

## **ASPHALT AND BITUMEN QUALITY ASSURED**

World class development and testing facilities enable AECI Much Asphalt and subsidiary AECI Spraypave to offer clients consistently high product quality from design to delivery and placement.

This is no easy task as local laboratories must conform to international best practice while also meeting the specific demands of the local industry, points out Joanne Muller, Manager of the AECI Much Asphalt Gauteng Regional Laboratory.

AECI Much Asphalt's Central Laboratory at the Cape Town head office and its Gauteng Regional Laboratory in Benoni are fully equipped for Sabita's recently updated Manual 35 guidelines on the design and use of asphalt in road pavements. With the focus on Spraypave's product offering, both also offer full performance grading (PG) capability on binders in line with SATS 3208:2019.

To operate optimally and offer industry the best quality control possible, AECI Much Asphalt also offers testing capabilities that surpass current industry requirements on aspects such as moisture induced sensitivity testing as well as bond strength testing, to name a few.

"We are one of three Industry stakeholders capable of analysing the chemical composition of bitumen by means of a SARA analysis and one of only two with Fourier Transform Infrared (FTIR) Spectroscopy capability," explains Morne Labuschagne, Technical Manager – Bitumen at AECI Much Asphalt. "The FTIR technology used mainly to determine oxidation levels as well as polymer concentrations and types of bituminous binders."

### *Capacity squeeze*

Joanne Muller says industry uptake and implementation of Sabita Manual 35 based performance asphalt designs have been slow and staggered since its initial publication in 2015. "Significant capital outlay is required to gear up for these designs and AECI Much Asphalt started the process immediately. The capacity that would be required was largely unknown, so many commercial laboratories in South Africa delayed the capital investment. It has become clear that more capacity is needed, and many laboratories are only now establishing this test capability."

Accelerated Sabita Manual 35 design implementation on contracts over the last two years has placed tremendous strain on the AECI Much Asphalt facilities as there are more designs required than equipment to perform them, Muller adds. "Specific tests such as Four Point Bend Fatigue testing are very time intensive, which compounds the problem." AECI Much Asphalt has added fatigue testing devices in both laboratories to enable increased throughput and stay ahead of the curve.

The company has also commissioned more gyratory compactors and vacuum sealed devices at its production facilities in the past year to align process control and Manual 35 design activities. A new gyratory compactor at the Central Laboratory not only increases capacity in arriving at the final answer once compaction is completed but enables observation during the compaction process, using sophisticated torque transducers built into the device.

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“This functionality helps us to understand the compaction behaviour of asphalt mixtures, evaluate the risk of material breakdown during compaction, and optimise mixtures for workability for example,” says Muller.

*Constantly evolving*

The AECI Much Asphalt Central Laboratory will commission an Epifluorescence Microscope at the end of April 2022, taking polymer modification to the next level in terms of product quality and process efficiency.

“Global technology is always changing and improving, and our technical team continuously assesses how we can look at things differently to make the puzzle pieces fit,” says Muller. “We are currently exploring testing and the associated equipment required for semi-circular bending as a possible fatigue quality control measure, as well as binder shear ratio testing as a fatigue predictor.”

In a move to expand the group’s design and testing footprint, a new laboratory is being set up at the AECI Spraypave plant in KwaZulu-Natal to complement the services in Gauteng and the Western Cape.

A dynamic shear rheometer (DSR), used to characterise the behaviour of asphalt binders at high temperatures, has been commissioned here and laboratory staff are being trained. The new laboratory will be fully operational by mid-2022.

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