SINGAPORE: There is a new type of concrete in town which is said to be bendable yet stronger and longer lasting than regular concrete, according to scientists from the Nanyang Technological University (NTU) - JTC Industrial Infrastructure Innovation Centre.

Called ConFlexPave, the scientists said the invention allows the creation of slim precast pavement slabs that are thinner than standard precast concrete slabs.

The slimmer slabs allow for quick installation, and halves the time needed for road works and new pavements. It is also more sustainable, requiring less maintenance, the scientists added in a joint press release. Traditional construction of road pavements, which involves steel reinforcement and waiting for the concrete to harden and gain strength, can take up to a week.

ConFlexPave is specifically engineered to have certain types of hard materials mixed with polymer microfibres. The inclusion of these special synthetic fibres, besides allowing the concrete to flex and bend under tension, also enhances skid resistance, the creators explained.

Mr Koh Chwee, Director of Technical Services Division at JTC and Co-Director of the NTU-JTC I3C, said the invention will not only enable the construction industry to reduce labour intensive on-site work, enhance workers’ safety and reduce construction time, it also benefits road users by cutting down the inconvenience caused by road resurfacing and construction works.
Another potential application for the bendable concrete would be in earthquake-prone areas such as Japan. “This material can potentially help to mitigate the earthquake damage to any infrastructure,” said Asst Prof Yang En-Hua, who led the research.

The bendable concrete has been successfully tested as tablet-sized slabs at NTU laboratories. Asst Prof Yang said the challenge with test-bedding this new concrete is ensuring that the mix for the concrete is even when done on a bigger scale.

“If we can use the conventional (construction) equipment, and we can still achieve (the same) fibre distribution, then we will be achieve the same performance that we obtain in the lab,” he said.

It will be scaled up for further testing over the next three years in partnership with JTC – at suitable locations within JTC’s industrial estates and in NTU where there will be human and vehicular traffic, according to the press release. Potential sites could be in Seletar Aerospace Park or Jurong Island.

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