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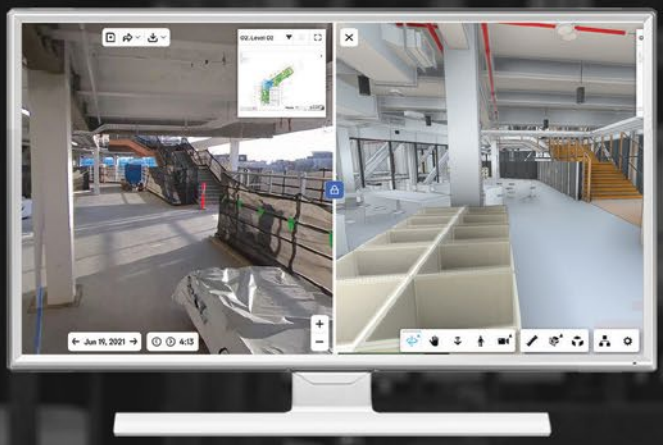

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Senior Project Engineer
and Quality Control Manager, R&S

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REGULARS

ON THE COVER

Keller Geotechnics SA has recently completed the Enablement Works Contract for the Cape Town Station Student Accommodation Project for the Eris Property Group. The site is located on the corners of Strand, Adderley and Old Marine Drive in Cape Town. The R1,3bn development will include a 3 085-bed purpose-built student accommodation, 6 700 m² of modern retail space and a new world-class public square. This new retail precinct will be known as Cape Station.

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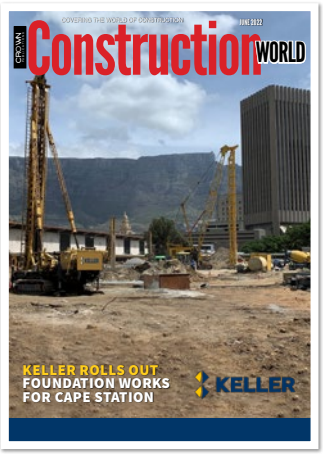


The MSCI South Africa Green Annual Property Index 2021 was released in April. This index has, for the past six years, provided an independent comparative return on investment for green-certified and non-certified offices.

It illustrates that there is not only a link between green-certified buildings and investment performance, but also between certified buildings and lower vacancy rates, lower operating costs, higher net operating income and lower discount rates.

The current instalment of the MSCI South Africa Green Annual Property Index supports how much business sense green buildings in the commercial property sector make. In fact, it shows that the investment performance of certified green, Prime, and A-grade offices outperform buildings that are not certified.

The Index is released annually by the Green Building Council of South Africa (GBCSA) and is sponsored by Growthpoint Properties.

Towards the end of 2021, the index sampled 303 prime and A-grade office properties with a combined value R59,1bn. Of these, 153 were green-certified buildings which were compared to 150 non-certified offices of a similar quality.

The results indicate that the buildings reduce cost of occupancy for tentants and that these buildings provide a healthier environment for occupants. At the end of December 2021, the green-certified office sample delivered a return of 2,2%, 170 Building Performance Score more than the non-certified samples' return of 0,5%. During the past six years, green certified offices outperformed the non-certified sample by 19,1%.

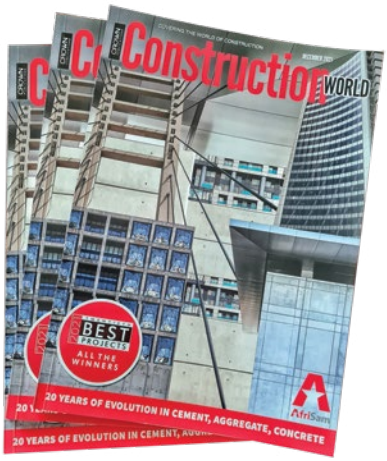
The main reason for the better performance of green certified offices is that they have a higher income return despite costing, on average, 29% more per square metre to build. Green certified offices have lower per square metre usage of electricity-and water when compared to non-certified offices. The increase in these costs can have a significant impact on performance over the lifecycle of a property.

Highlight of 2022 (so far)

The South African construction landscape has not seen stellar results like this for a while: Afrimat, a leading open-pit mining company providing industrial minerals, bulk commodities and construction materials, recently released full year results for the year ended 28 February 2022, with revenue up 26,7% to R4,7bn (2021: R3,7bn). In the current cut-throat context, this is impressive.

Stay safe

Wilhelm du Plessis
Editor



2021's special Best Projects issue. Entries are now awaited.

EDITOR & DEPUTY PUBLISHER
Wilhelm du Plessis **constr@crown.co.za**

ADVERTISING MANAGER
Erna Oosthuizen **ernao@crown.co.za**

LAYOUT & GRAPHIC ARTIST
Katlego Montsho

CIRCULATION
Karen Smith

PUBLISHER
Karen Grant

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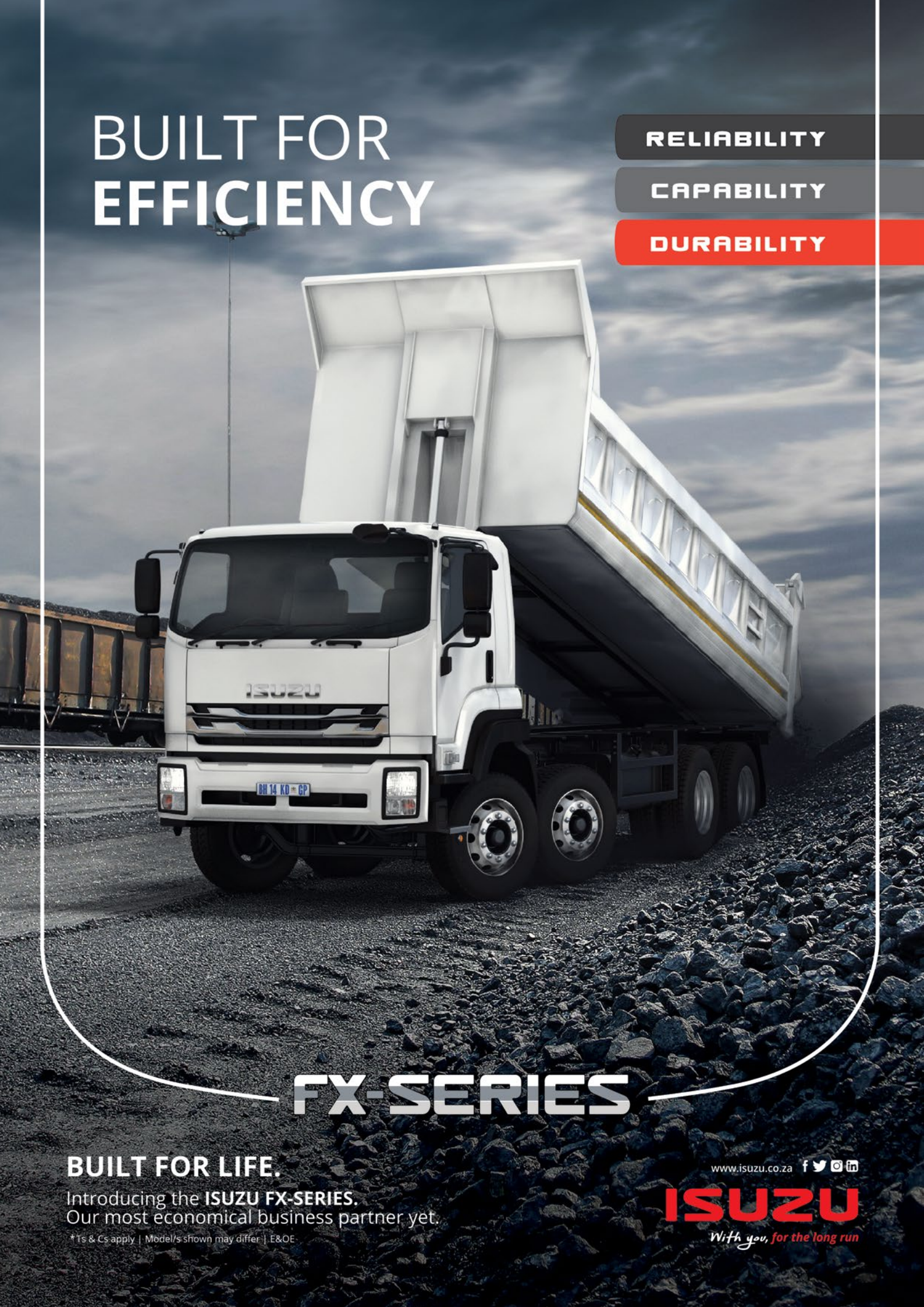
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PRESIDENT CYRIL RAMAPHOSA OPENS COROBRIK'S KWASTINA FACTORY

President Cyril Ramaphosa says the public sector and private business can come together to form productive partnerships which can accelerate South Africa's economy and create jobs. The President was speaking at the opening of the Corobrik Kwastina Brick Manufacturing factory at Driefontein, in Gauteng.

Corobrik's new R800m Kwastina ('Home of the Brick') factory in Driefontein is the most technologically advanced and environment friendly brick-manufacturing plant in Africa. "Kwastina is testament to our commitment to constantly innovate. It is an acknowledgement on our part that we need to progress and make those step changes to keep us relevant for the next 100 years," says Corobrik CEO Nick Booth.

The President highlighted that the fact that the company is a local one that supports government efforts to empower and support local enterprises.

"Corobrik has made a significant contribution to our efforts to extract greater value from our natural resources, by making its bricks from raw materials extracted from South African soil. This is an important part of government's efforts to support localisation, supplier and enterprise development, as well as empowerment.

"As we proceed with the implementation of our infrastructure plan, the demand for building materials will grow substantially. It is our intention that as much of these materials as is possible should be sourced locally," President Ramaphosa said. The President hailed the local company for doing well despite the devastating and detrimental impact COVID-19 has had on the South African economy.

"We are an economy that was devastated by COVID-19. Much as we sought to manage COVID-19 and navigate our way around its dangerous paths, we still lost two million jobs. For an economy like ours which was precariously positioned over a number of years to lose two million jobs in just a 12 month period is quite a devastation.

"And we are very pleased that as we begin to recover, we have companies like Corobrik who are living up to the commitments they made and are creating jobs and making sure that our economy moves forward. Corobrik is making a vital contribution – in a very literal sense – to rebuilding South Africa's economy," President Ramaphosa said.

The hi-tech facility is fully automated, from mixing the raw materials to the end product. Capable of producing 100 million bricks a year, the new factory will easily be able to meet larger-volume orders. In a first for the South African market, Kwastina will be flexible enough to produce small quantities of bespoke products for the architectural market.

Kwastina is not only one of the largest brick manufacturing

plants in sub-Saharan Africa, but also one of the most modern and energy-efficient in the world. After a comprehensive analysis of Corobrik's existing manufacturing process, the Greenfield project resulted in a new shaping plant, a new fully automatic wet side, a setting plant for direct setting, two tunnel dryers and two tunnel kilns, and a new unloading and packaging plant for dispatch packs without pallets.

"What makes this factory so exciting is that it allows us to compete anywhere in Southern Africa, landing product in regions traditionally not in Driefontein's market as the new factory is more cost-effective," says Booth. "It is going to give us an advantage in the market, not just in terms of technology, but also in quality and consistency, which are critical for specifications involving tight tolerances."

Corobrik is already hard at work extending its product range, with various new products being introduced already. Current trials are being carried out with brick glazing for bespoke projects, as well as the clay raw material to produce different colours to give Kwastina a unique footprint in the country.

Booth concludes that the commissioning process went smoothly, with no major hiccups in the process. "It was a privilege to see Kwastina through to fruition." He ascribes the success of the project to detailed planning and the fact that tried-and-tested technology has been used, mainly from German suppliers. ⊙

HI-TECH INNOVATION AT KWASTINA

Dryer plant

The dryer system consists of two separate tunnel dryers based on latest advances in air circulation technology. This means air in the individual zones is circulated by radial fans without housing, installed in an intermediate ceiling and operated via external drives. Adjustable injection openings ensure an optimal drying process.

Kiln plant

The kiln system consists of two separate tunnel kilns coated with PTFE on the inside for sealing purposes. To optimise energy consumption, the kilns feature a preheated combustion air supply and systematic wheel cooling in the undercar area. The burner system with pulse control and flashing device, combined with a kiln control system, ensures an optimal firing result to produce a variety of fired products.

Unloading and packaging

The kiln car handling is fully automated. The tunnel kiln cars are transported to the unloading position, where finished firing packs are unloaded from the kiln car deck. The firing packs are placed carefully on a belt conveyor and delivered to the dehacking robots. Two industrial robots form a complete dispatch pack on each line and feed it to the packaging plant.

Kiln car cleaning system

For an optimum cleaning result, both the bottom draught blocks and kiln car deck are completely cleaned according to the 'top-bottom' system.

ZUTARI APPOINTS NEW MANAGING DIRECTOR OF TRANSPORT

Leading consulting engineering and infrastructure advisory firm Zutari has appointed Vishaal Lutchman as its new Managing Director of Transport, with effect from 1 April 2022. Vishaal joins Zutari from the South African Institution of Civil Engineering (SAICE), where he was CEO since 2020. During these two years, he steered SAICE through a time of great challenges within the organisation, the industry, and the country, while having to endure the consequences of a regressive economy exacerbated by the devasting effects of the pandemic on the profession.

Vishaal has always had a passion for civil engineering, with a particular focus on building strategic teams, mentoring, training, and developing young engineers. He has played a key role in its advancement by providing innovative solutions for professional career growth, advocating for the protection of the profession and reconnecting infrastructure stakeholders, and leveraging such relationships towards a common development agenda.

Vishaal is a professional engineer with over 22 years' experience in the leadership and management of businesses related to infrastructure development. His technical and advisory skills were nurtured mainly within the maritime and rail disciplines. As an executive, Vishaal has focused on integrating organisational strategy, operations, and technical capacity with future-fit engineering solutions.

Before his role at SAICE, Vishaal was Director of the maritime, aviation and rail business at WSP | Parsons Brinckerhoff. Prior to that, he spent five years with RoyalHaskoningDHV as Director of the Maritime and Freight Advisory group. As Deputy Chief Engineer at Transnet, he oversaw the parastatal's capital and port infrastructure projects across all ports in the country.

He is well versed in providing advisory and consultancy services for infrastructure projects in Africa, having worked in South, East, and West Africa. Vishaal's qualifications include an MPhil in Leadership, an MBA, a Diploma in Business Management, a BSc Civil Engineering degree, and a Diploma in Civil Engineering, among others. He is currently completing his PhD in Urban Studies at the University of Johannesburg. "Our clients are committing greater investment to improve transport infrastructure. We are confident that, with his vast experience in the field, Vishaal will bring innovative thinking and strong leadership in implementing and managing complex and critical projects for us," says Zutari CEO Teddy Daka. Vishaal will be based in Tshwane and be part of the Zutari Executive Committee. ⊙

SUPPLY CHAIN RISKS NEED TO BE BUILT INTO CONSTRUCTION CONTRACTS

Current logistical bottlenecks present high risks for contractors in completing capital projects, for miners and other industries, and they need to protect themselves against penalties. ***By Tyron Theessen and Megan Jarvis, Partners at Webber Wentzel (pictured).***

Supply chain disruptions, which emerged as a result of COVID-19 lockdowns in 2020, and were joined by rising inflation towards the end of 2021, have intensified in the first part of 2022. With the war in Ukraine and the COVID-19 shutdown in Shanghai, it looks as if disruptions may worsen.

The other side of logistical disruption and the war in Ukraine is that it is causing a spike in the prices of certain commodities, so mining companies are more anxious than ever to accelerate expansion projects – even as their contractors are battling to secure the necessary inputs.

For example, the shortage of microchips, which are used in a vast range of consumer products, including cell phones and automotive vehicles, stemmed not only from the closure of factories but also rising demand for technology, when more employees had to work from home. Three-quarters of microchip production is located in East Asia, according to the New York Times.

Another area of acute shortage over the past two years has been steel, as not only were mills shut during COVID-19 but, when they re-started, they underestimated the extent of economic recovery. This has caused a spike in the cost of certain steel products.

The costs and timelines for importing goods have increased dramatically, with a 500% increase in the freight costs of using a 12-meter container to send goods by sea from China to South Africa

Additionally, COVID-19 cases continue to affect the outputs of suppliers, manufacturers and contractors at various levels of the supply chain. For example, an outbreak of COVID-19 at a supplier or sub-supplier compromises its capacity to complete production timeously, which in turn delays delivery to manufacturers and contractors.

These delays and heightened costs are causing contractors and OEMs to seek ways to manage risks and disclaim responsibility for time and cost overruns on large capital projects. Material Adverse Event or Force Majeure clauses may not assist, as the materiality threshold may not be met in respect of the former and supply chain disruption is unlikely to be construed as an unforeseen or unavoidable event in relation to the latter.

With no immediate prospect of this problem being resolved, contractors that need to procure critical capital items reliant on inputs like steel, microchips or the logistics chain are having to consider including additional clauses in their contracts to protect themselves from the ramifications of failing to deliver within anticipated timelines. Contractors need to acknowledge that there are higher levels of commercial risk and manage these differently.

Where there are concerns that a potential delay in the supply chain will have an unintentional knock-on effect on the construction period, the time for completion and the defects date (and these delays are not attributable to the contractor), the contractor may consider including back-to-back provisions in their contracts with suppliers in order to mitigate these risks. In addition to providing for contractual relief, contractors should reduce their reliance on a single critical source of supply and look for alternatives. Sourcing products closer to home or using local products may also alleviate risk.

The knock-on effect of risk to corporate reputation should be considered when selecting a supplier and the relevant geopolitical risk ought to form part of this evaluation. Sustainability of supply may form an important part of ESG reporting for contractors too. ⊙

"Another area of acute shortage over the past two years has been steel, as not only were mills shut during COVID-19 but, when they re-started, they underestimated the extent of economic recovery. This has caused a spike in the cost of certain steel products.

MULTIPLE BENEFITS FROM SA's MOVE TOWARDS RENEWABLES

As South Africa begins a more rapid adoption of renewable energy sources as part of its transition away from fossil fuels, this is expected to have direct positive impacts on air quality and health.

According to Nicola Rump **(pictured)**, principal environmental scientist at SRK Consulting, the trend will contribute towards the country's climate change commitments and improve air quality – which is increasingly of concern, along with the associated health impacts, in some parts of the country.

"With stricter standards in recent decades, stewardship of our water resources can also be improved as we move toward renewable energy," she said.

Last year, South Africa's Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) progressed with the awarding of preferential bidder status to eight private energy producers. "Using sources ranging from liquified natural gas (LNG) and diesel (mainly as back-up) to solar photovoltaic (PV) technology and battery energy storage systems (BESS), these bids showed that the cost gap between renewable and fossil fuel energy generation had narrowed," she said. The RMIPPPP called for bids to supply 2 000 MW to meet the immediate electricity supply gap, and another 11 813 MW from various energy sources.

She noted that a further upside of using more renewable sources – such as solar energy facilities and wind farms – is that power generation is gradually decentralised, potentially reducing the impact of unexpected failure at a local level.

"While any disruption of a large, centralised power generating system can leave large areas unsupplied, the impact is likely to be much less if a single turbine or small facility is temporarily out of service," she said. ⊙

JOINT ACTION NOW URGENTLY NEEDED TO HALT CONSTRUCTION MAFIA

Years of disruption by construction mafias in the civil engineering sector are holding back South Africa's recovery, and all parties now need to throw their support behind efforts to eradicate this criminal scourge.

Lindie Fourie, operations manager at the Bargaining Council for the Civil Engineering Industry (BCCEI), says the problem of intimidation, extortion and violence on construction sites has reached crisis levels.

"We are encouraged by President Cyril Ramaphosa's recent announcement of a special police unit to deal with the construction mafia, but it will need all stakeholders to give active support if this effort is to be successful," says Fourie. "The BCCEI has developed an action plan to address the challenges in the civil engineering industry and we are reaching out to other players to ensure our response is collaborative."

Key aspects of the plan include working with stakeholders to effectively prevent interference in projects, as well as reacting proactively to instances of interference, she says. She commended the various government bodies, industry associations and professional societies who have spoken out against the construction mafia, and called on all players to join hands in their responses.

"With our members being both employees and employers, we have witnessed lives being threatened, ransoms demanded and people kidnapped as well as jobs lost when these criminal elements target important civil engineering projects – most of which are state-funded," she says. "With government working hard on its economic reconstruction and recovery plan, the country cannot afford its investments in infrastructure to be hijacked by local mafias." She highlights that the delays and damage caused is stalling government's job creation efforts, as infrastructure works are among the quickest ways to stimulate growth. With Treasury's budget under strain following years of low growth and the COVID-19 pandemic, it cannot afford the cost of infrastructure to be further raised by criminal intimidation of contractors.

"Government infrastructure projects all include a range of constructive transformation measures, which are dutifully applied by contractors who legally win these projects," says Fourie. "Mafias are undermining these worthy efforts and derailing crucial improvements to our roads, water, energy and other infrastructure – and holding back government's service delivery." ⊙

LET'S ACKNOWLEDGE GOVERNMENT's HANDLING OF THE PANDEMIC

Imperfect though it might have been, it is important to acknowledge South Africa's success in the handling of the COVID-19 pandemic. With the announcement that the State of Disaster has ended, it is an apt time to look back and to note with gratitude that – for the most part – we did well. To a large extent, as a country we can hold up heads up with some pride. ***By Howard Feldman, Head of Marketing & People at Synthesis***

Whereas it is always important to look back at a process to determine what areas were not handled as best as they could have been, it is also important not to judge the process, decisions and implementation with knowledge that we have today. It is undoubtedly the case that the pandemic made fools of all politicians, doctors and experts and taught us humility in ways that were hard to imagine.

Early on in the life of the pandemic, doctors and scientists were forced to come to terms with just how large the void in knowledge was, and governments were forced to make decisions that they knew would result in hardships one way or another. Despite the confident rhetoric, few lawmakers anywhere could honestly claim to comfort with their choices that would commit their citizens to some form of suffering one way or another.

These were times of unenviable choices: times when it was much easier to be a commentator than a decision maker

There were, of course, fantastically stupid decisions as well. The banning of cooked chickens, open toe shoes and cigarettes will haunt the government for years, but there is hardly a cabinet anywhere who hasn't been called out by their citizens for an act of irrationality. The beach closures and the inevitable damage to the morale of the nation was inexcusable and one that appeared to me to have been made in spite. It is unlikely that we will ever know the real motivation for the decision. In addition, the theft of COVID relief funds will remain an embarrassing blight on an already corruption-tainted government.

Once again, a terrible 'own goal' if ever there was one

And yet, despite these, vaccines were successfully procured, systems were set up with impressive speed, recording logistics and administration managed extremely well to the extent that whoever wanted to receive a vaccine, was able to do so. The SA Health Products Regulatory Authority (SAPHRA) was particularly impressive and the National Institute for Communicable Diseases (NICD) did the country proud with neither organisation succumbing to the political pressures they endured.

The private sector, although tentative at first, stepped up and together with government ensured people who required treatment, were not only able to be provided such, but that vaccines reached the upper arms of all those who rolled up their sleeves.

Of course, there were dark and terrible days: days when oxygen ran low, car parks were converted into makeshift areas and the medical teams near buckled under the horror and strain of it all. There were days when hundreds of South Africans lost their lives, when families mourned the death of loved ones to whom they could not bid farewell to and when burials took place without fanfare and without community. But each country will talk of those days and no one in the world was spared the loss that the epidemic invited.

One of the lesser attractive features of the so called 'woke culture' is that we like to cancel things. Inherent in this is judgement over the past, which might be reasonable in some cases, but not all is current knowledge. If the pandemic taught us anything, it should be that we need to acknowledge how little we know and how little we can control.

As someone who has been – and most likely will continue to be – vocal in my criticism of our government, I want to take a moment, to hit the pause button and to acknowledge with gratitude their role in the handling of the pandemic. I would further like to acknowledge the doctors, medical support staff, scientist, teachers, parents and everyone else who did their bit to usher us through our walk in the shadow of death. ⊙

"If the pandemic taught us anything, it should be that we need to acknowledge how little we know and how little we can control."

CESA WELCOMES ECSA's NEW CPD VALIDATION PROCESSES

Consulting Engineers South Africa (CESA) welcomes the Engineering Council of South Africa's (ECSA) decision to refine its processes for validating CPD Category 1: Developmental Activities (courses, conferences, webinars etc.) for CPD point allocation. This has been necessitated by the many unscrupulous training providers in the industry who have been falsely advertising CPD validated training courses and conferences that often do not match their CPD points allocation.

Brenda Lacey-Smith, Manager CESA School of Consulting Engineering **(pictured)** explains, "Often the CPD allocation for the training being provided does not match the quality and content requirements for the allocation of the level on which the CPD points were initially awarded".

In efforts to improve the governance and quality of CPD training and the points that are claimable, ECSA has implemented new standards and processes to which all voluntary associations and academic institutions offering training or CPD validation services must abide, when awarding CPD points.

"This process started during 2020 and is now in its final stages of providing recognition to industry bodies such as CESA. This recognition has been awarded to CESA following a comprehensive audit by ECSA of the organisation's systems and processes", continues Lacey-Smith.

It is unfortunate that there may be frustration experienced by some CESA member firms and industry partners during the transition to the new system, however, CESA, in ensuring that both the quality of training and the CPD point allocations are maintained at a high standard, welcomes this important development. CESA has aligned its systems with the new standard and has been successfully audited and approved as a recognised ECSA certified License Body, to be a CPD validation agent.

"We now in a position to offer this CPD validation service and subsequently ensure that both our training and CPD point allocations can stand up to any scrutiny by ECSA. This will ensure that when registered persons claim such points in the future, they can do it confidently having the CESA CPD validation stamp of approval," concludes Lacey-Smith. ⊙

CONSTRUCTION TECHNOLOGY CAN HELP TO MITIGATE NATURAL DISASTERS

The devastating floods in KwaZulu-Natal should focus renewed attention on the contribution that the construction and engineering sectors can make to provide sustainable shelter for marginalised communities. ***By Bongani Dladla, acting CEO of the Construction Industry Development Board.***

'Build back better' has become a core theme of government's efforts to reshape South Africa's socio-economic landscape in the wake of the revelations about state capture, the sharp economic downturn, and the ravaging impact of a global pandemic.

The phrase takes on a deeper meaning in a wake of natural disaster that wreaked havoc on low-income communities, claimed the lives of hundreds of people, destroyed infrastructure, and will cause untold hardship in the region for months to come.

The South African construction and engineering sectors should come forward to contribute to the rebuilding efforts and to offer their expertise to decision-makers on how future calamities can be mitigated.

This can be achieved by both large and established companies within the sector as well as emerging enterprises who are often rooted within communities and have extensive knowledge and expertise about practical solutions that can be implemented to ensure higher levels of sustainability.

The Construction Industry Development Board – cidb – can play a pivotal role through our actions to promote effective and efficient infrastructure delivery extensive database of research material on construction and engineering in a developing economy. In recent months the cidb has become an important clearing house for research on the benefits that can be derived from fourth industrial revolution trends and the application of green technologies in the building industry. Such research complements our primary mission to transform the construction sector through inclusivity, high ethical standards and championing the participation of emerging contractors.

Sadly, the urban profile that has developed over decades in the flood-afflicted areas around eThekwini has become a feature of many cities on the African continent and in the rest of the developing world. Nearly a quarter of the South African population live in informal settlements. People build structures on open spaces that are located close to economic opportunities.

A growing number of informal settlements are springing up in risky areas that are vulnerable to flooding, landslides, and other natural disasters. Moreover, such settlements lack access to basic amenities such as storm water drainage, well-constructed roads, waste removal services and other basic municipal services.

This situation is replicated across the African continent. In a recent study the non-profit organisation, Habitat for Humanity, concluded that floods and droughts, taken together, account for 80% of deaths and 70% of economic losses linked to disasters in sub-Saharan Africa. Recovery from such disasters is costly and takes long to achieve. The provision of temporary shelter, housing repairs and the replacement of household goods represent at least 50% of total post-disaster recovery costs.

As we brace ourselves for the next wave of extreme weather it makes sense that we start planning for worst-case scenarios. Across the globe home builders and public sector regulators are looking at enterprising solutions to improve the ability of homes to withstand future natural disasters.

This will require a 'whole-of-society' approach. The different spheres of government will have to improve their planning processes to guide future housing development and to bring communities closer to economic opportunities in a more structured manner. Communities should be better informed about the dangers inherent to building structures on steep slopes or within low-laying flood plains.

Following his visit to the flood ravaged areas President Cyril Ramaphosa made it quite clear that there will be a renewed focus on the performance of local government in the delivery of service such as sanitation, waste removal and road construction – all factors which aggravated the impact of the floods.

But this is also an opportunity for the construction and engineering sectors to come up with technological solutions which can contribute towards more resilient structures. The reality is that materials used in the building of houses in low-income settlements are mostly substandard and not able to withstand recurring floods. Access to good quality building materials depends on income levels, and low-income communities living in flood-prone areas mostly use substandard building materials to construct their dwellings.

Recent advances in construction technologies and building materials offer affordable solutions to such communities. Across the globe the industry is increasingly looking for measures which utilise low-cost technologies and require low technical skills. The emphasis is on the utilisation of existing skills and resources within communities to produce resilient building materials.

The South African construction and engineering sectors should be leading research in these fields and offer their technical know-how and skills in finding solutions. This knowledge is also found within emerging enterprises where contractors have acquired vital experience through their participation in local construction activities.

The cidb – as a body which promote the interest of the emerging construction sector – can play a vital role as a clearing house for research and knowledge and by ensuring small and medium enterprises play a critical role in the reconstruction of disaster-affected areas. ⊙

dhk ARCHITECTS ACHIEVES B-BBEE LEVEL 1 STATUS

Over the past 13 years dhk Architects has progressively advanced on a process of transformation. It is delighted to announce the most recent milestone in this journey – the achievement of a Level 1 B-BBEE rating. And while this is a significant and important benchmark, it also recognises it is by no means the end of the journey, but rather a step forward towards greater systemic change.

The company first achieved a B-BBEE rating in 2009, but remained at Level 8 until 2018, at which point the dhk board made a conscious decision to focus more aggressively on transformation across the company, and so began to define and implement policies to that effect.

dhk's B-BBEE rating progressively improved over the next few years, moving up to level 5 in 2019, Level 3 in 2020, Level 2 in 2021, and ultimately a Level 1 rating this year. This is not the end of the road however – it simply means the very real steps it has been taking towards measurable company-wide change are beginning to show results. It sees the achievement of a Level 1 B-BBEE rating as one metric in an ongoing process that we will continue to advocate for.

The transformation policy is intended to assist in addressing the historic inequality that characterises the built-environment professions, and society as a whole in South Africa. In order to start to shift this in a meaningful and sustainable way, its strategy aims to:

- Ensure that it address employment equity and representation through its recruitment, succession planning and promotion processes
- Provide opportunities for staff to learn and grow by investing heavily in skills development and training
- Encourage diversity in the workforce, and encourage this diversity to filter into the work it produces
- Create a nurturing environment that enables development and encourages growth
- Ensure that Broad-Based Black Economic Empowerment is addressed across every sector of its overall business strategy
- Work at grass-roots level to encourage transformation from school-age through tertiary studies
- Ensure that its business contributes to the social upliftment of its spatial and economic context, to help bring about effective and meaningful transformation of the South African economy

"We are immensely proud of achieving Level 1 – but we know we're still on a journey. Over the next few years we expect to continue to expand black ownership and management control of the business, and deepen the diversity of our talent pool. We have a reputation for delivering extraordinary places and spaces across South Africa and globally – we remain committed to this, and our ongoing transformation will assist us in maintaining and improving the quality of our work," says Derick Henstra, dhk Executive Chairman and Founding Partner.

dhk has a firmly established reputation as a design-led multidisciplinary studio which incorporates architecture, urban design, landscape architecture and interior design. More than 100 people contribute to the success of the company across these disciplines making dhk one of the largest architectural practices in Africa. dhk's integrated approach to design in the built environment, coupled with innovative solutions, has garnered international recognition with projects across Africa and in Europe, and offices in Cape Town and Johannesburg.

"dhk has a firmly established reputation as a design-led multidisciplinary studio which incorporates architecture, urban design, landscape architecture and interior design."

2022 TWENTY-FIRST BEST PROJECTS

CALL FOR ENTRIES

Construction World's Best Projects showcases excellence in the South African building, civil engineering, supply and project management sectors. In its 21st year, the aim of *Construction World's* Best Projects is to recognise projects across the entire construction industry: from civil and building projects to professional services to specialist suppliers and contractors.

There are **SEVEN** categories in which to enter. Projects may be entered in several categories, provided they meet the prerequisites for entering each one, and meet the criteria.

This competition is by submission only – it is judged solely by what you submit – so it is essential to take careful note of the entry requirements.

JUDGING

A panel of independent judges from the construction industry has been appointed. These judges represent ECSA, SAICE, MBA, CIOB and Architecture.

Each criterion set out for the various categories, will be scored out of 10 – with 10 being the highest score and one being the lowest. It is therefore VERY IMPORTANT that the entry address the criteria for the particular category it is entering.

If a criterion is not answered, it will be awarded a medium of five points.

In each category a 'Winner' is announced as well as a 'Highly Commended Award'. A 'Special Mention Award' may be given.

SPECIAL ISSUE

The December issue of Construction World is dedicated to the various winners and entries and is an overview of activity in the entire built industry during the past year.

Contact Erna Oosthuizen, the advertising manager, if you wish to advertise in this issue. Advertising here will associate your brand with excellence.

How to submit entries

- Each entry must to accompanied by the **completed entry form**, available from www.constructionworldmagazine.co.za or by requesting it from constr@crown.co.za.
- The maximum length for submissions is **2 000 words.**
- Each submission must clearly state which **category** is entered.
- **IMPORTANT** It is to the entrant's own advantage to address **ALL THE CRITERIA** as set out in the category being entered. If the criterion falls outside the scope of the contract, please state this. It is advantageous to use the criterion as subheader and then to address this directly.
- The written submission must be accompanied by up to **six high resolution** photographs with applicable captions.
- The photographs and copy must be submitted separately. The photographs must be .jpgs and the copy in Word (not PDF format).
- The submission must also contain a **summary of important project information** such as the client, main contract etc. – i.e. the professional team involved in the project.
- **Electronic submissions only.**

Prerequisites for entry

All the categories have the same prerequisites (unless otherwise stated). These are:

- Only South African civil and building projects that are executed by locally based companies.
- Projects are eligible during the execution of the project and up to 18 months thereafter (within reason).
- Projects must be at least 50% complete at the time of entry.

Awards evening

Information about the format/venue and date of the awards evening will be available in July when there is more clarity with the situation around COVID-19.

Entry form available on
www.constructionworldmagazine.co.za
or by requesting it from constr@crown.co.za

Contact

For more information contact the editor, Wilhelm du Plessis, on 011 622 4770 or constr@crown.co.za

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Entry Deadline
Monday, 5 September
at 17:00

1 *Category* Civil Engineering Contractors

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

2 *Category* Building Contractors

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

3 *Category* Civil Engineering and Building Contractors (outside South Africa)

- In addition to the common prerequisites, projects outside South Africa must be executed by a **South African** contractor.

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

4 *Category* Specialist Contractors or Suppliers

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

5 *Category* Consulting Engineers

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

6 *Category* Architects

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

7 *Category* The AfriSam Innovation Award for Sustainable Construction

Please address the following criteria:

- Construction innovation technology
- Corporate Social Investment
- Design innovation
- Environmental Impact Consideration
- Health & Safety
- Quantifiable time, cost and quality
- Risk management
- Motivation facts about the project

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SUSTAINABILITY ROADMAP DRIVES AFRISAM's LEADING ROLE

Having made an early start to its sustainability journey, AfriSam's roadmap to the future makes it an environmental leader in the cement sector today.

It has been almost 30 years since AfriSam published its environmental policy – the first among its peers. Since then the company has set the standard in terms of sustainable business practices in cement production, including its mitigation of emissions and its energy-efficiency achievements.

"We recognise the right of present and future generations to an environment that is not harmful to human wellbeing," says Hannes Meyer, Cementitious Executive at AfriSam. "This drives our commitment to continually improve our environmental performance and to positively contribute to sustainable development."

With the energy-intensity of cement manufacturing, and with most of South Africa's electricity being coal-fired, AfriSam has made reducing energy consumption – and hence carbon emissions – a strategic priority. It has pursued this goal over many years and on many fronts, according to Meyer. Among the areas where the company has made strides is cement milling, where considerable energy is consumed.

"We were the first cement producer in South Africa to install a vertical finishing mill, which took place at our Roodepoort plant in 2009," says Meyer. "This saved 30 to 40% of electricity consumed per tonne of product in this process."

It also retrofitted some of its open circuit ball mills with high-efficiency separators, making the mills much more efficient by feeding the coarse material back into the mill while the finer material exits as final product. This increases the capacity of the mill while reducing the energy consumed, and hence also the carbon emissions associated with electricity production.

AfriSam's emission monitoring became significantly stricter and more effective some 20 years ago, when AfriSam installed online monitoring systems at its kilns. These systems generate results in real time, and allow detailed data to be reported monthly to the environmental authorities. "This is a worldwide trend in the cement sector, where stringent controls are in place and emissions are closely monitored 24 hours a day," he says.

He notes that AfriSam was also the first in South Africa to retrofit a cement kiln with a sophisticated bag filter system in 2004, replacing the less efficient electrostatic precipitator. By 2012, it had installed this technology at all its kilns. This allows the company to run at levels as low as 10 milligrams of dust per cubic metre.

ESTABLISHING SUSTAINABLE BUILDINGS OF THE PRESENT

The building industry is experiencing unprecedented disruption due to a variety of trends, including the pandemic, ongoing technological transformation, market pressures, and evolving occupant expectations and needs.

Yet, discussions continue to focus on what the building of tomorrow looks like instead of examining how current innovation such as the IoT and next-generation building management systems (BMS) can create sustainable, customer-centric spaces within existing structures.

BMS at work

South African business and individuals continue to be affected by the country's volatile grid and power provision and tertiary institutions are no exception. To this end, a local university, faced with the realities of load shedding and its impact on quality of education, decided to negotiate with the municipality to find a mutually beneficial solution.

The municipality's prerequisite: the university had to guarantee it could drastically reduce its power consumption with two hours' notice for the duration of the loadshedding period.

The university set to work and implemented a sophisticated BMS system that could assess its power consumption. The system found that by rotating the HVAC system throughout the campus the university would be able to meet the municipality's requirements.

Utilising smart sensor technology, the BMS system determined that by switching off the HVAC systems in allocated areas 45 minutes at a time, it would be able to drastically cut down on power usage.

This 45-minute window is short enough not to drastically impact the space temperature which means by the time students and lecturers start feeling some discomfort, the HVAC system is switched on again.

The hospitality industry has been severely impacted by the pandemic and coupled with realities of escalating electricity costs, an office block in Umhlanga, KwaZulu-Natal decided to find a solution to its exorbitant power consumption.

A major contributor to the office block's energy usage was its HVAC system which had to ensure the building stayed cool and comfortable during the hot and humid summer months. Already steps had been taken to support the HVAC systems by making ice at nights and running it through an ice plant system.

Unfortunately, due to the heat from the early morning sunrise over the ocean, the ice supply was depleted by 12:00 in the morning and HVAC system had to take over during the peak hours of the day.

Using a BMS system, the office block ascertained that by utilising the HVAC strategically it could save on costs and energy. It was found that by switching on the HVAC system earlier (between 4:00 and 5:00) and gradually cooling the office block during non-peak times, the ice plant could be used during peak daytime, thus saving on energy and costs.

Building automation

The preceding examples examples clearly make a case for the importance of BMS in saving costs and energy. Taking this one step further, is the automation of BMSs to optimise buildings. For example, integrated presence detectors can detect whether a room is in use and adjust the heat, ventilation, and lights accordingly.

"Integrating HVAC, lighting, and booking systems also offer opportunities for reducing energy use."

Mark Freeman, Offer Manager – Digital Buildings, Schneider Electric South Africa.

Integrating HVAC, lighting, and booking systems also offer opportunities for reducing energy use. It can be as simple as automatically warming conference rooms 10 minutes before meetings, thus extending the lifespan of equipment and cutting on energy usage. Also, the newest guest room management systems (GRMS) seamlessly integrate with property management systems (PMS) and the BMS. When a guest arrives, front desk personnel can remotely take the room from energy saving mode to the guest's preferred temperature.

Also, through an integrated and automated BMS and PMS system, staff have access to the do-not-disturb (DND) and make-up-room (MUR) status of rooms. The lights are automatically switched on when housekeeping enters the room (to clean) and switched back to energy saving when they leave. Similarly, the HVAC and lights will switch on and off when guests enter or leave rooms.

The above has led to almost 40% in savings in energy bills in hotels throughout Africa as energy usage is optimised according to guest occupancy.

Schneider Electric's Buildings of the Future ethos which is driven by our EcoStruxure Buildings architecture strives to help owners and managers get the most out of the current resources and systems. We aim to future proof properties with digitally connected, open solutions that are adaptable for future needs. ⊙

HOTEL CHAIN INVESTS IN LIMPOPO WITH A 4 STAR OFFERING

African Century Group, marked the beginning of a 4-star Premier Hotel 120-room establishment in Thohoyandou with a sod turning event in April.

Most significant about this development is that African Century Group is owned by Tsakani Masia, a black female whose business prowess attracted the Premier Hotel Group to be part of the development.

Undoubtedly to be the biggest 4-star hotel in the far Northern part of Limpopo Province in the Vhembe District that borders Zimbabwe in an ever-green scenic view of Thohoyandou and a stone throw from the Kruger National Park's Punda Maria gate, the hotel will be a major milestone in the tourism sector and will serve as a catalyst to many economic developments that existed and are still planned for the region.

The highlight of the event will be a normal ritual of turning the soil by the Premier of Limpopo Province Stanley Mathabatha to signal the beginning of the construction process. Dignitaries from the financiers and other stakeholders will grace the occasion.

With vast knowledge and experience in the building industry, Nakiseni Business Enterprise, a sister company to African Century owned by the same owner of African Century Group has been assigned to execute the construction work.

A project of this magnitude is critical in creating job opportunities with hopes to provide during the construction phase, in the region of 480 jobs varying from unskilled local construction labour through to highly skilled artisans, project managers, and the like. When the hotel officially opens, it will also employ 85 permanent workers, and 30 to 40 contract/part-time staff improving the livelihood of the local families.

"Not only does this development create jobs and livelihoods but it also plays its part in changing this environment that I call home. The people of Vhembe like others also deserve better facilities for their socio-economic fulfilment," says Tsakani Masia, the Managing Director of African Century Group.

"When we were approached by the African Century Group, we never thought twice. After going through the profile of the owner, Mrs Tsakani Masia, and after listening to her vision, we were convinced that in her, we had found a partner equal to the task. As is the case with developments like this, our due diligence gave us a thumbs up. We could never have settled for a better partner than the African Century Group. More exciting is the fact that the Group is local and is fit for a big stage such as this," says Samuel Nassimov, MD of Premier Hotels.

The Premier Hotels development on the north-eastern edge of the town will be a modern build, with a touch of African flair, very similar to its OR Tambo hotel. The facade will be stone as opposed to brick with numerous environmentally-friendly aspects. With close to 8 697 m2 of usable space, the hotel will accommodate 120 rooms, conference space to host up to 450 delegates for conferences for local business in the area or celebratory functions, a business suite, bar and restaurant with wine bar, outdoor pool, and gym facility. ⊙

VUKILE COMPLETES R90M UPGRADE AND EXTENSION OF DAVEYTON MALL FOR ITS COMMUNITY

Vukile Property Fund the leading retail REIT, has completed the strategic upgrade of Daveyton Mall in the Ekurhuleni Metro, Gauteng, in a project that brings together a vibrant mix of shopping, leisure and community with an R90m investment in the township economy.

First opened in 1993, Daveyton Mall is one of the first township malls developed in South Africa. Nearly 30 years later, it has been given a colourful new makeover and exciting extension to better reflect and serve its vibrant community.

"Shoppers can look forward to a beautifully upgraded mall which is on par with other contemporary retail centres in South Africa," says Laurence Rapp, CEO of Vukile Property Fund.

The mall relaunched on 27 April 2022 after a year-long construction project. Right from the start of the redevelopment, the Daveyton community was engaged in the intent and extent of the mall's revamp to ensure their vital input for the project.

Creating local economic opportunities with the redevelopment was a priority for Vukile. A Community Liaison Officer was appointed as the first point of contact for local construction SMMEs and labourers. As a result, 13 local SMMEs were subcontracted, and 43 local labourers employed on the project.

Inside and out, the revamped mall embodies its community. Daveyton is known for its many colourful installations at important nodes, intersections, and points of interest. Reflecting its importance as a hub within the community, especially considering the adjacent taxi rank, the redevelopment has ensured that the colour and vibrance of Daveyton is reflected by the mall.

Daveyton Mall's new entrances have been built into tall, colourful and welcoming beacons that stand out on the local landscape. The original mall structure and new extension have been beautifully woven together, unified by repeating brickwork details.

To ensure its bright and beautiful external aesthetic is extended inside, the mall chose murals and installations for its interior design from more than 50 artworks submitted by local talent. This artwork will be on permanent display, fostering a sense of pride and signalling that the mall isn't only situated in Daveyton but is part of Daveyton. The internal passages have also been brightened with skylights and higher bulkheads and shopfronts, and glossy tiles.

The mall's tenants have welcomed its modernisation and refreshed tenant mix, which enhances the overall experience and enjoyment of the mall.

"We have improved the shopping variety by introducing more apparel from famous national brands and a brand-new food court including a welcoming common sitting area with more fast-food offerings. Keeping the tenant mix relevant, appealing and exciting will remain an ongoing exercise," says Itumeleng Mothibeli, MD SA at Vukile.

For Daveyton Mall shoppers, Vukile has introduced Truworths, Identity, and Footgear to its fashion line-up

and Pedros Chicken, Chicken Xpress and Romans Pizza to its fast-food menu. These popular brands join an already successful retail mix led by the mall's original anchor tenant, Pick n Pay, including OBC Chicken, Mr Price, Pep, Jet and various national and local brands, including Ackermans, Clicks, Sportscene, KFC and Debonairs.

With the community in mind, new outside benches and shading canopies have been added to the mall to cater for the long queues of customers who collect social grants each month. These queues often stretch outside the mall, and the new benches and shading will ensure a more comfortable wait. The mall's new design also includes free-of-charge promotional areas where community members can display and sell their goods.

Connecting the community with countless opportunities, valuable information and priceless learning, the Daveyton Mall redevelopment has enabled it to offer free in-centre Wi-Fi for customers.

The new mall is also more eco-friendly. With biodiversity and water savings in mind, as well as creating a beautiful environment, nearly 100 indigenous, water-wise trees will provide shade in the parking areas – a giant green leap forward from the previous count of three trees. The largest of these original trees was kept, as were most of the existing gardens containing wild irises.

All the new lighting, interior and exterior, is energy-saving LEDs. Creating a place where patrons can always feel safe and welcome, the parking area and building perimeter have improved illumination, security surveillance and CCTV monitoring at night.

"The successful delivery of the new Daveyton Mall is thanks to the support of the Daveyton community, the new design by VDO Architects' which heroes the local culture and colour, and the contractor, Radon Projects, which ensured a safe site where opportunities were given to local contractors and workers. We are extremely pleased with outcome of this collaboration and honoured to take this legacy mall into the future with the community of Daveyton," says Mothibeli. ⊙

Driven cast insitu piling rigs.

KELLER ROLLS OUT FOUNDATION WORKS FOR CAPE STATION

Keller Geotechnics SA has recently completed the Enablement Works Contract for the Cape Town Station Student Accommodation Project for the Eris Property Group. The site is located on the corners of Strand, Adderley and Old Marine Drive in Cape Town. **By Arnold van Taak, Project Manager, Keller Geotechnics SA**

The R1,3bn development will include a 3 085-bed purpose-built student accommodation, 6 700 m² of modern retail space and a new world-class public square. This new retail precinct will be known as Cape Station.

Keller's scope of work consisted of the demolition of previous structures, installation of new civil services and the installation of the new foundation piles for the 22-storey high building that is currently under construction. Contracted for all three work aspects (demolition, civils and piling), the Keller operations team was well positioned to manage the interfaces with multiple work aspects progressing simultaneously. The site itself had limited space and access to the site had to be changed as the project progressed through the various phases. Careful planning and sequence of work was particularly important to successfully implement this portion of the works.

The development will also include a new world-class public square to serve as a landscaped urban garden with artwork and seating to encourage tourist engagement and dwell time.

Innovative design and various pile types

The piling and lateral support works made up the bulk of the contract and was designed in-house by the Keller design team. The lateral support and foundation scheme had to cater for a variety of load requirements.

Keller's diverse product offering allowed the design team to come up with efficient and innovative solutions.

The optimised design made use of four different pile types and seven different pile sizes.

Driven Cast-in-Situ piles

The majority of the piles were of the Driven-Cast-In-Situ type (known as Franki piles) and is a staple product offered by Keller. This pile type is typically very cost effective, has good load bearing capacity and is well suited to the tricky ground conditions encountered in Cape Town. These versatile piles were installed in two variants, compression only piles and tension/compression piles. The tension capacity was improved by retrofitting a rock anchor which is installed into the bedrock below the toe of the pile. This anchor forms an integral part of the pile. The anchor enables the pile to also transfer tension loads to the bedrock during certain seismic occurrences. Also worth mentioning is that Keller's use of dedicated piling rigs take up far less space compared to crane mounted pile driving leaders and offers a real benefit in projects with space constraints and interfaces with other work. This piling method offers good production and assures the achievement of contracted milestone dates.

ODEX piles

On the northern site boundary, a new culvert was constructed requiring a relatively deep excavation adjacent to existing services and trees. The presence of the trees precluded the use of a typical batter slope, anchors or a crane requiring high headroom. To satisfy all three constraints, Keller provided an alternative design to the initially planned sheet pile solution. The alternative design made use of reinforced ODEX type piles installed in a row and socketed into the bedrock. This system provides a cantilever to support the embankment.

This innovative cantilevered design assured slope stability without the need of anchors, avoiding potential clashes with existing public services. In addition, the equipment required for the ODEX piles took up limited headroom which safeguarded the trees.

Temporary cased auger piles

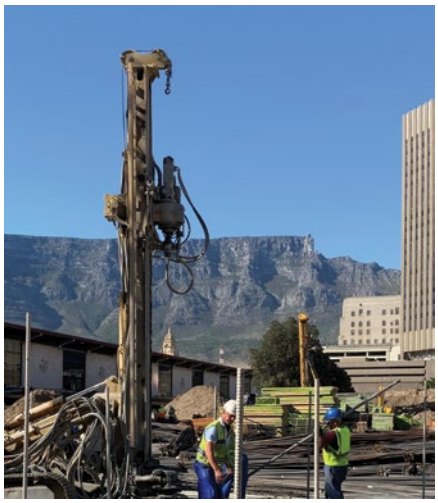
In certain areas of the building footprint, the structural loads warranted the application of temporary cased auger piles. Again, Keller designed a number of these piles to work in compression as well as tension.

Tension capacity was achieved in two manners: retrofitted rock anchors and in some instances, piles were socketed into bedrock. Where rock sockets were chosen, the resistance to friction gained from the interface between the pile's concrete and the rock socket enables tension loads to be transferred into the bedrock.

Micro piles

The last type of pile that were installed were micro piles. These piles use smaller rigs and are particularly useful to install piles to support new structural elements in and around existing buildings. This is achieved by using a miniature drill rig that can fit through narrow door openings and requires very little headroom, making it suitable to manoeuvre and install piles inside buildings and below existing floors and ceilings.

This prestigious project highlights the versatility and capability of the Keller team – from design to installation – to deliver a complex turnkey design and construct geotechnical project. ⊙



Left: ***Demolition of existing structures to make way for the new building.*** *Right:* ***Dowelling for tension capacity in piles.***

New stormwater culvert with cantilever lateral support in the background supporting the protected tree.

ABOUT KELLER GEOTECHNICS SA

Keller, is the largest, oldest and most established specialist geotechnical contractor in Sub-Saharan Africa, offering a comprehensive range of geotechnical and marine engineering techniques.

For any enquiries, please contact Anton Stoll on 082 419 0249 or anton.stoll@keller.com

More information: www.keller-africa.co.za

FAST-TRACKING DISASTER RESPONSE IN FLOOD-RAVAGED KWAZULU-NATAL

With the vital N2 corridor in Durban damaged to the extent that the road is impassable in certain sections following the recent flooding in KwaZulu-Natal, an existing contract related to settlement repair of the route has been fast-tracked by the South African National Roads Agency SOC Ltd. (SANRAL).

Dr. Gabi Wojtowitz, Geotechnical Engineer and Associate Design Director at Zutari.

Zutari was awarded the contract following a competitive tender early last year. The engineering design and advisory services company is now playing a major role in devising the most cost-effective and resilient solution to repair a section of the route relating to its contract.

"We have effectively pulled together significant resources and expertise as quickly as possible to assist to the best of our capabilities," says Zutari Technical Director Tashna Margo. This includes advising on measures to ensure human life is protected and quickly restoring the damaging impact of the floods on key infrastructure.

In addition, Dams Expertise Leader Dr. Frank Denys and Senior Water Resources Engineer Martin Kleynhans have been called upon to assist in assessing the flood damage as part of Zutari's urban stormwater and flooding expertise. "Basically, we are conducting a condition assessment to ascertain the extent of the damage, assess what repairs can be done and what not, and provide options as to the way forward," says Denys.

A contributing factor has been the role played by the existing slope instabilities in the province. KwaZulu-Natal is known for slope instability as it relates to the local geology and topography. Floods and climate change influence this risk.

"There is a broader narrative around this and how with climate change and design and construction we need to assess risk and design differently for more resilient infrastructure," says Dr. Gabi Wojtowitz, a geotechnical engineer and Associate Design Director at Zutari. "It also speaks to risk classes and defining areas not to develop in. Perhaps a similar risk classification for development in respect to slope instability could be drawn up as to what is currently used for dolomitic ground conditions where specific measures are imposed for high-risk areas," she suggests.

Dr. Wojtowitz concurs that the catastrophic flooding has increased the focus on climate change as an area of serious concern. She notes that such extreme weather events are likely to become more extreme and common in future. This speaks to the need for resilient infrastructure and risk mitigation, as well as bringing human-centred and environmentally aware design to bear. "If we highlight potential issues that are not responded to, and then these become the cause of a disaster scenario, it is a much harder scenario to rectify after the fact. Not that this was not an extreme event; it certainly was. However, there are definite multiple underlying contributing factors that maybe made it worse than it should have been. It does suggest this could be an example of what is likely to occur more regularly in future," says Dr. James Cullis, Technical Director and Sustainability Expertise Leader at Zutari. ⊙

"There is a broader narrative around this and how with climate change and design and construction we need to assess risk and design differently for more resilient infrastructure."

A LIGHTWEIGHT FILL SOLUTION

The application of geofoam as a lightweight fill solution for road construction at the Clairwood Logistics Park in Durban is a first for South Africa. This proved a more economical and viable solution for the container yard infrastructure compared to the rigid inclusions applied elsewhere on-site. Construction World *spoke to ISO Moulders, the manufacturers of this lightweight fill solution.*

What does ISO Moulders do?

ISO Moulders is the largest converter of EPS (expanded polystyrene) in Southern Africa. We are experts in appliance packaging, sheet for SIPS panel, seedtrays and thermal insulation. We provide innovative solutions and pride ourselves in supplying a high level of service to the industries we support.

What is your footprint?

ISO Moulders is nationwide

What is your Unique Selling Point?

We can help you from design conception through to tooling and production

How important is sustainability for ISO Moulders?

ISO Moulders is always looking for ways to reduce our carbon footprint. We recycle all our own scrap and are members of Polyco SA which runs recycling and collection programmess throughout the country. We are ISO 14001 (Environmental Management) accredited and are registered producers of packaging materials in line with the Government's 'Extended Producer Responsibility program (EPR)'.

What did ISO Moulders supply for the construction of the Clairwood Logistics Park?

GeoBlock.

What necessitated this solution?

The Clairwood development has a NATCOS oil pipeline running through the corner of the property. This was a problem for the developer who needed to have an access road for the property to run above a section of the pipeline. This was possible to achieve by removing the existing soil and replacing with ultra-lightweight GeoBlock to achieve zero net loading on the pipeline.

What are the benefits of EPS geofoam?

GeoBlock is an Ultra-lightweight backfill – less than 1% of the weight of the surrounding soil, which allows designers the ability to achieve zero nett loading on underground structures without needing to further protect it from the additional loads of a roadway and traffic.

The placing of the GeoBlock is quick and can be done by hand. This significantly reduces the construction time on a project. Settling is also reduced due to the reduction in loading.

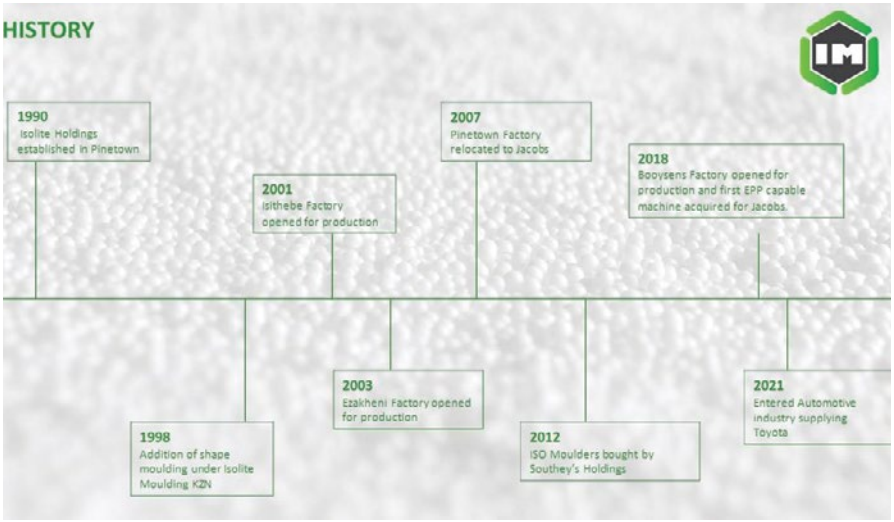
Where was the EPS geofoam manufactured?

The GeoBlock for the Clairwood Project was supplied from our Jacobs Factory.

How much was supplied to the project?

The project cubic meterage was 1 500 m^3 of GeoBlock.

A brief history of ISO Moulders



REPEAT INSPECTION WILL REVEAL FULL EXTENT OF DAMAGE

It can reasonably be anticipated that the full extent of the damage caused to structures during the unprecedented flooding in parts of KwaZulu-Natal from 11 to 12 April may only be revealed over time.

This is because the potential for water ingress through damaged concrete could result in spalling over time. "It is important that structures are not only assessed on a once-off basis, but that repeat inspections are carried out at varying intervals to fully understand the damage caused," says Jet Demolition Contracts Manager Kate Bester.

The damage caused to structures will vary due to various factors, including the duration at which these structures were submerged, whether they were submerged or exposed to flowing water, and the areas within which they are constructed. "The key consideration now is to continue to exercise caution," urges Bester. This is important where structures have suffered damage or been exposed to extreme elements such as excessive water or even fire.

The way forward now is for specialist companies and engineering consultants to undertake general preliminary assessments to determine whether a given structure can be salvaged or may need to be condemned. Such professionals are usually appointed by the property owners or their insurers to guarantee that these critical assessments remain independent. "In some cases, structures that pose an immediate risk to public safety will be completely vacated and placed under guard to prevent unauthorised access," notes Bester.

When dealing with unsafe, unsound, or irreparably damaged structures, the primary concern is to bring the

"It is important that structures are not only assessed on a once-off basis, but that repeat inspections are carried out at varying intervals to fully understand the damage caused."

structure to ground safely. Once the structure is reduced to a safe condition, the focus can shift to sorting and managing the resulting waste. Typically, concrete rubble will either be crushed for reuse in shaping and backfilling activities or removed to spoil.

Steel will be recycled, while hazardous materials such as light ballasts or electronic waste is removed to hazardous waste disposal. In extreme cases, most prevalent in fire-damaged structures, there is often product or goods stored within the facility prior to the blaze. These fire-damaged goods, in most instances, are not suitable for general disposal and need to be treated as hazardous waste.

"Jet Demolition regularly assists property owners and insurers to estimate the demolition costs associated with these projects or advising on the most appropriate approach to bring the structure safely to ground," highlights Bester. The challenge is that demolition methods are often prescribed in requests for proposals (RFIs) based on experience. However, this may not necessarily be the best option for a damaged structure.

"We add value by advising potential clients or insurers on more appropriate and risk-adverse methods more suited to the actual condition of the structure," says Bester. The equipment deployed on a damaged structure varies from a 1,4 tonne mini excavator to enter extremely confined spaces to a 102 tonne high-reach demolition excavator capable of tackling a structure mechanically without the need for persons to enter into unsafe or structurally unsound environments.

"We own a fleet of specialised plant and equipment,

Kate Bester, Contracts Manager, Jet Demolition.

ensuring we are able to respond appropriately to the task at hand without introducing any unnecessary or additional risk," says Bester. Jet Demolition has responded to several emergency projects over the years, as far afield as Indonesia, where it undertook the explosive toppling of a damaged water tower in Banda Aceh for the UN Development Programme. "Closer to home, we have responded to a vast number of emergency projects resulting from fires, human error, or natural disaster," concludes Bester. ⊙

PRECAST WIND-LOAD COLUMNS BUTRESS LARGE WAREHOUSE

Massive precast concrete wind-load columns in addition to smaller precast columns and precast tilt-up panels have been used to reinforce a warehouse being built on an industrial estate situated in Pomona, Gauteng. ***Text by David Beer on behalf of the Concrete Manufacturers Association.***

The southern elevation and the five wind-load columns.

Both the columns and the panels were cast on site by precast concrete specialist, Superstruct.

Developed by JT Ross, the structure was designed by architects, Empowered Spaces. Sutherland Engineers handled the structural and civil design engineering and Bantry Construction was the main contractor.

Construction of what is one of the largest warehouses in the country started in August 2021 and the first of this three-phase project was completed in the first half of 2022.

According to Donnie Smith Sutherland project structural engineer, the warehouse was constructed to a tight building program which would not have been achievable without the extensive use of precast concrete elements.

The wind-load columns' starter bars were meshed with the column-base rebar.

Mobile cranes with loading capacities between 90 and 250 tonnes were used to lift the columns and panels off the casting beds into their final positions.

To cater for the wind loading on the two gable ends, a comparative cost analysis showed that it was far more economical to resolve these large forces using large precast concrete cantilever columns rather than any other construction method. Initially, five of these columns were placed along the southern gable end and spaced at around 40m apart. Internal tenant requirements, to some extent, played a role in choosing the spacing of these columns. A further five wind load columns will be installed at the northern gable end during the final construction phase.

The wind load columns are some of SA's highest precast concrete columns on an industrial building to date. They were all 600 mm wide and their depths vary between 1,4 and 1,7 m. Their heights range from 20,7 m to 24,8 m and the columns weigh between 30 – 48 tonnes. The foundations are equally formidable.

Smaller intermediate precast columns, between 10 and 13 m high, were also incorporated into the gable ends and were extended to roof height using structural steel sections.

Eighty precast columns on relatively large concrete foundations were used on the eve elevations. These columns measured 800 x 500 mm x 8 m high and were extended to 20 m using structural steel. The extension heights were again chosen to achieve an economical balance between practical considerations, material costs and plant hire costs. Similarly, 10 m precast columns were used inside the building and

The southern elevation and the five wind-load columns.

these were also extended to roof height using structural steel members.

The tilt-up panels were used to enclose the perimeter of the warehouse. 8,72 m wide, their height varies between 4,55 m to 8.35 m; the largest panel measures 8,72 x 8,35 m.

Supported by the column foundations, the panels double up as the retaining walls on two of the building's sides.

Commenting on the project, Superstruct managing director, Bruere Visser says that the lifting and placing of panels as large as these is an operation which requires careful planning and execution.

"The placement of lifting anchors in the panels must be accurately calculated to avoid the bending and stress cracking induced by secondary loading during installation. The casting bed positions and installation process also needed to be planned to achieve a streamlined cost-effective operation. This minimised any potential for damage during installation and numerous casting beds were required to achieve these logistics."

Superstruct's precast columns were cast with starter bars for meshing with the column-base rebar and HD bolts were cast into at the top of the columns for attaching the structural steel I beams. The bolts were cast in pockets to provide some flexibility when attaching the steel I beams.

Visser added that all the blindings were checked for levels before the columns were placed and before the columns were in position they were shimmed to the correct height and plumbed to the correct alignment. Where necessary, further alignment adjustments were made immediately after the foundation concrete had been poured.

Sutherland has offices in Cape Town, Johannesburg, Durban and Nairobi. It has pioneered precast industrial design since the early 2000's has successfully completed over 400 000 m² of warehousing in the Plumbago Precinct in Pomona.

Donnie Smith notes that the Pomona gable-end columns were some of the largest precast columns that he and the Sutherland Engineers have designed to date. To further save costs in erecting these columns, it was decided to taper them from the foundation to the girder which was a design feat in itself. He added that Bantry Construction and Superstruct should be commended for the role they played in achieving the goals. ⊙

One of the wind-load columns prior to casting.

PROFESSIONAL TEAM
Architects: Empowered Spaces
Structural and Civil Engineers: Sutherland Engineers
Quantity Surveyor: MLC
Main Contractor: Bantry Construction
Precast Concrete Subcontractor: Superstruct

"The placement of lifting anchors in the panels must be accurately calculated to avoid the bending and stress cracking induced by secondary loading during installation."

FLOOR REFURBISHING AT SUTHERLAND SALT TELESCOPE

The Southern African Large Telescope (SALT) is the largest single optical telescope in the southern hemisphere. It is situated at the South African Astronomical Observatory (SAAO) field station, near Sutherland in the Northern Cape. Funded by a consortium of local and international partners, SALT has been in full scientific operation since 2011 – Africa's giant eye in the sky.

Even as SALT scientists look up, what lies below their feet is as important. The SAAO needed a complete floor refurbishment in their 120 m^2 instrument room and appointed Eyethu Alpha as the main contractors. Botwei Projects, Sika-approved applicators, were then appointed by Eyethu Alpha as specialist contractors for the Sikafloor® systems.

The refurbishment process started with the floor preparation which was done using the cup grinding method. This exposed the problem areas of the floor, which determined the repair process and product requirements. All cracks in the floor were exposed and cleaned, and thereafter, gravity fed with Sikadur®-52 ZA epoxy resin. Used to fill and seal voids and cracks in structures such as bridges and other civil engineering buildings, Sikadur®-52 ZA is a two-part, low viscosity, multi-purpose epoxy resin, which has excellent penetration and high bond strength. Following a good cleaning and a wipe with an oil free solvent, the floors were then primed using Sikafloor®-161.

Thereafter, an inspection was conducted to locate any pinholes, which were subsequently closed with Sikadur®-31 DW epoxy. This is a two-part epoxy-based moisture tolerant structural adhesive which bonds most construction materials, has high mechanical strengths, and can also be used for minor concrete repairs, joint filling and crack sealing. It has been specially formulated to meet the requirements for use in contact with drinking water.

A final 2 mm thick layer of Sikafloor®-263 SL epoxy floor screed was then applied. This self-smoothing epoxy solution is for concrete and cement screed with medium to heavy traffic. It is highly durable and applied by a Sika-approved Specialist Applicator. After curing, the existing floor joints were cut, reemed and then primed with Sika® Primer-3N. This is a solvent-based primer designed for use prior to other Sika products, on porous substrates, such as concrete. It is also easy to apply, has a short flash-off time and is water repellent.

The joints were then sealed using Sikaflex® PRO-3, a high-performance Polyurethane sealant designed for floor joints and various other civil engineering applications. It is a single component, moisture-curing, elastic sealant with high mechanical and chemical resistance. It cures without bubbles and is solvent-free.

Eyethu Alpha and Botwei Projects successfully refurbished the floor, and the project was completed in December 2021. ⊙

RAUBEX IN N3 COLLABORATION WITH AFRISAM

Keeping the goods flowing between the port of Durban and the powerhouse of Johannesburg has always been a basic pillar of South Africa's economic life; current roadwork on this vital corridor is hoping to streamline traffic and boost trade.

Since April 2021, JSE-listed Raubex Construction has been active on a 4 km stretch from Dardanellas to Lynnfield Park. The project is a major overhaul of the road surface, with the addition of two – sometimes three – lanes in each direction. Bridges are also being widened and a completely new twin-spine, road-over-road bridge is going up over the R603 route.

According to Raubex contracts manager Abri Lubbe, the widening of the bridges at the Umlaas and Sunnyvale underpasses has been completed, as has an agricultural underpass. The work has included the construction of abutments, the application of precast beams, in-situ decks, balustrades and end-blocks.

"The twin-spine bridge at the Umlaas Road junction – which is a three-span structure – is underway," says Lubbe. "Work began on this bridge in October 2021, and piling has been completed to allow for the foundations to begin; it is due for completion by the end of 2023."

Roadwork on the southbound lanes is getting underway, says Thys Greeff, construction manager at Raubex, as the contraflow arrangement for traffic frees up this side of the highway for construction work.

"Excavation takes place to between 1000 mm to 600 mm, and this is filled with blasted material from AfriSam," says Greeff. "The next level may comprise a 150 mm capping layer and a 300 mm G6 selected layer, followed by a 350 mm stabilised sub-base layer of crushed material."

Roadstab – AfriSam's specialised road stabilising cement – is being supplied in 50 kg bags to the Raubex subcontractor for adding to the sub-base layer. By the end of the contract, around 180 000 bags of RoadStab – or some 9 000 t – will be used.

The readymix supply will come from AfriSam's nearby plant at Umlaas Road, says AfriSam Regional Sales Manager Randal Chetty. More than 300,000 tonnes of construction material, including unselected fill, blasted G6 material and 20 mm aggregate have been supplied to date.

With the scale of the numerous upgrading projects on the N3 placing pressure on local suppliers, Chetty says AfriSam's quarry at Pietermaritzburg will be able to provide back-up supply where necessary.

"Serving this project – alongside others in the area – demands meticulous planning to ensure that the required blue and brown material is always delivered," says Chetty. "On the readymix side, for instance, we have already begun stockpiling the 20 mm aggregate and river sand, for when project demand is greatest." ⊙

Eben Meyburgh, Group CEO at GVK-Siya Zama

RECENT R2BN PROJECT WINS

POSITION GVK-SIYA ZAMA AS TOP TIER CONTRACTOR

GVK-Siya Zama, a leading specialist contractor in the field of building, renovation, restoration and recycling of buildings, has been awarded two notable projects in recent months. Amounting to over R2bn combined, the two projects will cement the company's status as a top tier contractor in the industry.

Speaking on the project wins, Eben Meyburgh, Group CEO at GVK-Siya Zama, explains that being awarded these projects is indicative of the company's expertise and its commitment to working collaboratively with clients to deliver quality builds.

"At GVK-Siya Zama, while we do not intend to be the biggest contractor in the country, we strive to be the contractor of choice in the South African market," he says. "We see the current state of the industry as being contractually driven, which can potentially be highly acrimonious. We aim to change this by partnering with our clients and becoming a more solutions-driven company to better serve them and exceed their expectations."

The two projects are significant notches in GVK-Siya Zama's belt, with the first, a venture commissioned by Eris Property Group to redevelop the Cape Town train station to a mixed-use residential and retail space, and the second, construction of a R900 m hospital in a remote location in the Eastern Cape.

"Situated on the corners of Strand, Adderley and Old Marine Drive in the Cape Town CBD, the redevelopment of the Cape Town station is a complex landmark project that includes the construction of a 20-storey, 3 085-bed purpose-built student accommodation facility, 6 700m^2 of retail space and a new world-class public square," adds Meyburgh.

The project forms part of Eris's RISE Student Living brand, which has positioned itself as the leading student accommodation provider in South Africa. The project is expected to take approximately 23 months to complete and be ready for the January 2024 student intake.

Planning indicates that the Cape Station project will consume 31 281 m^3 of concrete, 3 300 tons of rebar, 120 000 m^2 of formwork, 8 million bricks and 189 km of joint sealant while four tower cranes will be needed to move materials vertically.

The scale and complexity of these projects has seen the company climb the ranks of the more prominent contractors in South Africa and represent the calibre of project that GVK-Siya Zama intends to pursue.

"Our mandate of being the contractor of choice could not have been realised if we did not change our mindset to first be the employer of choice and reshape our company to be more people-centric than before," adds Meyburgh. "Providing the best service and solutions to our client comes from having the right employee complement and that starts with attracting the best people in the industry and creating an environment that is friendly, supportive and humble, as well as having an open-door policy that all voices are heard and taken into consideration."

While these may be lofty ideals, they are often marred by daily challenges. Meyburgh believes that it is critical to ensure employees are engaged and motivated. "This is key to retaining our people and helping them to achieve greater professional levels."

GVK-Siya Zama intends to pursue this path of success and project delivery, and with additional projects in the pipeline, it has undoubtedly secured its status as one of the key players in the industry. ⊙

MAMELODI SQUARE BRINGS NEW SHOPPING EXPERIENCE TO RESIDENTIAL AREA

A new shopping centre in Tshwane's Mamelodi is under construction and expected to be completed by October 2022.

The shopping centre was designed by award-winning MDS Architecture for developers McCormick Property Development and Putprop Limited, a listed property group. It is located in the heart of Mamelodi.

Louis Pretorius, partner at MDS Architecture, says the single level shopping centre will be enclosed and will offer 16 640m² GLA.

"Mamelodi Square is situated in an area with limited business premises. It will serve the community by offering an array of shopping options, a food court and children's play area. For this reason, it was important to ensure easy access from both Tsamaya Avenue and Shilovhane Street," says Pretorius.

The entrances are large, bright red portal structures which pop against the exterior neutral colour palette in shades of grey. The food court and children's play area are situated at one of the prominent entrances into Mamelodi Square. Lighting of the mall and the entrances was given a lot of thought during the design process.

Says Pretorius, "The design incorporates as much natural light as possible at the entrances, as well as through clerestory windows along the mall and the courts. Mamelodi Square also features a series of roof lights."

The interior floor tiles in neutral shades of grey are set in patterns down the mall and in the courts. These same patterns are repeated on interior bulkheads in different colours to add interest and entice shoppers to explore the whole shopping centre. Creating further interest, artificial lighting is included across the malls and through various hanging pendants.

Mamelodi Square has parking for 322 cars and a taxi rank that can accommodate 43 taxis.

PROFESSIONAL TEAM
Architect: MDS Architecture
Main Contractor: Tri-Star Construction
QS: Quanticost
Civil & Structural Engineer: Hannes Hattingh Consulting Engineers
Electrical Engineer: Ingplan Consulting Engineers
Fire & Mechanical Engineer: Pretocon
Wet Services: SJ Franklin
Landscape Architect: Bertha Wium Landscape Development
Town planner: Landmark

TECHNOLOGY TO IMPROVE THE BUILDING INDUSTRY's SUSTAINABILITY

RIB Software, a multinational providing innovative technology solutions to the architecture, engineering and construction (AEC) industry, has partnered with Building Transparency, a non-profit organisation that has developed a free and open access tool targeted at reducing the impact of embodied carbon and making the AEC industry more efficient and sustainable.

Building Transparency's premier technology solution is the Embodied Carbon in Construction Calculator (EC3). This tool houses a database of digital, third-party verified Environmental Product Declarations (EPDs), which can be used to perform sustainability benchmarking and assessments.

This is particularly useful to construction material procurers, developers, contractors, and policymakers alike. By being able to measure the amount of embodied carbon within production materials, these stakeholders are empowered to evaluate a project's overall carbon emissions and utilise that information to procure low carbon material alternatives or, in the case of regulators, set embodied carbon limits. Measures that will ensure the industry's compliance and adherence to Environmental, Social and Governance (ESG) sustainable building practices. Through the sponsorship of various entities, such as RIB, Building Transparency's EC3 tool remains free to use.

Addressing the building industry's environmental impact

The statistics paint an unflattering picture of the AEC industry's impact on the environment. Research has uncovered that an estimated 38% of global energy consumption can be attributed to building and construction activities. While the processing of materials such as concrete is believed to contribute to as much as 6% of global carbon dioxide emissions. The high amounts of material waste that occur within the industry along with the need to rework construction structures adds to the inefficiencies.

Working in a sustainable manner is critical to the future prosperity of the world. The continued disregard for the negative and potentially disastrous effects of greenhouse-gas emissions, pollutants and other environmentally unsafe practices must be addressed. As the Intergovernmental Panel on Climate Change (IPCC) report revealed, we are at a code red for humanity. Our collective efforts should be geared towards choosing a path of action that avoids a climate catastrophe.

Partnership speaks to core purposes

"There is a need to actionably and urgently reduce the carbon footprint of the AEC industry. Knowledge is power, and integrating technology such as EC3 into the workings of the sector provides critical decision-makers with the tools and data needed to effectively evaluate and understand the true carbon footprint associated with their projects. Armed with this, they will be able to chart tangible targets and collectively help minimise the industry's impact on the environment. We all have a role to play in building a more sustainable world," says Stacy Smedley, Executive Director of Building Transparency.

"As RIB, having been at the forefront of innovation in the construction industry for over 60 years, our partnership with Building Transparency aligns closely with the purpose of enabling our customers to build in an environmentally and socially responsible manner. We cannot shy away from the fact that the long-term growth of the AEC industry is closely tied to sustainable practices. Transforming the way the sector plans, builds and operates buildings is our primary purpose," concludes Andrew Skudder **(pictured)**, RIB Chief Revenue Officer.

"As RIB, having been at the forefront of innovation in the construction industry for over 60 years, our partnership with Building Transparency aligns closely with the purpose of enabling our customers to build in an environmentally and socially responsible manner."

CONCOR HANDS OVER HIGH SPEED IKUSASA PROJECT AT OXFORD PARKS PRECINCT

Applying innovative construction methods and its well-established quality and scheduling systems, Concor has met another tight deadline with the handover this February of the Ikusasa building in Rosebank, Johannesburg.

The building – which features four storeys above ground and three basement levels – is part of the popular Oxford Parks mixed-use precinct in Johannesburg, and will be occupied by Anglo American Global Shared Services (AGSS). According the Concor site agent Warren Mills, the company's core team was required to manage around 70 specialised subcontractors, ensuring the most efficient deployment of resources to meet the project's demanding timeframes.

"Among the innovations we employed to cut the construction time was the use of larger foundation piles," says Mills. "This meant that there was no need for concrete bases or excavating around each pile; instead, the design allowed the columns to be cast over the piles."

Some 115 piles were cast, with columns spaced on an 8,4 metre by 8,4 metre grid to hold the suspended concrete slabs. By expediting this part of the contract, Concor could give early access to the wet trade contractors like bricklayers and tilers, as well as to the installers of the unitised façade panels. "This allowed us to make rapid progress toward the external works and the internal fit-out," he says.

Another innovation was to back-prop on just two levels rather than the traditional three levels. This also allowed earlier access to the lower floor plate, to initiate brickwork and 'first fix' services such as floors, ceilings, electrical supply cables and water pipes.

"The result was to facilitate beneficial occupation for the tenant, giving them early access in a phased approach to prepare the working areas with furniture and other fixtures in time for employees to start work," says Mills. The building's four levels make up over 7 500 m^2 GLA, while the three basement levels cover more than 10 300 m^2. The structure consumed about 8 700 m^3 of concrete and over 800 tonnes of reinforced bar.

In line with sustainable building practice, a priority on the site was reducing, re-using and recycling construction waste. This included separating waste at source, ensuring that rubble, wood, steel and plastic was sorted into dedicated skips. By preventing contamination of different waste streams, waste could be more efficiently and cost effectively recycled.

Ikusasa is Concor's first 6 Star Green Star building in terms of the Green Buildings Council South Africa's Green Star rating. In recent years, the company has completed a number of award-winning buildings in the Oxford Parks precinct. ⊙

"The building's four levels make up over 7 500 m^2 GLA, while the three basement levels cover more than 10 300 m^2."

CHRYSO® EnviroMix delivers a reduction in CO_2 emissions of up to 50%.

CHRYSO's HISTORY OF INNOVATIVE CHEMISTRY FOR SUSTAINABLE CONSTRUCTION

As it is for its parent company, Saint-Gobain, the environment, sustainability, safety and quality are key drivers for CHRYSO. Locally CHRYSO Southern Africa is ISO certified for quality, safety and its environmental impact. Hannes Engelbrecht, CHRYSO's Concrete Unit Business Director says that climate change, waste and water management are KPIs for this focus. At its production plant in Jet Park it uses solar power to reduce its carbon footprint. He reminds Construction World *of CHRYSO's commitment to sustainable and innovative construction while simultaneously using examples to show that CHRYSO has done just that for many years.*

CHRYSO technical experts are aiming to facilitate the development of innovative materials through the optimisation of concrete formulations to achieve low CO_2 cement, concrete and energy savings. It has, through strong R&D, enabled low-carbon concrete admixtures by giving access to new performance levers that creates such solutions. The range of admixtures that CHRYSO developed are for use in existing low-carbon cements such as those where fly ash and slag are used.

"R&D is essential, because new cements with additions as well as the binders of tomorrow made of new geopolymers will require new additives supported by advanced technologies. CHRYSO is well prepared to support its customers in this low-carbon concrete revolution," says Bruno Pellerin, R&D Director at CHRYSO.

In the last 15 years CHRYSO has been strengthening its expertise in the field of concrete admixtures with low-carbon impact. The innovative technology in the company's portfolio of cement additives underpins its specialist knowledge in the chemistry of low-carbon cements.

EnvironMix®

Frédéric Guimbal, CHRYSO's Global Director of Concrete BU says the construction industry is accelerating its transformation to manage and reduce the environmental impact of its carbon footprint. "CO_2 footprint is a major challenge in the development of concrete formulations, coupled with the traditional properties of this material, and at the heart of our construction techniques (classes of strength, durability, workability, setting time, etc.)," he says.

In 2021 CHRYSO launched Environmix®. This is a global range of innovative products and services aimed at reducing and controlling the carbon footprint of concrete and is dedicated to the readymix and precast concrete industries. These followed growing concerns over climate change and the scarcity of natural resources.

The CHRYSO®EnvironMix is a range of tailor-made admixtures that minimises the environmental impact of concrete mix designs. "Locally we have an excess of fly ash and this admixture range allows better utilisation of mixes to incorporate these pozzolans while still ensuring superior levels of technical performance," says Engelbrecht. "This assists in the reduction of the clinker to reduce CO_2. The products designed for cement production are directly coupled with the technology for concrete producers, so the technology is vertically integrated downstream."

CHRYSO®EnvironMix provides a reduction in CO_2 emissions of up to 50%, while CHRYSO®EnvironMix ULC (Ultra Low Carbon) can achieve a reduction of more than 50%.

CHRYSO®Quad and CHRYSO®Graft technologies

"Many sand producers wash sand to remove clay to provide clean product to concrete producers. Water is used and CO_2 is produced to transport the sand," says Engelbrecht.

Depleting resources and new types of sand available are turning sand sourcing into a major challenge. CHRYSO®Quad provides a solution for the use of 'challenging sand'. This typically includes lack of fines (influencing porosity and slump retention) or excess of fines (influencing water and

admixture needs, slump retention and mixing time), clay and the unfavourable shape of the sand.

This admixture solution delivers the perfect response to the use of challenging sands to produce concrete that meets the performance criteria. When there is an excess of fines and/or swelling clay, Quad Clear technology is used. This includes the CHRYSO®Quad 700, 800 and 900 Series that ensures effective binder dispersion and reduces viscosity.

When there is a lack of fines or unfavourable shape factors, Quad Graft technology is used. Product-wise the CHRYSO Quad 500, or 600 Series is used to improve concrete cohesiveness and to simplify finishing work.

This technology significantly drives down sand procurement costs as local resources can be used.

With this range, CHRYSO created new development levers for the construction industry by delivering solutions to produce the cements of tomorrow.

M2 Bridge rehabilitation

CHRYSO partnered with Lafarge Readymix to complete the M2 bridge rehabilitation in Johannesburg. Investigations found that the Selby and Kaserne bridges were severely compromised. They identified that alkali silica reaction caused the deterioration of the concrete. These sections were demolished and new concrete structures had to be cast.

Lafarge Readmix was contracted to supply 45 MPa readymix and a concrete mix was identified to compact easily and to meet durability criteria. Lafarge's Agilia concrete is engineered to flow and self-compact under its own weight. CHRYSO's range of chemical admixtures provided the optimum solution to the casting of concrete that would not require vibration. The project has time constraints and the concrete mix was cognisant of this.

The QUAD range was used for the concrete mix and ultimately these addressed the environmental impact of the concrete mix as it allowed the use of a wider range of sand (including challenging sand) and utilised local resources better, simultaneously minimising the carbon footprint of the bridge's concrete.

Gillooly's

CHRYSO Southern Africa supplied a number of additives and construction system products to various packages of the Gauteng Freeway Improvement Projects (GFIPP) in 2010. One of these was Work Package 1 that comprised the upgrade of 10 km of the N12 highway between the N3 Gillooly's Interchange and the R21 Interchange.

Arguably the most impressive on this package was the incremental launch at Gillooly's. This bridge was vital to the interchange relieving traffic congestion. The curved bridge was cast in increments – there were seven incrementally launched spans and 20 concrete segments, each weighing some 300 tons. The concrete needed to be workable. This was because each pier was densely reinforced and cast as one, with shuttering inside, meaning that the concrete had to flow underneath the shutters. Chrysofluid®Optima 100 and 206 were used to improve the workability on the concrete.

The bridge deck required 35 MPa concrete over a period of 36 hours for stressing to comply with the eight day jacking cycle required. CHRYSO added their Xel 650 product which is a non-chloride set accelerator with a low alkaline content which increases the initial hydration of cement is usually used in winter and cold weather.

"The products enabled the main contractor to reach the strength early and avoid delays. These technologies were ground breaking and South Africa," says Engelbrecht.

N12

CHRYSO Southern Africa supplied admixtures to Section 19 of Sanral's GFIP that was done by main contractor, Basil Read. The Continuously Reinforced Pavement section of the N12 freeway required CHRYSO's Omega range of plasticisers that were added to the concrete mix to achieve higher workability and extrusion properties. The concrete mix was especially designed to match the requirement of the slipform equipment imported for the project by the contractor.

For the Ultra Thin Continuously Reinforced Concrete Pavement sections of the highway, CHRYSO'S Optima and Premia admixture ranges formed part of the concrete blend developed to achieve the required strength and slump retention for prolonged placement.

Garop and Copperton wind farms

Each of the Garop and Copperton Wind Farms in the Northern Cape required 40 wind turbines to be precast. These concrete tower sections were manufactured locally and transported via road to the site to be assembled and erected.

The precast turbines had a complex concrete mix and had to reach 80 MPa in 28 days. The towers are 100 m high and were cast using locally sourced aggregate.

The use of CHRYSO Quad negated the need to transport aggregate to the remote location. In addition CHRYSO supplied Premia 360 and the environmentally friendly release agent Dem Elio Bio 10 to achieve superior concrete surfaces. ⊙

Set accelerating admixtures reduce the time for a concrete mix to change from hardened to plastic state.

The concrete used for the Prieska windfarm segments reached 80 MPA in 28 days.

THE FACTS SHOW CONCRETE PAVEMENTS HAVE COME A LONG WAY

There are several misconceptions about concrete pavements which often offer the most favourable solution when whole-life road-building costs are considered, according to Bryan Perrie, CEO of Cement & Concrete South Africa (CCSA).

Perrie says apart from the fact that concrete pavements are beneficial to the environment, there are also misunderstandings about speed of construction and riding comfort, to name just some of the qualities of modern concrete pavements.

"In the first instance, the environmental benefits include long service life: concrete pavements generally last for over 30 years. In addition, they require relatively little maintenance and repair, resulting in long-term savings in raw materials, transport and energy. The reduction in traffic disruption and delays caused by roadworks also cuts fuel consumption and exhaust gas emissions," Perrie states. "Other aspects to consider include reduced fuel consumption, recyclability, and new air-purifying construction materials and methods, as well as life-time costing, as stated. Road-user delay costs - which can be astronomical - also are often not included in life-cycle costing.

"When it comes to speed of construction, the curing time of concrete is far from the 28-day period that is sometimes incorrectly suggested. A new concrete pavement, made from conventional concrete can be opened to traffic after only four to seven days of curing. High early strength concrete mixes make it possible to

reduce the curing time to just three days and, in certain cases, to only 24 hours. This technique is used in several countries on busy traffic routes and has been used on a number of projects in South Africa as well."

When it comes to riding comfort, Perrie believes that the situation is now totally different to early concrete pavements which did not offer top quality riding comfort because of the length of slabs and width of joints and faulting at the joints, or damage to supporting erosion-prone layers. He says for over 40 years now these problems have been dealt with by using designs that implement new and superior measures in jointed pavements such as:

- Shorter slabs with 4,5 m maximum length to make concrete pavements less susceptible to cracking, curling and faulting;
- Narrow sealed construction joints to overcome the problems previously encountered with joint performance; and
- Dowels in the transverse joints and cement-bound bases to ensure excellent load transfer and the prevention of faulting at the joints.

"Continuously reinforced concrete pavements – which have no transverse joints – are often chosen for freeways and primary roads. The shrinkage of the concrete is absorbed by a pattern of fine microcracks that has no impact whatsoever on the pavements' evenness or ride comfort."

Furthermore, smooth concrete pavements can now be built thanks to:

- Optimised concrete mixes offering constant workability and prepared in modern computer-controlled batching and mixing plants often established on site;
- New generations of slipform pavers equipped with automatic vibrator control systems and a longitudinal levelling beam behind the finishing machine or so-called "supersmoother";
- Properly installed guide wires for controlling the machine or the use of modern wireless guidance; and
- New types of evenness measurement set up immediately behind the paver to allow correct construction.

"It should be remembered that an important property of concrete pavements is that the longitudinal evenness obtained after construction is retained for many years.

"There is no doubt that concrete pavements are the logical and sustainable solution for South Africa. One only has to look at the thousands of potholes on our road networks at the moment to see how concrete could have prevented such a costly and dangerous situation. Concrete pavements are the natural choice for projects where performance, value, longevity, social responsibility and concern for the environment are paramount," Perrie adds. ⊙

"It should be remembered that an important property of concrete pavements is that the longitudinal evenness obtained after construction is retained for many years."

STRUCTA TECHNOLOGY ANNOUNCES NEW PRODUCT RANGE DEVELOPED

Says Rodney Cory, Director Prestank Structa Technology, "We are indeed proud to have developed a new economical range of water storage solutions, and we are looking forward to being of better service to all companies and municipalities who need such solutions."

He continues: "Our company, Structa Technology, prides itself to be one of our countries' best producers of water storage solutions. We manufacture Pressed Steel Water Storage Tanks known as Prestanks as well as our patented Round Water Storage Tank known as The Roddy Tank and have now added the newly developed Circotank range. Our water storage solutions therefore offer our water utilities and municipalities three durable, cost effective water storage products spanning a range from 500 ℓ to 4,2 million ℓ. Structa Technology is geared to assist our government with its water infrastructure and maintenance programme. Due to Structa's drive and continuous commitment to technological advancements the company is able to offer the Municipality more cost effective and durable solutions for water storage."

The Roddy

The Roddy Tank is a welded Sectional Round Galvanized water storage tank that offers the following capacities: 3 900 ℓ; 7 200 ℓ and 10 000 ℓ, specially made where low volume extra durability and robustness is required. The Roddy tank has found application in rural water storage, domestic water storage, industrial water storage as well as agricultural water storage. It lasts up to 40 years (Hot Dip Galvanised according to SANS 121, ISO1461), is easily transported, erected and requires minimal maintenance.

Circotank

Structa Technology has now developed an even more economical but robust round galvanised steel tank range.

The range, branded as Circotank, is manufactured from galvanised steel sheet cold rolled with a stiffening profile. A zincal version is currently being tested for application in corrosive areas. The tanks utilise a PVC liner which hugely improves the speed and quality of build, resulting in a reliable product. Liner replacement is possible thus resulting in ease of maintenance and longevity.

Circotank is offered in two size ranges, being a Maxi-range covering tank sizes of 100 000 ℓ up to 1,5 million ℓ and a Midi range covering a very user-friendly range of 5 000 – 20 000 ℓ. The Maxi-range is aimed at large scale water storage projects, with typical application in industrial water storage such as fire tanks and mass rural water supply schemes. The tanks are transported in pre-rolled segments, thus allowing for compact transport and easy off-loading. They are erected on concrete ring beam foundations and require reasonably simple earthworks before erection. Erection is done with a strake lifting system that requires no cranage. This all adds up to a very economical total cost per cubic metre water storage. Structa has well trained teams available to install the Maxi range.

The Midi-range fills a gap not covered by typical moulded plastic tanks and would find good application where users need storage between 5 000 and 20 000 ℓ, often on stands to provide distribution pressure. Structa is particularly excited about this size range as it would find excellent application in schools, clinics and small rural water storage. These tanks are transported in segments and can be assembled on top of stands if required. This eliminates usage of cranes in difficult rural applications. Structa supplies package systems of tanks and stands, ready for assembly, even by the user.

Prestank

Structa's 40-year-old flagship brand namely Prestank has over the years proven itself as a hygienically safe, cost effective and reliable way to store water for communities, commercial sectors, private sectors and even for personalised storage. Structa's Prestank Water Storage Tank is the ideal water storage solution for volumes from 10 000 ℓ and above, especially on elevated stands.

Prestank may be used for various water storage applications from temporary or permanent installations at mines, power stations, building sites, hospitals, water affairs, municipalities, rural communities and agriculture. The Structa Prestanks are fully customisable, high quality water storage solutions that are manufactured according to SANS guidelines and meet South African Hot Dipped Galvanizing requirements. A major advantage of the sectional tank design is that it facilitates easier handling and transportation over long distances to remote areas, regardless of the final dimensions of the assembled unit. Furthermore, assembly on site is quickly achieved without the need for sophisticated tooling methods. Minimum maintenance is required because the galvanised steel panels resist weathering from the elements, while maintaining the integrity of the water within from contamination of most forms.

The Prestank, Circotank and Roddy Tank adhere to the following design codes: SANS 10160 for structural loading and SANS 10162 for structural steel design of tank stands.

Structa Technology is a member of The Structa Group of Companies (www.structa.co.za) and has successfully manufactured steel engineering products for infrastructure projects since 2002.

The subsidiaries in the group

prides itself to:

- Manufacturing standards,
- Quality, health and safety standards
- State of the art machines
- Highly Skilled and dedicated workforce
- Innovative design ⊙

STRUCTA TECHNOLOGY PRODUCTS ARE:

- Proudly SA
- Manufactured by BEE compliant manufacturers
- Relevant to infrastructure development
- Compliant in terms of Quality Control

LATEST BLASTING TECHNIQUES FOR REHABILITATION OF DAM WALLS

New blasting techniques have been developed specifically to retain the structural stability of dams themselves, with no wasted effort. These projects call for highly controlled, cautious, partial demolition techniques. Therefore Jet Demolition's work on large water-retaining dams are some of the most important projects the specialist contractor has undertaken to date.

Rehabilitation of dam walls usually requires demolition of redundant portions of monolithic blocks and associated concrete structures. Dynamic energy imparted by the demolition process has the potential to cause damage to concrete located just across the demolition boundaries and beyond. Hence, informed and judicious selection of demolition methods and their application techniques are vital to a controlled and productive project – which is where Jet Demolition's extensive experience stands it in good stead, explains Contracts Manager Kate Bester.

"Our work at Hazelmere Dam allowed for the compilation of specific demolition-control guidelines to be developed for dam rehabilitation projects." Here a combination of explosive, mechanical, and diamond-cutting methods were employed. It was demonstrated that explosives can be used as the primary method of demolition on dam rehabilitation projects in a safe, productive, and controlled manner, without causing damage to the remaining mass concrete and concrete structures. Located on the Mdloti River in KwaZulu-Natal, the Hazelmere Dam was built in the 1970s. To clear the way for new construction works, demolition of the existing spillway crest, piers, lintel beam, and bridge decks required the controlled removal of 5 300 m^3 of concrete up to 3 m in thickness. The key requirements were to demolish the redundant structures in a safe, rapid, cost-effective, and controlled manner, without residual damage.

The traditional demolition method for projects with large volumes of mass concrete is explosives, with large hydraulic hammers used for the smaller concrete sections and for secondary breakage. Finishing work is typically undertaken by small hydraulic hammers and handheld breakers.

Despite the advances in diamond-cutting technologies, this method is usually not practical nor cost-effective to apply in isolation. The use of drilling and blasting is unrivalled in terms of speed and cost-effectiveness. When considering safe blasting vibration levels for a particular project, it is critical to consider the prevailing site conditions and geometrical configurations. "At Hazelmere Dam, our production blasting programme and demolition methods achieved all of these objectives successfully," concludes Bester.

With world-class standards being applied to aspects of national infrastructure, there is the need for world-class contractors to complete these projects (Image: SRK Consulting)

BUILD MORE CAPABILITY TO UNDERPIN TRANSFORMATION

To ensure that Mining Charter directives on procurement and enterprise development lead effectively to economic transformation, a better planned approach to capacity-building is needed.

"While South African mining companies are complying with the charter's requirements, it is clear that this process can raise costs and performance risks to unsustainable levels," said Steve Bartels, partner and Civil Engineering Technologist at SRK Consulting. "This can occur particularly in large, complex projects where specific expertise and experience is scarce."

In its efforts to engage the services of empowered service providers, mining companies often struggle to find players with the necessary balance sheet, technical knowledge-base and record of similar past projects. Bartels pointed out that one of the results is that mines look to partners such as consulting engineers to support and guide the inexperienced contractor.

"Consulting engineering firms like SRK have, of course, much to contribute in the sphere of strategic advice and technical studies – and we provide this service to large and small companies," he said. "However, the building of the necessary skills and experience to perform large engineering contracts from mines is a process that can't be rushed – and South Africa is not giving enough focus to nurturing and growing this technical capacity among emerging contractors."

He highlighted that successful projects are built not only on good technical expertise but also on solid financial foundations with meticulous project planning and execution skills. Many aspects of preparation and implementation take decades of experience to fully equip an individual or a business to conduct professionally.

Bartels' insights are based on his direct involvement in government efforts to empower emerging businesses. In the 1990s, he was engaged in provincial government initiatives to systematically guide and develop the growth of emerging contractors in the road-building sector. This led to various constructive strategies that began to steadily improve the capability of committed new players wanting to add value in this industry. He has seen the potential impact on emerging contractor development and growth from his experience with emerging contractor development programmes, labour-intensive construction programmes and poverty alleviation programmes.

"The regulations in place to promote local and preferential procurement are valuable instruments for change in the right direction," he said. "They can lead to challenges, however, when the experience and capacity is still being developed to fill the opportunities created."

Among his concerns is that the disproportionate burden of decision-making falls on the procurement department of mining companies or other large firms who issue engineering contracts. This can lead to insufficient focus on the technical aspects of the project, and the specific human and capital resources required.

"A balance needs to be established between the procurement processes that consider competitive pricing and legislative compliance of contractors verses their technical experience, knowledge and ability to successfully complete a project which is driven by the technical aspects of procurement. ," said Bartels. "This creates considerable risk for the client who issues the tender and can also set the contractor up for failure. If the contractor fails, then so do the Client and consultant."

Beyond the individual contracts themselves, this process can also have a broader impact on industry. If emerging contractors are not supported and nurtured into a position of strength before being provided with economic opportunity, it is difficult to retain a robust foundation of quality for engineering performance. He noted the high standards that are demanded for the construction of South Africa's national roads, for example, where there are opportunities for all tiers of contractors.

"With world-class standards being applied to aspects of our national infrastructure, there is the need for world-class contractors to complete these projects," he said. "Similarly, the recent Global Industry Standards for Tailings Management (GISTM) demand the highest level of expertise in designing and constructing tailings facilities."

Even in the consulting engineering field, it is becoming difficult to develop and retain the necessary levels of experience for these kinds of projects. He highlighted that there was no short cut to developing the business capability and related engineering expertise for the modern economy. It was for this reason that SRK made mentoring an important aspect of its skills development efforts.

"Consulting engineers can contribute in many ways to the building of capability among emerging contractors and consultants," said Bartels. "In projects where this is possible, the overall design can ensure a place for different levels of skill and experience, for instance."

The careful assessment, monitoring and development of contractors' performance is also important, and needs to be well planned and consistently implemented. The aim of these initiatives is to ensure that emerging contractors grow sustainably while meeting stringent engineering and other standards – thus ensuring that clients achieve value for their investments. ⊙

REALITY CAPTURE IS TRANSFORMING CONSTRUCTION

Every construction project (big or small) has many role players who need to see the site to know what's happening. Until now, the only options were to take hundreds of pictures with no context of location, or video calling someone from the site. Now, OpenSpace is opening a whole new world.

Liza Stewart from Agile Business Technology using OpenSpace on a construction site.

Case studies in the UK have shown up to 50% savings on travel expenses. Imagine checking in on your site from the comfort of your office or even your home. No need to catch red-eye flights or live in expensive hotels – simply ask someone to take a walk and you can virtually visit the site that same day.

Anyone on site can strap on a camera, connect their phone, start recording, and upload the footage to Openspace.ai after they've walked the site. From there, OpenSpace will do the heavy lifting – using artificial Intelligence, computer vision, 3D reconstruction and machine learning, the user's position is plotted on the floor plan and 360° images are generated. By simply clicking on the dots on the screen, you can move around as you please and see the site as if you're right there. Not only can you have a 360° vision of your site but with the additional features such as Split View and Field Notes you can compare the site to previous walkthroughs and even download a PDF report with the location and time of any field notes taken. Best of all, this processing happens in less than an hour – you can know what's happening on-site without delay.

Using 360° images to document the jobsite allows teams to collaborate better and makes it easier to do quality control and inspections to help identify safety hazards, and can even be leveraged as a point of reference following project completion to assist owners and facilities teams.

The construction industry is undergoing radical change, and OpenSpace believes the future has never been brighter. Artificial intelligence, computer vision, 3D scanning, and other technologies are rapidly evolving, bringing unprecedented opportunities to those willing to embrace them.

OpenSpace is the leader in automated 360° jobsite capture and AI analytics. Customers choose OpenSpace to quickly and easily capture a complete visual record of the jobsite which provides teams with a single source of truth that increases coordination, drives accountability, and simplifies dispute resolution. ⊙

THE FLEET OWNER'S CHOICE – NEW GENERATION ISUZU N & F-SERIES TRUCKS

Vehicle selection – choosing the best truck for a transport task – is a key function of fleet management. And it all starts with the availability of the correct Gross Vehicle Mass (GVM) within a range of trucks. Nothing could be easier than selecting from South Africa's widest truck range. The New Generation Isuzu N & F-Series trucks with 23 N-Series models offer GVMs from 4 200 kg to 8 500 kg and 24 F-Series models offer GVMs from 11 000 kg to 26 000 kg.

When it comes to towing and trailer operations, Isuzu N-Series includes Gross Combination Masses (GCM) ranging from 7 050 kg to 12 000 kg with the F-Series GCMs ranging from 16 000 kg to 36 000 kg.

Vehicle selection does not stop at GVM & GCM – a wide range of transmissions includes the class-leading Automated Manual Transmission (AMT). There are four N-Series models equipped with AMT and six F-Series models with AMT technology. Allison torque convertor transmissions are available in the Isuzu FV1400 while the New Generation Model FVM 1200 moves up from a 6-speed ZF -to a 9-speed ZF transmission.

Cab configuration – a critical choice for crew transport

Again, Isuzu leads in the safe transfer of driver and crew. It is a legal requirement that goods and passengers must be separated by a partition. The new N-Series has five crew cab models with GVMs ranging from 5 500 kg to 7 700 kg, with the new F-series at 14 000 kg GVM two models.

Isuzu's new variable warranty enhances fleet owner choice

The first of its kind in South Africa, Isuzu Motors South Africa (IMSA) is now offering an innovative aftersales solution in the form of Variable Warranty plans. These are specifically tailored to fit the needs of short, medium, or long-haul operators and will enhance Isuzu truck customer experience.

The Isuzu Variable Warranty Plan allows greater flexibility for truck customers. In addition to the standard two-year unlimited kilometre warranty, customers and operators can opt-in on a Variable Warranty plan, extending the warranty period to either three, four or five years.

The Variable Warranty Plan is valid from the date of sale of a new vehicle to the original retail purchaser up to a maximum of 500 000 km on N-Series trucks, and 700 000 km on F- and FX-Series trucks. Maintenance terms and conditions apply to the specific Variable Warranty selected.

The Variable Warranty Plan is available at no additional upfront cost on all new Isuzu truck chassis cabs across the N-Series, F-Series, and FX-Series ranges purchased and operating in South Africa. This excludes truck bodies and certain applications such as tippers, compactors, and mixers. T&C's apply with regarding specific service/ maintenance schedules

Telematics for the entire Isuzu Truck Range

Isuzu satisfies modern fleet management expectations with the most up to date telematics system. Telematics offers real-time fleet management and driver development – it is an essential component of driver training. Telematics is also leading evidence in any court action following a road incident and thus protects a driver against spurious claims.

The entire Isuzu range benefits from a telematics-ready truck and stolen vehicle recovery hardware installed at factory. This includes a panic button and driver ID tag reader already installed.

Compatible with the Mix Telematics fleet management system, it is also compatible with existing 3rd party fleet management systems at a small additional cost. The stolen vehicle recovery service ready – BEAME – has been installed for some years now.

Tubeless tyres – Fleet Owner's Choice

The entire Isuzu truck range now comes equipped with tubeless tyres. The advantage built into tubeless tyres is cooler running – the result of no friction between a tube and the tyre itself. Lower operating temperature has the additional benefit of extending the tyre life for lower variable costs.

Less rolling resistance from a tubeless tyre turns in lower fuel consumption – lowering the cost of ownership.

Conclusion

Market demand for Isuzu as a used truck sets the tone of the biggest fixed cost factor – depreciation. All the engineering fine-tuning comes together in ensuring a second economic life for an Isuzu used truck. This brings a return on the cost of investing in a new Isuzu N or F-Series lowering the total cost of ownership.

CTRACK LAUNCHES CRYSTAL, A GAME-CHANGER IN ONLINE BUSINESS

Ctrack has 35 years experience in vehicle tracking and fleet management and, during that time, they have developed a variety of innovative solutions for efficient fleet and asset management services.

Ctrack has completely redesigned and consolidated their offering into a new product, with a big focus on how data is managed and presented. Utilising proven hardware Ctrack Crystal allows for the management of movable assets, no matter how big or small, in a new and innovative way.

"In this day and age, the usefulness of data is determined by how easy it is to make decisions based on that data. Ctrack Crystal takes the guesswork out of fleet and asset management by offering cutting edge tools and functionality in an easy to use format,"says Hein Jordt, Chief Executive Officer of Ctrack Africa.

Cloud-based

By integrating with hardware installed in vehicles, data is now transmitted to the cloud and hosted within the Microsoft Azure environment, a much faster and more secure solution.

Real-time web interface

For fleet managers and business owners, this means tracking and tracing solution in real-time, with live updates every 15 seconds. It is no longer necessary to wait for data to refresh.

Interactive functionality

Ctrack Crystal is user customisable and features improved functionality such as a live map with traffic views, the ability to send a message to the driver and the setting up of user-defined locations amongst a myriad of other options, from one location, all designed to save time and costs.

Fleet managers are often inundated with data and Ctrack Crystal aims to simplify operations.

With the rollout of Ctrack Crystal, users will be able to choose from a variety of functionality packages and add functionality as their particular needs change, including innovative features like voice commands and live in-cab camera views.

As with many of the functions of Ctrack Crystal the in cab camera system can be paired with Artificial Intelligence software. As an example, this clever software sifts through the data gathered by in-cab cameras and only reports on the transgressions defined by the fleet manager, instead of on every transgression.

New management reports and dashboards

As part of the improved user experience, users will need to make fewer inputs in order to reach the desired outcome. Best of all, the entire solution is fully customisable by the user and according to their own preferences.

The snapshot dashboard offers a high-level overview and highlights the most important areas where attention is needed at that time resulting in quick and decisive decision-making.

This is done by focussing on critical parameters such as what needs to be done today, what assets worked and which did not, presented with graphics, detailing jobs scheduled, jobs remaining, jobs completed, unscheduled jobs, fleet alerts, and geofence visits, amongst others.

Better driver management will result in less risky driving behaviour but better driver engagement and performance, including safer more fuel-efficient drivers.

The optimal management of a fleet of vehicles or moveable assets has a direct bearing on factors such as collision, insurance and fleet costs as well as total cost of ownership which in turn results in better utilisation of vehicles and increased profitability.

Similarly, a fleet health summary gives an easy to understand status on assets and allows fleet managers and business owners to keep a handle on maintenance, servicing and regulatory issues.

The executive dashboard allows decisions to be made more rapidly by highlighting trends based on 72-hour data, selected from any date on the platform, as opposed to the 24-hour view that was given previously.

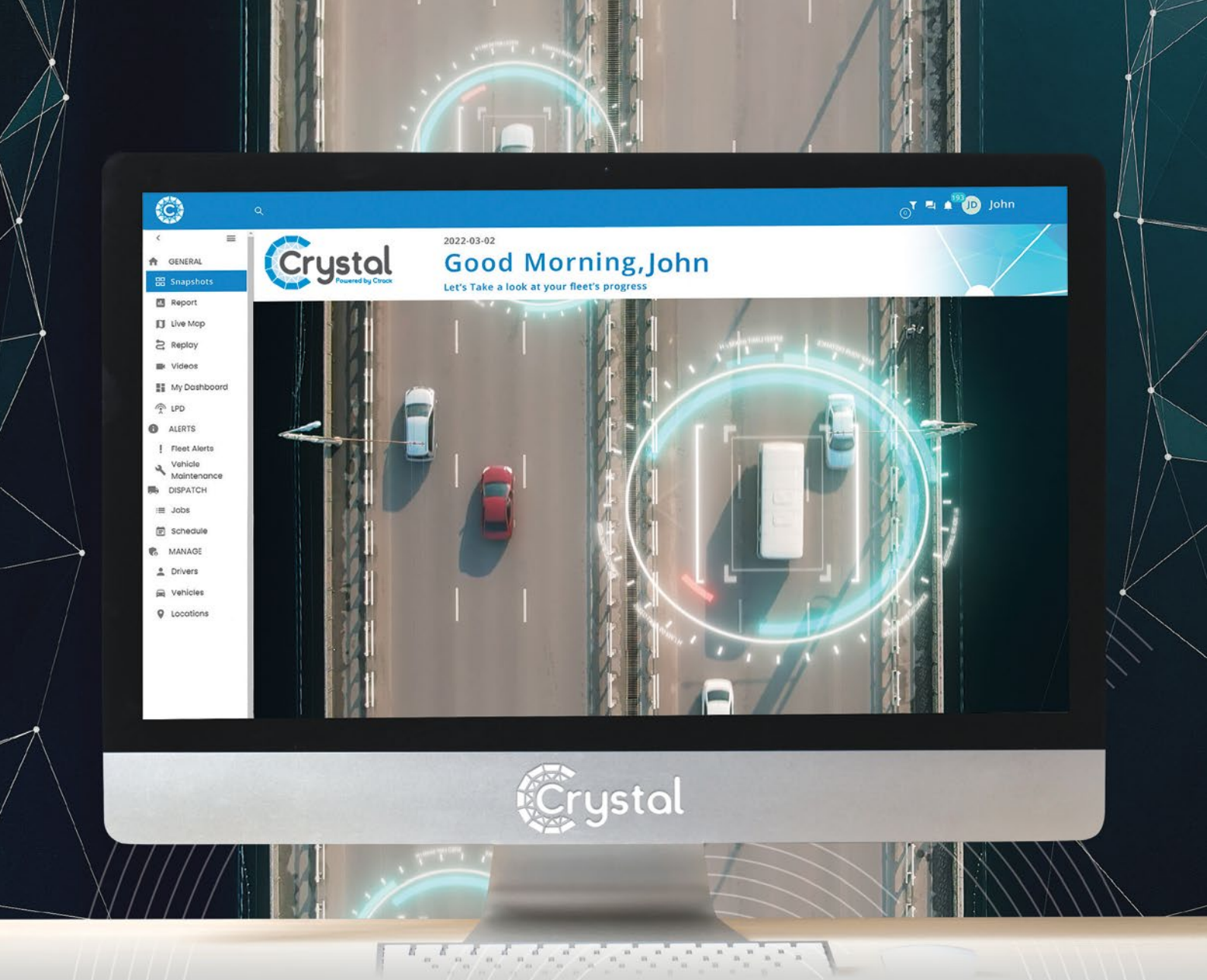
This display allows users to keep an eye on their fleet with readouts of the most pertinent data presented in a manner that makes it easy to understand and utilise in making relevant decisions.

This functionality ensures a 24-hour, 365 days a year view of assets prescribed by the user from anywhere on the planet.

New driver app

A new native mobile app, released alongside Ctrack Crystal, now combines the functionality of Ctrack Mobi, Driver Mobi, Drive and OTR (On-The-Road) into one app that is easy to use yet offers more extensive functionality.

The use of this app gives fleet managers true control of their operation from any location. The new Ctrack Crystal app will be available for both Android and iOS devices. ⊙



Ctrack Crystal

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Download on the App Store

Crystal's Innovative Solutions supports managers with

- **Intelligence on Safety and Risk Mitigation**
- **Advanced Driver Assistance**
- **Vehicle Safety Inspection**
- **Daily Jobs & On-Route Tasks**
- **Camera AI Data Intelligence**
- **Efficient Planning with tailored Data Summaries**
- **Inventory & EPOD* Integration**
- **Asset Efficiency and Replacement Planning**
- **Identify Fleet Risk with Heatmaps***
- **Voice Commands via Mobile Device***

*** Some product functions not immediately available in Africa. Image for illustration purposes only.**

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