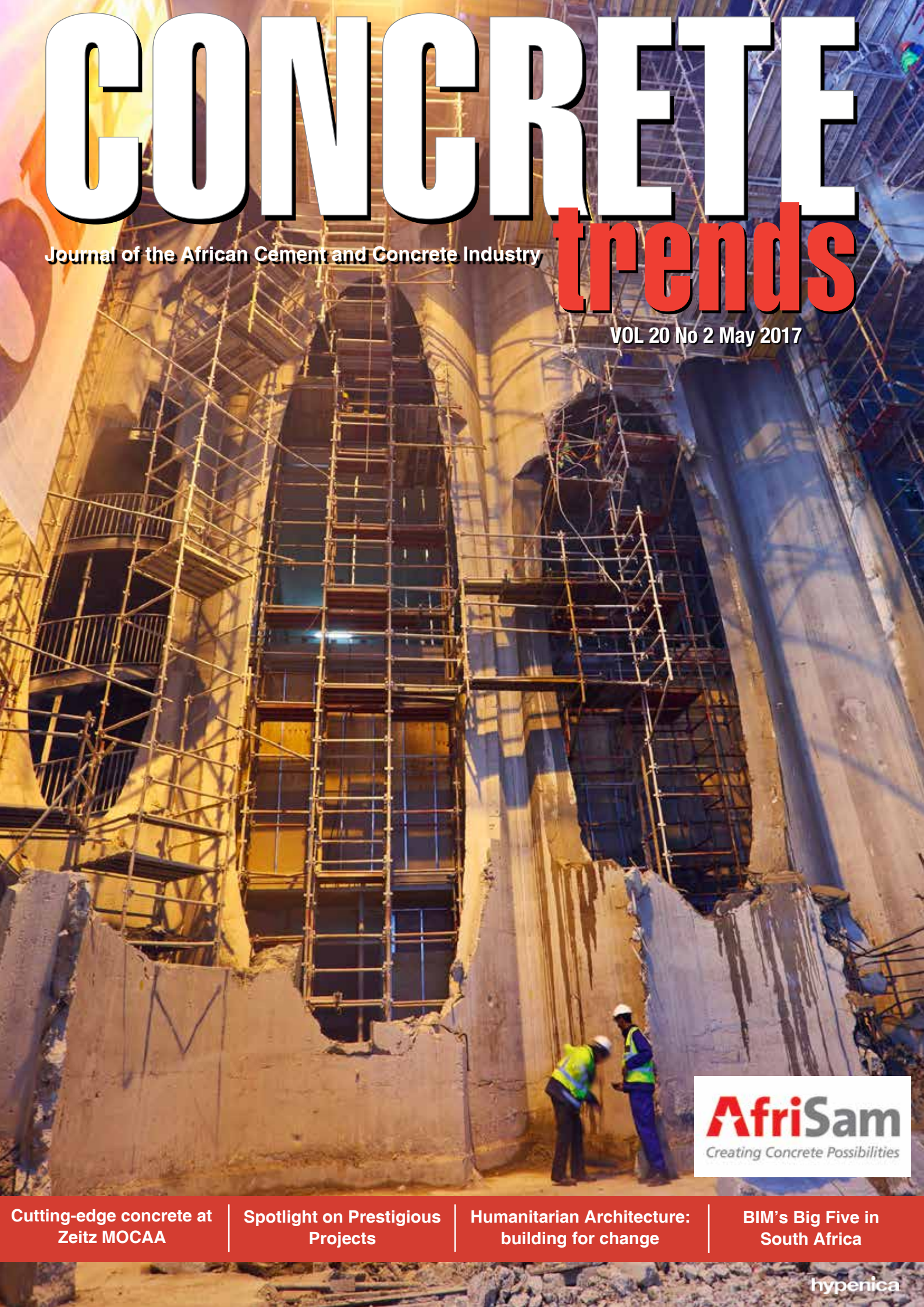


CONCRETE

Journal of the African Cement and Concrete Industry

trends

VOL 20 No 2 May 2017



AfriSam
Creating Concrete Possibilities

Cutting-edge concrete at
Zeitz MOCAA

Spotlight on Prestigious
Projects

Humanitarian Architecture:
building for change

BIM's Big Five in
South Africa

hypernica

CorehfilTM SPECIALITY FIBRES

www.corehfil.com

CorehfilTM PP Fibre is specially manufactured as a concrete additive to limit plastic shrinkage and control early cracking in cementitious products and can be used in:

- Commercial, Industrial & Residential Floor Slabs
- Bridge Decks
- Precast Concrete Products
- Plasters & Mortars
- Thin Panels
- Architectural Finishes
- Refractory Casting Moulds
- Marine & Hydraulic Structures
- Shotcrete

Benefits include:

- Low cost secondary reinforcement
- Reduces concrete cracking due to plastic shrinkage and settlement
- Protects primary reinforcement by inhibiting surface cracking
- Improves impact and abrasion resistance
- Increased tensile and flexural ductility
- Light, clean and safe to use



MANUFACTURED AND DISTRIBUTED BY:



welcome2colours.com

Tel: +27 31 736 8700
Fax: +27 31 736 1589

49 Eaton Road
Hammarisdale, 3700
sales@corehfil.com
www.corehfil.com

Official Supplier For
Lafarge ReadyMix Fibre Concrete



**ISO 9001
CERTIFIED
COMPANY**

CONCRETE trends

Volume 20 No 2 May 2017

CONTENTS

Message from Gill Owens the editor	2
Industry News	3-4
Association News.	6-7
News from Africa.	8-11
Cover Story	12-14
Art & Architecture	18-21
Humanitarian Architecture	22-23
Precast Concrete	24-29
Projects	30-38
Chemicals & Admixtures	40-41
Concrete Flooring	42-46
Green Technology	48-50
Technical Focus	52-53
Construction Equipment	54-58
Products & Services	60-65
Digital Construction.	66-69
Smart Buildings & Infrastructure.	70
THE LAST WORD	72

**Host publication of Totally Concrete Expo
and African Construction Expo**



Gallagher Convention Centre, Johannesburg: 23-24 May 2017

CHAIRMAN:

Rudi Leitner e-mail rudi.leitner@hypenica.com

CEO:

Devi Paulsen-Abbott e-mail devi.paulsen@hypenica.com

PUBLISHING DIRECTOR:

Errol Bryce e-mail errol.bryce@hypenica.com

EDITOR:

Gill Owens e-mail gill.owens@hypenica.com

ADVERTISING:

Vuyisa Mfobo +27(0)73 630 2438 / vuyisa.mfobo@hypenica.com

DESIGN, LAYOUT & PRODUCTION:

Elise Jacobs e-mail elise.jacobs@hypenica.com

REPRODUCTION & PRINT:

RSA Litho Printers Cape Town



Published by HYPENICA (Pty) Ltd. 31 Bell Crescent, Westlake Business Park, Tokai | PO Box 30875, Tokai, 7966, South Africa | Tel +27 (0) 21 700 4300 | Fax +27 (0) 21 702 4340

Concrete Trends is the official quarterly journal of the African Cement & Concrete Industry and is officially endorsed by



Hypenica accepts no responsibility for any opinions or statements in this publication. Consequently no person connected with the publication of this journal will be liable for any loss or damage sustained by any reader as a result of action following any statements or opinions expressed herein.



ISSN 1560-2710

12 | COVER STORY



AfriSam supplied specialised readymix to the Grain Silo Project. The complex at the V&A in Cape Town is almost 100 years old and the 42 concrete silo tubes and elevator building are being repurposed to house the Zeitz MOCAA. Photograph credit: Grant Duncan-Smith.



3 JG Afrika's water services changing lives.



42 Concrete floors offer dramatic design options.

It's always darkest before the dawn

While at first glance there seems to be very little to be positive about at the moment, and one could be forgiven for feeling that the situation in the country could hardly get worse, I was drawn to the message in an article by Bobby Godsell published at www.sagoodnews.co.za.

Titled *The best of times and the worst of times*, it looked at a number of factors and weighed up where South Africa is at present. I was particularly struck by a passage that rang very true to me and carried a much-needed ray of light:

"I suspect 2017 will prove to be a critical year, much as was 1976, 1986 and indeed 1990 to 1994. South Africans seem to have a love affair with Armageddon. We lurch to the precipice, gaze over, and have thus far decided 'not today'.

"I am hopeful we will navigate the rapids of 2017. We are in much better shape to do this than in previous times. We have independent courts, competitive politics, a robust media, and an increasingly active civil society. And an enforceable constitution."

Then, in addition, the latest FNB/BER Civil Confidence Index revealed slightly increased levels of confidence in South Africa's construction industry in the first quarter of 2017. Confidence improved by five points to register at a level of 40 during this period and Statistics South Africa calculated that the real growth in construction works was 2.3% year-on-year in the fourth quarter of 2016 – up from 1.3% in the third quarter. These figures are not wonderful, I know, but they are still on an upward trajectory.

Finally, keeping the best for last, I am delighted to draw your attention to three stories in the Industry News section which are proof positive that South African businesspeople are resilient, resourceful and in it for the long run.

PPC celebrated its 125th birthday on 22 April, and the year got off to a good start with the company achieving three significant milestones as part of their African expansion strategy.

This is the year that Rocla turns 100 and commemorates a century of excellence in the manufacture of products for the infrastructure, mining, building and construction industries.

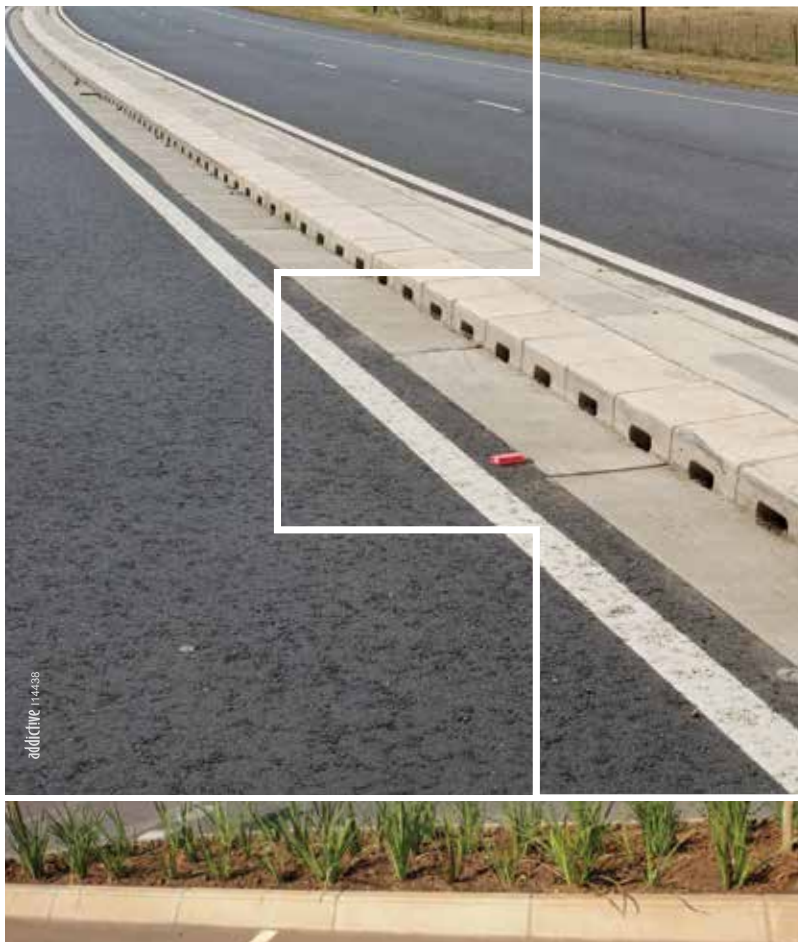
And lastly, consulting engineers and environmental scientists Jeffares & Green, now rebranded as JG Afrika, look back on 95 years of service to the South African construction industry.

It is these achievements, serving as testaments to our industry's ability to weather the storms of the past, which give me hope for our future.

The last words come from Bobby Godsell: "There is a famous Afrikaans saying 'Alles sal regkom', a quote from the remarkable mid Nineteenth century President of the Orange Free State Republic Jan Brand. But the quote continues 'as elkeen sy plig doen.' If it was true then how much more is it true now?"

Let's all work together to make 2017 a good year for all.

Gill Owens, Editor



ABSOLUTE INFRASTRUCTURE

Sustainable urban drainage systems are increasingly being used to prevent run-off and flooding, and as a method of collecting and cleaning storm water. Whether heavy duty or light duty solutions are needed, Technicrete has the systems and expertise to create functional drainage and aesthetically pleasing kerb systems.

Suitable for:

- Car parks
- Industrial Estates
- Retail Centres
- Pedestrian areas
- Domestic Drives
- Motorways
- Garages
- Service areas

Available in:

- Tongue & groove
- Standard grey or traffic calming colours
- Precast
- Various sizes available
- Highest quality



TECHNICRETE

paving | mining | masonry | erosion protection
retaining walls | drainage | kerbs | precast products

www.technicrete.co.za

Technicrete is a subsidiary of ISG, a leading supplier of innovative infrastructure products to the construction and mining markets in Southern Africa.

Tel: 011 674 6900
Maxi call: 0861 266 267



SABS
ISO 9001:2008 certified
SABS mark on applicable products

Celebrating 125 years of sustainable growth and development

For the past 125 years, PPC has tracked the growth and development of southern Africa, producing cement for many iconic landmarks, including the Union Buildings, Gariep Dam, Cape Town stadium, Medupi power station in South Africa, Gaborone airport in Botswana, Kigali Conference Centre in Rwanda, Kariba Dam in Zimbabwe and the Belgian embassy in Kinshasa, DRC.

PPC, a leader in the sector, now has a footprint that includes Rwanda, the DRC and Ethiopia in addition to our businesses in Zimbabwe and Botswana. PPC has also successfully started to diversify its portfolio following the acquisition of Safika Cement, Pronto Readymix (including Ulula Ash) and 3Q Mahuma Concrete.

In October 2015, PPC launched its new vision to become 'a world-class provider of materials and solutions into the basic services sector, taking a strategic approach to more than doubling our business every 10 years.' In line with our vision, the last six months have seen PPC achieve



three significant milestones as part of our African expansion strategy.

PPC Harare, an \$82 million milling plant, was officially commissioned by His Excellency, President Robert Mugabe.

PPC Barnet DRC, a one-million tonnes per annum greenfield cement factory in the DRC, loaded the first batch of saleable cement on the 17 April 2017.

The Habesha cement plant in Ethiopia was inaugurated on 19 April 2017 in the presence of His Excellency, Ato Hailemariam Desalegn, Prime Minister of Ethiopia. PPC is truly an African success story – a focused

business that reflects the strengths of its people, products and services. We believe that 'what we build, builds us' (Jim Rohn) and are excited about the transformational impact we continue to make as we provide more than just cement – bringing innovative products and engineering expertise to the continent's growing markets. ■

More information from
Siobhan McCarthy,
Tel: +27(0)11 386 9451
www.ppc.co.za

Celebrating close to a century of excellence in Africa

JG Afrika, a leading firm of engineers and environmental scientists, is celebrating its 95th anniversary this year. Just as importantly, it has also been just over a year since the company made the important decision to rebrand from Jeffares & Green to JG Afrika in a move that enhanced its already strong commitment to the continent.

Since 1922, this wholly-owned South African company has built a strong reputation for offering the continent quality and sustainable engineering and environmental consulting services.

The firm has progressed and evolved, keeping pace with the fluctuations in demand, the industry and also customer requirements, notes JG Afrika's managing director, Paul Olivier.

"Today, JG Afrika is a diverse company and our new brand reflects this. This new corporate identity also mirrors our African heritage. It shows that we are looking to the future and aligning our name with our diverse expertise, our modern approach



JG Afrika's water services change lives through Africa.

and the significant future Africa offers as a rapidly growing continent."

Phaks Ngqumshe, JG Afrika's Gauteng director, reiterates Olivier's views, and explains that the inclusion of 'JG' in the company's new name denotes its acknowledgement of and appreciation for its history, while 'Afrika' indicates its independence and its love for the continent.

"It is also a nod to the traditional spelling of 'Africa'," Ngqumshe tells *Concrete Trends*. "This is most obviously represented in our first democratic National Anthem, Nkosi Sikelel' iAfrika. With this name, we will show the world that we are true to our African roots, while remaining unique and maintaining our independence." ■

The firm's ongoing strategy to maintain what the industry considers best practice also included JG Afrika's ownership structure, with the firm establishing a 51% empowered shareholding from 1 March 2016.

JG Afrika looks forward to witnessing the continued development and growth of its valued workforce, while taking JG Afrika to new heights and enabling the old-new company to deliver even greater levels of service to its African clients. ■

More information from Charmagne Denny, Tel: +27(0)11 231 2200
www.jgafrika.com

Rocla celebrates 100 years of excellence

This year Rocla, one of South Africa's leading manufacturers of precast concrete products, celebrates 100 years of excellence in the manufacture of products for the infrastructure, mining, building and construction industries.

The Infrastructure Specialist Group (ISG) was formed in 2013 when Rocla, Technicrete, and Ocon Brick were acquired by a consortium of private equity firm

Capitalworks, RMB Ventures, Pan African Group and senior executives within the companies. The three iconic South African brands were previously owned by Murray & Roberts which sold them when the group focused their growth aspirations in engineering, mining and construction.

Some highlights

An example of Rocla's innovation is the recent launch of the Rocla Thuthukisa Sanitation Initiative (TSI). Its 'Community Cast' system was established to empower local communities, entrepreneurs, contractors and SMMEs to become manufacturers and suppliers of the most innovative and highest-quality concrete toilet structures available in Africa.

Andre Labuschagne, the product development manager at Rocla, explained that "Thuthukisa means 'to share' and this philosophy guided our development of the 'Community Cast' toilet unit that can be simply manufactured and be ready for use within two weeks. The resulting waste material can be recycled into practical items for everyday use."

Servaas le Roux, who is responsible for the negotiation, the design and the project management of all bespoke projects and also management of existing designs as well as any technical advice on manufacturing processes at Rocla, said: "As Rocla celebrates 100 years of excellence in the manufacture of precast concrete products in South Africa, the importance of technical research to meet customer requirements has never been greater. It is critically important to ensure that, at the outset, the client's needs are fully understood. This is best achieved by ensuring that the client involves all their external and internal role players in developing a needs definition."

"Recently, our policy of innovation through collaboration saw the development of a precast solution using steel components for an international diamond mine based in Gauteng. Apart from designing and manufacturing the precast components, the project involved developing an underground installation manual and lifting equipment together with handling equipment specialist Manitou. Research was conducted as far away as the Codelco Mine in Chile. While still in the feasibility stage, the project served to showcase Rocla's ability to develop and manufacture a unique, bespoke solution to stringent client requirements" said le Roux.

In April 2016 Rocla's locally manufactured concrete cabins that are used at photovoltaic farms in the Northern Cape

and Free State, were awarded the Concrete Manufacturers Association (CMA) Award for Excellence in the Innovation Category. CMA judges praised Rocla for their ground-breaking advancements in the use of precast concrete in the manufacture of these concrete cabins which proved to be completely vandal proof and quick to assemble.

A Rocla technical executive, Gerhard Rossouw, an engineer with over 35 years design and application experience stated: "We work with municipal and consulting engineers regularly to develop solutions for projects that are both cost efficient and safe. Rocla designed and manufactured many of the precast poles required by Eskom for their country-wide electrification projects in the 1990s. A large spun concrete pole for 132 kV distribution networks and double poles for specific power transmission requirements were also manufactured and designed by Rocla," said Rossouw.

"With public-sector infrastructure spend at approximately R865.4 billion over the next three years, Rocla believes it has a continuing role to play in supply and manufacture of appropriate infrastructural products for sanitation, water, roads and transport developments, as well as for schools and healthcare facilities. Rocla's 100 years of experience showcases their commitment to this market and highlights the expertise that 'Team Rocla' offers to our customers."

All of Rocla's products have been ISO 9001/2008 certified and have the applicable SANS recognition.

A brief history

Rocla, through its association with Hume Ltd and Superconcrete, have been leaders in manufacturing and supplying concrete products since 1917.

In 1957, Rocla, an Australian concrete pipe company entered the South African market with an operation in Welkom and funded by General Mining. The 'Rocla Process', a manufacturing process used for reinforced concrete pipes was invented, now known as the roller suspension method.

In 1971, due to equity by General Mining in both ROCLA and Superconcrete, the two companies were merged under the name Superocla. The name was later changed back to Rocla as we know it today. ■

More information from
Guinevere Thomas,
Tel: +27(0)11 670 7733
www.rocla.co.za



A selection of Rocla pipes ready for distribution to major infrastructure projects.



A view of Rocla's Roodepoort factory.

THE WATERTIGHT CASE FOR QUALITY

The benefits of our fly ash for dam construction:

- Improved workability and flowability
- Higher ultimate strength
- Reduced heat of hydration
- Enhanced durability
- Reduced permeability
- Improved cohesion, reduced bleed



MORE THAN WORLD-CLASS BUILDING MATERIALS

We understand and meet the needs of engineers, architects, specifiers, contractors and developers. We provide a complete range of environmentally-friendly Building Solutions for the challenges of a competitive construction market. We offer innovative, high-performance quality materials, as well as better value logistics, project management and consulting services.

AshResources
Fly ash products

Sharecall: 0860 FLYASH (359274)
www.ashresources.co.za



Locally produced cement, aggregates, readymix and fly ash products

LafargeHolcim
A member of

Sharecall: 0860 LAFARG (523274)
www.lafarge.co.za

Quarries create employment for surrounding communities

The value of well-run quarries in our cities and towns was recently underscored by research suggesting that each and every job in the quarrying industry creates a further five jobs in downstream operations.

These figures therefore suggest that quarries are major contributors to regional job creation efforts; and as an industry is a major driver of the national economy, accounting for substantial revenues and the creation of many thousands of direct and indirect jobs.

Aspasa director, Nico Pienaar, says these job creation figures are another compelling reason for our communities to be excited about the proclamation of a new quarry. "A registered legal quarry, especially one belonging to Aspasa, should be an asset to a community by creating jobs and enabling the construction of houses and infrastructure to be developed within the surrounding areas.

"Research done in the USA by the Phoenix Centre for Advanced Legal and Economic Public Policy Studies shows that quarries are not only beneficial to the development of physical infrastructure, but are also major contributors to building



A well-run quarry is an asset to our towns and cities and the benefits last over 20 years.

strong local economies. Furthermore, it showed that the benefits lasted for an extended period, ranging from 20 years to longer.

"This effectively means that people can be employed within the supply chain of a quarry for a lifetime. That means that everyone from the quarry manager, to the machine operators, transport providers, financial services, surrounding store owners and a host of other beneficiaries can build long-term plans and rely on the quarry as a constant source of income.

"Given today's strict health and safety requirements, and with the tight legislation guarding all environmental aspects of a quarry, perhaps the time has come for communities to change their misconceptions about quarries and to start viewing them as enablers of strong communities with solid infrastructure that is sourced locally with lifelong benefits for the entire community," concludes Pienaar. ■

**More information from Nico Pienaar,
Tel: +27(0)11 791 3327 / www.aspasa.co.za**

Level the playing fields now to prepare for growth – BCCEI

Civil engineering companies across the sector are urged to work with the Bargaining Council for the Civil Engineering Industry (BCCEI) to create a solid foundation for growth when the economy improves.

BCCEI secretary general Nick Faasen says: "There are still many companies who feel that they cannot comply with the requirements of the BCCEI collective agreements, but that is not a reason for them to stay away."

Since the BCCEI collective agreements were published in June 2014 it is mandatory for companies in the civil industry to register with the BCCEI. Parties concluded five collective agreements between unions – represented by the Building, Construction and Allied Workers Union (BCAWU) and the National Union of Mineworkers (NUM) – and employers – represented



The Bargaining Council for the Civil Engineering Industry (BCCEI) urges the sector to work to create a solid foundation for growth.

by the South African Forum of Civil Engineering Contractors (SAFCEC). The Consolidated Employers Organisation (CEO) also recently registered as an employer organisation representing employers in the civil engineering industry.

All agreements provide for exemptions applications for members who are genuinely unable to comply with the agreements' minimum requirements. The BCCEI has already assisted companies through the necessary procedures.

Since the BCCEI replacement constitution was signed on 17 November 2016, companies rated 1 to 3 by the Construction Industry Development Board (CIDB) are now included in the scope of all BCCEI collective agreements. This includes all sub-contractors that are sub-contracted to larger companies.

Independent and experienced specialists constitute the board dealing with the applications for exemptions and appeals. They are aware of the difficult conditions in the civil engineering sector, and consider these factors while protecting the rights of employers and employees.

Some of the important benefits for members are that the BCCEI concluded an industry provident fund, funeral benefit for limited duration contract (LDC) employees and voluntary medical aid.

The BCCEI is a statutory body registered with the Department of Labour and is independent, while being funded by employers and employees for the benefit of the whole industry. ■

**More information from Nick Faasen,
Tel: +27(0)11 450 4966 / www.bccei.co.za**

SACAP launches learning programme



SOUTH AFRICAN COUNCIL
for the
ARCHITECTURAL PROFESSION

The South African Council for the Architectural Profession (SACAP) is to launch an online platform that will initiate its Recognition of Prior Learning (RPL) programme, a key change driver of the fourth term council's plan that aspires to realise economic redress within the profession and the broader built environment.

The recognition of Prior Learning (RPL) is an alternate and valid route to professional qualification for these practitioners without their having to give up their full-time employment. As the RPL programme would take between six months and two years to award a professional qualification, transformation will be attained much faster than the pipeline approach of formal studies which take a minimum of six years.

The common focus of public institutions, as well as universities, has been on recruiting more students from the traditionally disadvantaged communities – a pipeline approach. Given the historic inequality in schooling, related to socio-

economic challenges faced by these students, curriculum and resources have not sufficiently tailored to this reality.

As the architectural professionals' regulatory body, SACAP's strategic plan and objectives are lined up with the essentials of the National Development Plan (NDP) and the roll-out of its cutting-edge large-scale infrastructure projects.

The programme has been designed as a two-phase process. The first stage takes place online and allows for self-assessment. The outcome of this assessment decides whether the user can progress to the second phase, which comprises the applicant being invited to present their work evidenced in the self-assessment phase, for review by an assessment panel.

SACAP is proud to start RPL to advance human potentialities in the interest of redress, transformation and nation building.

Please visit the SACAP website for more information:
www.sacapsa.com



www.elematic.co.za



TEL: +27 (0) 11 423 2700 FAX: +27 (0) 11 423 2717 EMAIL: info@elematicsa.co.za
P O Box 17261 Benoni West, 1503 R29 Main Reef Road, Benoni

Kenya adopts South Africa's Green Star rating system

By: Natasha Odendaal

The Kenya Green Building Society (KGBS) has signed a Green Star license agreement that will see it use the Green Building Council of South Africa's (GBCSA's) Green Star rating system and trademark in Kenya for certification of green buildings.

The licence will also be used to train and accredit professionals in Kenya using Green Star material.

This comes as Kenya achieves its first Green Star certified rating – a four-Star Green Star SA-Kenya – Multi Unit Residential v1 rating for the 400-apartment Garden City Village Phase 1 residential project, in Nairobi (see image right).

"The GBCSA has been certifying green buildings across the continent outside of South Africa since 2013, with Green Star buildings in Ghana, Rwanda, Namibia and now Kenya, but this license agreement will empower the local KGBS to drive the green building certification and education themselves, with support from the GBCSA where needed," GBCSA CEO Dorah Modise explained.

"As the latest National Building Code is yet to be ratified, contextualisation of the Green Star Rating Tools for Kenya empowers the industry to radically transform the way buildings are designed, constructed and operated in Kenya," explained KGBS chairperson Elizabeth Wangeci Chege.



Green Star, which was originally developed by the Green Building Council of Australia, was licensed to GBCSA in 2008 for use in Africa, following which it was extensively adapted for the local African climatic and economic context.

To date, GBCSA has issued 239 certifications for Green Star projects, 95% of which have been in South Africa. ■

Source: <https://goo.gl/M3rlsl>

Chinese firm signs \$10bn deal to build Tangier tech city

In a bid to hasten its industrialisation by attracting Chinese investment, Morocco has signed an agreement with Chinese aerospace company Haite to build a \$10bn industrial and technology city near Tangier.

Called Mohammed VI Tangier-tech in honour of Morocco's king, the city would be a 2,000-ha development housing 300,000 people, with a target of industry creating 100,000 jobs.



An official delegation studies the layout of Mohammed VI Tangier-tech City.

It would be divided into zones that specialise in aerospace, automobiles, telecoms and other sectors. The aim is to attract as many as 200 transnational corporations, many of which will be Chinese businesses that are attracted to Morocco's proximity to the European markets.

Finance will be accessed over the next 10 years, and will come from Haite, Moroccan private bank BMCE and the Moroccan government.

Moulay Hafid El Alamy, Morocco's minister for industry, said the government's strategy was to emulate China by first becoming an industrial power before developing its scientific, technological and financial sectors, reports French-language Moroccan news site, Lesiteinfo.com.

Ilyas Omari, the chairman of the Tangier-Tetouan region, pointed out that that the city would be only 15 km from Europe, and would be supported by a number of infrastructure projects, including the modern port of Tanger Med, the motorway network, a high-speed train line and industrial and logistics areas, reports Moroccan news site, L'Observateur.

Othman Benjelloun, president of BMCE, said that the project will contribute to "the revival of the Silk Road, so dear to our Chinese partners and friends. This road now [goes] through Tangier and, from this blessed land, to the rest of Africa, Europe and America." ■

Source: <https://goo.gl/Wnz1gm>



The new generation high-speed valve bottomer! **CONVERSION LINE ad*starKON SX⁺**



Giving converters a technological head start in block bottom sack conversion.

This performance excellence is achieved through combining outstanding production speeds with market-proven efficiency and unmatched flexibility.

Visit us at:

Chinaplas Guangzhou, May 16 – 19, Hall 9.2, Booth C41

Plastpol Kielce, May 23 – 26, Hall D, Booth D33

drinktec Munich, September 11 – 15, Hall A4, Booth 520



Starlinger Head Office:
Sonnenuhrgasse 4, 1060 Vienna, Austria
T: + 43 1 59955, F: -25, office@starlinger.com
www.starlinger.com
A member of Starlinger Group

textile packaging | consumer bags | recycling technology | viscotec

Sika opens new production facility in Ethiopia

Approximately one year after its national subsidiary was founded in Ethiopia, Sika has opened the first concrete admixture production plant in the country. Sika is the first-ever international company to manufacture its products locally, and the move creates a base from which to build business activities in the growth market, which has a total population of approximately 100 million.



Paul Schuler, Sika regional manager EMEA says: "The new factory in Ethiopia is part of the systematic implementation of our Africa strategy. We are playing a pioneering role in setting up local production, and this will bring us significant competitive advantages. Customers will benefit from local product formulations that are perfectly adapted to the raw materials and local requirements, as well as from shorter delivery times. This step creates a foundation for further growth in this promising market."

By establishing its factory in Addis Ababa, Sika is positioning itself in a megacity. Ethiopia is the second biggest economy in sub-Saharan Africa in population terms, and the fourth biggest in terms of economic output. One of the factors benefiting the construction sector is the government's Growth and Transformation Plan. According to forecasts, construction is set to grow by approximately 11% annually in the period up to 2025 and thus more strongly than other countries in the sub-Saharan region. ■

More information at www.sika.co.za

Kenya needs two million houses to tame slums

The World Bank has said that Kenya needs to build two million affordable city homes to meet its housing deficit and help stem slum explosion.



In its latest report the World Bank observes that many Kenyans are unnecessarily living in slum dwellings due to limited housing supply coupled with lack of affordability.

While only one in three of Kenya's 44-million people live in cities, its population growth is largely urban. The report also shows that most Kenyans will live in cities by 2033.

Although Kenya needs to produce 244,000 homes a year to meet demand, less than 25% of this number is currently being constructed. The situation is worsening as Kenya's cities are growing by 500,000 people a year.

Nairobi is one of Africa's most expensive cities for housing, with 2013 prices almost triple those of 2000. One of the main problems is a shortage of finance. ■

Source: <https://goo.gl/H17A3d>

Install solar or face jail Kenyan home owners told

Owners of large residential and commercial buildings who have not installed solar water heaters risk jail or a Sh1 million fine beginning in May when the energy sector regulator begins to enforce compliance with a law that came into force five years ago.

The law requires owners of residential (three bedrooms and above) and commercial buildings, whose hot water needs

exceed 100 litres per day, to include solar water heating systems in their building designs.

The Energy Regulatory Commission (ERC) said it will begin enforcing the Energy (Solar Water Heating) Regulations 2012 on May 27 when the grace period comes to a close.

"ERC and police officers attached to the commission will start conducting surveillance to ascertain compliance," Pavel Oimeke, the ERC's acting director-general, said. "Where we confirm non-compliance, we issue the building owner with a six-month notice to install the equipment failing which we will charge them."

The ERC's preliminary audits show that only 150,000 of three million buildings (both new and old) have installed hot water systems - leaving thousands non-compliant.

Installing solar panels could help homes slash electricity bills by up to 20%, but property developers have cited prohibitive costs as a deterrent to increased uptake. ■

Source: <https://goo.gl/IQ1hgd>



Nigeria to begin 38-km Lagos bridge this year

The government of Lagos State has announced that a 38-km, four-lane road bridge is to be built across the Lagos lagoon to ease congestion on crossings between Lagos Island and the rest of the city.

Work on the \$2.7bn Fourth Mainland Bridge is expected to begin this year, once agreement has been reached with those Lagos residents whose homes will have to be demolished to make room for the scheme. It is estimated that between 800 and 3,000 dwellings, most of them in informal settlements, will be affected.



NLÉ Architect's concept designs for the Fourth Mainland Bridge.

The project is to be procured as a build, operate and transfer model, although the length of the concession has not yet been decided.

Lagos Island lies to the west of the main city, and the three existing crossings provide a direct east-west link to it. The fourth bridge will be situated to the east of the island and will provide a north-south link between Baiyeku and Langbasa over the Lagos lagoon.

The bridge has been under discussion since 2003. A concept design for the project was produced by Nigerian architect and urban planner NLÉ. It has produced a concept design for a two-level bridge that would be part of a ring road around the city.

NLÉ comments on its website: "The two-level bridge will not only function as a means for vehicular traffic on its upper level, it will stimulate and accommodate pedestrian, social, commercial and cultural interactions on its lower level – 'Lagos Life' – with its tropical environment and intimate street level exchanges typical of the city."

"The Fourth Mainland Bridge in conjunction with existing road networks would establish a primary ring road around Lagos. This ring road will provide alternative traffic routes from Lekki to Ikroodu, Ikeja to Ajah, relieving the Third Mainland bridge of its overstretched capacity."

If the bridge is 38 km long, it will be the longest in Africa. The present holder, the 6 October Bridge over the Nile in Cairo, is 20.5 km and Lagos' Third Mainland Bridge in 10.5 km long. ■

Source: <https://goo.gl/7pml62>



tradition • innovation • quality

a.b.e.® Construction Chemicals

Quality Product Systems

WATERPROOFING



FLOORING



SILICONES, SEALANTS AND ADHESIVES



CONCRETE REPAIR AND PROTECTION



GENERAL CONSTRUCTION



HIGH PERFORMANCE COATING SOLUTIONS



Scan the QR code with your smart phone to view our product range and REVIT drawings



a.b.e.® Construction Chemicals (Pty) Ltd is a CHRYSO Group Company

CHRYSO

AfriSam supports the V&A Silo Precinct at the cutting edge of concrete know-how

Concrete has been cut around the world, but never on the scale or complexity required for the development of the Zeitz Museum of Contemporary Art Africa (Zeitz MOCAA) being constructed at the V&A Waterfront's Silo District in Cape Town, Western Cape.

The historic Grain Silo complex, which is almost 100 years old, is heritage listed and the decision was made to repurpose the complex of 42 concrete silo tubes and elevator building to house the Zeitz MOCAA. This project challenges the construction norm in that this is the first time extensive curved concrete work has been tackled concurrently with top-down and bottom-up demolition activities.

By the time the Zeitz MOCAA is completed early next year the main building contractor, WBHO, will have cut almost 60 kilometres of concrete to execute architect, Heatherwick Studio's unique vision for the project.

In executing Heatherwick's design, the concrete grain silos have gradually been carved away to create the new museum space and the impressive atrium of the structure which resembles a large grain of corn.

Mark Noble, senior development manager for the developer V&A Waterfront, tells *Concrete Trends* that the design of the atrium connects the new building to its historical grain storage legacy.

"The atrium has an organic irregular shape because its design is derived from the natural shape of the corn kernel. The architects digitally scanned a corn grain three-dimensionally and then supersized it to form the space," he says.

In order to execute this unique design, WBHO sculptured out underneath four of these bins on the west side of the structure and expanded out to the east side of the adjacent former elevator building, forming the large irregular cut-out oval shape. To create the museum gallery, the edges of the bins around the structure have been left intact, while some of the inner 33-m by 5,5-m silos have been almost completely removed.

Noble says that, along with the engineering aspect of the structure, one of the biggest challenges was how to remove portions of the silos without affecting the strength of the 100-year-old structure during construction.

Many of the silo tubes were actually split or cracked right

around horizontally and standing on their own self weight. These cracks and damage were a result of overloading the grain silos during use in an attempt to force out blockages in the bins. This meant that these particular silos needed to be structurally reinforced.

"To strengthen the external elevation of the building, the inner face had to be lightly cleaned whereafter chemical anchors were fixed in place and reinforced, and then insulation foam applied. Only then was conventional reinforcing installed and work could start on the curved shutters," Ben Coster, operations director for the project manager MACE, explains.

Resleeving the bins on the outer part of the building relied on a bespoke shuttering system that could be adapted to suit the unique shape and curvature of each silo bin. The varying shapes of the bins were as a result of being originally constructed by hand.

Once this had been successfully completed, a large section could be demolished on the east side of the structure where the new galleries are positioned.

Special shuttering based on the shape of the expanded grain had to be designed to assist in forming the cut-out on the west side of the silos where the atrium was to be cast. This allowed for an oval shape to be cut out of the tube and an angle to be formed on the side that varied from 90 degrees to about minus 5 degrees. Coster explains that this would allow the reshape of the atrium to be carved through at a later date.

Having sufficiently strengthened the silos around the edge of the atrium, WBHO could raise the lining of the silo tubes to meet what is set to become the sculpture garden on top of the structure.

At this stage, work also started on connecting the new concrete with the old concrete to create an arch to lock all the silos in a rigid form, ensuring structural integrity.

When the new concrete arch reached the halfway mark, the professional team worked with the temporary works engineer to find ways to remove segments of the atrium without compromising the structural integrity of the historic silos. Adopting this approach gave WBHO a significant head start ahead of the main cutting and demolition activities once the arch had been completed.



The historic Grain Silos before work began.
Credit: www.traveller24.news24.com



Starting to repurpose the Grain Silos.
Credit: www.artthrob.co.za



One of the biggest challenges was how to remove portions of the silos without affecting the strength of the 100-year old structure during the construction period. Credit: Grant Duncan-Smith.

Concrete was cut using diamond wire and large grinding saws, some with blades of up to 2,5 m in diameter. Extensive use was made of a double-cut saw with two blades allowing a curve to be cut through the concrete with the angles of the cast oval shapes being used as a guide.

When commencing work on the atrium, the professional team designed four specialised hanging scaffolds that were mounted internally at the top of the silo bins and hung down about 18 m. This allowed WBHO to continue cutting the curve and sections of the existing silo tube into blocks of about one square metre in size and drop them into the bin.

Once demolition had descended down to about 18 m, WBHO then had sufficient reach with a 20-ton excavator to continue the demolition and were able to drag the blocks out at the bottom of the bin, and continue to cut the balance of the atrium. This is followed by extensive refining and shaping of the atrium to achieve Heatherwick Studio's vision of a seamless curve. This has required extensive training of the local

artisans by Thomas Heatherwick to raise their skills levels in this extremely "interactive" process.

"They have not only had to improve their grinding skills on a flat surface, but also on an angle and curve while inverted. The only way to do this is a combination of standing back to strike an accurate line that then needs to be ground and polished. Heatherwick personally spent hours with the grinding teams showing them how to use the palm of their hands to actually feel for indentations, as well as high and low points on the concrete surface," Coster says.

The elevator building forms part of atrium, and a transfer beam had to be formed on the sixth level of the east side of this structure. Doing this allowed the removal of a large portion of the east side of the elevator building to form the complete arch of this irregular shape.

The existing steel frame inside the arch has been left as temporary work and will provide protection against ground vibrations while demolition activities are underway. Once

continued on page 14



A cross section of the Zeitz MOCAA development. Credit: Heatherwick Studio.



The atrium's shape is derived from a corn kernel. Credit: Heatherwick Studio.

completed, the steel frame will be cut and the arch released in its entirety. It is a three-dimensional arch that runs from the outer elevation and curves into the building as well.

Leading building materials supplier, AfriSam, is supplying all the new concrete requirements for this project. This includes the special design mixes that are being used in shallow shutters to restore the external aesthetics of the bins – in line with Heatherwick Studio's vision to celebrate the industrial heritage of the structure.

The old magnolia painted render from the outside of the building was chipped away by hand and air tools. Surfaces were then cleaned with high-pressure water sprayers to remove the loose elements of concrete in fragile areas. Areas where silo bins have suffered from age and some oxidation of existing reinforcing material were then cut back and treated.

"We worked with AfriSam to come up with mix designs that are not only suitable for use in shallow-depth shutters but also to colour and aggregate match as best as possible to the existing building," Justin Arendse, structural engineer from Sutherland Engineers, says. "And where this has not been possible, the professional team has opted for slightly more of a contrast in colour to celebrate the repair work."

Importantly, old concrete from the structure and reinforcing bar is being recycled into saleable products.

It is also apt that some of the original off-grey, 'yellowed' concrete is being retained at the Zeitz MOCAA museum. This is considering that this build can be viewed as more than a celebration of South Africa's industrial past. For concrete technologists and other built environment specialists, it will also serve as a monument of the concrete legacy the country has built over the years. ■

More information from Maxine Nel,

Tel: +27(0)11 670 5893

email: maxine.nel@za.afrisam.com

www.afrisam.com

About AfriSam

AfriSam, as the leading concrete materials producer in the Western Cape, has nurtured a strong business relationship with WBHO over many years, and was instrumental in providing speciality mix designs that would meet the exacting nature of the concrete construction requirements of the project.

Melanie Ross, territory manager of AfriSam, says the contractor has always appreciated the company's in-depth knowledge of construction materials that enables it to apply the correct readymix products for a given application. This is complemented by its access to consistent-quality raw material that is used in the concrete batching process.

While AfriSam supplied some standard concrete mixes to the Grain Silo project, the main mix for the silos including the sleeves was a prescribed mix of 30 MPA with a 9-mm stone. This mix was developed over a period of testing to ensure that it would have the correct consistency. Aggregates were an important factor in the final mix design as the surface finish had to meet the stringent specifications of the architect but also had to comply with the workability requirements.

Each daily pour was slow discharge because of the workability and the way the formwork was positioned inside the silos. On average there were two daily pours of 4 m³ each and discharge time was 2 hours. Traditionally, readymix offloading should take anything from 45 to 60 minutes, however in this instance the offloading time was extended to accommodate the complexity of pouring into the complex formwork in the silos.

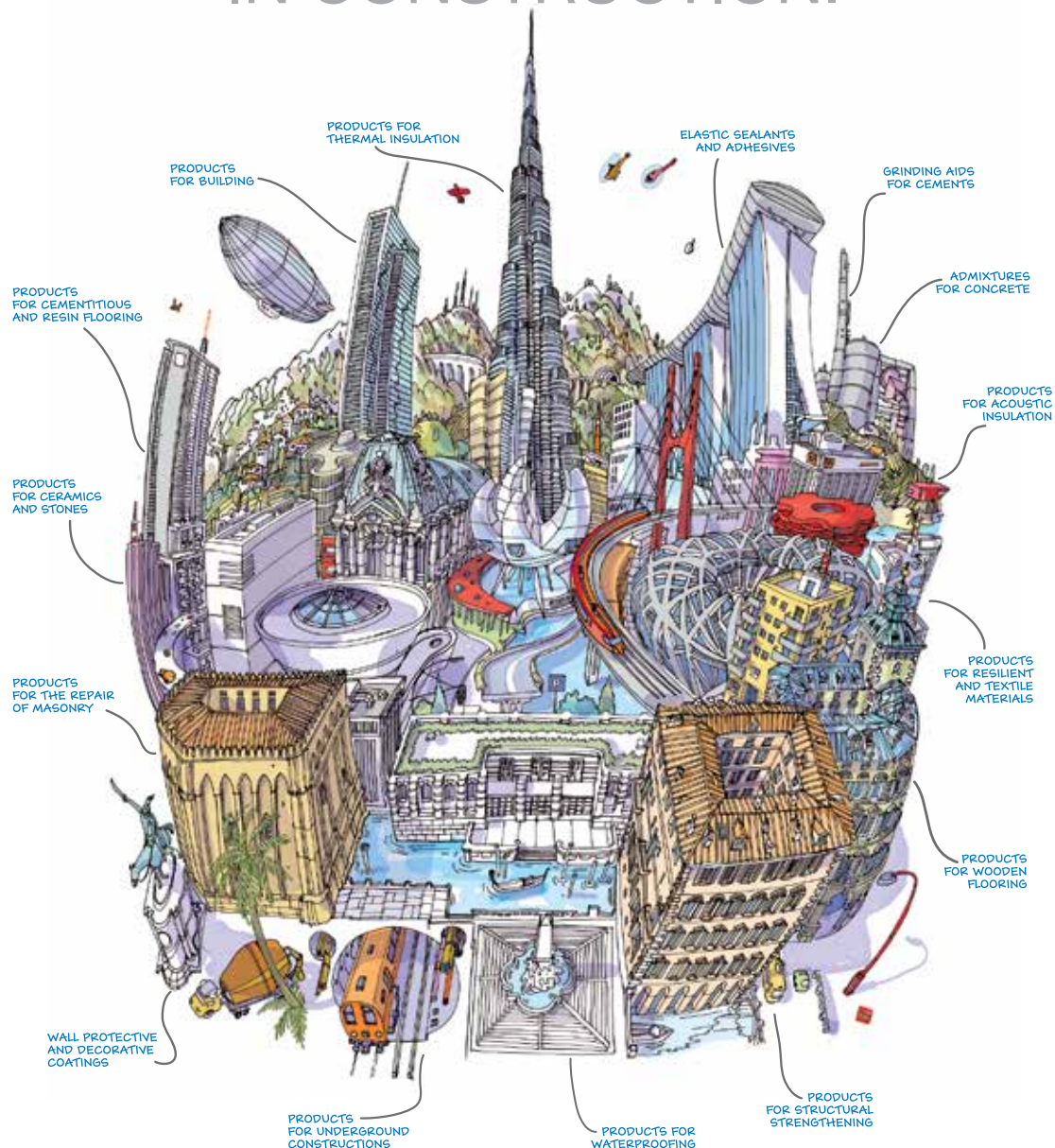
"This is an example of AfriSam's flexibility in meeting specific customer requirements," Ross concludes.



The elevator building forms part of atrium, and a transfer beam had to be formed on the sixth level of the east side of this structure. Credit: Grant Duncan-Smith.

THE WORLD OF MAPEI.

QUALITY AND VALUES IN CONSTRUCTION.



0088 / 11072016 / CTF GHD
MAPEI

Transforming a world of dreams and visions into reality.

In your home, office, shopping centres or at the bank, Mapei is there. In your children's school, local churches, hospitals, theatres and any construction around you will find the same quality Mapei products that have been used worldwide in some of the most accomplished and distinguished civil engineering projects in the world. Mapei provides an innovative product offering developed through its 18 research centres worldwide and we make it available for you to transform your visions into a reality. **Discover our world at: www.mapei.com**

For more information please contact us at - Tel: 011 552 8476 | Email: info@mapei.co.za | Web: www.mapei.co.za



Five hot trends for African construction

Africa's burgeoning construction marketplace is constantly evolving to deliver more projects on budget and on time and fill Africa's infrastructure gap. Inadequate infrastructure in Africa still cuts growth by as much as two percentage points per year and leads to a loss of almost 40% of productivity across the sub-Saharan region. Not only is it estimated that an additional 187 million Africans will live in cities by 2025, but it is also estimated that US \$150 billion is needed per annum to close Africa's infrastructure gap.

Africa's dynamic marketplace, however, never ceases its agility, and in 2017 innovation is brought to the fore as the construction industry adapts to new trends and leverages international technologies to build a better Africa together. This year, in the lead up to Africa Day on 25 May, the African Construction and Totally Concrete Expo takes place from 23 to 24 May 2017, boasting not only Africa's largest gathering of built environment professionals but also access to the latest hot trends available for construction in Africa.

Some of Africa's best construction market opportunities are now arising out of these latest industry trends:

1. Industry transformation – South Africa leads the way in industry transformation with recent initiatives signed in 2016 and shifting industry regulations designed to empower black contractors and underprivileged contractors. Xcelerate Verification Agency (formerly Izikhulu) hosts a workshop on understanding the old vs amended BBEE construction sector code which includes a case study on progressing from non-compliant to level 1 BBEE status presented by Vash Singh, Managing Director of Xcelerate Verification Agency (formerly Izikhulu) in South Africa. This is one of the outlets at the event available for those wondering how best to maintain compliance as the industry landscape transforms.
2. The green economy – Technologies are being embraced by Africa's construction industry to boost energy efficiency and reduce greenhouse emissions towards the development of a green economy. A smart and sustainable approach to building and construction reduces the environmental footprint of the industry and promotes the development of buildings and infrastructure that benefit from reduced maintenance costs over time. Dr. Kirsten Barnes, Waste Economy Analyst at GreenCape, an expert in green economics, presents the business case for the use of builders' rubble in construction. Dr. Barnes is joined by Donn  Atkinson, Education & Training Manager at the Green Building Council of Southern Africa as a co-presenter for the training session. "The underlying economics in the green economy are changing incredibly fast. Increasing rising prices for energy, water and

waste management costs are making greener, cleaner and more sustainable options cost effective choices. The faster these alternatives are implemented, the faster we are seeing prices drop. There is a real opportunity for companies to work on understanding their cost drivers and looking for slightly broader solutions in the green economy to make themselves more competitive in the short term, and more sustainable in the long term," offers Mike Mulcahy, CEO of GreenCape.

3. Small contractor empowerment – Small contractors comprise a significant portion of those using building materials and applying construction technologies today. Small contractors are traditionally a difficult population to reach as they do not have the corporate infrastructure of larger contracting companies. African Construction and Totally Concrete Expo offers a series of masterclasses presented by AfriSam and Builders Warehouse during Africa's first Contractors Corner, an interactive experience where contractors can find out about new projects opening for tender, learn about the latest materials and technologies available, and develop skills. Masterclass course offerings range from readymix concrete applications to sourcing finance and building materials for government projects.
4. Anti-fraud and collusion campaigns – In South Africa the National Treasury is under pressure to cut back on government spending to avoid further decline in the economy and reduce the budget deficit. Combatting fraud, corruption and collusion in the construction industry has been identified as a key priority for sustainable development and macroeconomic stability for 2017 and beyond. Master Builders Association North hosts a presentation delivered by Advocate Gerrie Nel and Advocate Phyllis Vorster, Director of Public Prosecutions in Gauteng, South Africa at African Construction and Totally Concrete Expo to bring these important issues to light. The training workshop will focus on understanding collusion and information sharing regulations.
5. Affordable housing delivery – Innovation in formwork, modular construction, precast concrete and other alternative building technologies provides new opportunities for housing delivery in Africa. With housing delivery targets being mandated in line with national development plans underway across the sub-Saharan region, many international suppliers are turning their attention to the opportunities provided by the housing projects planned and underway across the region. Finland's Elematic Oyj brings its expertise in the prefabrication in affordable housing projects with a presentation from Curt Lindroth, Area Director from Elematic Oyj in the United Arab Emirates. ■



AFRICAN CONSTRUCTION EXPO

+ Building Africa Together

TOTALLY CONCRETE EXPO

16 – 17 May 2018

Gallagher Convention Centre, Johannesburg, South Africa

Africa's biggest gathering of built environment professionals



WHY YOU CANNOT MISS THIS EXPO!

- Free CPD accredited hands-on technical training to build your skills and capacity
- Showcase your latest technology and service offerings across **6 dedicated zones in the indoor and outdoor expo**
- Network with hundreds of decision makers and thousands of contractors from over 40 countries worldwide

Photo courtesy of Murray & Roberts

BOOK YOUR SPACE EARLY FOR PREMIUM POSITIONING!

Book your space now to take advantage of year-round benefits and additional marketing exposure.
The 2018 expo is expected to be 75% sold out by 24 May 2017!

✉ marcel.dutoit@totallyconcrete.co.za ☎ +27 21 700 4300

Dedicated zones for:



Concrete



Construction



Digital Construction



Mechanical, Electrical
and Plumbing



Surfaces & Finishes



Tools & Equipment

Co-located events:

Digital
Construction
Expo

CAPTAINS of
CONSTRUCTION & INFRASTRUCTURE

Smart Buildings & Infrastructure
Africa Summit 2017

WOMEN
IN CONSTRUCTION
AWARDS

www.totallyconcrete.co.za

hypenica

PPC IMAGINARIUM 2017

Celebrating creativity: the 2017 PPC Imaginarium Awards

By Daniel van der Merwe, Architect PPC Ltd

In 2014, PPC extended its existing sculpture, fine art and industrial design competition (The Young Concrete Sculptor Awards) to incorporate jewellery design, fashion design, architecture and film to form the Imaginarium Awards. This unique art and design competition provides emerging artists and designers with the opportunity to showcase their talents through the medium of concrete.

The country's most supportive art and design prize has again garnered unprecedented attention from aspiring creatives, attracting a record 869 entries – substantially exceeding last year's 698 entrants.

The finalists' submissions were judged by a prestigious panel of industry experts, including well-known architect and director of the awards, Daniel van der Merwe, fashion and design consultant Allana Finley and visual artist Stephen Hobbs.

Regional judge, Igsaan Martin, Gallery MOMO Cape Town director said: "It is evident that entrants are researching the limitations of concrete and delivering this knowledge within their artworks. The outcome was innovative submissions of exceptional quality."

The winning entries are:

Handre de la Rey | Industrial Design Winner | CS Project

The entry explores creating a pair of ultra-thin sunglasses that push the perceived boundaries of cement-based products. The concept was developed over a period of five years and will be realised through 3D modelling and desktop prototyping.

The piece will be broken down into smaller parts that can be adjusted to individual users' specific requirements. Two concrete circles, suspended in a 3D-printed bridge, create the main body, and this can then be connected to interchangeable temples.



Deon de Lange | Industrial Design Runner-up | Kilroy (toilet paper storage rack)

This piece is inspired by the graffiti cartoon that originated during World War II, 'Kilroy was here.' The mysterious doodle was found in every imaginable public space, most commonly



in public restrooms. Being lost in the digital age, Kilroy returns to his rightful place, the bathroom, only now he has become a sleek accessory: a storage shelf for toilet rolls.

Cara Jade Bezuidenhout | Fashion Design Winner | Concrete Journey



In a society that emphasises outward appearances, isn't it strange that when you think of cement, the first thing you think of is the powder and not the bag it comes in? In its raw state, cement is motionless and cannot be moved without a bag in which to carry it. The two work hand in hand and result

in our ability to make beautiful, memorable and long-lasting things to share with future generations. We need realise that outward appearances are nothing without our inward spirit and personality. One cannot be without the other and that is what inspired this collection: 'the bag cannot be without the cement or it would lose its purpose and the cement would be stationary without its bag'.

By using digital printing, the designer created wearable garments reflecting the true beauty of both cement and cement bag. She has incorporated digital printing as well as upcycled cement bags and physical cement to create three ensembles.

Tshepo Sizwe Phokojoe | Fashion Runner-up | Dawn of a new epoch



Cement has helped build civilisation. Dressing well boosts self-esteem, which promotes productivity, and that, in turn, rebuilds civilisation. So with the use of PPC Cement, my work aims to build a garment that's intended to rebuild our civilisation.

Jewellery Winner | Zanele Vilakazi | Alphga

Time is a precious thing that cannot be saved nor over-used, it cannot be fast-forwarded nor paused, it's priceless, and yet it's free. The Alphga piece is inspired by the passage of time and the unbreakable and inevitable stages of life. It consists of three different parts that elaborate on the process of life, demonstrating how every life form changes from its beginning,



to its prime, to its maturity. The first part shows the birth of life and its gradual, vulnerable growth; the second segment portrays various developments as life progresses; and the last part depicts the stage when life has matured and aged.

Jewellery Runner-up | Aleks Ashton | Cyberglyph

The Cyberglyph necklace is a modern-day, abstracted rendition of the Rosetta Stone and its style is influenced by Ancient Egyptian pectoral necklaces and collars.

Instead of depicting ancient writing forms as the Rosetta Stone did, the Cyberglyph represents commonly used contemporary computer programming languages, namely: Python, C# and



F#. The logos of these programs are deconstructed and the resulting elements are used to generate a glyph-like motif in silver, inlaid with PPC concrete and accented with gemstones.

Sculpture Winner | Mziwoxolo Makalima | Doubt-Queuing (Overall Winner)

Doubt-Queuing is an artwork that aims to be the voice of a voiceless, subjugated society. The artwork articulates a group of community members that have stood for so long, and who have remained as strong as concrete, holding on to reinforcing while that reinforcing was still in good condition.



Today, we are tired of waiting and yet we go back to waiting. This waiting has become the trademark of our liberation, waiting, hoping for change. This is a long wait for promises made by those who call themselves leaders. Now, we wait because we are starting to think that maybe we should just be so grateful for our freedom that we should not want to be anything more than just voters.

Sculpture Runner-up | Sonwabiso Ngcai | Emweka

The sculptor is one half of a pair of identical twins. The piece, titled 'Emweka', explores a particular aspect of the life of twins within the context of Xhosa cultural and traditional belief

continued on page 20



From page 19

systems. Here, twins must observe a ritual in which they have to throw silver coins into the sea to appease their ancestors before they can bathe or swim.

Before colonisation, the concept of money was foreign among traditional Xhosa people who bartered crops, animals, land, and some forms of beads. The introduction of money totally changed traditional peoples' systems of production, distribution and exchange, as these then became characterised by money as a primary means of exchange. Thus, money cost most traditional societies all over the world, their land, animal and agricultural stock, but it also forced them to labour for their colonisers.

Money is a social construct. Its value does not exist in objective reality. Its value is a result of humans agreeing that it does indeed have value.

'Emweka' is interested in how different societies create and project traditions that affect and determine how different people interact and live with one another.

Work of winners and finalists will be exhibited at the UJ gallery from 18 May -15 June 2017, thereafter at the AVA Gallery in Cape Town. Additional curated exhibitions in 2017 will be in Durban, at The Turbine Art Fair and at 100% Design JHB. ■

More information at www.ppcimagination.co.za

Zaha Hadid-designed skyscraper divided by world's tallest atrium

By Adam Williams



Work is underway on a new skyscraper in Beijing, China, that was designed by architect Zaha Hadid (with longtime partner Patrik Schumacher) before her death. Rising to a height of 207 m, the Leeza Soho tower's interesting design will include an interior that's split into two distinct halves and joined by the world's tallest atrium.

The Leeza Soho skyscraper is situated within a new business, residential and transport development in southwest Beijing. Once complete, it will comprise a floorspace of 172,800 m² spread over 46 floors comprising mostly office space, but also having some retail space.

The tower is positioned directly above (and will offer connection to) a new subway interchange station. This station diagonally divides the interior into two halves, which are joined by a central atrium and wrapped in a glazed facade. Multiple walkways offer connection between the two halves of the building.

The atrium is set to be the world's tallest, reaching a height of 190 m and surpassing Dubai's Burj Al Arab's atrium, currently considered the world's tallest. The Leeza Soho's atrium also twists a total of 45 degrees as it rises, aligning with a nearby major road and providing both natural light and views of the city to each floor.

The project is targeting LEED Gold certification and includes a number of 'green' features. In addition, the tower will include 2,680 bicycle parking spaces with lockers and shower facilities, as well as underground charging spaces for electric cars.

Construction of the Leeza Soho is currently at the 20th floor and is due to reach its full height in September of this year. Completion is expected for late 2018 and it is being developed by Soho China. ■

Source: Zaha Hadid Architects / <https://goo.gl/VzSfPU>





Gift Acres 26: a hideaway space in the city

Gift Acres 26 is a compact 350-m² residential house in Lynnwood Ridge, Pretoria. The Faerie Glen Nature Reserve borders the eastern boundary of the house inspiring the design as a hideaway space in the city. In response to contextual influences, the design faces the street as a reflection of the city with innovative off-shutter concrete facades creating ultimate privacy. In juxtaposition, the house opens up towards the nature reserve creating an elevated house in the trees. This biophilic house not only respects and integrates nature, but also combines private outdoor-oriented living with city life.

The clients' brief requested that the main user circulation, living space and main bedroom be located on one level. Supplementary spaces, including the garage and laundry, are located half a flight of stairs down, while half a flight up takes you to the study and guest bedroom. A view of nature is ensured from every room in the house.

Selected building materials include natural stone harvested on site, concrete, steel and glass. The polished concrete floor forms a continuity throughout the house and generates a seamless transition between inside and outside spaces. A special designed mix of concrete with white limestone as aggregate was used throughout construction. The finished polished floors revealed a vibrant light colour which assists in reflecting natural daylight into the open plan spaces.

Strategic choices were made on window size, location, overhangs and screens, to prevent heat penetration into the

house during summer. During winter months, heat enters the house and is absorbed by the concrete floor. The stored heat assists in keeping the house warm during cold winter nights.

Concrete is used in its rawest form to contribute to the aesthetics and sustainability of the house. Concrete off-shutter walls were cast on the western facade using normal construction shutter boards in an innovative way to create horizontal lines. To craft the horizontal lines, the walls were cast in four pours. With each pour the shutter boards were moved to overlap the previous cast and vibrated thoroughly to insure a flawless finish with seamless joint lines.

The choice of solid concrete walls on the western facades was motivated by the contribution that the thermal mass of concrete makes towards the holistic passive design of the house. The concrete details continue to the interior – enhancing user experience and awareness of construction materials. ■

Professional team

Architect – Nadine Engelbrecht

Client – Pieter-Lodewiekus Bezuidenhout-Figueira

Engineer – Wally Haese

Photographer – Marsel Roothman

More information from Nadine Engelbrecht,

Tel: +27(0)71 140 4411 / www.nadineengelbrecht.co.za



Growing Up Africa: global partners building for change

"My hope is that we have made life better for people in the process of achieving our mission." Deborah Terhune, founder of Growing Up Africa.

Growing Up Africa's current project, the Devland Soweto Education Campus, is considered by many to be one of the most important humanitarian architecture projects to be built in South Africa, to date.

Who is behind the NPO-PBO registered Growing Up Africa (GUA) and the construction of the Devland Project? A fiercely private but unmissable, trend-setting and dynamic woman – Deborah Terhune.

Terhune has developed a unique 'mission-driven funding model,' design-to-need-driven rather than the traditional budget-driven-model, recruiting the collaboration of fellow professionals, the construction industry and suppliers to the industry, both national and international, who were open, from the outset, to new thinking about how projects would be funded with little cash.

"We ensure that the projects we build are central to the upliftment and empowerment of the people in the communities where we build and that we add value to those they are meant to serve. That means thoughtful planning, well-funded budgets, and a conscious effort to impart skills to the local population, helping to power the local economy long after GUA projects have been completed," Terhune explains.

"It thus falls to philanthropically minded NGOs in collaboration with like-minded architects and teams to devise a fool-proof template for the comprehensive coordination of all phases of a project, from concept to completion. Working collectively in this way will avoid waste, duplication, and/or failure of any one phase and go a long way to assuring the positive, lasting outcomes that entire communities desire.

"Simply put, we are a no-frills initiative built up brick by brick by a small army of volunteers who are rich in spirit and commitment. We will do the work but we need help with that small percentage of funding. After all, labour from the community needs to be paid in order to fuel the local economy.

"GUA's teams like to quote Jonathan Kalan: "Behind the veil of poverty, behind the images cast to the western world

of poor, helpless people in need of your charity, there is an incredible potential waiting to be unlocked. Finally, there are people and companies, willing to unlock it."

Terhune's hope is that GUA's projects have made life better for people in the process. "I might have changed a few things had I had a chance to do things over again but one thing is certain, I would not choose another field," says Terhune. "When I am asked what I have accomplished, my reply? 'Look around, the projects are there.' Our projects are groundbreaking and creative for the areas that we build. We believe that architecture has the power to inspire and to effect social change.

"We see possibilities that others overlook particularly with a vision to how changing one pivotal block or street in a transitional RDP neighbourhood (influenced by the construction of our education campus) could transform the entire area – a school that will nurture and grow young members of society.

"We hope to leave a legacy that becomes a catalyst for growth and change, with a clear vision and a strong reverence for humanitarian architecture in underserved areas. Building is a collective effort. With a social conscience, not only putting up buildings but opening neglected areas and transforming whole communities – remaking whole neighbourhoods," Terhune explains.

"We build complex projects and bring together teams of professionals, architects, suppliers and contractors, and university students (from South Africa and the USA) with creativity and tenacity. What we build is shaping lives."

Challenging the status quo, Deborah Terhune's team designs with human-centred design principles, considered a more nuanced approach, by using strict construction guidelines, and with the aim of making the building a positive contribution to ecosystems rather than being a consumptive force.

When asked about her role, Terhune has this to say: "My role and purpose on this journey in life, is not about me. I am but the messenger. The messenger to deliver a message of redemption, hope, forgiveness, gratitude.....and to evolve young people to the best of themselves."

The list of all of those contributing professional services, construction and materials – all either pro bono or in-kind to the Devland Soweto Education Campus – is far too extensive to be enumerated here. Suffice it to say that Deborah Terhune places an inestimable value on each and every one. ■



Growing up Africa founder Deborah Terhune observing progress at Devland.

Project summary:

Site footprint	=	7000 m ²
Building plan area	=	2000 m ²
Concrete volumes	=	1961 m ³
Reinforcing steel	=	99 tons
Glass Façade	=	6-m-high dbl/glaze
	=	44.5 m linear length
Perimeter	=	440-mm-thick Eco-wall.

More information from Deborah Terhune,
cell: +27(0)82 826 2237 / deborah.terhune@gmail.com
www.growingupafrica.org

Growing Up Africa and the Devland Soweto Education Campus

The Devland Education Campus is a new construction multi-purpose education facility situated on a 7,000-m² site in Soweto. The building is Growing Up Africa's bold response to the pressing educational disparity in South Africa, and it was designed as a state-of-the-art venue to empower under-served students with an education to meet the demands of today's workforce.

The project includes multiple flexible classrooms, an auditorium, cafeteria, and administrative spaces. The humanitarian project was developed and designed by an international team of architects, engineers, and other technical consultants. Its construction was made possible through a collaboration among leaders in the construction industry and an expansive group of trade suppliers.

The building's superstructure consists of a matrix of square concrete columns and two overlapping concrete roofs with cantilevered porches. The lower roof is appropriately scaled to the low-rise residential neighborhood on the northwest side of the site, while the upper roof provides the public face of the building facing the main highway on the southeast.

Perhaps the building's most recognisable feature is the sloping roof that soars over the primary auditorium. The pitched roofline creates a dramatic interior space for the auditorium and an iconic visual gesture that is seen from kilometre away. The double-height entry and public spaces are enclosed with zero-sightline glazing, while the walls for the meeting rooms and administrative spaces are built using the Eco-bag wall system. Special care was taken to also develop a variety of useful outdoor spaces. The covered porch at the cafeteria is elevated so as to place one's eye level above the fence line of the property, and the low garden at the north side of the property provides a tremendous amount of shaded seating to support outdoor activities.

For any humanitarian building project to be successful, the structure must not only respond to the immediate needs of the community, it must inspire the community to keep the spirit of the humanitarian mission alive. Participation by the community members throughout the construction process is critical, as the project's success is dependent on their on-going care and involvement. Not only does participation increase community buy-in for the project, the construction process itself provides jobs for local labour and teaching opportunities for those wishing to benefit from learning a construction trade.

The construction process for the Devland humanitarian project was designed to engage the local community in this manner. Local labour was involved in nearly all aspects of its construction -- from clearing the site and digging the holes for the concrete foundation to laying the bricks for the sidewalk paving and filling the sandbags for the Eco-bag wall system used throughout the building. Local labour worked side-by-side with the corporate partners who installed the main



concrete infrastructure of the building, and local labour will remain involved as the project moves toward final finishes, painting, and landscaping.

The project was designed so that specialty trades could be involved with smaller aspects of the building, providing an opportunity for local labour to learn a trade. For instance, weekend workshops were provided by the distributor for the Eco-bag wall system in order to teach framing and construction techniques unique to this unique wall system. To magnify the impact of the weekend workshops, the team actually built a small addition to an existing home near the project. Growing Up Africa's unique humanitarian approach to 'teaching with community benefit' provides immediate tangible results for the community, magnifying their effort to sustain community involvement with the project.

The Devland project was also designed as a state of the art building to encourage corporate sponsors to contribute in the most effective manner the could -- by providing materials, resources, and the technical expertise required to complete the building successfully.

Early on, Growing Up Africa understood that humanitarian design meant GOOD DESIGN, and the organisation sought design and construction professionals who enthusiastically supported its mission. The Devland Soweto Education Campus brings the best ideas together as a first step toward fulfilling Growing Up Africa's goal of improving the lives of under-served communities. ■

**More information from Deborah Terhune,
cell: +27(0)82 826 2237 / deborah.terhune@gmail.com
www.growingupafrica.org**

The ambitious and dramatic design of the Devland Soweto Education Campus.

AfriSam steps in to boost customer efficiency

A new initiative by leading cement and construction materials supplier, AfriSam is now helping concrete product manufacturers (CPMs) to reduce their costs of production while maintaining quality output.

According to Amit Dawneerangen, AfriSam's national sales manager, the new service is an Efficiency Audit facilitated by the company's Centre of Product Excellence in Roodepoort, and will help CPMs strengthen their businesses in the current tough economic times.

"The audit service is really a formal extension of the partnerships that we already enjoy with our customers, and will highlight areas where CPMs can make their operations more streamlined and profitable," says Dawneerangen. "It deepens our ongoing engagement with them to resolve a range of technical and commercial challenges together."

Customers wanting to take advantage of the Efficiency Audit service can invite the AfriSam expert team to their production facility, where specialists collect information on a range of operational areas, from raw materials and testing systems, to production processes and quality controls.

"Our teams comprise some of the industry's most experienced professionals, who take on the role of a technical consultant so they can engage on how best to drive down unit costs and improve business sustainability," he says.

Centre of Product Excellence manager, Mike McDonald says the depth of AfriSam's expertise in cement and concrete materials provides the core of the value added by an Efficiency Audit, as these materials make up a large part of customers' operating costs.

"By ensuring that their material quality and mix is optimal for their specific application, we can help them to achieve the lowest possible cost per unit produced," says McDonald.

Dawneerangen says that the current industry mindset often focuses only on the cost of materials in terms of Rand-per-ton, leading many businesses to buy the cheapest available materials without carefully considering the impact of this decision on other important business objectives.

"For example, admixtures can be a vitally important ingredient in the success of their products," he says, "so changing the admixture for the sake of a relatively minor cost saving could have damaging consequences in the production process and end up costing the business in lost sales."

McDonald emphasises the need for transparency between the team and the customer in the audit process, to achieve the best results. "The customer needs to be able to give us access to their plant and to all their relevant figures and data, so that we have a full and clear understanding of how things work at that specific facility."

The audit is a very intensive process involving usually about four experts, each one being a specialist in concrete, cement, aggregates or processes. As these specialisations do not necessarily reside in a single person, it is important to have an integrated team whose knowledge overlaps and reinforces the value for the customer. ■

**More information from Maxine Nel,
Tel: +27(0)11 670 5893
www.afrisam.com**



AfriSam is helping CPMs to reduce their costs of production while maintaining quality output.

Getting a good grip with CRB walls at Puma

In 2015, JSE-listed Equities Property, signed a R155-million contract to develop 2.3 ha of its 5.4 ha property in Contermanskloof, Cape Town, to house a new A-Grade distribution centre and head office for apparel brand Puma Sports Distributors.



Terraforce retaining blocks lining a slope bordering a detention pond.

To maximise space for the new buildings and infrastructure, the Terraforce concrete retaining wall block (CRB) system was chosen to retain numerous cut and fill slopes on site needing earth stabilisation. Dassenberg Retaining, appointed by Greymo Civils to install the Terraforce walls, started construction in mid-March 2016. Says Géorg Brand: "The modern office building, with its underground parking and adjacent large storage warehouse, which is connected by a fly-over bridge, necessitated several retaining walls.

A design was supplied by Fred Laker, Terrasafe Design Service, and in total 21,800 Terraforce L11 blocks were delivered to site. The blocks are all filled with concrete for extra reinforcing, except those lining a steep slope along the detention pond that manages the storm water coming off the roof of the warehouse and office building."

Brand adds that here the blocks were filled with 19-mm stone for extra traction and to ensure water flow through the pond as the water level rises or drops.

"While the detention pond was constructed, a temporary berm was put in place to allow excavation and the placement of a concrete footing for the wall. At this stage, all material had to be handled by hand to transport it to the top of the 6.75-m wall on the office side. Because the almost vertical wall is 6.75 m high and braces the loading and parking area of the warehouse, geofabric was placed into the backfill, compacted and locked into every second row of blocks," Brand said.

The walls were completed in February this year, with additional, higher, and longer Terraforce walls to be added on adjacent land also owned by Equities Property. ■

Main Contractor: Granbuild

Consulting Engineers: Boland Consulting Engineers, Henry Horn

Civil Engineers: Greymo Civils

Terraforce Design: Terrasafe, Fred Laker

Terraforce installer: Dassenberg Retaining

More information from Dassenberg Retaining,

Tel: +27(0)21 987 2233 / **email:** info@dassenberg.co.za

www.dassenberg.co.za



CONCRETE ROOF TILE EQUIPMENT USED WORLDWIDE SINCE 1985



THE ONLY EQUIPMENT MANUFACTURER IN THE SOUTHERN HEMISPHERE PRODUCING HIGH SPEED CONCRETE TILE EXTRUSION PLANTS



**EXTRUSION MACHINES
CAPABLE OF MULTI-PROFILE
PRODUCTION**



**OVER 100 CONCRETE ROOF
TILE PLANTS INSTALLED
IN AFRICA**



**OVER 1000 DIFFERENT SPARE PARTS SUPPLIED
DIRECTLY FROM OUR STORES IN SOUTH AFRICA**



**Manufactured by
Jessop & Associates (Pty) Ltd**

Tel: +27 16 421 2521 **Fax:** +27 16 421 2539

WWW.PROTILE.CO.ZA

Rocla's versatile concrete poles

In the last decade, questions about the cost effectiveness and environmental friendliness of timber and steel poles have inevitably made industry seek alternatives for applications across a range of sectors which include electricity, electrical, telecommunications, security monitoring, stadium and street lighting, park and public-place lighting and fibre-optic poles. All these applications can be cost effectively serviced by Rocla's locally manufactured cast and spun concrete poles.

Rocla has a very long and well established reputation for manufacturing concrete poles in South Africa, Namibia and Botswana. Their spun poles are manufactured from high-quality, durable, partially prestressed or reinforced concrete. Rocla's cast and rectangular poles are made in steel moulds from high-quality concrete with a mix designed to achieve the strength and durability to meet customer requirements.

Rocla's concrete poles have become the benchmark in long-life, zero-maintenance street lighting poles. They are vandal proof, are available in a range of heights, load capabilities and fitting requirements.

Security companies are utilising Rocla's spun concrete poles for the installation of CCTV cameras and other monitoring equipment in suburbs as part of their community crime prevention activities. The pole design enables cables to be fed from the ground through the pole, which is hollow, so that tampering or theft of cables is significantly reduced and the pole structure is impossible to destroy and extremely difficult to remove from the installation site.

Because of these advantages and with increasing installation of fibre-optics, Rocla's poles are being used extensively to build infrastructure and to replace the wooden poles previously used.

Local municipalities responsible for lighting stadia, parks and grounds and general public areas need suitable, low-maintenance, aesthetically pleasing lighting installations to create a safe, well-lit environment. Sports stadiums in particular, which are significant revenue earners, require a multi-faceted approach to lighting solutions. The Rocla spun concrete poles are ideal for accommodating floodlighting both sports pitches and the surrounding grounds.

In line with South Africa's commitment to electricity for all, Rocla developed cast concrete poles for the electrical distribution industry, while the advanced tall spun pole is used on transmission lines such as those found in Richards Bay and similar facilities. The concrete poles offer benefits that include vandal resistance, standardised fittings, quick installation and a maintenance-free long life – all of which the old, traditional wooden poles lack.

Veld fires in outlying farming and other facilities cause seasonal damage, and sometimes completely destroy wooden poles housing reticulation systems for electricity supplies of 11kV and 22kV, making regular replacement uneconomical. Concrete poles circumvent this type of damage and are much more affordable and durable.

All Rocla's manufacturing facilities comply with ISO9001:2008 quality management systems. The company tests poles to SABS 470 specifications and the concrete poles are marked with a traceability reference.

The scope of the testing procedures cover: inspection, test frequency, dimension checks, straightness tests, proof load tests, cover to reinforcing checks, torsional test and ultimate load test.

Rocla will design and manufacture to meet a customer's stringent requirements as well as manufacturing products for non-standard applications.

Rocla is part of the IS Group of companies that includes Technicrete and Ocon Brick. ■

**More information from: Guinevere Thomas,
Tel:+27(0)11 670 7733 / www.technicrete.co.za**



About Rocla

This year, 2017, sees Rocla celebrate 100 years of operation. Throughout 2017 Rocla will be highlighting its technical expertise in design, manufacturing processes and involvement in projects around South Africa.

Rocla (through its association with Hume Ltd and Superconcrete) is a proud leader in Infrastructural concrete products serving the Southern Africa Civil Engineering industry since 1917.

In 1957, Rocla, an Australian concrete pipe company, entered the South African market introducing the 'Rocla Process' for manufacturing reinforced concrete pipes by compaction on a spindle. In 1971, Rocla and Superconcrete, were merged under the name Superocla.

The Infrastructure Specialist Group (ISG) was formed in 2013 when Technicrete, Rocla and Ocon, all leaders in manufacture of infrastructure and mining products, merged. ISG is a proudly South African company committed to the sustainable development of our region and its people.

Precast provides attractive and affordable school seating



The Reddam House installation of Terraforce's 4x4 seating system.

When it comes to sitting down, we all want to do so comfortably. Unfortunately, many public or community seating solutions are often expensive and time consuming to install, leaving such spaces underdeveloped due to a shortage of funds.

As a result, there has been considerable demand for durable seating arrangements, which can be installed in a cost-effective and easy manner, while still meeting all the statutory requirements with regard to comfort and safety.

Consequently, the locally developed Terraforce 4x4 Step block system, a combination of an accessory stair/seating block and any of Terraforce's standard retaining blocks, has become increasingly popular in South Africa and other parts of the world, and is used successfully at many recreational or educational facilities.

The system requires very low hardware input for manufacture, low transport costs and low inventory requirements at sales outlets. As an added benefit, the completed seating arrangements also offer a high-quality aesthetic finish.

Recently two such installations were installed by Decorton Retaining Systems, a Terraforce – recommended civils company, at two schools in the Western Cape, South Africa.

The first, at the Fish Hoek High School, seats 1,100 students comfortably. Says Steve Mitchell, educator at the school: "The embankment next to our sports field was too steep for anyone to sit on, as you would just slide down the grass. It was a wasted area and an eyesore, as cutting the grass on that slope is quite a task. Now, with the steps placed strategically at

intervals, it naturally allows for our four school houses to be split without issues of rope or barrier tape.

This is convenient for our athletics, cross country and annual go-cart race. This now all happens on our sports fields. It also allows for our rugby and cricket supporters to have comfortable seating."

Mitchell emphasises that the school is particularly happy with the way the seating pavilion looks: "We love that it does not look like a bare concrete structure. The blocks have been slightly coloured, so it blends in with the environment, and the edges are rounded, so you don't get this sharp edge eating into the back of your legs when you sit on it, and visually it just looks so much better than it was before. Thank you Decorton for making it happen!"

The second installation is at Reddam House in the Clara Anna Fontein lifestyle estate in Durbanville and is possibly the largest pavilion-type seating in South Africa built with the 4x4 seating system. Bordering the 400-metre athletics and events track, the pavilion was built, also by Decorton Retaining Systems, against the embankment in front of the school and above the sports field, with a staircase in the centre and at both ends for easier access. Comments S.P. van Blerk, Co-founder of Decorton: "The seating platform accommodates 1,600 spectators comfortably, and up to 2,000 at a push, and we have just been given the go-ahead for four metres of seating space on either side." ■

**More information from Terraforce,
Tel: +27(0)21 465 1907
www.terraforce.com**



L13, L18, L22



Terrafix



Terracrete



4x4 Multi



L11, L12, L15, L16

GO GREEN

From the word

GO

we chose the right

COLOUR



**Find your nearest supplier
www.terraforce.com
Tel: 021 465 1907**

Innovative use of Aqua Zig Zags and DZZs for storm water attenuation

All new properties developed in the Ekurhuleni region, regardless of the size, are required to submit a storm water management plan to the Ekurhuleni Municipality. To meet this new prerequisite, the consulting engineers, Mhiduve (Pty) Ltd, have developed an innovative storm water attenuation management system through the use of Technicrete's Aqua Zig Zag Sustainable Urban Drainage Systems (SUDS) and DZZ interlocking pavers on the new Columbia Pharmaceutical factory development in Boksburg

Deon Slabbert, the project engineer from Mhiduve consultants, commented: "We believed that the successful management of the storm water element at this new factory required an innovative approach due to space challenges we faced on site. In addition to permeable paving used as a covering for attenuation ponds, we used Technicrete's DZZ 80-mm interlocking pavers over areas of 3,000 m² and 1,200 m² respectively below the permeable paving that had capacity to hold 1,600 m³ of storm water. We also sourced 4,300 m² of Aqua Zig Zag 80-mm Class 40/2.6 pavers. The DZZ pavers were coupled with 2-4 mm of filler stone that was used as grout in the system."



"The DZZ paving blocks have slots, which allow the storm water to penetrate the surface and be collected in the unique layerworks underneath the paving surface from where it can be released in a controlled manner into the local authority's system."

Technicrete sales representative, Wayne Oliver explained: "SUDS are increasingly being used to prevent run-off and flooding, and also as a method of collecting and cleaning storm water. It is an interesting and successful use of our DZZ range of interlocking pavers for an application as vital as storm water attenuation, a critical component of the Columbia Pharmaceutical factory development. The combination of the DZZs with the Aqua Zig Zags and filler stone established a good permeable paving system suitable to disperse the expected volume of storm water."

Technicrete's SUDS allows heavy rain to infiltrate through a permeable concrete block paved surface into a unique sub-base before being released in a controlled manner into sewers or water courses. The paved areas must be firmly restrained and Technicrete kerbing was utilised for this purpose on this attenuation project. ■

Precast pavers for Moletjie Road upgrade

Mid-2015 Limpopo's Public Works and Infrastructure Department announced that R1.2 billion had been earmarked for road refurbishment and maintenance to be rolled out over the next three years. This included a section of the Moletjie Road Project in Polokwane that was to be upgraded from gravel to paving. Technicrete's Bond Brick and kerbs were selected for the project.



Makapani Modipa, CEO of MacP Construction said: "There was no established pavement on this section of Moletjie Road, it was a gravel walkway that needed to be upgraded to a paved surface. Included along this stretch of walkway a 1.3-km bus stop had to be accommodated in the construction."

"We chose the Technicrete Bond Brick and kerb products due to their durability, this was a key factor for the bus stop development in particular, due to the weight and regularity of the bus traffic. The good pricing and Technicrete's reputation for reliable servicing made them a natural choice for the Moletjie Road project," said Modipa.

"The project consisted of a combination of 50-mm Bond Bricks together with Fig 8B Kerbs, 60-mm and 80-mm Double Zig Zag Grey pavers and Fig 3's Kerbs."

"The Bond Brick is a traditional paver that offers economy and durability and is very well suited for commercial and domestic surfaces. It has been a preferred choice with local municipalities as well as private commercial developments," said Hendrik Steenkamp, sales consultant for Technicrete ISG in Polokwane.

"Our precast concrete kerbs are an ideal edge restraint in the construction of roads, kerbs and gutter systems. We also can now offer our Figure C900 mountable kerb which can be utilised in traffic calming measures."

"Where heavy traffic is experienced, our Bond Brick paving blocks are perfect because of their longevity and quality while still offering a really good finish aesthetically," concluded Steenkamp.

The vast ranges of technologies and products, specifically suited for infrastructure maintenance and development, are the core offering from Technicrete ISG, and its sister companies Rocla and Ocon Brick. ■

**More information from Guinevere Thomas,
Tel: +27(0)11 670 7733 / www.technicrete.co.za**

Aveng Infraset launches new paving block



Aveng Infraset has introduced a fresh design option for landscape architects and paving contractors with the launch of Santiago®, a new paving block with an attractive textured finish.

Aveng Infraset Landscape Products sales manager, Brennan Small, says Santiago® complies with current trends in landscape design which favour larger more cost-effective pavers and is ideal for shopping and community centres, retirement villages, patios, driveways, walkways and pool surrounds.

"Santiago® has been designed to be laid in conjunction with our Masonique® and Cottage Stone® pavers, thereby creating greater scope for attractive design and layout options. These would typically comprise a Santiago® body combined with either or both Masonique® or Cottage Stone® as borders or header courses.

"Santiago® is available in three off-the-shelf body-through colours, grey, charcoal and sahara, in addition to numerous other colour options and can also be ordered in bush-hammered and rumbled finishes for added visual and design diversity," advises Small.

Requiring only 17 blocks per square metre, the 240 x 240 x 50 mm block is easy and cost-effective to install. An added advantage is that the blocks are manufactured with bevelled

edges on one side and straight edges on the other. As they are cast in body-through colours, they are fully reversible and can be laid either way.

"Santiago® is a high-quality product complying with SANS 1058:2012. It is cast to high tolerances at Aveng Infraset's Columbia plant at Rossway, Centurion, using a vertical manufacturing process which guarantees that it is free of any highs and lows. Moreover, its textured finish ensures that is non-slippery when wet," explains Small.

"We also produce paving blocks, kerbing and retaining wall blocks in our Masa plant, also at Rossway. Both Columbia and Masa produce state-of-the-art plant which enables us to introduce new, and often unique products for landscape architects and other construction professionals.

"Our Masa plant includes steel production pallets for enhanced vibration transference, in-line washing and sealing, ageing and waving techniques and a specially-insulated curing chamber. It also boasts an advanced colour blending facility which is faster and more accurate than the earlier generation of blenders," concludes Small. ■

**More information from Brennan Small,
Tel: +27(0)12 652 0000 / www.infraset.co.za**

EXCELLENCE IN WATERTIGHT CONCRETE



SIKA® WT-200P

The crystalline admixture enables concrete cracks to self-heal and therefore block water, even when under extreme hydrostatic pressure and it will continue to be reactivate whenever water is present.'

Benefits of using Sika® WT-200P in waterproof concrete:

- Increase in service life of the construction
- Significantly improved durability and sustainability of the hardened concrete
- Ensured watertightness without other expensive measures
- Reduced maintenance costs
- Enhances the self-healing properties of concrete and promotes the ability to heal concrete cracks

www.sika.co.za



BUILDING TRUST



Flexibility, value engineering and high-quality products deliver sought-after luxury apartments

Elematic South Africa's high-quality precast hollow-core concrete slabs and top-notch service on the Carlswald Luxury Apartments development in Midrand secured the company a good pipeline of work from the estate's developer, Century Property Developments, going forward.

The Carlswald Luxury Apartments project was no small undertaking. The 470 units, configured in 86 blocks, were developed and built in a single phase by Century Property Developments between May 2015 and October 2016. The development also includes a variety of amenities such as a multi-purpose hall, club house, swimming pool, braai facilities, tennis court with pavilion, children's play areas, outdoor gyms, a skate park, a bird hide and a Spark School for the children of residents.

Elematic South Africa (ESA) supplied all the precast hollow-core concrete slabs for the project – about 55,000 m² in total. Hendry Brand of Century Property Developments explains that precast hollow-core slabs were selected primarily because of the speed they offer in comparison to cast-in-situ concrete slabs. Overall, the construction team was able to complete approximately 40 units a month on average – an achievement which would not have been possible without careful planning, co-ordination and team work.

In that respect, Brand is highly complimentary about the service Century Property Development received from ESA. "To begin with, there were a number of different designs that had to be catered for because of the various apartment and block configurations. We used all the different thicknesses of concrete slabs available – sometimes we even used them all on a single floor," he notes. He continues, saying that even before the project broke ground, the Century Property Developments team, including its in-house architects, sat with the ESA team to look

at ways of optimising the structures for economies of scale, and to value engineer for cost-effectiveness. "We worked well together because we both like precision, and we like to have things well planned in advance," he comments.

There was an ESA team on site almost constantly for the duration of the project, measuring up and installing the slabs, which were on the critical path for project completion. Brand reports that Century Property Developments has been very pleased with both the quality of the slabs and the service received from ESA. "In terms of price, quality, service and our working relationship, we really do get the whole package from ESA," he says.

"We need a high-quality product because we want longevity in our buildings, especially since they are for the rental market. At the same time, we also need to find ways of optimising our costs, which can escalate quickly on a project this size," he continues. ESA's willingness to explore options with the client, while maintaining careful attention to detail and not compromising on product quality, helped ensure the successful delivery of Carlswald Luxury Apartments.

"We make every effort to explore options and to value engineer each project with our clients," notes Craig Webber, director at ESA. "We also try to continually improve on what we have done before." This meeting of minds has resulted in a good working relationship with Century Property Developments, which has awarded ESA a number of other contracts subsequent to this one. "There are benefits to working with the same contractors and suppliers if we can," comments Brand. "The ESA team know what questions to ask, they know how we work and they are extremely thorough. Like us, they take pride in their work. We also find that working with people we know means





we don't have to go through a process of trial and error with a new contractor for every project, because that can result in costly mistakes," he adds.

The Carlsward Luxury Apartments development has certainly been a success, with only a few units left to let at the time of writing. With one-, two- and three-bedroom apartments available, ranging from 53 m² to 113 m², these luxury rental units in a secure lifestyle estate have become extremely popular. The project also saw the development of a good working relationship between Century Property Developments and ESA. With a number of new projects in the pipeline, both parties look forward to a mutually beneficial relationship in future. ■

More information from Craig Webber,

Tel: +27(0)11 423 2700 / www.elematic.co.za

About ESA:

Elematic South Africa (Pty) Ltd manufactures precast hollow-core concrete slabs for the South African market. Elematic is a well-established international brand which was established in Finland in 1959 and has since set up precast production plants in over 70 countries worldwide. As part of the Consolis Group, which focuses on research and development in cement and precast concrete products, Elematic is backed by extensive knowledge and experience. Elematic South Africa supplies the latest available technology in precast concrete products. Its state-of-the-art production facility on Gauteng's East Rand is ISO 9001 certified and all its products carry the SABS mark of quality.



We are there when you learn

Need to conquer concrete? Our School of Concrete Technology offers special on-site and tailor-made courses to suit your requirements. **Study concrete with us.**



www.theconcreteinstitute.org.za

+27 11 315 0300

Corestruc scores on another milestone stadium project



All items used on this build are 60 MPa, contributing towards a robust end product that lowers maintenance costs and ensures a longer life span for the structure.



Corestruc's precast concrete systems have been widely deployed on a host of stadium construction programmes due to the many benefits they offer client bodies and their professional teams.

Corestruc has become a well-known name on sports complex construction programmes, with its modular precast concrete systems helping client bodies and their professional teams accelerate construction times and build more durable structures.

The precast concrete specialist is now working alongside A and P Civils and Trading to complete the latest such project that is being driven by the Collins Chabane Local Municipality, in South Africa.

Previously awarded under the Thulamela Local Municipality, before it was restructured last year, the new sports complex will bring significant value to surrounding communities in Limpopo.

This is considering the extent of the facilities that will be provided once it is completed, with the new sports complex featuring a grandstand that can seat up to 2,500 spectators.

The bulk of the 18-bench podium is being built using a precast concrete system from Corestruc.

The columns and rafters form the basis of the structure and were designed specifically for this grandstand, with the balance comprising the company's standard stadia precast concrete items that are adapted to specific project requirements.

Corestruc's Russell Hobbs says that the popularity of the company's systems can be attributed to the speed at which they can be installed, mitigating risk by allowing the most complex aspect of the project to be completed early.

"Our teams have completed similar projects in as little as eight working days, including the pavilions for the earlier Sekgopa and Lebaka sports complexes," Hobbs says.

The company's teams arrived on site once A & P Civils & Trading had completed the earthworks and site terracing for the stadium.

After casting the concrete bases and installing the connection bolts, the columns were fixed in position and aligned.

Each project is unique, and he says this one certainly presented its share of challenges.

"We had to deploy a 160-ton (t) mobile crane to lift and place the 20-odd back columns, each weighing in at 12 t. Apart from the complexities of accessing the sites, we also had to strategically place the crane to lift each precast concrete segment while work was forging ahead at the other construction faces," explains Hobbs.

The main contractor started with the brick works at the front of the grandstand to accelerate the works while Corestruc started placing the raking columns.

Gradually working its way to the back and below the structure, A and P Civils and Trading had completed more than 90% of the brick work by March, with Corestruc only having to place the roof slabs over the VIP and changing rooms to complete its aspect of the project.

By doing away with any erection and dismantling of scaffolding and formwork, as well as the large number of people working at height, the company's technology also contributes towards a much safer site.

All items used on this build are 60 MPa contributing towards a robust end product that lowers maintenance costs and a longer life span of the structure.

Hobbs looks forward to the completion of the project and the opening of the facility to members of the public. ■

**More information from Willie de Jager,
Tel: +27(0)87 232 2462 / www.corestruc.co.za**

CAPE CONSTRUCTION

Conference ■ Trade Expo

23 - 24 August 2017 | Cape Town International Convention Centre

THE WESTERN CAPE'S LARGEST BUILDING AND CONSTRUCTION SHOW



What to expect?

 **3 500+**
attendees

 **10+**
hours dedicated networking

 **100+**
exhibiting companies

 **80+**
media and association partners

 **1 500+**
contractors

**Contact us today
to book your space!**

 Marcel.dutoit@hypenica.com

 021 700 4300



Cape Construction Expo enables you to meet the entire construction value chain, and conclude several months of customer interaction in just a few days.

Join the conversation



CapeConstruction



Cape-Construction



@CT_Construction #capeconstruction

Pretoria building contractors complete new R36-m Centurion motor dealership

Leading Pretoria building contractors, J.C. van der Linde & Venter Projects, have completed the construction of a R36-million new motor dealership in Centurion.

J.C. van der Linde & Venter Projects, a member of Master Builders Association North, completed the greenfield project on a 4800-m² site on the corner of John Vorster Drive and Hendrik Verwoerd Avenue for the developer, Leo Haese BMW, a few months ago.

Steven Brown, contract director, says the contract involved the provision of a new three-storey upmarket dealership with a footprint of 2,150 m², comprising a lower ground floor to accommodate a workshop and car showroom; a mezzanine level for offices; and an upper ground floor featuring another showroom and more offices.

The façade was clad with 530 m² of metal imported from Italy, and installed by sub-contractors, Alania Building Systems. HBS Advantage curtainwall system and also Solar E glazing, covering about 875 m², was supplied and installed by another sub-contractor, Edelweiss Glass & Aluminium, of Silvertondale.

Brown says the major challenge in this contract, started in January 2016, was the intensive waterproofing required for the exposed upper ground floor's concrete coffer slabs. "This area will be used as an open-air showroom so maximum waterproofing protection was called for. A total area of about 3,000 m² had to receive imported torch-on waterproofing, provided by sub-contractors, Steed Bekker Waterproofing," he explained.

Four off-shutter concrete towers (each around 14 m high), housing interior staircases, protrude from this exposed upper ground floor of the new dealership with its high visibility on the corner of two of Centurion's busiest streets.



It was the second contract J.C. van der Linde & Venter Projects had handled for Leo Haese BMW. The building contractors recently also completed a major refurbishment of a Leo Haese BMW motor dealership in Hatfield, Pretoria.

Assisting Brown in managing the 75-strong J.C. van der Linde & Venter Projects team on site were Cornelis Boersema (general foreman), and Albert van Renssen (site agent).

The professional team for the project were:

Architect/Project Managers: VDO Consulting CC

Quantity Surveyors: Quanticost

Structural Engineers: Civil Concepts (Pty) Ltd

Electrical Engineers: CKR Consulting Engineers

Mechanical Engineer: Spoormaker & Partners

Health & Safety Representatives: Oryx Occupational Safety Solutions

Fire consultant: Chimera Fire Protection Consultants (Pty) Ltd. ■

More information from Pieter Venter,
Tel: +27(0)12 803 0392 / www.vdlv.co.za

About J.C. van der Linde and Venter Projects

J.C. van der Linde and Venter Projects (Pty) Ltd was founded in 2006 following a management restructure of the family business which was established in 1953. All eight directors of the new management team are active shareholders and involved in the day-to-day operations and management of the company. The company is well placed in the medium to large size construction market of greater Tshwane, with the infrastructure and management capacity to complete building contracts to an annual turnover of R500 m.

The company management is based on strong values with the core objective being to improve the lives of their staff and the community within which they work. We believe this focused 'hands on' approach gives us a financial and personal edge not only over our local competitors but also listed companies.

In February 2011, 31% of the company was donated to the Thandive Trust which was formed in partnership with PEN (Participate Empower Navigate – Pretoria City Centre Organization). The beneficiaries of the trust are disadvantaged young girls based in the Pretoria area.

The company is also a member of the M.B.A. North as well as a member of the Unashamedly Ethical Campaign.

**scaw****METALS GROUP**

A trusted industry leader

For more than 90 years, Scaw, a South African industry leader, has been a preferred supplier to the construction industry. Whether it's hoisting, reinforcing or excavating, Scaw produces an extensive range of products that drive safety and productivity in construction projects.

From wire & strand products, Haggie® Steel Wire Rope, chain products or construction specific steel, Scaw continues to design and deliver the highest quality products to customer specifications.

Highly qualified teams with extensive experience in all aspects of the application of our products are on call to advise and support the selection, handling, installation and maintenance of products vital to driving safety, productivity and profit in the construction industry.

www.scaw.co.za

*More than
steel.*

Innovative raising of Hazelmere Dam wall a first for Southern Africa

The severe drought experienced recently has resulted in Sika products being used in a mammoth ongoing project in KwaZulu-Natal. The site is Hazelmere Dam, a concrete gravity dam originally constructed in 1976, 40 km north of Durban.

Although fifteen families had to be relocated to higher ground, the project benefitted the local community by creating 53 new jobs. By July 2016, the dam volume had dropped to 23% due to the severe drought in KZN. However in November 2016, volume could have exceeded 70% if it were not for critical construction work on the slipway. Once this stage of the project was completed, in January 2017, the dam was allowed to fill to its maximum 100%, which is where it stands to date.

Realising the total inadequacy of the dam's water storage capacity, the Department of Water and Sanitation contracted consulting engineering company, Ingeprop South Africa, for an effective design. A decision was made to raise the dam wall by seven metres, thereby increasing the dam's capacity from 23.9 million cubic metres to 43.7 million cubic metres. Group 5 were appointed as main contractors.

As the first project of its kind in Southern Africa, involving the installation of 83 anchors into the spillway and the dam wall itself, the task called for the Australian-based company, SRG to be sub-contracted to drill, install and post-tension the anchors. With grouting of the anchors being of critical importance, it was decided that Sika products would meet the high standards required by SRG.

To demonstrate the installation process, SRG carried out first site trials by placing four test anchors 40 m deep below the dam wall. After commencement of the project proper in February 2016, 355-mm-diameter holes were drilled at depths varying between 55 m and 95 m. Along the spillway the holes were spaced 1.5 m apart, while on the dam wall, the holes were spaced 7.5 m apart.

The stringent requirements for the water-cement grout mix (exclusive of any aggregates or sands) included: initial flow time of 12 seconds, reaching 15 seconds after 60 minutes; a maximum of 2% bleed after two hours; 60 MPa @ 28 days; OPC Cement Cem I; and a grout density of 2200. Sikadur-AP was specified for use on the nose cones of the anchors. The 250-mm-diameter anchors, each requiring an average of 80 steel cables for post-tensioning, were inserted into the holes.

The first of two admixtures specified was Sika ViscoFlow-25 ZA, especially designed for concrete mixes with extended workability requirements as well as with improved flow characteristics. Compared to conventional dispersants, Sika ViscoFlow-25 ZA provides higher stability and workability time. Since Sika ViscoFlow-25 ZA contains no chlorides or any other ingredients which promote corrosion of steel, it is ideally suited for use in reinforced and prestressed concrete structures. Sika Stabiliser-229 ZA, the second specified admixture, increases the cohesion and plasticity of concrete, reducing bleed and segregation. Sikadur-42 ZA was used at the top of the base plates. It has a fluid consistency, is self-leveling, suitable for dry or damp concrete surfaces and provides high initial and ultimate mechanical strength.

This huge project, which is scheduled for completion at the end of 2017, will increase the water availability to the rapidly growing population of the North Coast region by approximately 10 million cubic metres and, since Hazelmere Dam forms the major water supply of the existing two systems in the area, the critical water shortages in KwaZulu-Natal will be significantly alleviated.

Sika is proud to be playing such an important role in this extraordinary project. ■

For more information on Sika products and systems, visit www.sika.co.za



Overall construction of the Hazelmere Dam expansion to raise the dam wall by seven metres. A total of 83 anchors will be inserted along the entire dam wall.

Foundation piling for new Fordsburg shopping centre completed

Gauteng Piling has completed the foundation piling for Fountain City, a new shopping centre in Fordsburg, Johannesburg.

Keo Lekutu, Gauteng Piling's contracts manager, says the developer and contractor, Tech House, appointed Gauteng Piling to provide the 54 auger piles that will serve as essential foundation elements for the new Fountain City complex.

Lekutu says the Fountain City project required 54 auger piles between 8 to 10 m deep, with a diameter of between 800 and 1,150 mm. "For the smaller-diameter piles, steel cages of 650 mm in diameter, were secured with 25-MPa concrete supporting a 2,500-kN design load; and for the bigger piles, the cage diameter was 1,000 mm secured with 25-MPa concrete, but with a 5,000-kN design load."

The soil was stable without underground rocks, but the site's major challenge encountered was underground water about 5-7 m below the ground, virtually all over the 1,913-m² site.

"We had to resort to the 'drill and cast' piling method which called for a concrete truck to be on standby right next to the drill rig. When the drilling had reached the required depth, the rig operator immediately lifted the extracted soil from the surface and concrete was cast into the shaft within seconds to prevent water ingress and the piles collapsing," Lekutu said.

The company is a leading member of Master Builders Association North and has been in operation since 1996,



Ernest Makwala, site foreman; Keo Lekutu, contracts manager; and Sibongiseni Dlomo, health & safety officer, with a reinforcing cage for one of the 54 foundation piles.

founded by veteran building industry leader, Nico Maas. Gauteng Piling has completed around 1,600 major piling contracts in the past 21 years. ■

**More information from Ignatius Maas,
Tel: +27(0)11 465 7751 / www.gautengpiling.co.za**

SIKHULISA SONKE WE DEVELOP TOGETHER



JG AFRIKA
EXPERIENCE QUALITY INTEGRITY

Proudly South African, JG Afrika (previously Jeffares & Green) provides civil and structural engineering and environmental consulting services throughout Africa.

ENGINEERING & ENVIRONMENTAL CONSULTING
www.jgafrika.com



JG Afrika and G4 Civils in the fast lane

The Bakwena N1N4 freeway is an important arterial connecting Gauteng with the Limpopo Province on the N1 and the platinum-rich North West province on the N4, while ensuring the efficient movement of people and goods between South Africa and neighbouring Botswana.

Over the past two years, the Bakwena Platinum Corridor Concessionaire (Bakwena), which operates the highway on behalf of the South African National Roads Agency Limited (SANRAL), has been upgrading specific toll plazas along the route to ensure improved flow of the many vehicles using the corridor every day.

The focus has been on widening four mainline plazas (Pumulani, Doornpoort, Brits and Marikana) as well as two ramp plazas (Stormvoël and Zambesi) by adding extra lanes to improve traffic throughput at the various plazas.

Importantly, work undertaken at the Zambesi plaza also forms part of a SANRAL/Bakwena pilot project to drive the uptake of its e-Tags' by providing users with a faster, more convenient alternative for passing through these pay-points on the N1N4 highway.

Registered 'e-Tag' holders can now fast-track their drive time by using an exclusive e-tag lane that exits directly from the highway – obviating queuing at conventional plazas.

"This is a pilot project," says Phaks Ngqumshe, a director of JG Afrika, "and depending on its success, the concept may be rolled out elsewhere on the corridor and on other national roads."

Ngqumshe has project managed the plaza upgrade programme since JG Afrika was awarded the design and construction supervision contract in 2015.

"This was a unique project in that the dedicated 'e-Tag' lanes, with separate dedicated e-tag lanes off the freeway are a new concept in the country. One of the complexities in the design and drawing stages is that we did not have similar projects that we could reference, so the design teams had to largely innovate from scratch," says Ngqumshe.

A "meeting of minds" between representatives of JG Afrika, SANRAL and Bakwena resulted in a solution that was not only feasible and practical, but also safe for road users.

This sharp learning curve challenged the experienced professional team, but also provided a sound mentoring platform for some of the young engineers and new engineering graduates on the engineering team.

Working to extremely tight deadlines, implementation started at Zambesi toll plaza, enabling the consulting engineer and civil contractor, G4 Civils, to refine operations and achieve a desired production rate over the duration of the project.

The Stormvoël plaza was next. Located in a built-up urban area, it required extensive rerouting of vehicles and pedestrians. The relocation of many associated services added another level of complexity to the project.

Ngqumshe says most of these challenges were overcome by an extremely proactive approach taken by JG Afrika and G4 Civils, prior to mobilising to site. This was complemented by excellent team dynamics between all parties right from the outset.

Pumulani and Doornpoort toll plazas were next, followed by the Brits and Marikana facilities, with the entire project scheduled for completion in October 2017.

All the new Plazas comprise a 300-mm-thick concrete pavement supported by stabilised layers, while structural work was required to also extend the existing toll plaza canopies.

This is over-and-above the work required to install the new signage and signalling as part of the overall work scope.

The only delays resulted from recent heavy rainfall, reflecting the efficiencies of the professional teams on site. However Ngqumshe is just as pleased by the impressive safety levels maintained throughout the programme, with no major incidences, or loss time injuries reported, to date.

This is a very significant achievement considering that the extensions were undertaken in operational areas, where impatient driving behaviour and also pedestrian movement alongside the highways were major risks that had to be thoroughly managed.

He says successes in this regard can largely be attributed to the professional team, G4 Civils, as well as Bakwena's very strong emphasis on safety.

"Health and safety have always been paramount for JG Afrika and G4 Civils, and our client insisted on this – even if it was at the expense of production. Bakwena was well aware of the challenges that we would encounter and were, therefore, extremely willing to accommodate our suggestions to ensure a safer site," says Ngqumshe.

With a just a few months left before this project is completed, he believes that it will be another milestone in the firm's long legacy in transport infrastructure, as well as its close affiliation with both SANRAL and Bakwena. ■



Construction underway on the Zambesi Plaza upgrade.



Construction of a concrete retaining wall using shotcrete.

**More information from Charmagne Denny,
Tel: +27(0)11 231 2200 / www.jgafrika.com**

Concrete!

**You work with it ...
We make it easy!**

Repairing old?

Starting anew?

We have the solution just for YOU:



- ANCHOR IT
- BOND IT
- COAT IT
- FIX IT
- FILL IT
- RELEASE IT
- REPAIR IT
- ROUGH IT
- SEAL IT
- SMOOTH IT
- STICK IT
- WATERPROOF IT

OUR PRODUCTS DO IT!

Tel: a+ 27 11 822 2320
Fax: + 27 11 822 2354
Website: ashakepoxerite.co.za
email: cindy@ashak.co.za
george@epoxerite.co.za



Release agents for every concrete purpose

Release agents are a valuable part of any construction project, ensuring that concrete does not stick to formwork or moulds; the CHRYSO® Dem range takes this technology another step forward with a brand that will be suitable for every application.

According to Hannes Engelbrecht, general manager: inland at CHRYSO Southern Africa, getting the best results requires choosing the appropriate release agent, as there are specific formulations for all options including timber formwork, manmade formwork and decorative concrete, as well as wet or dry precast concrete.



The CHRYSO® Dem range ensures easy, clean release of the formwork or mould from the concrete, without damaging either.



Release agents are a valuable part of any construction project, ensuring that concrete does not stick to formwork or moulds; the CHRYSO® Dem range takes this technology another step forward with a brand to suit every application.



The range even includes a vegetable-based, environmentally friendly release agent – CHRYSO® Dem Bio 10 – which is biodegradable and non-toxic.

"It is false economy to just use the cheapest release agent available," says Engelbrecht, "as the cost is relatively low when compared to the value of the formwork or mould. The CHRYSO® Dem range ensures easy, clean release of the formwork or mould from the concrete, without causing damage to either."

The products reduce the likelihood of any imperfections and surface damage to the concrete, such as blow holes, creating more durable and attractive concrete surfaces.

"It is important to remember that the quality of the CHRYSO® Dem range ensures there is no adverse effect on the adhesion of subsequent finishes and coatings," he says. "This allows plaster, paint or other coatings to be applied to the concrete with no associated problems; the release agents are also water repellent, so are not affected by rain."

These products do not have any negative effect on the hydration of concrete as it cures, and they are inoffensive to apply as they have very little odour.

The range even includes a vegetable-based, environmentally friendly release agent – CHRYSO® Dem Bio 10 – which is biodegradable and non-toxic, making it safe to use in confined applications such as mining and tunneling, or any other poorly ventilated area.

Reducing blow holes is the specialty of CHRYSO® Dem Elio LSM, with its low viscosity oil lowering the surface tension against the sides of the mould and allowing air bubbles to escape. CHRYSO® Dem Elio SP is designed for dry precast spun pipe production with the added benefit of the release of dry concretes that have been exposed to the high temperatures of steam curing. CHRYSO® Dem Oleo FW is a mineral-based release agent suitable for all types of formwork on site.

"The CHRYSO® Dem range is a fundamental change for an industry that is accustomed to a one-size-fits-all approach when it comes to release agents," says Engelbrecht. "It is also raising the bar among users, who will now start to expect better results." ■

**More information from Kirsten Kelly,
Tel: +27(0)11 395 9700 / www.chryso.com**

Repair, protect and rejuvenate concrete structures with Kryton

Sustainable building practices are more important now than ever before. Providing a durable and environmentally friendly solution to concrete leaks and deterioration can directly impact the long-term environmental and financial viability of a structure.



A concrete water containment structure, before and after using Kryton technology.



Most concrete crack repair methods are only temporary fixes, and contain harmful toxins. Using integral crystalline waterproofing technology, Kryton's Krystol Crack Repair System transforms cracked and leaking concrete into a permanent, water-resistant barrier. When applied to cracks, joints and concrete surfaces, the Kryton Krystol proprietary chemicals react and grow millions of needle-shaped crystals. These unique crystals grow deep into the concrete to fill and block the capillary pores and microcracks and stop the migration of water through the concrete.

Since this waterproofing technology becomes an integral and permanent part of the concrete itself, its effectiveness as a waterproofing barrier is not contingent on its ability to form and maintain a coating or membrane on the surface of the concrete. This means that, unlike surface-applied membranes, crystalline waterproofing technology can never be punctured, damaged or worn away, and will last for the lifetime of the concrete.

Not only does the Kryton Krystol system ensure that the concrete will be waterproof, the Kryton Krystol line of products is also certified safe for contact with potable water by NSF International (certified to NSF/ANSI std. 61) and contain zero volatile organic compounds (VOCs). Choosing products that minimise the impact on the environment and at the same time reduce the need for future repairs both contribute greatly to the overall sustainability of the concrete structure.

Repair any concrete structure using Kryton Crystalline Technology from; parking structures; water containment structures; bridge decks; to canals, tunnels and elevated slabs, pits and ramps, with the Kryton technology you will ensure that you minimise the impact on the environment and at the same time reduce exorbitant future repairs, contributing to the overall sustainability of your concrete structures. ■

WATERPROOF, REPAIR, PROTECT AND REJUVENATE YOUR CONCRETE



BE SURE. BE KRYTON.

USING KRYTON CRYSTALLINE CONCRETE WATERPROOFING TECHNOLOGY.

Waterproof Parking Structures, Water Containment Structures, Bridge Decks, Canals, Tunnels and Elevated Slabs.

Utilize Kryton to:

- **Repair & rejuvenate deteriorated concrete**
- **Protect your rebar**
- **Retard further corrosion of rebar and subsequent concrete spalling**
- **Repair water containment structures while still in use - safe for potable water.**
- **Completely waterproof your structure with Krystol self-healing technology**

Anglo American, Polokwane



Styldrift Mine Rustenburg



SANIKA
WATERPROOFING SPECIALISTS

AUTHORIZED
DISTRIBUTOR

AUTHORIZED
APPLICATOR

www.sanika.co.za T | +27 (0) 11 425 3061
info@sanika.co.za F | +27 (0) 11 425 6383

A | C/O Davidson & Malcolm Streets Rynfield
Benoni Gauteng, South Africa

Concrete floors becoming increasingly popular in housing

Traditionally concrete flooring has been used in locations where utility, durability, and ease of maintenance are more important than design and beauty but, because of the staggering design options now available, concrete floors are proving increasingly popular in a variety of residential and commercial applications, says Bryan Perrie, MD of The Concrete Institute.

"In addition to their customary role in warehouse, factory and parking area surfaces, concrete floors are now globally specified for housing, retail stores, trendy restaurants, and upmarket offices. In housing, concrete offers both aesthetic and practical options for flooring of key areas such as foyers, patios, kitchens, bathrooms, hallways, and garages.

"Concrete flooring is popular in kitchens because it is durable and easy to clean. It can be sealed against moisture damage, and made virtually impervious to staining agents or food and drink spillage. Durability and water and moisture resistance are also making concrete a popular bathroom floor choice: textured techniques can be used to ensure that the surface is slip-resistant even when wet. The various surface finish and colour options available allow for the application of concrete floors in a foyer or hallway that will be exceptionally stylish and also functional in these high traffic areas.

"Designers and home-owners are increasingly specifying decorative concrete floors for residential foyers, for maximum 'first impressions' and personalising this area to reflect a home's overall style. Enhancements for foyer concrete floors include stenciled motifs, multi-colour tile-like patterns, saw-cut designs, or floating concrete islands in shallow pools of water.

"Concrete floors are also being used to create garages that form an attractive extension of a home's living space. Particularly

when attached to a house, garages are now no longer just a storage space for cars, but also a playroom or youngster's den so much more attention is being paid to making the floors both attractive and durable," Perrie states.

"Skilled concrete flooring artisans can now replicate the appearance of expensive flooring materials such as marble, granite, or top-end wood. The lifetime cost of concrete floors is also low because they require little maintenance and have a lifespan of many decades.

"Maintenance requirements of concrete floors depend on the volume of traffic. When it comes to upkeep, sweeping and damp mopping is usually all that are required but applying a suitable sealer or a coat of floor finish or wax designed for concrete floors will make the floors more resistant to stains, chemical spillage and abrasion. Floor mats at entrances or in foyers also help lower wear and tear. At business premises, such protection is essential," Perrie adds.

To keep houses warm in winter, radiant heating cables can be embedded in concrete floors or the residence can be designed for maximum sunlight window access which will allow the floors to radiate the absorbed heat long after sunset.

"Concrete floors are also hygienic as they not trap pet dander that can trigger asthma attacks and adverse reactions in people sensitive to allergens. Finally, concrete floors offer benefits when a house is for sale: if the new owner wants to change the floors, he or she can simply place carpet or wood on top of the concrete slabs," Perrie concludes. ■

More information from Bryan Perrie,

Tel: +27(0)11 315 0300/ www.theconcreteinstitute.org.za



Concrete floors are becoming increasingly popular for all types of housing, offering a wide range of design options.





doka

The Formwork Experts.

Real-time measuring of concrete strength

Concremote® – Redefine your program. Push progress.



Process optimisation

Cut down labour and equipment costs by reducing striking time to a maximum of 2-3 days.

Easy to handle

Measuring sensors are quick to install and position as they are simply placed on fresh concrete.

State-of-the-art measurement

Concremote® stands out for its field-proven process reliability and for being very user-friendly.



twitter.com/doka_com



facebook.com/dokasouthafrica



youtube.com/doka

More Information:

www.doka.com/concremote



Acclaimed flooring system for Paarl panel beating workshop

a.b.e. Construction Chemicals supplied one of its acclaimed epoxy floor coating systems for new workshop floors of the Paarl branch of Tekton Autobody Repairs, a leading panel beating company in the Western Cape.

a.b.e. is part of the Chryso Southern Africa Group of companies. Johnie Emmerich, technical sales consultant – flooring for a.b.e. in the Western Cape, says abecote 400 Hi-build, an economical four-component, solvent-free epoxy flooring system produced and supplied by a.b.e., was selected for the new 1,000-m² concrete floors at the panel beating premises in Dal Josafat, Paarl.



a.b.e. Construction Chemicals' abecote 400 Hi-build flooring system was applied to new floors at Tekton Autobody Repairs in Paarl.

"The abecote system comprises a clear resin and hardener, pre-packed filler and ready-for-use pigment paste. It is suitable for a variety of applications: from workshops such as at Tekton, to ablution blocks, walkways, food processing plants, hospitals, and schools. It could also be used as a binder for abrasive grit to provide non-slip floor finishes," Emmerich stated.

Among the many advantages of abecote 400 Hi-build are:

- Excellent resistance to chemicals;
- Strong protective qualities;
- Requires little maintenance;
- Available in a wide range of colours;
- Seamless and hygienic; and
- Suitable for a variety of surfaces.

"There is an exceptionally wide range of abecote Hi-build colours available. Tekton selected Pale Grey for their floors.

"The flooring system's extremely strong resistance to oil, grease, diesel, acids and alkalis was an important benefit for the Tekton floors with their high vehicular traffic and storage loads," Emmerich added. He personally provided guidance and advice to Tekton who installed the new floors in-house.

a.b.e.'s wide and respected range of specialised floor coatings is based on bitumen, dry-shake cementitious materials self-levelling cementitious screeds, epoxies, and polyurethanes.

Typical applications include the protection of concrete floors and screeds against traffic abrasion, and also chemical and thermal shock. ■

**More information from Elrene Smuts,
Tel: +27(0)11 306 9000/ www.abe.co.za**





Cut to the chase

STIHL has a comprehensive range of cutting equipment for users who like their power tools up to any challenge. STIHL's TS range of cut-off saws (in petrol and cordless models of various sizes) are robust and reliable enough for any cutting task, and can cut far deeper than most hand-held cutting tools. Concrete, steel and asphalt are sliced cleanly and easily according to the blade used. And for precision cutting, look no further than the STIHL GS 461 professional concrete cutter, which perfectly complements any STIHL cut-off machine. Isn't it great to be

spoiled for choice without having to compromise? Take STIHL to the rock-face – no nonsense cutting equipment that gets any job done.

Like any premium item, STIHL products are only available at specialised dealers nationwide, for expert advice and superior after-sales service

Screeds and paint applied in four flooring projects

Products supplied by a.b.e. Construction Chemicals were successfully applied to create and coat floors in four parts of Southern Africa. a.b.e. is part of the Chryso Southern Africa Group.

The a.b.e. products supplied were:

- abescreed SLC P pumpable self-levelling compound, together with abescreed acrylic primer for a new 'mega gym' in Port Elizabeth;
- abeflo self-levelling flooring system for the floor of a new Vodacom outlet in Maseru, Lesotho;
- abecote 337 Tough Epoxy Paint for floors for the Havana Hills Wine Estate in Durbanville, Cape Town; and
- abecote Tough Polyurethane Paint for new floors at the Clover SA ammonia plant in Clayville, Gauteng.



a.b.e. products were chosen for the refurbishment of the floors of the Havana Hills Wine Estate in the Western Cape.

Dean Botha, a.b.e. technical sales consultant in the Eastern Cape, says abescreed acrylic primer and abescreed SLC P pumpable self-levelling compound were applied over an area of about 1,500 m² at the new Ignite Fitness gym in the Sixth Avenue Shopping Centre in Walmer, Port Elizabeth. The 'mega gym' with a floor space of over 3,000 m², has 59 treadmills, 42 rowers and assault bikes, 46 spin bikes, and 90 pieces of electronic equipment.

Bellgrove & Snell were the flooring contractors, and SBT Construction the main contractor for the new facility which features specialised lighting in the different areas to create appropriate atmospheres.

abescreed SLC P is a rapid-hardening cement-based screed for levelling floors where quick setting is required. "The product can be pumped to cover 2,000 m² per day and it is possible to walk on the floor after 6 to 8 hours under normal conditions. abescreed SLC P is also protein-free and will not harbour bacteria, which is important in a gym environment," Botha stated. "The product's primer improves adhesion and seals the substrate to prevent air bubbles forming on the surface of the screed."

Crouzer Scholtz, a.b.e. technical sales consultant based in Bloemfontein, says abeflo self-levelling flooring system was applied by Ceiling Pro Africa Free State to about 200 m² of the new commercial sales facility floor of Vodacom Lesotho in Maseru. "abeflo is available in a variety of colours: Sea Grey was selected for the Vodacom floors. The system comprises a clear resin and hardener, pre-packed aggregate and a ready-for-use pigment paste. The main contractors for the new Vodacom premises, EFS Construction, have extensively used a.b.e. products in the past," Scholtz added.

Paint supplied by a.b.e. was used for the flooring of the other two projects: abecote 337 Tough Epoxy Paint, a two-component, solvent-free polyamide-cured epoxy was applied to 600 m² of the refurbished floor of the wine cellar at Havana Hills Wine Estate in Durbanville. Johnie Emmerich, technical sales consultant: flooring for a.b.e. in the Western Cape, says Havana Beige was the selected colour for the concrete cellar floor of the



The new Ignite Fitness 'mega gym' used a.b.e products to create durable and attractive floors.

award-winning, 300-hectare wine farm 18 km north of Cape Town. "abecote 337 is a popular, decorative and stain-resistant coating for cementitious, masonry and asphaltic surfaces. It has been widely used in factories and warehouses, shopping areas and parking decks, as well as wine cellars, dairies and milking parlours," Emmerich explained.

Finally, a.b.e.'s abecote Tough Polyurethane Paint was applied by Spec Floors to 160 m² of floors at the Clover SA Clayville's ammonia plant following a specification by Nanox Architects. "The paint is a waterborne polyurethane floor paint for interior and exterior concrete surfaces. It is extremely durable and hardwearing and is solvent-free and therefore environmentally-friendly. It is easy to clean and offers strong resistance to chemicals and stains – important protection in an ammonia plant. The paint – which is colourfast and non-yellowing – is suitable for industrial uses as well as application to domestic floors, patios and garages," Ryan Nel, a.b.e. Technical Sales Consultant in Gauteng, stated. ■

**More information from Elrene Smuts,
Tel: +27(0)11 306 9000 / www.abe.co.za**

KZN CONSTRUCTION

Conference ■ Trade Expo

February 2018 | Durban Exhibition Centre

KWAZULU-NATAL'S LARGEST BUILDING AND CONSTRUCTION SHOW



WHAT TO EXPECT?



2 000+
Attendees



50+
Exhibiting companies



10+
Hours dedicated
networking



45+
Media and
association partners

BOOK YOUR SPACE!

 marcel.dutoit@kzn-construction.co.za

 +27 87 890 0898

Dedicated zones for:



Concrete



Construction



Digital Construction



Mechanical, Electrical
& Plumbing



Surfaces & Finishes



Tools & Equipment

'Green' concrete for 'green' energy

The Khobab Wind Farm in the Northern Cape will be home to the very first high-strength foundation to be built using alkali-activated concretes that substitute large quantities of portland cement with industrial waste, namely ground granulated corex slag (GGCS).

Designed by Cyril Attwell, Murray & Roberts Construction's concrete and research manager, the concrete mixes also utilise a minimal volume of commercially sourced activating agents.

Extensive international research has been undertaken in the field of geo-polymer concrete, however all these mixes comprise between 150 litres to 300 litres of commercial chemicals per cubic metre of concrete.

"This means that between 15% and 30% of the entire mix comprises activating agents. Most of these chemicals used to activate the waste substitute have carbon footprints similar to cement," Attwell tells *Concrete Trends* in an exclusive interview.

The work being undertaken at the Khobab Wind Farm is based on the success of the performance of the special concrete mixes developed by Murray & Roberts Construction in the precast elements for the Gautrain Rapid Rail Link project in 2006. As much as 32% of the cement used for the concrete mixes was substituted with the abundance of fly ash generated by the coal-fired power stations the country.

Based on the success of that project, some 85% of the portland cement used in the concrete mixes for the construction of the Portside building, the highest high-rise development in Cape Town, was replaced with GGCS.

Ongoing research and development in this field has culminated in the development of cement-free concrete mixes on limited sections of the upgrade of the City Deep Container Terminal. Most of the large slabs poured for the project consisted of concrete mixes comprising 68 to 70% industrial waste.

Extensive test work by Murray & Roberts Construction has revealed that the concrete mixes used on this project have achieved a compressive strength of 75 MPa over a three-year period. This is despite the original specification requiring a concrete strength of 50 MPa over the same period. Importantly, these impressive results have been validated by an independent SANAS-accredited laboratory.



The 61 plinths of the Loeriesfontein Wind Farm were constructed using 1,500 m³ of high-strength 60-MPa concrete comprising 75% GGCS.



Each one of the 61 bases uses 353 m³ of concrete.



Two bases were poured using high-strength 45-MPa concrete comprising 80% waste to ensure the necessary strengths could be achieved.



Pouring of concrete under way.

"We started off by conducting tests every six months and we are at the stage where we are undertaking annual inspections on the in-situ slabs, and have confirmed that the durability and strengths of the construction materials are increasing," Attwell says.

This project also laid the foundation for Murray & Roberts Construction to reduce the amount of activating agents used in geo-polymer concrete mixes.

The geo-polymer concrete used on the City Deep Container Terminal project only comprised 4% of commercially sourced activating agents. Attwell says this was achieved by studying and understanding the multiple reactions of the aggregates, waste, chemicals and water that were used in the geo-polymer concrete system.

This theoretical and mathematical approach will also be applied to the concrete used on future wind farm projects, where only 0,4% of industry waste activating agents will be used in the mixes.

This is considered an optimal amount of chemicals in the concrete as it is just enough to offset the amount of carbon generated from transporting waste to the construction site.

The 61 plinths of the Loeriesfontein Wind Farm, adjacent to the Khobab Wind Farm, were constructed using 1,500 m³ of high-strength 60-MPa concrete mixes which comprised 75% GGCS. Meanwhile, 3,200 m³ of 15-MPa concrete containing as much as a 95% waste replacement is used in the blinding beneath the bases. Each one of the 61 bases uses 353 m³ of concrete.

Pouring of the blinding commenced in mid-July 2015 and ended in mid-March this year.

"Working with these large volumes of concrete allowed us to achieve a repetitive production rate that would ensure consistent workability of the construction materials, while ensuring a minimum standard deviation strength of the concrete," Attwell says.

Critical testing of the performance of the concrete is also already well under way.

Over and above the standard strength tests undertaken at 28 days, cube tests were done at 56 and 90 days to provide Attwell with a much longer-term understanding of the strength and durability characteristics of the concrete.

Murray & Roberts Construction's testing is up to three to four times more thorough than conventional concrete



Cyril Attwell, Murray & Roberts Construction's concrete and research manager.

inspections. They also exceed those undertaken on concrete performance on wind construction projects, and involve studying the micro-crystal formations of the concrete using Environmental Scanning Electronic Microscopes (ESEM).

ESEM provides a clear understanding of the crystal formations between the geo-polymer and hydration technology used in the mixes. This is essential considering that these elements need to interweave correctly to ensure durability and strength of the concrete.

However, it is the work that is being undertaken on the bases, which are under high fatigue that is challenging traditional thinking around geo-polymer concrete.

Although a standard mix was initially specified, two bases were poured using high-strength 45-MPa concrete comprising 80% waste to ensure that the necessary strengths could be achieved. Strengths of 60 MPa were reached at 28 days, and then five additional bases were poured using a 30-MPa concrete mix with an 89% waste replacement. It reached compressive strengths of 40 MPa at 28 days.

This work will pave the way for the pouring of bases with a 100% waste replacement concrete mix.

The only challenge has been securing a sufficient supply of the waste product, restricting the number of pours with these concrete mixes.

"We could not get waste to site fast enough, considering that the amounts of GGCS that we are using for these concrete mixes are much higher than the demand for the raw material has ever been," Attwell explains.

The concrete is activated using a waste product sourced from another industry, and is one of the essential cornerstones of the proprietary mixes. He says there is a regular supply of this residue that is being generated in significant quantities, so much so that it is impossible to effectively dispose of it.

Importantly, Murray & Roberts Construction's work over the years also proves that geo-polymers can be cost effective. On the City Deep Container Terminal project, for example, the costs of the concrete mixes were about 40% more cost effective than conventional concrete.

Attwell's in-depth understanding of the complex inter-reactions that take place in geo-polymer concrete has also led to further reductions in carbon emissions. "Our concrete achieves natural chemical inter-reactions, and has found synergies at ambient temperatures and much lower, such as those at the Loeriesfontein Wind Farm project site," Attwell concludes. ■

**More information from Murray & Roberts Construction,
Tel: +27 (0)11 456 1000 / www.construction.murrob.com**

A strong foundation for infrastructure success



ROCLA

OUR DIFFERENCE IS CONCRETE

ROCLA is South Africa's leading manufacturer of pre-cast concrete products. Surpassing 99 years of product excellence, including pipes, culverts, manholes, poles, retaining walls, roadside furniture, sanitation and other related products within infrastructure development and related industries.

Visit us on www.rocla.co.za
for our nationwide branches



CHRYSO Enviromix® gives contractors the green edge

Billed as being a very innovative technology by CHRYSO, EnviroMix® is engineered to boost the performance of Supplementary Cementitious Materials (SCM).

SCMs are industrial by-products which when used as a partial replacement for portland cement reduce the amount of cement that is required for concrete. And in so doing, the energy and CO₂ impact of concrete is reduced. Significantly, if not used in concrete these waste materials would be consigned to valuable landfill space.

CHRYSO Enviromix® allows significantly higher clinker replacement using by-products, such as fly ash or slag, while maintaining the desired properties of plastic as well as hardened concrete.

Eddie Correia, executive vice president at CHRYSO Southern Africa, says EnviroMix® was developed specifically for use in green concrete. "When constructing a building if the quantity of portland cement is reduced at an average across all concrete mixes (between 15% and 60%) by substituting it with SCMs, a company can earn points towards a Green Star Rated building," he says.

CHRYSO Enviromix® is based on proprietary and patented chemistries including a combination of specific cement dispersion technology with hydration catalysts.

Using SCMs in concrete has many advantages; they can improve impermeability, increase the durability, reduce the potential for sulphate attack, reduce the heat of hydration and reduce the potential for alkali-silica reactivity.

However, Correia cautions that while the benefits of using CHRYSO Enviromix® technology are obvious, the curing of concrete is critical. As the percentage of SCM content increases



Eddie Correia, executive vice president at CHRYSO Southern Africa, says EnviroMix® was developed specifically for use in green concrete.

in concrete, longer curing times may be needed. It is, therefore, important to use a product from the CHRYSO Cure® range in order to protect the concrete until it reaches an adequate strength to counter the shrinkage stresses. If working with concrete containing reinforced steel, it is also advisable to use a corrosion inhibitor such as CHRYSO® CI.

Having an in-depth understanding of local aggregates and cement, as well as the performance characteristics of EnviroMix®, enables the CHRYSO Southern Africa team to recommend optimum design mixes. As part of the package, these design mixes undergo stringent testing both in the CHRYSO Southern Africa laboratory and on site.

"Importantly, by optimising the concrete design mix using local materials and using EnviroMix® technology, superior concrete placeability and finishability is ensured. Concrete strength performance at an early stage is also assured," Correia says.

EnviroMix® is suitable for use in multiple concrete applications including readymix concrete, self-consolidating concrete, precast concrete and site-batched concrete.

Correia says that, on projects where the EnviroMix® technology has been deployed, contractors have reported greater productivity. "Being able to meet the green materials specifications on a project and still keep to, or shorten, the construction schedule is a real advantage for contractors as this results in time and cost savings." ■

**More information from Kirsten Kelly,
Tel: +27(0)11 395 9700 / www.chryso.com**

Billed as a very innovative technology by CHRYSO, EnviroMix® is engineered to boost the performance of Supplementary Cementitious Materials (SCM).

beyond borders...



A COLUMBIA MACHINE, INC. COMPANY

- Concrete production lines
- Product refinement stations
- Block making machines
- Concrete mixing plants
- Planetary mixers
- Moulds

- Exemplary plants:



Libya



China



Ukraine



Russia



Poland



TECHMATIK S.A.

ul. Żółkiewskiego 131/133

26-610 Radom

tel. +48 48 369 08 08, fax +48 48 369 08 09

e-mail: techmatik@techmatik.pl

www.techmatik.pl

Corehil™ Speciality Fibre: reducing plastic shrinkage cracking in slabs

Concrete continues to be the most widely used engineering material in the world due to its versatility, easy availability and its durability. Concrete is especially strong in compression, but not in tension. To overcome this, concrete is often reinforced with steel bars to resist tensile stresses caused by applied loads such as wind, traffic, self weight as well as restrained shrinkage. However, these steel bars are only effective once the concrete has hardened, leaving the concrete vulnerable to any tensile loads while it is still in the plastic phase.

The plastic phase only lasts for a few hours after the concrete has been cast. During this phase the concrete is often exposed to conditions with high evaporation rates which are mostly associated in South Africa with warm, sunny, dry and windy conditions. The evaporation of pore water from the still plastic concrete causes a negative capillary pore pressure within the concrete which results in shrinkage of the concrete. If this shrinkage is restrained, by for example the same steel bars added to provide tensile strength in the hardened concrete, cracks are likely to occur and are typically referred to as plastic shrinkage cracks.

These cracks mainly occur in concrete elements with large exposed surfaces such as slabs, bridge decks and pavements. In most cases, plastic shrinkage cracks also interact with plastic settlement cracks. These cracks occur if the uniform settlement of solid particles in the fresh concrete mix is disrupted by inclusions such as reinforcing steel bars or a non-uniform

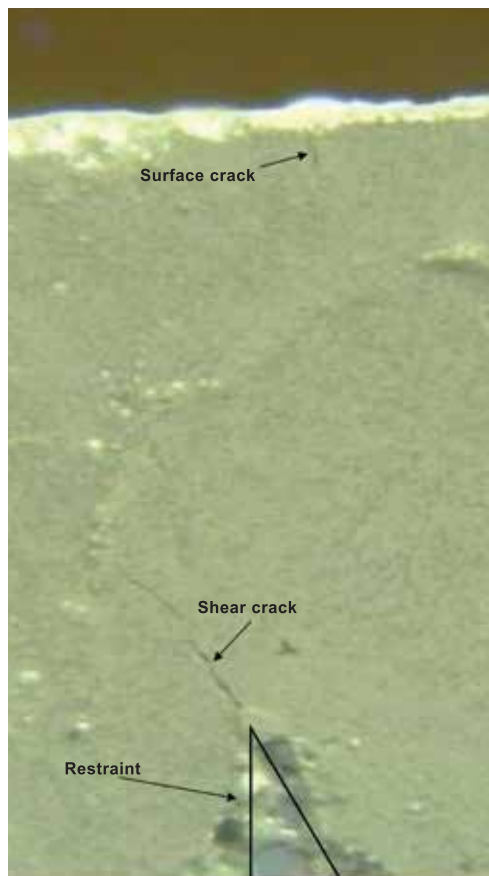


Figure 1: Plastic settlement cracks above restraint as viewed from the side.

slab depth. This results in differential settlement which causes both a shear and surface crack above the restraint as shown in Figure 1.

The surface crack is often only visible from the side and not at the surface, while the shear crack is only visible from the side. These cracks can therefore be present even if not visible at the surface and when present in combination with plastic shrinkage cracking can lead to sudden and severe cracking. Figure 2 shows the plastic shrinkage cracking that occurred when tested with and without a reinforcing steel bar with a cover depth of 20 mm and therefore with and without the influence of plastic settlement cracking.

Preventing these plastic cracks forming remains a problem in practice due its complexity, even though there are several effective precautionary measures that can be taken. These measures are mostly external and aimed at reducing the water loss due to evaporation by for example using a fog spray above the concrete surface, applying a curing agent and even erecting sunshades and/or windbreaks.

Although effective, these measures are often expensive, impractical and also difficult to apply at the appropriate time, especially for large slabs that are placed over several hours. Furthermore, these cracks are often hidden or closed at the surface due to finishing operations such as floating and trowelling as shown in Figure 3. The figure shows a plastic shrinkage crack that was closed at the surface by trowelling, while the crack remains present below the surface. This crack appears at the surface after a day or two, often leading to confusion regarding the

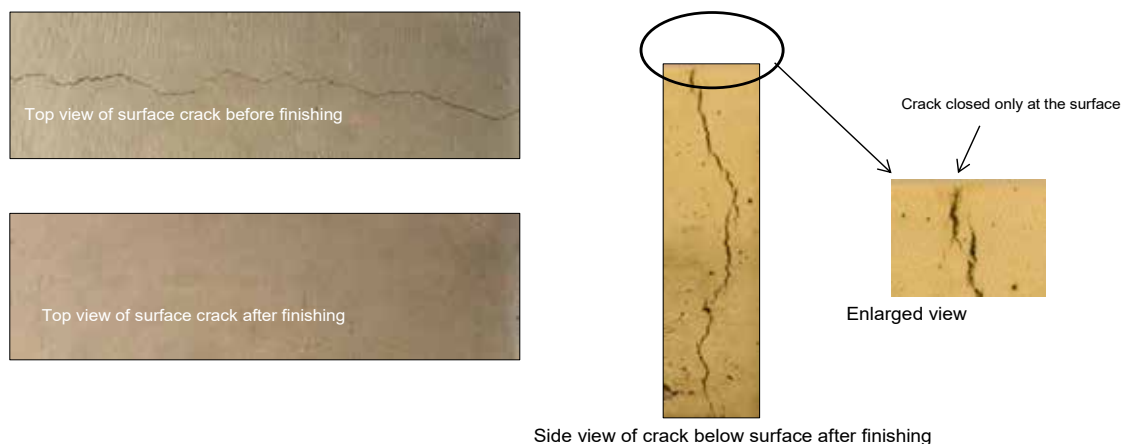


Figure 2: Crack widths without the influence of plastic settlement cracking

origin of the crack due to its apparent appearance in the hardened concrete.

The only current internal preventative measure that has proven to provide protection against plastic shrinkage cracking is the addition of a low volume of polymeric micro fibres to the concrete. These fibres reduce the crack widening by both increasing the strain capacity of the concrete as well as by bridging the crack once formed.

A typical dosage of 0.6 to 1 kg/m³ is added and proved to be effective in minimising plastic cracks. Higher dosages can also be added, although this could influence concrete properties such as workability and therefore trial mixes should be made and tested. It should also be noted, that fibres do not provide 100% crack reduction and therefore do not justify neglecting the application of external preventative measures.

In conclusion, although plastic shrinkage cracking remains a problem with concrete slabs, the addition of a low volume of polymeric micro fibres has proven to be an effective method to reduce the severity of these cracks. ■

**More information from Tel: +27(0)31 736 8700
email: sales@sapy.com / www.sapy.com**

This article was supplied by SAPY (Pty) Ltd. in conjunction with Dr Riaan Combrinck and Prof Billy Boshoff, Unit for Construction Materials, Stellenbosch University.

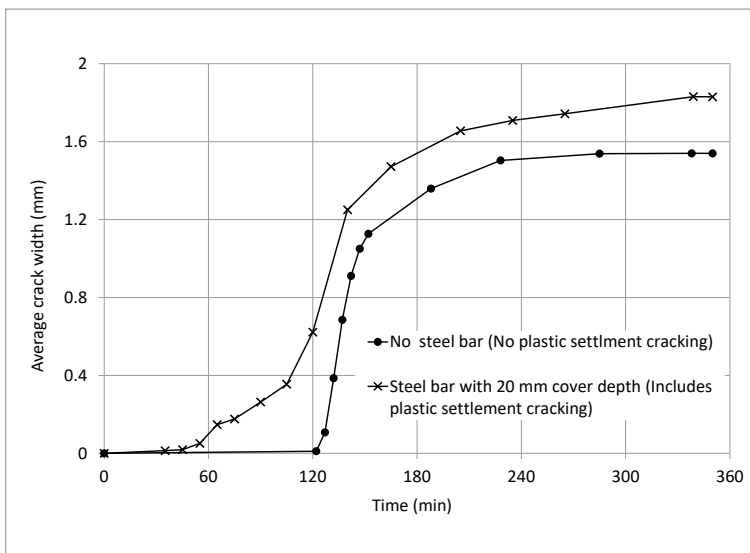


Figure 3: Influence of finishing operation on cracking.



verni-MC Concrete Crack Injection

MC Bauchemie GmbH & Co.KG of Germany have joined forces with VERNI-Speciality Construct Products (Pty) LTD. VERNI-MC, a division of VERNI-Speciality Construction Products (Pty) Ltd, will be marketing and selling the MC range of Concrete Crack Injection systems for Structural Reinforcing, Concrete Repairs, Structural Waterproofing, Sub-soil Stabilization & Stabilization & Lifting of Concrete slabs.

MC Bauchemie is a world leader in Concrete Crack Injection systems with MC Branches worldwide. The technology is superior and MC offer the complete range of materials to replace damaged Waterproofing systems, typically such as Car Park Decks, Roof Gardens, Bridges, Tunnels, Water Retaining Structures, Dam Walls, etc whereby the Crack Injection is done on the underside / reverse side of the concrete. Thus eliminating the need to shut the plant causing downtime or removing the existing roof garden, tar or paving, etc.

VERNI - MC "Concrete Crack Injection"

- ❖ Structural Reinforcing
- ❖ Structural Repairs
- ❖ Structural Waterproofing
- ❖ Sub-soil Stabilization
- ❖ Stabilizing & Lifting of Concrete Slabs

The MC Crack Injection systems offer: -

- ❖ High penetration activity
- ❖ Rapid strengthening
- ❖ Moisture compatibility
- ❖ Curing under dynamic loading
- ❖ High tensile & compressive strength

Official Launch

We exhibiting at Totally Concrete (Gallagher Estate, Midrand) stand no. 304. The Official Presentation Launch (30min) will take place on the first day 23rd May 2017, Area 2 @ 13h00, we welcome all participants, please feel free to join us.

VERNI-MC will be selling the materials onto specialist pre-approved and trained sub-contractors & specialist concrete repair companies. We are looking for suitable company's through-out Southern Africa, any interested companies should contact our MC Business Development Manager - **Trenton Botha – 082 569 8640 or 011 552 8393**
BE SURE. BUILD SURE with VERNI - MC CRACK INJECTION

New range of light compaction equipment



Compaction expert, Craig Sheppard of ELB Equipment.



Modern Ammann rammer.

ELB Equipment has extended its range of Ammann compaction equipment to include the manufacturer's range of light compaction and walk-behind machines.

According to Craig Sheppard, national product manager for ELB Equipment, the machines are ultra-efficient and "punch well above their weight" when compared with traditional machines in their size and weight category. They are also extremely versatile and can provide users with a multitude of options when used on site.

"For example, our range of rammers has a number of additional attachments that can be fitted to increase options on site, whether it be for longer stem, broader or narrow plate or different setup options, it makes a difference to have a machine that provides versatility. Dependent on the application, being for paving, roads or trenchwork, it is an advantage to be able to select from a wide range of attachments and pads."

Plate compactors

On the larger plate compactors and reversible plate compactors the range is even more versatile, offering a variety of options per machine, across a wide range of models. These models



Ammann new range of plate compactors available in Southern Africa from ELB Equipment.

range from standard forward compactors of between 70-100 kilograms in either diesel or petrol versions, to much larger reversible models of up to 440 kg and the flagship hydrostatic models that weigh in at up to 778 kg.

Locally, machines of this size are more akin to walk-behind rollers, but in the case of the large Ammann hydrostatic plate compactors they provide far better compaction than traditional rollers. They also have the advantage of having a smaller footprint (and are usually narrower) making them additionally suitable for use in trench applications.

The addition of up to three exciters in larger plate compactor models also ensures that the vibration and resonance provides the quickest and best possible settling of fines for quicker and more effective compaction. Ammann also has compaction meters that can be fitted to the entire range of machines to ensure the right compaction is achieved on site.

World-leading ergonomics

"Without exception, our machines are designed to be ergonomically efficient with reduced vibration transmitted to the handle, as well as having more comfortable and easier to use controls. This enables operators to work for longer hours with less risk of repetitive-type injuries which can lead to costly health and safety implications and time-lost injuries.

"What's more, the machines are manufactured in Europe to the highest possible standards and provide users with the latest compaction technology in versatile and durable package. In addition, in southern Africa the machines will be fully supported by the extensive ELB Equipment branch and dealer network. Customers will also have access to ELB Equipment compaction experts to ensure that they make the right decisions for their operations," concludes Sheppard. ■

More information from Craig Sheppard,
Tel: +27(0)11 306 0700 /
email: craigs@elbquip.co.za,
www.elbequipment.com

Seven-star luxury hotel rising with Doka know-how

Positioned on the shores of the Caspian Sea, this seven-star luxury hotel is set to become a landmark in the Azerbaijani capital of Baku.

Thanks to its striking architectural design courtesy of South Korean-based Heerim Architects and Planners, it is easy to see how this seven-star luxury hotel was given its name. Designed as part of the Crescent Bay development, La Luna has already been tipped to become an iconic representation of Baku's contemporary image.

Having started work in late 2009, the Crescent Bay urban development project covers a 450,000-m² footprint on its own man-made island in the Caspian Sea and includes the 125,000-m² La Luna hotel as part of its design. Other structures included in the project are the Crescent City shopping and leisure-time centre and the Crescent Place office and resident complex, both of which have been completed with the assistance of Doka formwork and expertise.

With an estimated completion date set for the end of this year, the 230-key hotel, which includes 74 apartments and 16 villas, will represent one of the premium addresses for visitors and residents alike.

Through the combination of both challenging weather conditions and the building's crescent-moon shape, custom formwork solutions were required to provide steady progress on the build while ensuring a safe working environment for site staff. Speaking on behalf of the contractor, Ilk Insaat MMC project manager, Mert Ersoy explains why Doka was selected for the project.

"We appreciate Doka as a partner of long standing on the construction projects we undertake. Particularly on account of the special know-how that Doka contributes to every project and also because of the cost benefit that derives from safer and faster construction with Doka products.

Very strong winds can blow for days in this region, so it is difficult to use cranes for working high above ground level, all the more so on the La Luna build. The construction managers



opted for SKE50 and SKE100 plus, systems designed to ensure smooth progress on the build even when outdoor conditions are extreme.

The Doka engineers on the project recommended the use of automatic climbers in order to optimise progress on the build, and this had a very positive effect on construction. The outcome was that the build rate was increased from the planned three to an actual five storeys per month. In combination with the SKE50 and SKE100 with SKE50 plus and SKE100 plus automatic climbers, the formwork of the building core had all-hydraulic assistance.

The automatic climbers were used on the outside of the hotel's structure and climb the large working platforms from one storey to the next. Other, comparable self-climbing formwork units have a lifting capacity of only five metric tons, but Doka's SKE50 plus can climb up to ten metric tons per unit.

These automatic climbing systems also meet the strict safety requirements of the site. They include Protection screen Xclimb 60 serving as an enclosure and protecting workers from weather and falls. The increased sense of safety on the part of the construction crew improves personal performance and, consequently, overall productivity. This reduces costly crane time and saves on manpower and calculable fixed costs." ■



Project details

Project: La Luna Hotel (Crescent Bay)

Location: Baku, Azerbaijan

Project owner: Gilan Holding

Construction work by: Ilk Insaat MMC

Construction start: December 2014

Scheduled completion: Late 2017

Building height: 123 m (28 storeys)

Cycle time: Five storeys per month

Formwork technology: Automatic climbing formwork SKE50 plus and SKE100

**More information from Pia van der Merwe,
Tel: 064 757 0895 / www.doka.com**

Techmatik launches new concrete block traveller machine!



The new MULTI 300 traveller machine is designed to produce high-quality concrete blocks at an economical price. Expanding on Techmatik's industry-leading design and innovation, the company has developed a machine that is able to produce a range of products and sizes that is extensive enough to meet every customer's needs.

The machine is equipped with moulds connected to vibrators and has an integrated hydraulic station as well as an electrical switchbox with a console for the complete visualisation of the production process. In addition, it is fitted with proven solutions, such as hydraulic cylinders for the fitted trays, mechanical compression heads and mould mountings as well as linear bearings.

With overall dimensions of 3800 x 2150 x 3520, this simplified compact design enables the machine to work in a small area with ease. An optional generator is offered for customers in remote areas without electricity. The machine is offered in Semi-Automatic or Fully Automatic versions and can even be fitted with a competitor's moulds. Flexibility combined with Techmatik's proven reliability makes this machine a great addition to the company's product line.

The TECHMATIK plant was built in the summer of 2004 in the Radom sub-zone of the Tarnobrzeg Special Economic Zone, in Poland. On 18th February 2016, it became part of the Columbia family of companies.

Columbia Machine was established in 1937 and today it is a third-generation privately held, world-wide leader in the design, manufacture and the provision of support for the equipment of a variety of industries, with customers in over 100 countries around the world.

Its primary business units include: batching and mixing solutions, concrete products equipment solutions, production equipment moulds, mechanical palletising machines, robotic palletising solutions, conveyor system solutions, pallet load transfer solutions and manufacturing services.

TECHMATIK's offering includes moulds for production of paving blocks and decorative concrete products, modern, high-performance concrete block machines, complete process plants, concrete mixing plants and various machines used for the manufacture of vibrated and pressed products, as well as for the ready-mixed concrete industry.

All production lines are equipped with advanced, state-of-the-art machines ensuring high output and repeatability of production and superior quality of products. Techmatik machines, devices and moulds are designed for high-performance and efficient production with the use of steel tabletops – a solution that ensures the best product properties by thorough compacting, with a significant lowering of production costs by reducing the amount of cement used for concrete mixes.

The offering is supplemented by manufacturing process control systems that include control modules for individual process stages and integrated control systems for the entire manufacturing process. Moreover, TECHMATIK offers repair, regeneration and maintenance services for all machines and equipment.

TECHMATIK is a company living up to its aim of offering "Technology of the Future". ■

More information at www.techmatik.pl



WE ARE BACK!

WIEHAHN, YOUR TRUSTED
FORMWORK SOLUTIONS PARTNER.



The art of
forming
concrete

Wiehahn Formwork Solutions, market leaders in the formwork and scaffolding industry since 1968, returns to South and Southern Africa as exclusive distributor for ULMA Construction.

Johannesburg: +27 (0)71 334 5403
Cape Town: +27 (0)64 752 7783

Distributor of



www.ulmaconstruction.com

Wiehahn re-enters the formwork market in South Africa



Constructing the control tower at Dakar International Airport, Senegal, using ULMA formwork.



Aluminum post shores ALUPROP display.



Aluminium decking system CC4.

Innovation and the use of new technologies in the local construction sector continues to grow by leaps and bounds. In an exciting development, as of March this year, veteran formwork company, Wiehahn Formwork Solutions, is re-entering the market with new products.

The Wiehahn Group was founded by George Wiehahn in 1968 and the formwork division grew steadily to become one of the market leaders in the South African formwork and scaffolding industry.

Among their local and international suppliers, is ULMA Construction, part of the ULMA Group, one of the largest business groups in Europe.

ULMA Construction offers complete formwork solutions for residential construction, civil works, non-residential construction and refurbishments. The product range includes modular and beam-based formwork, climbing systems, civil engineering systems, shoring and propping systems, and façade scaffolding. The products are very versatile and guarantee maximum safety, profitability and efficiency on site, no matter the size and complexity of the project.

Wiehahn and ULMA are an ideal partnership, since they share not only the same commitment to excellence, but also similar business philosophies.

Both are innovative and well adapted to an industry in constant flux. Wiehahn take pride in working closely with their customers from the very beginning, so that they can develop design solutions together and evolve throughout the construction process. They have always been hallmarked by excellent design capability, technical support and innovative product ranges.

Similarly, at ULMA they believe that continuous learning and renewal are essential, which is why they have a permanent programme of research, development and innovation. They are always improving their products, processes and services.

Because the products are simple to use and solutions are tailored to each project, Wiehahn feels that, with ULMA, they can offer some of the most time-efficient and cost-effective formwork solutions in Southern Africa.

Construction work is intrinsically dangerous, and safety is one of the main concerns for both Wiehahn and ULMA. Wiehahn are serious about adhering to all South African safety standards and regulations, and ULMA's systems are designed to guarantee workers' safety while handling and assembling products. Wiehahn also provide customers with thorough support and documentation on the correct erection procedures and usage of the products.

Wiehahn has a legacy of being a community-focused organisation. As a company, ULMA is committed to sustainability and the principles of Corporate Social Responsibility. As much as 10% of their profits are spent on social work and public welfare initiatives.

The company is excited to be re-entering the market. They are already involved in projects in Mozambique, Kenya and Uganda. Their current offices are in Gauteng and the Western Cape, with plans for a third in KwaZulu-Natal on the cards. ■

More information from Jorge Quintas,
Tel: +27(0)81 501 2772
email: jorge.quintas@formworkexchange.net
www.formworkexchange.net

Goscor Access Rental launches Africa's largest, tallest scissor lift

In keeping with its philosophy of introducing the most technologically advanced equipment locally from leading international manufacturers, Goscor Access Rental has recently launched the continent's largest scissor lift, boasting the highest working height and biggest deck of any comparable machine.

The HL-275 D27 from Holland Lift of The Netherlands was officially launched at Goscor Access Rental's Montague Gardens facility in Cape Town on 31 March, where IDS will be one of the first customers in South Africa to deploy the new machine. IDS provides a one-stop solution for affordable commercial and cold storage design, manufacture, and installation.

The mega scissor lift has a 6.15 m by 2.50 m deck measuring 8.25 by 2.50 m when extended fully. The biggest machine available in South Africa at the moment has a 5.55 m by 2.50 m deck measuring 7.55 m by 2.50 when extended fully.

In addition, the Holland Lift machine features a wheel base that is 60 cm longer. It is also capable of lifting a ton up to its full working height of 27.5 m notes Goscor Access Rental general manager Nici Verster.

Verster explains that Goscor Access Rental first saw the Holland Lift at Bauma Germany in 2013. The access rental company immediately put plans in motion to introduce this Rolls Royce of scissor lifts locally.



The HL-275 D27 from Holland Lift of the Netherlands boasts the highest working height and biggest deck of any comparable machine.



Western Cape branch manager Brent Viljoen introduces Africa's biggest deck.

"The South African market will definitely benefit from the application of this machine, especially when you consider major projects under way at the moment such as the Kusile and Medupi power stations for Eskom," Verster explains. Applications range from cladding to plastering and general electrical and construction work.

In addition, Goscor Access Rental is introducing the new machine to cater for the latest trend in the warehousing and distribution sector for larger facilities requiring ever-bigger access equipment to maximise productivity and efficiency.

"All the technology we source is not only the best in the world from a features, quality, and durability point of view, but is also aimed at ensuring our customers benefit from the lowest total cost of ownership at the end of the day," Verster concludes. ■

More information from Debby Marx,
Tel: +27(0)11 230 2600 / email: dmarx@goscor.co.za
www.goscor.co.za

About Goscor Access Rental

Goscor Access Rental, part of the Goscor Group of Companies, was established as a specialist rental company focusing on the rental of mobile elevated work platforms, also known as powered access. Our technology provides temporary aerial access in a range of applications. We continue to strive to eliminate risk and maximise safety at every opportunity. Strict international standards of safety and quality form the basis of our service, maintenance, and operator training programmes, allowing us to deliver the high-performance platforms and service levels needed by our clients.

The industrial equipment group Goscor is part of Industrial Services Holdings (InServe). Goscor represents leading equipment brands across several sectors. These include Crown, Doosan, Bendi, Hubtex and Taylor Dunn (forklifts and materials handling equipment); Bobcat (construction); Sany (earthmoving); Tennant, Elgin, Maer, Delfin and HighPoint (industrial cleaning); Subaru (industrial power solutions); Genie (aerial lift equipment); Sullair (compressed air solutions), and many more.

Packaging cement the sustainable way

In some cases plastic packaging is more environmentally friendly than other materials. A recent study shows that woven plastic sacks are the most sustainable packaging solution for cement: AD*STAR cement sacks made of coated polypropylene tape fabric achieve considerably better results than sacks made of paper or recycled polypropylene tape fabric.

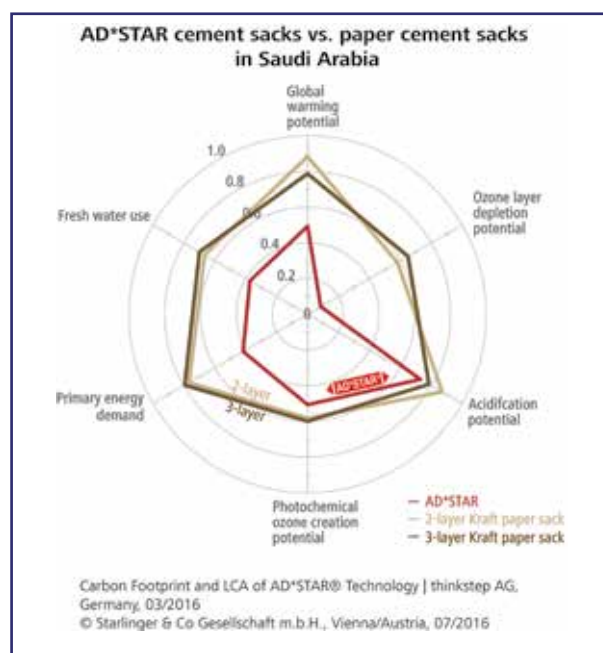
The effects on the environment, a much discussed topic regarding plastic bags for everyday use, also play an increasingly important role for industrial packaging. A new study which compares different types of cement packaging now proves that welded sacks made of polypropylene tape fabric are the most environmentally friendly solution for this application.

The results of the life cycle-analysis, carried out by the German PE INTERNATIONAL AG (now thinkstep AG) and commissioned by the Austrian machinery supplier Starlinger & Co. Ges.m.b.H., clearly show that AD*STAR sacks – welded block bottom valve sacks made of coated polypropylene tape fabric – have lower global warming potential (carbon footprint) than paper sacks or sewn PP sacks which are widely used, especially in Asia.

For comparison, sewn sacks made in China as well as Kraft paper sacks made in Saudi Arabia were analysed; all sacks had a filling capacity of 50 kg cement. The results are clear: The AD*STAR sacks developed by Starlinger do not only show the lowest values regarding global warming potential, they are also the most environmentally friendly packaging in terms of acidification potential (acid rain), ozone depletion potential, photochemical ozone creation potential (it causes summer smog), as well as energy and fresh water consumption.

Low breakage rates – smaller CO₂ equivalent: A decisive factor for the positive results of AD*STAR sacks are the low breakage rates in the course of the life cycle of the sacks. For the production of the AD*STAR sacks analysed in the study, 100% virgin material was used both in China and Saudi Arabia. Due to the special production process AD*STAR sacks are extremely robust despite their very low weight. Their strength and resistance results in breakage rates below 1% over the entire life cycle, while paper bags and sewn sacks have breakage rates of between 2.3% and 4.4%. This means that if AD*STAR sacks are used, less cement is lost and must be replaced, and less packaging is needed – consequently, less greenhouse gases are produced.

Great savings potential for greenhouse gases: The study analyses the environmental impact of the sacks during their entire life cycle – from raw material to the disposal of the sack. Raw material production, sack production, filling, transport and storage until disposal – by means of landfill,



recycling or thermal utilisation – were analysed. Starlinger has commissioned the study with comparable products from China and Saudi Arabia because the type of cement packaging analysed forms the biggest share on the cement market in the respective country.

In China, the world's biggest cement producer, around 20 billion sewn cement sacks made of polypropylene tape fabric with recycled content are produced. In the study, sacks made of 50% virgin material mixed with 50% recycled material, and sacks made of 100% recycled material were analysed.

The quality of the sacks is comparatively low because the recycled material used to produce the sacks is in most cases severely degenerated, i.e. the necessary level of strength can only be achieved by increasing the fabric weight. In addition, the sewing process further weakens the material by up to 50%. Sewn cement sacks have significantly higher breakage rates and thus cause considerable cement loss which has to be compensated by additional production.

Changing over to AD*STAR sacks does not only reduce CO₂ emissions caused during production and relieve the environment, it also helps to automatise the entire cement filling and transporting chain – a process that is already under way considering the current investments in modern equipment on the Chinese cement sector.

In Saudi Arabia, one of the biggest producers and exporters of plastic granulates worldwide, imported paper is used for cement packaging. Thus, two- and three-layer Kraft paper cement sacks were analysed in the study. In this case, switching over to the more robust AD*STAR sacks would not only prevent the loss of countless tons of cement caused by sack rupture, but also greatly reduce raw material input for sack production and avoid long transport routes. In addition, the entire value created by both raw material and sack production would remain within the country. ■

Note: AD*STAR® is a registered trademark. AD*STAR® sacks are exclusively produced on Starlinger machinery.

More information from Starlinger & Co,
Tel: +43 1 59955 0 / email: sales@starlinger.com
www.starlinger.com

The Transport Evolution series of expos and conferences offers you access to the right information, knowledge, partners and training to help boost ROI on projects of all sizes in Africa.

AFRICAN
ports
evolution
WEST AFRICA EDITION

5 - 6 September 2017
Accra, Ghana

AFRICAN
rail
evolution

17 - 18 October 2017
Durban ICC, Durban, South Africa

AFRICAN
ports
evolution

17 - 18 October 2017
Durban ICC, Durban, South Africa

WOMEN IN
transport
AWARDS

17 October 2017
Durban ICC, Durban, South Africa



BOOK YOUR PLACE TODAY!
thando.manona@portsevolution.com
for more information

Uretek lifts highways, runways, buildings

Wherever there is a problem that requires ground stabilisation, whether it is a highway that is subsiding due to wash-aways, or factory slabs that are no longer level, to heavy-traffic areas at airports, Uretek Geo-Systems South Africa have a fast, innovative and solid solution.

Using patented ground stabilisation technology, where rapidly expanding polymers are injected into the unstable areas and soils, Uretek is able to re-stabilise the area, level the surfaces, and enable the return to normal use in minimum time, with minimal disruption to workflows.

The benefits of the Uretek system are diverse, as have been proven by the range of applications for which it has provided solutions across southern Africa.



The Uretek Team at OR Tambo International Airport.

Uretek has:

- Stabilised and levelled bridge sections of the N1 highway in Pretoria
- Stabilised and lifted and corrected subsidence in school rooms in three schools, with minimum disruption
- Stabilised and levelled floors and traffic areas in three shopping malls, large supermarkets and trading areas
- Stabilised and steadied massive sugar silos
- Stabilised and reinforced embankments and walls in public areas
- Stabilised and lifted subsiding swimming pools
- Stabilised and levelled multi-storey buildings in office and residential complexes
- Stabilised, levelled and restored floor slabs in busy warehouse areas
- Stabilised and restored foundation integrity on the N12 highway in the East Rand

These are just a few of the projects across South Africa, Namibia and Botswana for which Uretek have, to date, provided rapid and sure solutions.

Uretek's unique and patented technology ensures proven solutions, time after time.

Its worldwide network of partners and technical personnel provide all the skills and experience needed to re-create a stable, secure environment across a very diverse range of applications. ■

More information from Uretek Geo-Systems (SA) (Pty) Ltd, Tel: +27(0)11 238 7154 / email: info@uretek.co.za www.uretek.co.za

Sika changes its skin! New improved packaging

Sika has recently implemented new and improved changes to its labelling and artwork. The product labels and packaging artwork have been rebranded to reflect Sika's personality of building trust with its customers. Sika products are now more practical and useful than before.

The packaging design might have changed, but Sika's promise stays the same: Providing customers with expert products they can rely on.

The goal is to deliver a clear product message and simple orientation, which will make it even easier for customers to identify which Sika product they need and what that product can deliver for them.

All Sika packaging is as recyclable as possible. All paper packaging is certificated, all plastics are recycled for other productions, and the steel and other metal sheets of barrels are re-used for production after use. Though Sika's packaging will be modified, the contents inside will not. There are no changes



to form, fit or function of any of these products. Customers will receive the excellent quality they are accustomed to. All Sika solutions are designed with the customers' success in mind and to build long lasting and mutually beneficial relationships. ■

For more information on Sika products and systems, visit www.sika.co.za

ALCO-Safe
(Pty) Ltd



Breathalyser key management system. Integrated key cabinet to ensure drivers take keys and return them sober. Reports are drawn automatically to show records of key movements. Solutions for 10 to over 540 keys

BREATH TEST KEY CABINET



AlcoBlow® Rapid Test

Strongest and fastest breath alcohol tester on the market. AlcoBlow Rapid Test requires the smallest breath sample and ensures accurate results first time, every time. Results are obtained within seconds.



LION ALCOLMETER® 600

The LION ALCOLMETER® 600 has a touch screen display, for entering names, surnames and ID number of test subjects for printing and record keeping.



Help is one call away +27 12 343 8114 / email info@alcosafe.co.za or visit www.alcosafe.co.za for more information

Tough enough for any construction challenge

For tackling rock-hard materials on site, STIHL power tools have impressive versatility and the necessary power.

Designed for the demanding conditions of professional users, STIHL concrete cutters and cut-off machines slice through concrete, stone, masonry, pipes and asphalt. A number of STIHL cut-off machine models offer user-choice to meet specific job requirements – all featuring STIHL's innovative designs.

These cutting tools use water while in action to significantly reduce dust volume and silica exposure. With current emphasis on the health of operators and an awareness of the need to prevent silicosis, this is a major advantage beyond mere user comfort. Water can be supplied from a tap, a pressurised water tank mounted on a vehicle, or smaller hand-held pressurised tanks where space is an issue.

Another advantage is the range's 100% mobility for on-site working convenience. All units are either battery-powered or petrol models, obviating the need for a power source or tangled cables provided the battery is fully charged.

The STIHL TS range of cut-off saws has been designed to cut hardened materials in a range of cutting depths, from the TS 410 with its 300-mm blades for 100 mm cutting depth to the TS 800 with 400-mm blades that can cut up to 145 mm deep. These units are capable of cutting far deeper than most similar hand-held cutting tools and can tackle concrete, asphalt ad steel, depending on the blades used.

Emission-free cordless technology

The STIHL TSA 230 exemplifies STIHL's inventive design and highly practical applications. Light, small and easy to work with, this is the first battery-powered cut-off machine with a 230-mm cutting wheel. Despite weighing less than 4 kg without the battery, the TSA 230 has a powerful cutting performance and is able to slice through tiles, bricks, pipes and metal easily. The water connection and optional vacuum adapter ensure clean, dust-free cutting, plus cordless design offers the convenience of battery power with the added benefit of the TSA being emission-free with reduced noise levels.

Perfect partners

STIHL TS units are often used on site together with the STIHL GS 461 concrete cutter. Produced especially for construction and renovation work, the GS 461 is designed for free-hand cutting of reinforced concrete, natural stone, sewage pipes (concrete, ductile iron) and masonry. The GS 461's impressive



power-to-weight ratio and smooth handling add to its manoeuvrability, making it ideal for cutting in tight spots or when working against a 90-degree corner. It can plunge cut through a wall 400 mm deep and delivers clean, neat corners. A larger TS unit can be used to make longer cuts, to meet plunge cuts at the corners.

The GS 461 is equipped with the low-emission, fuel-efficient and environmentally-friendly STIHL 2-MIX engine, and features an effective anti-vibration system for added user comfort during operation. The guide bar features nozzles that aim forward to precisely provide water to the chain, while standard fittings include side-mounted chain tensioning, a decompression valve, STIHL ElastoStart, a water- and wear-resistant starter cord, a long-life HD2 filter to catch even the finest dust particles to prevent damage to the machine, and a toolless bayonet fuel cap for easy and upright refuelling. The GS 461 handles like a chainsaw with the power of a cutting machine, and perfectly complements STIHL cut-off saws.

STIHL products are available through a nationwide network of 180 dealers, who offer expert advice and professional after-sales service. STIHL also offers a guaranteed 10 years' spares availability. ■

More information at www.stihl.co.za



A.SHAKepoxerite: innovative solutions for concrete problems



Grouting preparation.



Grouting in progress.



Grouting completed and dry.



Stack cast separation using release oil.

In 2010, A. SHAK (Pty) Ltd and Epoxerite cc joined forces to form a joint venture company, A.SHAKepoxerite (Pty) Ltd.

The objective was to expand the basket of products that could be offered to the South African construction industry.

A. SHAK, with their expertise on release agents and bonding agents together with their national footprint added real value to the Epoxerite range of cementitious and epoxy-based products. This created a dynamic merger with an impressive solutions-based product range.

Established in 1958, A.SHAK started off supplying only shutter release oil to construction companies and precast concrete manufacturers. However, with time, more products were developed, and the company became known for its expertise in the field, excellent service and range of high-quality products.

A.SHAK and Epoxerite have joined forces to form a dynamic company with an impressive product range.

Demand by smaller contractors requesting some of the products at builder's merchants and hardware stores moved A.SHAK into the retail market which has become an integral part of the company with many DIY products being added to the range regularly.

Epoxerite, established in 1978 as a specialist civil engineering contractor, started to develop their own products. Originally these products were manufactured exclusively for internal use. However, as a result of changes in the company structure, Epoxerite became solely a manufacturing entity and dropped the contracting side of the business.

This change meant that the high-quality products which they had developed could now be made available to the industry as a whole. The product range includes specialist grouts, epoxy adhesives and cementitious coatings.

The team at A.SHAKepoxerite pride themselves on being innovative and responsive to the needs of their customers, ensuring high-quality products and value-adding customer support. ■

**More information from Tel: 0861-127425
or +27 (0)11 822-2320 / www.ashakepoxerite.co.za**



Stack casting panel being lifted off stack.

VERNI - MC 'Concrete Crack Injection'

- Structural Reinforcing
- Structural Repairs
- Structural Waterproofing
- Sub-soil Stabilisation
- Stabilising & Lifting of Concrete Slabs

MC Bauchemie GmbH & Co.KG of Germany have joined forces with VERNI-Speciality Construct Products (Pty) LTD. VERNI-MC, a division of VERNI-Speciality Construction Products (Pty) Ltd, will be marketing and selling the MC range of Concrete Crack Injection systems for structural reinforcing, concrete repairs, structural waterproofing, sub-soil stabilisation and stabilisation and lifting of concrete slabs.

MC Bauchemie is a world leader in Concrete Crack Injection systems with MC Branches worldwide. The technology is superior and MC offer the complete range of materials to replace damaged waterproofing systems, typically such as car park decks, roof gardens, bridges, tunnels, water retaining structures, dam walls, etc whereby the crack injection is done on the underside / reverse side of the concrete. This eliminates the need to shut the plant, causing downtime, or removing the existing roof garden, tar or paving, etc.

The MC Crack Injection systems offer

- High penetration activity
- Rapid strengthening
- Moisture compatibility
- Curing under dynamic loading
- High tensile & compressive strength



Official Launch

We exhibiting at *Totally Concrete (Gallagher Estate, Midrand)* stand no. 304. The Official Presentation Launch (30 min) will take place on the first day, 23rd May 2017, Area 2 @ 13h00. We welcome all participants, so please feel free to join us.

VERNI-MC will be selling the materials on to specialist pre-approved and trained sub-contractors and specialist concrete repair companies. We are looking for suitable companies throughout Southern Africa. Any interested companies should contact our MC Business Development manager, Trenton Botha, Tel:+27(0)11 552 8393 or mobile: +27(0)82 569 8640.

BE SURE. BUILD SURE with VERNI - MC CRACK INJECTION

WE HAVE LIFT-OFF

URETEK

Uretek Geo Systems recently stabilized a test area of OR Tambo Airport successfully. The surface was ready for traffic within 15 minutes ,with no disruptions to the busy airport.

Uretek specialises in industrial,commercial and residential applications. **Uretek** have also helped rehabilitate and stabilise highways countrywide, with our advanced technology, backed by extensive experience.

Uretek deep injection patented technology,uses high density expanding polymers to stabilize soils at depth and increase their bearing capacity. This allows the foundations, floor slabs, or road areas to be realigned as needed.

Most importantly, **Uretek** slab lifting method returns your roads and concrete floor slabs to their original integrity, with a stronger sub-base and improved soil structure.

Regardless of whether your problem is routine or complex, **Uretek** can draw from extensive resources to develop the best solution to your needs.

Uretek loves a challenge and an opportunity to be innovative.

For more information about what makes **Uretek** the best choice, contact:
info@uretek.co.za (011) 238 7154 www.uretek.co.za



Ground Engineering
011 238 7154



In the swim with BIM at Pebble Beach

After the BIM Institute's first BIM BAM BOOM event in Durban, the team were able to scout the local construction scene. Several major private developments are breaking ground North of Durban, which will change the Umdloti and Umhlanga shorelines. The Pebble Beach Resort impressed the team, who talked to Will Flint, project architect at Craft of Architecture (COA) about the company's progress in adopting Building Information Modelling (BIM) processes.



The Pebble Beach project

Flint explains: "This is the first project that we have truly taken beyond the awesome 3D presentation capability of ArchiCAD – we are pushing for a truly holistic BIM model between all the design team. We are in the early stages of coordinating the SiVEST Structural team's Revit model and importing it into our ArchiCAD via IFC as a single coordinated BIM model.

"We are also running a data exchange process using the IFC format to provide our model to the QS team to take off accurate quantities using their programme, Dimension-X. This process is a daunting challenge, especially since we are trying

to implement this during the course of a real project, which is rapidly moving forward to construction.

"However, this is 'the future of collaboration' and an important aspect of the company's development, which we are keen to invest in," says Flint. "It is very exciting to be testing this process on a very real-life project."

The vision: COA is working towards the ultimate BIM goal of seamlessly connecting the stages of a project, with glitch-free integration with its QS teams, structural, mechanical, civil and electrical engineers and the rest of the consultant team.

"We use BIM processes as a vital tool that connects our initial concept models and presentations to our construction detailing and site monitoring work, right through to the snagging process and close-out of the project post construction."

The beginning: COA has made the move from 2D CAD to 3D BIM using ArchiCAD, which has been adopted over the last three years. Initial implementation was on the major renovation and expansion of the American International School in Mozambique and since 2014/2015 COA has rolled it out on all new developments – from large-scale master-planning through to interiors work.

And now? "We use BIM for all aspects of a project from the initial design concept through to detailed design, construction and post-construction as-built information and providing the client with accurate and detailed information for their Operating and Maintenance manuals," asserts Flint.

"Our use of BIM is an ongoing 'work in progress', but we have already achieved significant improvements in productivity in developing an automated drawing revision and change register, using layout books combined into a single master file, saving us huge amounts of time in documenting larger projects," explains Flint.

And the BIM engagement doesn't end there: "We have also started to work in 3D on site using tablet-based app (BIMX), which has been an extremely successful communication tool between consultants, client and contractors on site.

COA's particular strength comes from its background with high quality presentation imagery.

"Where before we adopted BIM we would take a 2D cad plan, work up the 3D model in Sketch-up, export to 3DS Max for presentation images, we are now excited to be able to connect all these processes using a single ArchiCAD BIM model, in conjunction with other software to produce photographic-quality renderings at key concept stages for client presentations, and take this exact design and model through to construction."

Flint says they have developed their own internal 3D detail and graphic library, which assists them with seamless productivity, so that they can turn around large volumes of work in very short timeframes to meet client's expectations.

COA is investing considerable time to develop its design coordination processes with consultants at stage 3. "We believe this will benefit the whole team as well as the client, and provide a valuable long-term resource for the client after handover for their future maintenance of the buildings."

Collaboration: "We have great working relationships with Graphisoft SA and other South African ArchiCAD BIM users, particularly Shawn Hopkins from LARGE Architecture in Durban, with whom we are pooling our knowledge and resources to push the development of our BIM capabilities," concluded Flint. ■

Project team Pebble Beach, Sibaya

Developer: New Cruise Investments

Product use: Residential and mixed use

Building contractor: Construction ID

Project architect: COA

Landscape consultant: Uys & White (Pty) Ltd

Project management: SiVEST

Electrical, mechanical and structural engineers: SiVEST

Quantity Surveyors: Est Qs

Sales: Developer Sales Team

Conveyancers: Anthony Whatmore & Company

Bank: Investec

Project scope

Mixed use and residential space

Total site area: 14,000m² of bulk

Total number of units: 160

Facilities include: 6.5 km beach, 75 km of walking trails, paths and boardwalks, putting green, rock climbing walls, jungle gym and play area, waterslide and three swimming pools, rooftop clubhouse, 24-hour state-of-the-art security.

More information at www.biminstitute.org.za

VOICE OF DIGITAL CONSTRUCTION ACROSS AFRICA

ABOUT THE BIM INSTITUTE

The BIM Institute is a unique resource for industry experts in Africa. BIM professionals provide unbiased information on industry processes, compliant software standards and software certifications. It creates platforms for professionals to collaborate and network with peers who share similar job responsibilities and industry information technology challenges.

This collaboration has formed a dynamic community of the key digital construction stakeholders including - product developers and retailers, solutions providers, senior analysts, architects, designers, contractors, academics and industry professionals.

SIGN UP NOW FOR FREE BIM INSTITUTE MEMBERSHIP AND WORKSHOPS!

Please join the BIM Institute as a free member to grow technology advancement in the Built Environment!
For more information on our courses, free workshops and to subscribe to industry news pls go to www.biminstitute.org.za

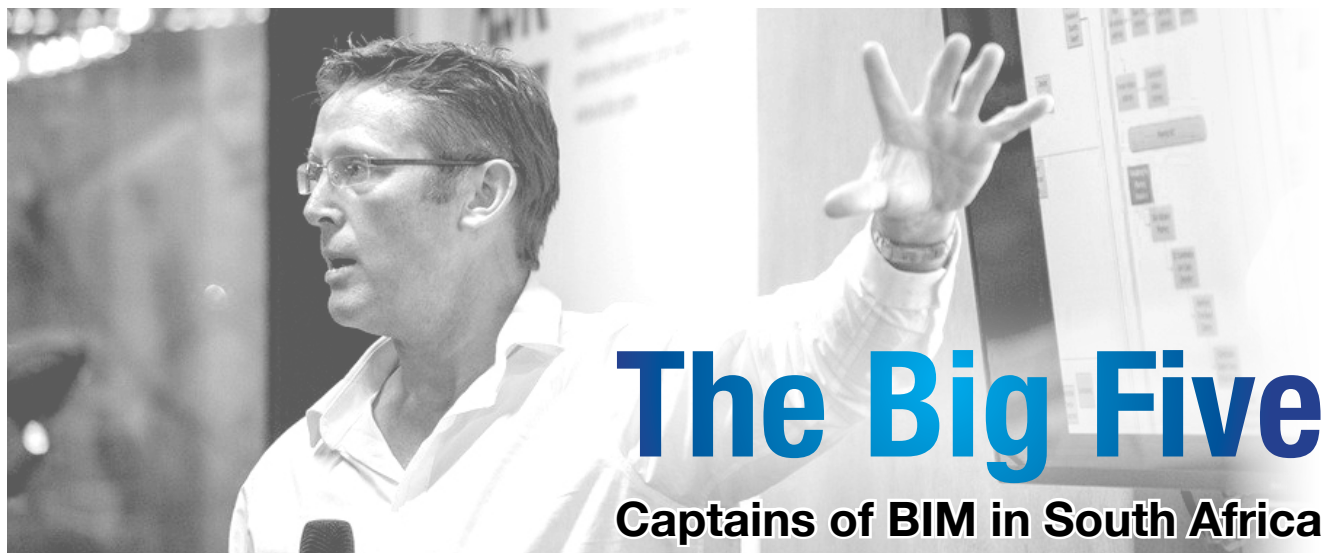
- > **ADVOCACY**
- > **NETWORKING**
- > **TRAINING**
- > **STANDARDS**
- > **CONSULTING**

**SPACE
LIMITED
SIGN UP
NOW!**

2017 KEY DATES

- > **DIGITAL CONSTRUCTION EXPO AND KNOWLEDGE LOUNGE:**
23 - 24 MAY 2017, JOHANNESBURG
- > **BIM BAM BOOM WORKSHOP:**
4-5 JULY 2017, JOHANNESBURG
- > **BIM BAM BOOM WORKSHOP:**
AUGUST 2017, CAPE TOWN

EMAIL: WORKSHOPS@BIMINSTITUTE.ORG.ZA



SPEAK to the experts and BIM gets pretty technical, pretty quickly, but at its core it is a process of working, aided by software tools, apps and processes that promote collaboration and transparency within the many working parts that make up a construction project.

The national rollout of BIM is spearheaded by the BIM Institute of South Africa, and Concrete Trends spoke to the Top 5 movers and shakers in the BIM-osphere in South Africa. These are some of the voices in the BIM Institute's steering committee, each bringing their own experience and energy to the committee.

Vaughan Harris



**Executive Director,
BIM Institute
Editor, Construction Software
and IT Journal
Director, Digital
Construction Expo**

As the founder and executive director for the BIM Institute it is Harris' vision to drive technological transformation in the industry, and support best practice in line with international BIM framework standards. In establishing the BIM institute, his core focus is to always remain completely neutral and non-biased in delivering the digital construction message.

The institute was created to engage stakeholders in the construction industry in dialogue and provide a platform for companies to engage in partnerships and support initiatives; a place to share and gain knowledge for digital transformation.

With an end goal of setting the BIM ISO standards in the country, the Institute has developed an "Implementation Guide" for BIM rollout in South African businesses. With the hard work and support of the Institute's Steering Committee this guide has gained widespread support nationally, and will form the backbone to the standards long-term.

Harris first immersed himself into BIM in 2010, while working for Construction Computer Software and managed the partnership with UK-based company 4Projects. This was where he saw first-hand the UK visualization around the various BIM level mandates and the processes they used to transform the UK industry.

Harris didn't need much convincing when he was introduced to BIM. With his Quantity Surveying background and in-depth knowl-

edge of construction IT, it seemed a straightforward and logical process - storing information in a 3D model, thus creating a single source of information for the entire team.

Always the showman, Harris compares BIM the 'The Matrix' movie.

"Not everyone can be Neo, but by joining the revolution you believe - and fully understand - that in order to transform we have to join the resistance if we want to better our future. You either see it or you don't!" he proclaims.

"BIM is far more than a technological enabler of transformation, but should be seen as supporting a complete process to manage static and non-static data in design, construction and operational processes. By any definition, BIM is reality; it represents a paradigm shift in how we share and manage information from design through construction to operation."

As a BIM visionary and someone who sees the returns that companies get from BIM across the supply chain, it frustrates Harris that so many organisations - especially contractors - just don't "get it."

"If society can see the advantages of something as simple as virtual reality, then why can an industry not see the advantages of accessing information in the realm of 4D and 5D?"

**"Not everyone can be Neo, but
by joining the revolution you
believe - and fully understand -
that in order to transform we have
to join the resistance if we want to
better our future.**

You either see it or you don't!"

The biggest challenge, according to Harris, is not to understand the advantages of BIM, but to first wrap our heads around 3D structures, before looking at the advantages around time and money in a BIM process.

When asked what the most surprising 'unintended consequence' of BIM is, he points to the structural dominance of asset management organizations and the Department of Public Works in the country.

"If these entities are to transform and become the driver of change, then I believe we should rather be asking the question: 'What are the unexpected consequences of not using BIM?'"

Harris is also the Editor of the Construction IT Journal and Programme Director for the Digital Construction Expo, roles which he embraces as vehicles to reach the widest audience of

professionals, software vendors and institutions through events and media.

"Everyone has a role in creating a digital transformation path for the country and continent," he concludes.

Chris Allen

**Director of A3D,
Lecturer in
Department of
Construction
Management
(NMMU),
CIOB Africa and CMDC
member**



Allen brings his knowledge of the early implementation of BIM on four different continents to the institute. He can attest to the fact that the challenges experienced in each of these environments is similar (and deep-seated in technical awareness and culture) - and thereby he has a handle on the skills needed to overcome them in order to make the South African/African BIM experience a successful one.

He was active in the BIM-osphere before the term BIM was even coined (circa 1999.)

"We formed A3D to use the 3D models we were already building for the construction process (to sequence construction activities) rather than just for design."

He was drawn to BIM as a way to make sense of the chaos of delivering projects the traditional way. The collaborative design and build environment he worked in in his early career suggested a better way of working. It was through BIM that he found he could use his tech skills to communicate with all the participants of a project - including the client - and coordinate activities much more efficiently.

BIM is a powerful visual communication tool, enabling project participants, from client to labourer, to see what the team is trying to deliver.

"Their eyes are literally opened to how the project goes together and their role in achieving that, which empowers them to become meaningful participants in the process."

Moreover, with BIM nobody can hide. Although Allen has encountered individuals and organisations not up to standard try to derail the process by blaming the technology, he warns that this can damage the team dynamic if not rooted out and addressed early.



Shawn Hopkins

**Professional Architect
BIM Curator /
Maker**

According to Shawn Hopkins, the introduction of virtual building modelling software (or BIM) has offered the architectural profession a powerful set of processes to design, communicate and deliver a real building, with more efficiencies than ever before.

"Through the connected workflows of BIM, the software can offer far more accuracies and efficiencies than traditional workflows," he states.

Fully leveraging the power of BIM software and the associated data, could see design and documentation efficiencies increase between 3 - 5 times to that of tradition 2D CAD workflows.

"It is in this space that many architects are missing a great opportunity to reignite their control on projects. Controlling the virtual modelling gives the profession the opportunity to reposition itself in the project team, and bring architecture back to its once revered status."

Hopkins says he adopted BIM in 2007, but it wasn't until 2013 until he had his "BIM enlightenment."

"There is a massive difference between using a BIM authoring tool, and fully leveraging the power of this tool. The first step to fully leveraging BIM is to understand the concept of being a 'data curator'. The fact that you are creating a virtual replica of the real asset. A concept we refer to as 'Build it virtually, assemble it in reality'."

"The concept of 'connect workflows' was my main motivation for exploring a BIM authoring solution," he explains.

"Having worked in the 2D world of AutoCAD for many years, and then extruding our designs out of the plan in SketchUP (which was an amazing process at the time) I needed my workflow to be more efficient through the plans, elevations and sections being connected to the 3D model. A pet dislike of mine is to re-do stuff. I simply felt that I was making the same decision in 3D, then again in plan / elevation / section / spreadsheet. That workflow was leading to errors, and many late nights."

The two greatest advantages of BIM workflows are the efficiencies and ability to communicate our design responses. The fact that a piece of software (ARCHICAD) could make Hopkins 3 - 5 times more efficient in the delivery of his architecture was a no-brainer.

"Margins nowadays are extremely tight, and if we are not able to accurately facilitate the design, documentation and coordination processes in less time, we are bound to lose work to our architectural competitors who have adopted BIM workflows."

Communication in architecture is everything, according to Hopkins.

"If you cannot communicate your design response, your client will simply shelve your ideas. BIM allows you to take your conceptual model, use it to communicate, and then shift into your design development and working drawing documentation."

Having fully adopted BIM processes in his office, it is very clear to identify the inefficiencies of outdated 2D workflows when they receive 2D CAD files from their consultants.

Unexpectedly, Hopkins now understands data, and the importance of local product data to his architectural workflow.

"My decision to adopt ARCHICAD in 2007 had nothing to do with how I could efficiently extract data out of my BIM model. To then have all that

data connected to the model, means that I can curate the information to ensure accuracies in the information that is leaving our office."

Hopkins and his team are now assisting local manufacturers get their building product data BIM ready, along with connecting that data to geometry inside the leading BIM authoring solutions.



Hans Rossocha

**General Manager
Group Five**

Hans Rossocha represents contractors and sub-contractors on the BIM Institute's Steering Committee, looking at the practicality of turning the models generated in the design phase into a workable plan on the construction phase.

"We highlight what the contractors need out of the 3D design. I look at that interface from the information that is developed during the design process and then gets used onsite. Are we in fact generating the right information for the right people?" says Rossocha.

Group Five has been using BIM actively for four years now.

"We started off using it mainly for tender proposal work, and then actively in our operational projects for the past three years."

The company was initially drawn to the processes when it saw the results British and US companies were achieving.

"Companies like Watterson, Skanska and Laing O'Rourke were showing huge reductions in the amount of rework they had on sites by using BIM 'Clash Detection' and the BIM digitalisation technologies."

The timing was crucial too as Group Five moves into an engineering, procurement and construction role rather than a pure construction role.

"It's in our interest to make sure that the engineering designs are correct, and have no errors in the contracts that we do."

Rossocha says that the biggest advantage of BIM is the visualization aspect.

"From the finance clerk all the way up to the clients and their representatives, the team is able to envisage - in 3D digital format - what we are going to build."

This information is then attached to the construction programme (that "interface" that is so important to the steering committee) where they can analyse the construction steps - from start to finish.

He says that he has been most surprised to see how people, when given the software tools (Autodesk in their case) - often without much training or documentation on how to use it - interact with the models and intuitively find ways to apply it.

"We had a Quality Engineer working on a major petrochemical project, for instance. He showed us exactly where and how he was going to do different quality checks on the piping using our model. He was never trained on the processes or given any documentation on it, but saw the value of the 3D model and formulated his own way of using it. It happens all the time," he smiles.

He was disconcerted how slow the take-up was for senior management though.

"As they weren't too familiar with using digital technology, they still insisted on having the 2D drawing and would sign off on that. It meant we had to run both systems for a while on a couple of projects. We wanted to apply it completely throughout the project, but there was some reluctance at the start."



Nicholas Karassavas

**BIM IPD Development
Revit Specialist
BIM Integration
Specialist, ARUP**

Nick Karassavas is a BIM stalwart, passionate about filtering out the noise created in the industry on the topic of BIM, and providing practical, unbiased and ethical advice to organisations starting - or at any point of the - BIM journey. This is what he brings to the BIM Institute steering committee.

"There is a lot of information out there, and people come onto committees with an angle, they want to sell their product or services. You have to filter that out and play to the best interest of the company, or the country's rollout. Things can get heated with these vested interests. As an organization we don't have these vested interests and we need to have the voices there to keep it impartial."

Karassavas has been active in the BIM environment for around 14 years, before it was even termed BIM. He recalls the excitement of working with Revit when it was first introduced, even before it was bought out by Autodesk. In fact, he was a part of the team that trained the Autodesk team in the US when they bought the software in 2002.

Hailing from an architectural background, Karassavas says it made absolute sense to digitize and collate all the information from the different disciplines and model everything. That way you can create a virtual building that you can start analysing and gauging the repercussions of what will happen on site - giving you a chance to value engineer all the different disciplines.

"It just makes absolute, perfect sense."

He warns though that the project hinges on the skill and knowledge of the initial draughtsman. He must set up the model carefully and correctly the first time, otherwise the project cannot succeed.

Another non-negotiable when working on a BIM project is ensuring that you have buy in across the board. This means having a detailed digital brief and documentation describing exactly what is expected from every member of the team, at every stage of the project.

"It's almost essential that you pre-discuss what's going to happen, who's going to produce what and how."

Another thing to keep in mind is your practical needs for the project; training, software and hardware solutions.

"You can't just use anything, you need to investigate what software and hardware you need before purchasing anything. It must conform to the size of the models and projects that you will be working on," he warns.

And lastly, he points to the need to have someone whose job it is to tie it all in. Not just the modelling aspects, but the documentation as well.

"It is vital that you have someone to navigate the project manager and the key people on the project, to ensure that they follow certain standards and protocols."

He reminds us to slow down and ensure we are moving in the right direction.

"People talk about level 2 and level 3, but you have to bring them back and remind them to first get to level one."

Importantly, Karassavas says that BIM keeps the project on the straight and narrow, forcing the team to follow best practice.

"If we train ourselves up to understand the fundamentals of the software you're using, how we share the data, how we do these execution plans and what they mean, then it's not going to take 6 - 12 months before we know what we're talking about," he concludes.

Vodacom confirmed as Presenting Sponsor of the Africa SBI Summit

Vodacom has announced its support of the Africa Smart Buildings & Infrastructure Summit that is taking place on 24 May 2017 at the Gallagher Convention Centre in Johannesburg, South Africa. The 2017 initiative welcomes Vodacom as Presenting Sponsor in 2017.

Innovative technology for smart buildings and infrastructure is transforming the way buildings are designed, analysed, constructed, and managed across the globe. "The time for us to rethink our quality control systems is now and for us all to benefit from information technology that is constructed and developed efficiently for a construction environment," says Vaughan Harris, executive director of the BIM Institute in South Africa.

The Africa Smart Buildings & Infrastructure Summit is Africa's only platform designed for decision-makers involved in the design, construction and management of their buildings and infrastructure assets. It will look at the future of African cities, from technology evolution to new value adding services, better collaboration, lessons learned, infrastructure transformation and sustainable strategies.

Tony Smallwood, executive head of Vodacom IoT says: "Places and settings are ecosystems in their own right in terms of people needing access to data and communications. The summit provides Vodacom with a platform to demonstrate its deep capability in converged communication solutions, from the underlying fibre infrastructure to the Internet of Things solutions. The foundation of any 'Smart' building is the collection, transmission and processing of data."

Information Communications Technology (ICT) and the Internet of Things (IoT) are key topics at this year's summit. "The core of any smart building is the digitalisation of the building components and ecosystem. Any smart building requires the extraction of data and the analysis of the ecosystem around the building, whether it's the weather, traffic or parking systems. These play into the smart building so it's all about the Internet of Things data," explains Smallwood.

The Africa Smart Buildings & Infrastructure Summit is presented by the BIM Institute and co-located with African Construction and Totally Concrete Expo and the Digital

Construction Expo. The Summit unites the essential stakeholders involved in the design, construction and management of buildings and infrastructure assets all under one roof to define a roadmap for the development of smart buildings and infrastructure in Africa. The innovative programme offers inside access into emerging trends in technology and best practices in planning for resilience, designing for adaptability, creating value and delivering smarter buildings and infrastructure.

About the Africa Smart Buildings & Infrastructure Summit

The 2017 Africa SMART Buildings and Infrastructure summit, presented by the BIM Institute, is Africa's only platform designed for decision-makers and analysts from the public and private sectors responsible for the design, construction and operation of infrastructure assets and or the specification and procurement of major infrastructure assets.

About the African Construction and Totally Concrete Expo

African Construction and Totally Concrete Expos cater for the entire African cement, concrete and construction industries. The audience includes architects, engineers, contractors, quantity surveyors, government representatives as well as suppliers of products and services to the industry. In 2017, we have six NEW, dedicated zones enabling you to make the most of your time at the show!

From indoor to outdoor experiences, workshops to prizes, there is something for everyone at the African Construction and Totally Concrete Expo 2017. PLUS there are a number of thought leadership and learning opportunities such as:

- Captains of Construction and Infrastructure
- Smart Building & Infrastructures
- Digital Construction
- FREE technical workshops■

For more information please visit
www.smart-summit.com





Smart Buildings & Infrastructure

WESTERN CAPE SUMMIT

23 AUGUST 2017
Cape Town, South Africa

KWAZULU-NATAL SUMMIT

FEBRUARY 2018
Durban, South Africa

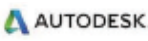
**Transforming the future of Africa's infrastructure through
SMARTER planning, design and delivery**

HIGHLIGHTS

- 1 Generate leads and raise brand value
- 2 Position yourself as a thought leader and showcase your capability
- 3 Present your cutting-edge technologies for smart buildings and infrastructure
- 4 Become part of the supply chain database in smart buildings

**THE SMART SERIES OF SUMMITS FOR DECISION-MAKERS INVOLVED IN
THE DESIGN, CONSTRUCTION AND MANAGEMENT OF THEIR BUILDINGS
AND INFRASTRUCTURE ASSETS.**

For sponsorship packages contact: daniel.claassen@hypenica.com

Host city:	Host City KZN Summit:	Presenting Sponsor:	Sponsors and partners:	Co-located with:
 a world class African city			       	 

Concrete couture not to be taken lightly

Meet a Hungarian couple hungry to show concrete's endless potential to the world. **Jan de Beer** reports.

Ivanka is obsessed with concrete – and it's making news and money.

Ivanka is not, as you might have thought, the daughter of the Western World's most powerful citizen (who wouldn't need more money, in any event) but an enterprising Hungarian company with a very commendable devotion to concrete. It's a profitable passion that has made the design world sit up and take notice.

Founded in Bucharest in 2002 by the young and attractive married couple, Katalin and Andras Ivanka, the now globally famous Ivanka Group has stretched the boundaries to extremes with concrete furniture and all sorts of unexpected trendy objects made from concrete.

The Group's latest development is a range of concrete clothing based on a textile with the aesthetic qualities of concrete. The revolutionary textiles were two years in the making, and inspired by Cement Couture, a conceptual range of handmade pieces created for a portrait shoot for Vodafone lifestyle magazine by the extremely photogenic Ivanka couple who, we can but hope, did not choose the range's name because of ignorance about the difference between concrete and cement. The ready-to-wear range – aptly named: Concrete Genesis – was personally designed by Mr and Mrs Ivanka.

Concrete Genesis premiered at a recent Paris Fashion Week, showcasing a range of ready-to-wear clothing and accessories that were according to reports "progressive in design yet totally wearable and designed for everyday use".

Concrete Genesis has received a warm welcome and widespread interest from both the press and buyers. The buyers, no doubt, must be in an income group who would regard airport's excess luggage charges as totally irrelevant.

But Ivanka's interest in concrete has always been heavy.

Going back a few years, the Group introduced its Flaster range: a concrete floor and wall tile made from fibre-reinforced high-performance concrete. Suitable for exterior and interior usage, Flaster comes in three different thicknesses, and so can be applied to floors, walls and in heavy traffic areas. The contemporary offbeat use of concrete, the custom colour of the product, and variation of small and large 'interlocking'



Katalin and Andras Ivanka, founders of the Ivanka Group, pictured in the new concrete clothes they have added to their company's concrete ranges.

modules, give endless possibilities for the user to create a completely personalised surface.

Not surprisingly, Ivanka's Flaster was named overall top innovation in tile design and received Flooring of the Year 2010 nomination from Elle Decoration International Design Awards and won 2nd prize on Homes & Gardens Designer Award in 2011 in the Product Category.

Turning to greener fields, Ivanka also developed the RainHouse – a revolutionary building that collects rain and filters it through a special bio-concrete system to turn it into pure drinking water. Part of Ivanka's Water of Life project, the RainHouse is essentially a massive filtration system that allows residents to enjoy free, sun-distilled drinking water without lifting a finger.

The RainHouse's complex rainwater harvesting system is built around Ivanka's unique bio-concrete, which

is pH neutral and bio-compatible with water. To demonstrate the concept, Ivanka built a full-scale demonstration model for the Milan Design Week where artificial rain fell from a fake cloud hanging over the model so attendees could watch as the water flowed effortlessly from rooftop concrete tiles into a bio-concrete-lined storage tank.

With freshwater resources dwindling worldwide, the ability to construct homes that conserve and produce drinking water would be priceless.

Since its inception, Ivanka has made a name for adding a design perspective to what is otherwise viewed by the uninformed as a strictly industrial or, even worse, 'boring, dull, grey' material. You could also mention the Ivanka loudspeaker system when encountering these mentally challenged people.

The Ivanka speaker cabinet – including the bass reflex port – is made of a single-piece moulded concrete. Except for the removable bottom plate, there are no joints or panels. The wall thicknesses vary from 18 to 30 mm and the speakers are an impressive one metre high. Weighing 70 kgs each, they are not definitely not suitable for shelves. But, in suburban South Africa, they would have a sought-after built-in security feature.

Trying to steal these monster sound blasters would almost need a forklift. ■



Ivanka Group's prizewinning Flaster modular paving and the revolutionary RainHouse.

MASTER BUILDERS SOUTH AFRICA

is a Federation of Registered Employer Associations representing contractors and employers operating in the construction industry, and is regulated in terms of Section 107 of the Labour Relations Act 66 of 1995. The Federation's nine Master Builders Associations, and three Affiliate Associations represent some 4000 contractors and employers in the industry.

PROMOTING TRANSFORMATION

Members of MASTER BUILDERS have declared their support for and commitment to sustainable and meaningful socio-economic transformation of the construction sector in particular and the country in general. This is to broaden economic participation, drive growth, job creation, skills development and transfer, poverty alleviation and capacity building for social cohesion and nation-building.

SAVE THE DATE

CONGRESS | 2017
CENTURY CITY CONFERENCE CENTRE
CAPE TOWN

10-12
SEPTEMBER



MASTER BUILDERS
SOUTH AFRICA

BUILDING SOUTH AFRICA

www.masterbuilders.org.za

MASTER BUILDERS SA

PO Box 1619, Halfway House, 1685
Tel: 011 205 9000 Fax: 011 315 1644
Website: www.masterbuilders.org.za

GREATER BOLAND

PO Box 13, Worcester, 6849
Tel: 023 342 6964 Fax: 023 342 6925
Website: www.mbagreaterboland.org.za

EAST CAPE

PO Box 7086, Newton Park, 6055
Tel: 041 365 1835 Fax: 041 364 1676
Website: www.ecmba.org.za

WEST BOLAND

PO Box 336, Langebaan, 7357
Tel: 022 772 2251
Fax: 022 772 2457

KWAZULU NATAL

PO Box 582, Westville, 3630
Tel: 031 266 7070 Fax: 031 266 6348
Website: www.masterbuilders.co.za

BOLAND

PO Box 1402, Suider Paarl, 7624
Tel: 021 863 3330 Fax: 021 863 3331
Website: www.mbaboland.org.za

NORTHERN CAPE

PO Box 819, Kimberley, 8300
Tel: 053 831 1845 Fax: 053 832 1368
Website: www.mbannc.org.za

NORTH

PO Box 4841, Halfway House, 1685
Tel: 011 805-6611
Website: www.mbanorth.co.za

FREE STATE

PO Box 542, Welkom, 9460
Tel: 057 352 6269 Fax: 057 353 2402
Website: www.mbfcs.co.za

WESTERN CAPE

PO Box 382, Rondebosch, 7700
Tel: 021 685 2625 Fax: 021 685 2622
Website: www.mbwcc.org.za

Solutions for perfect surface quality



CHRYSO®Dem Range

The **CHRYSO®Dem Range** of release agents reduces the likelihood of imperfections and surface damage to concrete, creating more durable and attractive concrete surfaces.

It allows for:

- easy, clean release of the mould/formwork from concrete; without damaging the mould/formwork or the concrete
- the adhesion of subsequent finishes and coatings - plaster, paint and other coatings may be applied subsequently
- protection and extension of the life of the mould/formwork

Gauteng (Head Office): 26 Malcolm Moodie, Crescent, Jet Park T: +27(0)11 395 9700 | F: +27(0)11 397 6644

CHRYSO
www.chryso.com