ACE Fiber™ brings cost-effective strength, crack resistance and long life to a busy highway.

Challenge
During the Spring and Summer of 2017, MTO Northwestern Region designed and rehabilitated Highway 130, west of Thunder Bay, ON. As part of this project, portions of the road were built using ACE Fiber to observe and monitor the performance of a new type of fibre reinforced asphalt concrete. The MTO has tried several types of fibre to reinforce asphalt pavements in the past, however, recent advances in materials technology have shown that aramid fibres are well suited for use as reinforcement within the asphalt concrete matrix. To function effectively, any reinforcing material in asphalt pavements must be capable of surviving the very high temperatures of the asphalt hot mix drum or batch plant, be thoroughly distributed through the asphalt mixture, and achieve high tensile strength at very low strains in order to prevent flexible asphalt pavements from cracking in service conditions.

The Ministry of Transportation of Ontario (MTO) continuously strives to improve the quality of paved asphalt highways throughout the province. The Materials Engineering Research Office (MERO), working with the Regional offices, is constantly researching new materials to achieve better roadway performance. One of the persistent problems under regular research is related to cracking of asphalt pavements all through the province.
Solution

The Highway 130 project called for 8.2km to be paved with 1 lift (60mm) of Superpave 12.5mm Hot Mix Asphalt (HMA), PGAC 58-34 (approximately 10,500 tonnes) reinforced with ACE Fiber, and was placed in August 2017 by Pioneer Construction of Thunder Bay.

ACE Fiber is a patented combination of aramid fibre and Sasobit wax that is designed to be continuously fed into the asphalt mixing plant using vacuum suction dosing equipment. Dosing is calibrated to the asphalt plant to continuously provide 65g/t of aramid fibre to the HMA.

Continuous line vacuum feeding of the fibre into the heated aggregate prior to adding the asphalt cement prevents clumping and balling of fibres in the HMA. ACE Fiber can be used in any HMA mix without modifying the asphalt plant equipment or the asphalt mix design.

Installation

The placing and compaction of the fibre reinforced asphalt concrete required no special preparation at the site. Occasionally observed fibrous tendrils on the edges of rakes and shovels were the only indications that there was any difference with the HMA.

Results

At the plant, a trained and certified technician was on-site to ensure the the ACE Fiber was properly mixed into the asphalt concrete. No special modifications were required at the plant to do the mixing and there was no impact at the facility through the use of the line vacuum dosing equipment.

The ACE Fiber reinforced HMA section will be monitored for improved cracking and rutting resistance over the life of the pavement.

The Nilex Advantage

Nilex is committed to unearthing better results. Whether it’s for a civil, resource or environmental project, we offer the latest engineered and technically-superior materials and techniques to save our customers time and money, minimize the need to move or remove earth, and reduce the need for granular materials.

With over 40 years’ experience, a long-standing commitment to the environment and highly qualified staff, Nilex delivers the products and technologies that give clients an economic advantage with environmental benefit.

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