Bridge

Continued from Page C1

AIT's plans are progressing with the Anson bridge finished, six Maine Department of Transportation bridges up for replacement by 2011, and a bridge in Framingham, Mass., to start construction later this month.

Svoboda has been in talks with other contractors and government officials interested in the bridge technology, which is touted as being cheaper, easier to install, longer-lasting, and better for the environment.

"The acceptability has been beyond our expectations at this early stage," Svoboda said recently. "We're ready to go. But the wheels turn slowly. It's going to be a good two or three years before we can really get a [foothold] in the market."

Why the delay?

It's actually a situation AIT and AEWC knew about all along. Although AEWC researchers say they have eight years of research to back up their technology, the bridge in a backpack is so new that it hasn't yet been examined thoroughly by a key organization, the American Association of State Highway and Transportation Officials, or AASHTO.

A new technology

The bridge technology uses carbon-fiber tubes that are inflated, shaped into arches and infused with resin before being moved into place. The tubes then are filled with concrete, producing arches that are harder than steel yet resistant to corrosion.

Finally, the arches are overlaid with a fiber-reinforced decking and buried under several feet of dirt and sand.

When deflated, each bridge arch fits into a sack roughly the size of a hockey equipment bag — hence the bridge-in-a-backpack moniker — which makes for easy transport. In fact, AIT can send the deflated arches through any standard shipping service.

The life expectancy of the bridges is 75 to 100 years, as opposed to 30 to 35 years for most concrete, wood and steel bridges.

The technology has been put into use first in the Neal Bridge in Pittsfield and now the McGee Bridge in Anson.

For the new bridge technology to spread, however, it needs to be examined by AASHTO, a nonprofit and nonpartisan group made up of transportation officials from all 50 states. AASHTO issues standards for materials such as lumber, steel and concrete. The standards have been in place for decades.

Svoboda said the association does not have an approval system per se, but AASHTO's inclusion of a project in its code of standards and specifications is key to gaining federal contracts, as well as contracts from states that adhere strictly to AASHTO's codes.

"If you want federal funding, [the project] has to be built per AASHTO requirements, and it's very hard to build per AASHTO requirements if you're not part of AASHTO," said Edwin Nagy, an AEWC structural research scientist who was involved with building both the Neal and McGee bridges.

6 DOT bridges to use UM's technology

Following are six Maine Department of Transportation bridges slated for replacement in the next two years that will be rebuilt using the AEWC Advanced Structures and Composite Center's bridge-in-a-backpack technology. The bridges are all in the design phase. The funding is coming from Gov. John Baldacci's Composite Bridge Initiative.

- Grist Mill Bridge, Hampden. Existing span: 51 feet. New span: 62 feet.
- Coopers Mills Bridge, Whitefield. Existing span: 32 feet. New span: 42 feet.
- Royal River Bridge, Auburn. Existing span: 24 feet. New span: 24 feet.
- Mill Brook Bridge, Westbrook. Existing span: 22 feet. New span: 27 feet.
- Stackpole Bridge, North Berwick. Existing span: 45 feet. New span: 72 feet.
- Underwitted Road Bridge, Falmouth. Existing span: two 15-foot spans. New span: 32 feet.

BANGOR DAILY NEWS MAP BY ERIC ZELZ

U.S. Transportation Secretary Ray LaHood, who visited the AEWC facility last month, reiterated that AIT must appear before AASHTO and the bridge specifications likely must be written into the organization's bridge code before the government can award contracts to AIT.

Svoboda said he is hoping LaHood can help AIT schedule the necessary meetings with AASHTO in a timely manner. AIT is also turning to members of Congress, such as U.S. Rep. Mike Michaud of Maine, who is on the House Transportation and Infrastructure Committee, and transportation officials all over the country.

The process is slow, acknowledged AASHTO program director Ken Kobetsky.

"If it's a new product or material, things don't move fast," he said. "And rightfully so. We're dealing with national standards. We would certainly encourage new products and ideas, but when you put something out there, we want to be sure."

But some private contractors and states, including Maine, are moving forward without AASHTO's endorsement. Gov. John Baldacci's Composite Bridge Initiative, which he announced earlier this year, calls for composite materials to be used in 10 percent of Maine DOT bridge construction.

Six DOT bridges, including the Grist Mill Bridge in Hampden, and bridges in Falmouth, Auburn, Whitefield, Westbrook and North Berwick, are scheduled to be rebuilt by 2011 using the new technology.

Svoboda also has been in discussions with a private developer — who happens to be a West Virginia state legislator — about a bridge there. The speaker of the House in Colorado also called AIT for more information about the bridge in a backpack, Svoboda said.

Then there's the 46-foot-long Framingham bridge, which could be finished as soon as the beginning of October. The private project is key for AIT because it may help the company gain a foothold in the Massachusetts market.

"Getting out of Maine is a big step for national approval," Nagy said. "Massachusetts is a pretty serious state from an engineering standpoint. They have a lot of infrastructure, and they also have fairly rigorous rules. Getting approval in Massachusetts is a big step."

Some states targeted

AIT is also targeting states that have the greatest need for bridge replacement. In the aftermath of the 2007 Minneapolis bridge collapse, federal and state bridges underwent an audit to determine their condition, and Svoboda said states such as Oklahoma and Pennsylvania had a high percentage of bridges found to be either structurally deficient or functionally obsolete.

Contractors in other countries aren't beholden to AASHTO standards, and Svoboda said he has been in contact with foreign companies and U.S. businesses with connections in South America, Central America, Africa, Eastern Europe, Australia, South Korea and the Middle East.

Although he won't reveal his intentions for coming bids, Gardner said he intends to follow the technology. And why not? His winning bid for the McGee Bridge was $5,000 lower than that of the second-lowest bidder. Other bids on the project were as high as $126,000.

Without the new technology, Gardner said, his own bid would have been around $100,000.

"I think my company is probably one that would be involved with new technologies," he said. "Maybe we're a little more open-minded than a lot of contractors. Contractors notoriously don't welcome change, like a lot of folks. But this is going to change the way we do business."

In addition to navigating the bridge technology's journey to and through AASHTO, and monitoring AIT's ongoing bridge products, Svoboda is putting his time into assembling more investors and spreading the word about the bridge in a backpack.

"There are so many people out there who say, 'Brit, if you get this [through AASHTO] I'll give you 10 bridges,'" Svoboda said. "The question [the Colorado speaker] had for me is, 'Why would I ever need another steel bridge?' Well, that's the acceptance. People recognize the advantages we're offering."

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