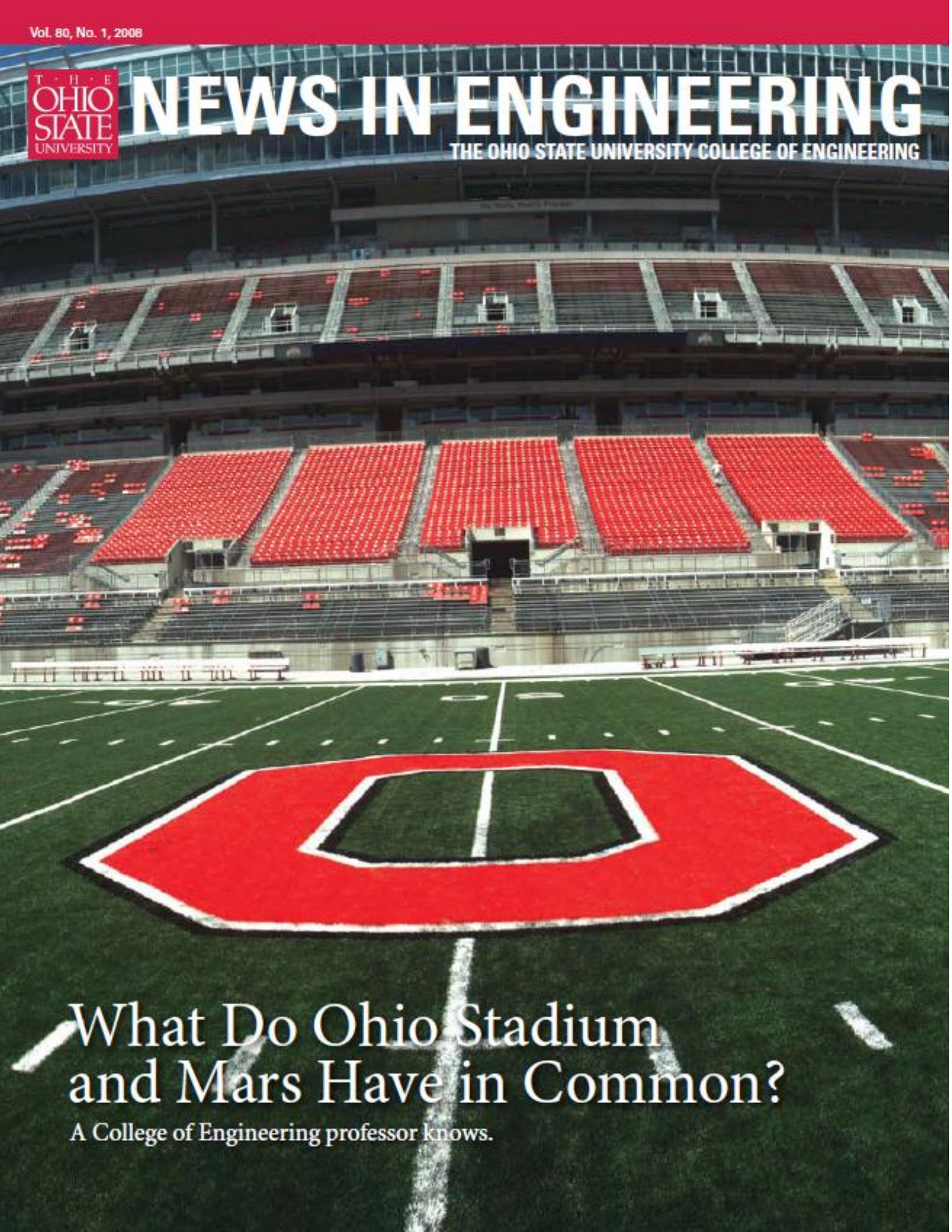




# NEWS IN ENGINEERING

THE OHIO STATE UNIVERSITY COLLEGE OF ENGINEERING



## What Do Ohio Stadium and Mars Have in Common?

A College of Engineering professor knows.

## Breaking Ground: Collaboration Brings Eco-friendly Material to Ohio State

By Rachel Lichtenfeld

While many riders use the new campus motorcycle parking lot, installed in August 2007 outside of Caldwell Laboratory, few realize its significance: It is made of eco-friendly concrete and is the first project of its kind at Ohio State.

Research scientist **Tarunjit Butalia** and professor **William Wolfe**, both in civil and environmental engineering and geodetic science, as well as representatives from the concrete industry, discussed the environmental and economical benefits of the concrete, called pervious, with the university administration.

Pervious concrete leaks water like a sieve, allowing water to return to the ground and eliminating the need for a drainage system. It is created by leaving most of the sand out of the concrete mixture, which is held together with cement, and potentially replacing some of that cement with fly ash, a coal combustion solid byproduct. The absence of sand creates small holes that allow rainwater and melted snow to flow quickly through the concrete. Beneath the concrete, water is detained in an aggregate reservoir until it passes into the soil or is released at a designated rate into a storm drain system.

"For every ton of cement in concrete that you replace with fly ash, you avoid 0.8 tons of CO<sub>2</sub> emissions," Butalia says. "And with pervious concrete, you're recharging the groundwater instead of having standing water, which can be a health hazard."

The pervious concrete motorcycle lot will be monitored to see how well it performs, especially during the freezing and thawing of winter weather. If successful, the concrete may be used in other parking lots on campus as early as 2009.

Sarah Blouch, Ohio State's director of Parking and Transportation, says the collaboration between administration and academia is fruitful for both parties.

"We like it because we can tap into a knowledge base that we don't have without hiring a consultant," she says. "And I think the academic departments like it because they can tap into real-life situations for use in the classroom."

Bo Zhang, senior engineer of renovation and construction for Ohio State's Department of Facilities Operations and Development, says Anderson Concrete Corp. donated the concrete, Ohio Ready Mixed Concrete Association provided the use of its construction equipment and Decker Construction of Columbus discounted labor and materials to construct the motorcycle lot. Ohio State's Facilities Operations and Development did the in-house design and supervised construction, and Ohio State Transportation and Parking contributed funding.

"The most exciting part of this project was the opportunity for me to work with the professors from the College of Engineering," Zhang says. "Dr. Butalia pointed the potential donors to us, and Dr. William Wolfe shared student papers on pervious concrete and its potential applications on campus. I was amazed at how insightful the students were. I am looking forward to having some students involved with us to monitor the post-construction performance of this very first application on campus."

Warren Baas, vice president of Ohio Ready Mixed Concrete Association, says his association takes every opportunity to help students at Ohio State. Baas, '69 ME, says the association has held concrete seminars and guest lectures with students and assists students with the concrete canoe competition each spring.

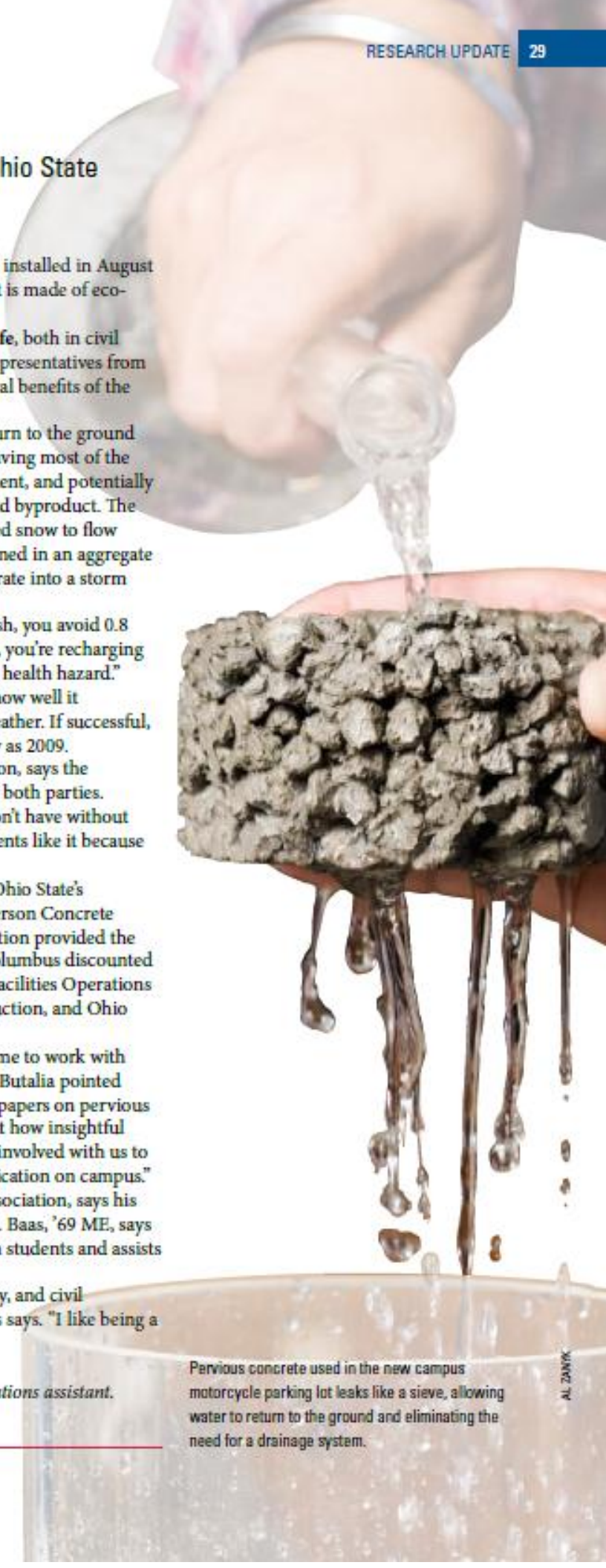
"I feel like we've had a very good relationship with the university, and civil engineering in particular, because of the nature of our work," Baas says. "I like being a part of the OSU family."

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Pervious concrete used in the new campus motorcycle parking lot leaks like a sieve, allowing water to return to the ground and eliminating the need for a drainage system.