICPI Certified Installer on staff, also headquartered in Vero Beach—to complete the project. The work to resurface the 45,000-sf (4,180-m²) lot started in late June 2013 and lasted through August, when average temperatures soared above 90 degrees with uncomfortably high humidity.

But the heat wasn't the biggest challenge, says Paul Engel, Gulfstream's founder. Working in such a confined space, an oddly-shaped 150-car lot, made maneuvering difficult. "Only 20 percent of the residents were living there during the project because most 'snow birds' travel north for the summer," Engel says. "But we still had to constantly move cars around, and go in and out of the same tight entrance. Even delivery folks had to park outside the entrance and bring materials in by hand."

Fortunately, laying the groundwork for installation was easier than expected. When Engel's crew began tearing up the asphalt, they discovered that the existing base material was not only suitable, it was thicker than required. "When they built the original project back in 1979, the contractor installed well over 8 to 12 in. (200 to 300 mm) of really good base rock," Engel says. "So at the time of our asphalt demolition, we barely scratched the old base." Because of this solid base, Engel and his team opted for interlocking concrete pavers.

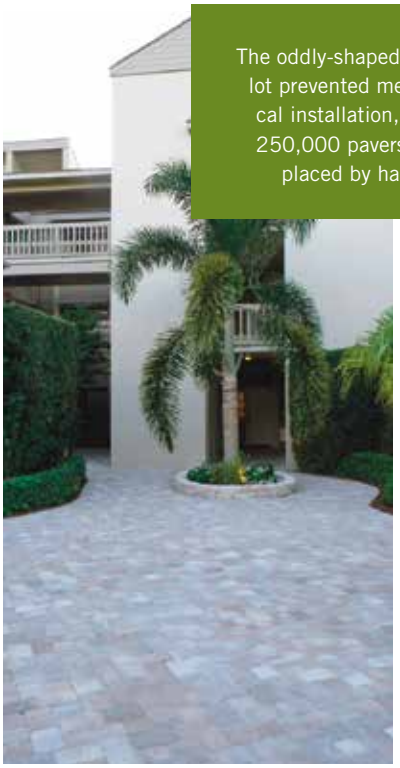
Proper drainage is critical when it comes to installing pavers in beach areas because of the high water table,

Continued on page 18

IN TOTAL, GULFSTREAM INSTALLED MORE THAN

250,000

individual pavers.



The oddly-shaped parking lot prevented mechanical installation, so all 250,000 pavers were placed by hand.

Light grey, tan, coral and light blue 6 x 6 in. (150 x 150 mm) and 6 x 9 in. (150 x 220 mm) pillow-top pavers complement the condos' color palette.

PHOTOS COURTESY OF PAUL ENGEL, GULFSTREAM HARDSCAPES

the level below which the ground is completely saturated with water. Without proper drainage, soil becomes marshy and unable to support pavers. The proper soil conditions, according to Engel, are either sandy or compactable fill.

As long as the pavers rest on a well-compacted base and have proper edge restraints to prevent pavers from shifting over time, they are perfectly suited for beach communities. In fact, 75 percent of the work Gulfstream did last year came from installing pavers in and near Vero Beach, an island community through which a significant portion of the Intracoastal Waterway runs.

In total, Gulfstream installed more than 250,000 individual pavers. A white cement colored the base, in addition to light grey, tan, coral and light blue 6 x 6 in. (150 x 150 mm) and 6 x 9 in. (150 x 220 mm) pillow-top pavers placed in a T-pattern.

The decision to install the job manually was largely due to the tight workspace. The site could not accommodate a machine to lay the pavers. In addition, the homeowners wanted all of the parking stripes demarcated with different color pavers, so this made hand installation the better choice.

PAVER POPULARITY

While the construction industry in the region has suffered over much of the last decade, it has recently seen some improvement with new subdivisions and larger commercial and residential projects. Fortunately for Gulfstream, many of those jobs include interlocking concrete pavements and hardscapes, Engel says. Pavers are common in the region because they are less expensive in south Florida due to lower labor costs and competitive pricing from several nearby manufacturers.

Another reason for the popularity of concrete pavers is that the base conditions are unique to the region. "Once you dig down in most areas we hit the subgrade known as coquina, which is the same product mined out of the ground for base rock and screeding sand, as well as sand used in concrete," Engel says. "It's not as hard as a granite, but it compacts well and is very stable." Pavers provide a natural look that complements the earthy tones of a beach landscape as well as local architecture, which is another reason for their popularity.

Spinnaker residents all agree that the new parking lot is clean, complements the building and its surroundings, and has increased property values.

"Everyone is thrilled with the final product," Smith says. "It's just beautiful." O

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By Andrew Conner

Sifting Through Proposed New Silica Rules

PROPOSED OSHA AMENDMENT COULD BE COSTLY

In August 2013, OSHA released a new proposed rule for respirable crystalline silica levels on job sites. The proposed rule would replace the current one by creating more stringent standards on the level of silica to which workers can be exposed in a day. OSHA regulations issued in 1971 set the permissible exposure limit (PEL) at 100 µg/m³ per 8-hour day, while the proposed regulation would set the new limit at 50 µg/m³, with an "actionable limit" of 25 µg/m³. An actionable limit means that concentrations exceeding this level require action to reduce exposure such as tightly-fitted dust masks, dust collection equipment or other means. If passed, significant additional cost increases would very likely result.

Installers used vacuum-equipped, practically dustless saws at the Hardscape North America 2013 Installer Championship.

WET CUT WOES

One common method to comply with this standard is by using wet-cut saws when cutting pavers. Wet-cut saws reduce silica dust by applying water to the blade during cutting. In addition to cooling the blade, water also lubricates the cutting surface, which allows the dust to be captured and form slurry. Even though it removes the threat of silica dust exposure, many professionals dislike wet cutting because the slurry can stain pavers and other surfaces when dried. The slurry can also dampen the bedding layer under the pavers, forcing the contractor to remove them and replace the wet, dirty sand.

DRY CUT TO THE RESCUE?

In response to these concerns, dry cutting is often the preferred choice for professionals. However, in order to comply with OSHA guidelines, the silica dust from cutting requires reduction. Vacuum-equipped saws solve this problem. However, many vacuum-equipped saws are not amenable to in-place cutting. Thus, the productivity and efficiency is reduced because a paver for cutting has to be marked, moved to the saw, cut, and then placed in the laying pattern.

One way to avoid this hassle is by using a hand saw with a vacuum; however, an electric power

source is usually needed to operate an attached vacuum hose, and these saws are also heavier. Gas-powered saws with vacuum attachments have recently become available, and this technology is still developing.

Another challenge working with vacuum-equipped saws is their need for routine maintenance to work correctly, in particular, keeping air filters clean and replacing them regularly.

Masks are another way to protect workers doing dry cutting. Unfortunately, there isn't enough data to say with certainty which masks work best, or how stringent the filtration system should be to meet OSHA requirements. However, cloth masks may not be sufficient in substantially reducing exposure.

THE FUTURE OF CUTTING

While wet cutting and vacuum-assisted dry cutting have drawbacks, both will most likely keep a jobsite in line with OSHA's current PEL. Whether these methods will ensure compliance in light of the proposed standards is not as clear.

Some uncertainty is due to the difficultly of determining the level of respirable silica on a jobsite. Currently there is no easy way for contractors to test exposure levels, which means that only an industrial hygienist can take accurate air quality measurements and determine the exposure levels.

No matter how you look at this issue, if the new rule is enacted as proposed, it will affect the bottom line of any concrete paver-cutting contractor. Not only does the testing and possible necessity of new equipment increase costs, but loss of productivity and related costs are also a concern. Due to the lack of reliable data currently available, the costs required to meet these rules are not known. However, contractors should use every currently available measure possible to minimize silica dust exposure for employees on job sites.

VISIT ***www.icpi.org/silica*** for more information about this issue.

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the MAIN events

2014

Feb. 26		
Webinar	*Improving Paver Installation Efficiency*	
Feb. 26		
Webinar	*Guide Specifications for Interlocking Concrete Pavement*	
Mar. 24-29		
New Orleans, LA	*ICPI Annual Meeting and 20th Anniversary Celebration*	
Sept. 10-13		
Grapevine, TX	*ICPI 2014 Summer Meeting*	
Oct. 22-24		
Louisville, KY	*Hardscape North America*	

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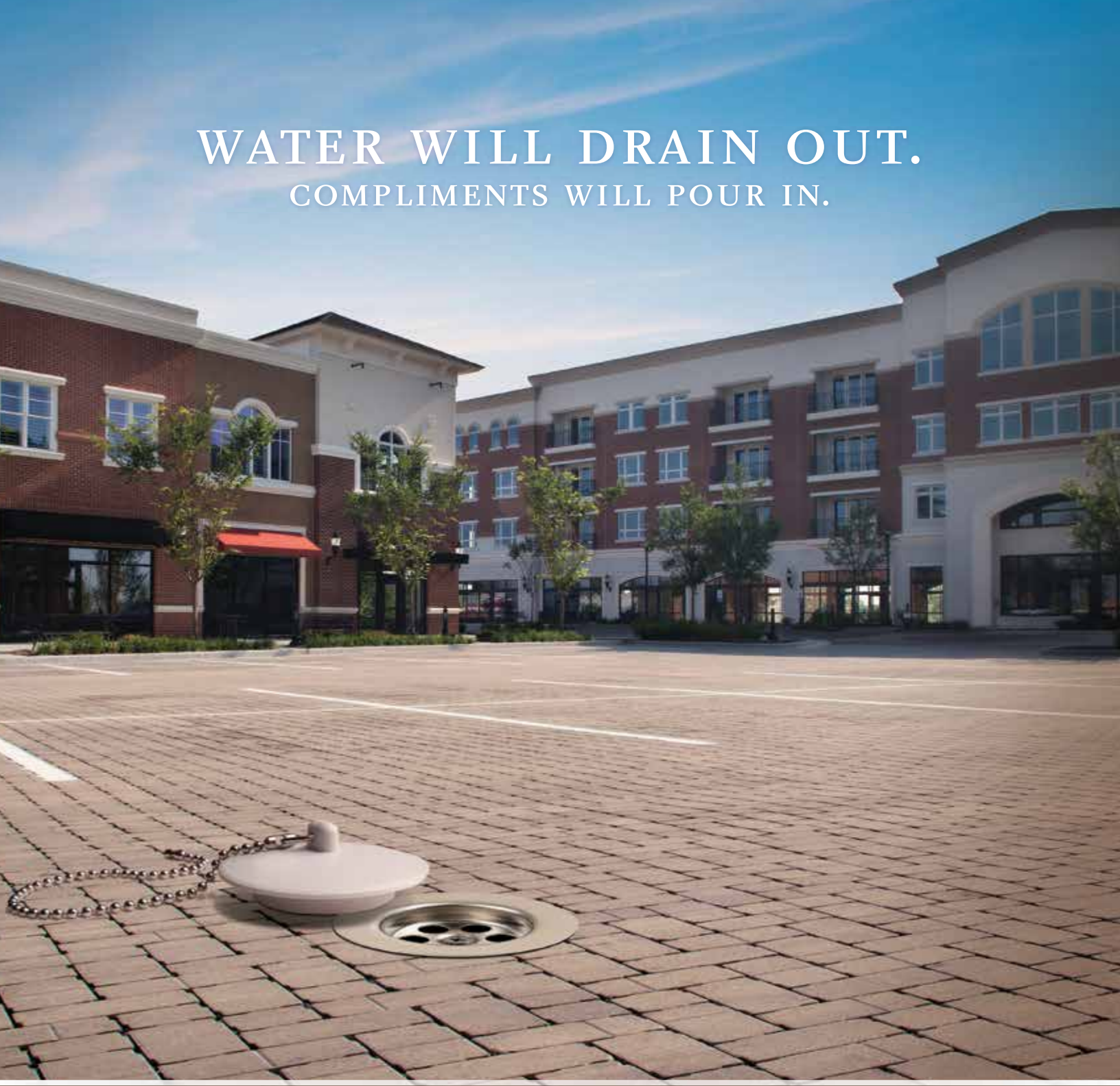

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