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ON THE COVER

The nagging question constantly facing construction site managers is: how do you balance productivity with affordability to ensure profitability? Well, CASE Construction Equipment can rightfully claim that it has over 180 years of experience finding workable solutions to address this issue. CASE Construction's long history of notable milestones attests to its ability to evolve with time and always stay close to customers with effective and innovative products and services. These include a growing offering of digital services – delivering performance, productivity and low Total Cost of Ownership.

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Despite the tough conditions for South African construction (building and civils), optimism and improved performance are gaining traction in this sector despite the odds that are stacked against it in the form of the energy crisis South Africa is experiencing, a rapidly weakening Rand and the perception that the country is losing its status as the leading market on the continent - which means that investment is dwindling.



Economist Dr Roelof Botha, who compiles the Afrimat Construction Index (ACI) on behalf of Afrimat, says the poor performance of the economy during the last quarter of 2022 was evident in construction sector activity: the ACI fared marginally worse than the decline in real GDP of 1,3% quarter-on-quarter. The year-on-year performances were nevertheless positive and the ACI's improvement of 1,9% outperformed the economy as a whole. This marked the return to positive growth for value added by the construction sector, both on a quarter-on-quarter and year-on-year basis.

Despite its now positive territory, the ACI which stands at 120,9 for Q1 of 2023 has a far way to go to equal the record high of the index of 143,6 in 2016. It is still some 21% higher than the base period when the index was started in 2011. For this record to be

equalled investor confidence needs to return.

The slow improvement in construction activity can be attributed to the increased interest rates and the state of the country's municipalities. With more functional municipalities, more infrastructure spend will be unlocked which will change the ACI completely. In terms of government budget, the three tiers (excluding state-owned enterprises) amount to an impressive R157b, and 39% of this is channelled to the provinces and municipalities. Sadly, out of the 257 municipalities, 175 are on the brink of a crisis, and of these 151 municipalities are already bankrupt and insolvent.

It's therefore fairly obvious that the majority of the country's municipalities are simply not in a position to spend transfers from National Treasury earmarked for infrastructure to satisfy

the needs of respective communities.

Wilhelm du Plessis
Editor

*Construction World publishes the first call for entries for Best Projects 2023 on pages 20 and 21. **The closing date for entries is 8 September** and the awards event will be in November. You are encouraged to enter worthy projects in civil engineering, building, specialist contracting or supplying, consulting engineering and architecture. Entry is free.*



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THE RELATIONSHIP BETWEEN ARCHITECTURE AND BRANDS

Branding and architecture – two forms of design – have an interesting and overlapping relationship, according to Landseer Collen, Principal, Director and founder of BPAS Architects. This has changed through the decades and is likely to continue to develop into the future, as new design technologies and philosophies evolve.

“There are many ways that branding and architecture intersect,” says Collen. “For example, an architect might become known for their own ‘brand’ of design and become sought after by clients who want buildings designed with this signature style.”

Classic examples of architects who have become known for a signature style include Frank Lloyd Wright, known for his revolution of domestic architecture and his signature organic architecture and “Prairie style” during the early 20th Century, and more recently, Frank Gehry, known for his iconic buildings that include the Bilbao Guggenheim, the Walt Disney Concert Hall, and the Biomuseo in Panama City.

“The architects themselves are the brand, and the architecture becomes the outcome of that brand,” says Collen.

Then, there is also the way that architecture and organisational brands interact. This relationship has evolved significantly over the last century. Collen points out that the easiest example of how the two began to interact probably traces back to the USA in the 1950s and 1960s, where buildings began to physically mimic the brand and product they related to.

“This was when we started to see hamburger joints built to look like hamburgers,” says Collen.

“Another example is the famous KFC bucket. Architects would be asked to design a KFC restaurant to include a giant bucket on a support tower that people could see from a distance.”

From this, there was a move towards architecture that incorporated a brand logo and even colours, for example through large-scale signage. Las Vegas pioneered this in its massive neon lights, such as the iconic The Sands Hotel sign, designed by Wayne McAllister.

Collen believes this idea persists in some form today, albeit in a more sophisticated manner. Branded environments, developed largely by interior architects for their corporate clients, provide a way for people to experience a brand through physical touchpoints. For example, if you’re familiar with the Starbucks brand, you’re likely to recognise the interior of a Starbucks coffee shop wherever it is in the world. The physical space incorporates more than a logo and brand colours – there is a specific look and feel that relates to the brand.

“When it comes to incorporating the brand into designing buildings, an architect will look to understand what the brand stands for – its values, the people it needs to connect with and the purpose it serves, and then to find ways to represent these things through structural elements,” says Collen. “It’s no longer a case of designing a school that looks like every other school, or a hospital that replicates previous hospitals.

It’s about translating the client’s purpose, vision and brand into a building that will be functional, practical and that tells their story.”

Collen believes that architects create buildings from a client narrative and that each building tells its own story. “That’s what an architect does,” he says.

“We translate stories into the built environment. The way we tell those stories has changed as material technologies have developed, and as the functions of spaces have evolved. At the moment, with all the regenerative work we’re seeing taking place, it’s a case of adapting existing buildings to support new stories.

While styles and trends will come and go and brands will evolve, architects will continue to be the storytellers of civilisation, capturing narrative through the built environment.” ©

ZUTARI EMPLOYS 90 GRADUATES AND CLINCHES EMPLOYER OF THE YEAR AWARD

Leading consulting engineering and infrastructure advisory firm Zutari has been recognised as a top employer by the Momentum Metropolitan GradStar Students' Choice Awards 2022. It clinched first place in the Professional Services: Consulting Engineering category, the second time it has received this accolade. This follows the company onboarding 90 graduates in 2023 in celebration of its 90th anniversary last year.

“The intention is to say to the world that there is opportunity and talent across the business in Africa and the Middle East. We just need to embrace it and provide the platform for growth, particularly to the experienced hires and graduates coming through,” says Zutari Chief People Officer Dean Naidoo.

All 90 graduates are currently permanent employees, confirms Zutari Learning Experience Leader Shamenthree Naidoo. “It is a huge commitment. That is how much we believe in Zutari the brand. It also shows how much we believe in our industry. For the graduates who have joined us, it is a prime opportunity for them to grow and learn from the best of the best. Ultimately our support will allow them to achieve their professional registration.”

“It has been an amazing experience,” says Madeleine Venter. “There is a lot of anxiety attached to your first job and stepping out into the grown-up world. From the moment I walked into Zutari, I immediately felt like I belonged.” Barely a few weeks in and Madeleine has already been exposed to three projects. “That is something you can only find in a company like this. Zutari cares so much about its culture, employees and codes and ethics. That is what makes it a great company.”

Yaseera Vally, who joined the Rosebank office team as a member of the structural team, comments that while the induction equips the graduates for what lies ahead, the process does not end there. “Zutari has put together an amazing programme to make you feel comfortable in where you are and what to do. The company is invested in your career, wants to know where you see yourself in five to ten years, what work you enjoy doing and what your strengths and weaknesses are.”

“It is a testament to what Zutari wants to be and what we will continue to do. It is a showcase of why we really love the brand and that we believe in South Africa and in the industry. Our graduates have progression and early-on exposure in terms of engineering and professional services,” says Shamenthree.

Commenting on the GradStar Students' Choice Awards 2022, she says that while the legacy companies are 90 years old, Zutari as a brand is only two years' old. “The award shows that the brand is gaining recognition and momentum, which is fantastic for us from a youth development perspective.”

Dean highlights that, in addition to the graduate programme, Zutari is also taking on an additional 45 interns in March. “We cast the net wider to see what other talent and



“It is a huge commitment. That is how much we believe in Zutari the brand. It also shows how much we believe in our industry.”

Zutari Chief People Officer,
Dean Naidoo.

skills are in the South African market or maybe even in the Middle East.”

He concludes: “We consider ourselves a multinational practice and an inclusive employer. There is opportunity to embrace a diversity of skills and talents. When we talk about longevity and creating an impact, one has to understand that if you work for Zutari, you are connected to the purpose of the organisation and what we do. Our business is not about engineering. Our business is about people. It is about how we impact our communities and how we create further opportunities on the continent and in the places and in the environments we work in.” ☺

BELL DELIVERS SOLID PERFORMANCE ON THE BACK OF STRONG DEMAND FOR ADTs

JSE-listed Bell Equipment (Bell), a leading global manufacturer, distributor, and exporter of a wide range of heavy equipment for the construction, mining, quarrying, sugar, and forestry industries, recently released final results for the year ended 31 December 2022.



Leon Goosen, CEO of Bell (**above**), said that increased demand for commodities, country-specific post-COVID-19 stimulus packages, and increased infrastructure spending in several markets had driven demand for ADTs in particular.

“The conflict between Russia and Ukraine since February 2022 caused ongoing supply chain constraints following the lingering effects of COVID-19, resulting in us having to cut back on production.

While we mitigated these challenges well by closely managing high-risk suppliers and putting supply continuity interventions in place, it did prevent us from fully capitalising on the market conditions,” he said.

Goosen added that an improvement in the supply chain in the last quarter of the year meant that Bell was able to catch up on production and that product was both invoiced and delivered to customers by the end of 2022. “This ensured that we closed the

year much more strongly than we did the first half of the year,” he said.

In addition to supply chain constraints, 2022 was marred by soaring fuel prices, unprecedented levels of inflation and interest rates, record load shedding, and floods in KwaZulu-Natal in April that caused logistics challenges. Reduced vessel frequency increased the need to use significantly more expensive air freight.

Eskom’s long-term implementation of extended load shedding during 2022 also had far-reaching effects on Bell, local suppliers, and customers. “Besides the disruptive impact on business, the mitigation action of running generators significantly increased the cost of doing business in South Africa. Power interruptions and changeovers also increase the risk of equipment being damaged, especially electrical switching and electronic equipment.”

Goosen said that to further mitigate

load shedding, the group is increasing production at its factory in Germany, investigating the feasibility of sourcing fabrications from outside of South Africa, as well as installing a grid-tied solar system for the Richards Bay factory.

Financial review

The group improved significantly on the 2021 results, with profit after tax increasing by 63% to R478,9m (2021: R294,3m). Strong market conditions resulted in all regions surpassing the previous year’s volumes. Group sales were up by 28% on 2021 largely due to an improvement in the supply chain in the last quarter that meant that production could be caught up and products invoiced and delivered to customers by year end.

Higher production volumes resulted in an increase in labour and overheads recovered, positively impacting the bottom line.

Notwithstanding freight and load shedding expenses already mentioned, other notable expenses include increased electricity charges due to higher production and electricity tariff increases.

Group inventory increased by R1,1b (31%) from December 2021 to R4,8b at the end of 2022 reflecting the high level of actual and planned production.

Recognising the improvement in the financial results, the board has declared a gross final dividend of 90 cents per ordinary share.

Operational update and product development

South Africa experienced a positive year, with favourable commodity prices fuelling demand in the mining industry. “The JCB product line is proving to be extremely complementary to the South African offering. The market has reacted positively to the group taking over the distribution and support for this great product range,” said Goosen, adding that in Bell’s major international

markets – the US and UK – demand was strong despite high levels of inflation, increased interest rates and soaring energy costs. Australia and New Zealand also maintained a high demand for ADTs.

“Our OEM business was restructured into three distinct divisions: Mining and Construction, Forestry and Agriculture, and Underground Mining to provide a more dedicated focus on product lines, distribution, and support going forward. Pleasingly, we have also started distributing JCB Agriculture alongside the Bell Forestry and Agriculture range and over a dozen independent dealers have been appointed as part of our strategy to grow our exposure in these industries through increased products and improved service,” he said.

He added that underground mining has been identified as another opportunity for growth.

“The two underground articulated dump truck models and a rock scaler have been well accepted in existing African markets for their built-in levels of safety, use of the latest technology and economical productivity. This range will be expanded to include a 6-ton low profile Load Haul Dump (LHD) loader.”

Goosen was proud to elaborate on innovation at Bell, saying that four years after commencing extensive testing, the group’s autonomous technology is now at the adoption stage with customers in the UK, South America, and Australia set to introduce autonomous Bell ADTs on their worksites during 2023.

“We currently have two approved service providers, xtonomy, based in Europe, and Pronto AI in the US, both of which can work with Bell customers from anywhere in the world. A third supplier has recently been engaged and the group will begin testing this system during 2023.”

In addition, Goosen announced that the group has decided to enter the global motorised grader market. Final testing and refinement on its first generation of motor graders are underway, with production set to begin as early as Q4 2024.

This is a significant step in the group’s strategy to grow its product development IP, increase its manufactured product offering, and expand global markets.

“Motor graders complement the group’s flagship ADT product as a core earthmoving product. There are several

shared global markets and dealer distribution channels. Significant design complexity as well as developing to the needs of the operator are key for this product line and the group has demonstrated ability to achieve these,” he said.

Three base machines will initially be offered, each with the option of a four- or six-wheel drive configuration. The G140 will cater for maintenance and light construction tasks, while the G160, with its increased power and performance, is designed to handle heavy construction applications.

The G200 is positioned as an entry-level machine for the mining industry.

Outlook

From a production perspective, the volume outlook for 2023 is strong, work in progress has normalised and supply chain issues should not be a major constraint in the second half of 2023.

Goosen indicated that the order book is being maintained at record levels and the group is already taking orders for 2024. Finished goods inventory levels are low for current demand and are expected to remain low due to the strong order book.

“In South Africa, we anticipate some improvement in the construction industry as the recent SANRAL awards have created optimism and are positive for the country.”

He said that Bell would continue to engage and work with the government, but that the cost and ability to do business in South Africa is a serious concern. “The cumulative effect of the challenges that local businesses must grapple with needs to be weighed up when considering strategies for long-term sustainability.

These include exchange rate volatility, fuel prices, rising inflation and interest rates, escalating electricity tariffs, a severely encumbered national electricity provider, growing structural challenges around water and sanitation, and road infrastructure and port inefficiencies that frustrate logistics.”

In closing, Goosen added that while Europe and the US have started 2023 very well, the group needs to exercise caution given the banking crisis in the US and macroeconomic indicators, most notably subdued economic activity and high inflation levels and interest rates, signalling possible recession. ☺

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DISCONNECTING AFTER WORK – AN EMPLOYEE’S RIGHT OR AN EMPLOYER’S RESPONSIBILITY?

In the modern world of work, the lines between personal and professional time are becoming increasingly blurred. With the rise of mobile devices and remote work, many employees find themselves constantly connected to their work, even after working hours. This phenomenon is particularly prevalent in South Africa, where employers have a tendency to contact employees after hours.

According to Nicol Myburgh, Head: HCM Business Unit at CRS Technologies, while this may seem harmless, the practice of contacting employees after working hours can have negative effects on both the employee and the employer. He cites several reasons why employers should avoid contacting their employees after hours.

Strictly speaking, it’s a violation of labour legislation, says Myburgh. “South Africa has strict labour laws that protect the rights of employees. According to the Basic Conditions of Employment Act, employees are entitled to a maximum of 45 hours of work per week, which includes any time spent responding to work-related communications outside of working hours. By contacting employees after hours, employers are essentially asking them to work free of charge, which is a violation of their rights.”

Employers need to remember that while they have every right to send their employees an email after working

hours, the employees also have the right not to respond, Myburgh adds. “In fact, expecting an employee to always respond to communications at any hour of the day or night could even be perceived as a form of bullying, and the employee could invoke the Code of Good Practice on Harassment as a means of protecting their rights to stay offline after hours.”

Working long hours without any downtime can also lead to burnout, he continues. “This is a serious condition that can cause physical and mental health problems.

By contacting employees after hours, employers are effectively denying them the opportunity to switch off and recharge their batteries. This can lead to decreased productivity, increased absenteeism, and high staff turnover rates.

“Additionally, maintaining a healthy work-life balance is essential for overall wellbeing, and employers who contact employees after hours are effectively encroaching on their personal

time, which can harm relationships with family and friends, leading to resentment and a lack of motivation.”

International trends

Countries such as France and Kenya have already outlawed after-hour calls and emails from bosses, while Kenya recently proposed the Employment Amendment Bill, which seeks to protect workers against doing extra work without pay.

While it remains to be seen whether South Africa will follow a similar route, in the meantime, Myburgh says nothing prevents companies from implementing a policy that prohibits after-hour communications between employers and employees.

“This being said, it is important to remember that in any working environment, employees may be required to work overtime in order to get the job done. But employers should take care not to make this the norm or they may be faced with unwanted consequences,” he concludes. ©



INCUBATOR OF ENGINEERING RESEARCH EXCELLENCE

The South African Institution of Civil Engineering (SAICE) recently joined forces with leading universities across the country to recognise excellence amongst civil engineering students for their research efforts. The SAICE 2023 National IP Showdown took place on 4 April, when students presented their final year research projects.

Students were invited to present their civil engineering university research and investigation project, which is part of the national curriculum for a final year civil engineering undergraduate student.

Through this project, students are required to select an issue that is topical in the industry and then conduct research in accordance with pre-set deliverables.

Once the research is complete, the student teams then present their findings to a panel of judges, which comprises both selected industry leaders and non-engineers. The presentations are then adjudicated by:

- Identifying if teams have gained an in-depth understanding of the research project.
- Determining whether teams showcase adequate communication skills by presenting their work to a diverse audience.
- Exposing these top students to the industry and to key players within the industry.

The main objective of the event is to create a platform for winners from the various universities to compete on a national level.

Steven Kaplan, 2023 SAICE President (pictured), enthusiastically summed up the National IP Showdown as an invaluable platform for upcoming civil engineering professionals to demonstrate their understanding of the issues faced in the environment by embarking on initiatives to find solutions to highly complex engineering topics.

The winners for 2023

The first place prize, sponsored by BVI was awarded to Bukani Ndebele from the University of Kwa-Zulu Natal– for his project on Biofilm control in water supply pipes.

This research investigated the bacteria build-up – biofilm – that is trapped in water pipelines that effects water quality, increases frictional losses and subsequently increases pumping costs. His research centred on methods to break down the microbial cells that make up the biofilm.

“The benefits of my research will result in a better understanding of how to improve water safety and quality while simultaneously reducing the

cost of transportation in pipelines” Ndebele explained.

The second-place prize, sponsored by SAICE, was awarded to Herbert Nyoni from the University of Pretoria who presented his project titled: Optical Crack Width Detection and Analysis in Concrete Using Python, OpenCV, and Machine Learning Algorithm.

Traditional methods of concrete crack detection and analysis are time consuming and require careful engineering skills. Nyoni’s research centred on the analysis using an image of the defect and employing a combination of commonly found software programmes and a machine learning algorithm to determine the cause and consequence of cracks in concrete structures.

In third place, sponsored by Leica Geosystems was Etienne-Pierre Skein from Stellenbosch University, for work on the Development of a High Modulus Concrete for 3D-Printing Applications.

Skein was inspired to make a difference to the traditional methods of concrete construction against a background of numerous reports of failing infrastructure by investigating the effects of increasing Young’s Modulus or stiffness of concrete members using 3D concrete printing.

Friedrich Slabbert: Director at Scindum Academy, who was a judge at the event, applauded the contestants and their ability to be able to present their research findings to the tough questioning of the panel of judges. “Being able to communicate and present effectively is essential to be able to sell a new or revolutionary concept, especially to an audience of professionals with traditional or no concepts of civil engineering” he said.

Kaplan concluded: “I’m immensely proud of our young graduates - their attitude and commitment in undertaking demanding research projects.

These are our future engineers with whom the built environment is entrusted, and their enthusiasm and approach provides the confidence that their skills will meet the challenges of the many projects that lie ahead.”

The event was proudly sponsored by BVI and Leica Geosystems, and accredited for 0.2 CPD points. ©

MEET THE EIGHT FINALISTS OF THE 36TH COROBRIK STUDENT ARCHITECTURE AWARDS

Highlighting talent, creativity, innovation and inspiration, the Corobrik Student Architecture Awards is all about jump-starting careers, building the industry and designing tomorrow. The finalists are selected from the eight major universities, based on the students' Architectural Master's theses, from the class of 2022. The finalists each receive a R10 000 prize and the opportunity to compete for the top title, plus a R70 000 grand prize, at a live event on 16 May 2023.

“Our relationship with the awards goes back some 36 years, and it is one that has proved very enlightening for Corobrik. It has added a lot of depth and enriched the architectural profession by allowing young up-and-coming architects to express themselves and show the kinds of directions they believe architecture should be going in,” comments Corobrik CEO Nick Booth. Since 1986, the awards have placed 35 winners on the architectural map, both in leading practices as well as their own firms.

Melicia van Loggerenberg, University of Pretoria
Melicia says she feels honoured to represent the University of Pretoria. “I would like to thank Corobrik for providing a platform to take our projects beyond our respective establishments.”

Entitled ‘Environment as a Cognitive Prosthesis’, Melicia’s mini-dissertation highlights the lack of age-inclusive interventions in public and social environments, specifically pertaining to the growing elderly demographic.

A further critique of geriatric care architecture provides

STUDENT ARCHITECTURE AWARDS

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36 YEAR 36

insight into the gaps in the discourse of which our failure to consider cognitive dependencies is the biggest shortcoming. The results of Melicia's research serve as a guideline for future projects advocating against ageist urban environments, contributing to a knowledge source that we will soon not be able to design without.

Mia Pulles, University of the Witwatersrand

"Architecture not only sculpturally defines the space we occupy on this beautiful planet, but it provides people with real, tactile opportunities to adapt, grow and live," says Mia. Entitled 'Igniting the Heart(h) : Resuscitating the Heritage of the Melville Koppies through Earth and Fire Craft Production', Mia's project engages with the conservation and resuscitation of the Melville Koppies site in Johannesburg.

It celebrates its ancient, richly-layered heritage with the design of a living museum, an artisanal pottery-making and iron-forging production space – crafts both deeply embedded in the site's untold history.

Katherine van Wyngaarden, University of Cape Town

"I am grateful to be part of this group with peers from across the country and to be given the chance to engage with their explorations," says Katherine. She believes that architecture creates a sense of belonging, encourages interaction and provokes emotion.

Entitled 'Playful architecture – Constructing Sociality', her project explores themes of playful architecture and how activated, adaptable and dynamic spaces are created by embracing the inherent instability of social space. The project is situated within an imagined future fabric of District six in Cape Town, on a site with existing activities to be plugged into and reinforced.

Ané Meyer, University of the Free State

"It actually still does not feel real," comments Ané on being a regional winner. "I am extremely excited for the journey ahead and look forward to meeting so many great upcoming architects."

Ané says architecture provides a deeper understanding of how design can create innovative solutions that impact communities and the environment. Her thesis is entitled 'Ephemeral Skin: Towards a Reparational, Relational, and Respectful Engagement with the Temporal Environment'.

The design of an algae research and manufacturing institute at Hartbeespoort Dam focuses on permanence and temporality in nature and the built form, growing and decaying with the landscape. The building will partly disappear over time, leaving a public park after the threat posed by hazardous algae blooms and the subsequent need for algae research is no longer dominant.

For online publications only: [Click here to view Ané's project](#) – Ané Meyer | Finalist 2022 (corobrik.co.za)

Luzuko Funda, Nelson Mandela University

Luzuko says the Corobrik Student Architecture Awards is a diverse representation of architecture in South Africa, with past winners setting a trend for innovation. "I am honoured to be a finalist, as I strive to make architecture accessible to all. I feel like I am already an inspiration for the next generation."

Luzuko's project, 'The Design of Buildings for the Faculty of Agriculture at the University of Fort Hare in East London', aims to revitalise the city surrounding the campus. It creates

an 'edge building' that interacts with the public realm, while slightly touching the natural landscape to preserve the natural edge.

The technical design looks at adapting the existing old Miriam Makeba building on the site and using modular systems as an architectural expression to create a sustainable building that fits the context.

Kreolin Lyle Naicker, University of KwaZulu-Natal

Kreolin says being a regional winner is "a proud moment in my life and makes me proud of the work I produced. I would like to thank Corobrik for allowing students to showcase their architectural designs and recognising their hard work throughout the year."

Kreolin's research, 'An Exploration of Water Security through Architecture: Towards a Learning Centre in Durban', aims to change our perception of water by means of a multi-sensory experience of the treatment process. The built and natural environment becomes a living system that demonstrates the water-cleaning process through an outdoor park with various bio-retention systems, allowing visitors to "(re)connect with nature".

The design encapsulates a strong axis from the entrance to the harbour, with adjoining interactive learning spaces and seating areas to attract visitors, forming active and informal learning environments.

Cindy Langa, University of Johannesburg

"I never imagined I would be in the running, let alone a finalist!" says Cindy. "I am happy about the platform Corobrik has provided to showcase my work." Cindy has an abiding interest in public spaces, "the who, why, when and how public spaces have changed over time, especially given the history of South Africa."

Her project, 'Broken Narratives and Blurred Recollections: [Re]Constructing Sharpeville's Broken Memorial Landscape', critiques the memorialisation of the Sharpeville massacre. "It proves how the memory of the massacre has been vandalised – narratively and physically – pre- and post-democracy. I argue that the blatant erasure of these narratives is an act of violence against the victims, and the surviving community of Sharpeville," says Cindy.

Francois Luc Groenewald, Tshwane University of Technology

Having his research recognised by his peers, lecturers and Corobrik "is truly an honour, and having the opportunity to share it publicly is more than the heart of any designer can dream for," says Francois.

He says that "the idea of commemoration in South Africa is probably one of the most special areas that architectural research design can poke its nose into." Entitled 'The Design of an Exploratorium at the Swartkop Air Force Base, Valhalla, South Africa', sheds light on the unrecognised and forgotten narratives of our aviation history.

The thesis reconstructs and reactivates a pre-apartheid, post-WW1 conservation site dedicated for aviation commemoration into an appropriate architectural solution by rescripting the programme, use and aviation heritage resources.

"We are very excited to celebrate the 36th edition of the awards. It has been an incredibly exciting and richly fulfilling journey," highlights Corobrik Marketing Support Manager Thilo Sidambaram, who herself has been involved with the awards for over two decades. ©

PROTECTING EMPLOYEES, CONTRACTORS AND CLIENTS

The Bargaining Council for the Civil Engineering Industry (BCCEI) is a statutory body created under the Labour Relations Act 66 of 1995 to provide for the co-regulation of stable and productive employment relations in the civil engineering industry. The council is an industry-based forum of organised business and labour that regulates employment conditions and labour relations. Construction World spoke to Lindie Fourie, the BCCEI's Operations Manager about the importance of compliance to the Bargaining Council for the employer and how non-compliance can negatively affect clients using non-compliant contractors.



Lindie Fourie, the BCCEI's Operations Manager.

The BCCEI is a legislative body that protects the rights of employees and is derived from the Labour Relations Act. This act makes provision for organised labour and employers organisations of a specific industry to represent that specific industry. "It represents the majority of people in the industry who have the right, in terms of the Labour Relations Act, to approach the Department of Labour to register a Bargaining Council and within that ambit can negotiate wages and conditions of employment. The main focus of the BCCEI is to ensure that those collective agreements with standards of employment and other regulations pertaining to employment law, particularly applicable to the civil engineering industry, are complied with by the entire industry," Fourie states. "In short: the BCCEI standardises the playing field."

"If a company does work of a civil engineering nature, it needs to be registered with the BCCEI," says Fourie. "Clients that issue civil engineering work to contractors must ensure that these contractors are compliant as it gives them peace of mind to know that you are not using an unscrupulous contractor this will cause issues along the line." There are major risks involved for clients on projects if they are using companies that are not registered. Fourie says there can be legal implications for the client as non-compliance is a case of purposefully undermining subordinate legislation.

Non-compliance

"Unscrupulous employers who are not compliant with the subordinate law and not a member of the BCCEI are the major concern, especially in the current climate where there is a lack of work from government, exacerbated by COVID-pandemic. The result has been cut-throat industry where companies often work at zero margins in an attempt to keep their people employed – and cut corners as a result," says Fourie.

What does the BCCEI offer the civil engineering industry?

The BCCEI benefits both the employers and employees. "Employers do not have to concern themselves with wage negotiations with unions and do not have to engage expensive labour consultants or external people to assist them with what has already been done at national level by representatives at the Bargaining Council who have the experience and expertise to do this," says Fourie.

Conversely, employees benefit from the published rules, know what remuneration they can expect, and which benefits they are entitled to. "Because collective agreements have been established, these can be extended to non-parties, which means that even if employees do not belong to a trade union or employers organisations, such employees are protected by these collective agreements under the Department of Employment and Labour.

"If other trade unions want to negotiate wages and conditions of employment covered by the collective agreements with a company, they are not compelled to do so as it is prohibited by law," says Fourie.

Unfair dismissal disputes are handled by the BCCEI. This has the advantage that the commissioners that preside over such matters have experience in the industry – something that is often not the case when unfair dismissal cases are handled by the CCMA.

"Many clients in the industry have realised the value of

using compliant contractors. Clients can stipulate in the tender requirements that potential contractors must be in Good Standing with the BCCEI. This means that when we issue a letter of Good Standing, we are telling the client that the contractor that will be used on a client's project, has no open compliance issues such as underpaying employees and that its levies to the BCCEI are up to date. This letter is extra security for the client as the risks of using non-compliant companies on projects can be disastrous," Fourie says.

Risks for being non-compliant – either a contractor or client

"If it becomes known that a contractor is underpaying its employees, then it is almost a given that tools will be downed on that project. This subordinate legislation governing wages has been published by the Minister of Employment and Labour and is merely a voluntary arrangement. Companies that are non-compliant in not paying the employees what they should are probably also non-compliant with regard to health and safety," continues Fourie.

BCCEI agents can issue a compliance order to non-compliant contractors which instructs them to comply with the conditions and provisions of collective agreements.

"It also has financial implications. Agents can do an assessment retrospectively of up to three years. If for instance a person has been working on a project for three years where they have been underpaid, the agent will do an assessment and will issue an order to an offending contractor to pay it back, back dated. The same can be done for unpaid levies. If a contractor

does not pay monies back within 14 days, the matter is referred to arbitration," Fourie says.

"Once the BCCEI has an arbitration award, and the company still doesn't comply, a sheriff can attach property to settle the unpaid monies."

Implicit footprint

Fourie says that it is the BCCEI's intention to have the civil industry grow and not be like a policeman with a baton. "In the same breath, it has a legal obligation to ensure compliance to collective agreements. The BCCEI, in addition to its headquarters in Johannesburg, has offices in five regions across the country. "We're in the process of expanding on that footprint. We have got designated agents, covering the entire South Africa, who engage with – especially - the public sector such as municipalities. Those companies not registered with the BCCEI do not do so because they are unaware of it, they do so because they do not want to be registered so they can save on levies and cut corners around payments to labourers. By doing so they not only jeopardise themselves, but also their employees and clients," Fourie concludes. ☺

"If it becomes known that a contractor is underpaying its employees, then it is almost a given that tools will be downed on that project."



WIND ENERGY'S LEADING ROLE IN SA'S ENERGY ACTION PLAN

Following the National Energy Crisis Committee's six-month progress update on implementation of the Energy Action Plan, released earlier this year, the South African Wind Energy Association (SAWEA) has commended the Government's transparency and inclusion of the public on its progress towards addressing energy security, and has welcomed the changes. However, it has advised that there are a number of key focus areas that require additional intervention and swift action within the five objectives outlined in the plan, with a clearer scope of wind energy integration, mainly infrastructure investment in wind projects.

SAWEA believes that in order for the country's energy security challenges to be addressed adequately, a holistic view of available renewable energy sources needs to be taken into consideration. Not only does this provide consumers and businesses options, but it will also enable a fertile economic environment. Wind, as one of the most cost effective renewable energy sources has significantly demonstrated its positive economic contribution with a total procurement by wind IPPs during construction and operations to date amounting to over R9b.

Fundamentally, the Energy Action Plan is a tool that will hold government accountable to ensure thorough deployment of the identified objectives to ensure an energy secure future that includes the integration of wind energy.

Unpacking these objectives and what the expectations for the wind sector are, SAWEA's Chief Communications Officer, Morongoa Ramaboa, explains, in relation to EAP's overall long-term objective to achieve energy security, "We support the various interventions and those that are in the pipeline. More so, we welcome the fact that renewable energy is being embraced by Government through the Cabinet's endorsement of the Just Energy Transition Investment Plan, as well as the prioritisation of solar, wind, gas and storage projects at nine of Eskom's power stations. We believe that this will ultimately support our urgent need for energy security, effectively reducing load shedding and the resulting detrimental impact on our green economy."

Furthermore, the Plan's approach to accelerating private investment in generation capacity, through the removal of the licensing requirement for generation projects of any size, the reduction of timeframes for regulatory approvals, as well as the establishment of a 'One Stop Shop' for energy projects through Invest SA, are interventions that SAWEA welcomes.

However, SAWEA also values public procurement that allows a baseline of investment and creates stability in a growing industry, noting that there's room for both markets to ensure that energy security is achieved across the entire value chain in both private and public spheres.

"The ideal is to create an environment that encourages and accelerates investment injection into the economy, removing the pressure from public fiscus, and to stimulate the private sector to invest in their own energy supply and furthermore create new industries," adds Ramaboa.

SAWEA believes that the reduction of timeframes for regulatory approvals based on the streamlining of environmental processes will significantly accelerate the development of large-scale transmission infrastructure. And, whilst it acknowledges that the state utility has conceptualised various programmes that will allow for the procurement of additional power when the grid is significantly constrained, it expects government to maintain consistency in as far as the capacity procurement is concerned.

Whilst a step in the right direction, the Association warns that accelerated procurement through the trusted REIPPP programmes and increased private offtakes, is what's needed to resolve the energy crisis in the country.

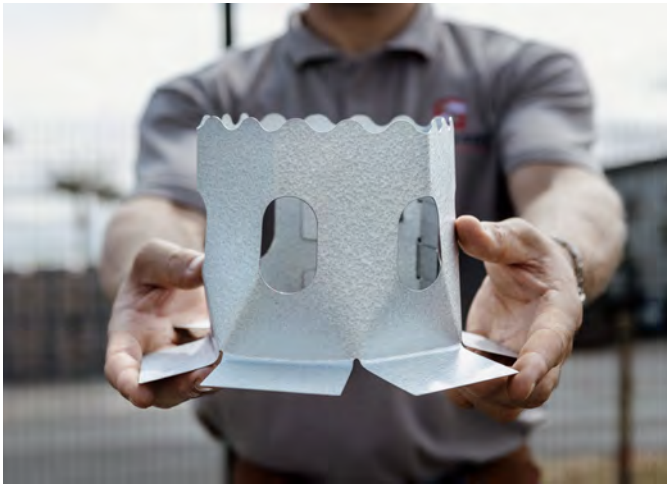
SAWEA reiterates that a clearly defined queueing system needs to be urgently implemented with a balanced view between publicly and privately procured electricity. It additionally advocates that Ministerial determination for over 18 000 MW of new generation capacity from wind, solar and battery storage be prioritised since it was published in August last year.

The EAPs intention to enable businesses and households to invest in rooftop solar, is viewed as a good start to providing reprieve from the adverse effects of interrupted electricity. This requires the development of a net billing framework for municipalities to enable customers to feed electricity from rooftop solar installations onto the grid by the utility.

"To complement this move, SAWEA is looking at investment opportunities to integrate wind energy for the use of businesses and households to supplement the use of PV panels, especially in areas that prone to strong wind conditions," continues Ramaboa. ☺

THE MESHPROP™ SERIES SOLVES THE CHALLENGES OF ELEVATING REINFORCEMENT

The problem of elevating reinforcement at large heights has been a challenge in the South African construction market due to the cost involved with current available products and has forced contractors to use bricks or the bending up of stools of reinforcement. This poses a risk to the integrity of flooring solutions like DPM piercing, buckling of products or the cracking of ground floor slabs. It also obviously poses a major risk for contractor's guarantees. Enter the new MeshProp™ Series, a fresh, innovative and unique product to assist contractors with this problem.



MeshProp™ Series was developed by Struksol® (Structural Solutions). This company was founded in 2021. The team at Struksol® comprises Dane and Noel Morel and Conrad Smith who have 60 years of combined experience. These individuals combine structural and marine engineering with technical sales and mining and business management who are committed to use their experience and knowledge in the construction industry for innovative technical solutions and systems to cater for economically sensitive markets in South Africa and further afield. Struksol's new MeshProp™ Series is an example of this. It is a technically advanced solution at an attractive price that caters for heights of 65 mm to 150 mm in elevation.

Struksol® offers after-market technical support together with consulting in various disciplines of engineering and undertakes to, by means of personal involvement through all stages of a projects, bring the latest technology and products available to achieve optimal results for the project.

The MeshProp™ Series

Struksol® has engineered this innovative product to fill a gap in the market that has been a problem in the construction industry for decades. Are you tired of bent rebar stools that punch through DPC? Have you had enough of unstable and expensive plastic stools that topple over? Are you concerned about bricks that cause weak spots in your ground floor slab?

Struksol's MeshProp™ Series mitigates these problems and makes the users confident that the risk on flooring guarantees is eliminated.

The MeshProp™ Series is an easily foldable and high strength reinforcement stool catering for large elevation heights and heavy loads. It is walkable, durable, stable, light and has minimal impact. This easy-to-use product provides

a new way to elevate reinforcement, whether it be mesh reinforcement or conventionally placed concrete, and caters for heights of 65 mm to 150 mm in elevation. It can be used for ground floor and suspended slabs, raft foundations, strip footings, conventional pad footings, pre-cast/tilt up concrete elements, plinths and various others.

Advantages

The system provides higher durability, load capacity and strength of material, while also offering greater stability than alternative products. It eliminates DPM and substrate punching and requires no supplementary accessories, but still provides a high bearing capacity while allowing concrete to flow freely. ☺



CLEARING THE WAY FOR ALTERNATIVE ENERGY ADOPTION IN SOUTH AFRICA



Addressing grid constraints will clear the way for an influx in new solar and alternative energy projects in South Africa, says Dinesh Buldoo, Managing Director, Power, WSP in Africa.

The tax incentives for solar and other green energy – announced in the 2023 Budget Speech on 22 February 2023 – are expected to go a long way towards spurring the adoption of renewable energy in South Africa.

Managing Director for Power at WSP in Africa, Dinesh Buldoo, says, “South Africa has world leading and abundant solar and wind resource potential. These incentives should support the growth of the alternative energy sector as a whole and enable it to overcome upfront capital costs on individual projects in favour of long-term gains for the industry and the country.”

WSP has seen several renewable energy projects, in different regions in Africa, coming through the planning pipeline over the past several years – with evidence of significant investor and developer interest in further projects. WSP has also successfully delivered Solar and Wind projects through the 4 Rounds of the Renewable Energy Independent Power Producer Programme (REIPPPP).

To truly unlock the potential in the renewables sector – in South Africa and on the African continent as a whole – regulations that enable renewable power generation plants to be built, and legislation and policies that support the growth of the alternative energy sector are needed. Tax incentives are one step towards making these changes.

“Private sector interest in investing in renewable power assets across Africa has been growing steadily, as the continent offers diverse renewable energy sources ranging from solar and wind to green hydrogen,” Buldoo points out. “This latest announcement by the South African Government should encourage local investment.”

But it’s not as simple as it sounds, he cautions. “Mitigating against the costs involved, especially in light of the recent volatility in equipment prices, is only one factor here. Getting the excess renewable energy generated by new private installations onto the grid, and distributed to where it’s needed, is what will make the real impact. Addressing South Africa’s grid constraints, therefore, becomes of even greater importance if the country is to maximise the momentum these incentives could create for renewable energy investment.”

Larger scale solar and wind farms are often located in remote destinations based on where the best solar and wind resources are. This results in these projects being concentrated in specific areas, leading to grid access issues since these areas often have little to no grid capacity available. Though the tax incentives could serve to incentivise rooftop solar installations in more urbanised areas, where grid access may be more readily available, transmission and distribution systems may still

Larger scale solar and wind farms are often located in remote destinations based on where the best solar and wind resources are.

Dinesh Buldoo,
Managing Director, Power - WSP in Africa.

be inadequately developed to accept power generated from these installations.

To understand the existing grid constraints better, and aid Eskom in its overall grid planning, the South African Photovoltaic Industry Association (SAPVIA) and the South Africa Wind Energy Association (SAWEA) recently announced the launch of the 2023 South African Renewable Energy Grid Survey in conjunction with the State-owned power utility.

“Zayd Vawda, Senior Renewable Energy Engineer at WSP in Africa and Chairperson of the SAPVIA grid access working group led the development and strategic guidance of the survey,” Buldoo says. “The 2023 version of the survey will account for projects that employ wheeling and has been expanded to capture even more detail per project, which will be invaluable to Eskom’s transmission planning division. It also gives the South African renewable energy industry an opportunity to contribute to national transmission planning and development, which should add value in addressing grid constraints.”

WSP is also assisting the SAPVIA/SAWEA task team who are leading the coordination of the solar and wind industry input to the new Eskom Grid Access guidelines. This will unblock one of the key challenges facing IPPs in South Africa.

Buldoo adds: “We believe that – as more renewable power generation plants are built as a result of recent changes in the Electricity Regulations Act, and as businesses begin to leverage the tax incentives announced in the Budget Speech – South Africa will experience intermittent excess energy in the electricity grid,” Buldoo says. “This will allow the country to begin realising other opportunities, including in the green economy, such as its ambitions in the production and export of green hydrogen. All indications are that, by successfully leveraging renewable energy sources, South Africa can benefit greatly from the global drive to achieve certain decarbonisation targets by 2030 and become carbon neutral by 2050. Critically, these benefits will not only be from an environmental point of view, but from an economic and social one as well,” Buldoo concludes. ☺

NORDEX GROUP AIMS TO PROVIDE FULLY RECYCLABLE WIND TURBINE BLADES BY 2032



Ahead of the imminent release of the Nordex Group's 2022 Sustainability Report, it has been announced that the company is now participating as one of the eighteen partners, in a sustainability project, funded by the European Union, to drive the recycling of high-value rotor blade materials from wind turbine blades.

Currently, 85% – 95% of a Nordex wind turbine is already recyclable. For many of the materials used, there are established recycling processes for environmentally-friendly disposal – especially for steel and concrete, which make up the largest share of a wind turbine in the tower and foundation.

Turbine rotor blades consist of a combination of different materials such as wood, various metals, adhesives, paints, and composites. The composites are glass-fibre-reinforced plastics, as well as carbon-fibre-reinforced plastics. At the end of their life, rotor blades are more challenging to recycle due to the heterogeneity of the material and the strong adhesion between the fibres and polymers. Recycling processes for these materials are not yet fully established, and reuse of recycled materials is not widespread.

As reported, over the past few years, the Nordex Group has already reduced the carbon footprint of its wind turbines.

“In line with our group's Sustainability Strategy 2025, ambitious goals have been set, including offering the market a fully recyclable blade

within the next decade, with the target set for 2032,” explained Nordex Energy South Africa's Managing Director, Compton Saunders.

In order to reach this goal, Nordex have conducted and participated in a number of Research and Development projects, one of which is the European-funded 'Wind turbine blades End of Life through Open HUBs for circular materials in sustainable business models', or EoLO-HUBS for short.

The general objective of the EoLO-HUBS project is to demonstrate and validate a set of innovative composite material recycling technologies which will provide answers to the three main areas involved in end-of-life wind farm recycling: De-commissioning and pre-treatment of wind turbine blades; Sustainable fibre reclamation processes addressing two alternative routes: low carbon pyrolysis and green chemistry solvolysis; Upgrading processes for the recovered fibres addressing mainly glass fibres as well as carbon fibres. ©

“In order to reach this goal, Nordex have conducted and participated in a number of Research and Development projects.”



FIVE TRENDS INFLUENCING COMMERCIAL PROPERTY RENOVATIONS IN SA

Commercial property renovations have become increasingly important in South Africa as landlords and facilities managers strive to provide modern and functional spaces for their tenants amid rising vacancy levels.

Calvin Vekates, CEO of the construction company Posch Group, says that as post-pandemic work trends continue to prove popular, creating flexible, adaptable, and technologically advanced spaces is more critical than ever.

“To succeed in today’s ever-changing market conditions, it’s essential for property owners and managers to stay up to date with industry trends to ensure their spaces are relevant to the needs of existing and prospective tenants,” said Vekates. “Keeping abreast of what is coming allows commercial property owners to stay one step ahead in a market that has seen much change in recent years.”

He reflects on five trends influencing commercial property renovations in South Africa.

Sustainable Design

Sustainable design is becoming increasingly important in commercial property renovations. This includes incorporating energy-efficient features, such as solar panels and LED lighting, and using environmentally friendly materials like recycled steel and concrete. Sustainable design benefits the environment and can save landlords money in the long run by reducing energy costs.

Flexibility and Adaptability

The pandemic has highlighted the need for flexibility and adaptability in commercial spaces. With remote work becoming more prevalent, landlords are rethinking how their buildings are used. This includes creating multifunctional spaces that can be easily adapted to different needs, such as hybrid workspaces that allow for in-person and remote work.

Technology Integration

Technology integration has become a priority in commercial

property renovations. This includes incorporating smart technology, such as automated lighting and temperature controls, and providing high-speed internet connectivity and advanced security systems. Tenants are looking for spaces that allow for seamless connectivity and enhanced productivity.

Biophilic (Natural) Design

Biophilic design incorporates natural elements, such as plants and natural light, into commercial spaces. This trend is rising in popularity as it has been shown to improve productivity, reduce stress, and enhance well-being. Biophilic design can improve indoor air quality and reduce energy costs by incorporating natural ventilation and lighting.

Safety and Security

South Africa’s high crime rate means that safety and security remain top priorities in commercial spaces. Security trends in commercial properties are constantly evolving, and managers should stay up to date on the latest developments.

One direction that has become sought after in South Africa is using advanced security systems, such as biometric access control, video surveillance, and intrusion detection. These systems provide an extra layer of security and can deter criminal activity.

By incorporating these trends into their renovations, landlords and facilities managers can create spaces that are not only functional and modern but also enhance the well-being and productivity of their tenants.

“Trendy spaces importantly give landlords an advantage in an increasingly competitive office and industrial rental market. Prospective tenants impressed by a functional, beautiful space are more likely to sign up, and those who love their space are less likely to leave,” Vekates concludes. ☉

BARLOW PARK RISES AS THE LANDMARK DEVELOPMENT FORGES AHEAD

The R3bn Barlow Park development in Sandton is rising out of the ground, taking the vision for this affordable residential and mixed-use precinct in a premium location another step closer to becoming a reality. The ground-breaking development is being led by developers Atterbury and Divercity in partnership with Barloworld, Twin City, and the Moolman Group.

Construction of the first phase began in June 2022 on Barlow Park's 4 100 affordable residential units in 11 apartment blocks, 5 500 m² of retail and restaurant space in a vibrant open-air neighbourhood centre, a Curro school, medical centre, shared offices and more, in a lush green setting at the gateway to South Africa's commercial capital, Sandton Central.

"The development of the retail section is progressing apace, with the main retail structure already complete. The steel structures on the podium level going up, which are now visible from the adjacent M1 highway. They will soon house restaurants. The Curro school building has also been completed," reports Atterbury Development Manager Ruan van Rooyen.

"Equally rapid advancements are being made on the first and second residential blocks, which will offer 750 rental apartments. The lift cores of these blocks now reach the height of eight of the total 11 floors, and they should top out around mid-year. Furthermore, earthworks for the third and fourth residential blocks of 860 units, including a creche, will commence this June," Van Rooyen adds.

The first apartments at Barlow Park will be available in early 2024, and the Curro school and retail centre will open at the same time, planned for January 2024.

"Atterbury continues to prove it is at the forefront of the latest development trends with Barlow Park," adds van Rooyen, who has almost a decade of experience in residential development, is applying this knowledge to the unique mixed-use development.

"The entire development, professional and construction team is excited to be working on a project of this scale," reports van Rooyen, who has an honours degree in Construction Management from UP and is experienced in all the stages of the development process from inception to completion.

As a talented young development manager who is part of the respected Atterbury development team, van Rooyen is focused on delivering the Barlow Park development to the best Atterbury-quality with the precinct's users' best interests in mind while being cognisant of the bigger picture for the property now and in the future.

And the timing of the development is proving to be excellent, points out Derrick Pautz, Atterbury Head of Developments, Gauteng.

Divercity, South Africa's leading investor and developer, in well-located and affordable rental

housing, is reporting a long-term-vacancy rate below 5% in its portfolio for the first time since the pandemic. Moreover, as more staff return to the workplace in South Africa, demand for such residential opportunities close to or within commercial hubs is increasing.

"We are seeing a big uptick in demand for quality, affordable residential rental apartments to such an extent that it is starting to drive rental inflation. While we have always been confident in the Barlow Park development, we are particularly pleased that all signs point to it coming online right in the sweet spot of the market recovery," says Pautz.

Barlow Park is located at 180 Katherine Street in the financial capital of Sandton. The property enjoys a prime position edged by the M1 highway and the major arterial of Katherine Street. It is less than two kilometres from the Grayston Avenue and Marlboro Drive offramps from the M1. ©



Ruan Van Rooyen, Development Manager, Atterbury Property at the Barlow Park project.

2023 TWENTY-SECOND 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 22th 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 and CIOB.

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 addresses 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 be 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 venue and date of the awards evening will be available in July.

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



<p>1 <i>Category</i> Civil Engineering Contractors</p>	<p>2 <i>Category</i> Building Contractors</p>						
<p>Please address the following criteria:</p> <ul style="list-style-type: none"> • 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 	<p>Please address the following criteria:</p> <ul style="list-style-type: none"> • 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 						
<p>3 <i>Category</i> Civil Engineering and Building Contractors (outside South Africa)</p>	<p>4 <i>Category</i> Specialist Contractors or Suppliers</p>						
<ul style="list-style-type: none"> • In addition to the common prerequisites, projects outside South Africa must be executed by a South African contractor. <p>Please address the following criteria:</p> <ul style="list-style-type: none"> • 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 	<p>Please address the following criteria:</p> <ul style="list-style-type: none"> • 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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<p>7 <i>Category</i> The AfriSam Innovation Award for Sustainable Construction</p>	<div> <h1>Construction <small>WORLD</small></h1> </div> <div> <table border="0"> <tr> <td style="text-align: center;"><i>Main Sponsor</i></td> <td style="text-align: center;"><i>Associate sponsor</i></td> <td style="text-align: center;"><i>Sponsor</i></td> </tr> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </table> </div> <div> <p style="text-align: center;">Entry Deadline Friday, 8 September at 17:00</p> </div>	<i>Main Sponsor</i>	<i>Associate sponsor</i>	<i>Sponsor</i>			
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CASE CONSTRUCTION EQUIPMENT: PRODUCTIVITY MEETS AFFORDABILITY

The nagging question constantly facing construction site managers is: how do you balance productivity with affordability to ensure profitability? Well, CASE Construction Equipment can rightfully claim that it has over 180 years of experience finding workable solutions to address this issue.

CASE Construction's long history of notable milestones attests to its ability to evolve with time and always stay close to customers with effective and innovative products and services. These include a growing offering of digital services – delivering performance, productivity and low Total Cost of Ownership.

Sustainability is built into the brand's DNA and is a key strategic driver that extends to all aspects of its business. Investment in mechanisation and technology must naturally aim to promote the profitability of a business, and it is therefore imperative that these decisions are meticulously deliberated.

Happy customers

The company has unlocked a new world of possibilities for South African end users, giving them direct access to the CASE global OEM factory product range through its main distribution branches in Gauteng, Cape Town, KwaZulu-Natal and the Eastern Cape.

Tim Boshoff, CASE Construction Equipment national retail manager, says: "Our clients' success is our success, and we commit ourselves to going the extra mile to understand and expedite our clients' requirements. Last year, we maintained a customer satisfaction index score of 80% among our South African clients in various industries, including agriculture, construction, mining and forestry. And let's face it: who doesn't like happy customers?"

"We pride ourselves on offering practical solutions to real-world problems. And we go out of our way to make sure our aftermarket support is top notch, no matter where you are or what you're using our equipment for. With CASE, you're not just buying a machine, you're buying into a network of support that will protect your investment, exceed your expectations and give you the best ownership experience. And we're not just talking about building strong machines, but also strong communities.

"In order to meet the demand for highly productive yet affordable construction equipment the company

has recently launched a special financing promotion. In association with a reputable South African financial institution we now offer flexible, tailor-made financing solutions on a range of our most sought-after machines," he explained.

World-class backhoe loaders

CASE Construction Equipment South Africa's top-selling loaders and backhoes already enjoy legendary status worldwide, and the company specifically recommends its 570T and 570ST backhoe loaders for users who need an affordable yet powerful, versatile and reliable machine to take on practically any task on the worksite.

The 570T and 570ST models take advantage of the new generation Fiat S8000 engine, a 3,9-litre turbocharged 4-cylinder engine with a mechanical injection system, which delivers exceptional performance. The reliability and success of these engines is second to none, with over three million of these units operating around the world in a wide range of applications.

The robust S-shaped boom on these machines has been designed for premium digging and lifting performance. Its heavy-duty structure ensures strength and durability thanks to the thick, multi-plate fabrications, castings, and forgings which are conveniently placed in the most stressed points and include larger cylinders hinge plates in the main arm, and bigger reinforcing plates on both ends.

The 570T and 570ST models reach deeper than any other backhoe loader in this segment: up to 5,58 metres with the Extendhoe dipper version. Customers looking for maximum flexibility can count on the lifting hook welded to the bucket linkage when they need the rear arm to lift and handle suspended objects.

This is a unique feature by CASE. On the front side, the straight loader arm ensures loading capacity up to 3 700 kg and the best-in-class tipping height of 3,48 metres. Compared to parallel arms offered by the competition, the arm of the Case 570T improves visibility to the bucket and

requires less maintenance having fewer greasing points.

Ultra-tough crawler excavator

Another machine on the highly-productive-yet-affordable list is CASE Construction Equipment's revered CX220C LC hydraulic crawler excavator, which is specially designed for tough applications. It comes with three available power modes and 10 auxiliary hydraulic settings. It offers an arm length of 1,9 m, 2,4 m and 2,9 m and 5,4 m boom length to cater for individual customer needs. Also, its 152 kN bucket and 132 kN arm digging force ensure optimal productivity.

This machine is ideally suited for tough assignments in stone quarries, road works, general construction and earthwork. The gauge function ensures the continuous monitoring of fuel consumption which helps in attaining up to four per cent better fuel efficiency due to hydraulic system control and six per cent better efficiency from the FPT engine. Five energy saving controls are present in the excavator which helps in constant consumption monitoring with an ECO gauge function.

The CX220C LC excavator has an operating weight of 22 tons and is equipped with an FPT six-cylinder fuel-efficient electronically controlled engine. It develops gross power of 117 kW (157 hp) and peak torque of 622 Nm at 1 800 rpm. The new generation FPT engine is developed and produced by CASE's sister brand FPT Industrial.

Lower cost of ownership

Robust design with increased plate thickness on structures and attachments significantly improves the durability of the excavator. The boom and arm feature heavy-duty brackets and reduced tolerances which increase component life, thus minimising downtime. The lower cost of ownership also comes with longer service intervals, further reducing downtimes. Moreover, this excavator offers fast, easy inspection and safe maintenance from ground level for user comfort and greater efficiency.

The CX220C LC offers CASE's state-of-the-art telematics system providing accurate, real time updates. The spacious HVAC cabin has ample legroom for a secure and comfortable working environment and CASE has also included an ergonomically designed mechanical seat with eight different adjustments to enhance operator comfort and productivity. Vibration dampening protects against whole body fatigue, ensuring all-day productivity. The cabin also has features like the Auto Climate Control function and air-conditioning system with 25% more airflow, with eight vents for better efficiency during harsh summer conditions and openable roof window for better visibility on top. The cabin has an integrated 18 cm LCD monitor for real time parameter monitoring.



Professional dealer network

Today, CASE serves its customers with products manufactured at its plants based in the United States, Brazil, Italy, India and Mexico. Its plants operate to World-Class Manufacturing (WCM) standards, paving the way for continuous improvement. The widespread dealer network also means that local CASE dealers are always close to their customers and serve them with the outstanding equipment produced at these plants.

Through the superior CASE dealer network, users have access to a true professional partner with world-class equipment and aftermarket support, industry-leading guarantees and flexible financing.

More information on the current special financing promotion and CASE's wide range of equipment is available at your local dealer, or visit the website at www.CASEce.co.za. ©

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WINTER CONCRETE PLACEMENT CALLS FOR SPECIAL MEASURES

Special techniques are required for winter concreting including optimising the mix design, using a variety of methods of heating up the concrete, thermal curing and the use of concrete maturity measurements, says John Roxburgh, Technical Specialist of Cement & Concrete SA's School of Concrete Technology.

Ambient temperature's effects on concrete is covered in detail in the School of Concrete Technology's training for the course, "SCT30 Concrete Technology" – an intensive five-day course that deals with, among many other subjects, the special procedures required for cold weather concreting.

Roxburgh says dealing with extreme temperature is fundamental to good concrete practice on site. "Cold weather concreting is generally defined as the placing of concrete at temperatures below 5 degrees Celsius.

In winter, there are many places in South Africa that have ambient temperatures around or below 5 degrees Celsius - especially early in the mornings, late afternoons and evenings."

In such cold weather, several potential problems may occur:

- The cement will hydrate slower leading to concrete taking longer to set and gain strength which has the knock-on effect of longer bleed times and difficulties in finishing, as well as later stripping times.
- There is also a chance of the concrete freezing with the associated damaged caused by the expansion of ice within the concrete.
- Thermal cracking in mass pours may also be harder to prevent with high temperature differentials between the hotter core concrete and the outer concrete in contact with the low external ambient temperatures.

"In low ambient temperatures, concrete should be placed and finished as quickly as possible, and special techniques

employed to keep the surface from freezing. The first is to always try and cast the concrete on a rising thermometer: rather cast in the early morning with the ambient temperature increasing as this would give the concrete more time to gain strength before it potentially freezes. Slightly 'richer' mixes should also be used by either adding more cement to the mix or reducing the extender content in the cement.

"Proper curing is crucial for concrete to achieve its desired strength and durability, and this is especially true in cold weather. The use of wooden formwork to help insulate the concrete or placing industrial insulating blankets and mats over the concrete will also help. Concreting works could also be done in a tent."

Roxburgh says when planning concrete work in winter, allowance should be made for the implementation of the techniques described above. It may also be necessary to adjust the schedule to allow for longer curing times.

"All these measures are reasonably easy to implement and will help tremendously in protecting concrete but there are more sophisticated and integral techniques that can be used in cold weather concreting to prevent costly setbacks – and these are fully covered in the SCT30 course offered by the School of Concrete Technology," he adds.

CCSA's School of Concrete Technology is the oldest and largest provider of concrete technology education in South Africa and has a wide range of courses that cater for all levels of competency. ©

KARIBA DAM PROJECT FORGES AHEAD WITH CHRYSO ADMIXTURES

Contractors are getting closer to the key objective of the Kariba Dam Rehabilitation Project – to reshape the plunge pool below the dam wall and arrest any further erosion.



Concrete is a central element of this world class engineering project, and CHRYSO® Southern Africa's Zambian distributor, Mart Solutions Ltd has been one of the key suppliers of construction chemicals to main contractor Razel-Bec since the very beginning of the project. This collaborative effort over the past several years has ensured the project's steady progress. With the aim of stabilising the plunge pool at the foot of the 138 m high dam wall, the project is using vast quantities of concrete in a range of applications.

The total volume of concrete used – which includes the coffer dam and underwater works as well as excavation – is almost 26 500 m³. At the coal face is Mart Solutions Director, Martie Coulson.

“Among the first challenges we faced was in the construction of piers for the temporary coffer dam, where concrete had to be poured underwater to create a foundation,” says Coulson. “Difficulties in finding bedrock for piers 7, 8 and 9 – as well as for the dam's right bank – meant that 22 000 m³ of concrete had to be placed underwater.”

This arduous process – which took six months and was completed in September last year – involved pumping concrete to 25 m deep, with divers handling the 125 mm diameter pipe to place the concrete. Adding to the complexity was the movement of water from the nearby Zimbabwe's hydro-electric turbine outlet, which exacerbated the ‘wash’ off the concrete into the surrounding water.

“This raised the risk of the cement being washed out of the mix, leaving the aggregate behind as well as further reducing visibility for the divers,” she explains. “The CHRYSO® Aquabeton product played a critical role as an anti-washout admixture that increases the cohesion of the concrete mix.”

This allowed the placement of a concrete base for the three piers, measuring some 15 m wide and 20 m deep. Another important aspect of the project is repairing a fault in the rock at the foot of the Kariba dam wall. Stitching of the fault will include the use of 40 mm anchors in the rock with CHRYSO NS Grout added to a concrete mix. In addition, 20 mm, 25 mm and 32 mm anchors will be used and will be secured with a.b.e.® dura.grout supplied by Mart Solutions Ltd.

“Some 7 071 m³ of specialised concrete will be used for the large 90 m high, 45 m wide and 2,5 m thick wall which will be

built in front of the fault as a protective shield,” she says. “This will be fixed onto the 12 m long, 40 mm diameter anchors in the wall, which will in turn be secured 10 m into the rock.”

A combination of CHRYSO® Omega 162 and CHRYSO® Fluid Optima 206 will be used in conjunction with densified silica fume and fly ash in the concrete mix for the wall – to assist in preventing the temperature rise in the concrete during placement and to avoid cracking. This is important due to the high ambient temperatures of up to 40 degrees Celsius.

“We have been running laboratory trials for three years to ensure that the concrete mix design will meet the standards specified by the engineers for the wall to ensure that the concrete will remain below 55 degrees Celsius during placement,” she explains. As part of the preparation of the concrete, therefore, a chiller plant will be cooling the water and aggregate before it is added to the mix. In another aspect of the project, Mart Solutions is providing the anchors to secure the safety nets, which are being installed against the risk of rockfalls in the excavation, as well as a.b.e.® dura.grout for securing the anchors. This non-shrink cementitious grout quickly develops placeable consistency and remains cohesive. CHRYSO Jet 30 is also being supplied for shotcreting, mixing with concrete as it is sprayed to ensure adhesion to the rock surface.

“As the coffer dam is dewatered, the contractors are able to start micro-blasting to clear rock from the plunge pool,” she says. “The walls must then be secured to prevent any rocks from falling.”

Mart Solutions has already provided the CHRYSO® Omega 162 superplasticiser for building the coffer dam piers. Ranging from 250 tonnes to 700 tonnes in weight, these piers measure 5,5 metres tall.

“The new generation CHRYSO® Omega 162 high range water reducing plasticiser played an important role to reduce water demand, thereby increasing the concrete's durability,” she says. “It also improved the concrete's cohesion and lowered its viscosity, for better homogeneity and off-shutter finish.”

CHRYSO® Omega 162 allows concrete to exhibit extended workability characteristics, while CHRYSO® Fuge B – a pore-blocking permeability reducer for mass concrete – was used in the coffer dam piers to prevent the penetration of water



Much of the success of the project thus far can be attributed to excellent dynamics between the engineering and contracting teams.

JG AFRIKA ASSISTS IN MAINTAINING THE N1/N4 TOLL ROAD FOR BAKWENA PLATINUM CORRIDOR CONCESSIONAIRE

Entrusted with the Pavement Management System for Bakwena Platinum Corridor Concessionaire, JG Afrika is helping to maintain the N1/N4 Toll Road to the high-quality standards specified in the concession contract. By Emma Day, Executive Associate at JG Afrika.

As part of this responsibility, JG Afrika and principal contractor, G4 Civils, are rehabilitating a 20 km section of the slow lane of the N4 between Kameeldrift Interchange and Ga-Rankuwa Interchange.

JG Afrika commenced with the engineering design in 2020 and is now overseeing the construction works which commenced in late in 2021 with the project mobilisation period.

G4 Civils started with the construction work on the project

in January 2022 and is expected to complete the work scope in August 2023. Having already completed about 60% of the scope of works, G4 has already made steady progress on this contract.

The scope of work entails milling the existing surfacing, base, subbase, and a portion of the selected layer. The base and surfacing layers are milled to a depth of 205 mm and width of 3,7 m and stockpiled for reuse. The subbase and a portion of the selected layer are milled to a depth of 510 mm and width of



The scope of work entails milling the existing surfacing, base, subbase, and a portion of the selected layer.



G4 Civils started with the construction work on the project in January 2022 and is expected to complete the work scope in August 2023.

3,7 m and sent to a separate stockpile. Roller compactors then compact the remaining selected layer achieving the required density in five passes. Hereafter, the milled surfacing, and base, as well as 100 mm new G5 material and cement is placed and stabilised to form a new 300 mm, 3,7 m wide C3 selected layer. A 150 mm bench is then formed on either side of the new base. After this, a new 150 mm, 4 m wide G1 base consisting of commercially sourced material is placed and a 150 mm bench formed on either side for the new surfacing. The 60 mm 4,3 m-wide continuously graded asphalt surfacing consists of AE-2 binder and rolled-in-chips is then placed.

Through a tender process coordinated by the contractor, the PLC tenders were put out for various packages to local targeted enterprises. A community liaison officer was appointed to receive CVs of local labour and assist with the appointment thereof.

Day attributes much of the success of the project thus far to excellent dynamics between the engineering and contracting teams. This is in addition to the proactive and hands-on approach that has been adopted by the client, represented by Danie Verwey, Chief Technical Officer; Danie Botha, Project Manager; and Joe Reyneke, Client Representative. ©

Day says that the project has not been without its share of challenges. “The construction works are being undertaken along an extremely busy section of the N4. To mitigate the impact of the construction work on the flow of traffic, rehabilitation, which is being undertaken in sections, needs to be planned very carefully. Unexpected ground conditions, such as areas with underground water, have also been a challenge,” she says. To ensure that the project met Bakwena’s goals to incorporate local targeted enterprises and local labour into the project, a public liaison committee (PLC) was set up during the mobilisation period of the project.



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Lungisa Tshele, CEO and co-founder of Lubocon Civils.



Bongani Msimango, COO and co-founder of Lubocon Civils.

GRADE 9 CIDB RATING SIGNALS GREAT PROSPECTS FOR LUBOCON

Black-led multidisciplinary contractor Lubocon Civils has entered the big league, with its achievement last month of a Grade 9 Civil Engineering (CE) rating – the highest achievable grade – from the Construction Industry Development Board (CIDB).

The level 9CE grading indicates that the company has developed the CIDB's top rating for expertise, experience and capability in the construction industry. It has been judged capable of undertaking large and complex construction projects, having earned a track record of successfully completing such projects on time, within budget and to the required quality standards.

"It has been a long and challenging journey to this point, and we are extremely proud of where we are today," says Lungisa Tshele, Chief Executive Officer and co-founder of Lubocon Civils. "Importantly, this step opens the door for us to compete for the larger projects in the market – an exciting prospect for the future of our business."

The CIDB Grade 9CE will allow Lubocon Civils to bid for projects valued in excess of R200m, and to do this independently. Started nine years ago by quantity surveyor Tshele and co-founder Bongani Msimango, a civil engineer, the company has climbed steadily through the CIDB levels as it developed its capabilities.

"We have deliberately grown our technical competence by attracting the best graduates and encouraging them to become professionally registered," says Tshele. "We have earned our reputation and growth through our high levels of competence and professionalism; we promote our expertise and skills above all else."

Developing the human resources within the business has also been critical to earning the CIDB Grade 9CE rating. The company has in-house engineers professionally registered with

the Engineering Council of South Africa (ECSA), and a number working towards registration. There are also qualified civil engineers and safety professionals registered with the South African Council for the Project and Construction Management Professions (SACPCMP) and more undergoing a candidacy programme to become registered.

"This is all part of our constant effort to build the skills foundation of Lubocon Civils," he says. "This in turn strengthens the sustainability of the company, so that it is not reliant on its founders alone."

A track record of successfully completed projects is of course another vital requirement of the Grade 9CE rating. He notes that Lubocon Civils has expanded over time into a range of projects from road contracts on provincial highways, to water and mine infrastructure.

"Our early work for local municipalities soon evolved into larger projects for provincial and national government agencies – and we then also became much more engaged with the private sector in industries like mining," he says. "Our civils offering has really grown and diversified, making us more multidisciplinary."

The CIDB also considers the financial capacity of contractors before awarding them promotion in the gradings. A key consideration is that companies must have sufficient financial resources for large-scale projects – as well as a proven track record of financial management.

"We have developed our financial capacity to give us the balance sheet required to operate at the upper levels of the

construction sector,” says Tshele. “This is the Lubocon way and talks to our mission – In Pursuit of Project Delivery.”

Lubocon Civils has also had its eye on quality for many years, and this has allowed it to clear the CIDB hurdle on quality management. The company developed and aligned its own quality management system with ISO 9001 and then took the next step to have this audited within the context of the ISO 9001 standard.

“This gave us an official ISO 9001 quality systems accreditation,” he says. “We have also put in place the ISO 14001 environmental management standard, and are busy with the ISO 45001 standard for occupational health and safety.”

The CIDB rating also requires robust health and safety policies and procedures which are effective on site. Tshele is proud of the company staff’s commitment to health and safety, which they drive through their in-house message of ‘Stop, Observe, Recognise, Take responsibility’ (SORT). This approach is driven home by a dedicated health and safety team that is guided by both the Occupational Health and Safety Act (OSHA) and the Mine Health and Safety Act (MHSA).

“Our qualified and experienced health and safety manager works with his team of safety officers to ensure strict compliance on all our sites,” he says. “The attention we have paid to this priority is shown by the fact that we have had no fatalities in the nine years of our existence, and continuously achieve very low Lost Time Injury Rates (LTIRs). Our DNA has always been about taking our people back to their families with zero harm and to date we are still living that.”

Looking forward, he concludes that the CIDB 9CE rating will undoubtedly help Lubocon Civils achieve its vision of becoming a household name in the construction sector and creating opportunities and transferring skills to the SMMEs while offering great value to its clients. “We look forward to growing further as a socially responsible business that contributes to the greater good of the people of South Africa, because this is the Lubocon Way,” he says. ☺



Concrete slabs for the Merensky stock pad at Bakubung Platinum.



Extensive experience in civils infrastructure is being applied on mining sites.



Work underway at the Exxaro Ash Disposal Facility in Belfast.

SUCCESSFUL COMPLETION OF MSUNDUZE RIVER BRIDGE

Located in the heart of the Mandeni Local Municipality, the project features the successfully completed Msunduze River Bridge, a four-span continuous reinforced concrete river bridge, straddling a total of 65 m over the Msunduze River. In addition to the construction of the bridge, the works included the upgrade of the gravel Local Road L3110 and its associated stormwater infrastructure. The successful completion of the project has not only improved the level of service delivery for the Nyoni and neighbouring communities by providing infrastructure development, but has also left its mark through the realisation of significant social initiatives that have uplifted and developed the skills of local community members and targeted enterprise contractors.

The project boasts surpassing the contract targets in all areas of community-based initiatives such as job creation, contract participation goals as well as accredited and on-the-job practical training to both local community members and emerging contractors. Through a collaborative effort of the KZN Department of Transport, Naidu Consulting and Icon Construction this was realised through detailed planning, social facilitation and the implementation of Labour-Intensive Construction principles. Despite the complexities associated with the construction of a reinforced concrete river bridge and the challenges faced with the COVID-19 national lockdown restrictions, the main contractor, with the extensive participation of the emerging contractors, was successful in overcoming these challenges and successfully completed the project in November 2021, whilst strictly adhering to quality control and programme related constraints.

Background

Naidu Consulting was appointed by the KwaZulu-Natal Department of Transport to undertake the design and construction supervision of the Msunduze River Bridge. The motivating factors that contributed to the requirement of a river crossing were not only to facilitate safe travel for pedestrians including scholars and the elderly but also to improve access for emergency services and encourage long-term economic development by 'unlocking land' and promoting public transport to the Nyoni and neighbouring communities.

Construction innovation

The structure comprises a four span, cast in-situ solid concrete deck. The deck slab was made continuous over the piers to eliminate the necessity for expansion joints,

limiting them to the abutments only.

Abutments and piers are reinforced concrete that are on pile caps consisting of 750 mm diameter piles socketed into bedrock.

Innovation

At design stage, the social aspects of the projects were given high priority by the intentional inclusion of design elements that were able to incorporate labour intensive construction methods as well as by the inclusion of work suitable for targeted enterprises. Innovative ways to achieve CPG were thought of at design stage, making the approach of the project unique.

Management of planning and technical design

Bridge elements were designed strategically, considering the incorporation of labour-intensive construction work and work that is suitable for targeted enterprises. Five Targeted Enterprise subcontractors were employed on the Msunduze River Bridge project to undertake the following activities:

- 2 CIDB grade 1CE PE – Drainage, Guardrails & Landscaping
- 1 CIDB grade 2CE PE – Gabions
- 1 CIDB grade 3CE PE – Bulk Earthworks
- 1 CIDB grade 4CE PE – Concrete & Reinforcing

The Targeted Enterprise subcontractors' scope of construction work had varying degrees of complexity; some complex construction aspects included bridge construction related concrete works such as pile caps, piers, abutments and parapets. With the continuous mentorship and practical training provided by the Principal Contractor, the emerging contractors were successful in overcoming the construction challenges associated with complex construction methods, whilst strictly adhering to quality control, and programme



related constraints.

Quantifiable cost - budgetary compliance

The planned construction expenditure of the project was R31 785 228 and the actual was R31 272 143.53, equating to 98% of the planned expenditure. Despite challenges presented by the COVID-19 pandemic, the project remained within budget.

Influence of consulting engineer on implementability and constructability

The conceptual design was wholly the responsibility of Naidu Consulting. The concept was developed by considering the following factors:

- Constructability
- Social impact
- Form and function
- Environmental impact and constraints
- Lifecycle cost and value engineering

Constructability and social impact were important factors considered during design stage with the incorporation of labour-intensive construction and bridge elements that are suitable for targeted enterprises.

Innovation

The bridge was made continuous over the piers, eliminating the need for expansion joints at the piers. The expected longitudinal movements due to temperature fluctuations, shrinkage and creep of the bridge deck, were calculated as approximately 30 mm at both abutments.

Laminated rubber bearing pads were used for the bridge bearings. These bearings were specific to their position in order to accommodate the thermal movement of the bridge adequately.

Risk management

A baseline risk assessment was conducted during the preliminary design stage to ensure that the various risks associated with a project of this nature and technical requirements were identified, considered and where possible mitigated through appropriate engineering design, detailing and specification.

Some of the risks identified were:

- Flash flooding during construction
- Working at heights during construction
- Safety of the public during construction
- Safe maintenance of the structure after construction
- Variable founding materials

The design incorporated robust and efficient measures to address these risks. A professionally registered engineer undertook the geotechnical investigations and specified the foundations for the substructure to be piled.

The indemnification of the client as well as the engineer against the construction health and safety of the works, as well as safety of the public was specified to be the responsibility of the Contractor who was compensated accordingly. This included but was not limited to the design and inspection of all temporary works by a professionally registered engineer.

The Engineer supervised the contract and provided relevant information, details and the oversight to ensure the impartial appropriation of risk. It was ensured the Contractor followed all necessary procedures where risk was involved.

The Engineer also reviewed and provided comment on the Contractor's temporary works designs, method statements, quality control as well as health and safety plans to ensure statutory and contractual compliance.

Quality inspections and review of quality records were undertaken by the Engineer at each stage of the construction process. By doing so, early warning systems were implemented to ensure that defective work was identified timeously, and a safe working environment created.

Through the implementation of effective safety measures and a safe working culture, the project ensued without any significant health and safety incidents despite the challenges of working at heights.

Environmental impact consideration

The construction supervision team together with the principal contractor strived to ensure compliance in respect of both

Occupational Health & Safety and Environmental matters over the construction duration. This included a significant change to the contract in respect of the Contractor's Health and Safety obligations which had originally, only included for a part time H&S Officer at tender stage. Based on the nature of the project and legal obligations associated with the pre-requisite work permits from the National Department of Labour, a full-time H&S officer was approved by the Client and appointed by the Principal Contractor at project commencement. Despite the high OHS risks construction activities associated with the construction of a river bridge such as deep excavations and working at heights, to name a few, the H&S Audits conducted over the project duration detailed minor findings such as first aid cases however mitigating measures were always put in place to prevent future re-occurrences.

The projects approved Environmental Management Programme (EMPr) detailed stringent environmental control measures associated with the construction of a bridge within a river course. An Environmental Control Officer (ECO) was appointed on the project to guide the project team in ensuring compliance over the construction duration. During the design stage, the structural engineers had maximised the bridge deck spans to reduce the number of piers within the river course while still maintaining a balance with the feasibility of the superstructure. A high-risk construction activity that was identified during construction as an environmental challenge was related to the construction of cofferdams for the piling and foundation construction within the river channel. The EMPr set out compliance requirements such as the river course was not to be completely dammed, dewatering restrictions and mitigating measures to ensure the pile and foundation construction to be programmed during the "dry" season such as winter months to reduce the risks associated with flood damage. These requirements were adhered to and successfully completed in compliance with the EMPr which was a milestone from an Environmental perspective. At project completion, the site was rehabilitated with alien vegetation removed, grassing and landscaping undertaken to ensure the project site was left in an environmentally acceptable condition.

Quantifiable time and quality

Strict control was maintained during both design and construction phases. Regular meetings were held with the client and contractor in order to track quality, time and budgets.

In addition to continued communication with the Client on the progress and challenges in meeting design and construction objectives, the Engineer ensured that the social development goals were met and the project was completed without any hindrances ahead of schedule and within budget.

Corporate social investment

A total of 45 new job opportunities were created on the project with the employment of personnel from the local community by the principal contractor as well as the Targeted Enterprise subcontractors. The project had an employment target of 40 new job opportunities which was exceeded by almost 13%. The project also ensured that personnel employed from the local community also received CETA-accredited training. ten youth were trained as part of the National Youth Service (NYS) programme receiving theoretical training, followed by on-site practical training.

The constant engagement with local community over the duration of the project also helped identify and realise various other corporate social development initiatives. All five of the Targeted Enterprise subcontractors completed

their scope of work with a high degree of quality and within the scheduled timeframes. As a result of the successful completion of their works as well as the development and training opportunities received, two of the Targeted Enterprise subcontractors are now in a position to upgrade their CIDB Grading status.

CETA-accredited training, with on-site training and mentorship provided by the Principal Contractor, ICON Construction.

Meeting the clients deadline for submission

The COVID-19 pandemic presented a challenge to the project programme and had the potential to have significant financial impact on the Contractor and subcontractors on the project. Despite the restrictions to combat COVID-19, the contractors were able to complete the project on time, within budget and with minimal impact on achieving the project goals.

The successful completion of the Msunduze River Bridge project has not only provided the Nyoni and neighbouring communities with new infrastructure, but the outcomes of this project further widely contributed to the uplifting of society at large. A substantial part of the project included the uplifting of the local community via employment opportunities and skills development, as well as the development of small businesses and targeted enterprises. ☺

Project information

Company entering: Naidu Consulting
Client: KZN Department of Transport
Start date: 3 February 2020
End date: 26 November 2021
Main Contractor: Icon Construction
Principal Agent: Naidoo Consulting
Consulting Engineer: Naidu Consulting

Summary - project details

Client: KZN Department of Transport
Consultant: Naidu Consulting
Contractor: ICON Construction
Commencement Date: 03 February 2020

Milestones	Planned	Actual
Completion Date	03 August 2021	26 November 2021
Contract Duration	18 Months	21.7 Months
Construction Expenditure (Incl. Contingencies, CPA + VAT)	R 31 758 228.00	R 31 272 143.53
Construction Expenditure (%)	100%	98.5%
Contract Participation Goals	35%	52%
Job Opportunities	40 No.	45 No.
National Youth Service (NYS) Programme – Accredited Training	10 No.	10 No.

BUSINESS INTERRUPTION AND NATURAL CATASTROPHES RANK AS THE TOP RISKS FOR THE CONSTRUCTION SECTOR

Business interruption/supply chain disruption and natural catastrophes rank as the top risks for the construction and engineering sector, followed by the energy crisis as a new entrant at #3, according to Allianz Risk Barometer respondents for this industry. After the launch of the top global business risks in the Allianz Risk Barometer 2023 in January, Allianz Global Corporate & Specialty (AGCS) has now published its Global Industry Solutions Construction Outlook, one of several risk trend briefings for specific industry sectors, including technology, media and telecommunications, and financial services.



sector to fast forward its green transformation, adopting more sustainable approaches given it is a key contributor to greenhouse gas emissions.

The drive to net zero will help deliver strong future growth for the construction industry but new technologies, innovative delivery methods and greener, leaner practices will also bring new risk scenarios such as potential defects and repetitive loss scenarios or unexpected safety or environmental consequences, in addition to benefits. “The switch to sustainable energy and the adoption of modern building methods will transform the risk landscape, with radical changes in design, materials and construction processes,” explains Berruguete. “In order to meet carbon reduction

Blanca Berruguete, Global Industry Solutions Director for Construction at AGCS, comments on the top risks: “Larger values are at risk for companies. Construction costs are soaring because of the higher prices for energy and raw materials. Replacement is costing more and taking longer. Materials can also often be unavailable due to logistics, shipping and supply-chain bottlenecks. The result is that any property damage and business interruption losses are now likely to be significantly higher than before COVID-19.”

Berruguete says: “The construction industry is facing a number of challenges such as the prospect of recession, the shortage, and rising cost, of energy, key equipment and materials given recent high inflation, a spike in procurement costs, ongoing shortage of skilled labour, longer lead times, schedules, and cost overruns, compromised supply chains, ever-changing workplace protocols, and increased competition.” While the energy crisis, in combination with other factors, has contributed to rising costs, given construction is an energy-intensive economic activity, in the mid- to long-term, it could also act as a catalyst for the

targets, rapid adoption will likely be required meaning close co-operation between insurers, brokers and clients, to share data and experiences to help underwrite what can be prototypical risks.”

Fire and natural disasters top causes of claims

Regarding actual claims patterns, fires and natural disasters are the top contributors to construction and engineering losses according to AGCS analysis of 22 000 insurance claims worth €12,8bn over five years from 2017 to end of 2022. Fire is the most expensive cause of loss, accounting for 27% of the value of claims analyzed. Natural catastrophes account for almost a fifth of claims by value (19%) and are also the most frequent cause.

Construction sites need to give more consideration to the impact of extreme events, such as wildfires, flash flooding and landslides in their risk assessments. With climate change increasing the frequency and severity of these events, the costs of property damage and business interruption are expected to escalate. ☺



CUTTING CARBON EMISSIONS WITH CEMENT EXTENDERS

The science of substituting clinker in cement with a portion of alternative cementitious materials has paved the way for substantial gains in decarbonisation.

According to AfriSam process engineer, Marieta Buckle, the company has reduced its carbon dioxide emissions per ton of cement by 33% since 1990. An important factor in this sustainability journey has been the use of extenders – mainly fly ash and granulated blast furnace slag.

“We have been on this journey for many years before buzzwords like ‘net zero’ were in common use,” says Buckle. “Our Project Green Cement began in 2000, involving significant research and development being invested; among the outcomes, we were able to launch our Eco Building Cement in 2010 as the lowest carbon footprint product.”

AfriSam became arguably the world’s first construction materials supplier to ‘carbon footprint’ all our production operations, including cement, aggregate and readymix concrete, she notes. Its carbon dioxide rating system indicates

each product’s carbon footprint relative to Ordinary Portland Cement (OPC).

Buckle explains that producing clinker is the most energy intensive aspect of cement manufacturing – and is therefore a prime driver of carbon dioxide emissions. A central strategy at AfriSam has therefore been to promote decarbonisation by reducing the portion of clinker in cement while maintaining its strength and other properties. As an added advantage the utilisation of extenders also enables formulation of cement products that have improved characteristics specific to the application.

“AfriSam’s extensive research and development effort has been able to develop a cement mix that comprises up to 70% of alternative materials,” says Buckle. “Such a mix would contain only 30% of clinker while still providing the

required cementitious properties for the application. Importantly, it consumes less energy – and generates fewer carbon emissions – in the production process.”

Its ongoing achievements in this field are reflected in the statistics. AfriSam’s carbon emissions per tonne of cement produced is – at 598 kg in 2021 – is considerably lower than the 671 kg average among South African cement producers, measured in 2016. It is lower, too, than the global average of 642 kg of carbon emissions per tonne of cement.

“By using what are essentially waste materials like fly ash and slag, we can leverage the energy that has already been consumed in generating them as by-products,” she says. “Apart from the value of recycling a waste product, we can make our cement production gradually more sustainable by reducing the energy that is required.” ☺



AfriSam launched Project Green Cement in 2000 as a concerted effort to produce more environmentally responsible cement.



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The Lokotrack LT200HP mobile cone crusher is being used to crush historic dumps in Zambia.



Pilot Crushtec Africa Sales Manager Wayne Warren.

FAST, OPTIMAL SOLUTIONS UNDERPIN AFRICA GROWTH FOR PILOT CRUSHTEC

With its focus on product quality, responsive service and high stockholding, Pilot Crushtec has continued to grow in Africa by responding rapidly to customers' crushing and screening needs with reliable solutions.

Whether the operational pressure is on mine production or project start-up time, there is seldom any time to lose when a mining customer in Africa needs a crushing solution, according to Pilot Crushtec Africa Sales Manager Wayne Warren. Manufacturing lead times and logistical delays – where equipment may need transporting across borders to remote areas – can often frustrate customers in the mining sector.

“A recent contract in Zambia showed the value that we bring to customers’ operations by being quick off the mark with the right equipment,” says Warren. “A customer contacted us to discuss their urgent need for a crushing solution, and within a month they could push the button on site and begin operations with a Pilot Crushtec plant.”

This was despite the equipment taking two weeks on the road to reach the site, he notes. With Pilot Crushtec’s strategy of prioritising its large stockholding, it was also able

to recently assist another African mining operation with a full modular plant solution at short notice.

“In fact, the initial enquiry from this company was for mobile crushers – but the application was better suited to a modular format,” he says. “We were able to discuss the options with the customer, and they decided to follow our recommendations, which proved even more cost effective for them.”

He explains that Pilot Crushtec had both the mobile and the modular options available in stock, so was able to supply without delay. It is not unusual for this kind of equipment to require a lead time of several months for manufacture, assembly, delivery and commissioning, he says.

There has also been significant uptake of Pilot Crushtec crushing solutions in Africa by mining companies based in Asia, says Warren.

While many of these have used crushing equipment that



Rubble Master RM90GO! Is crushing marble aggregates on a quarry in Namibia.



A Lokotrack mobile train for aggregates in road construction working in Namibia.

comes at a lower capital cost, a growing number are turning to Pilot Crushtec for its equipment quality, uptime, spares availability, service backup and warranty.

Among the offerings that have attracted customers has been a five-year or 10 000 hour extended protection service (EPS) warranty on major Metso Outotec components – quite unusual for OEMs operating in this demanding environment, he notes.

“Customers find that our equipment also retains its resale value very well – which considerably safeguards their upfront investment,” he says. He notes that a Namibian customer has also recently leveraged the longevity of their Metso Outotec crushing equipment when converting from mobile to modular plants.

“They simply moved the Metso Outotec equipment from the previous mobile configuration, and installed it on the new modular plant,” he explains. “This augmented the additional Metso Outotec crusher that was purchased for the new plant, saving considerably on capex while not compromising reliability.”

“Pilot Crushtec has been operating in Africa for more than two decades, so this operating terrain is very familiar to us,” says Francois Marais, Sales and Marketing Director at Pilot Crushtec. “Our reputation is solid, and for the past seven



The recently commissioned Pilot Modular VS350 VSI module manufacturing sand in Botswana.

years we have also marketed the highly regarded Metso Outotec brand. Known for being robust and reliable, Metso Outotec crushers have been the preferred choice for mines around Africa for many decades.” ©

NEW RANGE OF GRADERS

Designed to meet the emerging needs of the grader industry, Bell Equipment has expanded its mining and construction OEM product range to include motor graders. With several units running in diversified applications, production has been set to begin as early as Q3 2024.

The Bell Motor Grader follows the introduction of the Bell Tracked Carrier in 2020 and is a significant step forward in the company's strategy to grow its own range of manufactured product for the global construction and mining industries. With almost 70 years of experience in listening to customers, designing, and manufacturing specialised machinery, Bell is equipped with the skill set and resources ideally suited to building motor graders.

Product range

Bell Equipment Product Manager, Warren Swart, said: "Grading applications require a robust and powerful grader to achieve the performance and reliability expectations of the industry." According to Warren, Bell will initially offer three base machines. The G140 is well suited to all maintenance and light to medium construction tasks while the G160, with its increased power and performance, is designed to handle heavy construction applications. Completing the range is the G200, which is designed for bulk earthworks and the mining industry.

Each base machine has the option of a four- or six-wheel drive configuration. Warren explains: "From the conception of the Bell Grader we factored in the requirements of a six-wheel drive configuration. This early integration, as opposed to trying to add into the platform later, has resulted in a better performing machine that is more controllable, robust, and easier to maintain. The significant improvement in performance achieved by adding front-wheel drive is only useful if it is reliable for the life of the grader, so we have spent a lot of time making sure this is the case."

The Bell Grader has been designed as a truly international product with the capability to meet varying emission regulations in international markets as well as different types of operator controls. The South African launch of this product is only the start of an exciting journey.

Design

The Bell Motor Grader is engineered to operate in the most challenging and harsh environmental conditions. Over two decades of experience in the supply, maintenance, and repair of motor graders, along with insights from many local and international expert advisors, has allowed the company to have a clear view of what is important to make this product work. While retaining a familiar control and layout, Bell has incorporated a range of advanced components and features that will help operators improve productivity, maintain costs, and deliver work efficiently.

As Bell has achieved success in the past through its ability to intelligently automate specific functions within the ADT industry, automation has also been one of the significant drivers in the motor grader design process. This automation allows the operator to be more focused on the job at hand and the final product of his grade while

still improving fuel efficiency and component life expectancy.

Recognising the diverse range of applications and often remote uses of motor graders, Bell has standardised on high-quality, low-maintenance components, such as a fully sealed circle bearing.

To simplify operations further, advanced diagnostics are incorporated into the machine to reduce the complexity of daily checks and servicing efforts. The Bell Graders are fitted with Cummins engines and ZF transmissions.

"The Ergopower transmission is well respected in the grading application for entry level units and we are particularly excited about the opportunity that the cPower transmission provides for higher duty applications. There will be significant advancements that we can offer users of the two larger graders by having a transmission that can be so easily tailored to a customer's needs," explains Warren.

Utilising industry-leading components for all systems has been instrumental in achieving an efficient and robust grader. "Getting established components to work well together is what our system engineers do well, and in a highly operator-sensitive product like a motor grader, we knew that we had to get the overall feel 100% right. We are confident we have achieved this and those testing the product confirmed this for us," he says.

The Bell design team also focused on providing long-term durability across all structures. According to the results of strain gauge testing, the main frame will provide a life expectancy exceeding market norms by 40%. The tandem axle, with enhanced bearing and interaxle cooling, provides reliable performance in long-haul applications.

Infield testing

Bell Equipment's test and prototype graders have already been operating with great success in a wide variety of applications from landscaping through heavy ripping and final levels to overall road construction. "It has been really pleasing to see the improvements in efficiency and performance identified during the design stage being confirmed on real-world job sites.

"We've been encouraged by the positive feedback we've received from expert advisers and operators who have experienced our prototype machines. We're excited to introduce the Bell Motor Grader and illustrate some of the advances we've made to a complicated piece of equipment," said Warren.

Bell has always sought to lead equipment development in the construction and material handling industries. The Bell Grader continues this pursuit with advancements seen in key performance requirements of the industry.

Watch this space for more detail on how Bell is set to shake up the traditional grader market, and if you wish to experience the product first-hand, please contact your local Bell representative. ©

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MARIJUANA TESTING IN THE WORKPLACE: A NECESSITY FOR SAFETY-SENSITIVE INDUSTRIES

Despite the decriminalisation of marijuana for personal use in 2018, it is still important for companies to test employees before they enter the workplace. Marijuana can affect judgment, motor skills, reaction times, and decision-making and problem-solving processes, which could result in workplace accidents, injuries, and fatalities. By Rhys Evans, MD at ALCO-Safe

This is particularly important in high-risk industries, where the law stipulates a zero-tolerance approach be taken in the workplace when dealing with intoxicating substances. As such, marijuana remains a substance that can be prohibited from a workplace safety perspective and as part of their occupational duty to provide a safe working environment, employers must keep intoxicating drugs and alcohol out of the workplace.

However, it is not as difficult as one might assume and through clearly-communicated policies and substance testing in line with the policy, this risk can be reduced significantly.

Keeping intoxicating substances out

The Mining Health and Safety Act and section 2A of the General Safety Regulations of the Occupational Health and Safety Act both prohibit alcohol and drugs in the workplace. Decriminalisation of the personal use of marijuana in an individual's private home does not override the policy requirements for employees to arrive and remain sober at work.

To prevent employees from arriving at the workplace having consumed intoxicating substances, it is important for companies to have a clearly-worded substance abuse policy that specifies exactly what kind of behaviour is permissible and what is not. Depending on the risk involved in the particular industry and working environment, companies might choose to do regular compulsory substance testing, or randomised testing, or testing on suspicion.

Policies must be preventative, not punitive

In looking to create a safe working environment, companies need to realise that when drafting, implementing, and enforcing their anti-substance policy, that it is carried out in a way that is construed as preventative, and not punitive. The point of a workplace substance policy is not to catch people in the act, but rather to prevent that act from taking place entirely.

This means that a clearly-communicated policy on substances must go hand-in-hand with providing continuous education and training to employees about the dangers of drug use, including marijuana, and its potential impact

on job performance and safety. This approach will help employees understand the importance of maintaining a drug-free workplace.

Where employers are truly concerned with workplace safety and employee wellness, they could offer employee assistance programs that provide confidential counselling and support for employees struggling with drug addiction, including marijuana.

Putting the focus on safety, not performance

We are no longer focusing on proving that the consumption of a prohibited substance renders a person incapable of performing their job, we are focused on asserting that an individual enters their workplace in compliance with the workplace safety policy, which prohibits intoxicating substances entirely.

While immediate dismissal is required in certain industries for any infractions of the workplace policy on intoxicating substances, companies that have adopted an approach of dismissing after the first or second final written notice have had much greater success in the CCMA upholding their dismissals, where they can show that the dismissal was not punitive. They can also show that the dismissal did not occur because the individual was caught out but that the dismissal was in the pursuit of achieving a safer working environment, and that person failed to comply with the workplace policy against substances, despite having received written warnings and being offered rehabilitative solutions in respect of the conduct for which they were ultimately dismissed.

Safety through sobriety

Testing for marijuana is a vital part of risk management in high-risk industries. Employers must manage the risks associated with intoxicated employees to reduce the likelihood of accidents and potential liability issues. Preventing the presence of intoxicating substances in the workplace is the most effective approach to ensure a safe working environment free from the influence of such substances. This can only be done by implementing policies, enforcing them and focusing the value of fostering a culture that prioritises safety through sobriety. ☉



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