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Paving crews pour a batch of pervious concrete on a residential roadway in Shoreview. The project is gaining a lot of attention throughout the country. (Staff photo: Bill Klotz)



Great moments in Concrete

'Pervious' technology on Shoreview road should drain storm water, control pollution

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The eyes of the world, it seems, are on a \$1.4 million paving project in Shoreview.

Construction groups, civil engineers and public works officials are touring the job site. Just the other day, a group from Sacramento, Calif., flew in to take a look at the project. Media types from Miami to Bakersfield are asking questions. There's even an eye-catching video on Youtube.

"We have been talking to people from New York to California about this thing," said Mark Maloney, Shoreview's public works director. "It is very unusual to be involved

with an infrastructure project that has that much national attention."

The fuss is about "pervious concrete," a green technology that allows water to pass through instead of running off the surface, thus reducing the need for expensive storm water retention ponds and other infrastructure. Pervious concrete also provides a natural filter for polluted "run-off" – such as petroleum products – that would otherwise flow unimpeded into lakes, streams and rivers.

Pervious concrete isn't new; it has been used in Minnesota for at least five to 10 years,

Paving history

What: Largest pervious concrete pour in Minnesota

Where: ¾ mile residential roadway in Shoreview

Cost: \$1.4 million

Schedule: Construction began in July; set for completion this week

Benefits: Reduces storm water runoff to lakes, rivers and streams, reduces the need for storm water ponds, catch basins, and pipes

Project team leaders: City of Shoreview, North Country (subcontractor), Veit Cos. (general contractor), Cemstone (pervious concrete supplier)

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mostly on walkways, parking lots and the like. However, Shoreview is using the technology on a three-quarter-mile residential roadway – the first time, in Minnesota at least, that this type of concrete has been applied to a project of this size.

The project, which began in July and is just wrapping up, features a seven-inch bed of pervious concrete on top of 18 inches of aggregate.

The concrete doesn't contain fine sands. Instead, it's made up of a "concrete matrix" that's specially designed to allow water to pass through, according to Mendota Heights-based Cemstone, which is supplying 1,800 cubic yards of concrete for the project.

"The water goes through the pervious concrete, gets in this layer of crushed aggregate, and naturally filters into the soil," said John Lee, a sales manager with Cemstone. "For lack of a better analogy, it looks like a Rice Krispies bar."

It's not a cookie-cutter concept. In fact, the concept runs afoul of the traditional view of concrete used in cold climates.

In northern climates, the industry has typically designed concrete to keep water out, thereby preventing freeze-thaw damage. So it's not surprising that there's some skepticism about the future of pervious concrete on Minnesota.

The jury is still out on the Shoreview project; a lot more will be known about its durability after it gets past its first winter.

But Lee said the early indications are promising. In a recent demonstration that's documented on Youtube, crews put the concept to test by dumping 2,000 gallons of water on a finished portion of the street.

The water "disappeared in about a minute," according to Lee.

"When we go to the site, appearance-wise, the concrete looks remarkably well," Lee added. "The contractor [Ramsey-based North Country] has done an absolutely fabulous job. The appearance looks very uniform. As far as driving on it, and walking on it, it feels like a regular pavement."

The pavement isn't cheap; its upfront cost is about 50 percent more than traditional concrete, Lee noted. But he hastened to add that it's cost-effective considering that "you are getting a storm water management system" instead of just a driving surface.

Maloney concurs.

"When you net out what you don't have



Crews put the finishing touches on the pervious concrete pour in Shoreview. The finished pavement "looks like a Rice Krispies bar," said John Lee, a sales manager with Cemstone, the project's pervious concrete supplier. (Staff photo: Bill Klotz)

to build – mainly ponds and piping and catch basins and manholes – when you consider the cost of those things, it is almost a break-even," Maloney said. "We would not be doing the project if that weren't the case."

As more contractors become familiar with the product, and learn how to apply it with the proper tools and techniques, the price is likely to come down.

Maloney said the city's construction bids specified that experience with pervious concrete, including the proper certification, is a must.

Ramsey-based North Country is a paving subcontractor for general contractor Veit Cos. on the project.

"It's the largest project we as a company have completed as far as pervious goes," North Country project manager Cliff Swenson said. "It's a pretty big undertaking for us."

From a construction standpoint, pervious concrete differs from standard concrete paving, Swenson noted. Tools and techniques are different. For example, crews must take care not to over-compact,

a mistake that could prevent the all-important water infiltration.

The curing is "really, really important," Swenson said.

"The process – it is pretty critical. You don't have a lot of time. You need to get it down, rolled and cured as quickly as you can."

Swenson credits Shoreview officials for "taking a risk with a fairly new material, even though we have been working with it for years. They have put a lot of faith in us and the supplier and general contractor, Veit, to give them a good product.

"And we feel we have. ... We want to make sure it's successful, not just for ourselves, but we feel we are working for the industry as a whole."

Maloney said the project has "evolved into a partnership that is very, very different than the typical model that has delivered infrastructure. It has been a very positive experience, with all these different market sectors pulling in the same direction to advance something.

"For a city of our size, we don't normally get involved in projects where that's the case."