



# Variety is the word at this year's Steel Awards

By Paolo Trinchero, Chief Executive Officer, SAISC

The quality of the entries improves each year and 2014 is no different. This year we had 60 entries reflecting steel as the material of choice and a sign that we can indeed speak fluent steel. Steel structures of all types are now readily achievable and due to the all-round efficiency and sustainability of the material, it's no wonder steel is being used more and more.

What is **encouraging** is the broad range of projects from residential houses, to commercial projects, mining and industrial **and now renewable energy**. **This bodes well** for us as we need to ensure that we play in as many sectors of the South African and Southern African **economies as possible**.

What is encouraging is the broad range of projects from residential houses, to commercial projects, mining and industrial and now renewable energy.

All in all we received ten mining and industrial; four corporate office building, eight tubular (though a few entries in other categories also used tubular steel) and another eight architectural entries. The Light Steel Framing Category surprised everyone with eighteen entries - over 30% of the entries in total and this product is barely seven years old in South Africa! The new **B&T** sponsored Factory and Warehouse Category received seven entries. Although we only received four bridge entries, the judges had a hard time on deciding which one should be the winner. One refurbishment entry could not be 'categorised' but it was worth a mention.

This bodes well for us as we need to ensure that we play in as many sectors of the South African and Southern African economies as possible. During my first stint at the SAISC in 1998 we had less than 20 entrants with talk of CNC equipment, design and detailing software in its infancy. This year a number of projects displayed characteristics of a winning industry. They showed innovation in every process and the integration of design, detailing, fabrication and erection using modern CNC equipment and software which our industry has invested in so heavily.

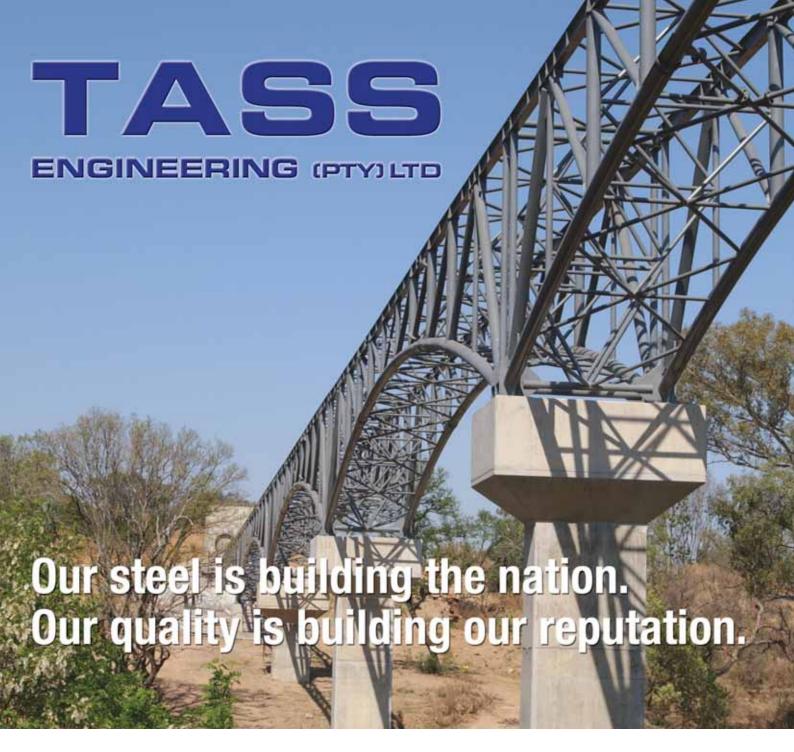
It has been a year since I (re)joined the SAISC as CEO and I must say that it has been a pleasure to serve the industry and work with the SAISC staff. We are not immune to the challenges being faced by our members but having competent, passionate staff and industry participants makes a huge difference.

The SAISC is passionate about training our next generation so we can continue to take advantage of opportunities in South and Southern Africa. We would like to see the industry working harder on integration and competitiveness as displayed by our winning entries. The SAISC is in the process of launching the SAISC Steel Academy which will cover a range of courses and training opportunities from typical engineering design courses, to competitiveness and contractual issues through to business development. Please support us and our initiatives.

I would like to thank the entrants who have made this event possible, the sponsors, the judges and the SAISC support team. Having had the privilege of attending some of the site visits and event meetings one realises the amount of work that goes into making Steel Awards such a successful event.

This year will be recorded as one of enormous challenge for our industry but as always we are showing that we are indeed men and women of steel.

I would like to congratulate the winners and encourage our members to continue to participate and grow our industry into the future.



TASS Engineering has been actively involved in structural and architectural steel fabrication and erection for more than four decades.

### **Current projects:**

- New Sentech Masts (650t) Sentech
- Sandton Repositioning Phase 3 Office Tower Cladding -Liberty Properties
- Sandton Atrium on 5th Cladding Liberty Properties
- Razomart Warehouse (350t) Razomart
- Warehouse Columbia Pharmaceuticals (250t)
- DSTV Head Office, Randburg (100t) Multichoice
- · Sedibeng Brewery Extension (650t) Heineken
- Frankenwald Warehouse (480t) Capital Property Fund

- Incubation Hub (240t) Century Property Developments (Pty) Ltd
- Sandton Office Tower, New Spire Liberty Properties
- Menlyn Maine Central Square (250t) Menlyn Maine Investment Holdings
- · Eastgate Refurbishment (920t) Liberty Properties







# The Judges Steel Awards 2014

I have to say that this is the most unique structure that I've seen during my career. Added to which the way it blends in with the bushveld is superb. Dennis Nash

#### Judges' Comments on the Malapa Fossil **Excavation Site - Overall Winner of** Steel Awards 2014

The judging process of Steel Awards 2014 follows the same routine every year. In some years the overall winner stands out almost from the start. In other years it is heavily debated right until the end. This year from the moment we showed the judges the images of 'the beetle' they could not stop talking about it - but could this be the overall winner was always the question until the final judging meeting took place. Since it is such a unique structure, we asked each of the judges to comment (in writing) on the Overall Winner.

Aside from the fact that this is a magnificent project, what is really striking about it is the vibrant excitement, enthusiasm, determination and finally satisfaction and joy from Professor Berger and his team which has infected all the participants. Louis Breckenridge (CEA)

This great project was so successful because the client and subsequently the professional team were able to select the members, contractor and suppliers, based on competence rather than price and worked closely with them.

Godfrey Ramalisa (CESA)

The 'small' Malapa fossil excavation cover stood out from the rest for its uniqueness of concept, design, application and appearance and it is true when they say that it is almost invisible! I proved this when I showed my wife a picture that I took of the structure from 20 metres away and she could not even see it amongst the surrounding shrubbery!

Colin Shaw (ASTPM)

This project proves that steel can be moulded into a solution that complies with the most demanding of requirements! John Barnard (SASFA) Nestled deep in the Cradle of Humankind, sits a man-made structure, spiderlike, guarding, yet revealing the untold hidden secrets of the past, silently telling an architectural, engineering and contractor ingenuity story of its own.

Johann Nell (SAISI)

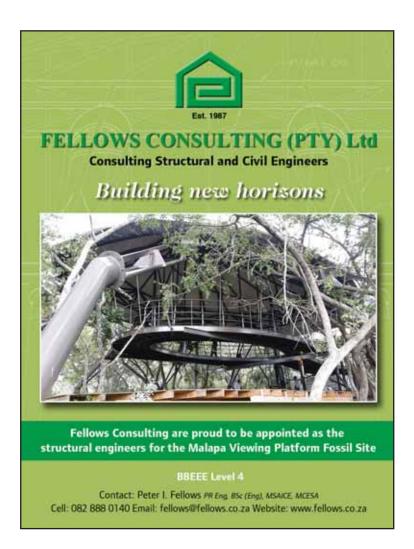
I have to say that this is the most unique structure that I've seen during my career. Added to which the way it blends in with the bushveld is superb.

Dennis Nash (JSD)

I can therefore only concur with Professor Lee Berger when he says that "this structure meets and in fact, exceeds all other aspects of the stringent briefing resulting in one of the most impressive structures related to a heritage site ever built".

Franco Mordini (ASTPM)

The Malapa project was a perfect synthesis of concept and material. The site is a universal celebration of humanity through time. It seemed appropriate that steel could be used to express this passage









of time with the very best design tools at our disposal at this time. Considering the intent and the sensitivity of the project, it is unlikely that any other material could have been used.

**Hugh Fraser (SAIA)** 

### The Associations and Institutes that make the judging possible

Each year we approach six Institutes and Associations to nominate a representative to join the judging panel. The SAISC would like to sincerely thank these organisations for their contribution to making Steel Awards the highly rated awards programme it has come to be.

### The Association of Steel Tube and Pipe Manufacturers of South Africa (ASTPM) represented by Colin Shaw and Franco Mordini

The ASTPM represents the welded carbon steel tube and pipe manufacturers in South Africa and their objectives are to promote the use of welded carbon steel tube and pipe; represent common interests to government and other organisations; promote import replacement and promote the export of welded carbon steel tube and pipe. The ASTPM sponsors the Tubular Category Award of Steel Awards.

Website: www.astpm.com

### The Constructional Engineering Association (CEA) represented by Louis Breckenridge

The CEA(SA) is a body representing its employer members in the construction engineering industry in South Africa. The umbrella body for all employers in this industry is the Steel and Engineering Industries Federation of South Africa (SEIFSA).

Website: www.cea.org.za

### Consulting Engineers South Africa (CESA) represented by Godfrey Ramalisa

Consulting Engineers South Africa (CESA) is the 'Voice of Consulting Engineering in South Africa'. CESA represents for its members, a body that promotes their joint interests and, because of its standing, provides quality assurance for clients. CESA is committed to the principles of sustainability and the promotion of engineering excellence.

Website: www.cesa.co.za

### The Joint Structural Division (JSD) represented by Dennis Nash

The Joint Structural Division (JSD) consists of members from both The South African Institution of Civil Engineering (SAICE) and the UK based Institution of Structural Engineers (IStructE). Their mission is: working together to look after the interests and development of structural engineers both in South Africa and internationally.

Website: www.jsd.co.za

### The South African Institute of Architects (SAIA) represented by Hugh Fraser

The South African Institute of Architects and the Regional Institutes are committed to maintaining the highest standards of professionalism, integrity and competence. Any member of the Institute, as defined in the constitution, is required to uphold and subscribe to these objectives.

Website: www.saia.org.za

### The South African Iron and Steel Institute (SAISI) represented by Johann Nell

The South African Iron and Steel Institute (SAISI) is a non-profit, pro-competition and non-governmental representative organisation serving the collective interests of the primary steel industry in South Africa. SAISI's membership includes four primary carbon steel producers and South Africa's only primary stainless steel producer.

Website: www.saisi.co.za

## The Southern African Light Steel Frame Building Association (SASFA) represented by John Barnard

SASFA, a division of the SAISC, promotes the use of light steel frame building (LSFB) in Southern Africa. The mission of SASFA is to develop and grow the Southern African and export markets for light steel frame building.

Spencer Erling and Reneé Pretorius of the SAISC are the conveners of the judges.



### STEEL IS OUR STRENGTH

The Integration of the Aveng Group 's three steel companies, Aveng Trident Steel, Aveng Steeledale and Aveng Steel Fabrication into one cluster known as Aveng Steel, creates a new powerhouse in the steel industry.

Aveng Steel is a specialist in offering all steel solutions, as the leading supplier of structural, sheet metal, carbon and alloy spring steel, welded tube and the largest supplier of reinforcing steel and mesh. Included in the steel hub is a state of the art fabrication facility that services the construction, mining, energy/ power and infrastructure industries. This integration will continue to provide customers in South Africa and across the African continent with the best products which deliver the highest quality for infrastructure development.

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Front Cover:

The Malapa Excavation Site Photographer: Les Steel-Smith Main Sponsor: Aveng Steel

Steel Awards 2014 Overall Winner:

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### and You Tube Join us on

### editor's note

ave you noticed anything different about Steel Construction? If not, close the magazine and look at the cover for a few seconds longer than you did before. What do you think?



Our new-look cover is part of our new look Steel Construction and we thought the Steel Awards Issue would be the perfect occasion to launch the revamp. We also chose this issue since we would like to know what you think and be able to tweak it after digesting your inputs before we start with the 'regular' issues again. Be a real magazine reader and open the centre-fold first. If you complete the survey, you might win a Mini iPad.

The theme for Steel Awards this year is 'Steel Empowers'. To empower according to the Oxford Dictionary means: To give (someone) the authority or power to do something. The SAISC took some licence with the word empower and not only included people, but also the world around us. The steel construction industry empowers about 75 000 people in South Africa with jobs, skills, training and life passion (for some of course it is just a job, but that is worth quite a bit these days). Without steel we would basically be without power - power generation (the renewable and not so renewable kind); economic power (just think of the mining and industrial industry); commercial development, infrastructure etc. Well, just imagine a world without steel...

The winner this year took 'Steel Empowers' to a whole new level as it enabled a group of palaeontologists to add more pieces to the puzzle of the origins of the human species.

All the category winners and commendations show in one way or another how steel moves things forward and empowers people to even do such a simple thing as cross a river to go to school.

Steel Awards could not be 'powered up' without the support of our sponsors and this journal would not see the light without our advertisers. Thanks to all who made the Steel Awards and the journal possible.

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### 11

This is the second year that Aveng's participation in the Steel Awards is under the new cluster of Aveng Steel.

The partnership with SAISC as the main sponsor is now in its fifth year and Aveng is very proud of this association.



### Main Sponsor

### Aveng Steel packs 198 years of experience into one

Aveng Steel is an operating group within the Aveng Group, which is one of the largest JSElisted construction companies by market capitalisation.

It is just over a year that Aveng Steel was formed through combining the Aveng Group's steel businesses of Trident Steel, Steeledale and Steel Fabrication into one operating entity to leverage their collective value.

Together these reputable brands of the steel industry represent more than 198 years of know-how, experience and excellence in their respective fields and places Aveng Steel as a leading player in the industry.

Stretching as far back as 1903, these entities' life spans individually are to be marvelled at. Their resilience to the socio-economic fluctuations which the South African steel industry has been subjected to, bears witness to the people that are now part of Aveng Steel.

The seamless integration of these businesses under the umbrella of Aveng Steel has presented great opportunities for customers and Aveng Steel alike. From the customers' point of view, Aveng Steel offers a virtual one-stop-shop. The capabilities of Aveng Steel range from the supply of structural steel, automotive materials, special steel and reinforcing bars, as well as pipe and tube manufacturing and steel fabrication.

Aveng Steel is able to embrace the needs of its customers at every level. Their priority is the ability of Aveng Steel employees to effectively interact and communicate with its customers: from receiving an inquiry through to the delivery of the final product and service to expectation.

#### **Aveng Trident Steel**

Aveng Trident Steel provides vast structural steel sections, plate and sheet metal of various sizes, and has a comprehensive range of carbon and alloy spring steel.

Processing by the specialised cutting division includes state-of-the-art, computerised, high definition plasmas, lasers and gas cutting machines. Guillotining, chamfering and bending are also available. Manufacturing of welded tube is offered, including an extensive range of squares and rectangular sections.

The coil processing division offers cut-tolength, blanking, slitting, press and tool cutting, angle cutting and edge dressing services.

To expand its product offering, Aveng Trident Steel has invested in various capital projects over the past year. The latest additions include a tube laser, which is capable of cutting tube structures that would not be possible with conventional cutting methods.

#### **Aveng Steeledale**

Aveng Steeledale was formed in the mid 1950s and grew both in size and stature to become a major technology leader in the reinforcing steel industry. Today it is recognised throughout South Africa and its neighbouring countries as one of the largest reinforcing steel and mesh suppliers, with 21 branches.

Aveng Steeledale provides products which are ISO 9001 compliant, has a quality management system and a full product package that complies with local and international safety requirements. The comprehensive product range includes cut and bend reinforcing steel, stock lengths, construction mesh (all references), white mesh, wire products, pre-assembled reinforcing steel and much more.

Aveng Steeledale's vision remains to further entrench its market leadership by providing the technology, products and services which meet, and where possible, exceed stakeholders' expectations.

#### **Aveng Steel Fabrication**

As the leading fabricator of structural steelwork and other industry-related products, Aveng Steel Fabrication has a proven track record of consistent, reliable and efficient services to a broad range of customers.

Aveng Steel Fabrication's Vanderbijlpark workshops were established in 1947, and since then it has grown from strength to strength. One of the most significant strides was the upgrade and expansion to the workshop facility in 2010. This included a totally revamped workshop with 60 000m² under cover. This area has six fabrication bays that cater for light, medium and heavy structural steelwork, plate work, auto-fabrications, heavy plate girders and tubular items.

The latest CNC machines are used for the fabrication disciplines and serviced by overhead cranes. The specialised offering to the industry includes an established detailing office using Tekla and Bocad systems.

Aveng Steel Fabrication maintains strict safety and quality controls with every piece of steel that goes through their workshop. They are certified to ISO 9001 Quality Management System as well as EWF/11W 3834 ISO Welding Certification.

Aveng Steel Fabrication has a proud history of being involved in some of South Africa's most notable projects, including the stadiums which were built for the 2010 FIFA World Cup.

Looking forward, Aveng Steel is well placed regarding new ventures, specifically throughout the African continent. The cluster is committed to establishing long term partnerships in order to provide added value services to the industry.

This is the second year that Aveng's participation in the Steel Awards is under the new cluster of Aveng Steel. The partnership with SAISC as the main sponsor is now in its fifth year and Aveng is very proud of this association. Aveng Steel has a footprint in all nine provinces in South Africa, is represented in six countries in Africa and supplies the Sub-Saharan Africa region.











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Email: info@macsteel.co.za Website: www.macsteel.co.za

### **MACSTEEL Maestros** Celebrating 12 years

### Table Décor Sponsor

#### Macsteel - More than just STEEL

With a proud history spanning more than 100 years and operating from a network of 79 service centres, branches and warehouses, the Macsteel Group supplies the entire Sub-Saharan geographic region with the most extensive range of carbon steel, special steel, stainless steel, aluminium and value added steel products to all sectors of industry.

Macsteel have for many years been generous contributors to numerous community tives, recognising that the Group plays a pivotal role in addressing socio-economic tiatives within this arena are the Macsteel **Maestros and Macsteel Maestros Life Skills** programmes, which offer a comprehensive range of developmental life-enhancing

and social responsibility projects and initiachallenges in our country. Noteworthy inimodules to young, exceptionally talented athletes from all sporting codes.

### Empowering and developing the 'Steel' in our youth

Founded in 2002, The Macsteel Maestros programmes aim to significantly enhance the capacity and ability of talented sports stars to be the masters of their own future. This is undertaken by bringing a unique balance to the quest for sporting excellence, equipping each athlete with the skills to be successful inside and outside of competition and most importantly, after their sporting careers.

To empower the 'Steel in our Stars' and engender in each athlete the opportunity to develop to their fullest potential and indeed, in every facet of their lives, they enjoy extensive professional assistance. This includes: full medical diagnoses and assessments; fitness evaluations; customised training programmes; nutritional and psychological guidance; injury rehabilitation services; educational and career advice; formal and informal life skills workshops and continuous mentoring.

Pressures beyond the realm of competition remain the constant companion of athletes, with many of the potentially damaging pressures coming from outside the sporting arena. To survive and enjoy long term success, each competitor needs specific skills that make it possible to cope with a high achieving sporting lifestyle.

Headquartered at The Sports Science Institute of South Africa in Cape Town and operating from regional centres in Johannesburg, Pretoria, Durban, Port Elizabeth, East London, Bloemfontein and Potchefstroom, the Macsteel Maestros programmes remain committed to achieving their objectives in collaboration with recognised regional and national sporting bodies.

Macsteel salutes and commends all of our Macsteel Maestros both past and present and sincerely hope that their prestigious sporting achievements and lessons learnt through the Macsteel Maestros programmes will assist in making them better citizens and ambassadors for South African sport development in the future.

Macsteel have for many years been generous contributors to numerous community and social responsibility projects. Noteworthy initiatives within this arena are the Macsteel Maestros and Macsteel Maestros Life Skills programmes.

BFI OW: The Macsteel Head Office located in Boksburg





### THE MACSTEEL MAESTROS INDIVIDUAL ATHLETE PROGRAMME

This programme caters for exceptional young athletes, from challenging circumstances, nominated by their respective sporting bodies. They receive support from specialists in their field.

#### This includes:

- · Medical diagnosis and rehabilitation
- Fitness evaluation and monitoring
- Dietary and psychological intervention
- Formal and informal life skills
- Mentoring and feedback
- Educational and career advice
- Other customised modules

Every programme is tailor-made to suit each individual talents and circumstances of athletes, allowing development in every aspect of their lives. For over a decade, MACSTEEL Maestros has enhanced the quest for sporting excellence by equipping athletes with the right skills to achieve success in competition and beyond their sporting careers.

### THE MACSTEEL MAESTROS LIFE SKILLS PROGRAMME

This programme offers customised life skills training to groups or teams by expert facilitators. The workshops encompass modules related to personal growth and self-management. Topics include time management, goal setting, substance abuse, stress management and commercial skills. We also teach competitors how to hande the media, appropriate social etiquette and networking. Federations and organisations can select modules according to their needs.

### THE MACSTEEL MAESTROS ATHLETE LIFESTYLE PROGRAMME

Research has shown an elite athlete performs best when practicing a balanced approach to sport. The programme focuses on considerations of governance, such as financial skills, contracts, wills, taxation, player satisfaction and family wellness.



INSTITUTE OF

The Macsteel Maestros and Macsteel Lifeskills programme are managed by the Sports Science Institute of South Africa and run at regional centres in Johannesburg, Pretoria, Cape Town, Durban, Bioemfontein, Potchefstroom, East London and Port Elizabeth.

# MACSTEEL Maestros

www.macsteelmaestros.co.za



# centering on MACSTEEL

By Marlé Lötter, Events Manager, SAISC



The Steel Awards 2014 table decor sponsor, Macsteel, has once again proven that this major steel merchant also packs lots of creative punch, such as they did in 2013 and 2012. However, this time they did so even in spite of strike action which delayed planning and production with a month at a critical stage - a time when thinking about 'nice things on tables' is furthest from executive minds. Incidentally, the strike episode is (at least partially) also why stress balls as individual gifts to all guests seemed to be highly appropriate 'fun therapy' for the tough times we have been through this year!

The SAISC sincerely appreciates the time and effort set aside by the national marketing manager, Dave Dawkshas, and his creative team leaders, Werner Petrick and Braam Kloppers as well as Candice

Menoita, to conceptualise and produce the beautiful, yet very functional centrepiece decorations for this year's dinner across all three venue in Johannesburg, Durban and Cape Town. We know that behind these names are the support of many more staff members of Macsteel to get the goods from sketches to shipments. Macsteel once again also assisted in major ways with the national transportation logistics.

Congratulations to the lucky winner at each table, who got to take home these art works. You should think of specifying these in your will - they may very well outlast you!

The funds raised from a R50 portion of every attendance fee across all three venues will be donated to a regional charity of merit. More details in the next issue.

### Steel Awards 2014 MCs and Entertainment

Over the past years the Institute received vastly positive feedback for the Steel Awards programme content. However, one friendly request became somewhat of a refrain "...need more time to network...

So, in an effort to comply we thought it would free up some talk-time for guests, if we could combine two key elements, i.e. the structural backbone of Master of Ceremony's work and the entertainment aspect. Hence we selected three very efficient MC- entertainers highlighted in the magazine.

### gauteng

Al Prodgers is a corporate stand-up comedian and MC who specialises in using his 'passionately South African' sense of humour strategically so that companies can "Lighten Up for Real Change." Weaving storytelling, interaction and solid corporate messaging Al has engaged audiences from Canada to Dubai via Uganda and Fouriesburg, was privileged to perform comedy for the likes of Archbishop Desmond Tutu, has hosted his own TV special on Comedy Central and enjoyed working ankle deep in mud (and brandewyn) for rugby supporters. He's been praised by The Times newspaper of London and attacked by an unimpressed penguin in Port Elizabeth.

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### Photo Competition Sponsor

Cadex SA supplies and fully supports Tekla Structures the leading 3D modeling tool for structures. These innovative tools are used by individuals and teams to improve profitability, quality and performance and to reduce risk on their projects.

Tekla Structures is an innovative 3D solution that facilitates accurate design, detailing and management of intelligent structural and building models of any size or complexity with ease and precision. The tools cover all materials during the entire structural design process. Tekla's intelligent model integrates the entire structural project workflow from sales and initial bid, through detailing, fabrication and erection, to asset management.

It is the most advanced and integrated way to manage the shop-detailing, fabrication and erection of all steel structures. Tekla Structures is a model based system that reduces errors, increases productivity, and provides the highest levels of automation of fabrication and project management by interfacing with MIS (Management Information System) and with CNC machinery.

Tekla Structures BIM (Building Information Modelling) software provides an accurate, detailed, and data rich 3D environment that can be shared by structural engineers, architects, concrete rebar detailers, steel detailers, steel fabricators, project managers and clients. At every stage the detailed models enable the highest level of constructability and produc-

The Software Maintenance Agreement benefits users by providing them with support, upgrades and fast efficient help when required. Local first level technical support is provided by experienced professionals, with years of industry experience, who assist all levels of users. Users on maintenance get access to the Tekla Extranet which includes an experienced and helpful online user community.

Cadex SA, Tekla's regional reseller, brings more than 60 years of experience in the Southern African steel construction industry to their clients.

Visit www.tekla.com for details about more configurations and tools.



### The Association of **Steel Tube and Pipe** Manufacturers of **South Africa**

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### Tubular Category Sponsor

The Association of Steel Tube and Pipe Manufacturers of South Africa (ASTPM) was formed in 1983 to represent the welded carbon steel tube and pipe producers. The members account for over 70% of the installed capacity. Details, product range and all other relevant information are available on our website www.astpm.com.

During the 30 years existence of the Association the members have loyally supplied the local market and have also exported in excess of 1.5 million tons of tube and pipe to over 50 countries. This has only been achieved due to the top-quality product that these members produce which is in compliance with both local and international specifications.

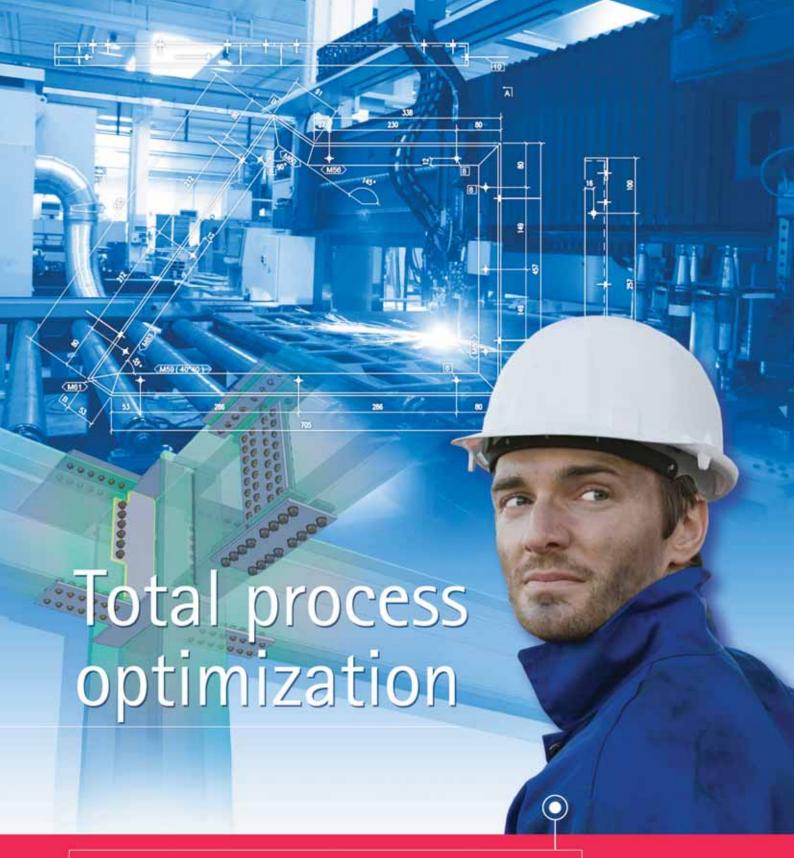
The Association continues to promote the use of tube and is active in ensuring that local standards are maintained and where necessary improved to meet local and international requirements.

One highlight that continues in the industry is the success of the standard Grade

S355 Structural Tubing that was launched in 2010. The higher strength continues to provide a lighter and stronger steel solution to the structural steel industry and compliments the inherent benefits of tube. Sales keep on improving.

Our members continue to invest in this industry and are expanding in value added machinery that includes plasma and laser cutting technology. These products are now more user-friendly especially with connections that save time and labour costs for the fabricator/erectors, enabling them to pass the savings on to their customers.

The ASTPM is pleased to be able to continue their sponsorship for this worthy award, both now and into the future and wish the SAISC every success for this flagship event.



Bob (35) knows the most efficient way to design, detail, and fabricate a steel structure. His company uses Tekla to automate fabrication and project management through interfacing with MIS systems and CNC machinery. What's more important, sharing the Tekla model allows the project team members to stay in the building information loop real-time.

Tekla BIM (Building Information Modeling) software solutions provide a data-rich 3D environment that can be shared by contractors, structural engineers, steel detailers and fabricators, and concrete detailers and manufacturers. Choose Tekla for the highest level of detail, accuracy, constructability and integration in project management and delivery. Visit our website to learn more about Tekla solutions and references. Since 2011, Tekla has been a part of the Trimble Group.

Contact Cadex SA, Tekla's Partner for Southern Africa info@CadexSA.com www.CadexSA.com +27 11 463 3641





#### **B&T Steel**

#### **Contact Details**

Bryan Wilken 16 Flambojant Street, Delmas, 2210 Tel: +27 (0)13 665 1914 Fax: +27 (0)86 528 3349 Email: marketing@btsteel.co.za Website: www.btsteel.co.za Facebook: https://www.facebook.com/BTSteel

### Factory and Warehouse Category Sponsor

B&T Steel was established in 1995 when directors Trevor van Vuuren, Norman van Vuuren and Ben Dicks realised that there is a niche market opportunity for supplying quality steel structures to local and export markets. Since most of our clients came from Witbank, Pretoria and Johannesburg, we started operations in a small rented factory with two offices in Delmas, Mpumalanga.

**B&T Steel currently occupies 90 000** square meters of land and we employ 160 skilled staff members that specialise in detailing, fabrication and erection of structural steel in South Africa and Sub-Saharan Africa. At B&T Steel we pride ourselves in our well-equipped workshops with automated CNC machines, which enable us to improve on basic concepts, time constraints, accuracy and productivity. We have our own mobile cranes and have been BBBEE compliant for a number of years

We make sure that we always stay on top of our game through continuous skills

development especially through Merseta, the accredited training institute.

The B&T team takes great pride in its uncompromising commitment to world-class quality and service excellence, as well as their sound knowledge of steel construction. This unified team has unlimited passion for the steel industry that shows in their approach to both business and their customers.

Over the last two years, we have seen significant growth in the retail market and are excited to see what the future holds for the industry and us as a company!

**Fabricating Innovative Steel Solutions** 

Genrec

### Genrec Engineering:

a division of Murray & Roberts Ltd.

#### **Contact Details**

Michael Mamotte, New Business Development Manager

Private Bag X035, Wadeville, 1422 Tel: +27 (0)11 876 2306 Fax: +27 (0)86 765 0363

Email: michael.mamotte@murrob.com Website: www.genreceng.co.za

### Partner Sponsor

### **Fabricating Innovative Steel Solutions**

Since it was formed over sixty years ago, Genrec Engineering has expanded services, grown its client base, and become a wellknown and highly respected enterprise.

The company's core values - honesty, integrity, accountability, care, respect and Ubuntu (humanity to others) help the business to not only maintain its ongoing success, but guide it towards the future.

As a respected steel fabricator and contractor, the company has worked on numerous infrastructure projects across a range of markets. Genrec specialises in the manufacture of structures and equipment for its diversified industry sectors which include: power generation, mining, petrochemical, mineral beneficiation, infrastructure, oil and gas and industrial.

Genrec prides itself on its pivotal role as a global partner in steel fabrication and heavy machining. The company has taken on numerous projects for clients in countries

across the globe, such as Dubai, Canada, Chile, Mozambique, Tanzania, Mauritania, Zambia, Qatar and Abu Dhabi and has earned a reputation as an internationally recognised and highly respected professional steel fabricator.

Rather than deal with separate companies, clients are able to facilitate all aspects of their projects through Genrec as services include: total project management; design and detailing; light, medium and heavy structural fabrication; planning and programming; heavy machining; painting; trial and pre-assembly; transport; steel erection; site logistics; surveying and QC services.

Genrec's facility encompasses over 55 000 square metres of covered workshops along with 19 500 square metres of open areas. The plant is equipped with the latest systems, CNC equipment, welding process and high-volume blasting and painting resources.

# EXCELLENCE IN FABRICATING INNOVATIVE STEEL SOLUTIONS



- . Steel Detailing Solutions
- . Light, Medium & Heavy Structural Fabrication
- Heavy Machining
- Planning and Programming
- Material Logistics
- Erection
- Site Services

At Genrec Engineering, our team is happy to discuss the value we can add to your projects with our resources, be that a single capability or the entire project offering.

Genrec Engineering specialises in the manufacture of structures and equipment in diversified markets such as:

- Power Generation Mining Petrochemical Mineral Beneficiation
- Infrastructure, Oil and Gas, and Industrial

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ISO 14001: 2004 + Cor 1 : 2009

ISO 3834 part 3

BS OHSAS 18001: 2009

**API Certification** 

**BBBEE Level 2** 

Our Values | Honesty and Integrity | Accountability | Care | Respect | Commitment | Ubuntu







### **NJR Steel Holdings**

#### **Contact Details**

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Website: www.njrsteel.co.za

### Partner Sponsor

### NJR Steel – Supplying 1st class steel products since 1980

Since 1980 NJR Steel Holdings (Pty) Ltd has grown from strength to strength by continuously enhancing our product range and capacity to meet increasing customer demands. NJR Steel currently operates seven manufacturing businesses and our products and services are distributed through seventeen NJR Steel trading branches which are strategically located across five provinces. Our NJR Steel Export business services our customers in Africa.

Exciting new developments include:

- NJR Steel Paint manufactures the Felpon brand of light industrial, domestic, contractor and decorative paint for the retail market.
- NJR Steel Fencing now stocks and distributes our De-Fence range of fencing solutions offering the market 'the new alternative' when specifying or selecting security fencing products and services.
- NJR Steel Mesh operates from a 6 800m² facility with the capacity to draw,

straighten and cut to size, indented and smooth rod in various sizes, and produce welded mesh in either sheets or rolls, and customised sheets on request.

NJR Steel – Wantsteel, our Palisade division has installed new fully automated machinery which has allowed us to expand our range, increase our capacity and improve our efficiency.

In addition to our traditional offering of long and flat products, NJR Steel also produces a wide range of value-added products such as in-house de-coiling and slitting. The group has roofing lines which allow us to roll corrugated, IBR and Widespan in various thicknesses of galvanized and Chromadek products to size.

**NJR Steel-Reinforcing**, situated in North Riding, is a high-tech world class, cut-and-bend facility which enables us to penetrate the reinforcing market with confidence.

NJR Steel's geographical footprint and extensive product offering continues to give us a strategic advantage over our competitors.



### **Peddinghaus Corporation**

#### **Contact Details**

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www.peddinghaus.com/youtube,
www.peddinghaus.com/twitter,

www.peddinghaus.com/linkedin

### Partner Sponsor

Established in 1903 in Gevelsberg, Germany by Paul F. Peddinghaus, Peddinghaus Corporation has remained the industry leader in steel fabrication equipment for over 109 years.

Headquartered in Bradley, Illinois, USA, Peddinghaus has evolved into a globally respected company that is currently under its fourth generation of family management.

Renowned for superior craftsmanship and design, Peddinghaus machines are recognised throughout the world for their power, speed and durability. By maintaining a team of engineers solely for the research and development of structural equipment, Peddinghaus continues to redefine industry standards for efficiency, and cost reduction.

Peddinghaus' mission is to ensure 100% customer satisfaction; this is achieved by maintaining the largest staff of field service technicians and customer support in the industry. Housing an extensive parts

inventory at all of our facilities worldwide, Peddinghaus guarantees that customers receive essential parts in the fastest manner possible. This mission is further exemplified by Peddinghaus' 24-hour technical support centre, the only one of its kind within the structural machine tool industry.

Peddinghaus product lines include: Drill lines, plate processors, angle/detail machines, thermal cutting/coping, automated layout marking, band saws, ironworkers and Raptor 3D CAD/CAM software.

With manufacturing facilities located in five different countries as well as sales and service staff throughout the globe, Peddinghaus' innovative designs and investment in cutting edge technology will continue to grow with the ever changing structural steel industry.







### Retecon | Ficep

#### **Contact Details:**

Hans-Peter Neth 100 Plane Road, Spartan, Kempton Park Tel: +27 (0)11 976 8600

Fax: +27 (0)11 394 2471 Email: machines@retecon.co.za Website: www.retecon.co.za

### Partner Sponsor

Retecon (Pty) Ltd as the sole agent for the international Ficep brand, supplies their innovative CNC machines and systems in South Africa for the steel construction industry.

With more than 120 installations countrywide, Retecon's sales and service staff have the knowledge and expertise to consult with customers and service the installed equipment to the benefit of the customer's operational requirements.

Ficep is one of the world's leading machine tool manufacturing companies with experience of over 80 years. This Italian-based firm has become the largest producer in the world today of automated systems for the fabrication of structural steel and plate.

### Products supplied:

- Angle lines for towers and normal construction requirements
- Plate machining, punching, drilling and plasma

- Beam drilling and cutting lines incl. marking
- · Shears and sawing lines
- · Software, dedicated for their equipment

Retecon's persistent and positive attitude towards uncompromising excellence in service has paid off and today forms a strong base for a successful future. With the ongoing quest for new technologies, the level of service demanded by our clients has increased to more than just the capability to repair machinery. Today and in the future, we will have to reliably demonstrate how to efficiently apply highly advanced technologies and continuously train our customers' technical staff in the most economical use thereof.

Retecon is an ISO 9001:2000 certified company.



### **Tubular Holdings (Pty) Ltd**

#### **Contact Details**

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Fax: +27 (0)11 450 2165 Email: tony.t@tubular.co.za Website: www.tubular.co.za

### Partner Sponsor

Tubular Holdings is a complete construction solution, encompassing structural steelwork, plate work, piping, electrical and instrumentation. It is completely self-sufficient in providing services with regard to manufacturing, plant, equipment, tools, site erection and produces its own drawings from an in-house detailing office.

Established 34 years ago in Emalahleni (Witbank), Tubular is now one of the largest privately owned engineering and construction groups in Southern Africa and employs some 2 500 people. The embedded values of integrity, accountability, initiative and teamwork are the mainstay of the group's success.

The company is committed to the training and development of its human resources at all levels by investing in time and money and is an accredited training institute with Merseta as per the powers vested by SAQA and certification for the SHEQ integrated management system ISO 9001; ISO 14001; OHSAS 18001.

Tubular has more than 50 000m² under roof structural steelwork, plate work and pipework fabrication capacity. Extensive use of CNC machines throughout the fabrication process ensures fast turnaround, accuracy and quality, on time. The in-house blast facilities and paint shop adjacent to the works ensure fabricated sections are dispatched direct to site.

The group owns 105 mobile cranes, six of which have a lifting capacity in excess of 400 tons, thereby allowing Tubular to tackle the most demanding of fast track projects. Electronic tracking of fabricated components, modularisation of construction and maximisation of heavy lift capacity provides Tubular with flexibility to meet the most demanding of deadlines.

Tubular is proud to be a partner sponsor of the SAISC Steel Awards 2014 in this vibrant and durable steel construction industry.





# **Overall Winner**

### and winner of the Association of Steel Tube and Pipe Manufacturers of South Africa's Tubular Category Award

### **Malapa Fossil Excavation Site**

By Spencer Erling, Education Director, SAISC

It is surely the first time since I have been managing the steel awards process (this year is number 13!) that the overall winner has ticked so many boxes as to why this project represents excellence in the use of steel.



#### The reason for the project

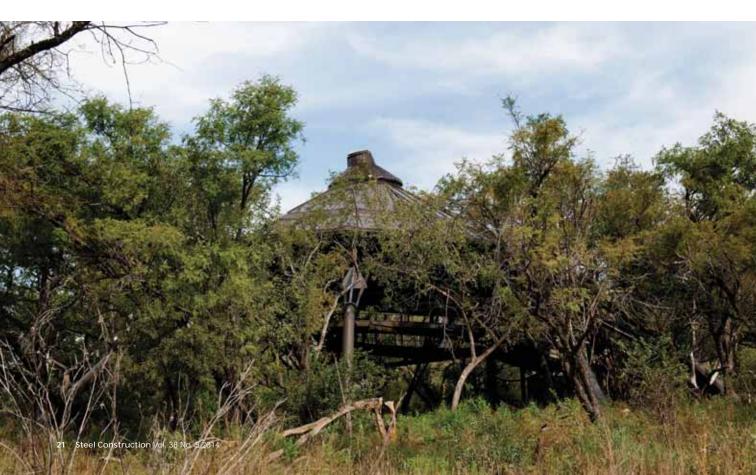
In 2008, Professor Lee Berger of the University of Witwatersrand (Wits) was using Google Earth to look for possible fossil deposits in the Cradle of Humankind.

What caught his eye was a near circular ring of trees, something that would indicate a possible cave entrance or potential fossil deposit. On confirming this was indeed a fossil bearing deposit he decided to revisit the site with his postdoctoral researcher, Dr Job Kibii, his nine year old son, Matthew and his dog, Tau. His son was previously introduced to fossils and was quite aware of what to look for.

Lee began to explain how he had discovered the site and then decided to send his son off and told him "to go and find some fossils". Little did he expect

that in less than two minutes he would be holding a block containing a fossil find that would be remarkable.

Whilst the full nature and extent of the dig have not yet been resolved, and might still take decades, what is known is that this is a fabulous find from a paleontological point of view. The site of Malapa has yielded two partial skeletons, a juvenile male and an adult female of a new species called *Australopithecus sediba*. While there





are several other sediba individuals from the site there are also remains of the animals that occurred alongside these remarkable hominids.

From geological studies it is known that the cave roof (which has since eroded away) stood 30 – 50m above the current deposit. Indicating that the hominids and animals collected in what is known as a 'death trap' situation. The animals would fall into the cave and then die on impact or not be able to get out, leaving behind full body remains.

What is also known is that the fossils have been reliably proved to be 1.977 – 1.98 million years old. (1 980 000 years old!)

Are you surprised that palaeontologists throughout the world are excited about the find and are keen to get involved?



### Perseverance in getting the project off the ground

Built environment professionals are in some respects used to solving challenges that stand in the way of progress. And if ever a project presented obstacles to get underway this surely must rate amongst the toughest.

The Cradle of Humankind is a World UN-ESCO heritage site. Before anything can be done in the area permission must be obtained from SAHRA (South African Heritages Resource Association). Even for something as important as this dig, permission to disturb the ground needs to be obtained. Any development whether it is a farmhouse for a farm owner or a temporary cover over the dig needs a permit. Even permission for the filming for Steel Awards needed a permit!

The farm upon which the site is located is owned by private persons. Wits needed to put a landowner agreement into place which provided access to the researchers as well as permission to erect a structure to protect the site itself. In this respect the landowners have been great supporters of the work being done at the Malapa site.



### Excellence in the use of steel – Architecture

"I grew up in the bush, I love the bush" says architect Krynauw Nel, "and I wanted to keep it just the way it is, undisturbed."

But the extensive brief (in summary here) was to build a removable structure over the proposed dig site to protect the site and the exposed fossils from the extremes of the weather to allow for as much 'dig time' as possible. Of course it must blend in with the ring of trees and the rest of the bush on the hill side.

Because Lee Berger is a world authority on the shoulder girdle of hominids, it would be desirable to have structural elements that resemble parts of the shoulder, the scapula and clavicle.

The structure must in addition have a tourist viewing platform, a crawl hoisting structure to lift out rocks of mass up to 1 ton and impart maximum natural light into the covered area. The access walkway to the viewing platform must be like a blanket over a baby and must not hinder the movement of the natural wildlife – so no handrails or the like.

There is no doubt that Krynauw met in full all these and the other requirements not covered by this article.



### Excellence in the use of steel - Engineering

The final shape when viewed from above is like a beetle with eight legs.

How on earth do you design a structure when you do not know where the foundations will be?

Well, with difficulty of course. Enter Peter Fellows the engineer. It was decided that during construction once positions were chosen, rods would be drilled into rocks around the site onto which would be welded base plates. That of course requires that the eight columns must be adjustable to suit the positions once identified.

The roof was to be 'rondavel-like' in shape but not necessarily round. From which would hang the viewing platform and hoisting structure.

So, introduce a Toblerone profile compression ring at lower and upper levels of the roof. Attach the upper parts of the columns to the compression ring in a manner that would allow them to rotate in plan. Make them also Toblerone in profile with curved upper ends (like those shoulder parts!). Make the lower columns out of big tubes, whose final length and shape of the 'dog's leg', which kink near their tops, would be finalised on site (after erecting the roof on temporary supports) based on the positions of the bases now drilled and welded into position.



### Excellence in the use of steel – Fabrication

The detailing and fabrication of a tubular structure extraordinaire like this take a special team. Enter the Spiral Engineering team. No, they do not only do fancy staircases and yes, they are surely the one of only a few teams with the skill and dedication to build such a complicated structure.

The accuracy of the detailing and the dimensional accuracy of the fabrication was tested during a trial assembly on temporary supports (thus emulating the actual erection procedure) at the local rugby ground, part of which is sponsored by the Spiral team.

If you are lucky enough (as our judging team have been privileged to do) to visit the site, apart from everything else about the site, you will be treated to superb fabrication quality and presentation.



#### **Excellence in the use of steel - Erection**

If what has been said before has not been enough to convince you that this is a special project take into account the site location; the 7.5km farm track road, part through a running river bed and that this is 4 x 4 world. You are surely wondering how on earth did they put this up.

Special trucks with limited capacity were used on the farm. After four unsuccessful tries, finally a 30 ton all-terrain crane made it to site and had a long enough radius and capacity to reach without damaging the trees and the bush.

Once the roof structure was erected on the temporary scaffolds and the upper columns were hung, only then could the final site-made dog's leg kinks be done leaving the beetle standing on her own legs.



#### Excellence in the use of steel

Considering the determination of the whole team, especially the site team; the quality of their work; the fact that when you now visit the site you cannot see the roof from only tens of metres away; that the construction team have left the site virtually as they found it, except for the structure, there is no doubt that this project represents excellence in the use of steel for every possible reason, a truly deserving Overall Winner of Steel Awards 2014.

### PROJECT TEAM

Developer/Owner:

The University of the Witwatersrand School of Geosciences

Architect:

Krynauw Nel Associates (Pty) Ltd

Structural Engineer:
Peter Fellows Consulting (Pty) Ltd

Quantity Surveyor:

Crane QS (Pty) Ltd

Project Manager:

Craig Harrison PM cc

Main Contractor:

Omni Struct Nkosi (Pty) Ltd

Steelwork Contractor/s: Spiral Engineering cc

Detailers/ Detailing Company:

KRU Detailing

Cladding:

Cupric Tectonics cc

Painter:

Mzekizeki Painters







### SPECIALISTS IN ARCHITECTURAL STEELWORK

piral Engineering is a market leader in the manufacture of architectural decorative steelworks, balustrades and staircases. This has been achieved through innovative manufacturing techniques, dedication and emphasis on detail.









# architectural

### category nominations

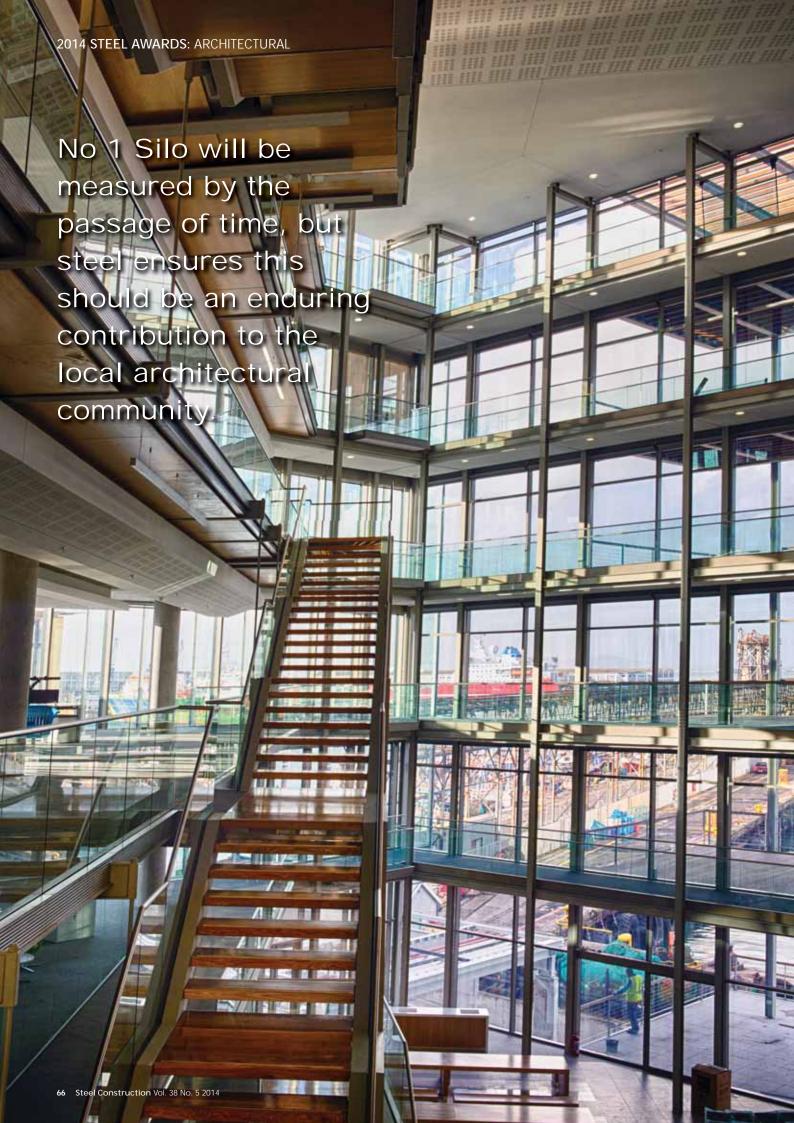












### WINNER

# Architectural CATEGORY

### No. 1 Silo

The six level open volume of the atrium in the heart of the building is one of the primary features of the development and the one that made the judges of Steel Awards look twice, and then again and again.

No. 1 Silo is part of the first phase in the Silo precinct development of The V & A Waterfront. Underway is the redevelopment of the historical Grain Silo (to be re-commissioned as an art gallery designed by leading British architect Thomas Heatherwick) with several other buildings around the Grain Silo to follow. This 10 storey development consists of an east and a west wing built on two levels of mega-basement covering the whole site.

The six level open volume of the atrium in the heart of the building is one of the primary features of the development and the one that made the judges of Steel Awards look twice, and then again and again. To make the most of the atrium

space and enhance the architectural features, it was crucial to maintain the slenderness of the structural elements. Structural steelwork was the solution to provide slender support to the facades, walkways, bridges, lifts and feature stairs, while economically extending the cantilevers of the conventional post-tensioned slabs framing the atrium.

#### **Facade structure**

The facade support structure has a threefold function. It had to be designed to support the facade wind loads; act as pedestrian walkways and support heavy loads from the long spanning atrium roof trusses. This was no easy task with an unsupported height of seven storeys! A 1 000m<sup>2</sup> space frame was

### **PROJECT TEAM**

Developer/Owner: V&A Waterfront

Architect:

Rick Brown & Associates; VDMMA

Structural Engineer:

GR Sutherland Associates (Pty) Ltd

**Quantity Surveyor:** 

MLC Quantity Surveyors

Project Manager:

Mace Management Services (Pty) Ltd

Main Contractor:

WBHO

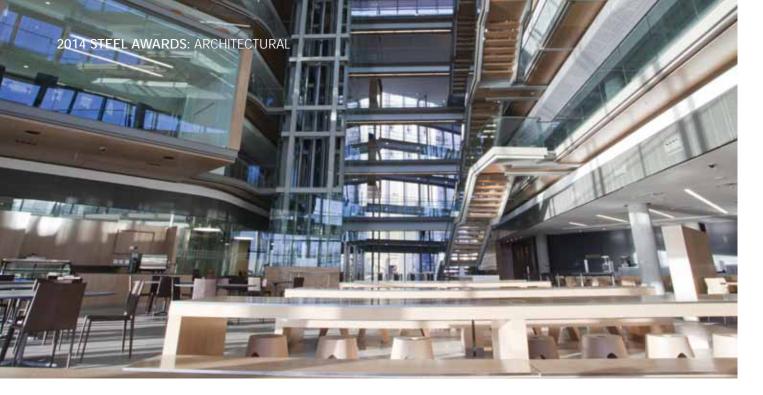
Steelwork Contractor/s:

Anchor Steel Projects

Detailers/Detailing Company:

Anchor Steel Projects





designed to transfer loads into the two office wings and down onto the supporting transfer slab below.

#### Atrium roof, meeting pods and lifts

The roof of the atrium is positioned above the open volume area spanning 17 metres. A composite steel and concrete Bondek slab was designed to serve as the primary support and waterproofing line to an accessible and functional roof.

Cantilever pods around the edges of the atrium serve as meeting rooms and walkways. An economical 'lightweight' steel and timber structure was provided by the engineer to make this architectural vision come true.

The three glazed feature lifts are central to the atrium design. The steelwork needed to be as slender and as uniform as possible while ensuring that vibrations would not hinder the operation of the lifts. Large loads from the roof are incorporated and transferred to the columns below via a transfer slab.

#### Feature stair

Another critical design element of the atrium was the feature stair that served the five office levels. The long spanning stringers of the stair were supported off steel H sections cantilevering 4 metres from the nearest structural grid at each level. The design opted for custom-made box section stringers that could span with minimal deflections and take the torsion from the glazed handrail, supported on heavy 305 H sections braced within the ceiling at each major landing.

#### Historical solutions

Heritage requirements regarding the treatment, restoration and reinstatement of the existing structures were of the utmost importance. Underpinning the heritage silo and buildings constructed in the 1920s was a great challenge to the structural engineer and contractor. Yet again, the use of steel as the primary supporting structures allowed the team a faster construction process while minimising the requirement of large plant working in areas of risk. The underpinning solution included driving steel in encased DTH piles adjacent to the existing building, thereafter incrementally welding steel beams and bracing to the steel encasing, as the 8.25m deep excavation commenced.

### Six green stars

No.1 Silo has been awarded a 6 star rating by the Green Building Council of South Africa. The development is the country's latest and largest green office building. It is only the second office building to be awarded this rating in South Africa and the first in the Western Cape.

The building provides its tenants with a healthier working environment, saving up to 50% in operating costs in the long term. Environmentally sustainable features include the use of seawater from the cold Atlantic Ocean, which will be used to cool the building, while heat generated from the IT server room will warm the reception area.

One of the key sustainable features of the building is its high performance, fully glazed double skin glass facade which maximises views towards Table Mountain and the ocean, while ensuring the optimal use of natural light through a system of automatically controlled blinds which track the sun as it moves across the building.

The intelligent mix of concrete and steelwork has provided a solution that is both economical and architecturally striking. The team was faced with numerous coordination, detailing and design challenges but the end result is testament to their commitment, expertise and co-operation.

#### Judge's comment

by Hugh Fraser representing the South African Institute of Architects (SAIA)

The contribution of steel to the design and innate qualities of this building is fundamental. As the inhabitant moves through the spaces, public and private, one is struck by the openness, daring and refinement of the architectural design. Steel has made possible the generous facades to exploit spectacular views of Table Mountain and the harbour; and to introduce enterprising meeting pods that hover above the entrance atrium.

Throughout the building, steel carries the language into the stairs, the workspaces and up to the roof.

No 1 Silo, like all buildings will be measured by the passage of time, but steel ensures this should be an enduring contribution to the local architectural community.



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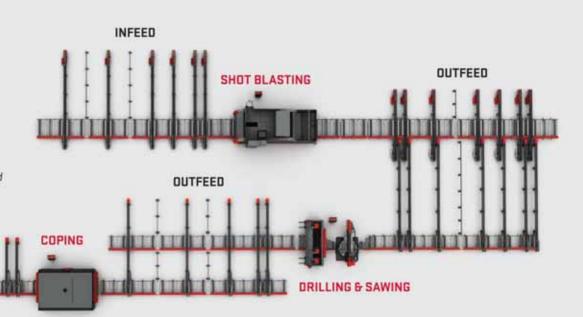
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### **ROB MOHAN**

PRODUCTION MANAGER

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### THE LAST GLASS HOUSE

- I Developer/Owner: Roelof Petrus van Wyk I Architect: Thomashoff + partner Architects I
- I Structural Engineer: P Design cc Consulting Civil & Structural Engineers I Quantity Surveyor: Bredell Quantity Surveyors I
  - I Main Contractor: Paragon Property Developments (Pty) Ltd I Steelwork Contractor/s: Cadcon (Pty) Ltd I
  - I Detailers/Detailing Company: Mondo Cané I Cladding: Cadcon (Pty) Ltd (JJ Roofing) I Galvanizer: Robor (Pty) Ltd I



### UP/CSA: INDOOR CENTRE OF EXCELLENCE

- I Developer/Owner: University of Pretoria and Cricket SA | Architect: Neo Dimensions Architects |
- I Structural Engineer: DG Consulting Engineers I Quantity Surveyor: CAQS Quantity Surveyors I Project Manager: University of Pretoria I
  - I Main Contractor: DLR Construction I Steelwork Contractor/s: Emerald Africa I Cladding: Saint Gobain Etics I



### NEW MILITARY HEALTH BASE DEPOT

I Developer/Owner: Department of Public Works, South African Military Health Services I Architect: Jeremie Malan Architects / Impendulo Design Architects Joint Venture I

Structural Engineer: Emzansi Consulting Engineers (steel), Civil Concepts (concrete) | Quantity Surveyor: Mokate Monk & Du Plessis | Main Contractor: Liviero Building (Pty) Ltd | Steelwork Contractor/s: QM Steel, Custom Creations | Cladding: Tate & Nicholson |



Skilled pro-active management and creative commercial design by Jeremie Malan Architects & Interiors has produced award winning, large and medium sized buildings on programme and within budget.







NEW MILITARY HEALTH BASE DEPOT - TSHWANE FOR DEPARTMENT PUBLIC WORKS/DEPARTMENT OF DEFENCE







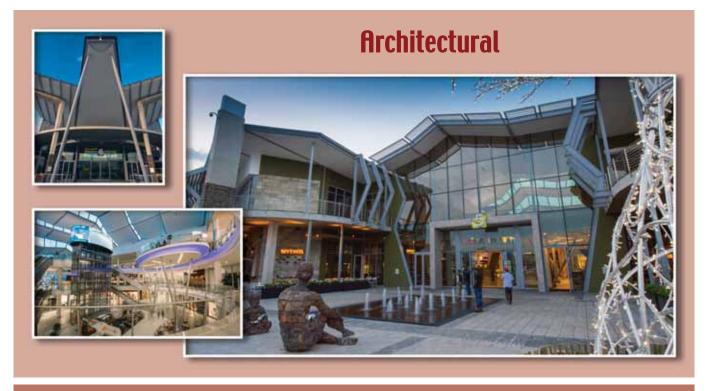






#### ADDITIONS TO EDUPLEX HIGH SCHOOL

- I Developer/Owner: H.A.S.S. Properties (Pty) Ltd I Architect: Sonja Neitz Architects cc I Structural Engineer: SF van Zyl Consulting Engineers I
  - I Quantity Surveyor: Matla Quantity Surveyors (Pty) Ltd I Main Contractor: NGA Construction (Pty) Ltd I
    - I Steelwork Contractor/s: Ferro Eleganza (Pty) Ltd I Detailers/Detailing Company: Ferro Draughting I
  - I Landscape Architect: Insite Landscape Architects cc I Fire Consultant: Safeway Fire Consultants (Pty) Ltd I



#### **CRADLESTONE MALL**

- I Developer/Owner: Sasol Pension Fund and Retail Africa I Architect: Bentel Associates International (Pty) Ltd I
- I Structural Engineer: Sutherland (Pty) Ltd I Quantity Surveyor: SVR Quantity Surveyors, NWS Quantity Surveyors I
  - I Project Manager: Sedgeley Developments (Pty) Ltd I Main Contractor: Aveng Grinaker-LTA I
    - I Steelwork Contractor/s: Central Welding Works (Pty) Ltd, Tass Engineering (Pty) Ltd I
  - I Detailers/Detailing Company: Bendraft Engineering Services I Cladding: Global Roofing Solutions I



### **ELEVATING THE INDUSTRY**

With 5500m<sup>2</sup> of factory space, Ferro Eleganza has the capacity to produce from 250 tons of light structural steel to over 350 tons of

heavy structural steel per month. With state of the art CNC machines the fabrication details are received and processed directly from their in-house detailing office.

- Airport Junction Shopping Centre Botswana 1750 tons
  Brits Granite Factory 450 tons
  JD Group Warehouse Rosslyn 360 tons
  Brits Mall 750 tons





















#### LUCKY BREAD COMPANY

- I Developer/Owner: TriBeCa Coffee Company (International) (Pty) Ltd I I Architect: Earthworld Architects and Interiors cc I Project Manager: Ecostruct Developments (Pty) Ltd I
  - I Main Contractor: Ecostruct Developments (Pty) Ltd I Steelwork Contractor/s: Art Industrial Steel I



#### THE S.E.E.D.

I Developer/Owner: MAL Foundation I Architect: Architects Of Justice I Project Manager: Mi-Amor I I Main Contractor: Dymond Engineering I Steelwork Contractor/s: Dymond Engineering I



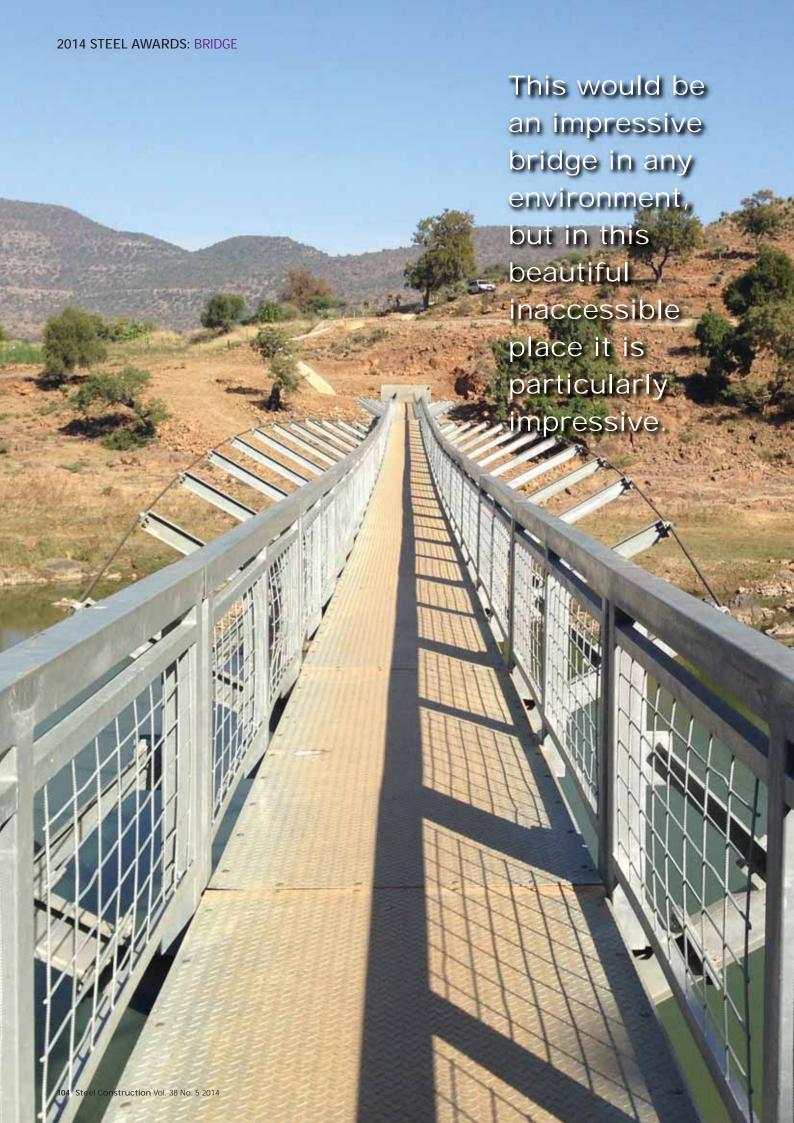
# bridge

### category nominations









#### WINNER

# Bridge CATEGORY

## Tugela River Pedestrian Bridge (KwaJolwayo)

The presence of the structure has resulted in a life changing, safe crossing option for communities on both sides of the river enabling them to access commercial and educational opportunities that were previously inaccessible particularly during the summer months.

For an entry to be accepted for Steel Awards, each nominator has to submit a motivation that should preferably include a reason why the project should win an award. This project's reason took the words right out of the judges' mouths:

This project merits an award in view of its portrayal of the benefits of technical solutions that efficient design, using structural steel, brings to rural communities faced with dangerous natural barriers which adversely affect their everyday lives.

#### **Description and purpose**

This award winner is a 134 metre, unusual structural steel suspension bridge over the 8 metre deep Tugela River at KwaJolwayo, upstream of Tugela Ferry in the Msinga area of rural, rural KwaZulu-Natal.

The bridge was built to provide safe passage over the river for people residing in tribal areas on the north and south bank to enable them to access employment opportunities and schools on the opposite side of the river.

Summer rains from November through to April make crossing the river at this point very dangerous and high water levels can cut off access for weeks at a time. When in flood, levels can rise more than 8m in

#### **PROJECT TEAM**

**Developer/Owner:**KZN Department of Transport

Structural Engineer: GDB Engineers cc

Project Manager: Nankhoo Engineers

Main Contractor:





this river gorge and the nearest safe crossing is more than 10km downstream at Tugela Ferry. A temporary boat crossing some years ago resulted in drownings and was abandoned.

The desperate need for this pedestrian bridge was identified by the KZN Department of Transport (KZNDOT) initiated Rural Road Transport Forum in conjunction with community organisations in the area.

#### Concept

The design requirement focused on the fact that the higher the mass of a structure the more materials are required to build it with a correspondingly higher cost to the environment, in material quantities and ultimately in rands and cents.

Every effort was made to keep the material content as low as possible whilst providing sufficient strength and stability to meet the client's requirements for a safe pedestrian river crossing.

Structural steel was chosen as the ideal material to meet the above requirements and the inaccessible deep gorge provided the ideal situation for the engineer to test his mettle.

#### Design

The final design consists of four cables supporting the steel Y frames which in turn support a 1.2 metre-wide steel deck plus two cables at the Y's waist. The suspension portion of the bridge structure consists of two equal spans of 60 metres.

The 14 metre approach span on the north bank consists of steel beams.

The two lower cables curve downwards below deck level and support the entire weight of the structure. The two upper cables curve outwards and upwards to a high point above deck level generating additional downward forces to prevent bouncing of the structure under dynamic loads and to stabilise the inherently unstable Y shaped structure. The structure was designed to allow the deck to follow a constant grade approximately 10m above normal river level.

A scale timber and wireframe model was constructed during the design process to prove the design concept and determine the construction methodology.

#### **Fabrication and construction**

An exposed rock shelf in the river channel allowed construction (above water level) of a central pier on a base dowelled to bed rock. Grouted rock anchors were constructed at each end of the structure while the steep ground on each bank required blasting to construct building platforms and landing points for the walkway and approach pathways. The reinforced concrete piers, rock anchors and abutments were constructed first.

All other components were designed for modular off-site fabrication and were sufficiently lightweight to be erected by hand or hand operated equipment without the need for heavy lifting equipment at this remote site. All steel components were hot dip galvanized prior to delivery.

Final erection of the steel components by the rigging subcontractor was carried out over a period of four weeks.

#### The community

The structure was constructed using labour sourced from the local community who will ultimately benefit from improved all weather access to the opposite bank of the Tugela River.

The presence of the structure has resulted in a life changing, safe crossing option for communities on both sides of the river enabling them to access commercial and educational opportunities that were previously inaccessible particularly during the summer months.

The performance of the structure under imposed loading is such that community members are happy to cross with water containers carried on their heads.

On one occasion, 30 knot winds were blowing down the gorge and whilst it was difficult to stand upright, the structure exhibited only minor lateral movement and no oscillatory motion was experienced.

#### **Judge's Comment**

by Louis Breckenridge representing the CEA

This would be an impressive bridge in any environment, but in this beautiful inaccessible place it is particularly impressive.

It is a monument to the team who conceived and installed it, particularly in light of the fact that site access is difficult, no heavy lifting equipment was used and scarring of the environment is almost undetectable.

Although the judges really struggled to choose between the Tugela River Bridge and the Isando Bridge (commendation in this category), the Tugela River Pedestrian Bridge came out tops of the Bridge Category.

The project also received a commendation from the SAICE Joint Structural division for technical excellence.

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#### **COMMENDATION**

# Bridge CATEGORY

### Isando Pedestrian Bridge

The most satisfying aspect of the project is to witness the daily use of the bridge by thousands of people and the improved space that commuters now have. It is fulfilling to see the structural steel form that is conventional yet unconventional as such a functional piece of infrastructure.

The Isando Pedestrian Bridge stands as a visible marker to the current efforts to overhaul and upgrade the freeways in and around Johannesburg. With a total length of 446m, the bridge and its approaches connect the Isando PRASA Rail Station with the OR Tambo International Airport precinct. The structure is well used by some 9 000 commuters crossing each day. The new bridge replaces two end-of-life footbridges that were built in the early 1970s. The project is one of the largest pedestrian bridges built in South Africa.

#### Design

The central 126.4m long section of the bridge has a four-span configuration with spans of 25.4m, 14.8m, 22.2m and 64m. The superstructure consists of a continuous composite steel box girder with a 5.4m wide concrete deck slab. The main span is supported by two vertical planes of fanned cables that are anchored into the back spans. A main feature of the bridge is its two un-braced cigar shaped steel pylons – one leans forwards at 11 degrees and the other backwards.

#### **PROJECT TEAM**

Developer/Owner: SANRAL

Architect:

GAPP Architects and Urban Designers

Structural Engineer:

SMEC South Africa

Project Manager:

SMEC South Africa

Main Contractor:

Raubex

Steelwork Contractor/s:

Vital Steel

Cable Stressing:
Amsteele Systems



The design was the winning concept in an invited design competition. The winning team was aware of the client's desire for aesthetics at a reasonable price. A self-anchored composite steel and concrete cable stayed bridge was chosen as the most economical form. The bridge's individual character was added thereafter.

#### Only in steel

The versatility of structural steel made the final form of the structure possible. For the

inclined pylons, the use of steel enabled offsite fabrication and the relatively simple erection of sections. It also allowed the creation of a sculpted tapering section with internal cable anchorages that retained the sleek look of the pylons.

The use of a torsionally stiff structural steel box girder proved an economical way of supporting the walkway. It also allowed for the asymmetrical cable arrangement on either side of the deck.

Attached to the box the sculpted outriggers showed what steel can do, creating integrated and flowing forms. These elements were galvanized and painted to reduce future maintenance activities over the highway.

#### Two elegant 'cigars'

The shaping of the towers was carefully considered as they are a visually dominant feature of the footbridge. To create a taper that appeared intuitively correct the section tapers in accordance with the golden ratio – where two quantities have the same ratio to each other as the ratio of their sum is to the larger of the two quantities.

#### Thief un-friendly handrails

Due to the continuous wear and tear, corrosion protection for the handrail's components was critical, so it was decided to use an oval stainless steel profile. But in South Africa, bridge handrails are often vandalised and stolen, so in order to negate theft, the oval section was split and placed over a rectangular hollow section. Locking pins

located at 500mm centres are welded to both profiles and to stop would-be thieves peeling off the stainless steel layer, the void between the two profiles was grout injected, locking the two profiles together.

The most satisfying aspect of the project is to witness the daily use of the bridge by thousands of people and the improved space that commuters now have. It is fulfilling to see the structural steel form that is conventional yet unconventional as such a functional piece of infrastructure.

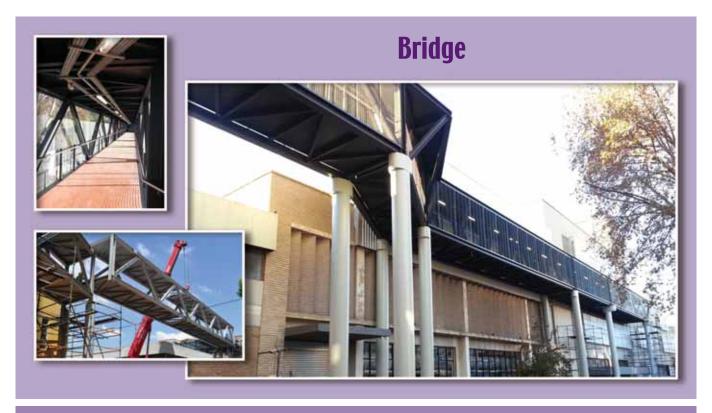
The client Edwin Kruger, Bridge Network Manager of SANRAL has the last say: "The bridge chosen is really a magnificent landmark and is receiving favourable comments by the public. It fits in very well in the surrounding area."

#### **Judge's Comment**

by Dennis Nash representing the JSD

The pedestrian bridge has a very pleasing appearance. It has a shallow arched deck suspended from angled cables, all strung from slender angled columns. The overall appearance is light and elegant.

Whilst the motorists hurtling under the bridge will not have time to appreciate the bridge, the judges were afforded the opportunity to see close at hand a well designed and detailed bridge structure.



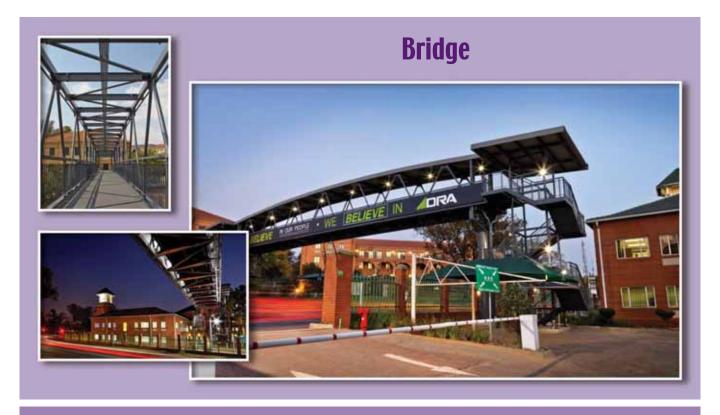
#### PERSKOR SKYBRIDGE: UNIVERSITY OF JOHANNESBURG - DOORNFONTEIN CAMPUS

| Developer/Owner: University of Johannesburg | Architect: GAPP Architects and Urban Designers |

l Structural Engineer: HBS Africa Consulting Engineers l Quantity Surveyor: Walker Maré l Project Manager: Turner Townsend l

I Main Contractor: Robenco Construction | Steelwork Contractor/s: Tass Engineering (Pty) Ltd |

l Detailers/Detailing Company: GB Draughting (Pty) Ltd | Cladding: Cochrane Steel Products (Pty) Ltd | Sub Contract Erector: Versatile Rigging |



#### DRA FOOTBRIDGE

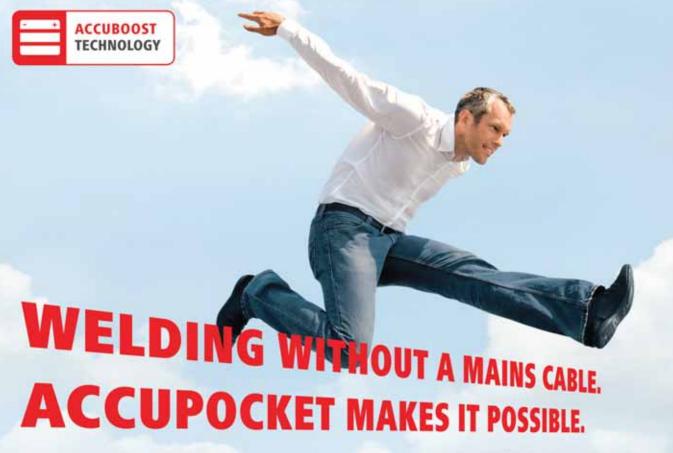
Developer/Owner: DRA Africa (Pty) Ltd	Architect: DRA Africa (Pty) Ltd	Structural Engineer: DRA Africa (Pty) Ltd
Quantity Surveyor: DRA Africa (Pty) Ltd	Project Manager: DRA Africa (Pty) Ltd	Main Contractor: P.I.C.M Randfontein (Pty) Ltd
Steelwork Contractor/s: P.I.C.M Randfontein (Pty) Ltd	Detailers/Detailing Company: P.I.C.M Randfontein (Pty) Ltd	

l Cladding: Safintra South Africa (Pty) Ltd | Civil Contractor: P.I.C.M Randfontein (Pty) Ltd | Flooring Contractor: Stoncor Africa (Pty) Ltd |





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/ AccuPocket 150/400 - off-grid MMA welding





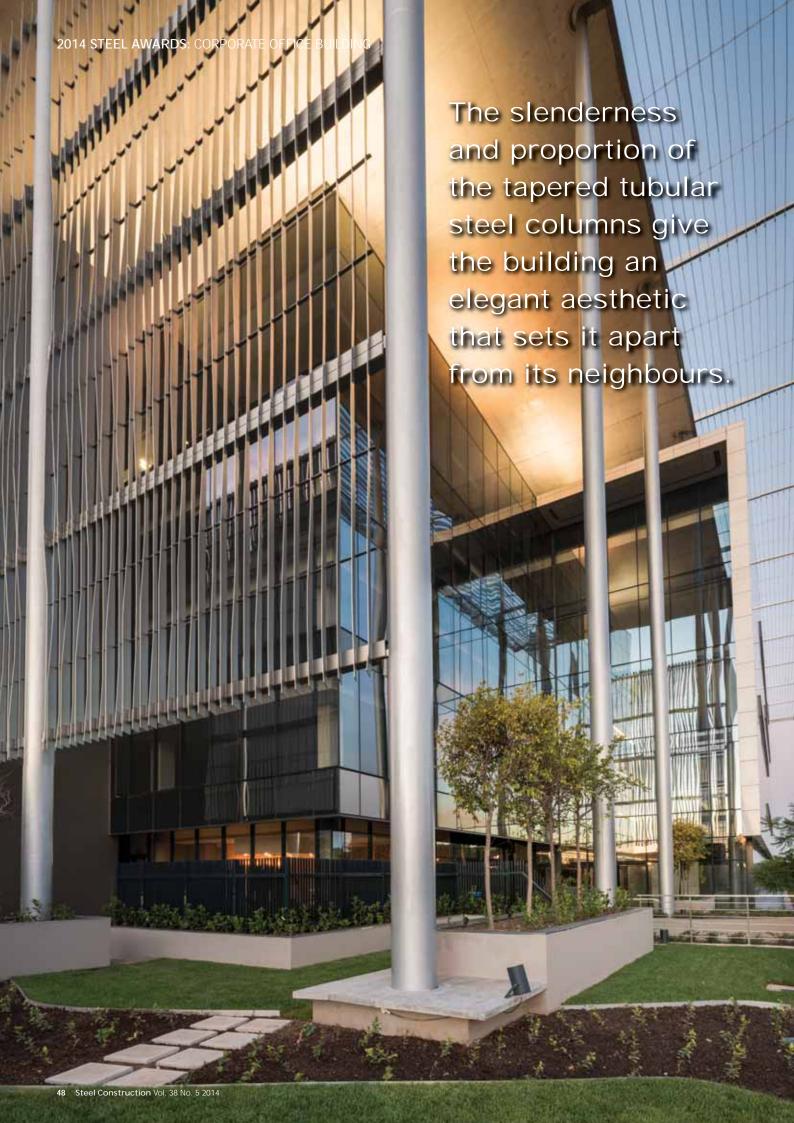
# corporate office building

category nominations









#### **WINNER**

# **Corporate Office Building**

### 30 Jellicoe

### **CATEGORY**

#### It's a case of imagine it, steel can build it.

30 Jellicoe is situated in Rosebank, one of northern Johannesburg's most prestigious business nodes. This office building is located on Jellicoe Avenue close to the corner with Oxford Road. It is essentially on the border with Dunkeld, which is an upmarket residential area. Thus, there was close cooperation with the local residents and this was taken into account when designing the five storey, 10 000 square metre building.

#### The building in a nutshell

The building's roof is supported on slender steel columns and appears to sail over a feature pristine white north wall. The wall and its horizontal window lines depend upon the steel structure for stability.

These windows reveal inviting glimpses of Johannesburg's world famous man-made forests.

The wall was designed to stand in contrast to the fineness and delicacy of the steel louvres on the east, west and north that takes great care in displaying its textured, soft nature. The basement roof also enters the mix to create a green podium for the structure to occupy.

#### The slender steel columns

For the columns, tubular steel was chosen firstly to keep the structure as slender (and elegant) as possible and secondly because the columns on the north, east and west elevations are five storeys high. Building them to be as true and straight in any other material but steel was going to be very difficult to construct over that height. Tubular sections also allowed the architect to detail the elegant taper at the tops of the columns which was formed by bending flat steel sheets. A smooth decorative finish to the

columns was achieved by using an automotive metallic paint.

#### Those louvres

Feature sun screen louvres run vertically to the east and west facades and horizontally to the north facade

#### **PROJECT TEAM**

Developer:

Investec Property

Owner:

Spareprops (Pty) Ltd

Architect:

Paragon Architects

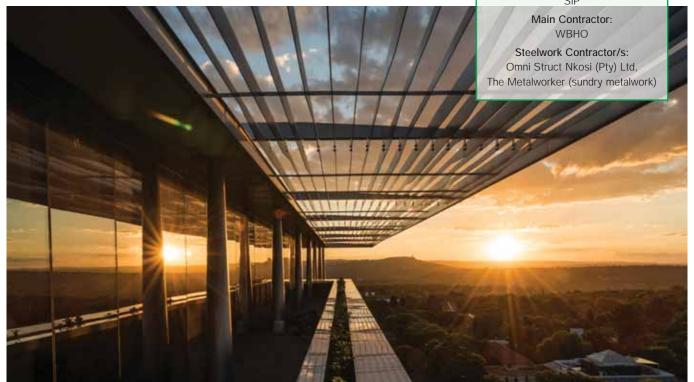
Structural Engineer:

Pure Consulting (Pty) Ltd

Quantity Surveyor:

Brian Heineberg and Associates

Project Manager:







The first impression of the louvres might be 'the result of the steelwork contractor after a late night' but on closer inspection one realises the louvres are incredibly detailed and planned to look like a series of wave actions, and yes, they are exactly as intended and succeed admirably.

How did they create this beautiful effect?

The louvres needed to be designed in such a manner that they could be fabricated in transportable panel sections and easily erected on site with no welding required. The louvre blades were profiled and cut from single sheets by interlocking the faces in order to achieve minimal wastage and maintaining the integrity of the texture.

#### Other steel gems

Two other well-designed steel details caught the judges' imaginations.

- The steel framed fire escape is surely the most elegant fire escape in a corporate office building, beautifully expressed with recessed lighting.
- The office library, a magnificent circular steel structure, completes this award winning building.

#### A green building

Various green principles were incorporated into the architectural design with energy efficient technology used in the electrical and mechanical systems of the building.

The steel louvres form a major part in the east/west and north shading of the office areas, while the large windows allow natural light into the building, which leads to both a healthier and more sustainable work environment.

#### **Challenges and solutions**

The challenge as always was the programme. The steelwork order was only awarded late in the programme and in the words of the architect (Paragon Architects) "I believe Omni Struct Nkosi did a fantastic job on the quality considering the time implications."

Another challenge for the architect and the structural engineer was how to make the connections elegant and pleasing to the eye, but also designing them with an appreciation for the fabrication and transportation.

#### Judge's comment

by Godfrey Ramalisa, representing Consulting Engineers South Africa (CESA)

The slenderness and proportion of the tapered tubular steel columns give the building an elegant aesthetic that sets it apart from its neighbours.

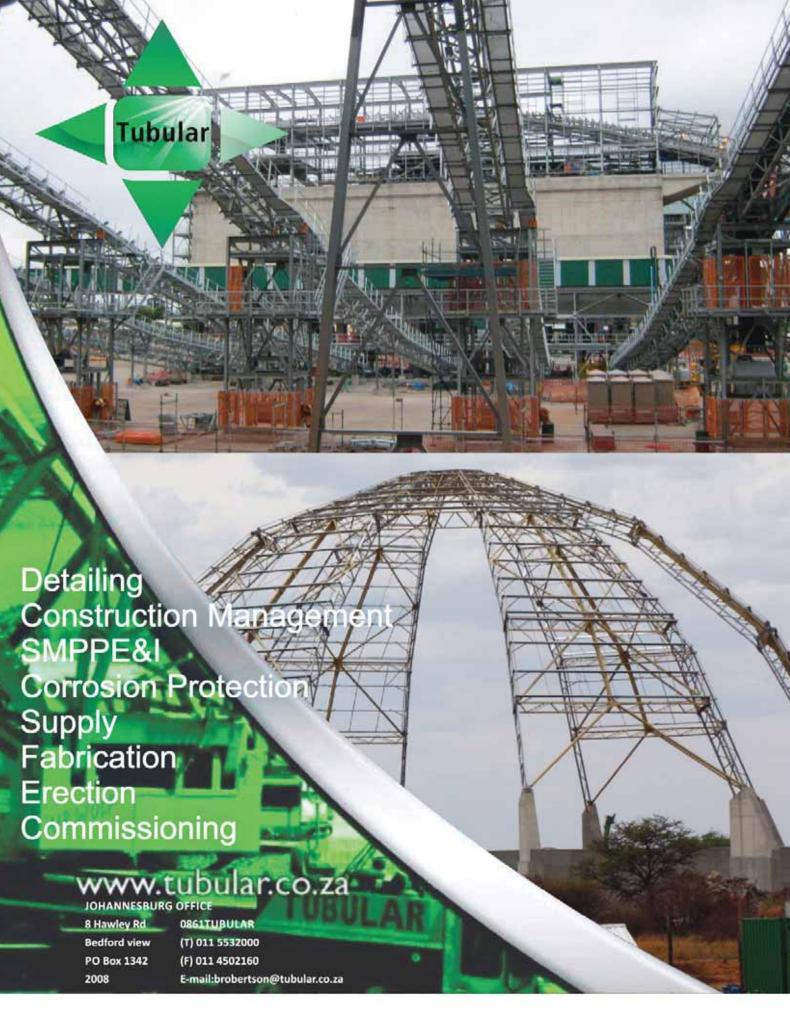
The ripple that is created by the louvre blades add another level of detail that finishes off the overall concept. The fineness of the steel elements work together to create a truly special building.

It's a case of imagine it, steel can build it.



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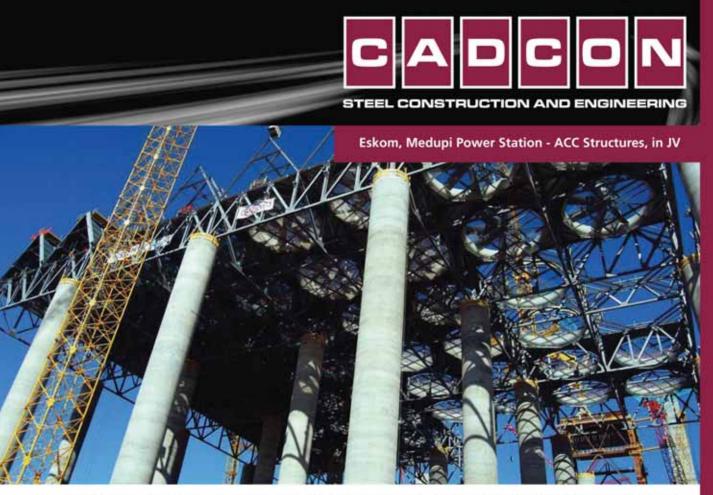
#### JINDAL AFRICA HEAD OFFICE

Developer/Owner: Jindal Africa Investments (Pty) Ltd | Architect: KMH Architects cc | Structural Engineer: L&S Consulting Pty (Ltd) Quantity Surveyor: BWR Quantity Surveyors | Project Manager: NB Property Solutions (Pty) Ltd | Main Contractor: Probest Projects (Pty) Ltd Steelwork Contractor/s: Nancy Engineering, Ironman Structural Engineering, Steel Studio | Detailers/Detailing Company: Mondo Cané | Cladding: Robertson Ventilation Industries (Pty) Ltd | Paintwork: Royal Coatings cc



#### GROUP FIVE NEW HEAD OFFICE BUILDING

Developer/Owner: Atterbury Property Holdings | Architect: LYT Architects | Structural Engineer: L&S Consulting Quantity Surveyor: Brian Heineberg & Associates | Project Manager: Pro Arnan – Principle Agent | Main Contractor: Group Five Buildings | Steelwork Contractor/s: Nancy Engineering (Pty) Ltd, Life Landscapes | Detailers/Detailing Company: L&S Consulting | Cladding: Alania | Interior Decoraters: Head Interiors |



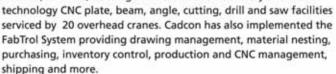
Established in 1987, Cadcon, as a vibrant and reputable entity, has grown into a leading steel construction, designing and engineering organization involved in major projects in and around Southern Africa and internationally. Cadcon operates from their 15 400 m<sup>2</sup> workshop and office facilities in Centurion, Pretoria, housing state of the art machinery and latest











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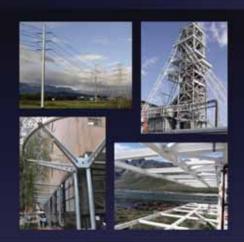
#### 2929 ON NICOL

Developer/Owner: Zenprop Property Services (Pty) Ltd | Architect: Empowered Spaces Architects Structural Engineer: Sotiralis Consulting Engineers (Pty) Ltd | Quantity Surveyor: Schoombie Hartmann | Project Manager: Capex Projects Main Contractor: Murray & Roberts Building | Steelwork Contractor/s: Spiral Engineering cc | Detailers/Detailing Company: KRU Detailing Painters: Mzekizeki Painters

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# factory and warehouse

category nominations



CATEGORY SPONSOR



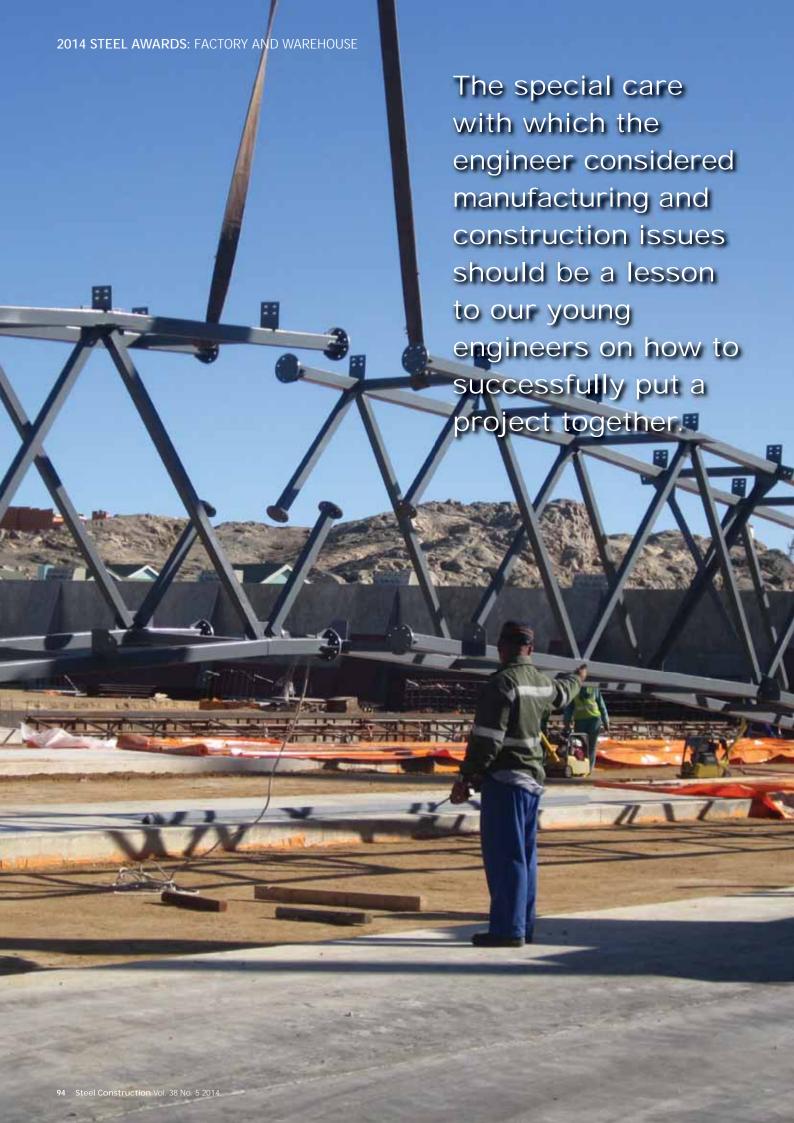












#### **WINNER**

# B&T Factory & Warehouse CATEGORY

# Zinc & Lead Storage and Loading Facility at Lüderitz Harbour, Namibia

By Spencer Erling, Education Director, SAISC

It's great to recognise a Southern African project, even more so in our new B&T factory and warehouse category.

Southern Namibia is well known for its mineral resources. Zinc and lead in this case.

How to export the material through the port of Lüderitz was the question? Some years ago the port was converted from a fishing harbour into the present Namport facility by reclaiming land between two of the islands.

Material is trucked in from the Rosh Pinah Zinc Corporation and so a storage facility with the capability of holding 25 000 to 30 000 tons was needed to enable 15 000 ton lots to be exported by ship.

The design brief was to be able to allow side tipping trucks easy access and to discharge their loads. Thereafter 10 ton capacity frontend loaders would move the materials into

### **PROJECT TEAM**

Developer/Owner: RPZC (Pty) Ltd – Part of Glencore Group

Architect:

Krenz Consulting Engineers (Pty) Ltd – KCE (Pty) Ltd

Structural Engineer: KCE (Pty) Ltd

Quantity Surveyor:

KCE (Pty) Ltd





heaps from which the same loaders would load up the material for transferring to ships in a 30-40 hour period.

#### The storage solution

A 90 x 67 metre building, surrounded on four sides by buttressed concrete retaining walls would be used for the storage area.

The next question was how to roof the area with the following requirements:

- Have to cover a clear span of 65 metres
- Should be capable of supporting an arched roof which maximises storage volumes
- Easily fabricated and erected in far-off Lüderitz, well known for its strong onshore winds and corrosive environment.

#### The structural solution

The engineer describes it as: "Tubular sections – the obvious choice."

Square hollow sections (SHS) for all the truss members being the natural progression for the following reasons:

- SHS offer ease of fabrication.
- Internal members can be cut by saw no special developments are necessary for connections as would circular hollow sections.
- The perimeter of the SHS is big enough to permit straightforward fillet welds for end connections.
- The splices at the end of straight standard tube lengths are made from simple flange connections.
- By keeping the members straight the

curvature for the roof is created by different purlin lengths. No wasting of top and bottom chords is incurred as would happen had the members been curved.

- This of course led to extensive use of jigs for maximum productivity to manufacture the truss and other members.
- Tubular profiles are ideal for dealing with the dominant prevailing winds.

The structure is a true two pinned arch, with the end pins fully visible. All purlins and girts were hot dip galvanized and the trusses were painted.

#### The transport and erection

The steelwork was fabricated in Keetmanshoop, some 340 kilometres from site, which is relatively short in comparison to the distances to some of the other Namibian industrial centres.

27 truck loads were used for the trusses. All the other steelwork only required eight more loads.

Tubular trusses are light when compared with their hot rolled equivalents. By boxing the trusses together, they become selfsupporting and allow for two crane tandem lifts.

#### What makes this project special?

The design not only took into account normal gravity and wind loads but also considered numerous accidental load issues such as the effect of the front-end loaders driving into a retaining wall/buttress, or the

possibility of the bucket at full height impacting with the roof trusses.

Robustness was well and truly considered. Overlapped continuous purlins added to the robustness of the structure.

The special care with which the engineer considered manufacturing and construction issues should be a lesson to our young engineers on how to successfully put a project together.

#### Judge's comment

by Franco Mordini representing the ASTPM

This warehouse is not an ordinary industrial warehouse. A number of characteristics makes it stand head and shoulder above typical industrial buildings. The aesthetically pleasing low arch-shape roof structure blends well with the harbour area and the natural environment making this 1 200 tons facility as inconspicuous as possible.

What stands out to the visitor are the long spans coupled with an efficient and visibly light roof structure. The box–girder trusses made of Square Hollow Sections have proven to be very effective.

The engineer has gone to great lengths to simplify the fabrication and erection as well as minimise wastage and transportation costs. Repetition and ease of fabrication are the cornerstones of this design.

Congratulations to the whole team, the truly deserving first winners of the B&T Factory and Warehouse Category.

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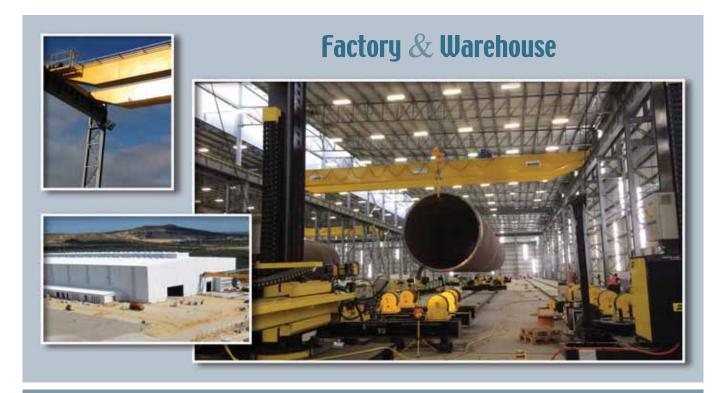


\* B&T is fully BEE compliant and a member of the South African Institute of Steel Construction (SAISC), the International Steel Fabricators Council (ISF) and the Gauteng Master Builder Association



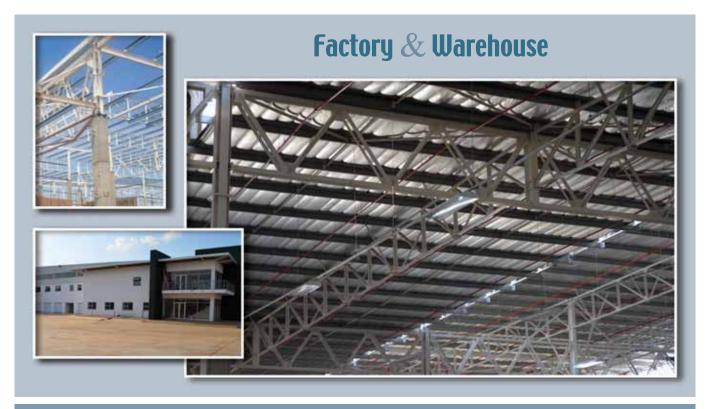
#### NEW FABRICATION FACILITY FOR AFRICAN CRYOGENICS

- Developer/Owner: ERF 200 City Deep/Bantry Properties (Pty) Ltd | Architect: Empowered Spaces (Pty) Ltd |
- Structural Engineer: UWP Consulting (Pty) Ltd | Project Manager: Bantry Construction Services (Pty) Ltd |
- - Detailers/Detailing Company: Charlie Strachan



#### DCD WIND TOWERS FACTORY

- Developer/Owner: Coega Development Corporation (Pty) Ltd | Architect: Afriplan Associates Architects |
- Structural Engineer: WorleyParsons RSA (Pty) Ltd | Quantity Surveyor: Pulana Baxter & Associates |
- Project Manager: WorleyParsons RSA (Pty) Ltd | Main Contractor: NMC (Pty) Ltd. a division of the NMC Construction Group |
- Steelwork Contractor/s: Uitenhage Super Steel cc | Detailers/Detailing Company: Mondo Cané | Cladding: Scheltema (Pty) Ltd |
  - | Galvanizing: Galvanising Techniques (Pty) Ltd |

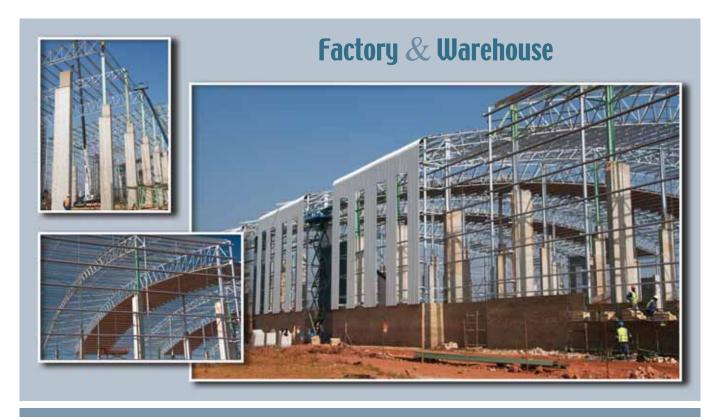


#### ZIBO PHASE 2 WAREHOUSE

| Developer/Owner: JR209 Investments (Pty) Ltd | Architect: Trilogy Architects | Structural Engineer: Sotiralis Consulting Engineers (Pty) Ltd | Quantity Surveyor: M & T Developments | Main Contractor: M & T Developments | Steelwork Contractor/s: B&T Steel | Detailers/Detailing Company: Kru Detailing | Cladding: Tate & Nicholson | Civils: M & T Developments Civils |



### Mondo Cané structural steel detailing & design services



#### TSR WAREHOUSE

| Developer/Owner: TSR (Pty) Ltd | Architect: AMA Architects | Structural Engineer: Talmac Engineering | Quantity Surveyor: Danie Venter LWA | Project Manager: AMA Architects | Main Contractor: Abbeydale Building & Civils | Steelwork Contractor/s: MPW Steel Construction | Detailers/Detailing Company: MPW Steel Construction | Cladding: Macsteel Roofing |



#### **KONE CRANES - ALSTOM**

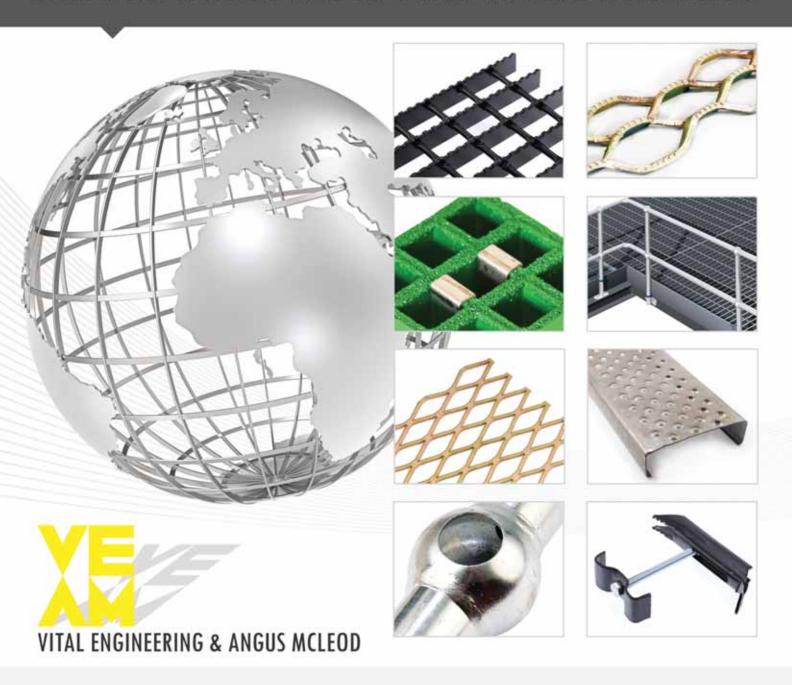
| Developer/Owner: Bantry Construction | Structural Engineer: C&S Projects | Project Manager: B&T Steel | Main Contractor: Kone Cranes | Steelwork Contractor/s: B&T Steel | Detailers/Detailing Company: B&T Steel | Painter: Dram Industrial Painting Contractors | Piling: Gauteng Piling |

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#### CELL C HEAD OFFICE AND WAREHOUSE

Developer/Owner: Atterbury Property Holdings | Architect: Bentel & Associates International and Empowered Spaces |
Structural Engineer: L&S Consulting (Pty) Ltd | Quantity Surveyor: NWS Quantity Surveyors | Main Contractor: Group Five |
Steelwork Contractor/s: Central Welding Works (Pty) Ltd | Detailers/Detailing Company: Bendraft Engineering Services |
Cladding: Global Roofing Solutions |









# light steel framing

category nominations





























#### **WINNER**

# **Light Steel Framing**

### **CATEGORY**

### McDonald's

Goodwood, Rustenburg, Silverlakes, Somerset West, Epping, Tembisa, East London

This combined entry has contributed hugely to the growing awareness of LSF for residential and commercial buildings and is the truly deserving winner of the Light Steel Frame Category award for 2014.

There were many first-rate examples of light steel framing projects this year, especially some of the residential projects. However, the judges decided that the McDonald's entry of seven fast food outlets best displayed excellence in the use of light steel framing. These structures are also first-rate examples of complete projects that show why LSF structures have sold 500 000 square metres of roofed area in the last calendar year.

### Why McDonald's chose light steel framing

McDonald's, the world renowned fast food franchise, has chosen light steel framing for their new outlets; firstly because it achieved their goals for an energy efficient building and secondly because speed of construction is one of light steel framing's main characteristics.

McDonald's has invested in many sustainability measures in its restaurants over the past two years. This visionary programme targets a 20% saving in water consumption,

a 20% saving on electricity consumption, 20% saving on costs and 20% saving on construction time as the brand continues on its strong growth path.

The light steel framing model was just the right system to address these targets. Silverline Group (a construction franchise that specialises in LSF) was awarded the tender, and convinced McDonald's that LSF was the way to go. They also assisted in optimising the design, in order to shorten the construction period.

They not only reduced material waste by 30% and transport cost by 80%, the insulating layers reduced the building's energy requirements by 17% to 20%, compared with those of conventional designs.

The time saving on the construction period has also been far better than with brick and mortar, which has enabled McDonald's to serve their customers earlier than expected – surely a win-win for them.

#### Now you don't see it, now you do!

The first LSF McDonald's outlet was in Goodwood, Cape Town. After careful planning, the team started on site in mid-March 2013.

#### **PROJECT TEAM**

**Developer/Owner:**McDonald's South Africa

Architect:

Architectural Design Associates

Structural Engineer:
Silverline Group Engineering

Quantity Surveyor: Silverline Group

Project Manager: Silverline Group

Main Contractor:

Silverline Group & Marc Barnfather

Steelwork Contractor/s:

Techomes Construction (Pty) Ltd, Innosteel (Pty) Ltd

Detailers/Detailing Company: Silverline Group Engineering











After casting the concrete for the foundations (using a Geoplast flooring module which consists of recycled plastic modules) and the lower floor, the wall frames and floor joists were erected. The first floor was completed in four weeks. The wall cladding was then installed: fibre-cement board on the outside; with glass-wool insulation in the wall cavities; followed by 15mm fire resistant gypsum board on the inside. While internal walls were being clad, steel sheeting was installed on the first floor to act as shuttering for the in-situ cast lightweight concrete floor.

Silverline completed the entire shell of the building, including internal walls and exterior painting in a mere two months. Road works and the installation of kitchen equipment took a further month, to give a total construction period of three months! A comparable double storey building using masonry construction would take at least seven to eight months.

The roof of the building was erected within 20 days of construction, enabling the installation of interior systems, such as air conditioning and wiring, to be carried out simultaneously with other construction activities.

#### A happy client

At the official opening of the Goodwood outlet on 29 June 2013, McDonald's said that they were really impressed by the speed of construction, and were very satisfied with the quality of the finishes stating that they have now built the first 'green' McDonald's in South Africa.

Even before this project was fully completed, Silverline Group started the next McDonald's outlet in Silver Lakes, Pretoria, using a similar floor plan and structure and the rest of the stores followed in quick succession in Rustenburg, Somerset West, Epping, Tembisa and East London.

McDonald's have since approved a number of new stores in South Africa to be built with light steel framing methods. Other fast food chains are following their example.

#### Judge's comment

by John Barnard representing the Southern African Light Steel Framing Association (SASFA)

From dance halls to hamburger outlets – is LSF flexible or what!

When McDonald's decided to use light steel framing to express their new image in South Africa, it was with sound business reasons, showing that LSF makes business sense to the most successful fast food chain in the world.

After due debate, the judges felt that the McDonald's projects exemplify some of the major attributes of LSF:

- · Speed of construction
- · Good quality finishes
- Energy efficient
- Clean building site with minimal wasted materials
- Modular construction that allows interior changes with limited disruption

This combined entry has contributed hugely to the growing awareness of LSF for residential and commercial buildings and is the truly deserving winner of the Light Steel Frame Category award for 2014.



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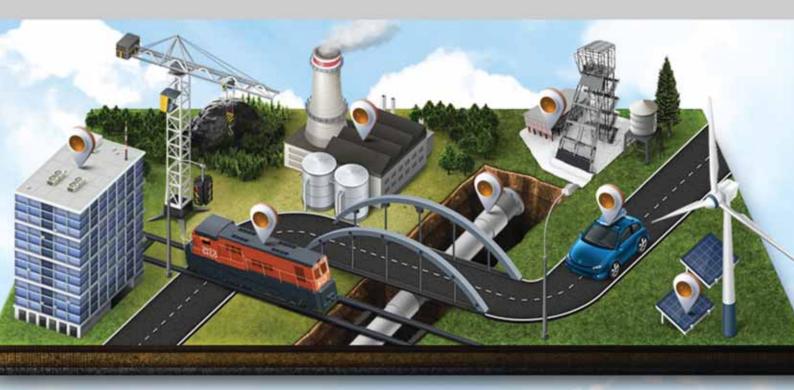






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#### **COMMENDATION**

# **Light Steel Framing**

**CATEGORY** 

# **Lutheran Community Outreach Foundation – Recreation Centre**

The major activity that the extension provides is that of an upstairs dance studio as well as an outdoor theatre. This project is built atop an existing basement structure that functions as a community hall, and is innovative in its use of materials.

With a superb batch of LSF entries it was not surprising that our judges had some serious discussion in coming up with their decision, leading to a commendation to the three storey Lutheran community outreach foundation recreation centre in Hillbrow.

This light steel frame structure is unique in that we see the LSF structure and methods used through the translucent sheeting for large portions of the external cladding. The project (funded by the National Lottery) is located next to the Lutheran Church, and on the site previously occupied by the old German Consulate and oldage home. The Outreach Foundation offers various programmes that provide children, the youth and adults the opportunity to engage with arts, culture and heritage activities that facilitate communication, participation and community building.

The major activity that the extension provides is that of an upstairs dance studio as

#### **PROJECT TEAM**

**Developer/Owner:** Lutheran Community Outreach

Foundation

Architect:

Local Studio

Structural Engineer:

Jaco Richter

Main Contractor:

E4 Construction (Pty) Ltd

Steelwork Contractor/s:



well as an outdoor theatre. The extension is built atop an existing basement structure that functions as a community hall, and is innovative in its use of materials. Specifically, the building is encased in a lightweight steel structure, which is wrapped by transparent sheeting that gives the appearance of a glass-encased cocoon.

The dance studio is located at an elevated level above the street, and faces on to the street via a long strip of window. The idea for this was to make the space appear more malleable to the outside, and to ensure that the community was able to enjoy the building from outside. In this regard, an outdoor bench facing the building was designed and built across the road, which encourages passers-by not only to have a rest, but also to watch dancers practising their moves in the dance studio. (www.urbanjoburg.com/hillbrow-theatre-lantern-light-joburg/)

Light steel framing construction was chosen for the project due to the structural nature of building a three storey structure on top of an existing basement. A conventional building would have been too heavy. The use of LSF allowed the space to be used in a suburb where finding open land space is like finding gold.

The building exhibits some unique features:

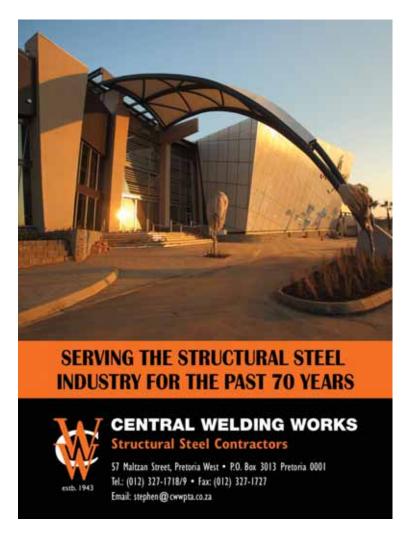
- · Apart from the translucent clad walls, all the other inner walls are clad and insulated in the normal LSF way. In addition, by insulating the surface bed the structure becomes comfortable in all weathers.
- · The sprung dance floor is supported on hot rolled steel.
- · Masses of translucent sheeting and windows bring in natural light.
- · The loads from the three floor structure are carried by beams back to the existing reinforced concrete column cen-
- · Careful attention was paid to the vertical bracing system of the LSF extension because of the nature of the site and the products.
- No cranes were used.
- · Also on view is a staircase with lovely details and finish.

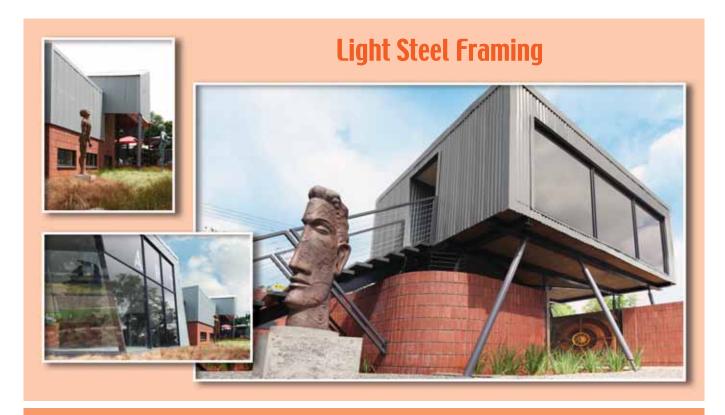
One of the most exciting parts of this project is the fact that the structure will



be like 'a lantern of light' in the city, achieved by the installation of fluorescent tubes alongside the steel framework. Light injects spatial value into an urban

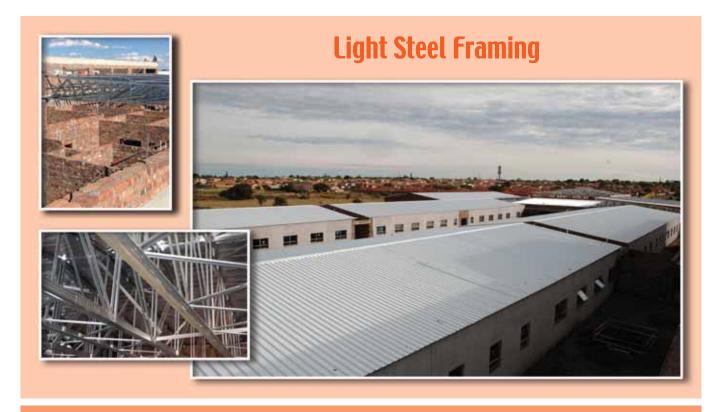
space: the street becomes a place where you linger; a place to chat with your neighbour and soak in the diversity of the city; a place of positivity.





#### **GALLERY ON LEVISEUR**

- Developer/Owner: Francisca de Gouveia | Architect: Sergio Nunes Architects | Structural Engineer: Cas Kempff Structural Engineers
- Quantity Surveyor: Pierre Oosthuizen | Main Contractor: Qualicon Construction | Steelwork Contractor/s: East End Construction Cladding: Beaconplate

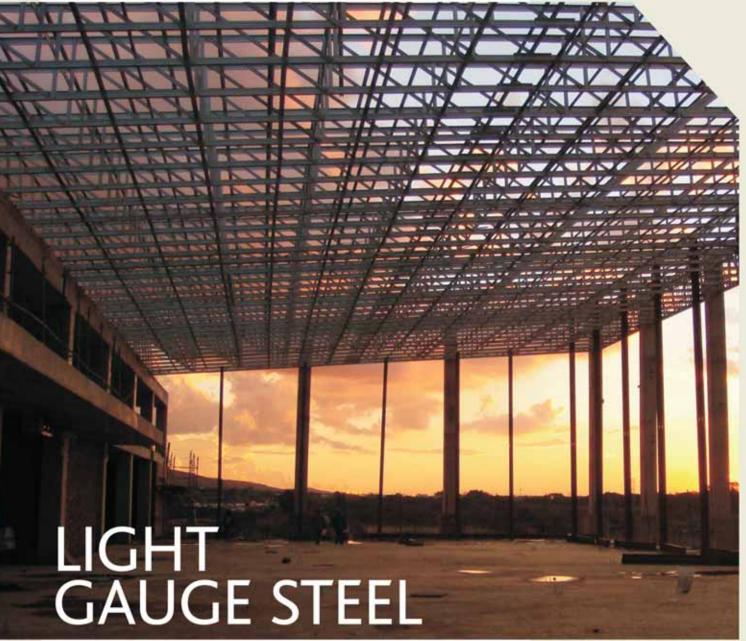


#### MEDICLINIC HOSPITAL GARIEP / KIMBERLEY

- Developer/Owner: Mediclinic | Architect: Graceland Architects | Structural Engineer: Civilsense Consulting
  - Quantity Surveyor: Taljaard Meyer Storm Incorporated | Project Manager: Scitus Consulting (Pty) Ltd
- Main Contractor: Tronkon Gauteng (Pty) Ltd | Steelwork Contractor/s: Kabelo Investments (Pty) Ltd t/a Central Roof Industries, Masenke Beaconplate | LSF Supplier: MiTek Industries South Africa (Pty) Ltd







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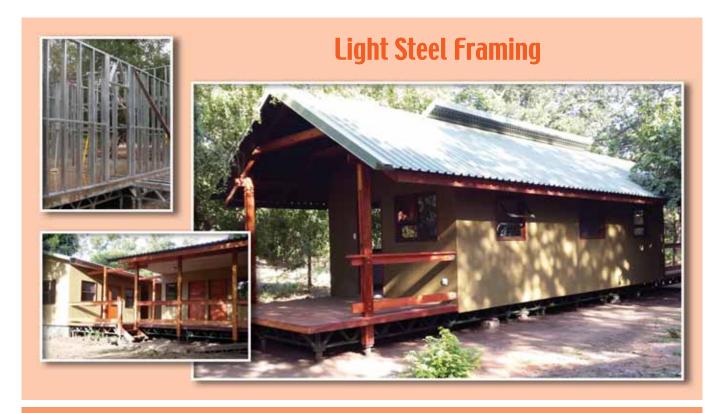
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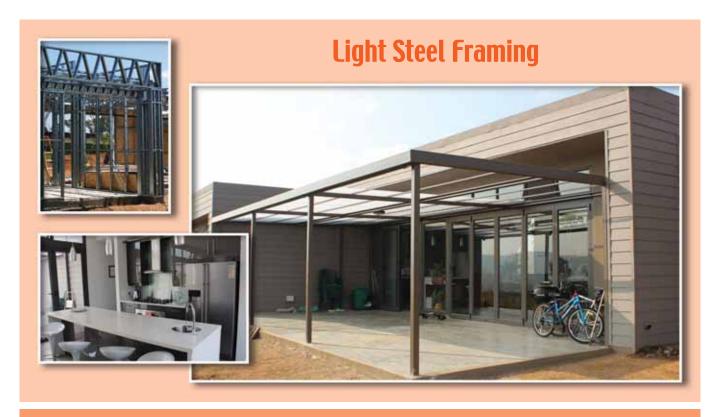
#### GORONGOSA BIODIVERSITY RESEARCH CENTRE

- Developer/Owner: Gorongosa Restoration Project Inc | Architect: Crafford and Crafford Architects |
  - Structural Design: E4 Construction (Pty) Ltd | Project Manager: E4 Construction (Pty) Ltd | Main Contractor: E4 Construction (Pty) Ltd | LSF Contractor/s: E4 Construction (Pty) Ltd |



#### C.A.T. MOTORS CRADOCK

- Developer/Owner: C.A.T. Motors Cradock (General Motors Dealership) | Architect: Carl Breytenbach Architects |
- Structural Engineer: Wessel Esterhuizen | Quantity Surveyor: Silverline Group | Project Manager: Silverline Group
  - Main Contractor: Silverline Group | Steelwork Contractor/s: Techomes Construction (Pty) Ltd |



#### MONAGHAN FARM LANSERIA

Developer/Owner: Mr. and Mrs. Coskey | Architect: Meik Architecture and Design | Structural Engineer: Silverline Group Engineering | Quantity Surveyor: Silverline Group | Project Manager: BMC Projects | Main Contractor: Silverline Group | LSF Fabricator: Innosteel (Pty) Ltd | Detailers/Detailing Company: Silverline Group Engineering



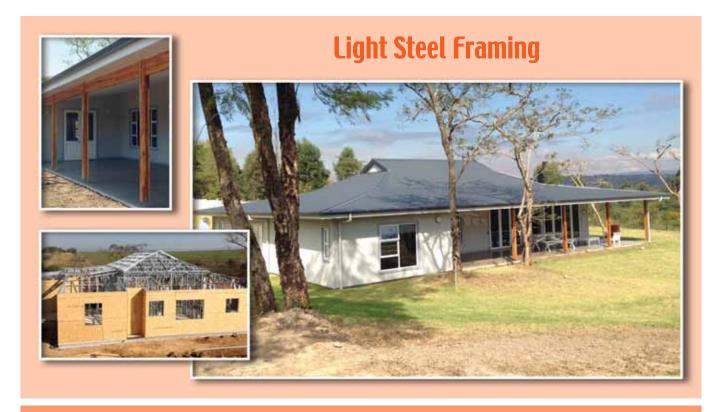
#### HOUSE REITH PAARL

- Developer/Owner: Ms. Reith | Architect: Michael de Jager | Structural Engineer: Silverline Group Engineering |
  - Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group
- LSF Contractor/s: Techomes Construction (Pty) Ltd | Detailers/Detailing Company: Silverline Group Engineering



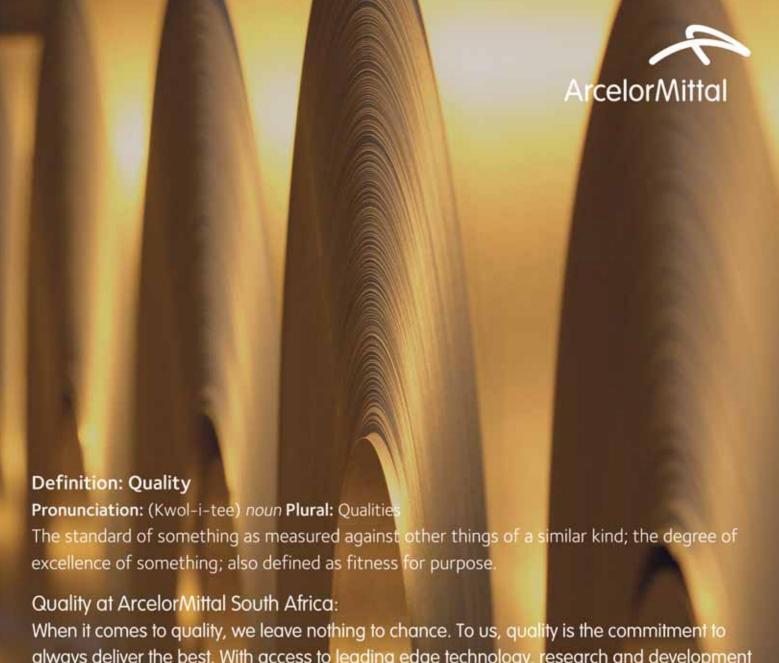
#### STAND 47

- **Developer/Owner:** Gavin Rooke | Architect: Thomashoff + partner Architects (Karlien Thomashoff)
- Structural Engineer: P Design cc Consulting Civil and Structural Engineers | Quantity Surveyor: Lyndon Projects (Pty) Ltd |
  - Main Contractor: Style Projects Building Contractors and Project Management | Cladding: Saint-Gobain |
    - Primary Materials Partner: Saint-Gobain



#### HOUSE CUMMING

- Developer/Owner: Stuart Cumming | Architect: Equilibrium Architectural Solutions cc | Structural Engineer: Martin and Associates
  - Project Manager: Shospec (Pty) Ltd | Main Contractor: Shospec (Pty) Ltd | LSF Contractor/s: Shospec (Pty) Ltd
  - ☐ Detailers/Detailing Company: Shospec (Pty) Ltd ☐ Detailing Company and Roll Former: Steel Frame Developments
    - Cladding: Global Specialised Systems



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#### KALKBAY EXTENSION

- | Developer/Owner: lan Mason | Architect: Hanneke de Wet Architect | Structural Engineer: Wessel Esterhuizen |
- | Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group
- LSF Contractor/s: Techomes Construction (Pty) Ltd | Detailers/Detailing Company: Techomes Construction (Pty) Ltd |



#### STELLENBOSCH EXTENSION

- Developer/Owner: Mr. and Mrs. Robinson | Architect: Blackcurrant Architects | Structural Engineer: Silverline Group Engineering
  - Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group
  - Steelwork Contractor/s: Techomes Construction (Pty) Ltd | Detailers/Detailing Company: SG Engineering



#### HOUSE MAHIEU PORT ELIZABETH

Developer/Owner: S Mahieu | Architect: Andre Rahl | Structural Engineer: Martin and Associates | Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group | LSF Contractor/s: Steelframe Developments | Detailers/Detailing Company: Steelframe Developments |

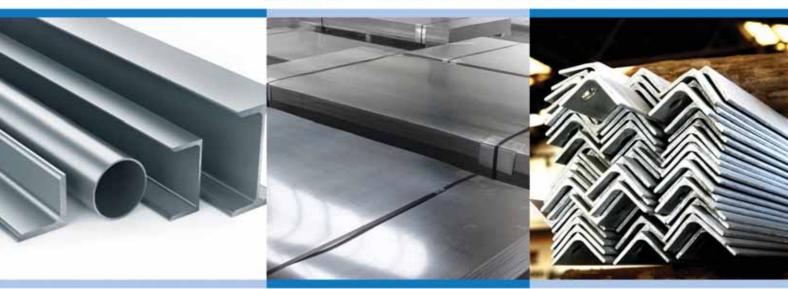


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#### **6 CAMPBELL STREET**

- Developer/Owner: SEVEN20 Entertainment | Architect: Joe van Rooyen Architects | Engineer: Mike Hull
- □ Builder: IKN Construction □ LSF Steel Design and Manufacturing: Trumod □ Roofing Profiler: Clotan Steel



#### HOUSE COETZEE

- Developer/Owner: Dieter Coetzee | Architect: Graham Holland Architectural Design | Structural Engineer: Tielman Nieuwoudt |
  - Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group
  - Steelwork Contractor/s: Techomes Construction (Pty) Ltd | Detailers/Detailing Company: Tielman Nieuwoudt |



#### HOUSE VAN DER WATH CLANWILLIAM

Developer/Owner: David and Melissa van der Wath | Architect: Michaal de Jager | Structural Engineer: Wessel Esterhuizen | Quantity Surveyor: Silverline Group | Project Manager: Silverline Group | Main Contractor: Silverline Group | Steelwork Contractor/s: Techomes Construction (Pty) Ltd | Detailers/Detailing Company: Silverline Group Engineering |

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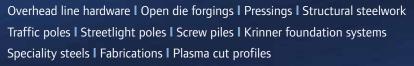




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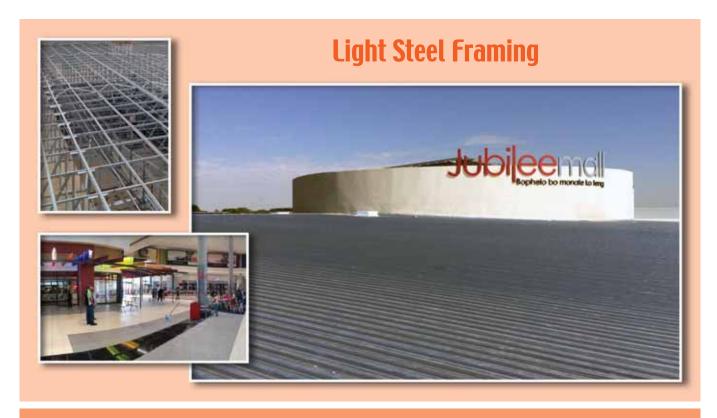
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#### MABONENG PENTHOUSE

Developer/Owner: Dryden Projects | Architect: Daffonchio and Associates Architects | Structural Engineer: C Plan Engineers Project Manager: Silverline Group | Main Contractor: Silverline Group | Steelwork Contractor/s: Barnet Construction



#### JUBILEE MALL - HAMMANSKRAAL

- | Developer/Owner: (NAD) New Africa Developments | Architect: LPA | Structural Engineer: DG Consulting Engineers Project Manager: HD Projects | Main Contractor: Beckers Building Contractor
  - Steelwork Contractor/s: Giant Engineering, Legendary Roofing | LSF Supplier: MiTek Industries South Africa (Pty) Ltd |



## mining and industrial

category nominations



















What a pleasure to walk around the structure, to see and experience exceptional quality and final presentation of the steel work.

#### WINNER

# Mining & Industrial CATEGORY

#### **Bakubung Platinum Mine Main Shaft Headgear**

By Spencer Erling, Education Director, SAISC

It is amazing how the whole team pulled together to get this done quickly not to disrupt the erection and of course waste money not using that big crane.

Wesizwe's core project is the Bakubung Platinum Mine (formerly known as the Frischgewaagd-Ledig project). The project site is situated directly adjacent to the western side of the Royal Bafokeng Platinum Styldrift project and immediately north of Maseve's Project 1. These properties are all located on the western limb of the mineral-rich Bushveld Igneous Complex in the North West Province of South Africa.

The Bakubung Platinum Mine will comprise of an underground mine with a twin vertical shaft system – a main shaft and a ventilation shaft which will also function as the second escape route – and a process plant.

Wesizwe formally launched the Bakubung Platinum Mine development project on 4 July 2011. WorleyParsons RSA was appointed to do the EPCM work having had extensive experience with mine development for the platinum industry.

For a new mine perhaps the most important step is to get the headgears and shafts built so that mining operations can commence. Aveng Grinaker-LTA was awarded the shaft sinking contract in March 2012.

#### **PROJECT TEAM**

Developer/Owner: Wesizwe Platinum Limited – Bakubung Platinum Mine

> Structural Engineer: WorleyParsons

Quantity Surveyor: WorleyParsons

Project Manager: WorleyParsons

Main Contractor: Louwill Bakgoni JV

Steelwork Contractor/s:
Louwill Engineering

**Detailers/Detailing Company:** PCSA Structural Steel Detailers







The structure consists of an A frame designed to resist horizontal, vertical and wind loads. The top three levels of the A frame form the sheave decks with the upper level at 72 metres above the bank. There is a 14 metre square centre tower between the bank and the underside of the sheave levels that accommodates six operating floors. A 30 ton capacity electric overhead travelling (EOT) crane and its support structure tops off the headgear. A full height stair case and elevator to the 72 metre level give complete access to all levels of the headgear.

Headgears are designed for three stages of the shaft development's use. This headgear is no exception and has been designed to satisfy the sinking requirements for the shaft, the equipping stage and of course for permanent mining use with all the skip unloading facilities and safety equipment for emergencies. This requires considerable changeovers between the various stages. To assist with this process to identify steel components that are temporary and to be removed and replaced, only prime painting has been done to this steel and flooring. All other permanent small steel components have been hot dip galvanized and plate girder components have received full paint specifications (to prevent the possibility of distortion in the galvanizing process).

#### What makes this headgear special?

The design of the headgear and its associated loads are in accordance with the SANS10208 series of specifications. These

specifications were drawn up by a committee under the auspices of the SAISC.

The dominant loads are gravity, wind and the forces associated with the loads on the ropes as well as snapping of the steel wire ropes and the reversal effect it would have on the headgear. Skip tipping loads are considered for the permanent use. There are other impact loads from emergency situations such as overwind of conveyances that have been taken into account.

Of necessity the steelwork needs to be fabricated to the highest standards with many full penetration welds (NDT tested of course) being the name of the game. The heat input from all the welding can lead to distortion and ensuring that the structural elements are dimensionally correct after all the welding is another of the challenges that the fabricator has to overcome.

There are literally thousands of bolts, all fitting without modification tightened to specification. This is testimony to the 3D detailing using Tekla and the accuracy of fabrication.

What a pleasure to walk around the structure, to see and experience exceptional quality and final presentation of the steel work. Louwill Engineering has certainly produced excellence in the use of steel.

#### The erection is also special

To achieve a quick and safe completion of the steel erection, the contractor planned and assembled large assemblies on the ground. At the right point in time a massive



1 100 ton crane was brought to site to lift these large assemblies with masses of up to 235 tons.

As expected, the 'Weather Gods' had to have their say and brought lots of rain just at the wrong time, softening the ground conditions needing an emergency decision to bring in dump rock to stabilise the ground upon which the crane stood.

It is amazing how the whole team pulled together to get this done quickly not to disrupt the erection and of course waste money not using that big crane.

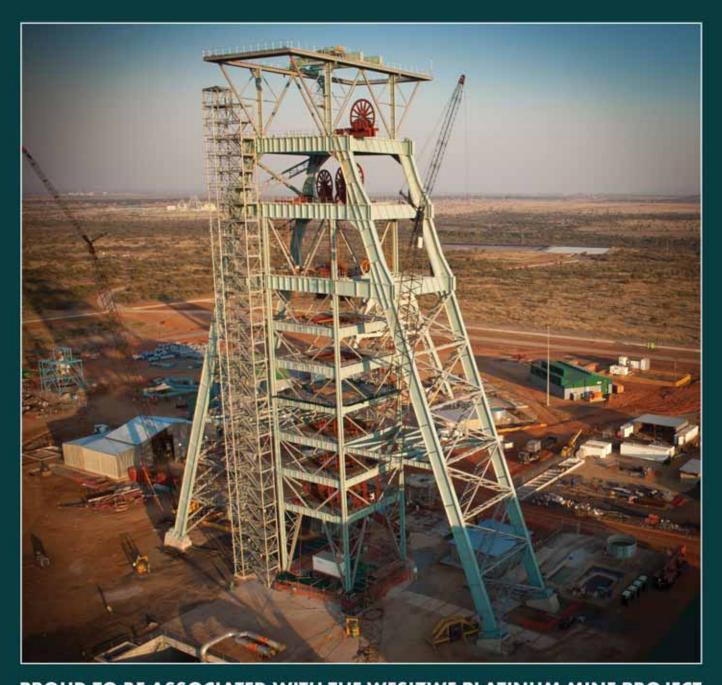
#### **Judge's Comment**

by Johann Nel representing the South African Iron and Steel Institute (SAISI)

As in the past, what impressed me was not only the final structure but also the story behind the structure. From the visit to the headgear one could fathom that this team is well organised and ready for any challenge that the construction programme might offer. How they overcame the heavy rains, one thing you can do nothing about, is just one example of many.

The actual structure is magnificent and as the representative of SAISI seeing those heavy plate girders is a joy. One can only applaud the good engineering and fabrication that came together to create this winner.

Our judges had no doubt that this headgear is a classic example of excellence in the use of steel and truly deserving of the Mining and Industrial Category Award for Steel Awards 2014.



#### PROUD TO BE ASSOCIATED WITH THE WESIZWE PLATINUM MINE PROJECT



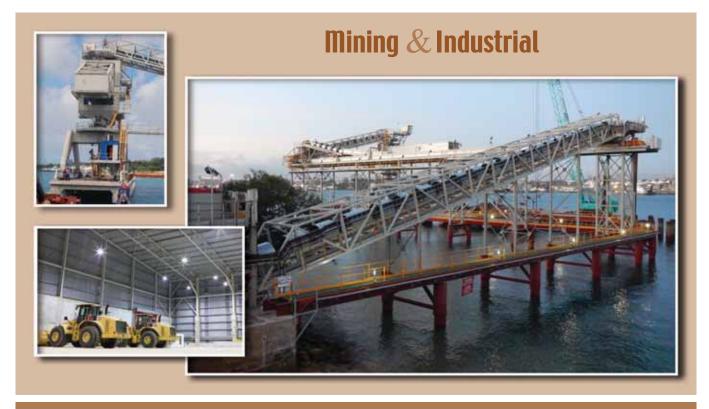








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#### KWALE MINERAL SANDS EXPORT FACILITY

- | Developer/Owner: Base Resources/Titanium Ltd | Structural Engineer: WSP | Electrical Engineer: WSP | Civil Engineer: WSP Ship-loader & Conveyor Systems Engineer: LNW/Syralco | Project Manager: WSP
  - Steelwork Contractor/s: Marine Structures: Stefanutti Stocks Marine; Shed: Steel Structures; Shiploader and Conveyors: Prodelko, Tass Engineering (Pty) Ltd | Infrastructure Contractor: Seyani Brothers & Co (Kenya) Ltd |



#### PIPE RACKS AT ISLAND VIEW

Developer/Owner: Transnet National Ports Authority | Structural Engineer: Transnet Capital Projects Engineering | Quantity Surveyor: Transnet Capital Projects: Project Services | Project Manager: Transnet Capital Projects Management | Main Contractor: WBHO | Steelwork Contractor/s: Shesha Engineering | Detailers/Detailing Company: Structech | | Galvanizer: Phoenix Galvanizing



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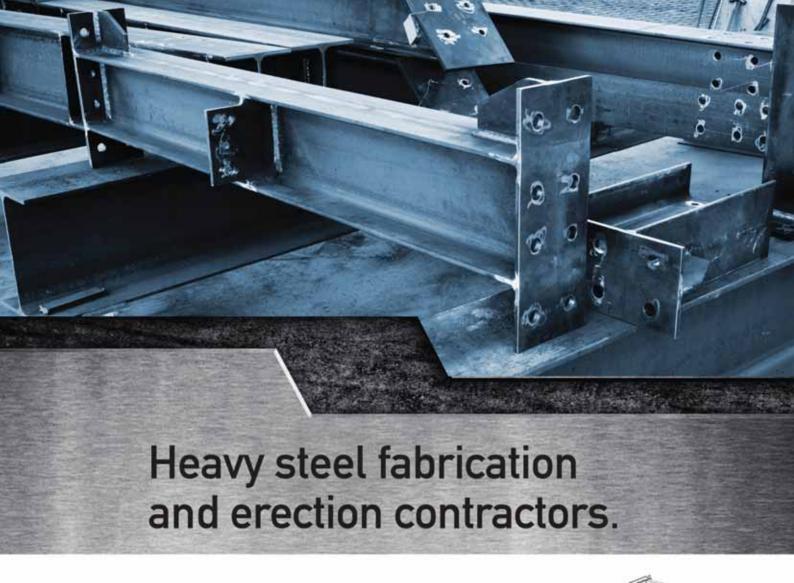
#### MEDUPI UNIT 6 FLUE GAS DUCT

Developer/Owner and Project Manager: Eskom Holdings SOC Limited | Structural Engineer: Mitsubishi Hitachi Power Systems Europe GmbH Quantity Surveyor: Turner and Townsend (Pty) Ltd | Main Contractor: Mitsubishi Hitachi Power Systems Africa (Pty) Ltd Steelwork Contractor/s: Murray & Roberts Projects (Pty) Ltd; MM & G Mining and Engineering Services (Pty) Ltd; Medupi Fabrication (Pty) Ltd (fabricator) | Detailers/Detailing Company: X-Tech, Murray & Roberts Projects (Pty) Ltd, PCP Drafting cc Cladding: Civil and Power Generation Projects (Pty) Ltd | Painter: ISC Matla (Pty) Ltd, Rand Sand Blasting Projects (Pty) Ltd |



#### **GOLDFIELDS VENT SHAFT CONVEYORS**

☐ Developer/Owner: Goldfields ☐ Structural Engineer: Logiman ☐ Main Contractor: Steel Services and Allied Industries ☐ Steelwork Contractor/s: Omni Struct Nkosi (Pty) Ltd | Cranes: Crane Corporation



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#### WATER RECOVERY GROWTH PLANT PROJECT

- Developer/Owner: Sasol Technologies | Structural Engineer: Thyssenkrupp PDNA | Quantity Surveyor: Thyssenkrupp PDNA | Project Manager: Thyssenkrupp PDNA | Main Contractor: Thyssenkrupp PDNA | Steelwork Contractor/s: Genrec Engineering | Detailers/Detailing Company: Genrec Engineering | Cladding: Bulldog Projects |



#### TWEEFONTEIN OPTIMISATION PROJECT

Developer/Owner: Glencore | Structural Engineer: DRA Mineral Projects (Pty) Ltd Project Manager: DRA Mineral Projects (Pty) Ltd | Main Contractor: DRA Mineral Projects (Pty) Ltd | | Steelwork Contractor/s: SMEI Projects Newco (Pty) Ltd |



#### KUSILE POWER STATION: MATERIAL HANDLING SILOS

Developer/Owner: Eskom Holdings SOC Limited | Structural Engineer: PD Naidoo and Associates | Main Contractor: Kusile Silos Joint Venture | Steelwork Contractor/s: Ferro Eleganza (Pty) Ltd | Detailers/Detailing Company: Ferro Draughting |

Autodesk 3D Revit models not only saved time with regard to modelling the project, but automatically created 2D drawings for the contract. This also facilitated visual images that could be rotated to get final approval from the client. Potential clashes of elements within the structure

"

Autodesk Revit
assisted us greatly in
saving time during the
modelling phase, before
transferring this data into
Prokon for structural
analysis.



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could be identified and solved.

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#### MEDUPI POWER STATION BOILER ISLAND

- | Developer/Owner: Eskom Holdings SOC Limited | Structural Engineer: Hitachi Power Europe | Project Manager: Hitachi Power Europe |
  - Main Contractor: Murray & Roberts Projects | Steelwork Contractor/s: Genrec Engineering Detailers/Detailing Company: Genrec Engineering | Cladding: Bulldog Projects |



#### NAMPAK FURNACE THREE & SUPPORT INFRASTRUCTURE

- | Developer/Owner: Nampak Glass | Architect: Osmond Lange Architects & Planners | Structural Engineer: AECOM |
- Quantity Surveyor: AECOM | Project Manager: AECOM | Main Contractor: Abbeydale Building & Civils (Pty) Ltd |
  - Steelwork Contractor/s: SE Steel Fabrication (Pty) Ltd | Cladding: GM Roofing |





## tubular

#### category nominations

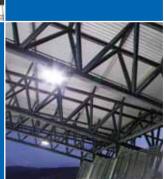












#### **Overall Winner and Winner of the Tubular Category**



#### MALAPA FOSSIL EXCAVATION SITE

Developer/Owner: The University of the Witwatersrand School of Geosciences	Architect: Krynauw Nel Associates (Pty) Ltd	
Structural Engineer: Peter Fellows Consulting (Pty) Ltd	Quantity Surveyor: Crane QS (Pty) Ltd	Project Manager: Craig Harrison PM cc
Main Contractor: Omni Struct Nkosi (Pty) Ltd	Steelwork Contractor/s: Spiral Engineering cc	
Detailers/ Detailing Company: KRU Detailing	Cladding: Cupric Tectonics cc	Painter: Mzekizeki Painters



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#### **COMMENDATION**

### Tubular CATEGORY

## **American International School of Johannesburg – Aquatic Center**

The structure is striking in a number of aspects. The interaction between the curved tubular and straight members, the blend of colours and the various textures of the products used is simply delightful.

Whilst our judges had absolutely no doubt who the winner of the category award should go to, they felt that there were other tubular projects deserving of recognition and awarded a commendation to the aquatic centre.

With such unusual scissor shaped columns and rafters used for this curved portal structure there is no doubt that the construction team have created a truly unique covering to this facility.

The aquatics centre is a purposely designed, all weather facility built for the American International School of Johannesburg. The school is a pre-kindergarten through grade 12 co-educational school and is located on a 58-hectare tract just on the northern edge of Johannesburg in the rolling hills and horse country. Completion of the project marked the 30th anniversary of the school.

The master plan design of the steel superstructure for the aquatic centre was conceptualised by the American firm Flansburgh Architects. Their South African counterparts Grosskopff Lombart Huyberechts (GLH) and Associates in association with Terra Ether Architects were the project architects and saw the project to completion. The 1 400 square metre

#### **PROJECT TEAM**

Developer/Owner:
American International School of
Johannesburg (AISJ)

Principle Concept Architect: Flansburgh Architects Boston, Massachusetts

Project Architects (South Africa):
Grosskopff Lombart Huyberechts and
Associates in association with

Terra Ether Architects

Structural Engineer:

WSP Group Africa

Quantity Surveyor: Taljaard Meyer & Storm Inc.





aquatic centre features a six lane, 25 metre training and competition pool with an additional shallow teaching pool as well as enclosed changing areas, office areas, storage space, and a mechanical services room.

The steel super structure is focussed on the part radiused, part straight tubular portal space-frame. The tubular steel frame comprises of 273mm diameter circular hollow sections in a scissor type geometric arrangement. The scissor geometry of the circular hollow sections is further emphasised by the purlin cleats which elevate the purlins from the structure in order to elevate the sheeting.

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For the technically minded: By raising the purlins, to express the structure, the purlins offer no buckling restraint. The scissor intersections apart from their aesthetic appeal, also restrain the 273mm tubes.

A major requirement for the structure was that the tubular sections should not have visible connections. The design team came up with innovative methods of connecting these members with internal sleeved cleats and internally bolted with 'out-of-sight' accessible bolted connections. The connections were then covered; site welded and ground down to achieve a smooth continuous finish. The base plates were placed below floor finished levels.

The innovative design and fabrication approach achieved the vision of a continuous smooth flowing structure, similarly to that of the smooth surface of the water in the swimming pool, which the roof structure is protecting from the elements. The steel structure was expertly manufactured and installed by Omni Struct Nkosi who contributed to the design team's specifications and details.

Special design features that take environmental as well as operational and economical concerns into account include the erection of the tensile structures, mechanical louvres on the facade, solar panels on the roofing structure and a hybrid solar and gas heating system for the change rooms. Rainwater is harvested for use in the exterior landscaping of the building.

#### **Judge's Comment**

by Franco Mordini representing the Association of Steel Tube and Pipe Manufacturers of South Africa (ASTPM)

The structure is striking in a number of aspects. The interaction between the curved tubular and straight members, the blend of colours and the various textures of the products used is simply delightful.

Not only is the structure beautiful it is also structurally functional.

The connections are well fabricated to the point that they are hardly noticeable, and confirm the excellent general workmanship of the whole project. This is a major contribution to the aesthetically pleasing nature of the structure.

This beautiful structure is a worthy recipient of a commendation for both its tubular and architectural attributes.

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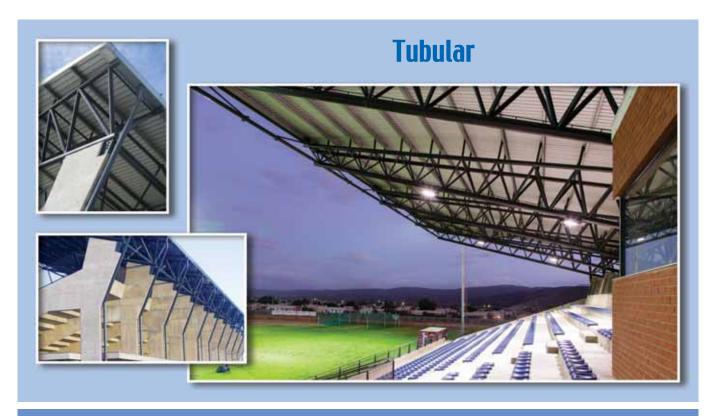
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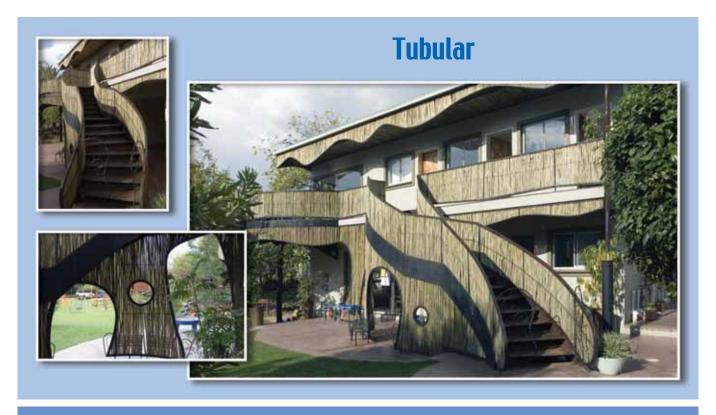


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#### **BRIDGTON SPORTS PAVILION**

| Developer/Owner: Oudtshoorn Municipality | Architect: Johan Smit Architects | Structural Engineer: SMEC South Africa (Pty) Ltd | Quantity Surveyor: AECOM | Project Manager: SMEC South Africa (Pty) Ltd | Main Contractor: Blignault Construction | | Steelwork Contractor/s: L en L Staalkonstruksies | Detailers/Detailing Company: Pinnacle Design and Steel Detailing | l Cladding: Cape Cladding Contractors (Southern Cape) (Pty) Ltd l



#### **BLUEBIRD PRE-PRIMARY SCHOOL**

- Developer/Owner: Bluebird Pre-Primary School | Architect: ERA Architects cc | Structural Engineer: IH & Associates Consultants cc |
- Steelwork Contractor/s: Tycam Roofing 200 (Pty) Ltd, ERA Architects Design and Build | Detailers/Detailing Company: ERA Architects cc | I Cladding: ERA Architects Design and Build I



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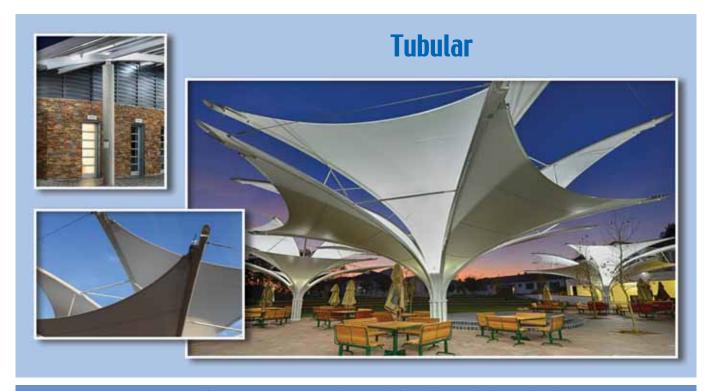
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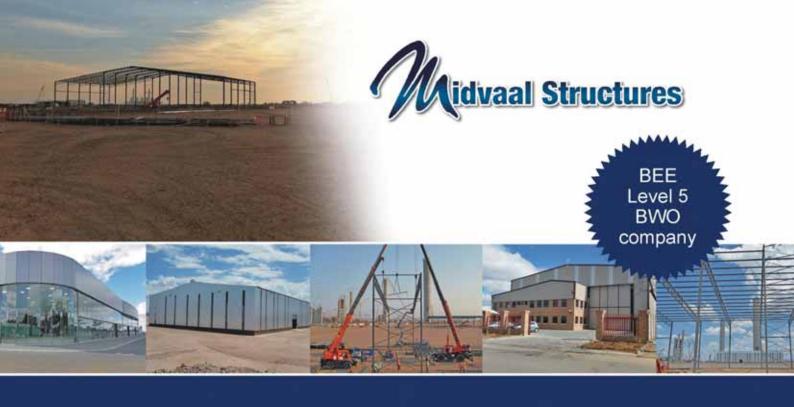
#### **HYUNDAI PARKADE**

Developer/Owner: M & F Giuricich | Architect: Talmac Engineering in collaboration with GL Architects | | Structural Engineer: Talmac Engineering | Quantity Surveyor: M & F Giuricich | Project Manager: M & F Giuricich | | Main Contractor: Ferro Bros | Steelwork Contractor/s: MPW Steel Construction | Detailers/Detailing Company: ISDC | I Cladding: WRT Roofing I



#### AMERICAN INTERNATIONAL SCHOOL - COMMONS

- **Developer/Owner:** American International School of Johannesburg (AISJ)
- l Principle Concept Architect: Flansburgh Architects Boston, Massachusetts l Project Architects (South Africa): Grosskopff Lombart Huyberechts and Associates in association with Terra Ether Architects | Structural Engineer: WSP Group Africa |
  - ☐ Quantity Surveyor: Taljaard Meyer & Storm Inc. ☐ Project Manager: JM Henrey & Associates ☐ Main Contractor: Baccai
    - Steelwork Contractor/s: Omni Struct Nkosi (Pty) Ltd | Detailers/Detailing Company: Omni Struct Nkosi (Pty) Ltd |
      - I Cladding Contractor: Omni Struct Nkosi (Pty) Ltd



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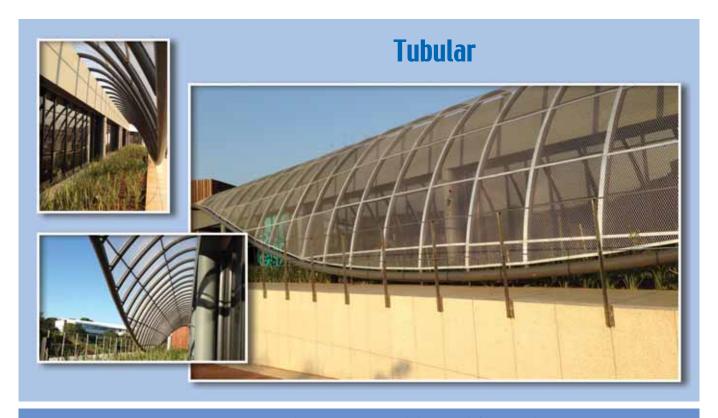
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#### **GIANT STADIUM**

- | Developer/Owner: Tswane City Council | Architect: Y+K Architects | Structural Engineer: Aurecon |
- Quantity Surveyor: Paresh Phsiba QS | Project Manager: Y+K Architects | Main Contractor: Aveng |
- | Steelwork Contractor/s: Omni Struct Nkosi (Pty) Ltd, Aveng Steel Fabrication | Detailers/Detailing Company: Aveng Steel Fabrication |



#### RYDALL VIEWS - PLANTED SOLAR SCREENS

- Developer/Owner: J.T. Ross Properties (Roprops No.9 (Pty) Ltd) | Architect: Dean Jay Architects |
- | Structural Engineer: Linda Ness Associates | Project Manager: JT Ross Developments | Main Contractor: J.T. Ross Construction |
  - | Steelwork Contractor/s: Rebcon Engineering (Pty) Ltd | Detailers/Detailing Company: Rebcon Engineering (Pty) Ltd |
    - l Cladding: Rebcon Engineering (Pty) Ltd | Horticultural Services: Groundwork Landscapes |



## **Special Mention**

#### Multichoice Samrand Data Complex Expansion – Roof Jacking

This entry did not quite fit into any of the categories this year, but it is such a good story for steel that the judges felt it deserves a special mention.

Serious modifications such as raising a roof to a steel structure often require a complete rethink of existing design to ensure structural stability. The aim of this project was to raise the roof and ensure structural stability whilst utilising the least amount of additional steel.

To achieve this, a plan was conceived that allowed for increasing the height of the columns by a simultaneous jacking and permanent column strengthening. The plan proved to be both cost effective and quick.

Two priorities of the whole process were the preparations for the columns to be raised and for the re-support of the main electrical buzz bar supply to the facility that ran through the existing roof trusses and could not be disturbed.

For the RHS columns, to increase their height meant cutting them. To ensure stability and something to jack against, channels were attached to the outside of the tubes. Using a series of drilled holes, rods were used to permit resetting the jacks.

Once all the preparations were completed and the electrics isolated after a double checking process the lifting operation began.

The two day jacking operation involved a large crew, two personnel manning each column jacking point, and a sufficient number of supervisors to control the rate of lift. The control of the rate was achieved by marking suitable increments up the sides of the columns and holding the lifting operation at each of these incremental marks.

Architect:

**GLH Architects** 

**Structural Engineer:** Pure Consulting (Pty) Ltd

Quantity Surveyor:

BTK Pretoria Inc.

Project Manager:

**GLH Architects** 

Main Contractor:

Walras Real Estate &

Infrastructure Solutions

Steelwork Contractor/s:

Tass Engineering (Pty) Ltd

Detailers/Detailing Company:

Tass Engineering (Pty) Ltd

Cladding:

Cladco Projects cc

**Sub Contract Erector:** 

Onpar Steel

Following the successful jacking operation a further couple of weeks was spent welding up the guide channels which now formed the reinforcing to the longer length columns. Extra girts were required for the longer cladding. The bottom chords of the roof trusses, which had to be removed to allow for the raising of the buzz bar, could now be replaced.

This project proves the versatility of steelwork when one is prepared to think outside the box when the refurbishment of a structure is required.

The Judges say: "Great concept conceived and executed by the team!"

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## New Generation PROGRAMME 2014

By Marlé Lötter, Events Manager, SAISC

The SAISC takes great pride in witnessing the names of previous New Generation participants among the company table reservations for the Steel Awards 2014 dinner – just proving the investment value of these top students for our industry.

Following nominations of top performers in structural steel by civil engineering departments of all our major tertiary institutions, the SAISC invited 20 students and mentors to participate in a unique, all expenses paid, full day programme in Gauteng. This programme aims to provide rather intense and special exposure to our industry. They conclude the day with the attendance of the Steel Awards 2014 dinner at Emperors Palace. Stretching the available budget as far as we could, the SAISC invited more top students to attend the dinner at the regional venues closest to their homes. Congratulations to all these participants and their mentors – please keep up the good work. Our country needs knowledgeable structural engineers like you!

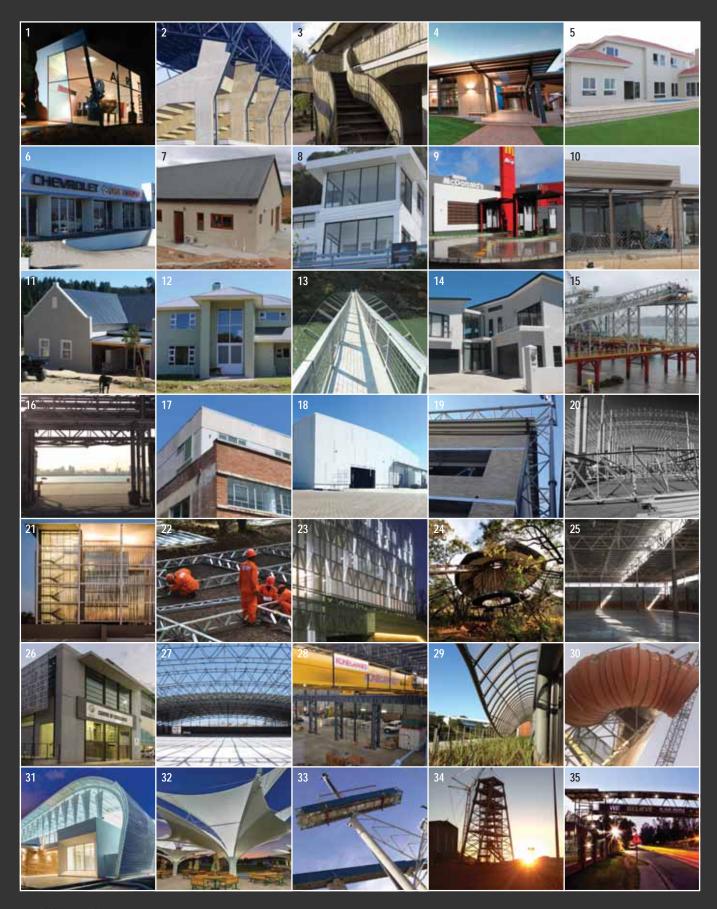
The Institute thanks Tim Tasioulas and his team at Tass Engineering for once again providing a starting base and very insightful, yet compact tour of their dynamic workshop. We also thank Mark Marais of Mitsubishi Hitachi Power Systems Africa for arranging yet another opportunity for the participants to get 'close and personal' with some of the vast structures at Kusile Power Station. Feedback from participants in past years confirmed these site visits as "very meaningful" and "eye opening to the possibilities of steel".

The SAISC takes great pride in witnessing the names of previous New Generation participants among the company table reservations for the Steel Awards 2014 dinner – just proving the investment value of these top students for our industry.



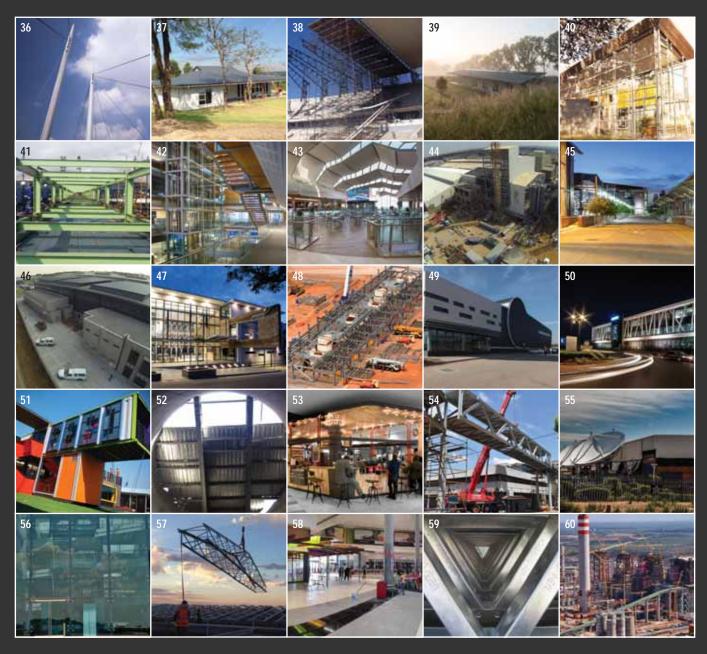






# Photo competition Entries





- 1 Gallery on Leviseur Ina Oosthuizen
- 2 Bridgton Sports Pavilion Supplied by SMEC South Africa
- Bluebird Pre-Primary School Leon Krige Photographer
- Additions to Eduplex High School Bruce McLean
- House Coetzee Silverline Group
- C.A.T. Motors Cradock Silverline Group
- House van der Wath Clanwilliam Silverline Group
- 8 Kalkbay Extension Silverline Group
- 9 McDonalds Silverline Group
- 10 Monaghan Farm Lanseria Silverline Group
- 11 House Reith Paarl Silverline Group
- 12 House Mahieu Port Elizabeth Silverline Group
- 13 Tugela River Pedestrian Bridge GD Bouttell Pr Eng
- 14 Stellenbosch Extension Silverline Group
- 15 Kwale Mineral Sands Export Facility Gerhard Kapp
- 16 Pipe Racks at Island View Supplied by Transnet Capital Projects
- 17 Maboneng Penthouse Silverline Group
- 18 DCD Wind Towers Factory WorleyParsons RSA (Pty) Ltd
- 19 Hyundai Parkade MPW Steel Construction (Pty) Ltd / Talmac Engineering (Pty) Ltd
- 20 TSR Warehouse Chris Salerno
- 21 30 Jellicoe Andrew Bell
- 22 Gorongosa Biodiversity Research Centre Supplied by E4 Construction
- 23 Lutheran Community Outreach Foundation Recreation Centre Sally Gaule

- 24 Malapa Fossil Excavation Site Les Steel-Smith
- 25 Zibo Phase 2 Warehouse Peter Drews
- 26 UP/CSA: Indoor Centre Of Excellence Fanie Richter
- 27 Zinc & Lead Storage and Loading Facility at Lüderitz Harbour, Namibia – KCE (Pty) Ltd
- 28 Kone Cranes Alstom Peter Drews
- 29 Rydall Views Planted Solar Screens Supplied by Linda Ness
- 30 Medupi Unit 6 Flue Gas Duct Supplied by Murray & Roberts
- 31 American International School of Johannesburg Aquatic Center Stephen O'Raw
- 32 American International School Commons Stephen O'Raw 33 Goldfields Vent Shaft Conveyors – Steel Services and Allied Industries
- 34 Bakubung Platinum Mine Main Shaft Headgear Supplied by Louwill Engineering
- 35 DRA footbridge Philip Schedler Photography
- 36 Isando Pedestrian Bridge Supplied by SMEC South Africa
- 37 House Cumming Shospec (Pty) Ltd
- 38 Giant Stadium Supplied by Omni Struct Nkosi (Pty) Ltd
- 39 Stand 47 Gavin Rooke
- 40 The Last Glass House Roelof Petrus van Wyk
- 41 Water Recovery Growth Plant project Supplied by Genrec Engineering
- 42 No.1 Silo Melanie Meyer & Michael Groenewald

- 43 Cradlestone Mall Nico Theron
- 44 Nampak Furnace Three & Support Infrastructure Supplied by SE Steel Fabrication (Pty) Ltd
- 45 New Military Health Base Depot Petrol Photography
- 46 New Fabrication facility for African Cryogenics Supplied by SE Steel Fabrication (Pty) Ltd
- 47 Jindal Africa Head Office Dalton Dingelstad Photography
- 48 Tweefontein Optimisation Project Charles Corbett Photography
- 49 Cell C Head Office Nico Theron
- 50 2929 on Nicol Darren Alexander
- 51 The S.E.E.D. Andrew Royal Photography
- 52 Kusile Power Station: Material Handling Silos Supplied by Ferro Eleganza
- 53 Lucky Bread Company Dook Photography
- 54 Perskor SkyBridge: University of Johannesburg Doornfontein Campus - David Freeme
- 55 Multichoice Samrand Data Complex Expansion Roof Jacking Supplied by Tass Engineering
- 56 Group Five New Head Office Building Supplied by Group Five
- 57 Mediclinic Hospital Gariep / Kimberley Central Roof Industries
- 58 Jubilee Mall Hammanskraal Giant Engineering
- 59 6 Campbell Street John Barnard
- 60 Medupi Power Station Boiler Island Supplied by Genrec Engineering

# Photocompetition Vinner

Stephen O'Raw

Stephen O'Raw is a semi-professional photographer living in Johannesburg, He tells us more about himself and his passion for photographing architecture.

I have had an interest in photography for many years, but this interest only developed after I attended a training course in 2009. This coincided with a career change that allowed me to dedicate more time to converting that interest into something more than just a hobby.

The development of architectural photography as the core of my practice was driven by two things, my interest in real estate, having been a real estate consultant for most of my professional life (a career that I continue to pursue in parallel with my photography), and my marriage to Louise, a successful architect.

Being married to an architect allowed me access to architectural photographic opportunities that I may not have had otherwise. It has also been an inspiration, as I understand perhaps better than most the passion, dedication and sheer hard work that goes into the creation of the buildings we see around us.

Shooting the aquatic centre was a wonderful experience. The steel structures that make up the building offered lots of opportunity for this. The repeating patterns of the structure and off-centre design were like a playground for me.

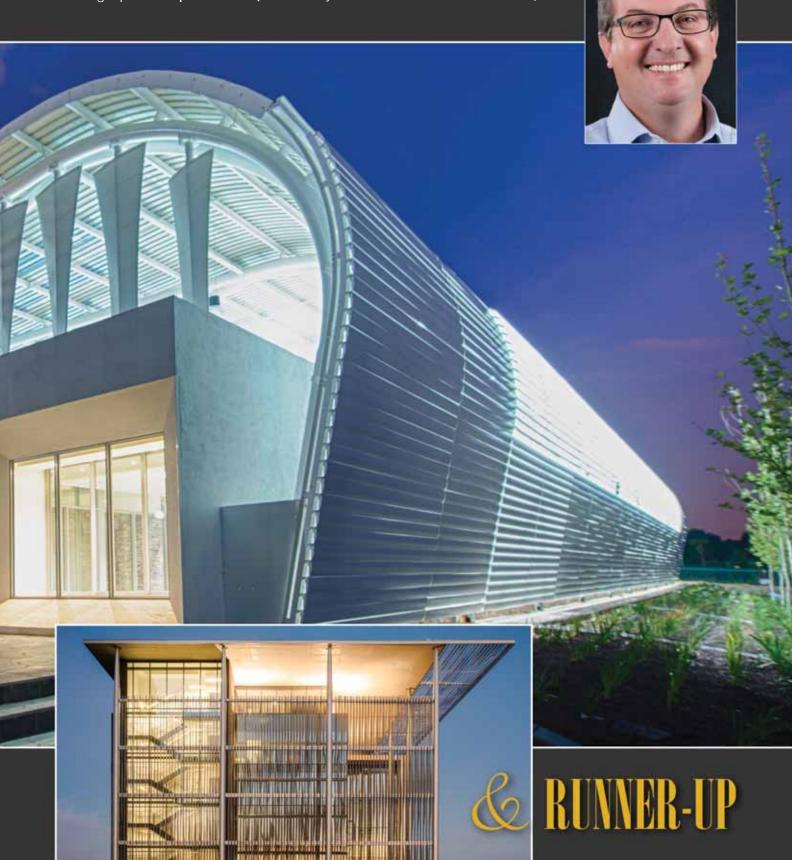
The building lends itself to a dramatic and structural approach, being part sculpture, part structure. I have been back to shoot it on a few occasions, but this photo was from the first shoot I ever did, even before the construction was finished.

If left to my own preferences, I tend to favour an abstract approach to shooting architecture. The steel structures that make up the building offered lots of opportunity for this. The repeating patterns of the structure and off-centre design were like a playground for me.

It is a wonderful space made up of some fantastic structural elements that I was lucky enough to be allowed to shoot.

# AMERICAN INTERNATIONAL SCHOOL OF JOHANNESBURG, AQUATIC CENTER

Photographer: Stephen O'Raw (Photo courtesy of GLH Architects & Terra Ether Architects)



Photographer: Andrew Bell

30 JELLICOE

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Eastern Cape

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# Gauteng

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# Bankos Distributors co

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# Betterect (Pty) Ltd

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Branch Engineering (Pty) Ltd\*
Representative: Shannon Van Den Heuwel Tel: +27 11 493 1197 Fax: +27 11 493 7884 shannon@branchengineering.co.za

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# Carbon Steel Fabricators

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