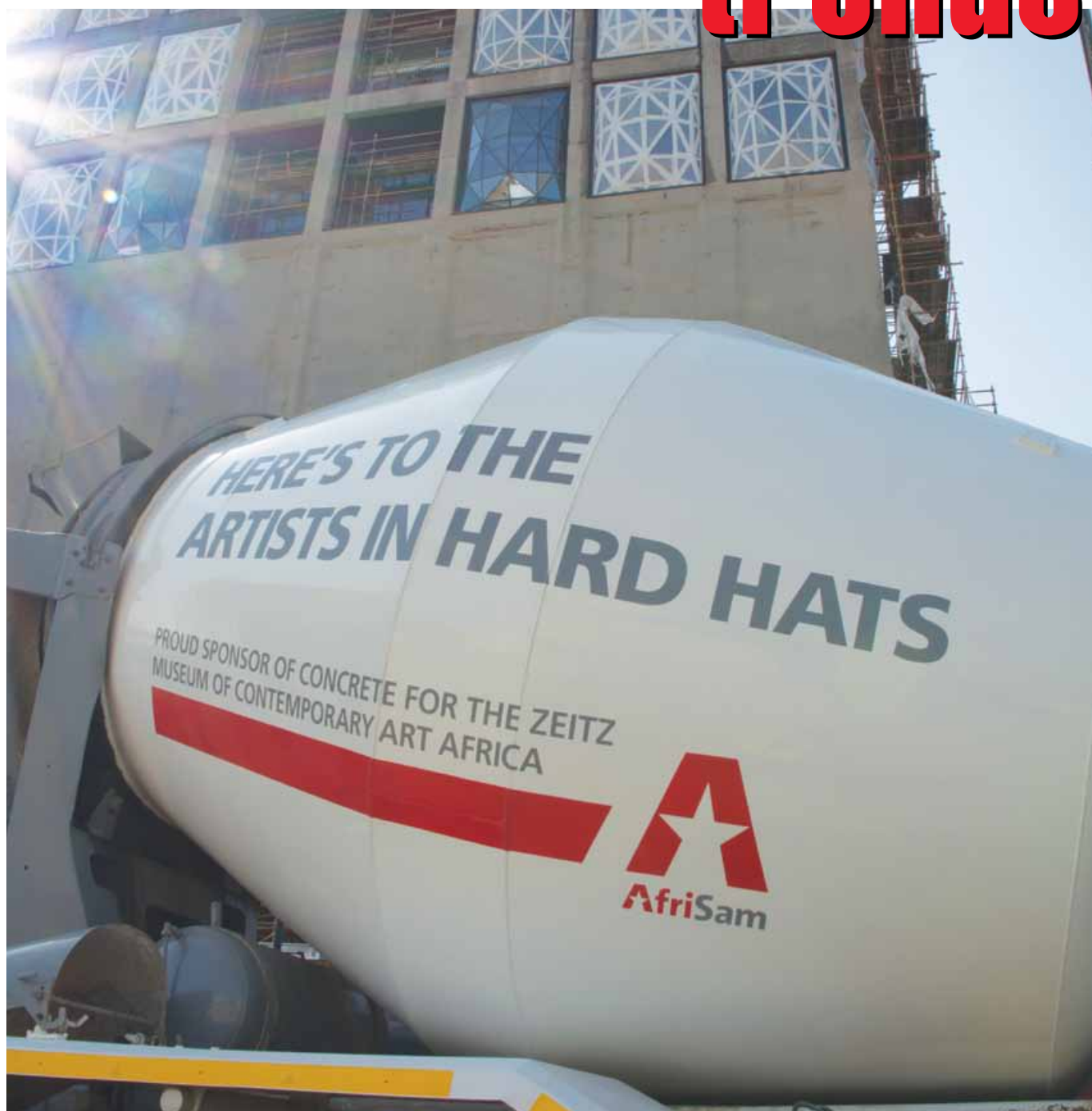


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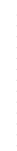
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COVER

*AfriSam stands the test of time: 88 years heritage of riding the waves of change to create both a legacy and sustainable future.*

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## Editor's comment



Eamonn Ryan

This past quarter was welcome for finally marking the end of the Covid pandemic. For those blessed with good health who never experienced a day's sickness throughout, it was still nonetheless a great inconvenience. For those whose health suffered, it certainly is good riddance.

The last restriction to be lifted was that on in-person events and entertainment. We can now visit the theatre, conferences and exhibitions – and the cement and concrete industry was not backward in this regard.

Barely days after the lifting, the first in-person event *Concrete Trends* was invited to was the launch by PPC Cement SA of its Building Africa Report at the Gordon Institute of Business Science (GIBS) and hosted by leading global events company dmg events – our own owners. The event also in part celebrated PPC's 130-year birthday. Just a little under a year ago, PPC commissioned GIBS to conduct various conversations and engagement that looked at what should be the collective role of the construction, cement and the built sector towards the reconstructive efforts to rebuild the African Continent.

Not long after that came one of the highlights of the year for the built industry: The Big 5 Construct Southern Africa 2022, previously African Construction Expo and one segment of which was the Totally Concrete Expo held in Johannesburg and also hosted by dmg events. Its purpose was to tackle the industry's most critical challenges and engage in important conversations around building Africa for long-term prosperity and sustainable growth. The event attracted many of the big players in cement and concrete, as well as the broader construction industry,

A number of pages of this issue of *Concrete Trends* are devoted to the expo, as well as profiling excerpts from some of the presentations.

Day one kicked off with the Stakeholders Engagement Forum, in partnership with NAFBI and sponsored by PPC Cement SA. The forum provided a platform for open discussion surrounding the industry's current challenges and the measures needed to expedite job creation and economic stability, and panellists included Minister Stella Ndabeni-Abrahams, as well as other leading industry experts.

Co-located with the above was the African Smart Cities Summit which took place on 8 June. Sponsors PPC Cement SA and NEXTEC hosted a VIP Investment Breakfast that put the spotlight on the need for constructive dialogue around investment for smart cities across the continent. Africa's burgeoning urban population represents either a huge opportunity or a huge potential problem for the industry, highlighting the important role to be played by technology in attracting global capital and driving economic transformation.

Tracy-Lee Behr, Portfolio Director at dmg events and host of The Big 5 Construct Southern Africa, said that overall, the event was a resounding success. "What made this year's trade show more special, was that it was the first time in over two years that industry stakeholders from across the globe were able to connect in person, do valuable business, and learn from world class experts in order to get back to business."

The event now moves on to KZN and Cape Town over the coming month with the details to be found within these pages. ■





## A solid foundation for every installation from TAL

***There is no question that the look and performance of a floor covering is largely dependent on what lies beneath it. When specifying soft floor coverings, a multi-level installation system is critical to ensure the desired end-result.***

**T**AL has developed a complete range of products that are fully compatible with each other, which when used together, provide a solid foundation for every installation. The TAL floor levelling system, as showcased at the Big 5 Construct Africa in June of this year, is designed to safeguard the final finish which is most often vinyl sheeting, LVTs or PVC-backed vinyl tiles.

The company's approach is focussed on two things; providing a practical, easy to use flooring system, and knowledge sharing with flooring professionals and installers on key issues such as understanding the substrates that they are working with, selection of products and correct tooling. "Using our years of experience and listening to feedback from the market on challenges that installers were facing on site, we have developed our TAL floor levelling system of products, which is specifically designed for local conditions," explains Obert Rukato, TAL Technical Executive.

TAL has always emphasised the importance of correct substrate preparation and understanding the surfaces onto which the final flooring needs to be applied. These substrates can be either concrete, sand and cement, or granolithic screeds. Once the substrate has cured and achieved the required compressive strength for the application of the proposed floor covering, a floor level survey, suitable preparation and priming ensures a sustainable bond onto the substrate.

It is good practice to mechanically abrade the floor, not only to remove residual curing agents, laitance and other surface contaminants, but also to achieve a suitable 'roughness' of the surface. Processes such as diamond grinding are not always possible on site, but alternative methods include carborundum rubbing blocks and wire-brushing. The 'roughness', or concrete surface profile (CSP), of the floor is defined by the International Concrete Repair Institute (ICRI), with values ranging from 1 (almost flat) to 9 (significantly rough). TAL typically



TAL Screedmaster application.

recommends a CSP value of 2-3 (light) for the installation of self-levelling screeds.

Vinyl floor coverings, and other soft coverings are very sensitive to high levels of moisture or high moisture vapour emission rates (MVER) in the substrate. TAL therefore recommends the use of their easy application, roller-applied water-based epoxy vapour barrier, TAL Vapourscreen WB. This product is formulated for use where residual moisture levels or high moisture vapour emission rates exceed the permissible limits stipulated by the manufacturer of the selected floor covering (typically 3 – 3.5% moisture content). Once cured, it produces a high crosslinking density barrier coat that reduces the risk of debonding of coverings due to MVER.

Since resin-based surfaces such as epoxy, polyurethane, etc are not compatible with cementitious compounds, it is necessary to apply a suitable primer to the vapour barrier prior to installing the self-levelling screed. TAL Primercoat is a rapid-drying ready-mix, one component priming slurry designed to key onto freshly applied and cured resin-based substrates and is fully compatible with TAL cementitious underlayment and screed compounds.

The surface is now ready to receive TAL Screedmaster, a rapid-setting self-levelling screed which gives installers the smooth and level surface required to install vinyl floor coverings. Designed with high flow properties, the product produces a smooth, flexible and hard-wearing floor surface prior to the fixing of floor coverings with minimum installation time.

The final level of the TAL floor levelling system is a selection of acrylic-based adhesives designed for installing soft floor coverings; TAL Profix for the installations of vinyl and textured (carpet) floor coverings, TAL Profix Plus for the installation vinyl floor coverings and those with coarse backings such as needle punch carpeting, and TAL Profix Plus LVT which is specifically designed for use with luxury vinyl tiles or PVC-backed vinyl tiles.



TAL Primercoat application.

As flooring is one of the last finishes to be installed on site, often with pressure on installers to keep to project deadlines, care has been taken to ensure that the system from TAL offers a quick and easy solution on site. The individual products are each quick-setting, delivering a faster installation overall. “Depending on site ambient conditions, it is possible to apply the vapour barrier and primer in one day, possibly pour the screed by the end of the day and proceed to installation of the final floor covering 24 hours thereafter,” says Rukato.

“We believe that by supplying our customers with the correct combination of products, together with on-site support and product training, we can help them deliver a successful and long-lasting vinyl flooring installation and protect the customer’s investment,” concludes Rukato. ■



TAL Profix Plus LVT application.



# The CMA'S current initiatives

By Eamonn Ryan

**One of the Concrete Manufacturers Association's main drivers is the up-keep and promotion of South Africa's precast concrete National Standards (SANS).**

CMA general manager, Henry Cockcroft, notes that three standards are currently pending:

- The release of the revised standard for segmented concrete block paving, SANS 1058:2021
- SANS 677 Concrete non-pressure pipes (check CMA website). Document in peer review and voting stage
- The formation of another workgroup tasked with clarifying SANS 927 Precast concrete curbs, edging and channels.

"At a time when the construction industry is faced with great uncertainty, including concerns about the level of government's infrastructure spend and the worrying state of many of the country's state-owned enterprises, it becomes ever more imperative that our National Standards be maintained, promoted and applied at a high level. Allowing sub-standard products to be manufactured and sold damages the entire South African economy," explains Cockcroft.

"It's important that we are constantly vigilant in relation to standards, the implementation of quality management systems and our commitment to the manufacture of quality precast products by our producer members. There are 16 national standards which apply to our industry and to maintain them and keep them current, the CMA sits on the South African Bureau of Standards National Committee, SABS/TC 081/SC 01, *Construction standards – Cement, Lime and Concrete*. We take our cue from our members, who report any standard-related concerns to us. We voice these concerns during SABS committee meetings as well as initiate standards reviews," says Cockcroft.

## CMA CERTIFICATION SERVICES

A more recent CMA initiative, which adds value to its membership base, is the expansion of its subsidiary, CMA Certification Services (Pty)Ltd. CMACS is accredited by SANAS (South African National Accreditation System) as an Accredited Certification (C75) product certifier. It recently added a second string to its bow by being accredited as a quality management systems Certification Body (C75b) in compliance with the ISO9000/9001 standards specification.

"This offers a new channel of information and quality management consulting services at preferential rates to CMA members. It will also assist other companies to design and implement quality management systems. One of its attractions is that it will be focused on precast concrete as opposed to being broad-based. With our specialist knowledge of the



Henry Cockcroft

precast concrete manufacturing industry, we can assist with the design of management systems so that they comply with the requirements of SANS/ISO 9001 and the relevant SANS-related product certification requirements. It renders the implementation and control of the management systems completely specific, making companies more efficient and cost-effective, while at the same time providing better product quality control.

"This ties in neatly with the CMA's purpose which is to promote the precast concrete industry and to safeguard its product quality. We are a voluntary association, our only membership proviso being a quality management system, or at the very least, a quality statement or policy. Members are obliged to clarify how they manufacture their products in

writing. This provides an undertaking to deliver products to best-practice standards and gives members' customers the opportunity of lodging complaints with us if this commitment is not met. We then address the complaint with the member company until a resolution is reached. We also have a panel of experts which investigates and provides engineered solutions for a variety of precast concrete technical issues.

## MARKETING DRIVE

"A major portion of CMA's activity and its promotion of precast concrete products is reaching into as many media platforms as possible. We've harnessed the power of social media in a big way and we believe our success in this sphere is benefitting our members.

"The CMA used to host a range of workshops on numerous precast concrete applications, but these are costly and we have opted for a new method of delivering content. For instance, we are in the process of publishing a new paving manual based on an outcomes-based-education approach, in the form of a ready-to-use facilitator, assessor and moderator manual. Our goal is to aid skills development in the built environment, where formal education and training is often lacking.

"Our long-term goal is to make training and skills development programmes available through electronic platforms. Akin to an online training porthole, anyone interested in a training topic, say on paving, could complete the modules online, collect sufficient practical evidence and then advance to the next module, until the course is completed.

"Currently we do not have sufficient funding to expand the rollout of our precast concrete skills development programmes into tertiary education. However, it remains one of our long-term goals," concluded Cockcroft. ■

# CorrISA addresses the longevity of infrastructure

By Eamonn Ryan

**The activities of the Corrosion Institute Southern Africa (CorrISA) aim at raising awareness of corrosion and mitigating its damaging impact – something it has been engaged in since 1964.**

CorrISA hosted a major event on World Corrosion Awareness Day, on the 25 April 2022. This event is celebrated annually worldwide on the 24 April. They've also participated in the recent dmg Events' Big 5 Construct and earlier this year in Coatings for Africa.

The Corrosion Institute's Executive Director Petra Mitchell, who was also a speaker at Big 5 Construct where she presented on 'Not Just Rust', emphasised that despite CorrISA's longevity, many people don't know of its existence or the impact of corrosion. Corrosion is often viewed as a 'necessary evil' to be tolerated and ignorance is often the cause of many premature, unexpected and expensive failures. CorrISA is now gearing up to counter this relative anonymity. "The aim now is to educate people to recognise corrosion for what it is. Research has shown that a lot of the failures we see on infrastructures such as buildings, roads and bridges are as a result of corrosion."

Mitchell outlines the Institute's current activities. "We provide a forum and platform for like-minded people to come together and share ideas and new technologies within the corrosion industry. This is not only from a company perspective but also from an academic perspective. Academic institutions

such as universities are sources of post-graduate research on corrosion, for example, by researching new technology which they share with the Institute to present to our membership, as well as the broader corrosion industry.

Each year the Corrosion Institute has the great privilege of recognising achievement excellence within the corrosion industry. The prestigious Corrosion Institute Annual Awards provide recognition to individuals and companies for their contributions towards furthering the objectives of the Institute and in so doing helping to champion the cause of corrosion control. These nominations are adjudicated by a panel of subject matter experts and the winners are announced at the event. The next Corrosion Institute Annual Awards will take place mid November 2022.

"We also host a conference called AfriCorr jointly with an organisation called AMPP (Association for Material Protection and Performance). It is primarily an academic conference or workshop where technical papers can be submitted and presented. Its aim is to bring together people from neighbouring countries as well as international academics and universities," Mitchell explains.

"Our membership base is diverse and multi-disciplinary.



Examples of rust on metal.





“Our membership base is diverse and multi-disciplinary.”

One finds that even engineers and scientists in other disciplines also come to deal with matters caused by corrosion. For example, the steel reinforcing in reinforced concrete can rust, the electronic boards in control systems can corrode and even a structure's strength can be compromised. Thus civil, electrical, mechanical and structural engineers/ technologists/ scientists will also have to deal with corrosion at some point in their lives. CorriSA is an industry association registered with the Department of Trade, Industry and Competition (DTIC). As an industry, members have access to various incentives offered by the DTIC. This also allows us to apply for incentives on behalf of our members if they don't have the capacity to do so themselves," she says.

There is a perception that corrosion mainly involves materials and chemicals, and although this forms part of what corrosion encompasses it is by no means only students within these disciplines that come face to face with corrosion issues. Because it is so multidisciplinary CorriSA also has reciprocity with many other associations such as the CCSA (Cement and Concrete SA), IOPSA (Institute of Plumbers SA) SAPMA (South Africa Paint Manufacturers Association), TIPSASA (Thermal Insulation Products and Systems Association SA), HDGASA (Hot Dip Galvanisers Association SA) and more.

**CORROSION TRAINING**

“When it comes to the science of corrosion, research, and the study of corrosion mitigation in general, there is not enough done at schools and universities to make people aware of and to study corrosion. Typically, at universities one finds that a single module dealing with corrosion is part of a programme such as metallurgy or material science. At postgraduate level it is dealt with if a student selects to do a research project that is concerned with corrosion. At secondary school level

no students are exposed to the studies of corrosion apart from an annual invitation to attend our annual Corrosion Awareness Day.

“Research has shown the economic loss of corrosion costs in South Africa is ±4% of its GDP. That means the direct cost of corrosion to each of us is around R250 per month. Based on the research, one ton of steel could turn to rust every 90 seconds and 50% of every ton of steel is used to replace corroded steel. Indirect costs are at least three times the equivalent to the direct costs. However, several independent studies have shown that 25% of the abovementioned effects and costs of corrosion can be prevented by applying known technology. This places a significant emphasis on the importance of corrosion education. Training has always been a big driver of CorriSA,” says Mitchell.

The Corrosion Institute of Southern Africa is the only body that offers in depth corrosion training programmes, equipping you with the right skills and knowledge.

Internal CorriSA Courses include:

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- Corrosion Management (Accredited with MerSETA)
- Not Just Rust
- SAQCC (Corrosion Control)
  - o Paint Applicators

It is the only AMPP licensee in Southern Africa. AMPP Courses include:

- Coatings Inspector Program (CIP) Level 1, 2 and 3
- Cathodic Protection (CP) Level 1, 2, 3, and 4
- Offshore Corrosion Assessment Training (O-CAT)
- Marine Coating Technology

For more information on what the Corrosion Institute offers contact its offices at 010 224 0761. ■



*AfriSam has taken a long-term view on quality, experience and capital investment.*



# TEST OF TIME: 88 years of creating concrete possibilities

***With a heritage stretching back nearly nine decades, construction materials leader AfriSam has been riding the waves of change to create both a legacy and a sustainable future.***



*AfriSam has set the standard in the sector regarding carbon emissions and broader environmental responsibility.*

**“T**he industry that we are in is all about creating durable structures and infrastructure on which to build economic opportunities,” says Richard Tomes, AfriSam’s sales and marketing executive. “This process relies on companies like AfriSam, who take the long-term view on quality, expertise and capital investment.”

Indicative of the company’s vision and adaptability, Tomes points out that it has seen four name changes over its life to date. Each name, he says, signals an important chapter which has contributed to its current foundation of success.

“Initially part of the Anglovaal group, the roots of AfriSam lie in the cement company Anglovaal Portland Cement Company – later Anglo Alpha,” he says. “Our journey included setting up cement plants first in Roodepoort, then at Ulco in the Northern Cape and Dudfield in North West province.”

Important strategic steps included the incorporation of aggregate producer Hippo Quarries and readymix company Pioneer Concrete, which created a fully vertically-integrated construction materials business. After the dawn of democracy in South Africa, the company became part of the multinational Holcim group, further augmenting its access to world class expertise and best practice.

## **GLOBAL STANDARDS**

A powerful combination of local experience and international competitiveness had therefore been laid by the time the business became AfriSam in 2008, owned by a black-led consortium. Its values – people, planet and performance – drew on past achievements and opened a new door to the future.



"Being part of Holcim gave us easier access to global research and technical expertise, enhancing our ability to grow and extend our offerings in meeting the country's infrastructure needs," he says. "It put AfriSam into the leading position that we continue to hold to this day."

Many current employees were empowered by their exposure to international business, which included paying greater attention to environmental issues. Being part of a Europe-based group, where environmental impact was a growing concern, gave AfriSam an early lead in the local market.

"We came to set the standard in our sector in South Africa regarding carbon emissions and broader environmental responsibility," he says. "We proudly continued this mission after Holcim's exit, and today have sustained this approach while becoming the leading construction materials company in the southern African region."

### SUSTAINABLE COMMUNITIES

Tomes highlights that success in the cement and concrete sector demands – perhaps more than most industries – agility and adaptability. Like mining, there is no chance of moving a cement plant once it is established.

"The capital commitments in our business are huge, and you cannot choose where your limestone deposit is located," he says. "This means that our facilities are often remote. However, they must still be planned and implemented for the very long term – and carefully managed and maintained for sustainability."

Its Ulco and Dudfield plants operate not just as production facilities, but as integrated settlements. To serve the nation's

requirement for vital cement supplies, they must function smoothly for many decades – providing work, schooling, housing and other services in a safe and secure context. This must happen irrespective of the many changes constantly taking place in the market and broader society.

"We train and maintain the best skills to oversee and maintain these large and complex plants," he says. "At the same time, we invest in the local communities – to make it attractive for our staff to live and work there."

### SKILLS PIPELINE

This again highlights the importance of the long-term view, rather than just short-term profitability, he emphasises. AfriSam invests in learnerships and bursaries to keep a pipeline of skills flowing.

"Even before the law required us to develop a Social and Labour Plan, our vision already aimed to create a positive African future by investing in community upliftment," he says. "A key aspect of this has always been education and training, to improve the chances for future generations."

Enhancing the economy in this way requires a solid governance foundation, he notes, with AfriSam creating a framework of ethics and performance.

"Our staff, our shareholders and our board members all play a role in sustaining the business and keeping it attractive for all stakeholders," he says. "This applies as much to our investors as it does to the people who live and grow in our communities. They must all fully appreciate and contribute to our combined role in making a better society."



The company trains and maintains the best skills to oversee and maintain large and complex plants.



*AfriSam invests in learnerships and bursaries to keep a pipeline of skills flowing.*

### TOP RATING

At the heart of any business's success are, of course, its customers. Here, AfriSam goes the extra mile to ensure it is meeting and exceeding expectations. Through a regular survey, conducted twice a year by an independent agency, a sample of more than 400 customers are asked to rate the company on a range of indices.

"We measure how we perform across all the touchpoints – from first contact through to aftersales support," he says. "The questions reflect on the value we deliver, whether it's placing an order, arriving on site with our product, or resolving difficulties."

The answer is clear, he says: AfriSam is regarded as the preferred partner, even if the upfront product price is not the lowest. Customers rate the overall value they receive from AfriSam as the highest the industry can offer, for the quality of both product and service.

"Benchmarking with other players in the market, we are pleased to see that customers rate us well in terms of keeping our promise," says Tomes. "It's not just about buying cement, readymix or aggregates; it's about how our whole package adds value to our customers' business."

### SAVING THE DAY

Indeed, there are many instances when AfriSam has been asked to step in after a contractor has been let down by suppliers who appear to have been a more economical option. He acknowledges that customers are sometimes under financial pressure to buy down, but this can be accompanied by considerable risk.

"Especially with projects that demand specialised expertise, products and equipment, there have been instances where a customer is let down in the middle of a job," he says. "In all the cases where AfriSam has been called upon, we have agreed to step in and take over. This has solved a potentially damaging situation and ensured that the customer can meet their obligations with an end-client."

AfriSam's established reputation for delivering solutions – even in an emergency – is based on a number of factors, explains Tomes. Its technical foundation is world class, including its Centre of Product Excellence in Roodepoort providing answers to difficult questions. This has become increasingly vital with industry contraction, as few contractors have concrete experts in-house. This allows the business to offer not just

a standard range, but also customised products for unusual applications. There could relate to heights of buildings, special strengths or flow characteristics.

### NO ROOM FOR ERROR

"Then there is our national footprint, product consistency and reliability," he says. "The scale of our operations, and the clustering of our facilities in key regions, means that there is always backup capacity."

He emphasises that concrete is a particularly unforgiving product; with the volumes and setting times involved, there is no room for error. There is certainly no luxury of time to sort out any challenges that confront a project unexpectedly. A plan must always be in place, supported by the necessary skills and resources.

"Our 88 years in business have been underpinned by our ability to find solutions and deliver them on time," he says. "Consistency gives customers confidence, including our one-stop concrete solution, fit-for-purpose mix designs, raw materials testing, proportionally mixing the material, slump testing and on-time delivery."



*The company creates a positive African future by investing in community upliftment.*

### FUTURE OF THE PLANET

Commitment to reducing environmental impact is being pursued alongside performance expectations, and do not compromise the quality that the market expects. With the growing demand for carbon neutrality, AfriSam has steadily reduced the carbon footprint of its cements. It is also a leader in terms of transparency – allowing customers to clearly see the related emissions printed on each cement bag.

"We are aiming at producing carbon neutral products," says Tomes. "At some of our plants, we are already considering renewable energy sources, reducing our consumption of coal-powered electricity and coal as a fuel in itself."

With South Africa signing up to global treaties and conventions on climate change, he says AfriSam is making sure that it supports these efforts with its own proactive initiatives.

"By showing leadership in reducing our carbon footprint, we want to leave behind a world for future generations to live comfortably," he says, "and not experience a worsening of the climatic conditions we have already seen – from heat waves to flooding."

He reiterates that AfriSam's success in its first 88 years is thanks largely to its agility. To thrive into a complex and challenging future, the company must continue to understand issues like climate change and be ready to play a role in dealing with them. ■





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# Precast concrete: quality & standards and certification

By Eamonn Ryan

**A workshop was hosted on 8 June at the Big 5 Construct expo by Concrete Manufacturers Association (CMA) and CMA Certification Services General Manager CEO Henry Cockcroft on 'Precast, concrete quality standards, product certification, successful product, deliverance'.**

In talking of quality management systems, Cockcroft highlighted two terms that are often wrongly used interchangeably in tender documents: 'accreditation' and 'certification'.

"There is a big difference between the two. Yet we hear people stating they're 'certified' to do this, or 'accredited' to do that. In fact, 'certification' is the process of providing someone or something with an official document - like a certificate. It involves being attested up to a certain status or level of achievement. Someone attending a training session gets certified as having attended a professional workshop, which is essentially a certificate of attendance. Similarly with a product, being certified means that product was measured as to having attained a specific level of performance. In the instance of a precast manufacturer obtaining certification on a product, it means the product meets the South African National Standards (SANS) specifications.

"This in turn implies the manufacturer has in place a quality management system which constantly verifies and monitors a consistent standard of production to the required specification. If a problem materialises, its record-keeping is such that the defect can be traced back. Specifiers of major projects therefore look for suppliers who implement a quality management system. Such a manufacturer would take this to the next step of getting certification that the product complies to the relevant standard," said Cockcroft.

On the other hand, Cockcroft described accreditation as "the process of recognising that someone or an organisation has the particular status of being qualified to perform a particular activity". A product cannot be accredited - only certified.

"When a product is certified, what is important is the identity of the issuer of the certification, and it is these organisations which must be accredited by the applicable authority in South Africa, which is the South African National Accreditation System (SANAS), to issue certification. It is therefore vital for consumers, businesses and specifiers to check whether a product's certification was issued by an accredited issuer. This is to verify the certification is legal, recognised and is done according to a standard, which in this case is ISO 17065. This is the standard according to which the certification company is being measured.

## HOW QUALITY STANDARDS ARE DESIGNED IN SOUTH AFRICA

The South African National Standards (SANS) specifications are actually compiled and maintained by the South African industry as applicable to the various standards specifications. These standards documents, known as the SANS specifications, belong to the Department of Trade, Industry and Competition (DTIC), while the South African Bureau of Standards (SABS) is



appointed to manage and maintain the documents. The industry is represented by various workgroups hosted by the SABS, contributing to, and maintaining the standards.

The CMA, as custodian of the precast concrete industry, represents its industry in the relevant workgroup within SABS, discussing national standards to ensure industry is represented and that standards are updated and maintained as required by the industry.

"A work group concerned with a particular product specification is formed of engineers, architects, specifiers, contractors, producers, and other industry experts. They advise on new standards or modifications to existing standards relating to a product, say, in precast concrete. This is one of the functions of the CMA, monitoring 16 specifications for precast concrete, to ensure they are aligning with the industry," said Cockcroft.

This is only an extract of the presentation. Look out for the rest elsewhere on the *Concrete Trends* website. ■





# Lightweight concrete – explaining the options and applications

By Eamonn Ryan

**Victor Bouguenon, Director: CemteQ Building Solutions hosted a workshop at the Big 5 Construct Expo on 8 June, on the subject of 'Lightweight, concrete and large, like concrete materials'.**

**"T**he official definition of lightweight is 'materials under 1 840kg/cube', which from our perspective is not ambitious enough. We look to replace the aggregate with entrained air, either a cellular concrete, polystyrene, perlite, or other options. We have limited options in South Africa – each of which has its pros and cons.

"Perlite is one that was introduced close to 100 years ago. Vermiculite is another we produce; polystyrene is a closed cell option; while cellular or foam concrete introduces air bubbles into the concrete. We also work with recycled plastic; AAC (autoclaved aerated concrete) is a stabilised cellular concrete using technology to introduce bubbles into the concrete. There's also non-autoclaved aerated concrete, which is effectively another expanded concrete without the use of autoclaves."

## BENEFITS OF LIGHTWEIGHT CONCRETE

Bouguenon said: "The benefits of lightweight concrete are to reduce the load on foundations; on slabs; and which often results in faster construction times as the lighter material means less labour while transport can handle more per vehicle. It makes possible building designs which are often otherwise impossible due to weight constraints. In particular, it facilitates the refurbishment and conversion of buildings from office to residential, where those buildings were not designed for that application.

"By its nature, lightweight concrete generally provides excellent thermal insulation properties by introducing air. Further, lightweight concrete often provides good fire resistance, depending on which material is used."

He informed the audience that lightweight walling is one fairly common usage. "One needs lightweight solid walls and



plaster which lightweight cementitious materials provide. We get asked for lightweight screens on roof decks for slopes to fall as it minimises the load on the slab. Other uses are loose fillers on floor slabs and cavity walls; thermal insulation, where people are looking for the SANS 10400X and where people are looking for fairly significant thermal insulation values on roof slabs," Bouguenon added.

## WHAT'S AVAILABLE IN SOUTH AFRICA

"We produce an exfoliated perlite, a volcanic material which is mined, crushed and has crystalline water in its particle structure. When put through a heat process to about 900°C, it expands and the crystalline water vaporises, while the particle expands into lightweight frothy glass bubbles. This gives good fireproof, acoustic and good thermal insulation properties. In its raw form, the material weighs 1 100kg/cube and by the time it's exfoliated it weighs between 30kg and 120kg/cube.

"Roughly 50% of perlite produced in the world goes into construction, and of that half goes into blocks and cavity wall fills in its loose form. We coat it with a hydrophobic coating which sits in a cavity wall quite comfortably for the rest of its life – as it's pH neutral and gives excellent cavity thermal insulation. For this reason perlite is used extensively for fire proofing. It also has various decorative applications," explained Bouguenon.

"Recycling polystyrene – pulled out of refrigeration panels, or the offcuts of things like seedling trays – are ground down with a coating that prevents segregation in concrete and encourages homogeneity throughout the mix. It is an effective way of introducing air into concrete. It has a closed cell recycled polystyrene or plastic material which can be introduced to bind to the cement. This in turn gives exceptional insulation and lightweight properties" he said.

This is only an extract of the presentation. Look out for the rest elsewhere on the *Concrete Trends* website. ■



# The advantages of open BIM versus closed BIM in the built environment

By Eamonn Ryan

**A workshop was hosted by the BIMcommUNITY Africa on the role of ISO 19650 in the built environment, subtitled 'Why should you care (unless you like wasting time, money and productivity)'.**

Hosting the well-attended workshop were: Richard Matchett, Digital Lead, Zutari and executive director BIMcommUNITY Africa; Gary Mansfield, Digital Innovation Lead/BIM Manager, CKR Consulting Engineers, non-executive director BIMcommUNITY Africa; Rudd van Deventer, Director: Spaceworx and member of BIMcommUNITY Africa; and Machial Odendaal, Technical Manager, Professional Senior Architectural Technologist ISO 19650 practitioner.

They described the advantages of a BIM (Building Information Modelling) system noting that the world is moving away from the current closed BIM to an open BIM model.

With closed BIM, data is stored in a native format that can only be accessed by the application from which it was created. For example, if one creates a project in Revit, then to save the file and try to open it again in ArchiCAD or another software, one will receive an error message saying. The same principle applies if one is trying to export model data to another program: each application has its own custom format for exporting 3D models, so there is no way to guarantee that the data will be transferred correctly unless all parties are using the same software – a difficulty considering how many actors are involved in a construction project. With an open BIM workflow, however, project files can easily be exported in different formats for use in other programs without losing any quality or accuracy.

The newest, most prevalent and more developed standard for BIM is the 'ISO 19650 series'. With the adoption of ISO 19650 in multiple countries (at a government level) and support from key BIM leadership groups, ISO 19650 is becoming the global BIM standard, the presenters noted.

Some key points about the ISO 19650 standard:

- It outlines the concepts and principles for BIM
- It can be applied to all projects
- It is a truly unified approach for BIM management

Mansfield explained that ISO 19650 is not going to be addressing the specific tools that need to be used, but rather is more



based on workflows and methodologies applied in the process. "What is currently happening abroad is people are talking about what they call Open BIM which addresses the issue of not having to share your proprietary information with others while you work on a project.

One of the file formats that is coming out strongly is IFC (Industry Foundation Class). I don't think ISO 19650 is going to dictate what needs to be used, because that would defeat the purpose. It's about everybody working together, finding a solution whereby we can share information collaboratively and have no interoperability issues."

Matchett added: "One of the key principles of ISO is to develop execution plans collaboratively, even in the choice of which file formats to use. The ISO is getting us to work together without telling us to go down a particular road."

This is only an extract of the presentation. Look out for the rest elsewhere on the *Concrete Trends* website. ■



# Transport and Construction industries join forces for Mega infrastructure event in Durban

***The South African government has committed R791.2 billion toward infrastructure development in the medium term and has gazetted 15 projects worth R47 billion in the transport sector alone.***

**A**s momentum builds in transport and logistics across Africa post COVID-19, the GDP contribution of the sector is expected to grow from R349 billion in the first quarter of 2022 to R363 billion by 2024, an increase of 3.7%, underlining the investment potential over the next two years.

The Big 5 Construct KZN, formally known as KZN Construction Expo has joined forces with Transport Evolution Africa Expo for a mega event like no other. These two prestigious industry events will come together for a two-day Forum and Expo which is to take place at the Inkosi Albert Luthuli ICC Complex (Durban ICC), South Africa, on 28 and 29 September. It will bring the transport and construction industries together in a collaborative and solutions-based event that will plot the roadmap to the future of these sectors in Africa.

The mega event presents seven events under one roof, with over 50 port, rail and road authorities, 2 000 transport and construction professionals and 100 exhibitors, tackling transport, construction and logistics issues head-on and showcasing global innovations.

“A co-located event with the Transport Africa Forum and Expo is The Big 5 Construct KZN which will facilitate dialogue around infrastructure at the core of re-stimulating the South African economy. The South African National Roads Agency (SANRAL) has alone committed R19 billion to developing 13 roads, creating nearly 10 000 jobs during construction”, according to Le-Ann Hare, Portfolio Director for Transport Evolution at dmg events, organisers of the Forum and Expo.

Other highlights for 2022 include the launch of the two-day Trade and Logistics Evolution Africa; the Women in Transport Awards; and the Transport Evolution Learning Academy. A key addition to Transport Africa Forum and Expo is a gathering of CEOs from across the transport and logistics sector within the Transport CEO Forum, where closer working relationships will be forged between all entities with a view to building robust transport corridors into Africa.

Association bodies play an essential role in the sector and along with leading associations including Concrete Manufacturers Association, the South African Institute for Civil Engineers (SAICE), which is the industry body for civil engineering professionals in South Africa promoting growth, excellence and sustainability in the industry and aims to advance professional knowledge and improve the practice of civil engineering, and which will be playing an integral part at the event by offering professional development through continued learning opportunities through its presentation of a number of CPD-accredited workshops.

Education through learning from others and experiencing new ideas through networking simultaneously provide a large platform for the investment of upskilling. The combination of these forums and expos and SAICE’s knowledge is a powerful education platform that will build a better industry.

SAICE Head of Training, Tom McKune concludes: “Since the initial approval of the principle of continuing professional development many years ago, SAICE as an organisation has encouraged its members to keep abreast of developments and knowledge in their areas of expertise in order to maintain their competence. We welcome this opportunity to strengthen our ties with dmg events, using the CPD framework to help trade professionals maximise their professional potential and overall business performance.”

With up to 10 free to attend workshops, engineers and stakeholders within the construction sector can qualify for CPD points on SAICE workshops and other verified workshops.



Some of the workshops at the event include:

- **Back to basics in the transport industry** – unpacking fundamental questions to understand the operational and economic benefit of projects.
- **Navigating construction:** the strategy will look at using creative adaptive strategies to infiltrate and integrate organically.
- **Standardised Quality Assurance Solution:** How does the South African Construction Industry Benefit from Certifying its Systems and Products in line with National and International Standards?
- **Gas compliance in the construction industry** will unpack gas compliance, certification and the risks of non-compliance
- **Building resilient smart cities with the Fourth Industrial Technology** and more...

The event will enable these two formidable industries to unite, providing a catalytic platform for open engagement, knowledge sharing and thought leadership to further economic stimulation and growth within the sectors.

To attend or participate at the event, go to [www.transportevolution](http://www.transportevolution) and [www.thebig5constructkzn.com](http://www.thebig5constructkzn.com) or contact LeAnn Hare on [leannahare@dmgevents.com](mailto:leannahare@dmgevents.com). ■



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# The post-pandemic conundrum – the WFH model and intoxication in the workplace

By Rhys Evans, MD at ALCO-Safe

**Many businesses in South Africa are now comfortable with offering a Work from Home (WFH) or hybrid model to employees after the Covid-19 lockdown ended. As employees now spend more of their working hours at home, this can pose a problem for companies that require regular alcohol and drug testing as part of their health and safety policies.**

It has become challenging to physically monitor whether an employee is consuming alcohol or drugs during working hours when they are not present in the office. Although companies might not be able to breathalyse or test employees for drugs in their home environment, they will need to look at training line managers and HR personnel to be sensitive to any tell-tale warning signs from employees when engaging with them online.



Rhys Evans, MD  
at ALCO-Safe

Companies should ensure that their policies now cover not just consumption and intoxication on-premises, but extend it to behaviour out of office during working hours in the event that it affects an employee's ability to do their job. These should clearly state that the workplace rules apply, even when working from home. Policies are not limited to the consumption of alcohol and should be updated to include any substance that impacts an individual's ability to perform their duties, such as cannabis.

## WFH: THE WORKPLACE RULES STILL APPLY

Intoxication in the workplace constitutes misconduct and is a dismissible offense. Employers must have an alcohol and substance abuse policy that is communicated to all employees.

## MISCONDUCT VS ILLNESS

Although all Covid-19 lockdown measures and restrictions on public gatherings have been removed and daily life is returning





to normal, this does not mean that the challenges and problems people were experiencing as a result of the pandemic have disappeared. In fact, life is only getting more difficult for most South Africans, who are faced with rising food and fuel costs and the constant disruption and stress of load shedding. People tend to turn to alcohol and substances as a crutch to cope during challenging times, and it is important for managers and employers to be sensitive to the fact that alcoholism and substance abuse is an illness. As such, each case must be treated on its merits and a distinction must be drawn between incapacity as a result of alcoholism and incidents of simple

misconduct, where an employee is taking liberties because they think no one is watching. If an employer suspects that an employee may have a dependency problem, the employer is under obligation to assist the worker to access treatment.

**WARNING SIGNS TO LOOK OUT FOR**

What do managers need to know in order to identify if there is a problem with alcohol or drugs when someone is working from home? This can be particularly tricky, especially when managers are only engaging with workers online, making it easy for workers to switch off their cameras during meetings, or sip alcohol out of a coffee mug. Here, it is important to be aware of behavioural changes in employees, such as someone who has always been reliable suddenly becoming unreliable with work deadlines, or a drop in performance. Someone who was always actively involved, now disengaging, or a person who has always met targets, now falling short of expectations. This alone is insufficient to point to a substance abuse scenario, as this can also indicate that the individual might be experiencing a personal or family issue. If the change in behaviour is noticeable, managers should investigate immediately, but in a compassionate manner.

**CORRECTIVE PROCEDURES**

When a manager suspects that an employee is intoxicated during working hours, the next step depends on their workplace policy and whether a first-time offense is legally punishable by dismissal. Ordinarily, counseling is the most suitable course of action, along with a written warning. Some companies are big enough to offer in-house counseling, while others can only refer the individual to the appropriate healthcare provider while allowing the person sick leave to seek assistance. If the problem is serious enough, the individual might be required to attend a rehabilitation centre, in which case the employee is often suspended until they have completed rehabilitation. Once they have returned to work, they will be evaluated on a regular basis with the aim of preventing relapse. It is important to remember, in the case of a substance abuse problem, that disciplinary procedures are not meant to be punitive in nature. This does not address the root of the problem, nor does it help the individual. While workplace intoxication policies must legally be enforced for the health and safety of all workers, it can still be done with compassion and sensitivity, particularly during tough times. ■

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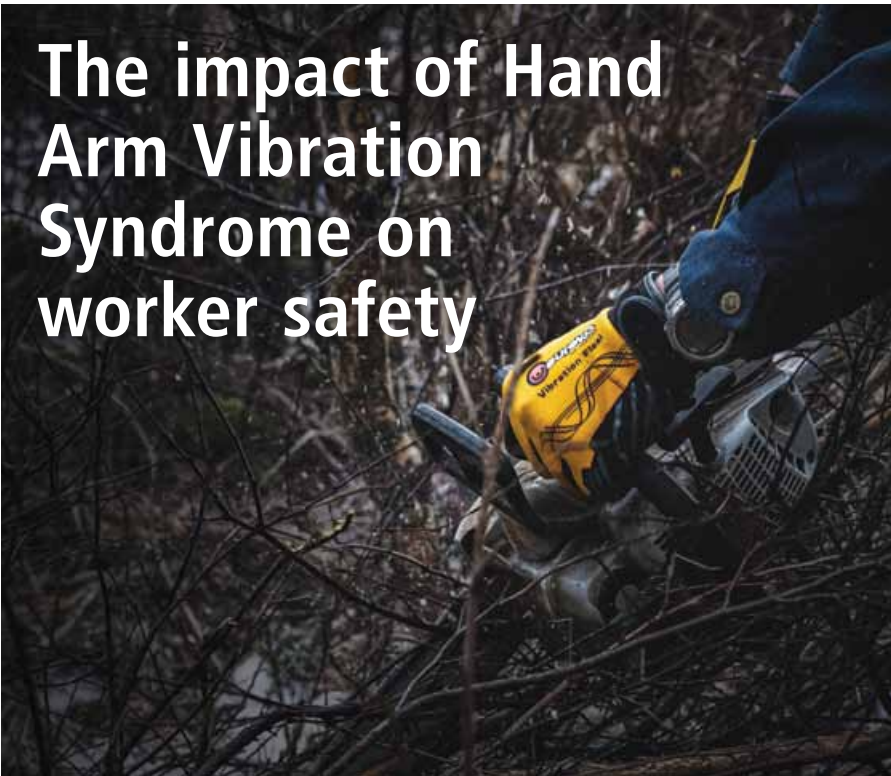
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# The impact of Hand Arm Vibration Syndrome on worker safety



By Eamonn Ryan

***Glove manufacturer Eureka has been involved for many years in technical textile and advanced safety gloves, including a range of anti-vibration gloves.***

**H**and Arm Vibration Syndrome (HAVS) is caused by an over exposure to vibrations when for example using handheld power tools. Symptoms include nerve damage that reduces sensitivity and finger dexterity; white finger syndrome, where fingers lose all feeling and turn white in cold temperatures; muscle fatigue, potentially resulting in disability. Unlike many injuries like cuts there is no well-defined time of injury but rather a gradual, accumulating, and irreversible injury.

Symptoms can take time to become apparent but once evident there is no treatment to reverse the harm and quality of life impact for sufferers can be significant. The indirect and sneaky nature of how injuries are sustained is a major concern and contributes to the low awareness in the industry.

The background to Eureka bringing out its current range of anti-vibration gloves, CEO Markus Berger explains: "The injuries workers can sustain are one of the biggest – if not the single biggest – contributor to lost man hours in Europe, and therefore no doubt South Africa."

Europe has an ISO 5349 standard for HAVS, implementing the limitation of workers' exposure to it. The strength of vibration

is measured in 'acceleration'. "In Europe, if the acceleration is five, and a worker operates the tool for a full eight hours every day, at this rate after 10 years of working the tool one has a 10% likelihood of having serious injuries. This is the threshold of European legislation. A tool vibrating five meter per second square is a medium to serious risk and means if one works eight hours per day the employer will injure 10% of their workforce every decade.

"Because this is an ISO standard, it is also a good reference for South Africa. We as a company have been doing measurements quantifying exactly how dangerous various tools are, and particularly how much the fingers are damaged in instances such as drilling concrete and cleaning concrete mixers, or other activities such as plumbing," he explains.

## **VIBRATION EXPOSURE AND RISK ASSESSMENTS**

Burger explains: Slow tools with rpm of 1 800 RPM (30hz) will cause a resonance and hence land most of the energy in the wrist, lower palm and forearm while faster tools 12 000 RPM (200hz) cause more resonance and injures to the fingers. Despite that, different tools cause resonances in different parts of the hand-arm system and they must be compared to each other. This simplification of putting one relevant value of vibration strength is the ISO 5349 frequency



Markus Berger.



weighted average acceleration. The ISO weighted vibration acceleration value, despite its shortcomings is a convenient tool for estimating risk to the workforce. An eight-hour day with exposure to  $10\text{m/s}^2$  is expected to cause blood circulation injuries to 10% of the workforce after three years of working. To compensate for the simplifications of the ISO 5349 weighted acceleration, it is wise to expect a significantly faster injuries for fast (15 000 RPM) or impacting tools

### WHO IS AT RISK?

Employees are at risk if they regularly use hand-held or hand-guided power tools and machines such as:

- Concrete breakers, concrete pokers
- Sanders, grinders, disc cutters
- Hammer drills
- Chipping hammers
- Chainsaws, brush cutters, hedge trimmers
- Powered mowers
- Scabblers or needle guns

There are two issues of concern, Berger explains: One is the magnitude of how much the tool is vibrating; the second is how it is vibrating.

“In this regard, the risks in the concrete industry are especially high when casting concrete or cleaning the tanks with chipping hammers or jackhammers. When working on concrete floors, or drilling in the concrete, the vibration is even worse. Consequently, the concrete industry has a real challenge with hand-arm vibration and should take particular note of this risk when choosing equipment such as drills or jackhammers.”

Berger says vibration injuries cannot be cured, but can be controlled through use of a four-stage methodology:

- “One is to make a crude risk assessment.
- “Number two is to rotate workers regularly. Don’t let one operator work eight hours a day with a single tool, as they will have a short career. Some people can get the lifelong, disabling injuries after just three to five years and there is no cure.
- “A third aspect of this is to use high quality tools, as there are new tools on the market which are smoother, and implement a good maintenance system, as tools which are better balanced cause less vibration.

- “Fourth is to have a layer of protection such as anti-vibration gloves, and in cold climates – even in South Africa during winter – keep the hands warm,” says Berger.

What are the early signs and symptoms to look out for?

- Tingling and numbness in the fingers (which can cause sleep disturbance)
- Not being able to feel things with your fingers
- Loss of strength in your hands (you may be less able to pick up or hold heavy objects)
- In the cold and wet, the tips of your fingers going white then red and being painful on recovery (vibration white finger)



### GOOD TOOLS AND GLOVES

Berger advises companies to select only “well serviced tools and preferably tools that are ‘low vibration’ due to built-in balancing rings or counterweights”. He adds: “Cutting tools should be kept sharp. Fast high frequency tool might have a lower stated ISO weighted acceleration number but can be just as bad as slower tools with a higher ISO 5349 acceleration value. In the search for better machines be sure to move to balanced tools, not just to shift to faster, higher frequency tools.

“Gloves are extremely important in keeping hands warm, protected from bruises and must be flexible enough not to increase strain too much. Vibration reducing gloves introduce a whole new layer of complexity. The gloves themselves introduce new resonance frequencies to the hand-glove- tool system. Simply said, vibration reducing gloves can be dangerous in certain situations,” he adds.

“Vibration reducing gloves are very effective to remove transient and high frequency vibrations from impacting tools. However, for rotating tools it can be complicated as one has to know what the worker is exposed to and what the gloves can protect from.

“Eureka has developed a system of vibration reducing gloves that are tailored to specific tools to avoid the dangers of misuse. The matching of task, tool and glove can be done with different accuracy, the simplest way is to separate the Impact Vibration family of gloves for impacting and very fast tools above 15-20 000 RPM. Tools slower than this will require Eureka impact Vibration flexi series to avoid dangerous resonance to the fingers. It is important for the glove manufacturer to secure a uniform and consistent quality of foam padding in order to deliver the promised protection at each frequency,” Berger adds. ■



# Sibusiso Hlatshwayo:

## CHRYSO SA's new managing director

By Eamonn Ryan

**His LinkedIn account describes him as "A people centric, passionate and innovative business leader with foresight and a demonstrated history of working and producing results and creating value for stakeholders in the manufacturing industry with specialised knowledge and skills in construction materials." Concrete Trends introduces: CHRYSO SA's new managing director Sibusiso Hlatshwayo.**

**I** started off my career in the industrial / technical area. From early on, I was designing and developing cements that had to meet stringent customer performance expectations. I worked with a range of building materials like cement, fly ash, slag, and the combination that is concrete. My highlight was being involved in producing some of the greenest high-tech cements in the early 2000's. Later on I moved into general management responsible for cement production facilities as well as managing performance for aggregate quarries on a national basis," says Hlatshwayo.

"After completing my MBA (Master of Business Administration), I sought for commercial experience and landed a role responsible for developing a cement additives business in sub-Saharan Africa and ended up becoming the Regional Director. This was my last role before I was appointed Managing Director for CHRYSO Southern Africa. In a nutshell, I'm a dynamic industry leader with experience grounded from an industrial / technical foundation topped with strong commercial and business experience that considers that only people make a difference in business."

### KEY MANAGEMENT LEARNINGS ACHIEVED ALONG THE WAY

Hlatshwayo adds: "Firstly I have learnt that people are inherently intelligent in unique ways and possess latent potential. A leader's role is to spark and ignite that potential in order to transform into delivered performance. I've learnt over the years that people make the difference, and they perform better when they are empowered than when they are managed. We manage things and we lead people.

"Secondly, courage is an important trait for a leader. Often times leaders are compelled to make high impact decisions with little information in uncertain environments. I have learnt to take courage in making decisions that will progress the organisations I've been working for."

Hlatshwayo looks for some specific values and characteristics in business partners he chooses to work with. "Definitely integrity. Often in the beginning of a partnership, arrangements are clear and the objectives are mutual. It's through difficult times that the character of business partners is exposed and that's when integrity triumphs over most characteristics. The ability to stay true to an agreement through difficult times and when conditions change and making sure that there is mutual value."

"My personal brand is 'my leadership equals results'. If you want results, I'm your guy! I'm an empowering leader who places people development at the centre of what I do. I believe that people can transform their performance by investing and improving their skills, competencies and most importantly attitudes.



*Sibusiso Hlatshwayo -  
Managing Director of  
CHRYSO Southern Africa.*

I also set the pace and stretch goals as I know that some tension is required to induce motion and progress. Before anything, I figure out the end goal and make sure it's clearly communicated and the necessary buy in is sought. Whilst I'm approachable, I hold my team to account to the committed goals and performance deliverables," explains Hlatshwayo.

He notes that the additives market is a highly competitive one: "Competition is good for the benefit of the customers in general. Our customers are increasingly more demanding, not just expecting performance and cost benefits, but also sustainable solutions that allow them to meet their net carbon reduction goals in line with their roadmaps. I believe the race is on to ensure that we are well positioned as a sustainability enabler and the preferred partner that is offering a unique customer experience."

As to his aspirations for CHRYSO during his tenure, he notes that in Africa, in particular, there are three main trends that play to the company's strengths. "Infrastructure deficit: the continent's need of critical infrastructure for the well-being of the people of the continent. Urbanisation: an increasing proportion of the population are moving to urban areas. Decarbonisation: as Africa moves to close the infrastructure gap, focusing on accommodating more people in urban areas – this needs to be done in a sustainable manner that ensures that future generations have a habitable planet.

"My aspiration for CHRYSO, in this context, is to become a preferred partner in construction chemicals in Africa for our customers who are on a journey of building Africa in a sustainable way. The unique customer experience should be tangible and an obvious differentiator in an addition to our superior value proposition."

### FAMILY AND PERSONAL ASPIRATIONS

"I'm very passionate about youth leadership development. I really believe that investment in the youth will pay off in the future. I therefore, participate in NPO (non-profit organisation) boards, sharing my leadership and management experience in strengthening governance in organisations with mutual objectives. I also mentor young and upcoming professionals.

Hlatshwayo adds: "I enjoy running. Currently I'm planning to run my second full marathon before year end so I'm excited to train for that. I'm also an avid Formula One fan as well as Moto GP. I've picked up a new hobby in recent years of restoring classic cars and I've just completed my very first project, a 1979 Ford Escort 1600 Sport.

"I don't have any more time though for more hobbies as my children, who are my heartbeat, Phuphelihle (9 year old boy) and Zandiyana (2 year old girl) keep me plenty busy!" ■

# Building industry pioneer passes away

By Jan de Beer

***Eunice Forbes, the first woman to serve as president of a national construction association, has passed away at the age of 80.***

**F**orbes was president of Gauteng Master Builders Association (now MBA North) from 2004 to 2006 and president of Master Builders SA from 2007 to 2009. She was awarded Honorary Life Membership of MBA North in 2014.

Founder and owner of Fintrex, Sandton-based sports track and flooring specialists, Forbes was passionate about reducing unemployment and poverty, and fought for increased training in the building industry and transformation, urging established contractors to help the emerging sector. She also took up the challenge to combat increasing lack of ethics and corruption, compromised health and safety, delayed payments, AIDS-awareness, and industry apathy about the power of unity.

Her work in cementing ties between MBSA and its counterparts in the rest of Africa - through her close association and later representing MBSA at the African Federation for Construction Contractors Association - led to the African body's Executive Bureau meeting in South Africa for the first time in its history.



Eunice Forbes

Forbes, who overcame polio and a curvature of the spine in youth, also was a camp fighter for equal rights for women and the disabled. Despite severe mobility issues in later life, Forbes still managed to be a member or hold executive positions in Nafcoc-JCCI, SA Women in Construction, SABS, Construction Sector Charter Council of the Department of Public Works Ministry and the BUSA National Disability Task Team.

Mohau Mphomela, Executive Director of MBA North, organised the first memorial service yet staged by the association to honour Forbes on June 30. He said: "Our tribute was to acknowledge 'an Iron Lady' who spent almost a lifetime serving the MBA and the entire building and construction industry. Since I became the first black Executive Director of MBA North in over 115 years, Eunice over the past 10 years ensured that I received all the support and guidance required for my work."

Mphomela told the gathering at the memorial service: "I am - because she was." ■

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**TECHNICRETE**





Erika Du Plessis

## Women's month profile with Foxcrete Marketing Manager Erika Du Plessis

By Eamonn Ryan

*To highlight Women's Month in August, Concrete Trends visited Foxcrete marketing manager Erika du Plessis*

**Q** Does Foxcrete have any initiatives under way to encourage more women to be involved in your sector?

**A** At Foxcrete gender rarely plays a role in what type of job a person does. If an individual can do the job, he or she will get the position. We have men that clean workshops, women that work with spanners and women in management positions. It is important for us to have both genders in leadership roles as it has shown to have invaluable benefits to our organisation. When a person possesses the potential to fulfil a certain position, the company will invest in that person and provide support for him or her to achieve their goals. The company is committed to training and development on an ongoing basis and encourages employees to better themselves. The challenge is to find women that are interested to work in the construction industry. It is easier to fill jobs in health and safety, administration and accounting in the construction industry than it is to fill jobs as construction vehicle operators and truck drivers. Although the company does not have a specific initiative under way to encourage more women to be involved in the sector, inclusivity has become part of our company culture.

**Q** As a woman, do you encounter any obstacles to your function or organisation?

**A** Being a woman working in the construction industry for the last 15 years, the times when I didn't encounter obstacles were few, but over time and with experience, the obstacles became less. The main challenge was to find my voice in a space filled with male-dominated ideas and approaches. In the past, most people were raised in households where men earn the money and women assume supportive roles. In my case, it didn't work like that. Gender roles played no part in our household. I was raised thinking that I can do what any man can. But I found myself washing dishes at the office, doing admin and running errands. I overcame this by educating myself as much as possible and working hard to achieve my goals. Over time, I found my voice and my opinions and ideas became important in the workplace. Unfortunately, there are always situations where I have to fight my way through. I get underestimated a lot and if I let my guard down, my authority gets undermined. But I have learned to change this into positive experiences and extract some joy from that. You know, like a: "Go ahead, make my day", kind of thing. So, I have to be tough, strict and consistent at all times.

**Q** What are your thoughts on the involvement of women, and the obstacles they encounter, in what is a male-dominated industry?

**A** It is tough for a woman to work in a male-dominated industry. We don't get recognised as swiftly as our male counterparts. We have to work for it and prove ourselves first. Another challenge is workplace harassment of women. Gender-based violence does not just occur at home. As business operates in society, social issues such as workplace harassment is a daily reality for many women. For this reason, we have to be able to fend for ourselves, be resilient and stand tall. Respect is earned, not a given. I must say, when I walk into a workplace with my high vis PPE and a clipboard, I am greeted with a smile and get offered coffee and muffins. But this sad reality is not always true. I have noticed a change in recent years across industries and I have read many success stories of women achieving their goals. Women bring a certain set of skills to the table that contributes greatly to the success of a business. Adversity made us strong. Our empathetic side makes it easier to connect to others on a level that males might find challenging. Women do well in areas such as self-awareness, adaptability, teamwork and conflict resolution which are all essential skills for effective leadership in the workplace.

**Q** What are your thoughts on the need for diversity in the sector – and indeed any sector – to find better solutions to problems and challenges?

**A** Diversity cultivates creativity and innovation. If we spend our time with people who are like us, our ideas and ways

of thinking will be limited. We will have the same solutions to problems. We will do things in similar ways. Introduce someone from another culture, gender, race or age, suddenly new ideas, solutions and ways of doing things will come to light. Women are still underrepresented in the construction industry. It could be because of the stereotype that construction is unfeminine. The truth is, construction is quite elegant. Like a play in a theatre, everyone plays their part in planning and constructing this amazing building or bridge or reservoir. There is also no reason why safety shoes can't be pink and why we can't implement smoothie Tuesday. My point is: the involvement of people from all walks of life is changing the rigidity of the construction industry and I find this quite exciting.

**Q** Are there any experiences you've had in business that other women could learn from?

**A** Although I had to work harder than my male counterparts to achieve similar goals, I learned so much more along the way because of it. The life skills I gained are invaluable. At times I became despondent, but the key is to not give up on your goals. Learn as much as you can. Do the work, no matter how menial and do it consistently every day. It is never in vain. There will come a time when the hard work will pay off. However, most often than not, women still assume most of the household responsibilities in life and the risk of burnout is high when we try to manage this work-life balance. It is thus important to be aware of this and to look after yourself in the process. Eat healthy, get enough sleep, and take the time to relax. ■



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One Cape Concrete's U-shaped structures with protruding rebar for connecting to in-situ roof beams.

# Ground-breaking use of precast concrete anchors new motor museum

By David Beer on behalf of the Concrete Manufacturers Association

*In what is undoubtedly a unique application of precast concrete in South Africa, 12 U-shaped precast concrete elements, manufactured by Concrete Manufacturers Association member, Cape Concrete, have been used as the primary anchor material for the construction of a motor museum at Lourensford Wine Estate in Somerset West.*

Limited by town planning to a maximum 900m<sup>2</sup> footprint, architect Anton Heyn designed the building to resemble a barn and to accommodate as many cars as possible, 42 in all, as well as motorbikes and other memorabilia. A pair of timber barn doors at each gable end provides vehicle access and cars are displayed in four bays, each flanked by four of the precast structures.

"To a large extent the exhibition space determined the shape of the precast concrete elements," said Anton Heyn. "In order to optimise our limited space allowance, we angled the two lateral faces of each column at 20° to create an additional 20% of exhibition space. This not only allowed 10 cars to be parked in two opposing fanned crescents in each display bay, but improved viewing angles as well."

A 3m wide central section, which runs the full length of the barn, forms the viewing area and another two cars can be displayed in the reception area situated in the middle of the building.

The precast structures were used to secure the building's timber-framed walling and other construction elements. It was

clad with Zinacalume aluminium roof sheeting which was also used for the roofing above each of the four exhibition bay sections and the central reception area.

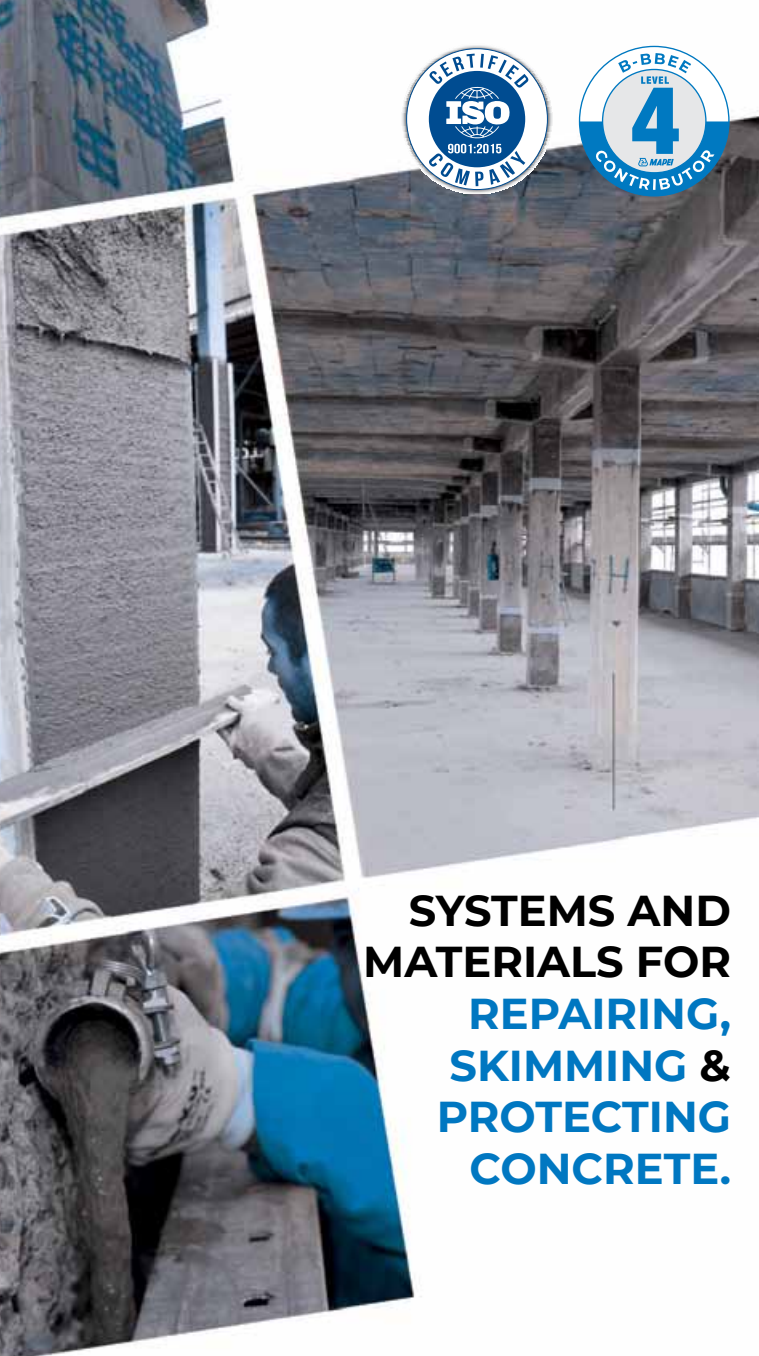
The roofing also comprised four 15m x 2.6m in-situ slabs which were cast between the Zinacalume roof sections and were supported at each end by the precast elements. The slabs were tapered from 350mm to 250mm to provide a slope for rainwater which drains into the hollow sections of the U-shaped precast units. Similarly, the five discrete mono-pitch Zinacalume roofs, slope in the same direction, draining into gutters mounted on the building's western elevation.

In addition, eight 15m x 2m (height) in-situ beams were cast on either side of the four concrete roof slabs to support four wooden truss assemblies for the Zinacalume roofing and its ceilings.

The precast units are founded in 120mm (depth) x 200mm (width) U-shaped channels which were cast into the footings.

"We had to increase the depth of the footings to ensure we didn't compromise their structural integrity," said structural engineer, Gawie Combrinck, managing director of GFC-





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*Shuttering for the in-situ roof slabs straddles the U-shaped precast concrete elements.*

Holdings. "The original design had a 50mm cover above the reinforcing steel but it was not enough to accommodate the founding channel. So we increased the cover to 150mm to give us the required 120mm channel depth. Once a precast unit was lowered into a groove it was shimmed level and sealed with a flowable non-shrink grout.

"When I first arrived on site I thought to myself this is beautiful concrete. I realised then that it heralded a spectacular concrete display, because with tolerances of less than 4mm on each, the precast elements were as perfect as you can get them. There is not a single crack on any of them thanks to some heavy reinforcing.



*One of the U-shaped footing channels.*

Cape Concrete director, Walter Botes, commented that because an off-shutter finish was required on all sides, the precast structures were cast vertically.

"This entailed pumping self-compacting concrete from the bottom of the mould, a process which eradicated air bubbles without using external vibration and gave a much smoother finish. The precast structures were cast with rebar extensions at the top to tie into the cast in-situ roof beams.

"The four corner precast units were cast with an additional concrete wing to which the timber barn doors have been attached. These units are all identical, except that two were cast with door openings for staff access. A single mould was



*One of the roof-truss assemblies which was mounted between two in-situ roof beams.*





One of the museum's eight bays.

used for casting all 12 units but the mould required some slight modification for casting the four corner units.

"Transporting the units to site required careful planning. Weighing 13 tonnes apiece, they were lowered onto their side and delivered two at a time. Using lifting anchors cast into the top of the units, they were tilted into the upright position before installation. We used a four-legged chain running over two rollers, belt slings and a spreader beam to lower the columns into position," said Botes.

"This project is quite unique," added Anton Heyn, "and was completed in what was a fixed budget. Precast concrete is a very flexible and malleable building product and I can't think of any better material which we could have used, especially as we needed to opt for shapes which offered better space utilisation.

"I'm very happy with the excellent finishes achieved by Cape Concrete. As an architect one couldn't have expected better than this. It's what we visualised and it's turned out perfectly," concluded Anton Heyn.

The motor museum follows the contours of the site and the flooring in each bay section is stepped down 200mm. The floor has a very smooth finish which was protected during construction with plastic sheeting and a layer of sand.

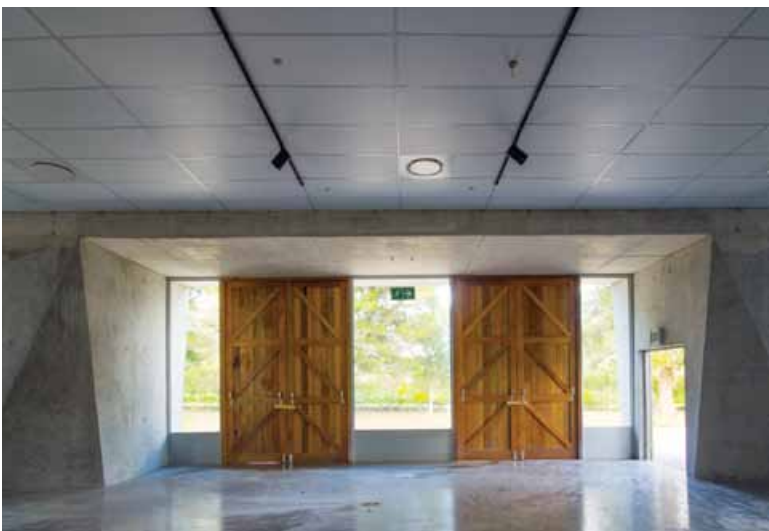
As direct sunlight fades vehicle paint over time, the museum's lighting is generated artificially and naturally; dif-

fused natural light is supplied by four corner windows in each display bay and by windows above the reception area. And an air pressure system has been installed to keep the museum as dust-free as possible.

The museum is linked by a path to the Lourensford market area where, in a second phase of the project, additional cars will be displayed in redesigned shipping containers. The path and the immediate area surrounding the museum has been paved with grey interlocking pavers supplied by Concrete Manufacturers Association member, C.E.L. Paving Products. ■

#### Project team

Architect	Anton Heyn
Structural engineers	GFC-Holdings (Gawie Combrinck)
Quantity surveyors	Piet Bentum
Main contractor	Build A Way
Precast concrete columns	Cape Concrete
Fire engineer	Hannes Pretorius
Town planner	Gideon Roos
Lourensford	Koos Jordaan, Tinus Potgieter



The southern barn-door car entrance mounted between two of the precast concrete elements supplied by Cape Concrete.



One of the Terraforce Four x Four®  
Step Block Caps showing the  
installation reinforcing.

# Terraforce introduces Four x Four Step Block Caps

*By David Beer on behalf of the Concrete Manufacturers Association*

***CMA member and global landscaping block designer and license provider, Terraforce, has introduced the Four x Four Step Block Cap, a concrete panel 400mm (width) x 200mm (height) x 50mm (thickness), designed for installation at the ends of landscaped seating rows and steps to create neater and more attractive edging for outdoor seating installations.***



The world's first Four x Four Step Block Cap block installation was completed in June 2022 as part of a sports facilities upgrade at Durbanville Preparatory School in Cape Town. The upgrade included the construction of 244m of seating and steps of between three and five rows high and built on five elevations. The seating fronted onto two new Astro Turf fields and two grassed fields.

It was constructed with the Terraforce Four x Four Step block and the L12 block, and the Four x Four Step Block Caps were used to panel the edges of the last Four x Four blocks at the ends of the of seating and stairs rows.

The project also included the construction of a vertical wall between the two Astro Turf fields built with L12 blocks. And in a first for the Western Cape, the top blocks of the wall were capped with the L12 Terraforce Cap, a capping panel similar to the Four x Four Step Block Cap.



The neat finishing of the Terraforce Four x Four® Step Block Caps.

All the products used on the project, including the Four x Four Step Block Cap and the L12 Terraforce Cap, were manufactured by licensed Terraforce block manufacturer, Klapmuts Concrete.

Overall, 10 000 4x4 Step Blocks, 3 200 L12 blocks and approximately 150 caps were used for the project. The actual installation work was done by Decorton Retaining Systems as a sub-contractor to the main contractor, DP2 Construction. During the installation process additional reinforcing was provided by the use of dry concrete to support the blocks.

Cast with two bars of reinforcing with hooked ends, the Four x Four Step Block Cap is easy to install. The host block is simply filled concrete into which the reinforcing is pressed until the capping panel is flush with the block.

One of the challenges of the project was the extremely long seating rows and sloped embankments which meant the seating had to be stepped down in several places. Moreover,



Some steps capped with the Terraforce Four x Four® Step Block Caps.



Seating sections showing the stepped-down construction.

the seats and stairs were given a slight slope to allow for water run-off.

The introduction of the Four x Four Step Block Cap resulted from a special request from the school which had previously undertaken similar projects using the Terraforce blocks. As a result, the Four x Four Step Block Cap blocks will now be made available countrywide and globally through other Terraforce licensees. ■

#### Project Participants

Engineer:	Lyners Consulting Engineers
Main Contractor:	DP2 Construction
Sub-Contractor:	Decorton Retaining Systems

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*A newly completed layby entrance and sidewalk installation paved with C.E.L.'s Brownstone exposed aggregate pavers.*



## Exposed aggregate pavers beautify Ashton, Cogmanskloof and Montagu Roads

*By David Beer on behalf of the Concrete Manufacturers Association*

***Brownstone coarse-exposed aggregate pavers, supplied by Concrete Manufacturers Association member, C.E.L. Paving Products, have formed part of the rehabilitation of Trunk Road 31, a 13.4km pass which cuts through Cogmanskloof situated between Ashton and Montagu on the Western Cape's renowned R62 route between Oudtshoorn and Robertson. In addition, the pavers were used to resurface extensive sections of sidewalks along the main thoroughfares in Ashton and Cogmanskloof pass.***

**C**.E.L. also supplied its 80mm Terracotta interlocking pavers for the construction of four raised intersections on Ashton's main road. The project was undertaken and funded by the Western Cape Department of Transport and Public Works to improve traffic and pedestrian safety and to enhance the flood capacities of the bridges along the route.

H&I Civil Engineering (Pty) Ltd was appointed as principal contractor of the project which commenced at the beginning of March 2019 and reached completion in May 2022. It involved resurfacing Trunk Road 31 which skirts the scenic Cogmanskloof River, and included various ancillary works such as the construction of sidewalks and rest areas on some sections of the pass road.



*A coarse-exposed aggregate paver sidewalk at the entrance to Trunk Road 31 in Montagu.*





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A sidewalk in Ashton paved with C.E.L.'s coarse-exposed aggregate pavers.

Furthermore, the project involved the erection of three new bridges, two of them straddling the trunk road, and the other, the iconic cable-tied arch bridge, spanning the Cogmanskloof River in Ashton. The old bridge had been repeatedly damaged by flooding and silting and no longer fulfilled its functional purpose. The new bridge accommodates four lanes of traffic and is flanked on either side by sidewalks surfaced with C.E.L.'s exposed aggregate paving.

Approximately 15 000m<sup>2</sup> of the exposed aggregate pavers were used in Ashton and Cogmanskloof along Trunk Road 31. Additionally, 3 700m<sup>2</sup> of the Terracotta 80mm interlocking pavers were laid to seal the four raised intersections on Ashton's main road. The interlockers rest on a 300mm cement-stabilised sub-base topped with a 150mm G1 sub-base course, and a 20mm layer of bedding sand.

Consulting engineers, AECOM SA (Pty) Ltd, were responsible for the design and project management elements of the overall project. As the principal contractor, H&I Civil Engineering was responsible for the project's entire construction programme. The physical paving work was undertaken by three sub-contractors: Hydro Cape Turf surfaces; Suku Nikizela and Zimele Civils; and Plant Hire. All the unskilled labour for the paving work was sourced locally in Ashton and Montagu as was Hydro's skilled labour complement.

H&I's Civil Engineer responsible for the project's Emerging Contractor Development program, Yamkela Hlehliso, said that he was very happy with the quality of pavers supplied by C.E.L.

"The exposed aggregate pavers look like natural stone and blend perfectly with the folded sandstone crags and rock facing features of Cogmanskloof," said Hlehliso. ■



A sidewalk paved with C.E.L.'s coarse-exposed aggregate pavers on Ashton's recently completed cable-tied-arch bridge.





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Concrete Units precast concrete channel sections being delivered to site.

**South Africa's largest abalone producer, Abagold, has installed drainage channels constructed with precast concrete sections manufactured by CMA member, Concrete Units. The installation forms part of an upgrade of Bersig, Abagold's second abalone farm, established in Hermanus in 2002.**

**A**balone is one of the planet's most desirable sea foods and Abagold cultivates the world-renowned *Haliotis Midiae* species which it exports live, canned and dried globally. Bersig is one of three Hermanus based Abagold abalone farms, the others being Sea View and Sulamanzi. Abagold is also invested in a number of subsidiary aquaculture ventures locally such as port Nolloth Sea Farms (an abalone ranching facility) and Specialised Aquatic Feeds. Internationally Abagold has invested in and built Oman Aquaculture in Mirbat Oman, the Middle East's first abalone aquaculture facility.

Abalone farming involves maintaining a continuous flow of fresh sea water through cultivation tanks.

The new system was designed by consulting engineer, Jean Dippenaar, who conducted extensive analyses of flow rates on the old system before he determined the optimal flow rates for

its replacement. Once the new design was finalised the original plant was gutted; the old tanks, pipe work and the PVC drainage pipes were removed and were replaced with a new tank system and the precast concrete drainage channels.

Biological growth inside the old system's underground PVC pipes made them almost impossible to clean and this impeded water flow to the detriment of the farm's yield curve," said Nico Hough, site manager of main contractors, Exeo Khokela.

"By contrast, using precast concrete drainage channels has not only improved flow rates, but has simplified operation and maintenance. What's more, we anticipate that far less maintenance will be required in the years ahead. For instance, after three months in operation, the channels required no maintenance at all," said Nico Hough.

"Originally designed as an in-situ installation, we switched to precast concrete channelling because it gives the smoothest possible concrete finish and it saved a month's installation time. Smooth finishes inhibit biological growth, unlike porous surfaces which encourage it."

Implemented over two phases, Phase 1 involved the construction of 13 channels and took six months to implement, and with nine channels, Phase 2 took just under four months to complete.

In order to minimise the number of channels, Dippenaar's design has two rows of tanks draining into one channel. Two 110mm diameter PVC outlet feeder pipes were cast into the side walls of each channel section at an angle of 45° to yield a tank flushing flow capacity of approximately 180m<sup>3</sup>/hour.

Concrete Units supplied 327 channel sections for both phases. Weighing 2.3 tonnes apiece, the channel sections were also cast with interlocking tongue and groove ends to ensure watertight joints and were laid end-to-end using Jointex and an expansion filler.



Freshly laid precast concrete channels.



A precast concrete drainage channel flanked by two rows of abalone tanks.

“One hundred and sixty four channel sections were used for the project’s first phase and 163 units were deployed for the second,” said Alwyn Carstens, production manager of Concrete Units.

“With external dimension of 700mm (width) x 600mm (height) X 4.04m (length), we cast the channel sections inverted to provide the smooth off-shutter finish. We used just over 23kg of rebar on each channel section. Inner concrete cover was 75mm (typical for marine work) and outer wall cover was 60mm.

“We used a 40MPa durability mix with a GGCS slagment extender. And a special water resistant and crystalline waterproofing admixture, SIKAWT 200P, was used to reduce the permeability of the concrete. The admixture will also improve the durability and design life by healing all post cracks that might form over the design period,” said Carstens.



Sea water drains from the abalone tanks into a channel from two outlet feeder pipes.

In addition to installing the new plant and the channels, Exeo Khokela were also responsible for the earthworks.

“We created the channel platforms so that the drainage channels could be installed at a constant slope of 1%. We used imported fill for the subgrade and we raised the platforms by 350-500mm to achieve the slope. After excavating the channel trenches the channels were installed on 15MPa blindings,” concluded Hough. ■



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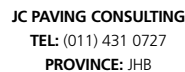
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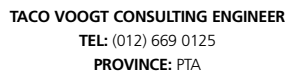
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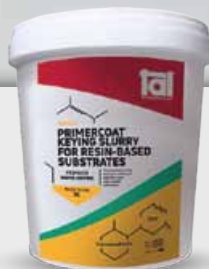
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