

Concrete vs. Asphalt

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By AP

The longstanding rivalry between concrete and asphalt suppliers is spilling over into the streets of Minneapolis.

Specifically, it's affecting the \$37 million Marquette and Second Avenue South (MARQ2) transit project, which will bring bus lanes, wider sidewalks and other improvements to Marquette and Second avenues from the Minneapolis Convention Center to the post office.

Minneapolis project officials initially intended to pave the transit lanes with concrete and the road surfaces with asphalt, but in the bid documents, they left the door open for either concrete or asphalt road surfaces.

The city received five bids for the project. Concrete -- typically the more expensive commodity -- came within 5 percent of the asphalt price.

It was close enough for the city to go with concrete throughout the two-mile MARQ2 corridor, much to the delight of concrete-industry boosters, who say their product is greener, sturdier and better looking than asphalt.

"We bid this in the spring of last year, and petroleum prices at the time were at record highs," explained Bill Fellows, the MARQ2 project manager for the city of Minneapolis. "I don't know if you would find the same thing today."

"We were encouraged that we were able to do it all concrete, because all else being equal, we do think it is a better product for a transit corridor. But the cost is a big component that everyone has to address in their own setting."

Mendota Heights-based Cemstone is providing 15,000 cubic yards of concrete for the project, which could be completed as early as this fall.

John Lee, an engineer and sales manager for Cemstone, said concrete has traditionally been the product of choice for pavements that carry heavy loads, such as runways and interstate freeways. As the price gap narrows, the concrete industry is seeing more opportunities on smaller projects, he says.

"We have tried to get to that point where concrete is at least looked at. For years, it hasn't been because people have perceived it as being too expensive," he added.

But Richard Wolters, executive director of the Minnesota Asphalt Pavement Association, says asphalt compares favorably to concrete by any measure, including cost, environmental sensitivity and performance.

"There's been a lot of hype going on by the competition as far as professed [economic] advantages," Wolters said. "But we don't see that relative to the true market price and structure."

Asphalt prices have been moderating of late after some steep price hikes a year ago. Last summer, asphalt was up 17 percent compared with summer 2007, and some parts of the country were experiencing increases as high as 40 percent.

During that price run-up, Lee said, concrete became "very competitive" on a first-cost basis.

Concrete backers also make a case that their product is appealing from an environmental standpoint because, among other things, it reduces the "heat island" effect that raises temperatures -- and cooling costs -- in urban settings.

Moreover, many concrete mixtures -- including those used in the MARQ2 project -- include fly ash, a coal-combustion byproduct that otherwise would end up in landfills.

"The engineers have become so comfortable [with fly ash]; they know the benefits of it," Lee said. "Not only from the standpoint of being green, but structural performance. When used properly, it is a great product to put into ready mix concrete."

But asphalt's fans claim many of the same advantages for their product, which -- for example -- can include mixes that reuse discarded roof shingles.

Minnesota is in an ideal position to get good asphalt prices because it has major refineries that supply asphalt materials, as well as good infrastructure and natural resources that can easily transport asphalt and related commodities to the state, Wolters says.

"We have the opportunity to bring asphalt up by the Mississippi River and we have rail connections, and we have pipe connections" from Canada, he said. "Historically, in Minnesota, our price structure has been much lower than the national average."

From an environmental perspective, asphalt has a lot to offer because it's easily recyclable, Wolters says. Asphalt fans also cite a 2005 study from the American Society of Civil Engineers, which shows that the production and placement of hot-mix asphalt requires 20 percent less energy than other pavements.

Wolters says asphalt roads are built to last and are easier to maintain than their concrete counterparts, and he points to a string of national awards the Minnesota Department of Transportation has won for its asphalt pavements.

Awards include a June 2009 "perpetual pavement award" from the Asphalt Pavement Alliance for a two-mile stretch of Highway 36 near Stillwater.

Advances in asphalt mixes, including the emergence of warm mix asphalt, also bode well for the industry, Wolters says. Warm mix asphalt conserves energy because it can be produced at lower temperatures and still get the benefits of traditional hot mix asphalt, he noted.

MnDOT is testing warm mix asphalt at its MnROAD facility near St. Cloud, and some counties are experimenting with it as well.

Lee says concrete is evolving from a technology standpoint, too. For example, high-tech paving equipment such as laser screed technology makes it easier and cheaper to install concrete, he says.

Another issue: In the past, civil engineers have had a tendency to "over-design" concrete mixtures, Lee said. In other words, the tendency was to make the pavement thicker than it needs to be, thus driving up the cost.

But Lee says a standard four-to-five inch thick design for concrete pavement "performs beautifully."

"From a design standpoint, it comes down to comparing apples to apples," he said.

Derek Tompkins, a pavement expert with the University of Minnesota's Pavement Research Institute, says each pavement type has its advantages.

In general, asphalt roadways tend to be cheaper upfront and the roads can usually be opened to traffic more quickly than concrete roadways, Tompkins noted in an email. Moreover, asphalt is "very familiar" to contractors and engineers, and it's usually associated with less "tire-road" noise.

Concrete, however, is "perceived as a better long-term solution," Tompkins wrote. Rehab costs tend to be lower because concrete pavements "do not suffer distresses such as rutting in the wheel paths" or cracking associated with cold temperatures, he noted.

When it comes to cost, "both asphalt and cement binders are expensive, highly engineered materials that are not going to become any cheaper," Tompkins wrote.

The verdict?

There's no cut-and-dried answer to which is better, according to Tompkins. A case could be made for either, depending on the construction time frame, expected lifespan of the roadway, climate, traffic loads, available resources, initial construction budget and other factors.

"The decision between concrete and asphalt is very much rooted in context," he concluded. "And one cannot state which is conclusively 'better.'"

Fellows agrees.

"We struggle with it at the city constantly," he said.

But he hastened to add that, "when all is said and done, you could probably argue" that Marquette and Second will be two of the nicest streets in the heart of downtown.