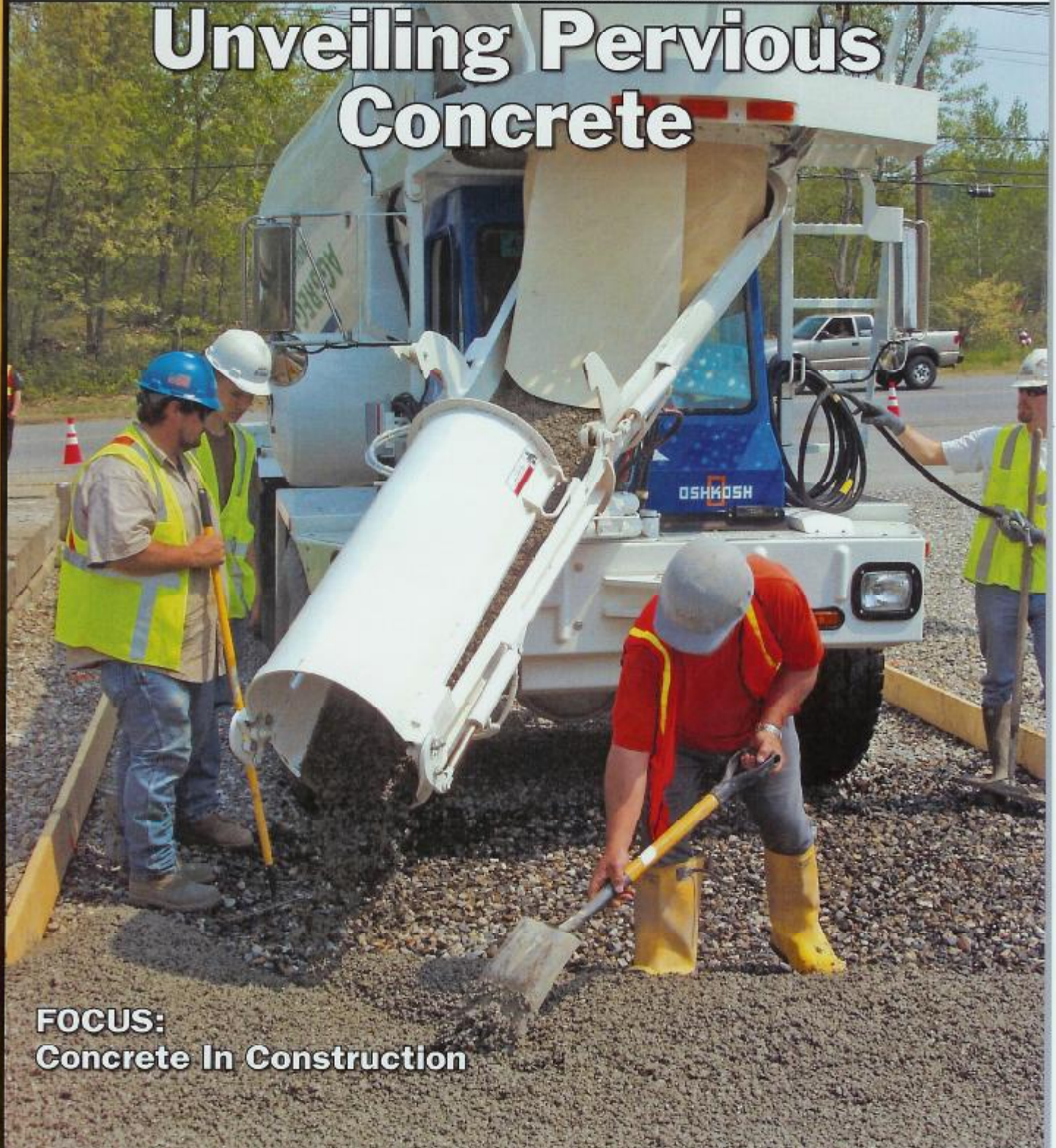


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Unveiling Pervious Concrete



FOCUS:
Concrete In Construction



A steel pipe roller levels and compacts high-void ready mix.

A Sutton, Mass., pavement demonstration conducted as part of an industry seminar provided designers, contractors and materials producers with important tips on using pervious concrete, a building material fast gaining recognition for its stormwater management and sustainable characteristics.

Held at the Sutton facility of Aggregate Industries Northeast (AIN), the seminar and demonstration was sponsored by The Massachusetts Concrete & Aggregate Producers Association Inc. (MaCAPA) in cooperation with AIN, Worcester Polytechnic Institute and the University of Rhode Island Transportation Research Center.

Until recently, pervious concrete, otherwise known as porous or permeable concrete, was relatively unheard of locally according to Shawn Legein, executive director of MaCAPA, who cited a few "test patches" that have been installed at various locations in Massachusetts.

While reportedly first used more than 150 years ago, pervious concrete has not seen widespread use in New England, but this is expected to change as designers and contractors increasingly call for the material due to its environmentally friendly characteristics. In line with this, producers are beginning to promote the concept to concrete contractors and designers as a way to help construction projects achieve

certification under LEED, the Leadership in Engineering and Environmental Design rating system created by the U.S. Green Building Council.

Typically, the use of pervious concrete in the U.S. has been for the most part limited to low-traffic-volume pavements, but there have been applications for parking lots, tennis courts and as base for high-volume pavements. In Europe, the material has even been used for structural applications, for example, in bearing walls for buildings up to 10 stories tall.

Unlike traditional concrete, pervious concrete has a significant amount of interconnected voids – anywhere between 15 percent and 35 percent. Stormwater percolates rapidly through pervious concrete and into the underlying subgrade

The use of **pervious concrete** is among EPA's Best Management Practices for managing **stormwater runoff.**



Above: Another view of pipe roller shows its screed action as designers and contractors look on.



Left: A single pipe roller provides the finishing touches just before crew places plastic sheet over material for curing.

Below: Bob Banka, (blue shirt, back to camera) addresses group of architects, engineers, contractors, and materials producers.



and soil. This is seen as beneficial in recharging groundwater, reducing stormwater runoff, and meeting U.S. Environmental Protection Agency stormwater regulations, according to the National Ready Mix Concrete Association (NRMCA). The group points out the use of pervious concrete is among EPA's Best Management Practices for managing stormwater runoff, and eliminates the need for retention ponds, swales and other stormwater management devices. And this leads to lower project costs.

The Sutton demonstration was led by Bob Banka, senior sales representative of BASF Admixtures Inc. Banka showed how easily water flows through pervious concrete by emptying a bucket of water on a previously placed and cured section. Within seconds the water percolated through the material. Typically, depending on the water/cement ratio, the size of aggregates and amount of fly ash and additives used in the

Unveiling



On a previously cured section, Banka demonstrates how rapidly water percolates through pervious concrete.



Above: Shawn Legein, MaCAPA executive director, addresses seminar as Mark Nikitas of Aggregate Industries and Bob Banka of BASF look on.



Left: Roberto Huet, president of Aggregate Industries Northeast Region, attends demonstration project.

mix, water will flow through the concrete at the rate of between 2- and 8-gallons per square foot per minute. Strength for pervious concrete can vary anywhere between 400 psi and 4,000 psi, while the material is lighter than regular concrete, tipping the scales at between 100 and 125 pounds per cubic foot.

For the Sutton demonstration, Aggregate Industries supplied the ready mix, a blend of paste made of portland cement and water, 3/8-inch pea stone and fly ash. No sand is used to make the material. Banka explained that using smaller aggregates reduces the number of interconnected voids and impedes the flow of water through the material.

He also cautioned that the material should not be installed in "hot spots" where there might be fuel spillage. And it's critical, since water content of pervious concrete needs to be controlled within a narrow range, that the area where it is to be installed is wet down thoroughly just prior to placing the material. This prevents water from being removed from the mix too quickly.

Since pervious concrete cannot be pumped, it was chuted directly from Aggregate Industries' Oshkosh front-discharge truck into forms set up on a stone base in the parking area chosen for the demonstration. Concrete workers for the demonstration were volunteers from several construction companies, including: Hathaway Concrete of Richmond, R.I.; S&F Concrete of Hudson, Mass.; Marguerite Concrete Inc. of Franklin, Mass.; and S&S Concrete Floors of New Ipswich, N.H.

Once the concrete was leveled, workers used a steel pipe roller to compact the material. Immediately after compaction, the crew covered the material with plastic sheets for the curing process.

Prior to the demonstration, Banka had trained the workers in finishing pervious concrete, and tested them for designation as "Conditional Pervious Finishers For MaCAPA Certification," a program related to the NRMCA Pervious Concrete Contractor Certification program. Developed by the group for contractors, the program was modeled after American Concrete Institute's Flatwork Finisher Certification, and is designed to be administered locally by local sponsoring groups in conjunction with planned training sessions or demonstrations of pervious concrete placement. At least 20 local groups throughout the U.S. have expressed interest in administering the certification program, including MaCAPA.

Under the MaCAPA program, Executive Director Shawn Legein observes Conditional Pervious Finishers on actual pervious concrete installation projects and assigns credits for the square footage finished. Finishers need credit for a total of 10,000 square feet, and achieving at least 80 percent on a written exam, to qualify for certification. For more information on the program, readers may contact Shawn Legein at (877) 407-8800, Bob Banka at (802) 891-1089, or Mark Nikitas at (781) 941-7200 or (781) 589-1045. ■

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