Commitment and Training is Vital for Mining Concrete Works

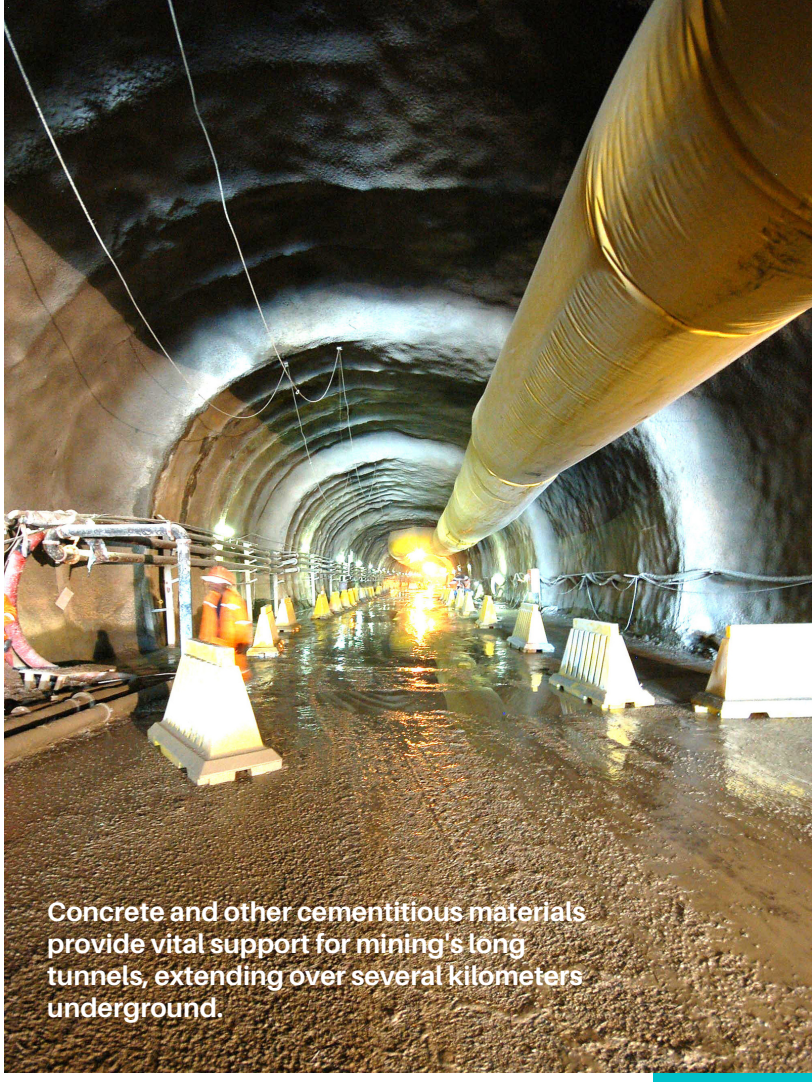
Concrete plays an integral part in any mining operation - both above and below ground to sustain the mining process and ensure the safety of miners. But for optimum mining concrete works, there are some specific elements to consider, says John Roxburgh, Senior Lecturer at the Cement & Concrete SA (CCSA) School of Concrete Technology.

He says the robust and durable nature of concrete lends itself well to any mining project with strength, durability, ease of application, availability, low initial cost, and meager life-cycle cost other factors, among concrete's other benefits. Areas of application are wide-ranging and include headgears, shaft linings and supports, tunnel supports, roads, the lining of ore and waste passes, and backfill.

"Concrete and cementitious materials provide vital support for mining's massive tunnels which can extend over several kilometers underground. Concrete linings also have to cope with the passage of millions of tons of rough materials tumbling down through ore and waste passes, as well as severe shocks from blasting. Self-compacting concrete is also playing an increasingly important role in mining," Roxburgh states.

"But achieving successful and safe concreting works in mining calls for special measures. For example, the concrete must be easy to mix, transport, and place under difficult conditions and often extreme temperatures. The concrete works will need to be structurally sound, and the finished product requires little to no maintenance after completion. And, most importantly, in a mining environment, it is crucial that concreting is done right - the first time. Failures can not only cause devastating losses in production but also in lives," Roxburgh states.

He says there are three critical components to proper concrete applications.
"Firstly, there must be a sincere and committed intention to get the project done correctly, right from the outset. From top management, right down to the laborers placing the concrete, there must be a passion for perfection. Management, supervisors, and foremen must show an energized willingness to attain maximum performance in concrete projects.



Concrete and other cementitious materials provide vital support for mining's long tunnels, extending over several kilometers underground.

"Secondly, skills and selection of tools and equipment, are also important. Placing concrete is nearly always done under time pressure - typically, there are only three hours to transport, place, compact, and protect the concrete. The right skills, tools, and equipment will save valuable time and reduce pressure, resulting in a better product."

Roxburgh also believes training is vitally important. "Concrete technology education provides an essential understanding of how concrete works, of its plastic and hardened properties, along with the knowledge of tried and tested best concrete practices on site.
Training plays an essential part in the quest for proper concreting. Hence, it is crucial to mining engineers - whether electrical or mechanical or in other industry spheres, to acquire appropriate concrete technology education. It is the engineer who leads mechanical, electrical, civil or chemical installations. There will be some concrete works involved in nearly all these cases, such as foundations, plinths, or floors, right at the beginning of the project. Getting the concrete works appropriately done and on time will start such projects off on a sound footing," he concluded.