

CONCRETE

Journal of the African Cement and Concrete Industry

trends

VOL 18 No 4 November 2015



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Cover:
 Story on Page 15:
 Focus on Cemengal's
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CONCRETE trends

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Page 28 - TuksSport High School built with a strong focus on preservation.

Host publication of CESA Infrastructure Indaba



Emperors Palace, Kempton Park: 9 - 10 November 2015

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There's good to be found in every situation

They say that a nation is known by the way it reacts to disasters and emergencies. Well, South Africans have a reputation for 'manning up' and pulling together – and this is exactly what happened when the pedestrian bridge in Sandton collapsed, killing two, injuring travellers on the freeway and causing chaos in the always-busy freeway traffic.

The emergency services rose to the occasion and did an excellent job. In a climate where taking responsibility for anything that has gone wrong is sadly lacking, Murray & Roberts bucked the trend.

They stepped forward immediately, took responsibility and set about seeing that the families of the dead and those injured were taken care of. Their own team is investigating the cause of the failure, working alongside City of Johannesburg-appointed independent engineers and investigators from Consulting Engineers South Africa (CESA).

Public transport companies pulled together to assist the public. Putco, Metro and Gautrain buses offered free transport in areas affected by the bridge collapse, and some even offered free transport to Soweto.

The star performer was Uber, who offered free passage to and from the Sandton Gautrain station and free rides to the value of R250. News 24's Georgina Guedes summed up Uber's

initiative perfectly. She wrote: "As publicity and appealing to national sentiment go, that ranks right up there with delivering boerewors for free in time for braais on Heritage Day."

In this and in every other circumstance, South Africans have shown themselves to be brave and resilient. And we need to be if we are to weather the current storms of economic adversity.

When times are tough, the tough get going – out of South Africa and north to our neighbouring territories where challenges and opportunities abound in equal measure. Despite the instability of many African countries, there are outstanding success stories and the opportunities they offer are attracting foreign direct investment to the continent.

Increasing investment in infrastructure and a commitment to opening trade routes across the continent augur well for an improved economic climate in future.

It is in this climate of challenge and optimism that we at *Concrete Trends* and our publisher, Hypenica, wish you a happy, peaceful and safe festive season. May this be a time to rest and recharge to go into 2016 with confidence and vigour.

Gill Owens, Editor



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AfriSam's Thank Tank is an 'Ode to the Builder'

AfriSam acknowledges the role that all stakeholders play in creating a sustainable future for South Africa. At the Totally Concrete Expo held in May 2015, AfriSam ran a campaign asking visitors to pay tribute to the many builders whose efforts and craftsmanship make a tangible difference in the lives of so many people every day.

The response was overwhelming and a large number of visitors submitted messages in the form of an 'Ode to the Builder'. AfriSam then replicated these messages in graffiti form completely covering the drum of one of its readymix trucks that operates in the Gauteng region.

"This is a simple, yet meaningful, way for AfriSam to pay homage to the contractors who create endless concrete possibilities in our industry. Going forward we plan to roll this initiative out to other regions as we spread our 'Creating Concrete Possibilities' message across the country," says Victor Bouguenon, marketing manager of AfriSam. ■

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



AfriSam's Thank Tank pays tribute to the many builders whose efforts and craftsmanship make a tangible difference in so many people's lives.

Dangote: the cement industry's newsmaker

Africa's richest man and President of the Dangote Group, Aliko Dangote, has been hitting the headlines recently for Dangote Cement Plc's activities – and in his personal capacity.



President of the Dangote Group, Aliko Dangote.

Two international awards

For his unparalleled contributions to societal development in Africa and internationally, Dangote has been honoured with this year's the Clinton Global Citizen Award for leadership in the private sector.

The Clinton Global Initiative (CGI) said it recognised Dangote's exemplary and selfless dedication to positively impacting the lives of people globally through numerous philanthropic initiatives implemented through the Dangote Foundation.

Dangote Cement also won the Business of the Year Award at the African Business Awards ceremony on the sidelines of the UN General Assembly in New York.

<http://goo.gl/DZJkST>

Tanzania cement plant commissioned

The Dangote Cement Plc commissioned its new three million metric tonnes per annum cement plant in the Mtwara District of Tanzania on 9 October.

The new plant, part of the company's Africa expansion strategy, is the fourth to be commissioned this year. The others

are in Ethiopia, Zambia and Cameroun; plants in Senegal and South Africa are also due for commissioning this year.

Plants are also being constructed in Senegal, Cote d'Ivoire, Ghana, Liberia, Sierra Leone, South Sudan and Kenya.

<http://goo.gl/zwrml5>

Dangote Cement to list on London, Johannesburg Stock Exchanges

Dangote is consolidating his cement businesses across Africa into one company that will have the scale and resources to compete globally, he told reporters in Tanzania at the commissioning of his plant.

Dangote said he plans to list on London and Johannesburg stock exchanges in the near future. Dangote Cement, listed on the Nigerian Stock Exchange in October 2010, is now the largest listed company in Nigeria and West Africa. "We plan list in London and Johannesburg in the near future."

In August, Dangote cement signed a deal valued at \$4.34 billion with the Chinese government to build 10 new cement plants across Africa, and one in Nepal. The new projects will have a combined capacity of 25 million metric tonnes per year. By the time they're completed, Dangote Cement will be capable of producing 81 million metric tonnes of cement per year. "This will make us one of the largest cement companies in the world," Dangote said. ■

<http://goo.gl/10iKu0>

a.b.e. waterproofing loading on REVIT welcomed

South African architects and other designers have welcomed the fact that the specifications for a.b.e. Construction Chemicals' waterproofing products have now been preloaded on Autodesk REVIT software.

a.b.e. is part of the Chryso Southern Africa Group.

Ivor Boddington, a.b.e.'s product manager: Concrete Repairs & Protection & General Construction, says Autodesk REVIT is an innovative building information computer program that has transformed building design from drawing flat sketches on paper to creating virtual, three dimensional designs. "It enables architects; structural engineers; mechanical, electrical and plumbing (MEP) engineers, designers and contractors to design a building and its components in three dimension, annotate the model with 2D drafting elements - such as used for waterproofing - and then access construction information from the building model's database," Boddington stated.

"Three-dimensional modelling itself is not new but in the past the 3D models would merely illustrate what a building would look like when completed. Now, thanks to the Autodesk REVIT program, architects and other parties involved in designing and construction can plan ahead when it comes to the finer details of their design, including the annotation of the a.b.e. waterproofing the new structure will require.

"The fact that a.b.e. waterproofing specifications can now be extracted and inserted to a project at the design stage means that the designers can automatically generate a Bill of Quantities containing all the products and measurements required, the extruded elevations to be provided for, as well as the final conceptual visualisation," Boddington explained.

Autodesk REVIT also enables designers to extract energy analyses and environmental impacts, as well as waterproofing requirements, prior to the construction of a building, thereby saving important additional unforeseen costs later in the construction schedule.

Boddington added that a.b.e. is planning to preload all other applicable a.b.e. products onto Autodesk REVIT software, including a.b.e.'s flooring, specialised adhesives, structural glazing, concrete repair, silicone and sealants, and construction commodity products.

a.b.e.'s full range of waterproofing products are now within easy access for architects and designers through Autodesk REVIT software. ■

**Further info: Elrene Smuts, Tel: +27(0)11 306 9000
www.abe.co.za**

BASF South Africa and Sub-Sahara launches social media presence

BASF in South Africa and Sub-Sahara is expanding its online communication activities by launching its presence on social media platforms Twitter and Facebook.

BASF's online presence will allow for enhanced engagement with all stakeholders in the African region

According to BASF South Africa and Sub-Sahara vice-president and head of business centre, Joan-Maria Garcia-Girona, while BASF has already had a global presence on social media for some time, there is a need to engage on a regional level.

"Social media is about engagement with the audience and these platforms will allow us the opportunity to share information and hold conversations with our customers, partners and all key stakeholders," he said. "With our entry into the social media sphere, we as BASF in the African region will be able to share specific insights with our stakeholders."

What to expect on these platforms:

- News releases, blog posts, updates on the company's CSI initiatives, speeches, research, reports and other publicly available BASF materials.
- Interesting facts, quotes, videos or observations related to the various industries BASF serves.
- Corporate event updates.
- Topical questions related to the various industries meant to provoke discussion or action. ■

Follow BASF on @Twitter BASF_Africa and like the company on Facebook/BASF_Africa

New appointment at TCI Info Centre



Kizzy Shipalana (on right) with Information Centre colleagues, Susan Battison (left) and Bongani Methula.

Kizzy Shipalana has joined The Concrete Institute's Information Centre team as information specialist.

A qualified Librarian with more than 10 years' experience in the field, Shipalana started her career at the South African National Biodiversity Institute (SANBI) as library student in 2001. In 2003, she was appointed permanently there as Librarian. She worked for Ditsong Museums of South Africa from 2007, also as Librarian, prior to joining The Concrete Institute.

Shipalana holds a BA (Hons) Library and Information Science degree, obtained at UNISA. ■

**More information from Bryan Perrie,
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SAICE-SAFCEC awards for excellence in civil engineering

The prestigious annual SAICE-SAFCEC Awards for the Most Outstanding Civil Engineering Achievements for 2014/2015 was held in Cape Town in mid-October.

Most Outstanding Civil Engineering Project Achievements

Community-based projects

Winner: The African Renaissance Roads Upgrading Programme. In this R48.8 million project, Naidoo Consulting used innovative solutions and created jobs through labour-intensive construction. Afriscan Construction built a new church and gave local youth training and practical experience.

Commendation: The evolving design and construction of rural national roads in response to community concerns SANRAL commissioned Aurecon to reconstruct National Route 2 Section 18. This R434-million project, constructed by Haw & Inglis Civil Engineering, created employment and business for the local community.

Technical Excellence projects

Winner: Kirstenbosch Centenary Tree Canopy Walkway, 'Boomslang'

Boomslang, a steel and timber footbridge, meanders through and over the treetops in Kirstenbosch. The South African National Biodiversity Institute, appointed Mark Thomas Architects to design the pedestrian walkway. The R5-million project was constructed by Henry Fagan with contractor Slingsby and Gaidien Construction.



'Boomslang' the 2015 Technical Excellence winner.

Commendation: Umgeni Road Interchange

SANRAL appointed Hatch Goba to design and administer the project, which was constructed by the Rumdel Cape/EXR/Mazcon JV.

Commendation: Acid Mine Drainage: Witwatersrand Central Basin

TCTA appointed AECOM to provide technical solutions to pump and treat AMD before it rose to the surface. This R600-million project exemplifies civil engineering helping to alleviate a threat to the area's water supply. Contractor Group Five ensured that all project processes were completed on time.

International projects of excellence involving South African engineers

Winner: The Jorf Lasfar Slurry Pipeline Project in Morocco

The 187-km pipeline is the world's largest phosphate ore pipeline, and can transport 38 million tons of phosphate ore per year. Paterson and Cooke Consulting Engineers and main contractors Tekfen Construction of Istanbul, proved that slurry pipelines offer environmental and economic advantages.

Commendation: Nacala Dam Feasibility Study

Millennium Challenge Account Mozambique on behalf of the Mozambique Government, appointed Jeffares & Green in association with Conseng and Lamont to undertake the environmental and social impact assessment, design and supervision of the dam rehabilitation.

SAICE Technical Divisions: Projects Awards winners

Environmental Engineering Projects (Award sponsored by Sika): **Cederberg Nature Reserve**

Structural Engineering Projects (Awards sponsored by Vital Engineering): **Malapa Fossil Cave Cover and Visitors' Platform**

Project Management and Construction: **Head Office for the Department of Environmental Affairs**

Transportation Engineering Projects: **First full-scale EME Construction Project in South Africa**

Water Engineering Projects (sponsor SMEC): **Mdwaka Dam**

SAICE Institutional Awards for 2015

SAICE Civil Engineer of the Year: **Deon Kruger, University of Johannesburg. (Award sponsored by PPS)**

SAICE Young Civil Engineer of the Year: **Daniel Avutia, SRK Consulting**

SAICE Technologist of the Year: **Brian Kannigadu, BMK Engineering Consultants (Award sponsored by Uretek Geo Systems)**

SAICE Young Technologist of the Year: **Bulelwa Leni from RHDHV (Award sponsored by Uretek Geo Systems)**

SAICE Student Chapter of the Year: **UJ-Civils**

SAICE Branch of the Year: **Amathole**

SAICE Division of the Year: **Water Engineering Division**

Most Supportive Advertiser of the Year

Winner: Knowledge Base.

Runner-up: Voltex

SAICE-Lafarge Photo Competition 2015

Winning photo – Autumn under the pier, by Chris Wise

1st Runner up – Pipeline giraffes, by Karl Kusel

2nd Runner up – Spanning the circle, by Henning van Aswegen

Highly commended – Metolong Bridge by Corrie Meintjies, and Reaching out by Deon Classen ■

More information from Marie Ashpole,

Tel: +27(0)11 805 5947/8 / www.saice.org.za

Sika expands its footprint in Africa

Sika are opening their first concrete admixture and mortar production facilities in Nigeria and Ivory Coast. The global speciality chemicals company has established new subsidiaries in Ethiopia and Tanzania to participate in the growing markets in the Sub-Saharan region. Thus Sika continues its dedicated and successful expansion strategy and is enlarging its presence to sixteen countries across the whole of the African continent.

Sika established their subsidiary in Nigeria and Ivory Coast in 2014 and are now in Lagos and Abidjan, investing in local production facilities for high-quality concrete admixtures and mortars to supply the booming construction, refurbishment and maintenance markets in both countries. Many international and medium-sized local contractors working on big oil and gas, infrastructure, commercial and residential projects represent a large potential customer base for Sika.

Paul Schuler, Sika regional manager EMEA, explained: "Our new production facilities in Nigeria and Ivory Coast and our new subsidiaries in Tanzania and Ethiopia represent another milestone in the execution of Sika's Strategy 2018. With the latest investments we will further accelerate our growth in Sub-



Sika's Nigeria plant under construction.

Saharan Africa and increase Sika's market share. It demonstrates our strong belief in the potential and the prosperous future of the continent."

With roughly 180 million inhabitants and an expected annual growth rate of approximately 5%, Nigeria will have major requirements in the construction sector. With 23 million inhabitants, Ivory Coast despite being one of the smaller African countries, also offers a promising growth potential for Sika. The cement consumption in both countries is expected to grow by 9% in 2015.

One of the pillars of Sika's Strategy 2018 is the accelerated build-up of emerging markets and the expansion of the supply chain. The overall objective is to increase sales generated in emerging markets from currently 37% of total sales to 42-45% by 2018. Africa is one of the focus regions for the company. In the first six months of 2015, Sika's sales in the region were up 18%. Currently the company maintains 16 local subsidiaries and 13 manufacturing sites on the African continent. ■

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

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Chryso Group expands its presence in Mozambique

The Chryso Southern Africa Group has strengthened its presence in Mozambique through the appointment of a permanent representative for products from both Chryso and the Group's subsidiary, a.b.e. Construction Chemicals.

Luis Ferreira, business development manager – Export for Chryso Southern Africa, says Paul Soares, an experienced construction industry professional based in Maputo, has been tasked with identifying new business in the burgeoning Mozambican capital and other parts of the country, following up on existing business, and providing technical assistance to the Chryso Group's distributors and customers.

"Paul has extensive experience of the local construction industry and will now call on new and existing construction companies in Mozambique to provide product and technical



abe - railway sleepers Tete to Ncala line': Chryso SA supplied the admixtures and demoulding oil for the production of concrete railway sleepers for Mozambique's Tete to Ncala railway line.

knowledge, and encourage specification of Chryso Group products. Customers will still acquire the relevant products from our existing distributors in the segments and areas in which they operate, but Paul will provide the essential technical back-up and identify opportunities for the application of our products," Ferreira stated.

He said there was now growing demand for building materials in Mozambique with multi-storey luxury hotels, office blocks and apartment buildings being constructed to replace demolished Colonial-era structures.

"Mozambique has experienced economic growth of $\pm 8\%$ per year for the past 14 years and a major construction boom is under way there. After devastation by civil war for 15 years, the country is poised to become the world's biggest coal exporter within the next decade, while the recent discovery of two massive gas fields has turned the region into an energy hotspot, promising a massive economic bonanza," Ferreira added.

"Topping the list of the industrial sectors benefiting from this phenomenal growth is the construction sector, with transport and communications also growing rapidly. The Chryso Southern Africa Group can supply vital products to all these sectors, so see huge growth potential in Mozambique. Appointing a full-time technical consultant for Chryso and a.b.e. products will sustain our established role in Mozambique's infrastructural development while also expanding our market share in our neighbouring country," Ferreira stated. ■

**More information from Elrene Smuts,
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CESA Infrastructure Indaba

"When you don't invest in infrastructure, you are going to pay sooner or later," – Mike Parker

Consulting Engineers South Africa (CESA) has rebranded its annual conference to the CESA Infrastructure Indaba. CESA recognises that the conference is a tripartite alliance between the 3C Stakeholders (Consulting Engineers, Contractors and Clients), all working together to improve the quality of life of our people.

The CESA Infrastructure Indaba will be held from 9-10 November 2015 at Emperors Palace, aiming to stimulate debate on key issues. The Theme is 'Working Towards Improved Delivery of Infrastructure & Engineering Services'.

According to the National Development Plan South Africa will need to spend at least 30% of its GDP on infrastructure development to allow infrastructure to have a meaningful contribution in eradicating poverty, halving

the unemployment rate and contributing to economic growth to the desired level of between 5 and 7% per annum by 2030.

Currently the country is only managing 22.9% of GDP on infrastructure spending with the public sector contributing 13.95% and the private sector 8.95%. The respective targets for the public and private sectors are 20% and 10%.

Topics to be covered at the conference include: Procurement or 'misprocurement'; Service delivery through Engineering Infrastructure; Human Capital development (Recognition of the engineering profession and Succession Planning & leadership development); Infrastructure Funding – Collaborations and Corruption (values or ethics). ■

**Conference registration including Gala Dinner:
R 6,690.00 including VAT**

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Top 4 must-have clauses in your construction contracts in Africa

The scramble for construction contracts in Africa continues. However, before you embark on a contract here are some important clauses that you should ensure are incorporated into your contract.

I am sure if you have been in the construction industry for a while there are some critical clauses that you have regretted leaving out when signing a contract which would have perfectly protected your rights and minimised your liabilities and increased your profitability.

As a leading journal for the construction industry in Africa, *Construction Review Online* has interviewed many contractors and here are the top four clauses that they deemed necessary – especially for those embarking on construction contracts in countries across Africa.

1. Scope of Work: This is what defines what you will do, how you will do it, what you will use, how long you will take and the criteria of the contract between the service provider (vendor) and the customer.

While some may regard the scope of work as a simple thing, as a contractor, bear in mind that it should clearly document the project requirements, milestones, deliverables, end products, documents and reports that are expected to be provided by the vendor. Make sure that both parties understand what is to be done and not to be done.

2. Indemnification: We all know that compensating for any loss keeps the business going and an indemnification clause

compels one party to compensate the other party for certain losses or damages resulting from third-party claims.

This will keep you as a constructor in the game if at any stage your client moves or activities result in your loss. This compensation is unrelated to other contractual obligations and damages. An indemnification clause can help protect you against future liability.

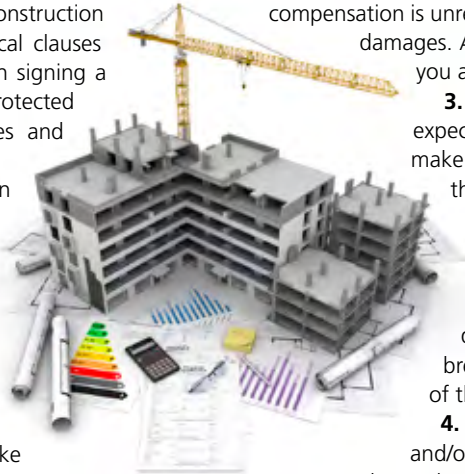
3. Payment Conditions: After work we all expect to have our dues paid. As a contractor make sure you get into the right agreement on the mode of payment.

You should ensure that you know the conditions under which the payment will be made for the work done and for the work yet to be done. To help determine this, you should have a cost breakdown of the entire project ready as part of the contract negotiation process.

4. ADR Clause: This could be Arbitration and/or Mediation. Although not all construction contracts have them, arbitration clauses may prove to be extremely helpful in case of a future dispute.

Arbitration and meditation can help cut costs of potential litigation. Consider what sort of arbitration suits both of your needs best and include these provisions in the contract. There are many versions of arbitration and we recommend you consult an attorney before deciding which to incorporate into your contract. ■

<http://goo.gl/vRz78z>



Ethiopia: Gilgel Gibe III Hydroelectric Project has begun power generation

The Gilgel Gibe III hydroelectric power project began power generation on October 10. The Dam, the highest roller-compacted concrete dam in Africa at 243 m, will have a total installed capacity of 1,870 MW. This will increase Ethiopia's power generation capacity by 234%, contributing to Ethiopia's socio-economic development by feeding the country's grid as well as facilitating more power to the country's power-export program and assisting



regional integration among neighbouring countries through the interconnected power links.

About Gilgel Gibe III Dam

The Gilgel Gibe III Dam is an under construction 243-m-high roller-compacted concrete dam which has an associated hydroelectric power plant on the Omo river in Ethiopia. It is located about 92 km (57 mi) northwest of Arba Minch in the Southern Nations, Nationalities, and Peoples' Region. Once completed it would be the third-largest hydroelectric plant in Africa and will produce a power output of about 1870 Megawatt (MW).

The Gibe III dam will be part of the Gibe cascade, a series of dams including the existing Gibe I dam (184 MW) and Gibe II power station (420 MW) as well as the planned Gibe IV (1472 MW) and Gibe V (560 MW) dams. The existing dams are owned and operated by the state-owned Ethiopian Electric Power Corporation, which is also the client for the Gibe III Dam. ■

<http://goo.gl/oi1S9W>



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Gearing up for multi-billion infrastructure projects

As Government gears up to spend R813 billion on infrastructure development over the next three years, the Aggregate and Sand Producers Association of Southern Africa (Aspasa) is cautioning role players to begin consulting with building material suppliers to ensure availability and quality of products required.

Aspasa director, Nico Pienaar, says planning needs to be done in conjunction with all role players so that materials such as sand and aggregates are available where required. Depending on the grade and type of aggregates required, materials may need to be sourced from different areas which might complicate or increase the price of projects.

"Sand and aggregates in concrete, bitumen or as bedding material, are the building blocks of almost all our infrastructure from roads to railways, building and pipelines. Yet few people realise how different the requirement is for each application.

"Different infrastructure requires different characteristics and properties of these materials and it is thus prudent to establish where the nearest sources are, what reserves are available, what transport implications exist and to secure supply and pricing at a predetermined rate.

"Otherwise, material may require transportation over long distances to ensure it meets the correct specification and quality. Contractors may be tempted to use unsuitable material



Nico Pienaar of Aspasa.

from makeshift excavations or purchase from illegal suppliers practicing unsustainable quarrying, negatively impacting surrounding communities, and the environment.

By working with all relevant industries, plans can be made to bolster supply to meet demands. Where local supplies are an issue the industry could work together to stockpile materials or locate new and sustainable sources closer to where it is required. This will also prevent collusion as all possible suppliers can be identified and terms, conditions and pricing obtained beforehand to ensure fairness. "We want to ensure that our industry is ready and stands to benefit from Government's bold plans," Pienaar concludes. ■

More information from Nico Pienaar,
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Master Builders SA appoints new executive director

Roy Mnisi has been appointed executive director of Master Builders South Africa (MBSA), the leading national representative body in the building and construction industry in South Africa.

Mnisi has served as the CEO of the Institute of Municipal Finance Officers since 2008. He is a qualified attorney and is a non-practising member of the Law Society of South Africa. He is also a member of the Institute of Directors and has, over the last five years, served on a number of boards and committees.

Currently in the process of completing his Masters in Corporate Law through UNISA, Mnisi cites some of his key skills as "strategic thinking; planning and implementation; as well as analysing and organising."

"Roy will be an asset to MBSA, and I look forward to having him at the forefront of the necessary change management and culture break that will enable the organisa-



Roy Mnisi has been appointed executive director of Master Builders South Africa (MBSA)

tion to better deliver on its mandate," comments MBSA President, Neil Cloete.

Master Builders South Africa is a voluntary membership based organisation representing contractors and employers operating in the building and construction sectors. Its primary role is to promote the viewpoints and interests of the industry and to promote the highest quality and standards. It engages with government and legislative bodies on national policies that affect the industry, with the goal of creating a sustainable building industry in South Africa.

It also provides a range of services to its members, including training, legal services and labour relations, as well as advice on building codes, standards and economics impacting on the building industry. ■

More information from Neil Cloete,
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Championing corrosion control in South Africa

In its quest to continually champion corrosion control, the Corrosion Institute of Southern Africa (CorrISA) has prioritised corrosion-related education and training.

To achieve this aim, emphasis is placed on providing excellent training courses geared to learners at all levels and covering a range of topics within the corrosion sector. This effectively ensures that knowledge is gained, expertise is shared and the broader industry is the ultimate beneficiary.

The suite of courses offered is constantly being updated and expanded to ensure that current 'best practice' is incorporated and the diversity and accessibility of the range of courses is maximised. Lecturers are all accredited professionals with many years of experience in the industry and their ability to share their expertise is invaluable to students.



Training courses currently available include:

- Not Just Rust: a basic introduction suitable for technical and non-technical learners.
- Introduction to Corrosion Engineering: this flagship five-day course has a 20-year success story and continues to be offered to critical acclaim.
- Economics of Corrosion: the ideal course to bridge the financial/economic aspects and technical aspects of

corrosion. This course has particular appeal to financial departments dealing with large asset procurement as well as project engineers wanting to learn how best to present their requirements for budget approval.

- Best Practice Awareness – Corrosion in the Water Industry: a specialised course geared to those working primarily with water pipelines. The course looks at coating and cathodic protection as well as some of the peripheral aspects which may influence or exacerbate corrosion.
- The NACE International suite of cathodic protection and coating inspection courses which is presented under license to NACE International.
- Specialist courses: these are presented through CorrISA by industry experts.

Through these courses as well as practical hands-on workshops, seminars and the highly esteemed biennial AfriCORR Congress, CorrISA is becoming widely regarded as the foremost authority on Corrosion Education in Southern Africa. ■

**More information from Tel: +27(0)10 224 0761
email: secretary@corrosioninstitute.org.za
www.corrosioninstitute.org.za**

Prosecute leaded paint producers or embarrass South Africa

The SA Paint Manufacturing Association (SAPMA) has advised the SA Department of Health that the government's failure to prosecute paint manufacturers with hazardous levels of lead in their paint products was not only hampering SAPMA's quest for the total elimination of lead in paints, but would also severely embarrass South Africa if plans to stage a global 'anti-lead-in-paint' conference here in 2018 came to fruition.

SAPMA was recently advised by the International Paint and Printing Ink Council (IPPIC) that it was strongly considering holding its 2018 conference – at which lead in paint would be a major topic – in South Africa. This stems from IPPIC's admiration for SAPMA's pioneering anti-lead campaign in Africa. IPPIC, in fact, presented a paper on SAPMA's African success at a Global Alliance to Eliminate Lead Paints (GAELIP) meeting, organised by the UN Environment Program (UNEP) and the World Health Organisation (WHO), in India late last year.

The UN Forum was told that SAPMA had taken a leading role in voluntarily eliminating soluble lead in the early 1970s,



Deryck Spence, executive director of SAPMA.

in line with British and European standards, as well the establishment of the legislation under the auspices of the Hazardous Substance Act promulgated in 2009.

SAPMA has urged that any companies still using lead pigments in enamel paints, should be prosecuted. But their pleas to the SA Department of Health had so far fallen on deaf ears, he said.

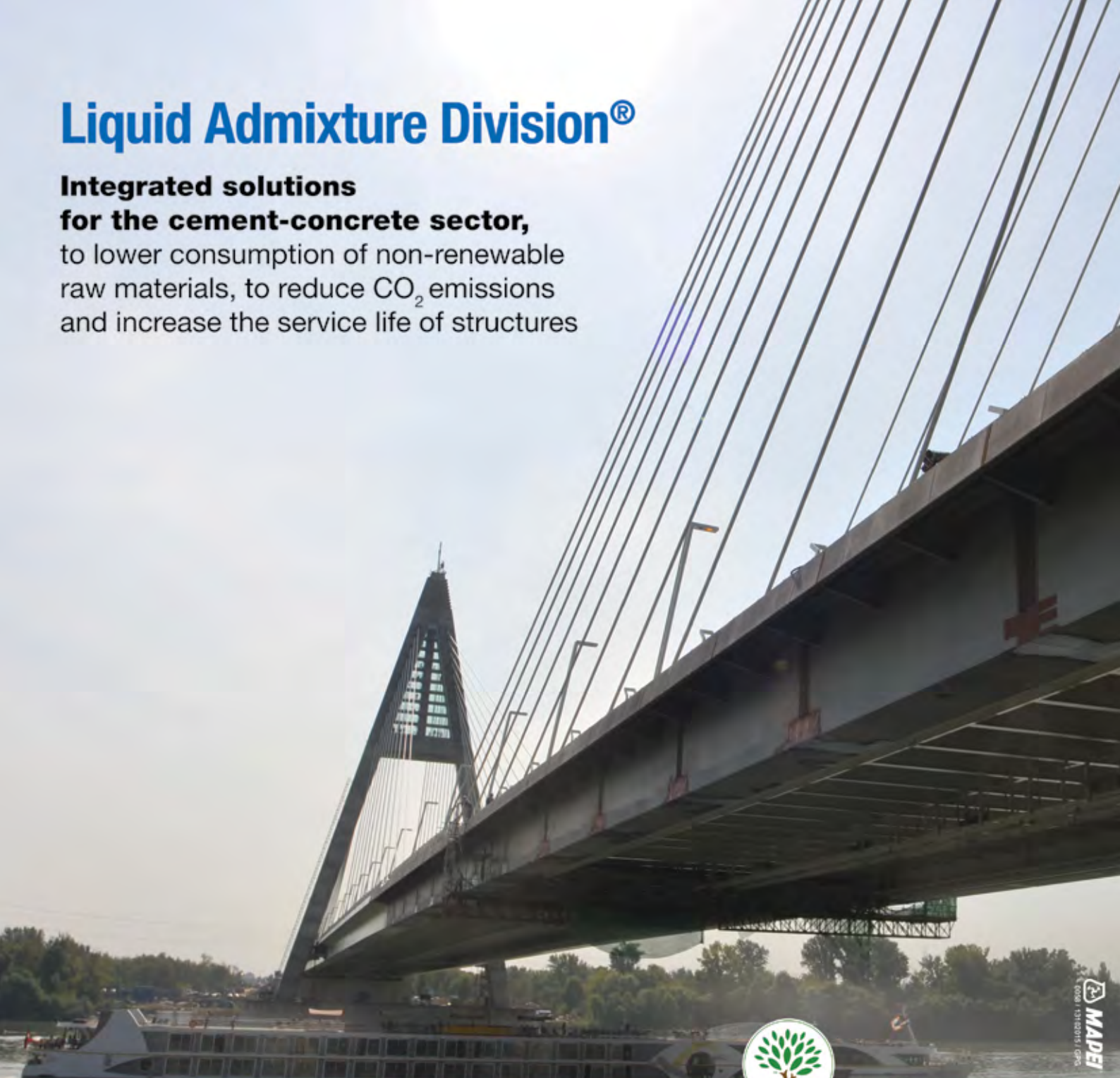
"SAPMA has also participated jointly with the SA Department of Health in numerous awareness campaigns relating to lead in paint, but feels strongly that perpetrators will continue offending unless they are prosecuted.

"SAPMA therefore urged the Department of Health to urgently introduce a total ban on lead in paint, and to even more importantly immediately start prosecuting all the offending manufacturers so that South Africa could put its house in order before the proposed 2018 conference is held in South Africa," Spence concluded. ■

**More information from Mandy Linossi,
Tel: +27(0)11 615 1195 / www.sapma.org.za**

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New and innovative developments in the latest Plug&Grind® models

By Moisés R. Nunez, Commercial and Marketing manager

Since its presentation to the world in Ghana in 2011, Plug&Grind® has regularly introduced new features in its development of its range of new modular and portable grinding stations.

First introduced was the Plug&Grind® Classic, which has a production capacity of 90,000 t/y, with a ball mill Ø 2,2 x 9,5 m and 500kW. The first unit was sold in Kenya for utilisation by Mombasa Cement.

A year later, Cemengal's Plug&Grind® XL made its appearance. A cement grinding plant with a production capacity of 230,000 t/y: ball mill Ø 3,0 x 9,5 m and 1100 kW; bag filter for 50,000 m³/h. The "big brother" of the Classic model, it comprises eight containers and four special modules, delivered in only eight and a half months FOB.

As a result of the R&D department's continuing investigations and modifications, the Plug&Grind® Fuels emerged late in 2014. This is a petcoke and coal grinding plant with a production capacity of 130,000 t/y and a ball mill Ø 3,0 x 9,5 m and 1100kW. This is the fuels grinding station for which most cement players have been waiting. Eight containers and four special modules are delivered in eight and a half months FOB.

Spring 2015 saw the arrival of the Plug&Grind®XP4. This cement grinding plant is an XL model equipped with the new Magotteaux Classifier XP4®.

Magotteaux, as a historic partner of Cemengal, collaborated on the concept for the process sizing and tube mill internals as well as for the classifier.

The current development of its original classifier XP4® comes after 30 years of experience with the third-generation

SD Sturtevant classifier, and the new XP4® is fully aligned with the growing success of Cemengal's Plug&Grind® – a no less original concept.

This XP4®I classifier integrates the three functions in one unique body: the particle classification, the fan and the cyclone

The main advantages of this classifier are:

- Its compact design, which aligns perfectly with the full compact plug and grind concept. No ducting to one external fan, no external fan and a drastic reduction of the filter capacity and sizing as only 10% of the air classifier throughput (5000 m³/h) has to be utilised on top of the main mill process filter for dedusting
- Its own efficiency, which is fully comparable to latest classifier generation
- Its lower energy consumption due to the lower pressure drop also linked to the compact design, using the air rotation movements after the classifier cage for the integrated cycloning function

The production capacity is 230,000 t/y and it has a ball mill of Ø 3,0 x 9,5 m and 1100kW.

During this past summer, the very latest model of Plug&Grind® was launched to the market – the VP&G® Cement and Slag grinding station which has a production capacity of 17 t/h for GGBFS and 23 t/h for cement. This new product will meet customers' needs for energy savings and includes the latest technology in vertical mill products.



Any of the above models would provide the solution for investing in new markets, isolated markets, or just for major short-term projects.

Plug&Grind's® short time to market after contract signature, as well as the modularity and portability of these grinding stations, makes the Plug&Grind® the ideal solution for most grinding projects in Africa.

In addition to all the above advantages, the Plug&Grind® is the only modular and portable grinding solution which has units already sold, operating and proven. To date, more than 20 units in three different continents are working for all kinds of clients, producing cement and slags.

In Africa we have sold two units in Uganda, two in Kenya, two in Mauritania and two more units in two other African countries.

In summary, the main advantages of all Plug&Grind® models are:

- ✓ Modular design: the Plug&Grind® Classic fits in just nine standard containers, and the Plug&Grind® XI fits into eight standard containers and four special modules
- ✓ Short time to market: delivery in under eight months
- ✓ Preassembled in Spain: small and easy work on site
- ✓ Easy to transport, erection and commissioning
- ✓ Simple civil works
- ✓ Simple operation and maintenance
- ✓ Low staff numbers required to operate the Plug&Grind®
- ✓ Strategic for penetration into new and/or small, niche markets.

For all the above reasons, we firmly believe Plug&Grind is the solution for an increasing number of markets worldwide. ■

More information from Moisés R. Nunez,
email: moises.nunez@cemengal.com
www.cemengal.com



Above and below left: Kampala Cement's Plug&Grind plant.



Above and below: Plug&Grind in Mauritania.





A Tale of Two: Contemporary Concrete Living

Architect: Enrico Daffonchio.

By Daniel van der Merwe. Architect, PPC

Italian-born and Johannesburg-based architect Enrico Daffonchio was invited to exhibit his work at the Venice Biennale's TIME SPACE EXISTENCE exhibition. Daffonchio is possibly best known for his work on the redevelopment of the Maboneng Precinct in Johannesburg's CBD, where his architecture has been central to reinventing this previously neglected urban neighbourhood.

His career, however, spans from early successes such as the luxurious Outpost Lodge in the northern Kruger Park, which won the 2003 Wallpaper Magazine Award for best lodge, through to a number of show-stopping houses that push the envelope of sustainable yet modern architecture, as well as to urban design and commercial buildings (The Energy Works in Parktown North is another landmark work).





His architectural approach is strongly rooted in his formative years in northern Italy, where classical architecture coexists with Italian rationalism, and a chemistry of tradition and innovation shapes all aspects of design.

Daffonchio loves the raw honesty and textural qualities of off-shutter architectural concrete. Its low- to no-maintenance, structural integrity, good thermal qualities and endless application possibilities ensure that concrete is used whenever possible in his architecture.

House 01, Hyde Park, Johannesburg

This house has been designed to be highly flexible and adapt to the owners' changing needs. The house has two skins throughout: the sliding glass windows and doors, and the sliding timber shutters, which enable the owners to constantly transform the look and feel of the spaces to suit their activities.

On the ground floor, all of the doors in the living area can slide away to open out onto the expansive covered patio and garden, while the timber shutters set into the concrete portal on the south of the patio can slide away so that the patio is open to the landscaped motor court to the south, and to the garden and pool to the north. Along the full length of the northern facade on the first floor, folding stacking timber shutters outside the sliding windows provide shading and privacy for the bedrooms and TV room, but can be stacked open for extra sun and views.

The house is cooled by means of passive solar design, thermal mass, insulation, natural ventilation and cross ventilation. In winter, the house is heated with hot water under-floor heating, connected to a heat pump (heat exchange). Domestic hot water is provided by means of solar geysers, and the pool is heated with solar mats.





House 3, Hyde Park, Johannesburg

The house is set on a secluded site in Hyde Park. The architecture is a bold mix of off-shutter concrete and slick materials, with dramatic volumes and lighting. On arrival, one is greeted by a high, solid exposed off-shutter concrete wall, with a 3.8-m-high raw mild steel entrance door and canopy. The entire door can pivot open and is held open by means of a steel disc which is rotated to lodge into a sluice in the concrete motor court. For practical reasons, the pivot door has a smaller, concealed side hung door set into it. The garage doors to the west of the motor court have been designed as full height steel frames clad in timber slats. The surface of the motor court is made up of concrete slabs with strips of grass in between to soften the area and absorb stormwater.

One enters into a 7-m-high living area, with an exposed off-shutter concrete wall to the south, and an exposed off-shutter concrete soffit above. To the south and north of this area are walnut-clad floating staircases with frameless glass balustrades, which lead to the first floor and the jacuzzi and yoga deck on the roof respectively.

Several sculptural light fittings are suspended in the volume. The rest of the lighting is achieved by means of soft, indirect light, which takes the form of LED light strips underneath the stairs and the kitchen island, LED cove lighting, and recessed downlights in troughs. This combination affords the owners flexibility to light the space to suit activities and moods.

On the western end of the double-volume living area is the kitchen, which was specifically designed to read as an architectural feature rather than a kitchen. The kitchen comprises walnut cupboards and cladding which stretch all the way up to the underside of the soffit, and wrap around a window which looks onto, and is shaded by, an ancient olive tree. The kitchen island appears as a monolithic block, with a thick slab of ironwood floating off the back of it, which acts as a server while visually concealing the hob. To the south of the kitchen is a frameless black glass sliding door, which can be pushed into a cavity to open the kitchen up to the back of house kitchen and scullery area. When closed, this door reflects the garden and view to the north.

The north side of the double volume opens onto a more intimate, lower living area, with a white oak ceiling, and sliding floor-to-ceiling glass doors on the north, east and west sides. These doors slide away into cavity walls, allowing the entire area to flow onto the pool, braai area and garden.

The eastern end of the pool has a beach entry, which slopes down from the covered patio to the north of the cinema, creating spatial and visual continuity with the living areas.

On the first floor, the three bedroom suites are surrounded by floor-to-ceiling sliding glass doors with frameless glass balustrades to take advantage of the view over Hyde Park, and enable the rooms to be opened up to the outside. Sliding timber shutters provide shading and privacy when closed.

The monochromatic palette of materials throughout the house was selected to ensure a balance and contrast between slick, modern elements and a soft, natural feel. In the guest bathroom, the exposed off-shutter concrete walls surrounding the vanity area have been left untreated, and serve as the backdrop for a polished brass vanity counter, a sculptural white basin, and a round mirror which conceals a light which washes over the concrete, accenting its roughness. The slick reflectiveness of the white Caesarstone, black glass and mirrors in the bathrooms is softened by the use of matte charcoal Duco, timber, and warm, concealed lighting. ■



More information from the author via email:
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Translucent concrete animates Abu Dhabi Mosque's facade

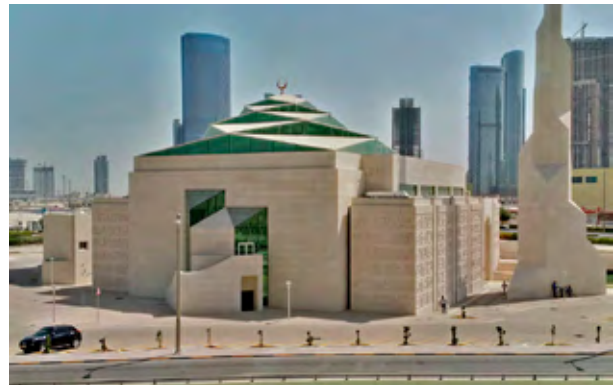
By Rory Stott

By day, the concrete facade of APG Architecture and Planning Group's Al Aziz Mosque in Abu Dhabi, features protruding elements of Arabic script spelling out the 99 names of God from the Quran. By night though, the 515-m² facade is transformed, as the concrete script lights up in the darkness. The effect is made possible thanks to the translucent concrete panelling system provided by the German-based manufacturer LUCEM.

The translucent concrete used in the facade system works thanks to fibre optics, included as part of the aggregate within the concrete. In this project, LUCEM were able to position these fibres in accordance with drawings created by the architects and an expert calligrapher. To blend with the stone panels used elsewhere on the building's facade, the concrete used was pigmented to match the stone's color, and the panels sandblasted to create the correct texture.

While it appears that the facade is lit by light from inside the building, the effect is achieved through a system of LEDs installed within the wall cavity. This required LUCEM to develop a specialised cable system which would allow faulty LEDs to be replaced without removing any of the panels – each of which weighs over 300 kg. ■

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Sika has shown steady growth with two new branches located in Namibia and Botswana. In addition to this, Sika South Africa now has two production plants in Kwa-Zulu Natal as well as Gauteng, doubling production in a matter of years.

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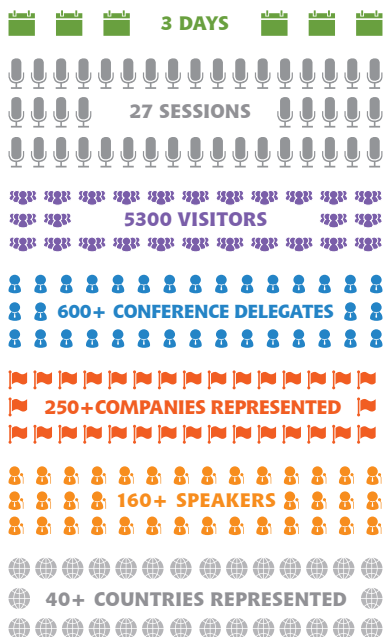
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TOTALLY CONCRETE EXPO

AFRICAN CONSTRUCTION AND TOTALLY CONCRETE EXPOS PREPARE INDUSTRY AND GOVERNMENT FOR URBANISATION RATES OF 74% BY 2035

African Construction and Totally Concrete Expos, Africa's biggest gathering of qualified buyers and sellers for the cement, concrete and construction industries holds its 4th annual event from 9 to 11 May 2016 at Gallagher Convention Centre in Johannesburg, South Africa.

Sub-Saharan Africa is now poised for unprecedented growth with the region's population forecast to grow from 1.1 billion people in 2013 to 2.4 billion by 2050. Consumer spending is forecast to rise from US\$1 trillion to US\$4.7-trillion over the same period. In addition, transport volume demand is expected to climb by a factor of between six and eight by 2040 and **urbanisation rates are expected to climb from 63% in 2014 to 74% by 2035** in South African cities alone.

As Africa's construction industry leaders gear up to support their long-term development initiatives designed to underpin these growth forecasts, the African Construction and the Totally Concrete Expos provide a unique gateway into doing construction business across the continent's high growth and high risk markets.

Cement and concrete companies that are also facing increasing competition in the South African market are now looking across borders into the higher margin growth that is being experienced throughout sub-Saharan nations. **African growth presents huge business opportunities for the cement industry** in particular because the whole subcontinent requires 40 million tonnes of new cement capacity. Both industry titans and new entrants into the local marketplace will find value in the African Construction and Totally Concrete Expos experience because the platform provides an outlet for construction business development while also offering practical insight into managing daily operations in the African context.

Over the course of three days, **the 2016 edition of the event brings together more than 6000 construction experts from across the continent** next May to facilitate an interactive exchange of knowledge and to promote cross-border collaboration. The

conference offers innovative and interactive content delivery that addresses strategic issues affecting infrastructure delivery and also discusses the latest developments and technologies that are associated with the cement, concrete and construction industries.

Both the indoor and outdoor exhibitions showcase the very latest products and solutions available to deliver projects on time and on budget and also offer free technical training workshops aimed at promoting capacity building as well as skills development for the local built environment.

An independent event survey conducted by a research engine called Explori in 2015 revealed that **participants to the African Construction as well as to the Totally Concrete Expos rate the event highly and express a very high likelihood of return**, citing that the event has the best content, scoring well above other major conferences catering to the African construction industry.

"It was a very successful show for us where we made a number of high quality new contacts and reinvigorated old relationships. **Most beneficial for us were the direct introductions to specific people in various governmental and business organisations,**" says Michael Canfield, Communications Manager at The Gauteng Asphalt Group of Companies, of the event.

Endorsed by the Concrete Society of Southern Africa and sponsored by Marley Building Systems, AfriSam, Pan Mixers South Africa (PMSA), Priedemann and Stihl, African Construction and Totally Concrete Expo is the only all things cement, concrete and construction event in Africa that provides the entire industry ecosystem with the tools and solutions to navigate Africa's high growth markets and ensure ROI on projects of all sizes.



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– Steven Kaplan, COO, South African Institution of Civil Engineering, South Africa



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- Concrete Society of Southern Africa
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Innovative formwork solution for Victoria Station, London



PAL22 with shutter installed.

The London Underground, the oldest in the world and the largest in Europe, comprises 11 lines and 270 stations. Of these, the Victoria Line is a deep-level underground route built in the 1960s providing an interchange between The Tube tunnels and the Victoria mainline station terminus.

Used by over 100 million passengers per year, the Victoria Line is the busiest London Underground line. The £741-million Victoria Station Upgrade (VSU) was commissioned to relieve congestion and upgrade the station. To facilitate the flow of passengers, the upgrade required new entrances, a complex network of high-level interchange tunnels, escalators and elevators, and new ticketing offices and corridors.

The complex network of passenger tunnels required various changes in section profile, so the secondary lining consisted of numerous geometries and profiles across the extent of the project. After a series of lengthy negotiations involving some of the best known European competitors in the field of steel moulds for in-situ casting, the main contractor (BAM Nuttall and Taylor Woodrow Joint Venture) awarded CIFA the steel formwork supply contract.

CIFA proposed an innovative and highly flexible technical solution that could be modified on site to accommodate the changing profiles. This was based on flanged formwork built using various radii with minimum deflection tolerances coupled with a single carriage with a dual longitudinal length configuration and a variable height with different configurations.

CIFA provided formwork comprising three elements, 5 metres in length, that could be adapted to the 7 sections of the network and were transported by a long (≈6.85 m) motorised carriage travelling on rails.

The added difficulty in moving the equipment through the narrow connection curves of the tunnels was overcome by creating a system that allowed for the carriage to be short-



Travelling shutter installed in shaft.

ened 'semi-automatically' (≈ 3.50 m) by removing the longitudinal extensions, thus configuring it for the transport of just one formwork element. The problem of the different heights was overcome using telescoping legs with removable-flange trunks and supplementary external lifting cylinders.

These solutions allowed for the pre-assembled carriage to be lowered in the shaft in a reduced configuration, as well as for each 1.67-m ring of the formwork (weighing 4.60 tonnes each) to be transported to the first and narrowest opening (PAL22).

After having completed the transport phase, the carriage was extended semi-automatically in the vicinity of the first tunnel and was loaded with the 3 rings (total weight ± 14 tonnes). The casting phase then commenced for the various sections, with adaptations being made to the regularity of the profiles, which were in-line with the tolerances specified by the designer. An equally effective system was established for the casting of PAL10 escalator incline on a slope of 30° .

A system of pulling cables fixed to a 7.5-tonne winch and an anti-tipping counterweight allowed the carriage to operate safely for both the transportation and positioning of the casting moulds. One particularly challenging aspect of the work was the transition sections – i.e. those between the horizontal upper and lower chambers and the 30° inclined escalator barrel.

The adaptable shuttering system developed by CIFA allowed TWBN to construct

the transition sections using the same traveller and bespoke shutters simply fitted to it on site.

Along with the clever formwork design, the solution included a procedure for handling the geometric and structural details of each piece of formwork as well as transporting and positioning the formwork to complete the casting.

The solution was implemented on site using a forklift secured using cables connected to a winch located in the upper chamber, which allowed safe passage of the formwork through the upper transition and down the escalator incline. The formwork, designed by Giovanni Esposito of CIFA, was symmetrically adaptable allowing it to mirror itself and so be re-used for the upper and lower transitions. Guided by product manager Luigi Scudellaro, the CIFA Tunnelling technicians were on site to oversee the success of this solution.

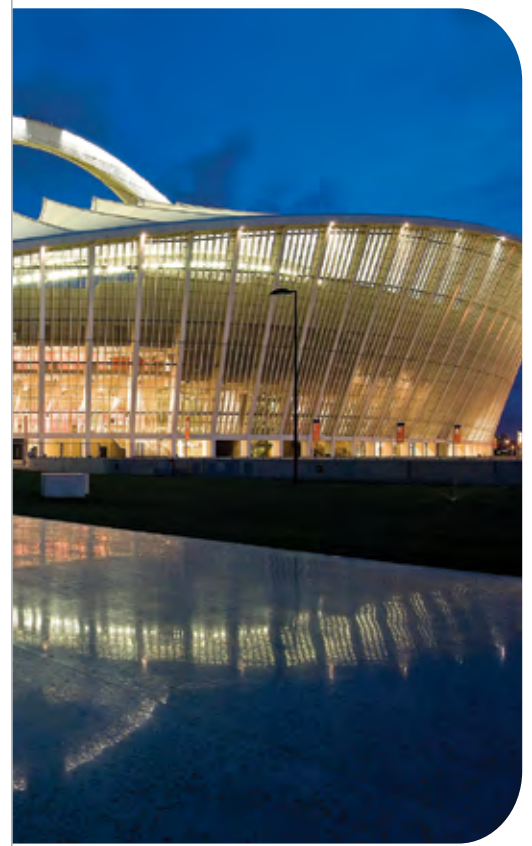
These works have served to highlight the uniqueness of CIFA's products. Miles Ashley, programme director of LU Cross-rail & Stations, said: "This was truly the first time that this system has ever been used to cast an inclined chamber, and it turned out to be a brilliant example of engineering being used to solve the problem of completing a casting on a steep slope."

The final stages of the works are currently under way and are proceeding on schedule. ■

More information from
Eleonora Radice,
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Pulling cables helped to position the travelling shutter.



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Preservation a focus for new TuksSport High School

Preserving historical and botanical treasures were among the challenges Pretoria building contractors, J.C. van der Linde & Venter Projects, overcame when constructing the new R49-million TuksSport High School and residences on the University of Pretoria Sports Campus in Hatfield.

TuksSport High School is an independent co-ed school, catering for 260 learners from Grade 8 to 12. The school, which opened on 20 July 2015, forms part of the UP High Performance Centre, sharing its vision of offering both a sporting and learning environment for selected students. It enables current and potential top performers to receive sports coaching and training while continuing their schooling.

The new facility is located on a University of Pretoria Veterinary Science Faculty Experimental Farm (Proefplaas) site, historically a quarantine camp for new livestock or game before the animals were taken to dedicated camps. Steven Brown, contracts director for MBA North member, J.C. van der Linde & Venter Projects, who handled the contract, says the project called for construction of four primary buildings:

- A double-storey administrative building with adjacent single-storey multi-purpose hall. The admin building includes a reception lounge, offices, boardroom, staff room, copy room and psychologist's room. The adjacent multipurpose shed-like hall is semi-covered with a laser-cut screening that extends from its pitched roof.
- One triple-storey and two double-storey classroom blocks comprising 17 classrooms, an IT centre and laboratory classrooms.
- A four-storey residence block for 96 students, constructed with a combination of load-bearing brickwork and a concrete column structure. The block's red facebrick façade is combined with plastered and painted walls and the building is fitted with a curved steel fire escape enclosed with steel mesh.

"J.C. van der Linde & Venter Projects also had to provide an open-air amphitheatre, accommodating 260 students," Brown states.



The four-storey residential block with the amphitheatre in the foreground. The curved steel fire escape was designed to soften the western red facebrick façade.



Attached to the TuksSport campus' admin block is a multi-purpose hall, designed to evoke memories of a farm shed on the historic Proefplaas site.



The classroom blocks spill out on to a central courtyard with concrete seating.

He describes the historical and the environmental challenges that were presented by the site. "We had to preserve some extremely rare trees – which created fairly formidable access problems – and also ensure that specified historical structures on the terrain were not damaged during the building process."

Neo Dimensions architect, Ben Kunz, who handled the design of the TuksSport project, says structures such as the old Proefplaas' quarantined animals' concrete drinking troughs, had to be preserved and incorporated in the design. "The drinking troughs were re-used here as landscape elements and the footprint of the old camp re-introduced into the landscaping by means of paving lines in the lawns," Ben Kunz explains.

"The trees on the site are mainly the remnants of a UP arboretum. Eight particularly precious trees were identified, which included three different species of South African yellowwoods. Only at the National Botanical Gardens at Kirstenbosch are all four indigenous yellowwood species to be found. So the experimental farm's three yellowwoods, had to form part of the design, building and provision of services.

"Neo Dimensions' design for TuksSport consists of too open, separate and detached buildings, influenced by their various functions, incorporating an openness in the landscaping. We wanted to keep the farm-like character and opted for buildings with raw finishes. Robust red facebricks were used throughout to commemorate the quarantine camps, as well as steel-frame structures reminiscent of the farm sheds. Off-shutter concrete was chosen for all soffits, columns and

walkways for both durability and the desired look and feel," Kunz states.

"Environmental concerns were important; e.g. the residence block's north façade features different bedrooms on each level that protrude, or are recessed, from the façade to create natural sun control over the bedroom windows. Additional steel louvres were provided to the protruding bedrooms with their vertical window design. Furthermore, the flat concrete roof of the building can accommodate future 'green' facilities such as water storage tanks and solar panels. Hot water is generated by a heat pump with a water storage vessel," he adds.

The amphitheatre was influenced by the difference in contour between the classroom buildings and the residential block. "An amphitheatre was the ideal solution to accommodate this difference in levels and it produced the perfect school assembly space," Kunz explains.

Steven Brown says J.C. van der Linde & Venter Projects started work the contract in August last year, and handover took place in July 2015, as scheduled. His team on site included two senior foremen, a senior site manager, and full-time professional Health and Safety Manager. A total of 1,600 m³ of concrete and about 700,000 clay bricks were required for the building.

Funding for the construction of the new TuksSport High School was provided by The Athletics Foundation Trust. ■

All photographs courtesy of Ciaran Nunan.

**More information from Charl Venter,
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The professional team

Main contractors: J.C. van der Linde & Venter Projects

Architects: Neo Dimensions Architects

Project Manager: Neo Dimensions Architects

Quantity surveyors: GK Projects

Structural engineers: DG Consulting Engineers

Electrical and mechanical engineers: Plantech

Landscape architects: University of Pretoria

H&S consultants: Oryx

Fire officers: Adengo Consulting.



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Popular PE promenade undergoes major refurbishment

As part of a lengthy repair project, Sika products have spruced up Port Elizabeth's very popular beachfront promenade with a complete refurbishment. When the walling and railings along the PE promenade were in serious need of repair, Nelson Mandela Bay Municipality hired Africoast Engineers to design an effective solution for the deteriorating infrastructure. Sika's PE Consultant John Zehmke recommended use of seven Sika products. Techni Civils was subcontracted when casting of new concrete walling was proposed for the more deteriorated sections of the promenade. Meandering for several kilometres along the beachfront, the Port Elizabeth Promenade performs a significant role in the city's tourism industry, and it was therefore imperative that the most reliable products be used to give the structure long lasting and aesthetically pleasing protection against the harsh coastal environment.

Standing approximately halfway along the promenade at Humewood Beach is the Promenade Dome, commonly called The Tin Hat for its resemblance to a WW1 soldier's helmet. This large concrete dome, standing on six columns, formed part of the Sika repair and protection project. It is situated on one of the older sections of the promenade known as the Princess Promenade, which was officially opened by Prince and Princess Arthur in 1923.

Being so close to the sea, corrosion protection was critical. Sika FerroGard-903+ was spray applied onto all concrete surfaces. Based on organic compounds, the product is a ready-to-apply corrosion inhibitor that penetrates the concrete and forms a protective monomolecular layer on both the cathodic and anodic zones of the reinforcing steel. It does not change the appearance, nor alter the water vapour diffusion properties of the concrete structure, and can be applied where other repair or prevention options are not viable. Sika FerroGard-903+ is an economical, renewable corrosion inhibitor that can increase the service and maintenance life cycles of concrete structures by up to 15 years.

Two products used from Sika's Concrete Repair and Protection range were SikaTop Armatec-110 EpoCem, an epoxy resin compensated coating material with corrosion inhibitor, and Sika MonoTop-612, a cementitious, polymer-modified high strength repair mortar containing silica fume and synthetic fibre reinforcement. While SikaTop Armatec-110 EpoCem protects anodic areas and provides excellent adhesion to concrete and steel, Sika MonoTop-612 provides excellent workability characteristics and is ideally suited for application on overhead or vertical surfaces. In this project the latter was used as a concrete

repair mortar. Both products may be spray applied and provide good resistance to water and chloride penetration.

Sikacem-810 a waterproof, reactive synthetic polymer dispersion, was used as a mortar additive where damaged parts of the wall required replastering. Its finely dispersed silica fume reacts with calcium hydroxide, a by-product of cement hydration, to increase the overall proportion of set cement in the mortar. The benefits of this reaction include improved bond strength, increased workability, and significantly higher flexural, tensile and compressive strengths. Non-corrosive, the product provides increased resistance to wear and abrasion and improved impermeability to water.

Awarded the contract for this large refurbishment project, Techni Civils not only faced the challenge of daily high tides, delaying application of some repair products, but also monthly spring tides when especially high sea levels reached those sections of wall built close to the water's edge.

The balustrading and all joints between concrete panels, were sealed with Sikaflex AT-Facade, an internationally approved one-component, moisture-curing elastic sealant based on silane terminated polymers. It is specifically designed for use on movement and connection joints offering a movement capability of 25% and low stress to the substrate. With low extrusion force and perfect smoothability, it provides excellent adhesion to porous or non-porous substrates and is solvent- and silicone free. By providing the highest UV resistance, colour stability and ageing resistance, Sikaflex AT-Facade was the perfect product to meet the high aesthetic standards required for this challenging project.

To increase concrete cover to steel, on some of the existing concrete, SikaTop Seal-107 ZA was applied 2 mm thick. This two-part, polymer modified, waterproof mortar slurry comprises a liquid polymer and a cement-based mixture that incorporates special admixtures.

The entire concrete walling surface was coated with Sikagard-550 W Elastic, which is a one-component, plastoe-elastic, thixotropic coating based on UV-curing acrylic dispersion. Providing excellent crack-bridging properties, a high diffusion resistance against CO₂, water vapour permeability and environmental benefits, it also delivers outstanding resistance against weathering and ageing, protects against moisture ingress and has a reduced tendency to dirt pick-up and contamination – important factors for this project. ■

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



Before Sika repairs.



After Sika completed the repairs and coating.

Work begins on challenging Menlyn Park Phase 2 project

Murray & Roberts Buildings has commenced work on the Menlyn Park Reconfiguration Phase 2 project in Pretoria. Originally opened in 1979, the Menlyn Park Shopping Centre is undergoing a major redevelopment that includes a massive expansion and also refurbishment, adding approximately 45,500 m² to bring its retail space to approximately 170,000 m².



An artist's impression of the new look Menlyn Mall currently being constructed.



Rui Santos, operations director at Murray & Roberts Buildings, says that the company recently completed the work on the first phase Food Court portion, which included the construction of an enclosed area over two levels (previously the Events Arena) which houses recreational and fast food outlets. This spanned over a seven-month period and was completed in December 2014. The construction of the new retail portion of Phase 1 spanned over 12 months and anchor tenants Checkers Hyper, Pick 'n Pay, Food Lover's Market, House and Home, New World, two restaurants and a number of smaller line shops commenced trading on 12 June 2015. Additional structured parking was also constructed during this phase.

Phase 2, which started at the beginning of June 2015 and is scheduled for handover at the end of November 2016 calls for the demolition of 35,000 m² of an existing area of the shopping centre, followed by the construction of a new two-level retail section of 57,000 m². In addition to this, the contractor will also

be responsible for the refurbishment of existing malls, ablutions and the existing seven-level parkade within the centre. This will include replacing ceilings, floor tiles, balustrades and the cladding of demising columns as well as the redecoration of existing external facades, new landscaping and boundary wall construction on the perimeter of the centre.

Tenants in the section to be demolished during Phase 2 were relocated to the new retail section of Phase 1 and to the temporary The Village Mall in the existing P5 Parkade. Demolition work has been implemented in a phased approach to accommodate this relocation of existing tenants. It was also necessary to isolate the existing services in phases for the complete centre to enable the demolition works to commence. Work is scheduled to progress from the western side of the newly completed Phase 1 mall towards the remainder of the existing centre stretching to the east.

Santos says that one of the biggest challenges on this project will be logistics. "With the mall being fully operational at all times, we will need to undertake the demolition and construction work with as little disruption to the centre as possible. This will require careful planning and great attention to the safety of not only our and sub-contractors' teams but also the general public.

"Extreme care has been taken in order to ensure the safety of all shoppers and other stakeholders, with work areas hoarded off and communicative signage clearly demarcating construction areas. Demolition will take about three months and thereafter piling will begin, followed by the construction work," says Santos.

The exceptionally fast track nature of the contract programme will be challenging, coupled with the complex logistics of moving materials in and out of the site to achieve the critical milestone dates. Environmental stewardship is important to all involved in the project and the waste material from the demolished site will be sorted, prior to removal off site.

"To accommodate the tight construction programme and also to meet the targeted handover date, a greater portion of after-hours work will be undertaken, including the majority of the finishing trades," Santos says. ■

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Crystalline combats corrosion



Corrosion will occur if there is moisture and oxygen present at the surface of the unprotected steel.



Crystalline technology turns porous concrete into an impermeable barrier, resulting in a structure with reduced cracking, self-sealing and waterproofing abilities that provide a powerful defense against water damage and corrosion of reinforcing steel.



Corrosion initiated by cracks in the concrete provides paths for water and salts to reach the reinforcement. Corrosion is quite severe despite thick concrete cover to steel (up to 75 mm). This shows how significantly cracking can compromise the structure.

Corrosion of reinforced concrete is a very significant problem affecting concrete infrastructure, leading to deteriorating concrete structures worldwide. Largely attributed to the corrosion of steel reinforcement, concrete structures built to last 50 to 100 years routinely need substantial repairs and rehabilitation during their service life. The repair and rehabilitation of concrete infrastructure results in high life-cycle costs over a structure's service life.

Traditional preventative measures

Concrete normally provides reinforcing steel with excellent corrosion protection. Due to the high alkalinity of the concrete, the steel reinforcing bars are passivated by an iron oxide film that protects the steel. However, the passive layer can break down over time due to atmospheric carbon dioxide, which through a process called carbonation, lowers the pH of the concrete until the passive layer becomes unstable. The passive layer can also be rapidly broken down by aggressive chemicals such as chlorides, which are present in coastal environments and in deicing chemicals. Once the passive layer is compromised, steel reinforcement will corrode if there is moisture and oxygen present at the surface of the steel.

Under optimal conditions, the penetration of moisture, chlorides and carbon dioxide is slow; the passive layer is protected and corrosion is minimal. Concrete's ability to resist corrosion depends largely on its permeability and the thickness of concrete cover over the reinforcement. However, if cracks are present, aggressive agents can quickly reach the steel and initiate corrosion.

Traditional measures to mitigate corrosion have proven to be less effective than desired. Excessively thick concrete cover to reinforcing steel is vulnerable to cracking, and corrosion inhibitors provide only temporary protection. Epoxy-coated reinforcement was once thought to be a solution, but has proven unreliable in field applications. The problem is that these systems do nothing to prevent the conditions that cause corrosion from developing in the first place. The current state of corrosion results from inadequate long-term performance of traditional corrosion prevention measures.

A solution

In all cases, the penetration of water into concrete is a critical factor in the corrosion of steel reinforcement. Water acts as a carrier for chloride ions, and is also required for corrosion to occur. Therefore, the first line of defense against corrosion is to prevent water penetration into the concrete. It is important to use a concrete mix with low permeability, and to use an appropriate amount of concrete cover for the application.

However, among the many solutions that exist to reduce the permeability of concrete, for many applications, the integral waterproofing system can be very effective. Permanent integral concrete waterproofing can be achieved by using a smart technology known as 'crystalline technology'. This technology is considered smart because the admixture in concrete remains dormant during the service life of the structure, activating only when it comes in contact with moisture.

Kryton International Inc.'s Krystol Internal Membrane™ (KIM®) is a chemical admixture in dry powdered form, effective in creating waterproof concrete. KIM is a reactive permeability reducing admixture for concrete based on hydrophilic, crystalline technology called Krystol™. The features of Krystol provide

many unique benefits that enhance durability and compensate for those concrete properties historically responsible for poor durability. The KIM admixture differs from other single-function admixtures and supplementary cementitious materials. KIM reduces the penetration of water and waterborne chemicals through three primary mechanisms:

- By crystallisation and lowering permeability of the concrete;
- By reducing the size and quantity of cracks in the concrete; and
- By self-sealing cracks and micro-cracks that form later in the life of the structure.

Additionally, the concrete should be placed, consolidated and cured following American Concrete Institute (ACI) guidelines to minimise shrinkage and cracking. With good materials and workmanship, concrete can resist the development of corrosive conditions, increasing structural durability and reducing lifetime maintenance costs.

Not only will Kryton's KIM diminish corrosive conditions but it reduces water permeability by 70-90%; it can withstand water pressure of 140-m head pressure; increases compressive strength by 8-18%; reduces freeze thaw by 87% and increases chemical resistance up to 37%. The result is a structure with increased durability, a longer lifespan and lower maintenance costs over the structure's service life. ■

Source: Alireza Biparva, B.Sc., M.A.Sc., LEED Green Assoc., Research & Development Manager/Concrete Specialist, Kryton International Inc. alireza@kryton.com /www.kryton.com



Fewer repairs on water infiltration issues will drastically reduce maintenance costs for the life of the concrete structure. Funds are then available to improve facilities for condo owners.

All photographs courtesy of Kryton International Inc.

More information on the Kryton Crystalline Concrete waterproofing product range contact SANIKA Waterproofing Specialists on Tel: +27(0)11 425 3061 or email info@sanika.co.za



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Technical forum: Improving final concrete finish quality through appropriate curing

Question: What is the role of curing in the final finish quality of concrete?

Answer: Curing has the greatest effect on the surface and near-surface zone of concrete. The objective of curing is to maintain satisfactory temperature and moisture conditions in order to improve the final product's strength, impermeability and durability.

Temperature is an important factor in curing since the rate of hydration, and therefore strength development, is faster at higher temperatures. Ideally, the temperature of placed and compacted concrete should not be allowed to fall below 5°C since this will result in slowing or even halting the hydration process. Concrete will freeze at temperatures below 2°C, resulting in concrete that will take longer to gain strength, delaying form or mould removal and subsequent construction.

If concrete is expected to drop below 2°C, an air-entraining agent from the CHRYSO® Air range should be added to the mix to protect it from freezing or thawing. Air bubbles provide a pressure relief valve, enabling moisture within the concrete to freeze and expand into the bubbles, thereby preventing cracking and spalling.

In addition to protecting the new concrete from extremely low temperatures, it is important to reduce the temperature differential between the core and outer surface of the concrete to an acceptable level while the concrete is gaining strength to avoid thermal cracking.

Moisture loss is another aggravating factor caused by sunshine, wind and humidity. Curing will protect concrete from these elements until a strength that is adequate for countering shrinkage stresses is reached. Plastic shrinkage cracks will occur if the evaporation rate exceeds the rate of bleeding.

Moisture should be kept within the concrete for the hydration process to continue until the concrete achieves its 28-day strength.

Question: When and how should one cure concrete?

Answer: Curing can be performed during two phases of the hydration process; firstly prior to initial set, while bleeding is taking place, secondly, after initial set and final surface finishing, but ideally before final set occurs.

Remember that bleeding occurs up to a point prior to the initial set of the concrete. When this point is reached, the surface will change from shiny to matt, whereafter surface finishing can commence. Once surface finishing is completed, curing

compounds can be applied. Premature application of curing compound may result in it becoming disproportionately diluted.

High-pressure water spraying using a mist or fog sprayer provides the earliest possible method of curing but is not always ideal as water has to be sprayed continuously up to initial set. The objective is to create a 100% humidity zone in contact with the exposed concrete surface. However, the use of water may create a wet environment, preventing other trades from operating in that area and if there is surplus water, complications can arise.

Plastic sheeting is typically applied after compaction and initial striking of concrete. This is suitable for most elements and is effective, provided the plastic is applied with precision and is in constant close contact with the concrete. Early application on flat slabs may damage the surface finish.

A reliable and controlled way of preventing rapid evaporation of water is the application of a product such as CHRYSO® Profilm 19 after compaction and initial striking. This product reduces the evaporation rate and forms a continuous barrier film over the concrete surface.

When curing after initial set and final surface finishing, one can use the methods outlined for curing before initial set as well as some additional methods. Firstly, one can leave formwork in place to prevent evaporation from surfaces which are in contact with the formwork, while covering exposed surfaces with plastic sheeting. Once formwork is removed, other curing methods should be implemented.

Curing compounds are membrane-forming liquids that are sprayed onto the concrete surface to inhibit the evaporation of water. They are applied as soon as bleeding has stopped and the bleed water has evaporated from the surface, or immediately after stripping the formwork from the columns, walls and beams.

The choice of curing compound is especially important if concrete is to receive further treatment. Some compounds will interfere with subsequent concrete surface treatments (paints, plastering, emulsions, sealants, adhesives and renders). Chryso can advise customers on the most appropriate curing agent to use for specific applications, by referencing a large number of successful projects. ■

More information from Kirsten Kelly,

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www.chryso.com



A perfect finish.



An example of concrete bleed and plastic shrinkage cracking.

Cochin International to become world's first completely solar-powered airport

By Nick Lavars

The new 12 MWp solar plant at Cochin International Airport stretches across 18.2 ha and is made up of more than 46,000 photovoltaic solar panels

It may not be the first airport to fit solar panels to its terminals, but India's Cochin International Airport is set to become the first in the world powered entirely by solar. Situated in Kochi, the airport handled 6.8 million passengers in the 2014-15 financial year and forecasts a 330,700-ton reduction in carbon emissions over the next 25 years as a result of the switch to solar.

The Cochin International Airport, which is the first in India developed under a public-private partnership model, first ventured into solar power in 2013 when it built a 100-kilowatt peak (kWp) rooftop photovoltaic (PV) plant on its arrivals terminal. This was followed by a 1-MWp PV plant that was split between the rooftop and the ground at its aircraft maintenance hangar facility.

Now it is scaling things up substantially. Unveiled in August, the new 12-MWp solar plant stretches across 18.2 ha and is made up of more than 46,000 photovoltaic solar panels that are located alongside the cargo terminal. The airport claims that the power it generates each year would be enough for 10,000 homes. In combination with the pre-existing solar



plants, the plant is expected to make the airport completely carbon neutral.

The company says the mitigation of carbon emissions over the next 25 years is equivalent to planting three million trees or not driving 1.2 billion km. ■

Source: Cochin International Airport
<http://goo.gl/f6m2LV>

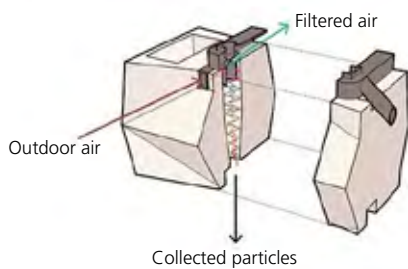
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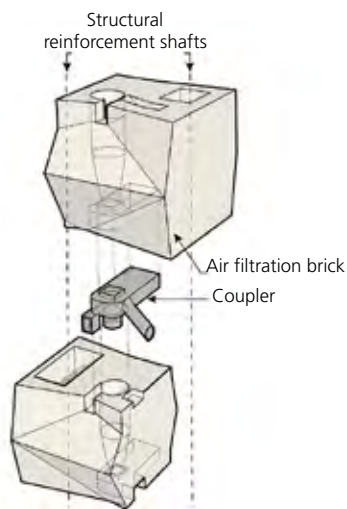
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Innovative bricks suck pollution from the air like a vacuum cleaner



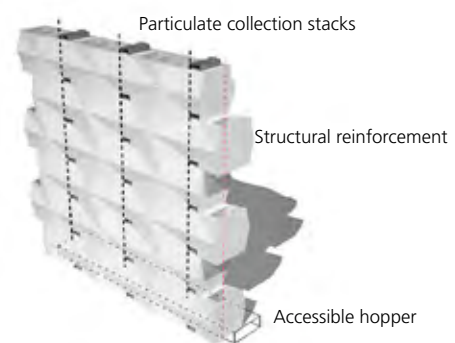
Air pollution in cities is a major problem, and therefore, buildings that help alleviate the problem are significant. In recent years, designers have started moving beyond simply reducing a building's emissions and begun to work with techniques that actually remove pollutants from the air, through systems such as Nemesi's 'photocatalytic' façade for the Italy Pavilion at the 2015 Milan Expo which captures and reacts with pollution in the presence of light.

However, in most cases these new technologies have been chemical, only affecting the air that physically comes into contact with them. What if buildings could take a more active role in pulling in pollutants from the sky? What if they could work a little more like a vacuum cleaner? This was exactly the inspiration behind the Breathe Brick developed by Carmen Trudell, an assistant professor at Cal Poly San Luis Obispo's school of architecture and founder of Both Landscape and Architecture.



Breathe Brick modules are connected via a coupler that aids in collecting particles, protects the cyclone and facilitates module alignment during construction.

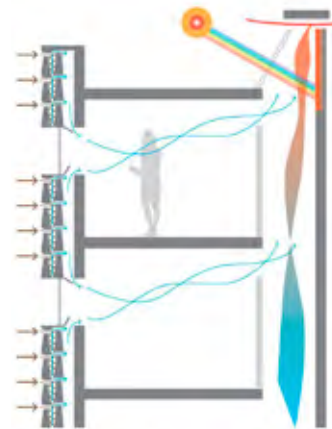
The Breathe Brick is designed to form a part of a building's regular ventilation system, with a double-layered facade of the specialist bricks on the outside, complemented by a standard internal layer providing insulation. At the centre of the Breathe Brick's function is cyclone filtration, an idea borrowed from modern vacuum cleaners, which separates out the heavy pollutant particles from the air and drops them into a removable hopper at the base of the wall.



A Breathe Brick wall can be a structural gravity and lateral load bearing system, while also collecting air pollution into a cleanable hopper at the base of the wall.

The system is composed of two key parts: concrete bricks, and a recycled plastic coupler, which both helps to align bricks and creates a route from the outside into the brick's hollow centre. The concrete bricks themselves feature a faceted surface which helps to direct airflow into the system, and a separate cavity for inserting the steel structure.

The Breathe Brick can function with both mechanical and passive ventilation systems, as the brick simply delivers filtered air into the wall plenum; this air can then be delivered to the building interior through mechanical equipment or through trickle vents driven by passive systems such as stack ventilation.



The Breathe Brick can work in conjunction with a passive solar chimney to improve efficiency of filtration and promote distribution of filtered air through the occupied spaces.

In wind tunnel tests, the system was found to filter 30% of fine particles (such as airborne pollutants) and 100% of coarse particles such as dust. As the entire system is relatively inexpensive, Trudell posits the Breathe Brick as a way to lower pollution levels in developing countries, where rapid expansion of industry and less stringent environmental regulations often cause problems. ■

Images: Carmen Trudell & Natacha Schnider

Source: archdaily; published 18 August 2015
<https://goo.gl/Q1G6lx>

French infrastructure firm joins power-generating road race

The concept of solar power generating roads got another boost recently when French infrastructure company Colas unveiled its photovoltaic surfacing product, called "Wattway".

The fruit of five years of research with the French National Institute for Solar Energy, Wattway paving panels are comprised of photovoltaic cells embedded in a multilayer substrate.

The company claims that 20 square metres of Wattway can power a single home, excluding heating, and that a one-kilometre-long section of road can power streetlights for a town of 5,000 people.

The race to bring power-generating roads to the market is now under way in three countries. Last year a Dutch consortium built a 100-m stretch of power generating road for testing in Krommenie, the Netherlands. And in the US a husband-and-wife team of inventors is pursuing the idea after a successful crowdfunding campaign.



A section of Highway A41 North in France, built by Colas (Image courtesy of Colas)

Now Colas, a subsidiary of Bouygues, is getting in on the act.

"Today, our Wattway process is unique on a global level," said Hervé Le Bouc, chairman and chief executive of Colas. "The Solar Road will play a part in the energy transition, and is a building block for Smart Cities."

Wattway cells collect solar energy via a very thin film of polycrystalline silicon. In a statement, Colas said the sturdy and skid-resistant panels can be used on any road around the world, and are able to bear all types of vehicle traffic, including trucks.

Colas said Wattway uses existing infrastructure, removing the need to rip roads out and rebuild them. The product is designed for cities, and for isolated, off-grid areas where hooking up to the electricity network is costly.

Wattway was unveiled at the World Efficiency Congress in Paris. ■

More information at <http://www.wattwaybycolas.com>



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California to get world's largest green roof

The Hills at Vallco by Rafael Viñoly and Olin Landscape Architects

You don't usually think of taking the elevator up to the roof to enjoy your lunch in the park, but that's exactly what shoppers in Cupertino are going to be able to do once the world's largest green rooftop is built there.

The Hills at Vallco is a huge green-roofed building project planned for the downtown heart of Cupertino, California. The 111,484-m² Vallco shopping mall, on 20.2 hectares of land, struggled in a declining economy, until Silicon Valley-based Sand Hill Real Estate bought the land in 2014.

Vallco's new owners have plans to revive the dreary mall into a green and vibrant town centre that will prioritise stewardship of the environment. The winning design for the space, by the Uruguayan architect Rafael Viñoly and Olin Landscape Architects, includes plans for 800 apartments and two million square feet of mixed office and retail space across a grid of several easily-walkable city blocks.

Green Design

The area will be laid out with foot traffic in mind, and not cars. Instead of a concrete mall surrounded by acres of paved parking lots, gardens and running trails will weave through the neighborhood. The design for the new town centre even includes plans for an orchard and a vineyard, both open to members of the public.

But these parks and orchards won't be on the ground. Instead of the traditional neighborhood parks, squares of green in a concrete grid, Viñoly's plan is more lofty. Literally. An impressive 11 hectares of gently rolling green space will connect the tops of many of the buildings in the complex, giving The Hills at

Vallco what would be the world's largest green roof to date, taking the title from Chicago's 9.9-hectare Millennium Gardens.

The plans for the green roof include six kilometres of walking trails winding among the vineyards and orchards, which will be irrigated by a combination of recaptured rainwater and recycled water. The landscape design features several acres of native drought-resistant plants, which will provide a natural and familiar refuge for local wildlife while improving local air quality by absorbing excess CO₂.

Green, Practical and Beautiful

Green roofs have been gaining traction in the architectural world, and some cities have even enacted bylaws to ensure that all new large construction projects will include one.

They provide natural insulation and evaporative cooling to the structures that they cover, lowering energy demand and expense. They greatly reduce the heat-island effect common in urban spaces, and can bring down the average temperature in the heart of a city by several degrees. And a rooftop garden is certainly nicer to look at than tar and shingles.

The immense elevated collection of lawns and gardens planned for The Hills at Vallco will transform an urban space into something beautiful and sustainable. The designers hope that the green roof and the water-conservation methods, so important in drought-parched California, will earn the project a LEED Platinum certification. The plans for the design have been submitted to the Cupertino city council, and are awaiting approval before construction can begin. ■

<http://goo.gl/6MSqf3>



PPC Cement increases green footprint through tyre-burning initiative



PPC's De Hoek plant will burn tyres, reducing coal usage and nitrous emissions.

An innovative tyre-burning initiative at PPC's De Hoek plant in the Western Cape has demonstrated the viability of burning waste tyres as an alternative to coal for cement production. The project, which will enable De Hoek kiln 6 to burn up to three tyres per minute, will reduce the plant's coal usage by an estimated 15% while significantly reducing nitrous emissions. It will also decrease landfill requirements, ensuring a positive and sustainable environmental impact.

PPC originally started exploring the viability of tyre-burning as far back as 2007. At that stage, however, the company was unable to secure a reliable supply of tyres.

PPC continued to connect with various players in the market – including with REDISA (the Recycling and Economic Development Initiative of South Africa), various provincial authorities and environmental groups. From 2014 onwards, this started yielding real results, with viable solutions to both sustainable supply and transport logistics being found.

"Once our supply issue had been resolved, we were able to develop an effective system to implement at the plant," explains Johan Vorster, GM at PPC De

Hoek. "We have drawn on internationally-recognised technology and equipment for the process. When the system has been fully automated, whole tyres will be transported directly into the riser section of kiln 6."

When fully commissioned, the automated system will feed one tyre every 10 – 20 seconds into the kiln. The tyres will be delivered by REDISA to the plant as part of the agreement.

"We're looking forward to implementing the same system in our DHK 5 kiln and at other PPC plants once this project is finalised," says Vorster. "In that way, we'll be able to increase our green footprint both organically and sustainably. We also hope that by championing this initiative, we'll inspire other companies to explore similarly viable alternative energy solutions so that, as a sector, we're able to collectively reduce our environmental impact." ■

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Retaining walls stabilise building platforms at Emoyeni Mall

Five geosynthetic reinforced retaining walls using precast concrete retaining blocks manufactured by Aveng Infraset have played a crucial role in creating stable terraces for the construction of Emoyeni Mall, a recently completed shopping centre between Nelspruit and Hazyview in Mpumalanga.

Leading rural retail centre development specialist, McCormick Property Development, built the mall. Engineered Interlock Solutions (EIS), in conjunction with TMV Consulting Engineers, designed the geosynthetic-reinforced concrete block retaining walls. The walls were built by EIS collaborating closely with main earthworks contractor, Joubert en Seuns.

EIS owner, Manie Troskie, says EIS won the retaining wall tender by offering an alternative and more cost-effective design which also provided better functionality.

"The site has substantial quantities of sub-surface water and our design had to make provision for extensive drainage. There were some embankment sections where one could actually see water oozing from the ground.

"Three walls were open-face designs and were built with Aveng Infraset's Terrace Blok® TB 490 and TB 300 retaining wall blocks. The other two walls were closed-face and built with the Infrablok™ 350."

The largest wall, 200 m long, was built in an open-face configuration at an angle of 70°. It was constructed on the perimeter of the property to reinforce an embankment which rose to 12 m at its highest point from a service road below.

"We only had five to six metres to work with on this wall and the installation of extensive sub-surface drainage was required

before construction of the wall could begin. Sub-soil drains were installed on top of the foundations, three-to-four blocks below kerb level. Fin drains, wrapped in A2 bidem, which go back to the cut face, were laid to trap water at the top, sides and bottom of the embankment.

"We also installed 250-mm Kaytech wick drains which were wrapped with bidem. In areas with the heaviest water flows, we positioned 100-mm slotted pipes covered with stone and Geomesh geotextile to trap the water at the cut face. All ground water drains into a pipe at the bottom of the wall which runs parallel to the foundation and feeds into the stormwater system.

"The perimeter wall's foundation was steel reinforced. One metre wide, it varied between 450 mm and 300 mm in depth. TB 490 retaining blocks were used to erect the lower section of the wall and the upper section was laid with lighter TB 300s," explained Troskie.

High-tenacity Paragrid supplied by Maccaferri was used to reinforce the wall. The material was specified because of its low elongation properties, its ability to attain tensile strength quickly and its stretch factor of less than 5%. The Paragrid reaches back to the cut face and was laid at a spacing of every second block on the lower half of the wall. Macgrid WG4 was installed at every third block on the top half and extends nine metres into the fill.

The parking basement wall was also built as a geosynthetic-reinforced wall. Rising to 5.5 m it takes a heavier loading than the perimeter wall as it must support a portion of the building's weight. This was erected on a jockey slab, concrete columns and normal foundations. Because of the heavier loading, the wall was built using the TB 490 block only.

"Basement walls are usually built with solid concrete retaining walling, however, retaining block walls are more cost-effective," advised Troskie.

Two closed-face walls were built using Aveng Infraset Infrablok™ 350 at an angle of 85° due to limited space. The one wall, varying in height between one metre and 3.4 m, was built adjacent to a car-park feeder road and supports a building platform on which a Cashbuild store was built. The walls were built around the concrete support columns and reinforced soil, and the retaining wall supports a portion of the building's loading. Maccaferri Paragrid was used to reinforce this wall to prevent any soil movement under the building's foundations.

The second closed-face wall was built around a water reservoir situated on ground above the centre. This wall was constructed with Infrablok™ 350s at a face angle of 75° and Macgrid WG4 was used for geosynthetic reinforcing. A combination of Macgrid WG4 and cement-stabilised backfill was deployed where the space between the reservoir and the concrete block retaining wall was limited.

Other members of the professional team included the main consultant, Endacon Consulting Engineers, and the main building contractor, Ikotwe Construction.

Over the past 33 years McCormick Property Development has completed 58 shopping centres and is now moving into Africa with some major projects in the pipeline, most notably the Mall de Mozambique in Matola. ■



The 200m perimeter wall at its highest point of 12m.

**More information from Brennan Small, Aveng Infraset,
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Precast products play a major role in Mokopane



Rocla precast manhole rings and covers protect water infrastructure.

The maintenance of water infrastructure is important not only to safeguard against water wastage through old and leaking pipes, but also against the loss of water and also of associated products and equipment through tampering.

Rocla's precast concrete manhole cover slabs, lids and rings have recently been installed in the Mokopane District to protect a freshwater pipeline that services the local community and runs past the Mogalakwena Mine.

Sarel Pretorius, Rocla's sales consultant based in Polokwane said: "Steel valves had been removed from the freshwater pipeline valve chambers and we were approached by engineers from C2 Civils as they believed our precast concrete manholes would offer a more secure option for the pipeline, which they do.

"The challenge for us was in the delivery of our product. The soil levels at site were at a very steep angle due to excavations and the soil is particularly soft, resulting in traditional lifting equipment not being able to lift the complete manhole off the vehicle. We circumvented this by delivering in half-loads, which enabled us to still meet the delivery schedule set by our client," Pretorius said.

"For the project, which commenced in March 2014, Phase One used 44 manholes; Phase Two and Phase Three 12 manholes and Phase Four 13 manholes, of which the four phases stretch over 40 kms. We also used 106, 1,950-diameter manhole rings, cover slabs and lids and

68, 1,500-diameter manhole rings, cover slabs and lids." said Jan Coetzee, the site manager for C2 Civils.

"These precast manhole lids will certainly prevent any future tampering as well as protecting the steel valves underground. While the delivery area provided us with some product off-loading challenges, Rocla accommodated this by adjusting their whole delivery process to suit our requirements. We were very happy with the service provided by the Rocla team to this vast infrastructure upgrading and maintenance projects. We would certainly use their products again when the need arises" concluded Coetzee.

Rocla recently supplied inverted culverts to a power station in Mozambique, as well as precast bridge deck planks, permeable paving, Alfabloc powder separators for the chemical industries and pipes and associated products for storm-water projects throughout South Africa.

Rocla is one of South Africa's leading manufacturers of precast concrete products for infrastructure projects. The company will manufacture to customer requirements in addition to offering standard precast sizes.

Rocla is part of the IS Group of companies which also comprises Technicrete ISG and Ocon Brick. ■

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Precast concrete has many advantages

Concrete is one of the most versatile of all construction materials and can be designed and proportioned to meet a wide range of requirements, states Bryan Perrie, managing director of The Concrete Institute.

He says that there are two methods of fabricating reinforced concrete. The first is to pour the liquid material into forms at a building site; this is called in-situ concrete. The other method used is precast concrete, in which various building components are manufactured in a central plant and then brought to the building site for assembly.

Perrie says that by producing precast concrete in a well-controlled environment, such as at a precast yard or factory, it is possible to monitor and control all stages of production to ensure aspects such as adequate curing, and ensure that the products fully comply with strength requirements prescribed by the standards and specifications.

"A precast yard may be an established factory or it may be located on a building site. Precast concrete is generally cast at ground level which helps with safety and productivity throughout a project. There is greater control of the quality of both materials and workmanship in a precast plant than when concrete is cast in situ. This increased control can boost durability and lead to savings in maintenance costs, inconvenience, materials and energy. The moulds or forms used in a precast plant may also be reused hundred to thousands of times before



Bryan Perrie, MD of The Concrete Institute.

they have to be replaced which means the cost of formwork for precast is lower than for in-situ construction unless they have very unique shapes.

"Frequently, if the structure has been appropriately designed, precast products can be removed and reused after the structure has reached the end of its life and is to be replaced," Perrie states.

He says there are many different types of precast concrete products. Precast architectural panels are used to clad all or part of a building façade. Storm-water drainage, water and sewage reticulation make use of precast concrete units such as pipes, culverts, manholes, sumps, and tunnels. Precast building components are used architecturally for cladding, as accessories and curtain walls. Structural applications of precast concrete include bricks, blocks,

foundations, beams, floors, walls.

"Precast concrete products are also used in the construction of various transportation systems such as culverts, bridge beams and segments, railway sleepers, sound walls or barriers, safety barriers and kerbs. A significant amount of precast concrete was used in the construction of the Gautrain system and the soccer stadia built for the 2010 Soccer World Cup," Perrie adds. ■

**More information from Bryan Perrie,
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www.theconcreteinstitute.org.za**



Precast concrete elements can be transported to a construction site and then lifted into place.

Mabopane Railway Station gets safe, durable paving

Durable, smart and safe paving at public transportation areas is crucial for commuters to have a problem-free safe passage, while still ensuring that the finished product has aesthetic appeal. Bokosi Ditshimema JV, developers of the Mabopane Railway Station in Soshanguve, Tshwane, contracted to the leading paving and kerb supplier Technicrete ISG to supply Double Zig Zag (DZZ) paving and kerbs.

Bokosi Ditshimema JV's Themba Kokelo said: "This project commenced in February 2014 and is due for completion in November 2015. We chose products from Technicrete because according to our experience we know that the products will give us a good-quality project".

Kokelo continued: "Some of the challenges that we faced at Mabopane included storage space restrictions due to the overhead power lines and Technicrete assisted us in this regard by availing their trucks at a low cost to move some of the product from one point to another on site where they were needed for construction.

"Technicrete's products were used for pedestrian walkways, bus terminals, parking areas, local and long-distance taxi terminals. We are pleased with the final finishes. Technicrete's high-quality products have allowed us to construct the project as per the civil engineering design."



Tienie Bronkhorst, the sales representative of Technicrete ISG said: "When commuters utilise public transportation, of any kind, it is imperative that they are able to walk on high-quality, solid and level paving to and from entrances and exits and that kerbing around parking facilities is not only good in appearance but clearly visible to the commuter.

"The Technicrete product is such a product. Its installation is well suited to depots, commercial applications and any place where there is a large amount of foot and vehicle traffic and also where longevity and durability are key factors in the project's lifespan. The Mabopane Railway Station had height restrictions and therefore we liaised closely with Ditshimema Projects to solve these limitations."

Technicrete ISG is part of the Infrastructure Specialist Group, which is also the holding company for Ocon Brick and Rocla. ■

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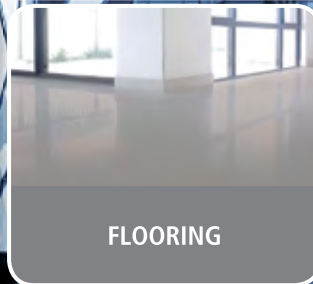


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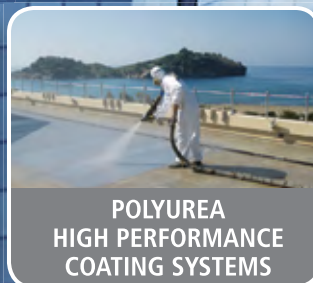
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Western Cape's first multi-storey, load-bearing reinforced concrete block masonry development

Lange Formal Township, the Western Cape's first multi-storey, loadbearing reinforced concrete block masonry development, has been supplied with over 16,000 m² of prestressed hollow-core concrete flooring slab by Echo Group company, Topfloor.

Topfloor hollow-core concrete floor panels have been an important contributor to the growth of the building and construction industry in the Western Cape since 1997. That role has been strengthened through the acquisition of Topfloor by the Echo Group, South Africa's largest and longest-established prestressed and precast floor manufacturer.

Eighteen low-income rental apartment blocks are being built by the main contractor, the Power Construction Group, which formed an integral part of the project's architectural and engineering development teams. The Power Group is a

supplier of civil, roads, building, turnkey housing, project engineering and property development services, which it delivers through the group companies – Power Construction and Power Developments.

Built for the City of Cape Town and situated on the Cape Flats off the N2, the development's anticipated completion date is November 2015.

Each block houses twenty-five 35-m² apartments comprising two bedrooms, kitchen/lounge, a bathroom and a balcony. Moreover, insulated roofing and solar heating are included to meet conservation requirements and reduce the cost of living for the occupants.

In addition to the hollow-core concrete flooring slabs, Topfloor also provided the Power Group with precast staircases. Other precast concrete elements used included high-strength concrete blocks, modular precast concrete doorframes and windows, as well as poly-fibre balcony railings.

According to Power Group, director Johnny Moore, precast hollow-core slabs were an integral part of the structural design criteria and saved months in construction time.

"No shuttering was required, nor was curing time needed for wet concrete, which meant that other services could begin work as soon as the slabs were installed. Further time-savers were the smooth soffits and rough finishes on the upper sides of the slabs. This enabled the soffits to be painted without the need for skimming and made bonding the screeds onto the top sides hassle-free. All of these time-saving advantages translated into substantial savings in terms of time and costs for the client.

"Topfloor was involved in the primary as well as secondary planning stages and we helped resolve details such as the staircase/slab interfaces and pull-up bars for the reinforcing of the walkway balustrades," said Moore.

The Lange buildings have been designed to comply with seismic codes and this meant that Topfloor had to provide pre-cut openings for seismic-stress connections. In addition, Topfloor supplied cut-outs for plumbing ducts.

Topfloor general manager, Wessel Prinsloo, says another advantage of using hollow-core flooring is its superior thermal and sound insulation properties.

"In addition to this, the hollow-core slabs are produced in a well-managed factory environment which ensures high and consistent quality levels."

The professional team which initiated Lange's design concept was led by Dieter Boessow of Architect Associates. Together with Power Construction's project engineers and consulting engineers, Aurecon, and independent construction consultant, Guenter Koch, they succeeded in setting a new standard and establishing a new trend in cost-effective economic housing delivery in the Western Cape.

Moore concluded by saying that the fiscal benefits gained with this project points the way forward in labour-intensive skills development and job-creation potential. ■



A close up of some Topfloor hollow-core slabs used at Lange.



One of the precast staircases supplied by Topfloor.

More information from, Johnny Moore, Power Group, Tel: +27(0)021 907 1300 / www.powergrp.co.za or Wessel Prinsloo, Topfloor, Tel: +27(0)21 951 7700 www.topfloor.co.za

Lords View Industrial Park: aesthetics partners with functionality

Lords View Industrial Park in Chloorkop, near Midrand, offers easy access to all major highways as well as being in close proximity to O R Tambo International Airport. This major industrial park development, which commenced in March 2011, will house global and national industrial and retail distribution centres and warehouses.



The Foschini warehousing building in the Lords View Industrial Park.

Technicrete ISG, part of the IS Group of companies, was selected to pave and kerb the perimeter of the industrial park and their Armorflex solution for erosion control was used in an overflow application joining the four dams situated in the park.

Power Construction's site agent, Robert Turner said: "On a project of this magnitude, aesthetics are as important as functionality. The Technicrete kerbs and double zig zag (DZZ) paving give the industrial park a pleasing finish. We used Technicrete's barrier, mountable and semi-mountable kerbs in a variety of dimensions to kerb the 2.5 kilometres of roads and walkways at the park, while the paving area utilised DZZ's and BondBrick grey pavers for the parking and all the other walkway areas".

"It was the product quality, service and price from Technicrete ISG that secured the contract as well as their professionalism," said Turner of the decision to choose Technicrete.

In addition to the industrial park development, Technicrete ISG also completed work within the Greencross building area and will be supplying DZZ's and BondBrick for the Foschini and Stuttaford warehousing sites that are shortly to be developed at Lord View Industrial Park.

Technicrete ISG sales consultant, Tienie Bronkhorst said: "We supplied R1.5 million worth of Technicrete product to Lords View Industrial Park, which is due for completion in June 2016. In addition to our pavers and kerbs, our Armorflex solution offers installation flexibility as it conforms to ground contours, does not fracture and requires little ground preparation. It provides a good defence against erosion with an excellent lining for drainage channels".

"We are very pleased with the final appearance of our products around the industrial park which has used the grey/terracotta colour scheme combination and are delighted to be involved in further sites within the complex," said Bronkhorst. ■

More information from Guinevere Thomas,
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Saving space in a tight spot



Building on a steep slope is always tricky, but even more so in situations where other property boundaries have to be considered and where space is very limited. The greatest drawback is that if you want usable flat areas, much of the garden space may be taken up by banks and steep slopes that link them together.

That is where the beauty of versatile retaining walls – like the Terraforce retaining system – comes in, as they can provide a way of changing levels sharply, which is especially useful if space is tight. Stairways and ramps can be integrated to facilitate quick access to the workable spaces created.

When Camps Bay home owner Sue Schalit noticed that her original stone retaining wall was showing cracks and slight forward movement, she became concerned that it would collapse and cause damage to her garden as well as to the neighbouring properties.

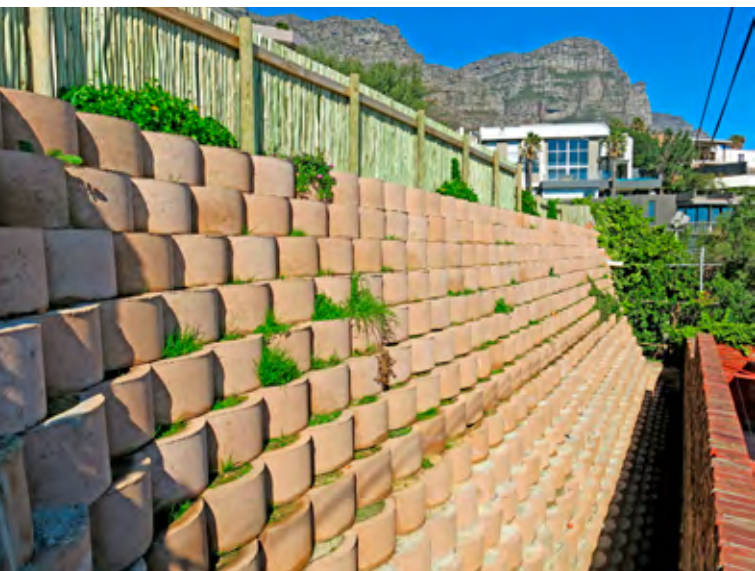
Says Schalit: “We hired Mike van Wieringen, the geotechnical consultant, to confirm our fears, and his report not only verified movement but also revealed that the foundations were inferior. He recommended a Terraforce wall as it has the least impact on our garden and provides an exceptionally strong retaining wall solution.”

The wall design was supplied by Fred Laker, an engineer with Terrasafe, a professional wall design service offered by Terraforce, and Schalit contracted Dassenberg Retaining, an approved Western Cape Terraforce installer, to build the new retaining wall.

Says Georg Brand, of Dassenberg Retaining: “The site was not an easy one, with very limited work space. All materials had to be carried to the workstation by means of bags and down three staircases. Spoils had to be carried up to road level. The whole process was very labour intensive. To ensure additional strength and due to the height of the wall, the lower section had to be reinforced with Y12 steel rebar.”

The wall was completed in less than three months and Schalit was very impressed with the Dassenberg team and the resulting wall: “The team from Dassenberg was incredible, working in tough circumstances, carrying tons of rocks up by hand. The wall is extremely neat and I am very happy with the result!” ■

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



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New a.b.e. Polyurea contracts include conference centre water feature



The completed water feature.



Noel Abendroth, head of a.b.e.'s Polyurea Performance Coatings Division, applying VIP Polyurea Quickseal LP65 waterproofing to the water feature at Number 7 on Brae Conference Centre in Pretoria.

Waterproofing an innovative concrete water feature at a new Pretoria conference centre was one of three new contracts on which a.b.e. Construction Chemicals' VIP Polyurea coating was recently applied.

Part of the Chryso Southern Africa Group, a.b.e. is the licensed South African distributor of the German Voelkel Industrie Produkte (VIP) range of Polyurea protective coatings and joint fillers. a.b.e.® Construction Chemicals started its operation in 1939 in Durban, supplying bitumen to KwaZulu-Natal municipalities. a.b.e.® has since grown in both size and diversity to become a major supplier of specialised construction products to the building, civil engineering and building maintenance industries. a.b.e.® has manufacturing plants in Boksburg and Isipingo and is supported by a network of branches and distributors throughout South Africa, sub-Saharan Africa and the Indian Ocean Islands.

Noel Abendroth, a.b.e. Polyurea Performance Coatings Division manager, says VIP QuickSeal LP 65 was selected in grey as protective coating for the new 'mini-dam' which features a small windmill, adding a rural atmosphere to the grounds of Number 7 on Brae Conference Centre in The Willows, Pretoria.

Quickseal LP 65 is a modified polyurea elastomer especially designed for easy, low-pressure waterproofing applications. The product contains no solvents or VOCs and provides an economical lining for a wide range of applications requiring robust, durable, flexible water-tight membranes.

The polyurea application to the five-metre-diameter water feature was personally handled by Abendroth and his a.b.e. team who also carried out prior demonstrations of the product's suitability for the project. The main contractor was C&M Projects, Pretoria; and the conference centre developer, Number 7 on Brae.

VIP Polyurea was also selected for two recent water-proofing projects awarded to a.b.e.:

- Sealing leaks on the existing parking deck at the Protea Hotel in Sea Point where Thermoseal had to waterproof an area of 1,220 m². VIP Polyurea Quickseal MP 250, a modified Polyurea, was used for this project with an Aliphatic polyurethane topcoat. The main contractor was Deco Systems.
- Sealing expansion joints on the parking ramp at the Fury Ford motor dealership in Woodmead, Johannesburg. The joints had to be sealed to stop leaking into stores below. The application of VIP Quickseal PP 350 was handled by Custom Linings.

"VIP QuickSeal PP 350 is a spray-applied, instant curing flexible membrane that can be built to any thickness in one application. Very cold, very hot or even very humid environments do not affect curing time or physical performance of the product which provides flexible, seamless, hard-wearing substrate protection. Rapid spray application and instant curing result in shorter shutdown times than traditional systems," Abendroth explained. ■

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

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Sika's critical role in refurbishing Loftus Versveld Stadium

Loftus Versveld Stadium in Pretoria has recently undergone a mammoth concrete rehabilitation project and Sika's high-performance products were specified for the job. When stadium owners, Blue Bulls Rugby Union, contracted structural engineer, Erhard Kruger of HGK Consulting, to design an effective upgrade for this prestigious sports venue, he specified Sika's concrete repair and protection products.



Sika inspecting exposed rebar.



Sika breaking out concrete to rebar.



Final inspection, before repair material is placed.

Contractor, Stefanutti Stocks commenced the project in January 2014 and Sika technical sales manager, Jacobus Pretorius, ensured the smooth running of Sika's product supply.

SikaTop Armatec-110 EpoCem was used as bonding primer and steel reinforcement protection. This cementitious, epoxy resin coating material provides extended open times for repair mortars and is certified for application under dynamic load conditions. With its EpoCem technology and corrosion inhibitors, SikaTop Armatec-110 provides excellent adhesion and protection.

SikaGrout-212, a high-strength, fluid, expanding grout with adjustable consistency and excellent flow characteristics, was used to repair the large concrete floor and seating areas. It is non-corrosive and expands by gas generation while it is still in the plastic state.

Large-scale repairs to concrete walls, including all vomitory walls, were achieved using Sikacrete-214, which is ideally suited for casting sections or members where the volumes required are either too large for conventional grouts, or too inaccessible for normal concreting. Easy to mix, apply and finish, Sikacrete-214 is economical and provides excellent adhesion. Both SikaGrout-212 and Sikacrete-214 are shrinkage compensated and display rapid strength development.

Overhead concrete sections that required applications to a maximum depth of 35 mm were repaired with Sika Rep LW a cement-based, multi-purpose patching and repair mortar. It is water-vapour permeable and provides excellent adhesion. Overhead repairs, up to a depth of 70 mm, were undertaken using Sika MonoTop-615 HB, the high build, cementitious, polymer-modified repair and reprofiling mortar containing silica fume and corrosion inhibitors. Its adjustable consistency and thixotropic behaviour provided excellent workability characteristics. Both products offer high resistance to freeze/thaw cycling.

Once concrete repairs were completed, the waterproofing and protection phase commenced. For increased concrete cover and overall concrete protection, SikaTop Seal-107 ZA was applied. This two-part, polymer-modified waterproofing mortar slurry comprising a liquid polymer and a cement-based mix, incorporating special admixtures, is ideally suited for protection against water ingress, and provides good moisture control and increased resistivity.

Concrete box gutters at the stadium were protected with internationally approved Sikalastic-152, a two-pack, elastic fibre-reinforced, waterproofing coating. Due to its high elasticity, Sikalastic-152 provides optimum adhesion on to almost all substrates and can be applied to many different structures including those subject to thermal movement or vibration. Concrete column heads were waterproofed with Sika Cemflex, an acrylic-based emulsion that is watertight, oil resistant and UV stable.

Many challenges were faced during this project, including a prohibitive time schedule, with no work permissible on weekends or when a sporting event was scheduled. However, the ease of preparation and application of Sika's reliable products allowed for completion of the project not only well within the time limit, but also well within budget. ■

More information on Sika products and systems at www.sika.co.za

SDLG Equipment shows latest range at Bauma Conexpo 2015

Babcock International Group, one of Africa's leading suppliers to the energy, process, mining and construction industries, is the exclusive distributor of Shandong Lingong Construction Machinery (SDLG) in southern Africa, a range that includes wheel loaders, graders, excavators and vibratory rollers. Introduced in 2012 and showcased at Bauma 2013, the range has had tremendous success since then and was on display at Bauma Conexpo 2015.

These machines are well supported by Babcock's extensive infrastructure of branches, dealers and service capability from Cape Town to Zambia, with an inventory of parts sufficient to support new and existing SDLG products.

Established in 1972, SDLG manufactures 40,000 to 50,000 units per annum and has been one of the few companies to achieve numerous Chinese industry awards for its loader range. In 1998, SDLG obtained the ISO9001 International Quality Management System Certification which has since made them a global supplier of earthmoving equipment, with all the technical innovations and quality levels to compete with the best equipment available in world markets.

A leading supplier of earthmoving equipment in South Africa with 90 years of achievement and services, Babcock also represents Volvo Construction Equipment, Winget, Tadano, Volvo Penta and DAF Trucks.



In 2006 SDLG signed a cooperation agreement with Volvo Construction Equipment whereby capital was raised to incorporate European style methods and management philosophies into their overall structure. This integration has had positive effects; production levels have been raised and quality improved. This has maintained its brand advantage and improved market share in China and internationally.

The SDLG stand at Bauma Conexpo 2015 featured the latest range available for the local market, as well as the brand new B877 backhoe loader now available in Africa.

The SDLG range of equipment is characterised by its simplicity and cost effectiveness, and is adaptable to any operating conditions. The machines are proving ideal for construction, quarrying, agricultural and aggregate industries, targeting the light to medium applications. They offer extended trouble-free operation and are extremely maintenance friendly, being devoid of sophisticated electronics. ■

**More information from Grant Sheppard,
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Tough and versatile, WINGET 2B and 4B Series site dumpers offer reliability and simplicity for a long, productive life on any construction site. Both series include hydraulic tipping and are fitted with a rugged and durable Lister Petter air cooled diesel engine (available with hand or electric start). Heavy duty axles with oil immersed multi-plate disc brakes maintain braking efficiency and minimise maintenance in site conditions.

Contact Babcock on tel 011 230 7300 or enquiries@babcock.co.za

WINGET

Mapei technology provides the ideal solution for repairing concrete

Mapei South Africa has addressed the increasingly important issue of repairing damaged concrete structures to extend their service life by introducing Planitop Smooth & Repair R4.

This rapid-setting cementitious mortar is another technology innovation from the international Mapei group, world leader in the production of adhesives, sealants and chemical products for building. In extensive testing internationally, Planitop Smooth & Repair R4 has been highly successful at protecting against carbonation and chloride attack, extending the time to onset of initial corrosion and suppressing corrosion propagation.

The new product is a one-component thixotropic mortar containing polyacrylonitrile fibres, synthetic polymers and special admixtures. This has resulted in an exceptional R4-class mortar that offers a solution for convenient high-performance structural repairs and smoothing of any internal or external damaged concrete surface, even those surfaces in permanent contact with water. It is applied by trowel to horizontal or vertical surfaces in a single layer from 3 to 40 mm thick.

Some typical applications would be rapid repair work on deteriorated concrete beams and pillars, cornices and edges of balconies, as well as repairs to structural elements that require a mortar with high mechanical performance properties. It is finding considerable use for repairing precast concrete members and damage caused by rusty reinforcing bars. The user-friendly product is particularly useful for quickly smoothing over surface defects in cast concrete before painting the surface with a coat



Planitop Smooth and Repair is supplied in 25Kg bags suitable for most concrete repair work both internally and externally. Suitable for use in repairing precast concrete members and elements.

of either an elastomeric product from the Mapei Elastocolor range or an acrylic paint from the Colorite range.

Planitop Smooth & Repair R4 forms a mortar with good workability and setting and hardening times that can be regulated by adding Mapetard ES. It hardens without shrinkage and has excellent adhesion to concrete substrates and to steel reinforcement, especially if the steel has been pretreated with Mapefer 1K anticorrosion and re-alkalising cementitious mortar. Mapei's research and development has formulated an all-round repair mortar, providing:

- Good impermeability to water and salt solutions
- Good impermeability to carbon dioxide
- Good crack bridging
- Good adhesion to substrate
- Good ageing resistance

"Planitop Smooth & Repair R4 really does tick all the boxes," says Mapei South Africa's product manager, Paul Nieuwoudt. "I am confident that it will become a standard stock item for anyone involved in concrete repairs, whether in the precast concrete industry, general construction work or even DIY homeowners."

About Mapei South Africa

Mapei South Africa is part of the Mapei Group, an Italian-based multinational that is a leading manufacturer of chemical and adhesive products for the construction industry. As part of the multinational group, Mapei South Africa passes numerous benefits on to its clientbase by having access to technical experts, research capabilities and product specialists. Mapei South Africa distributes its products throughout sub-Saharan Africa. ■

**More information from Mapei South Africa,
Tel: +27(0)11 552 8476 / www.mapei.co.za**

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OK™ cement mill

The only vertical roller mill specifically designed for cement and slag grinding, the OK mill is the preferred mill for energy-efficient cement production. The mill's patented design has been proven to reliably grind with optimal power consumption while allowing for fast and easy adjustments to both feed and final product. The OK mill's inherent flexibility gives sustained efficiency under all conditions, including with a reduced number of rollers in operation.

The reliable and flexible OK mill remains the most energy-efficient choice for cement and slag grinding.

See a video of the OK mill in action at
www.flsmidth.com/okmill

The OK™ vertical roller mill is manufactured by FLSmidth under license from Earthtechnica Company, LTD. and Taiheiyo Cement Corporation.

FLSMIDTH

'Thinking About Concrete? Think PMSA' a hit at Bauma Conexpo Africa 2015

Pan Mixers South Africa (PMSA) hosted international representatives of various new products at its stand at Bauma Conexpo Africa 2015.

With a major indoor presence in Hall 5, as well as an external area featuring a full-scale IMER wet-batch plant, Africa's leading manufacturer of concrete, block, brick and paving machinery reported major interest from existing customers, visitors and potential new clients.

The company's theme was 'Thinking About Concrete? Think PMSA' and Quintin Booysen, sales and marketing manager at PMSA, says the total solutions package on offer attracted huge interest from visitors to the stand.

"Customers in Africa need local support and technology best suited to the challenges and rigours of operating in Africa, such as remote locations and a lack of skills, particularly in terms of preventative maintenance," Booysen comments.

Kevin Hickman, technical services manager at Eco Filters UK, says that the company was particularly pleased that PMSA had been elected to be its official representative in South Africa.

The world's leading manufacturer of filters for the wet-press concrete industry, the company has an extensive range of filters for use in the production of all types of wet pressed concrete.

A particular feature of the filters is that they are compatible with all major types of wet-press concrete machinery, whether single- or three-mould. "These are essentially paper-replacement filters for use in concrete wet-pressing machines," Hickman explains.

Eco Filters can manufacture filters in a range of sizes to suit specific requirements, including logos and various finishes.

"We have a technical service department with an incredible depth of experience in the wet press concrete industry. This expertise is on hand for all of our customers to tap into, including technical advice and on-site support," Hickman adds.

Manfred Ludwig, MD from Ludwig Moisture Control of Germany, demonstrated the company's FL-MOBIMIC Profi Check mobile moisture-metering unit.

Featuring a user-friendly operation and seamless integration of wireless technology or USB laptop connection, the unit allows for convenient evaluation, quality control and monitoring during every phase of processing, from initial evaluation of the materials to be processed right up to the finished product.

Michael Kraft, MD of Kraft Curing Solutions of Germany, revealed that by installing the company's full curing system on their precast brick and paver plants, customers can realise cement input cost savings of up to 30%.

"This is of particular importance in the context of Africa's infrastructure build-up, where we see a major opportunity for this technology. It is also the main reason we have partnered with a company like PMSA, which has such a strong foothold through the continent," Kraft comments. ■

**More information from Quintin Booysen,
Tel: +27(0)11 578 8700 / www.pmsa.com**





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Afrimat Limited's Readymix division supplies concrete primarily to large-scale civil engineering and infrastructure projects through fixed and mobile readymix plants where concrete is batched on demand and then transported to site by concrete mixer trucks.

Readymix's batching system meets the standards set by the South African Readymix Association in order to deliver the highest quality products. Close to 90% of Readymix's raw material needs (excluding cement) are sourced from the group's own quarries.

Readymix plants are based in Cape Town, Worcester, Vredenburg, Vryheid and Port Elizabeth. The division also offers production, pumps, TFM mixer and technical services.

Readymix is part of Afrimat Limited, a leading black empowered open pit mining company.

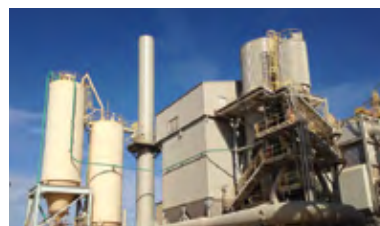
Fives: providing high-performance technologies and solutions



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Gas treatment



Combustion



Pyroprocessing



Optimisation & Control

Fives is an industrial engineering group with a heritage of over 200 years of engineering excellence and expertise. The company designs and supplies machines, process equipment and production lines for the world's largest industrial groups in various sectors such as cement, aluminum, steel, glass, automotive, logistics, aerospace and energy, in both developing and developed countries.

In all these sectors, Fives designs and manufactures equipment and innovative solutions, which best anticipate and meet the needs of its customers in terms of performance, quality, safety and respect for the environment.

Within Fives, the Cement | Minerals business line specialises in the design, supply and installation of core process equipment and complete plants. The Group's expertise includes technologies in crushing, grinding, pyroprocessing, combustion and gas treatment, as well as offering complete project management and customer services.

Fives is recognised in the cement and mineral markets as a provider of pioneering solutions with the highest levels of performance, quality, energy efficiency and emission controls.

From the initial definition of the project to the plant commissioning, Fives provides tailor-made solutions, on-time delivery and within-budget execution.

Fives also offers plant site services to support customers in achieving the highest levels of production-line availability, maximising efficiency and maintaining plant performance throughout the lifecycle.

With 80 years of experience in industrial engineering and contract execution, Fives Cement | Minerals dedicated teams – 500 strong in France, Spain, Germany, Canada, the USA, Mexico, India, Brazil, China and Russia – have proven operational excellence in dealing with major projects worldwide.

Fives brings its high-level expertise and services to supply tailor-made solutions and to ensure that the plant delivers unrivalled performance with optimal availability. ■

More information from Chrystelle Lucidarme,
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www.fivesgroup.com

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As a high performance company, TOTAL Lubricants produces and markets lubricating oils in over 150 countries. At TOTAL its research teams take great care to develop lubricants along with products for other applications (grease, fluid, coolants etc) that meet international standards as well as vehicle manufacturers' stringent approvals.

Protecting the environment is a key consideration: the engineers at TOTAL Lubricants always design products with sustainable development in mind, in order to reduce the consumption of fuel and emissions of exhaust gases and particles that are the result.

Innovation has always been seen as a major priority: TOTAL Lubricants mobilises 110 researchers in its two research centres to design and develop cutting-edge products and solutions for cars, motorcycles, transport, agriculture, public works, marine, aviation and industrial applications.

TOTAL's research and development laboratories create products that work specifically for particular types of vehicles. With the rapid changes that are taking place in the design and manufacture of original engines, TOTAL meets the demands for high-quality products by working with original engine manufacturers. As a result, TOTAL South Africa can offer complete product ranges approved by the most demanding manufacturers. This means that TOTAL lubricants can be trusted to deliver optimal performance for a wide range of vehicles.

TOTAL lubricants are designed not only to protect engines, but to increase performance and extend the life of the engine. As an essential part of lubrication engineering, tribology deals with the effective lubrication of machine components to ensure minimum friction in the moving parts and to provide reliable functioning. TOTAL's application of the latest tribology and lubrication engineering technology greatly reduces monetary losses. In a nutshell, engine life is extended by the effective lubrication functionality in combating friction and wear.

The TOTAL QUARTZ range meets all of the above requirements and helps optimise the operation of petrol or diesel engines. TOTAL QUARTZ lubricants contain three main components: the first is the base oil. Its composition and properties vary across the four product ranges according to the demands that

each needs to meet. The original properties of the base oil are radically enhanced by adding two other components: polymers and performance additives.

- They protect engines against all the causes of wear by reducing friction and corrosion.
- They prevent engines from overheating.
- They ensure good cylinder compression and maximum engine efficiency.
- They ensure that the engine is clean by preventing the deposit of various impurities.

In addition to this, TOTAL also has the Rubia range of lubricants which provides excellent protection, extended drain intervals, enhanced fuel economy and improved performance.

TOTAL's range of Rubia lubricants is the result of leading-edge research and a deep understanding of the workings of the heavy-duty engine industry as each product in the range delivers on performance, cost, efficiency and quality – time and time again.

The quality of a lubricant is defined by a number of key parameters that you'll find on the label. These indications help you to assess the properties and level of performance offered by the lubricant. After all, you always want the right lubricant for the right application.

With TOTAL Lubricants you are guaranteed to get high performance and smooth operation. You're getting much more than excellent products. You're choosing a comprehensive lubricants strategy with proven efficiency. ■

To keep your engine younger for longer, with TOTAL Lubricants, visit www.total.co.za

TOTAL Lubricants for the cement industry

The cement industry has stringent lubrication requirements as plant and machinery are subjected to rigorous operating conditions. TOTAL Lubricants guarantees high-quality oils and greases to improve productivity and avoid unplanned downtime.

TOTAL industrial lubricants ensure optimum performance and improve protection for equipment. With state-of-the-art oil and grease technology, savings can be made in maintenance costs and energy consumed by cement production machinery. TOTAL Lubricants provides support, and guarantees the best lubricants for extraction, crushing, conveying and grinding, as well as firing. ■

Creating homogenous mixes with Mayday Equipment's handheld power mixers



The handheld power mixers enable users to create homogenous mixes.

The use of spades or similar tools to perform mixing operations often results in a non-homogenous mix of questionable quality. Mayday Equipment identified the need to address this issue, especially when screeds and epoxies are involved, and has introduced a new range of handheld power mixers into the market.

Recognising that no two mixing jobs are identical, the Collomix range of handheld power mixers is available in a number of variants. Mayday Equipment will be marketing

the Xo1, Xo 6 and Xo 55 Duo models, with a variety of stirrer accessories for various applications. The models have power ratings respectively of 1,010 W, 1,600 W and 1,450 W with mixing volumes of 40, 90 and 90 litres.

All models have been designed for ease of operation. An increase in the height of each handheld power mixer means that operators can stand upright when mixing. This, together with the ergonomically shaped shell-type handle, eliminates back pain and decreases fatigue.

The design incorporates extremely high-performing motor and transmission components as well as acceleration electronics that allow continuously variable RPM control. The counter rotating handheld power mixers are easy to use even in heavy and viscous materials and reduce mixing time by up to 50%.

The Xo 55 Duo handheld power mixer is equipped with the Hexafix® fast coupling device for tool-less stirrer changes. A forced-action mixer, it incorporates counter-rotating stirrers for thorough mixing. The Xo 1, the compact and lightweight one-gear model, is typically used with WK stirrers for mortars, plasters and screeds.

The Xo 6 is for more demanding applications where higher performance levels are required. Used together with the MK stirrer range it is ideal for concretes, heavy mortars and epoxy resin mortars.

Different stirrers can be used depending on the liquid's viscosity; variants are available for liquid, powdery or semi liquid, and powdery materials. All stirrer surfaces are powder coated, have stable welded connections and are manufactured from high-quality, durable materials. The protective ring protects mixing buckets from damage and provides a smooth and reliable operation.

Mayday Equipment can provide a full assessment of customers' specific requirements together with offering advice on the best handheld power mixer and stirrer combination for each individual's application. ■

**More information from Devin van Zyl,
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ROCLA is Southern Africa's leading manufacturer of pre-cast concrete products for infrastructure, including pipes, culverts, manholes, roadside furniture, retaining walls, stock troughs, poles and other related products.

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

FleetBoard keeps all eyes on UpTime

Mercedes-Benz South Africa's renowned proprietary telematics system, called FleetBoard, has set new benchmarks in the OEM telematics market and the system now sports a critical new component, UpTime.



FleetBoard Uptime monitoring enables checking truck location, speed and technical status.



Dynamic Transport says FleetBoard has reduced wear and tear and improved driving techniques.

Mercedes-Benz South Africa (MBSA) Polokwane commercial vehicle outlet, Mercurius Motors, was one of the very first dealerships to implement FleetBoard UpTime monitoring, enabling constant communication with MBSA through the on-board control module, which records all fault codes occurring on the vehicle, transmitting them to a server known as the Telediagnosis Viewer.

For Japie Brits, dealer principal, Mercurius Motors, "Being able, at the click of a mouse, to track exactly where one of our vehicles is, how fast it is going and its current technical status, is invaluable. And, as a dealership, we can use UpTime as an additional selling feature, on Mercedes-Benz trucks. Whenever we take prospective customers through to the UpTime screen and show them the benefits current FleetBoard customers derive from the system, it then becomes a sure sale."

FleetBoard UpTime "informs us when a particular vehicle is due for a service, to schedule a session with our workshop and then call the customer. We have even made calls to operators letting them know that a specific truck within their fleet was low on oil or needed to have its brakes replaced, all from the data on the screen. Basically, UpTime allows us to carry out proactive monitoring," notes Brits.

Dynamic Transport is a Polokwane-based company that uses FleetBoard. Says Dynamic Transport's Andre Bradbury: "FleetBoard encourages our drivers to take a proactive and more economical driving style which results in reduced wear and tear on our vehicles. This means we can reduce the number of times our trucks go into the workshop due to breakdowns, as the drivers are handling them better. We have noticed improved wear and tear on various parts and are happy that we can remotely monitor our drivers' patterns, advising those who need guidance and rewarding those who excel at efficient driving techniques."

"We had one of our trucks hijacked recently and the culprits removed the tracker thinking they had gotten away with the vehicle. Thanks to FleetBoard, we were still able to trace and recover the vehicle," exclaims Bradbury.

"Maximising vehicle uptime will always remain one of the most important aspects of running a commercial vehicle fleet. With UpTime, FleetBoard's after-sales support team is given total visibility of customer vehicles, enabling them to offer comprehensive round-the-clock support to keep customer fleets moving," concludes Rowlands Peters, manager for FleetBoard South Africa.

"What gives FleetBoard's UpTime an added advantage over other telematics offerings out there is that we have remote access to fault codes and this means we can also order the required parts for repair early, amongst other things. In short, FleetBoard UpTime is the perfect answer for those struggling with downtime," concludes Peters. ■

**More information from Tel: 0800 133 355
www.mercedes-benz.co.za**



Filtration technology for a dust-free working environment

Cement production is a very complex process that has many challenges related to dust collection. Many steps of the process require dust control, and each step presents its own set of challenges related to the material's properties, moisture, and temperature.

Donaldson® Torit® has dust collectors which are designed for each step of the whole cement manufacturing process. Donaldson understands the many environmental challenges that face the cement industry today and our products provide the robust, yet easy to service designs required, to help you meet or exceed current and future emissions regulations. Donaldson® Torit® dust collectors, in hundreds of cement plants worldwide, are operating as both 'source capture', 'process filtration' and 'remote mounted or centralised' dust collection solutions.

Superior Technologies: With innovative technologies like the new PowerCore® dust collectors and highly efficient filter media like Ultra-Web®, Dura-Life® and Textratex® Extreme, Donaldson sets the benchmark in air pollution control.

Donaldson has a range of solutions in terms of bag collectors, cartridge collectors, pressurization units and Powercore® filtration, to suit every specific application's needs. With the development of the Downflo Oval Cartridge and Powercore® technology, these Donaldson's filtration units have a smaller footprint, are easier to maintain, and have a lower pressure drop across the filter media compared to bag filters. All these benefits contribute to the saving on the initial capital cost as well as the running cost of our filtration units.

Powercore® Smaller Up to 70% smaller: Today's streamlined and lean manufacturing facilities demand peak performance in the smallest spaces. The space saving PowerCore® dust collectors fulfil this requirement. Compared



to conventional baghouse collectors, PowerCore® CPC dust collectors are up to 50 % smaller. The PowerCore® CPV bin vent filters do not require an upstand, and therefore reduce the head room required, CPC units are even up to 70 % smaller, compared to conventional systems.

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Civilution Congress 2016 – on track!

South Africa seems to be on a knife-edge, a time of challenge and turmoil – balancing between economic success and disaster. Faced with several challenges, the engineering profession is also at a tipping point. Through the decisions and actions of engineers now, history will judge their contribution to the development of South Africa. SAICE and its sister associations trust that their contribution will tip the scales towards successful and sustainable development.

Since its inception, the *Civilution* philosophy has embodied engineers' hope of enhancing levels of respect and recognition for the profession. In partnership with government, engineers can assist in countering failing infrastructure and contribute towards sustainable development and prosperity for all.

What is Civilution?

Many of the challenges facing the industry are contentious, and divergent views and disparate aspirations will have to be accommodated. Also, much that is required will take engineers out of their comfort zones; therefore requiring a *Civilution*.

The term *Civilution* aptly illustrates what engineers need to address in the industry. They have to raise and address controversial issues to enable engineers to fulfil their rightful roles. They have to establish communication with all spheres of government to establish a flourishing industry by re-professionalising government departments, and especially local municipalities, which will effect timely roll-out of projects. Only in this way will engineers be able to provide the professional service of which they are capable. The industry needs to provide an improved service to the various constituencies that benefit from engineering.

By implementing these, the following challenges could be addressed:

- Lack of or inadequate service delivery in many local authorities
- Lack of infrastructure development which affects the economy
- Timely roll-out of infrastructure projects, especially water infrastructure
- Some of the challenges such as corruption, collusion, tenderpreneurship, lack of training and mentorship, could then also be tackled.

Civilution aims at moving away from the status quo where engineers are retrenched where inadequate provision is made for students needing experiential training, graduates lack sufficient on-the-job mentoring, where undercutting for tenders is the order of the day where salaries are inadequate, where even established engineering companies are struggling, and where institutions are restricted from playing a more meaningful role in assisting government.

Central theme for 2016 – Minimising risk by maximising accountability

Only a culture of accountability, where it is clearly understood that everyone in the industry (and in government) is responsible, can corruption, non-delivery of services by government and roll-out of infrastructure projects, to name but a few, be eliminated.

In conclusion, to realise the theme of *Civilution* 2016, accountability and transparency should be non-negotiable! ■

For more information, please contact:
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Safety awards for V&A Waterfront's Silo District development



The V&A Waterfront's construction site has achieved 2,500,000 man hours without a loss of time incident and won four safety awards.

Construction at the V&A Waterfront's Silo District has achieved some impressive milestones in recent weeks: 2,500,000 man hours without a loss of time incident (LTI), and four construction safety awards for the work under way in the district.

Audited by the Master Builders Association (MBA), the V&A Waterfront's Grain Silo project, comprising the much-anticipated Zeitz Museum of Contemporary Art Africa (Zeitz MOCAA) and The Silo (hotel), came first regionally and second nationally in the MBA Safety Competition.

Phase 2 of the Car Park Redevelopment in the district also took home a regional first-place prize and second-place national prize, while No. 5 Silo came second in the regional safety awards.

Rounding up the accolades, the Silo District development was named Safety Company and Safety Team of the Year at this year's awards.

The final phase of the V&A Waterfront's Silo district is on track for an early 2017 completion at a substantial investment of R1.5 billion. This will bring the total investment by V&A Waterfront shareholders, Growthpoint and the Government Employee Pension Fund, managed by the Public Investment Corporation (PIC), to over R2.5 billion.

Four new developments will introduce over 35,000 m² of mixed use, sustainable developments including new corporate offices, a residential development, a Virgin Active Classic Health Club and a mid-range internationally branded hotel, plus over 1,050 additional parking bays.

When completed, approximately 2,500 people will work in the Silo District daily. In an economic impact study released

earlier this year, the expected nominal contribution to GDP from future developments is a massive R29.9 billion.

About the Awards

The Construction Industry's Health and Safety Competition had its origins in 1963, when the first Building Safety Competition was held by NOSA in collaboration with the Master Builders Association. It took place in Natal and the only facet that was adjudicated on was housekeeping. In 1964 it was held as a national competition and it was extended to two categories namely Building and Allied Trades.

Today, the competition is a comprehensive, well supported annual event, open to all the Association's members and FEM policy holders. Companies compete in 10 different categories. Regional competitions are held by each of the Associations and their winners are entered into the national competition. Master Builders South Africa (MBSA) arranges the national judging of the sites entered for the competition. Some 40 to 50 sites are entered on an annual basis with only a small window of opportunity during which a site can be judged – usually when the work is at peak – the number of entries are always gratifying as is the extremely high standard the entrants subscribe to.

Regional as well as the National Safety award functions are held annually to pay tribute to those who excelled in Health and Safety and thus contributed towards the prevention of on-site fatalities and injuries. ■

**More information from Tel: +27(0)11 205 9000
www.mbsa.org.za**

MBA North member breaks decade-long KZN safety dominance

Master Builders Association (MBA) North members received three national awards in the annual Master Builders South Africa (MBSA) Construction Health & Safety Awards this year – including one award that has been won by a KZN MBA member for the past 10 years.

The MBA North members, winners of MBA North Regional Construction Health & Safety Awards, who went on to scoop national MBSA honours, are the Stefanutti Stocks and Basil Read JV for Kusile Power Station in the Contracts of over R500 million category (for the third time); Belo & Kies Construction for its work on the Newcastle Crossing Shopping Mall; and Tiber Construction for the Top Plant & Storage Yard for the company's Village Deep yard, south of Johannesburg.

Tiber's achievement was the first time an MBA North member had managed to wrest the national Top Plant & Storage Yard shield from a MBA KZN member after the province had 'owned' this category for the past decade.

Tiber contracts director, Mario de Carvalho, says that the company's success was achieved after many years of dedication to ensuring that the Tiber facility adhered totally to all prescribed Health and Safety requirements. "There were a few years when we narrowly missed the top national honours in this category. This year we were determined to grab the accolade.

"The Tiber yard personnel gave the safety initiative their full support. It was, in fact, a massive team effort that also included



Elated Tiber Construction staff (from left): Michael Nysschen, safety consultant; Peter Tyrrell, yard manager; Caroline Chauke, safety, health & environment representative; Hilton Chauke, assistant yard manager; Mario de Carvalho, contracts director; and José Correia, MD.

encouragement and assistance from top management. We now intend holding on to the MBSA Shield for many years to come," De Carvalho added.

Mohau Mphomela, executive director of MBA North, said: "This is gratifying, not only for the awards won, but also because it shows that our members are clearly aware that the health and safety of their employees are worth more than any financial gain from building projects." ■

**More information from Gerhard Roets,
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Lafarge's Microfinance Academy to reduce housing deficit

By Raheem Akingbolu

Lafarge Africa Plc's mission statement, 'Building Better Cities throughout the World by Providing Innovative Solutions' has begun to materialise in Nigeria with a commitment to reduce the housing deficit through sustainable development and investment in low-cost and mass housing across the country.

Lafarge Africa Plc, a member of the LafargeHolcim Group, has launched the Lagos State Chapter of its Housing Microfinance Academy, which is to provide capacity building for Microfinance Banks to enhance accessibility of housing credits for the low- to middle-income sectors of the country's inhabitants.

"The move, a corporate social responsibility of the group, is aimed at enabling low-income earners own homes, reduce the 17-million housing deficit in the country and results from the success of the pilot scheme of the affordable housing initiative called 'Lafarge Ile Irorun' undertaken in Sagamu last year," CEO, Aggregates and Concrete, Lafarge Africa, Loren Zanin said at the launch in Lagos.

"The 'Lafarge Ile Irorun' (house of comfort) has come a long way and expanded nationally, and was now called 'Lafarge Easy Home,'" he said.

"In just two years, it has enabled 2,000 families to build their homes, allowing a total of 10,000 Nigerians to become homeowners for the very first time."

Zanin continued: "Nigeria has from the start been one of the key countries for our affordable housing initiative and what was done in Sagamu, the first housing microfinance programme ever in this country, was through the partnership with LAPO Microfinance Bank and with the support of the Agence Francaise de Developpment (AFD) that dedicated a five million Euros credit line to LAPO Microfinance for this."



Governor of Lagos State, Akinwunmi Ambode with Denys Gauer the Ambassador of France to Nigeria

Zanin said the challenge of providing access to housing for low-income earners has special importance within Lafarge Africa Plc, as it sees it not only as a challenge of the times, but also as an opportunity which is fully aligned and central to its overall strategic objectives.

He said: "This initiative was launched four years ago and over the period, Lafarge has developed projects in 18 countries. This initiative is unique as it combines two objectives, which are finding new ways of doing business by serving the low-income segment profitably, and making an impact on the housing for millions of people. This is now a business for Lafarge which impacted more than 300,000 people over the last two years, and generated €7,2m EBITDA in the last year."

The Ambassador of France to Nigeria, Denys Gauer said AFD, which is an arm of the French development agency, is a public institution in charge of administering aid. It was involved at the pilot scheme because of the importance of the initiative. He said the academy aims to enhance the development of microfinance housing in Nigeria to build houses for the poor which is a major challenge in Nigeria.

Speaking at the event, the country manager, International Finance Corporation (IFC) in Nigeria, Eme Essien said IFC is in partnership because housing is a major challenge in Nigeria as statistics revealed that there is a housing deficit of nearly 17 million units to close up in the housing sector. He said the sector has to produce over 700,000 units of housing every year but the formal sector is only building about 1,000 units a year and the most prolific developers in Nigeria can only produce about 400 units a year. ■

<http://goo.gl/BZDNoJ>



Lafarge Africa Plc is committed to helping to reduce the housing deficit in Nigeria.



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AfriSam hands over a multi-purpose learning centre in Wesbank

AfriSam, the leading construction materials group, in partnership with the Department of Mineral Resources, Western Cape Education Department, and Airports Company South Africa (ACSA), is creating learning possibilities with the launch of a state-of-the-art multi-purpose Learning and Resource Centre in Wesbank, Western Cape.

The handover of the first phase of the multi-million rand project was celebrated at a ceremony hosted at Hoofweg Primary School, attended by the Minister of Mineral Resources, Honourable Ngoako Ramatlhodi, MEC of Education Ms Debbie Schafer, AfriSam dignitaries, and community members from Wesbank and surrounding communities.

AfriSam's relationship with the Western Cape Education Department goes back a number of years, and in 2012 the company heeded the call to partner in the construction of the centre for under-resourced local and surrounding communities.

The Centre is located at the Hoofweg Primary School to provide easy access to learners from neighbouring schools and the community. With three primary schools and one secondary school in the area, over 5,000 learners can benefit from the Centre's facilities.

The Centre will offer e-learning, literacy, numeracy, IT literacy and library services. The library facility will serve as the mainstream teaching resource for Grade 4 to 7 learners, with the school using their existing media centre room for the foundation-phase learners. The Centre will be fully integrated into the Hoofweg Primary school programme in the mornings and will be open for surrounding schools and the community to use in the afternoons.

Corporate Social Responsibility Manager at AfriSam, Tsholo Diale said, "We hope this facility motivates and encourages the learners and community members to invest in their education, with the vision of a better future for themselves and their communities. AfriSam's role is to create possibilities and uphold our legacy of building communities by making it possible for our people to realise their dreams for the future benefit of our country," he explained.

AfriSam's commitment to the project is in line with the company's overall community involvement mission, which is

to understand the needs of society and communities in areas where it does business, and make meaningful and sustainable contributions to their upliftment.

AfriSam has committed to funding the second phase of the project, which is the construction of a full public library for the community.

AfriSam has an intensive CSR programme with a focus on education and conservation. The company is involved in various educational projects nationwide, with the objective of empowering and equipping communities with the knowledge and skills, as well as providing them with the tools and facilities to become self-reliant and sustainable. The company's overall Community Involvement mission is to understand the needs of society and communities in areas where it does business to make meaningful and sustainable contributions to their upliftment.

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AfriSam's readymix operation can produce almost any concrete mix required by customers from any one of its 43 readymix concrete plants. AfriSam can produce over 10 million tons of aggregate from 17 quarries and aggregate operations each year.

Its Slagment business in Vanderbijlpark, has produced Ground Granulated Blast Furnace Slagment over the last 50 years. AfriSam South Africa is a proud Level 2 Broad Based Black Economic Empowerment (BBBEE) contributor. ■

**More information from Maxine Nel,
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Minister of Mineral Resources Ngoako Ramatlhodi officially opens the e-Learning and Resource Centre in Wesbank, accompanied by Hoofweg Primary Principal Allstair Sauer, ACSA acting Communications Manager Deborah Francis and AfriSam CEO Stephan Olivier.



The e-Learning and Resource Centre situated at Hoofweg Primary School in Wesbank, is a multi-million rand project set to benefit the surrounding Primary and Secondary Schools and under-resourced communities.

New MBA North Women's Forum to boost gender equality



(from left) seated: Rose Ts'enase (chairperson), Mohau Mphomela (MBA North executive director) and Siphokazi Mtimkulu. Standing: Precious Ngakane, Dorcus Mashale, Masega Lebelo, Maria Sono, Lebogang Dube, and Ntombenhle Ramadie.

Master Builders Association (MBA) North has established a new Women's Forum which aims to promote and elevate the role of women in the construction industry.

The MBA North's Executive Committee member, Rose Ts'enase, who is also the chairperson of the new Forum, says the objectives of the new Forum include:

- To collectively share knowledge and transfer skills and training among women who are MBA North members so that Women's Forum members can more meaningfully target government and private sector projects for new business;
- To identify and source 'enterprise development' opportunities within MBA North for Forum members;
- To organise mentorship and coaching from well-established firms in the building industry;
- To promote social responsibility;
- To benefit from networking and industry liaison; and
- To encourage more young women to enter the building industry.

Ts'enase, who heads the construction company, Bashoeshoe Construction, says many women are now passionate about effecting change in the construction industry and are gradually making inroads into the industry with the current average being Construction Industry Development Board (CIDB) Grading of 5 for the CIDB Contractors Register.

"There is already one woman who has achieved a CIDB Grade 9 status. But women face some severe challenges such as a lack of effective development support through restricted access to finance, skilled resources, delays in payment from clients, and the absence of support from the big existing contractors. The industry has always been male-dominated so that women tend to be less experienced. The

result is that women often lose business to male contractors," she explained.

"It is commendable that MBAs encourage members to award sub-contracts to emerging contractors, but it should be to emerging or small contractors who are MBA members. The major contractors should contact MBAs for the names of small contractors with experience and skills and award sub-contracts to such accredited MBA members," she stated.

Ts'enase said the new Women's Forum is planning to visit high schools to encourage young pupils to consider engineering when following their tertiary education. "We also plan to visit universities and colleges and encourage female students and give them hope that there is room for women in the construction sector. Our target is the private sector, public sector as well as state-owned entities. We are also planning to work with the other associations in the construction industry and hopefully with the new Department of Public Works' Women Empowerment Advisory Committee to seek avenues of further collaboration."

The chairperson of the new MBA North Women's Forum developed an interest in construction when she was only 10 years old when she saw her father extend their house by acquiring a brick manufacturing machine and manually producing the concrete bricks to build the new rooms. When she was older, she personally managed another extension to the family home and eventually decided to start her own building company.

"I aspire to be a CIDB Grade 9 contractor one day and compete with the big players in the industry and become a service provider of choice. The new MBA North Women's Forum will help all female MBA members meet our goals and learn from each other," she added. ■

**Further info: Mohau Mphomela,
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Concrete tracks in the bush educate and entertain

Imprints on wet concrete give a new dimension to game drives, writes Jan de Beer.

You know the feeling when you've laid gorgeous, new concrete paving in your front garden and find, to your horror, that Kitty thought it a nifty idea to preserve his paw marks on it for posterity?

I felt the same compassion for the paving contractor when strolling along one of the new concrete walkways that lead to the very impressive hides and modern ablution blocks in the iSimangaliso Wetland Park (the old St Lucia Game Reserve). There, near the start of the smooth and shimmering new concrete pathway, were the ultra-conspicuous imprints of a buck that must have crossed it before the concrete had set. The inverted heart shapes looked like it belonged to one of the duikers that inhabit this World Heritage game reserve. Unlike our family cat's tracks, the footprints were orderly, as if the duiker had just casually strolled across the pathway.



Wet concrete is bound to splash when a 4 ton elephant steps on it.



Hippo footprints creatively imprinted on one of the concrete walkways in iSimangaliso Wetland Park.

Further along the game drive, I stopped at more hides – and found more animal tracks, all crossing the concrete only at one spot, and all angled neatly across the walkway. Every new approach to a hide brought new tracks in the concrete: more hooved tracks (some so big that they had to be buffalo), formidable cats' tracks (almost certainly leopard), dainty pawprints (probably from the smaller nocturnal wild cats), and, eventually near one of the lakes, the gigantic and unmistakable tracks of a hippo, plodding along to the lake the hide overlooked. The hippo tracks were deep, as you'd expect from such a massive creature. Birds were drinking from water that had collected in the enormous circular tracks of an elephant on a walkway near another dam.

By now, I had got the message. There tracks not left by creatures of the bush, but placed there by the brainiest of the great apes, homo sapiens.

Respected KZN conservationist, Andrew Zaloumis, who is in charge of the 322,000-hectare iSimangaliso Wetland Park, solved the puzzle. Having spent so much time in game parks since childhood with his father, Dr Nolly Zaloumis – also a legendary KZN conservationist – Andrew said he wanted to create some fun and excitement for the visiting children, who tend to get bored during long game drives.

"Our landscape architects said the trick with the concrete tracks would be restraint: not too many as it would then become 'kitch'. So each walkway has just enough, and the spoor encountered on the paved areas also indicate what game you are most likely to see in that particular area.



Tread warily: there's thick vegetation around the Mfazana Hide - and ominous leopard tracks on the concrete pathway...

The footprints were made off-site as part of an iSimangaliso Community Art programme – and there was great excitement all around when the casts were created. Later they were imprinted on the wet concrete. We see the tracks-on-concrete-walkways as an ongoing project. For example, there will be tracks on the hides at Bubu, Malibale and also the 200-metre-long walkway to Mkuze Game Reserve's kuMasinga hide, regarded as one of the most prolific game viewing hides in South Africa," Andrew explained.

Hats off to Andrew and his team for ensuring that at iSimangaliso game drives – even visits to the bush loo – will never be the same again. It certainly makes you look at more than just the pictures in your mammal handbook. ■

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