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Asphalt option getting a tryout 'Rollcrete' may provide paving answer

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Cities and counties are looking for alternatives to asphalt as the price soars for the oil-based material and threatens to bring paving projects and contractors skidding to a halt. The city of Indianapolis may have just found one viable alternative that goes down like asphalt: roller-compacted concrete, or "**rollcrete**."

City engineers recently signed off on the use of **rollcrete** in the rebuilding of residential streets between Troy Avenue and Southeastern Avenue, near the Marion County Fairgrounds.

Starting on Kercheval Street, workers from Whitestown-based Calumet Civil Contractors loaded an asphalt paving machine with the material that looks as dry and lumpy as volcanic ash. Yet, when rolled, it mimics conventional concrete in appearance and hardness.

More important, it took the place of at least 4 inches of asphalt—except for a 1-1/2-inch topcoat of the familiar black stuff that will be applied to smooth the ride and improve appearance.

On a project like this, **rollcrete** probably costs 15 percent to 25 percent less than asphalt, figures Steve Sweet, a Calumet manager. **Rollcrete** is often used in contemporary dam-building for its quick-drying properties. Nearby cities such as Columbus, Ohio, have used it for years in various projects.

"We are looking across the board, looking at different ways to approach some of our projects," said Steven Hardiman, spokesman for the Indianapolis Department of Public Works.

Also driving innovation are paving contractors who have been forced to swallow asphalt costs that have risen markedly since they bid a project a year or two earlier.



Asked for the latest price-per-ton of the liquid component used in asphalt, Mike McGill checked his price sheet like someone checking the bottom of their shoe after walking the dog: \$816 versus around \$365 a ton year ago—a 123-percent increase.

By contrast, gasoline pump prices in the Midwest rose 24 percent over the period.

"[Asphalt] is not coming down yet, either," said McGill, a sales and project manager at Indianapolis-based paving contractor Grady Brothers.

"I could tell you what cement is going to cost next year, within 2 or 3 percent. With asphalt, I can't tell you what the cost will be tomorrow," said Calumet's Sweet.

High asphalt prices are putting the brakes on paving plans statewide. For example, earlier this summer, in Evansville, Vanderburgh County commissioners lopped seven miles off of road repairs, blaming rising asphalt prices.

"We just bid a little bridge project last month and the price we got was 30 percent above our engineers' estimate," said Bill Williams, public works director and highway engineer for Monroe County. "Our asphalt price alone went up a good 50 percent."

Even in the fast-growing Hamilton County town of Fishers, engineers are looking into asphalt alternatives, including **rollcrete**.

"We're looking at what the best options would be" for the material, said Jeffrey Heiking, director of engineering and public works. Heiking said he'd even be curious about an all-**rollcrete** surface—without the asphalt veneer.

Heiking said some private developers might be interested in **rollcrete**, particularly in new residential developments. Typically, builders construct roads with a base material of asphalt, with a topcoat applied only after construction winds down. But that base asphalt often takes a beating from construction equipment, which adds to the cost.



Sweet said some residential developers have told him they can no longer afford to use asphalt, as lenders won't commit to financing as the price continues to rocket.

Old standby

But local governments are also giving traditional concrete a second look.

A few years ago when Fishers rebuilt parts of Allisonville Road and 116th Street, concrete was considerably more expensive to use, in part because of the added labor of forming and finishing. In the end, though, concrete was chosen for those busy roads for its longevity. Concrete can last 30 years vs. 20 or less for asphalt.

Fishers chose concrete recently for a new project that typically would've been paved with asphalt—a roundabout, at State Road 238 near Interstate 69. Asphalt prices have risen so much higher relative to concrete that the latter carried only about a 7-percent premium over asphalt. Asphalt's rise has trimmed in half the premium paid for concrete.

"Before, concrete was too high, but it's getting to the point we need to look at that" again, said Williams, vice president of the Indiana Association of County Highway Engineers and Supervisors.

Cost comparisons between conventional concrete and **rollcrete** are a bit more difficult. On the plus side for **rollcrete**, there's no need to erect forms, to buy and tie rebar, or to trowel the surface.

On the other hand, local contractors such as Calumet are still learning how to work with **rollcrete**, including becoming comfortable enough to recommend it without a thin asphalt topcoat for ride smoothness and aesthetics.

It can be hauled by dump truck and applied with some traditional paving machines, although modifications to the machines might be necessary. Calumet bought a new paving machine, "in the high six-figures," that has an additional roller to create a higher, more desirable pavement density.

Rollcrete can also save time. Conventional concrete takes about a week to cure to reach 90 percent of its strength; the time is just 24 hours with **rollcrete**. Vehicles can start driving on **rollcrete** later that same day. Workers can stand on it immediately after it's applied by the paver.

Calumet estimates that using traditional slip-form paving of a roughly quarter-mile stretch of Kercheval could have taken two days.



"We did this whole road in a little over six hours," Sweet said.

Cost of versatility

Lower price isn't **rollcrete**'s only benefit.

Many asphalt plants close in December, but "I can literally be laying [**rollcrete**] in the dead of winter if the ground is not frozen," Sweet said.

Rollcrete also could be cheaper from the standpoint of road-bed preparation. In some applications, because of

its strength, **rollcrete** can be applied thinner than an asphalt road-meaning less earth excavation, which further reduces cost.

Some **rollcrete** proponents say users of the material might also qualify for government grants based on its environmental benefits, such as the reuse of fly ash, a byproduct of burning coal to fuel electric generating plants.

McGill said Grady Brothers hasn't yet decided whether it will offer **rollcrete**. But paving contractors clearly remain under pressure in a climate of rising asphalt costs.

Curiosity over **rollcrete** is growing. On the Kercheval Drive project, Sweet said, more than 100 representatives from several municipalities showed up to take a look, plus some from the Indiana Department of Transportation and from competitors.

"We have to have some alternatives [to] still be competitive in the market and still get projects done," Sweet said.