

ARCHITECTURALLY EXPOSED STEEL
6 FEATURED PROJECTS

NEW WEBSITE FOR THE SAISC
FRESH LOOK AND FEATURES

STEEL AWARDS 2018
PROJECT NOMINATIONS ARE OPEN

GET READY FOR STEEL INDUSTRY 4.0
PAOLO SHARES THOUGHTS FOR 2018

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OVERALL WINNER SAISC STEEL AWARDS



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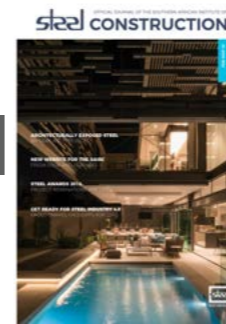


Eastgate Refurbishment Phase 2 - 2016



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OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF
steel CONSTRUCTION

FEB/ MAR '18 VOL 42 ISSUE 1



FEATURES



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NEW WEBSITE FOR THE SAISC
FRESH LOOK AND FEATURES
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STEEL AWARDS 2018
PROJECT NOMINATIONS ARE OPEN
(PG 17)

THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

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PUBLISHED BY: Southern African Institute of Steel Construction 1st Floor, Block C, 43 Empire Road, Parktown West
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SAISC COMMENT

PAOLO TRINCHERO
CEO, SAISC

GET READY FOR STEEL INDUSTRY 4.0

2018 is a year of opportunity.

The winds of change are beginning to blow and we should start to see some green shoots this year.

Although economists are predicting GDP growth of less than 2%, we may be able to get closer to 3% with some assistance from mining, growth in our neighbouring countries and a more positive global environment.

The SAISC, its sub associations, staff and management need show leadership this year in developing and assisting the industry into a new growth phase. We need to work together with our membership and constituencies to show that we are indeed an innovative industry.

Where are the opportunities?

We have a world class mining industry that may well start spending if the policy environment improves. Our EPCM's are getting busy which means we may see a turning point from care and maintenance to investment. This helps the construction, manufacturing and mining industries.

Our SOE's finances could improve in time. Our National Development Plan, in desperate need of funding yes, may gather some ground.

Neighbouring countries should start investing in larger projects as their economies begin to improve. Developments in Zimbabwe can have a huge positive impact on surrounding economies.

Improved business and country confidence should translate into construction projects over time.

**"WE NEED TO WORK
TOGETHER
TO SHOW THAT WE
ARE INDEED AN
INNOVATIVE
INDUSTRY"**

Our industry is leaner than it has been for a long time and will benefit from an uptick in the economy.

Steel construction has a number of favourable policy support measures with regards to fair trade.

- We have a 15% import duty on fabricated structural steel and transmission line steelwork.

- The loophole of importing fabricated steel under the prefabricated buildings heading is now being closed with a duty of 20%.
- Fabricated structural steel has been designated which means all government procured steelwork has to be manufactured locally.

All of the above initiatives have been rolled out across our sub-associations to widen the net as far as possible. 2018 however must be a different year. We cannot rely on support measures to protect our industry as we have seen that domestic growth and competitiveness are key. The SAISC has been aware of this for some time, but when members are in survival mode it is difficult to get the support needed to drive innovation.

What about innovation?

Get ready for "Steel industry 4.0"! A year of widespread and improved training, tackling member issues head on, studies on automation, better contracting and legal information, technical innovation and a desire to see the industry grow.

It is SAISC custom to review its strategy from time to time. We would appreciate your comments to ensure we are on the right track and delivering on our mandate.

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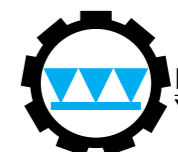
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EDITOR'S NOTE

DENISE SHERMAN
MARKETING MANAGER, SAISC

What does the SAISC of the future look like? How does it better meet the needs of its members?

These are two of the many questions we've been asking ourselves and members throughout 2017. While the answers often vary from person to person, one thing is certain, the key is innovation. Not "change for the sake of change", but a deliberate and well thought out path from where we are now to where we would like to be.

YOUR FEEDBACK
HELPS US REFINE
OUR PUBLICATIONS,
EVENTS AND
SERVICES.

There has been a tremendous amount of thinking, consulting, talking, planning, and fielding some very constructive criticism. For those of you who have engaged with us, thank you.

Your feedback helps us refine our publications, events and services. The feedback we've received has led to adapting some current offerings, and creating a few brand new ones.

If you're a member, you NEED to read page 17 to find out what's changed in the Steel Awards 2018 project nominations. Be sure to get your entries in before 29 March 2018! Some early birds have already entered multiple projects.

In addition to our Industry Breakfasts, we will also be hosting some brand new events which are great networking opportunities

May 2018 be a year of growth and innovation!

SAISC CALENDAR JAN TO JUNE 2018

DEADLINES

29 March Steel Awards project nomination deadline

TECHNICAL TRAINING

26 Feb - 3 March SASFA Building Contractors Course
15 March Basics of Steel (JHB)
28 March Seismic Design and Construction: Deciphering SANS 10160-4 and beyond (JHB)
11 April Basics of Steel (DBN)
19 April Seismic Design and Construction: Deciphering SANS 10160-4 and beyond (CT)
7 June Basics of Steel (JHB)
14 June Basics of Steel (CT)

BUSINESS AND SOFT SKILLS TRAINING

22 February Social Media for the Steel Industry (JHB) 1/2 Day
19 April Steel Industry Business Development Workshop (JHB)

EVENTS

21 February #Re_Construction (Maboneng)
2 March Industry Breakfast
3 March #BeautyOfSteel Instagram Walk
25 April #Re_Construction (Maboneng)
11 October Steel Awards (JHB/ CT/ DBN)

TOP 10 FEATURES OF THE
NEW SAISC WEBSITE

After countless meetings, emails, more meetings, and staring at screens till our eyes went wobbly... the new SAISC website is officially live! As with anything new, there will definitely be a period of learning and adapting (for us and for our members!)

In an effort to make the transition a bit easier, we've put together this article on some of the new elements of our site. Its by no means an exhaustive list, but rather the top 10 areas we'd like to highlight.

The Home Page

As the face of the SAISC, we felt that our home page needed a drastic update. We've gone for a cleaner, more elegant design that will open up new advertising and communication opportunities.

The Member Directory

Our new member directory - [https://www.saisc.co.za/mem-](https://www.saisc.co.za/mem-ber_category/saisc/)

[ber_category/saisc/](https://www.saisc.co.za/mem-ber_category/saisc/) is available to all site visitors (i.e. casual visitors or logged in members). It's a user friendly, searchable directory. Visitors can search by company name, organisation/ membership type, or province.

Online Shop

All publications available from the SAISC can either be purchased through our online shop, via telephonic or email order, or by visiting our offices. If you choose to purchase your book online, please be sure to request a copy of our special member discount codes to enjoy a significant discount on the listed price. These codes can be obtained by emailing denise@saisc.co.za

Featured Projects

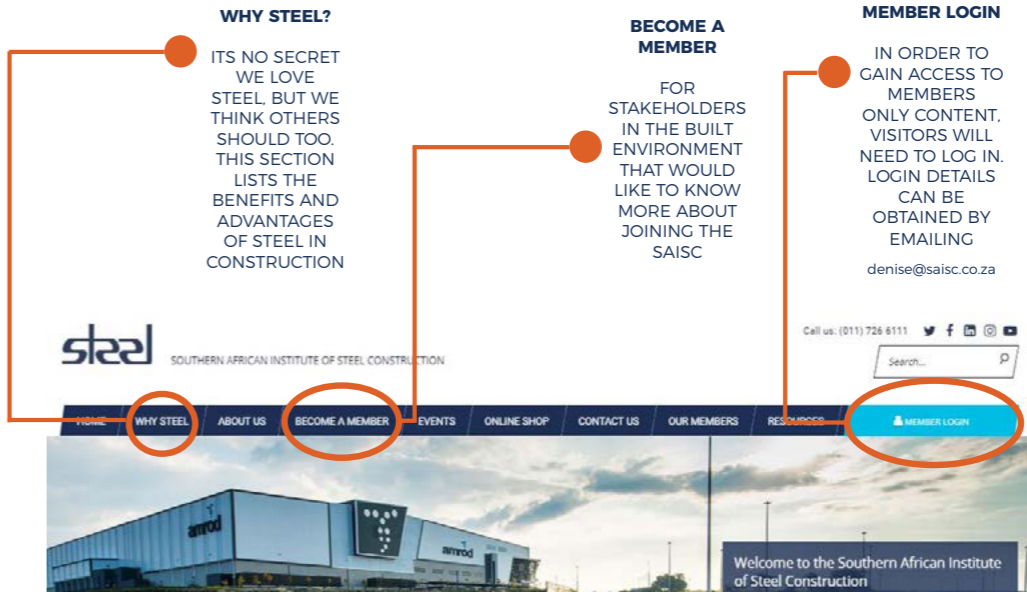
The Home page now provides an opportunity for us to better showcase projects our members have been involved with, displaying them in a very visual and engaging.

Projects can also be filtered by six different categories (Factory/ Warehouse, Metal Cladding, Architectural, Commercial/ Retail, Light Steel Frame Building and Tubular). Currently only images are featured, but we will be adding content including project summaries and team members for each featured project.

Streamed content areas for non-members and members

Potential members and current members have very different information needs. For this reason, we have streamlined the kind of information on our website to cater to the different groups.

The public facing home page has information on the advantages of steel and details on why or how to become a member of the institute. To access premium content, relevant to members, a visitor will need to log in.





Accessing Members-Only Content

Individual members and company member representatives email addresses have been added to our user database. In order to gain access to the site, you will either need to request a password by emailing denise@saisc.co.za – or by clicking on the “forgot your password” section. You will be prompted to enter your email address and a password reset email will be sent to you. your email address and a password reset email will be sent to you.

Once you’ve logged in, you will notice that the menu buttons at the top of the page will change. This is because restricted content has now become available. You will only be able to access this content if you log in. While remembering a username or password can be frustrating or “a bit of a schlep” this can be avoided. If you select “keep me signed in” when you log in for the first time, you will not have to repeat the login process every time you visit the site, but will stay logged in.

The Technical Hub (Members Only Content)

One of our primary functions is to provide technical assistance to our members. The Technical Hub section of our new website is exactly what the name suggests. It is a content hub for all things technical, and is accessible only to logged in members.

- <https://www.saisc.co.za/technical/> is an introduction to our team and their speciality areas
- <https://www.saisc.co.za/technical/tools/> is where you will find downloadable documents, spreadsheets and Autocad files
- <https://www.saisc.co.za/technical/technical-articles/> is where you will find technical articles that have appeared in the Steel Construction Journal from 2010 onward.

<https://www.saisc.co.za/technical/submit-a-technical-question/> is a webform for submitting technical questions that will be responded to in a 24hour turnaround time.

(If your question is urgent, please call our offices or email one of our team members via <https://www.saisc.co.za/technical/>

News

The news section of our website adapts based on whether you are signed in to the site or not. If you are not signed in, then the news that displays on the front page will be news relevant to the industry at large (i.e. both non-members and members alike).

If you sign in, however, the news section will contain articles relevant only to members.

Events and Training

The SAISC runs a number of events for non-members and members alike. The Events and Training section is where you’ll find information on our long-standing events like Steel Awards, Industry Breakfasts, Technical Training and of course – the Annual Golf Day.

In 2018 we have a range of new training courses and events launching, so keep an eye on this section of the site for more details.

PROJECT PROFILES

NO 5 SILO

PROJECT TEAM

Architect - VDMMA in association with JP | Structural Engineer - Arup
 Steelwork Contractor and Steel Erector - Mazor Steel (Pty) Ltd. | Main Contractor - WBHO
 Client - V&A Waterfront | Project Manager - Mace Management Services
 Quantity Surveyor - MLC Quantity Surveyors | Cladding Supplier and Contractor - Rohdes Roofing
 Galvanising - Nunation | Paintwork Contractor - Advanced Galvanizing (Pty) Ltd.

About the project

The Silo District at the V&A Waterfront in Cape Town is an award-winning example of a sustainable mixed use development. No.5 Silo, a commercial office building, forms part of the larger Silo Precinct Plan, with the prime requirement to increase the client's rental stock.

No.5 Silo was built on top of a pre-existing basement. The building sits on two panels separated by an expansion joint. The two portions of the building are independent and the two sides of the atrium are linked by jointed steelwork, facades, structures and bridges.

Why Steel?

Hot rolled steel sections were used for majority of the steelwork. As slender members portraying light-weight structures with long spans were envisaged, hot rolled steel sections were best suited due to possessing the necessary strength to achieve the design intention. They are also available in a wide variety of standard section sizes in South Africa.

Key structural steel features of the building include the saw toothed roof, structural framing for high level extract fans, fire escape steel staircase, bridges, atrium grillages, double volume arcade, steel support frame to sloping facades, wind lobby and pergolas.

In keeping with the theme of the building (warehouse type and industrial looking), cladding formed a large part of the aesthetics. Cladded roofs spanned between purlins (a cold formed section). A variety of cladding systems were used i.e/ timber, rheizink etc. for which hot rolled steel provided the flexibility when it came to fixing into.

Special Considerations

The use of hot rolled steel allowed for members to be welded and bolted together during the fabrication process. Fabrication was done in a controlled environment where quality was strictly monitored. Prefabrication allowed for large sections of the steel structure to be made up beforehand, transported to site and hoisted in place, leading to decreased construction time.

As the concrete frame of the building had been completed, it was imperative that the prefabricated steel sections and connections be designed to fit within the concrete frame. As built structural surveys were carried out prior to steel manufacture. Connections with sliding joints were vital when fixing in small enclosed spaces and over the expansion joints to allow for lateral movement.

HOT ROLLED STEEL SECTIONS WERE BEST SUITED TO ACHIEVE THE DESIGN INTENTION

Challenges and Solutions

The design brief for No.5 Silo had called for an expansive and open footprint to floors. Given the pre-existing condition of the structural grid already defined from the basement below and the clients request for no transfer beams, the structural system had to work with the floor space whilst remaining within the predefined conditions.

The inheritance of the expansion joint splitting the building into two independent halves had to be considered carefully during design, as numerous steel structures passed over the joint. These steel structures formed the link between the two building halves. Steel joints and connections were specially designed to allow for lateral movement of the structures over the joint. A challenge experienced was working within the constraints of the as built building to erect the steelwork in place. This was the case for the steel bridges, saw tooth roof and steel staircase.

The low level of tolerance of the concrete, meant that measurements had to be taken on site before steel was fabricated.

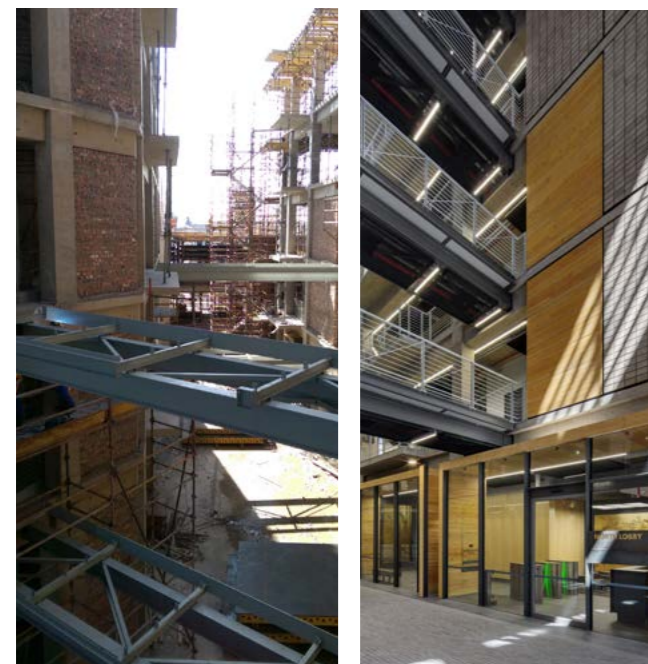
The prefabrication of the steel bridges and steel staircase led to these sections being lifted through the roof and erected in place. As a result closing the building couldn't be done until the staircase and bridges were in place.



Tonnes of Steel Used: 322

Profiles used: IPE, Universal columns and beams, equal and unequal angles, parallel flange channels, solid rods, rectangular hollow section, cold formed lipped channel

Type of Cladding: Unitised glass and tile cladding, rheinzink cladding, sheer glass curtain walling, rough cut timber cladding



SASOL HEAD OFFICE

PROJECT TEAM

Architect - Paragon Architects | Structural Engineer - L&S Consulting
Steelwork Contractor 1 - Nancy Engineering | Steelwork Contractor 2 - Magnet Engineering
Structural Steel Detailer - Pure Consulting and Sotiralis | Main Contractor - Aveng Grinaker
Client - Alchemy Properties/Sasol Pension Fund | Project Manager - Capex
Quantity Surveyor - Pentad | Cladding Supplier - Gusteyn & Horack and World of Windows

About the project

A purpose designed office building for a large varied multinational that consolidates all their local offices into one building. Steel was used extensively throughout the project both as an aesthetic element and also an important structural element.

The 'tuning fork' steel column is both an aesthetic feature and a stabilising element supporting the bridges. The torque is

transferred from the centre line of the bridges to the column grid below, generating its dynamic form.

The structural framing includes post tensioned steel reinforced concrete throughout the building. Large spans of up to 40m are used, including column free post tensioned bridges. The top four storeys of the building comprise a 10m cantilever supported on a steel sacrificial column.

Why Steel?

The unique building form, speed of construction, large spans and challenging cantilever makes this a unique project. For the Architecturally designed exposed areas, tubular steel was the preferred choice. The steelwork in the skylights was designed for off-site manufacture, rapid transport and installation.

THE 'TUNING FORK' STEEL COLUMN IS BOTH AN AESTHETIC FEATURE AND A STABILISING ELEMENT SUPPORTING THE BRIDGES.

Tonnes of Steel Used: 200

Profiles used: Hot rolled sections, cold formed sections, hollow sections, round solid bars, plates, Rectagrid, non standard sections made up from plates
Type of Cladding: Unitised glazed panels



CLEAR CHOICE BUILDERS OFFICE

PROJECT TEAM

Architect - Bright Black Architecture | Structural Engineer - Vitruvius Consulting (Pty) Ltd
Steelwork Contractor, Erector and Detailer - Pretorius Steelwork and Sotiralis
Main Contractor and Client - Clear Choice Builders | Project Manager - Bright Black Architecture
Cladding Manufacturer, Supplier and Contractor - ArvalSA

About the project

Driven by passion for the built environment and a desire to excel in their work, Clear Choice Builders (Pty) Ltd ("CCB") undertook to design and construct a new Executive Offices Building for themselves that would showcase the competence, effectiveness and the relentless attention to detail that the company offers to its clients.

The development incorporates fascinating architectural and engineering design coupled with high-quality construction making it a really inspiring South African project.

The new office block that has been built over a new man-made lake includes a 170m2 underwater auditorium and bar, 780m2 of office area on a

ground level and 260m2 of living space on the upper floor level.

The building will be accessed by a bridge structure which will span over the length of the dam. The structure is 45m in length and is visible from all four sides. The finished radius and positioning of each arch had to be extremely accurate as this was the most critical part in getting the aesthetic of the building correct.

Why Steel?

The ellipsoidal shape of the shell means that the structure is curving un-proportionally in 3 dimensions.

HOT ROLLED STEEL SECTIONS WERE BEST SUITED DUE TO POSSESSING THE NECESSARY STRENGTH TO ACHIEVE THE DESIGN INTENTION

Steel was chosen for this application as it is the only material versatile enough to create a complicated shape such as this one.

Tonnes of Steel Used: 60

Profiles used: I beams, Lipped channels, H sections, hot rolled, lightweight
Type of Cladding: ARVAL façade cladding,



KLOOF ROAD HOUSE

PROJECT TEAM

Architect - Nico Van Der Meulen Architects | Developer and Main Contractor - Investbo
Steelwork and Cladding Contractor - Estee Automation
Project Manager and Quantity Surveyor - Nic Smallwood

About the project

The client's brief called for a family-focused home, suitable for indoor/outdoor entertainment that maximises views to the north. The result is a 1 100m² sculptural piece of architecture that is an extreme transformation from the previously modest single storey.

pavilion is located on the lower level of the sloping garden, providing views of the steel sculpted northern façade in its entirety, as well as the cantilevered koi pond.

Why Steel?

The Architect's intention was to maximise views. Steel profiles are thinner than concrete, which enabled the Architect to achieve this objective without compromising on view or structural integrity.

THE LARGE-SCALE USE OF STEEL SHEET METAL TO ACHIEVE IRREGULAR MORPH-LIKE SHAPES GAVE THE PROJECT A UNIQUE SCULPTURAL APPROACH.

This was the first time the Architect had used morph-like metal cladding on a large scale, to create irregular geometries for a residential project.

The large-scale use of steel sheet metal to achieve irregular morph-like shapes gave the project a unique sculptural approach.

Tonnes of Steel Used: 38 Tonnes
Profiles used: I-Beams, H-Beams
Type of Cladding: Steel Sheet Metal

A 12 x 8-metre, floating

HOUSE PEARCE

PROJECT TEAM

Client/ Developer/ Architect - MDS Architecture | Structural Engineer - WSP Group Africa
Steelwork Contractor and Steel Erector - SE Steel Fabrication (Pty) Ltd
Structural Steel Detailer - Steel Project Detailing
Main Contractor and Project Manager - Kintro Construction

About the project

House Pearce is a residential project on Monaghan Farm where environmental and aesthetic considerations were of utmost importance.

Why Steel?

Steel was chosen primarily for its aesthetic appeal. Environmental/ sustainability considerations prompted the Architect to specify that the steelwork be allowed to rust naturally.

THE STEELWORK, ANGLED AT VARIOUS DEGREES ON CONCRETE PLINTHS, CREATES A PLEASING ARCHITECTURAL LOOK AND FEEL

The trigonometry of angles of the steelwork to concrete required a significant amount of calculation

and teamwork from all to achieve desired result.

The steelwork, angled at various degrees on concrete plinths creates a pleasing architectural look and feel

Tonnes of Steel Used: 17
Profiles Used: Tubular, beams, columns, purlins and girts
Type of Cladding: Klip-Lok



ONE FORREST

PROJECT TEAM

Architect - Nico Van Der Meulen Architects | Structural Engineer - Encon Consulting
Steelwork Contractor and Steel Erector - Estee Automation | Main Contractor and
Project Manager - Investbo | Quantity Surveyor - Nic Smallwood

About the project

The aim was to take a unique approach to privacy, as the house is in an estate.

The Architect achieved this objective by reinterpreting the use of I-beams with tubular steel cladding, to create a screen around the house. Each section of the façade is a different size and pattern, according to how much privacy/view is required.

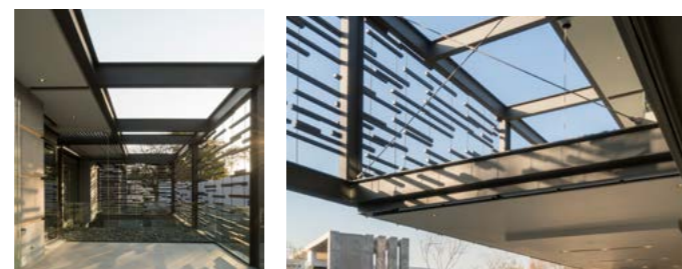
Boundaries were pushed in terms of how steel was used architecturally, taking a very solid and “heavy” material, and turning it into a light and airy / floating feature of the home. This project is an example of how steel, which is often considered a utilitarian and industrial material can be adapted for an aesthetic residential application.

Tonnes of Steel Used: Under 6 Tonnes (Façade)
Profiles used: Tubular (Rectangular Hollow Sections), I-Beams, H-Beams

Why Steel?

Weight was a big factor, due to the extensive cantilevers around the house. The Architect chose to use a lightweight element/profile to serve both an aesthetic and structural purpose. Achieving floating boxes from an engineering perspective proved challenging, and was achieved through principles of suspension, rather than conventional column systems.

STEEL, WHICH IS OFTEN CONSIDERED A UTILITARIAN AND INDUSTRIAL MATERIAL, CAN BE ADAPTED FOR AN AESTHETIC RESIDENTIAL APPLICATION.



STEEL AWARDS 2018

Project Nominations Are Open!

The SAISC Steel Awards, the premier event on the steel construction industry calendar is open for nominations. Our objective with Steel Awards is to acknowledge excellence in the use of structural steel as well as to encourage, inspire and showcase the hard work of people in our industry.

Annually the Steel Awards judging panel decides on the categories and winners based on the actual entries received. However, the following awards and categories will definitely happen, in addition to other that may arise this year:

- Overall Winner
- Tubular Category
- Light Steel Frame Building Category
- Factory and Warehouse Category
- Metal Cladding Category

In addition to the above categories, awards were made in the following categories in 2017:

- Commercial
- Architectural
- Innovation

All projects will appear in the Steel Construction Journal and will be featured on the SAISC website. However, only shortlisted projects will appear in the visual production played during the awards ceremony. A maximum of 10 projects per category will be shortlisted, and nominators will be notified prior to the awards if their project has been short-listed.

What's New About Steel Awards in 2018?

Some changes for 2018 which we're really excited about are:

- The project entry fee has been set at a flat rate of R 1500 per project, regardless of project size. We'd like to encourage as many nominations as possible, and believe that taking this approach makes entering projects more attractive and accessible to a wider group.

- SAISC and sub-association members can submit one free project for every paid project submitted. We don't want entry fees to be a deterrent to members submitting as many of their projects as possible... so we've gone ahead and made that hurdle a lot smaller!

Remember – one of our key objectives is to promote excellence in the use of steel, but in order to do that we need our members to submit the projects they are proud of. Submit your projects, and let us help you maximise their PR/Marketing mileage!

- A project scoring sheet has been included in the application form for reference, to give nominators insight into the adjudication process. While some additions may be made to the form based on the judges input, we felt it would be beneficial to shed some light on the adjudication process so that nominators have a better understanding of what goes on behind the scenes.

- The photo competition will be open to members of the public, and shortlisting of photographs will take place on Instagram. We've decided to embrace technology here in order to increase the digital marketing reach of Steel Awards, and make some noise beyond our industry. We want the public both nationally and internationally to fall in love with the beauty of South African steel, and look at structures with the same glint in their eye that we have!

How to enter

Project entry forms and a document explaining the entry process and judging criteria in detail can be downloaded from <https://www.saisc.co.za/news/sa2018nominations/>

**DEADLINE FOR
NOMINATIONS:
29 March 2018**



TECH TRENDS

AMANUEL GEBREMESKEL
TECHNICAL MANAGER, SAISC

THREADED FASTENERS

Threaded fasteners are crucial elements when connecting things to each other. For steel structures fastening is attractive, as compared to welding, because it can be carried out in-situ and disassembly at the end of life is relatively simple. Within our industry it is used to attach both heavy structural steel as well as light steel frames.



References: Fastener Black Book
(Pat Rapp Enterprises) and Wikipedia

The threaded fastener is so ubiquitous that it is easy to overlook the genius in the technology and how much innovation and standardization went into its development.

The threaded fastener origin story

While many can be quite knowledgeable about how to use threaded fasteners, it is hard to find people with knowledge about the history and origins of the two dominant ISO and UTS standards that govern their making.

Records going back to around 250 BC show that Archimedes explained the mechanical principle of the screw as a form of wedge. He formulated the mathematical characteristics of the helix where his goal may very well have been to use the screw technology to move water. By the 1st century BC the entire Mediterranean was using screw principles to press clothes, olives and wine.

However hand cut screws were inefficient and remained a major impediment to the popularization of the screw as a fastening concept.

The mechanization of screw cutting had to wait for Leonardo da Vinci's floating mandrel.

By 1568 Jaques Besson, a Frenchman, invented the first useable screw cutting lathe. Later the interchangeability requirements of the Industrial Revolution motivated British Henry Maudsley to invent the modern lathe in 1797 allowing him to cut threads with great speed and precision.

The key to popularization of any technology has always been standardization, and that task fell to Maudsley's apprentice Joseph Whitworth. In 1841 he presented a paper to the Institute of Civil Engineers proposing that the angle of the tread flanks and number of threads per inch be standardized. He proposed a 55 degree angle for the thread flanks. The British Standard Whitworth (BSW) was born.

By 1864 an American tool-maker from Philadelphia, William Sellers, proposed 60 degrees for the thread profile and flattened the pyramid top to increase cutting efficiency. American railroads, the largest companies

at the time, bought into his innovations and thus was born an American standard to compete with the British one.

Lack of interchangeability between the American and British standards only came to bite during the Second World War when Britain relied heavily on American supplies to execute the war. As a consequence of the war a Unified Thread Standard (UTS) was established in 1949 by the English speaking nations.

However at the same time continental Europe was promoting a similar but metric based thread standard which became a competitor to the UTS. These issues resulted in the International Organization for Standardization (ISO) being established to provide a forum for arriving at a consensus between the inch and metric jurisdictions.

Today ISO utilizes the metric system for threaded fasteners and dominates the global fastener industry. The UTS on the other hand continues to be popular in the United States and Canada.

This is clearly a success story for an incredibly useful technology.

After all these innovations and standardization efforts it is impossible at this point to imagine a world without the threaded fastener.

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SAMCRA FEATURE

DENNIS WHITE
DIRECTOR, SAMCRA

THE IMPORTANCE OF REGULAR MAINTENANCE

The need for regular maintenance of metal cladding systems is regularly overlooked by owners of buildings.

Past and present

In the past maintenance was generally restricted to annually tightening or replacing the odd fixing screw or more commonly placing a blob of a sealing mastic over the heads of a leaking fastener. Leaking flashings were sealed with anything from bitumen backed foil to paint-on membranes. Those that were loose were ignored until they blew off. Gutters and rainwater goods were similarly ignored until they leaked or overflowed. Basically it was a case of 'if it ain't broke don't fix it'. With the introduction of the modern concealed-fix profiles the situation appears to have deteriorated.

Warranty conditions

On completion of the construction phase owners are presented with a number of warranties as specified by the specifying professionals which are seldom read and invariably filed away. What owners fail to realise is most warranties are subject to certain conditions of which maintenance is by far the most important followed by physical damage.

Most manufacturers of the coil used to profile metal cladding require regular washing of area not regularly washed by rain such as the underside of overhanging eaves, canopies and carports plus areas of side cladding shadowed

**"MOST WARRANTIES
ARE SUBJECT TO
CERTAIN CONDITIONS...
MAINTENANCE
IS BY FAR THE
MOST
IMPORTANT"**

by an overhang, especially in coastal and polluted environments. Spills and fallout from extractors can be extremely corrosive.

Ponding in gutters is a key cause of premature failure of protective coatings. It must be remembered that the accumulation of vegetative and dust based debris on roof cladding can be extremely corrosive.

Coatings and sealing gaskets

Premature failure of the coatings and/or sealing gaskets on fasteners can have a rapid and dramatic impact on the durability of the coatings to the cladding. The interface between inadequately coated materials used to support items installed in direct contact with the cladding have an equally detrimental effect. Runoff and condensate from unlagged copper components in air conditioning units can destroy some metallic coating within six months.

Mechanical damage and maintenance frequency

A common source of mechanical damage to protective coatings and structural integrity of the cladding is caused by following trades installing and/or maintaining plant mounted on a roof. This can range from joints in flashing being prized open to allow for the passage of cables, etc. through to dented or cracked ribs. Wet trades are infamous for causing extensive mechanical damage.

We therefore recommend at least an annual inspection and in the case of marine and polluted environments biannual maintenance inspections.



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Southern African Institute of Steel Construction

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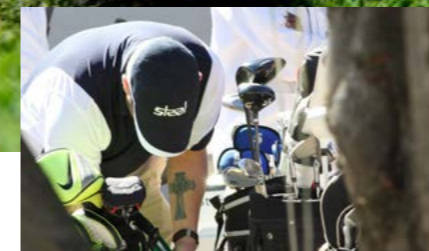
Times:

Tee-off 11:00am to 13:00pm
Players dinner with prizes from 6pm

Player Booking Enquiries

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For more information on **sponsorship opportunities** for this event, contact **Liesel Weber**, on **(011) 726 6111** or by emailing liesel@saisc.co.za





SASFA FEATURE

JOHN BARNARD
DIRECTOR, SASFA

LIGHT STEEL FRAME BUILDING SHOWS ITS METAL IN ROOFING



Talk about Light Steel Frame (LSF) building and what probably comes to mind for most readers are residential buildings, low-rise office blocks, fast-food outlets and other structures built by owners or developers that want energy-efficient, green, aesthetic buildings that can be built accurately and quickly.

We have however noticed of late that it is LSF roof structures that are hitting the headlines and two recent projects exemplify this trend. The first is the complex, curved Ultra-Span LSF roof structure for the Mpumalanga-based Kingdom Leadership Centre, a train-

ing and education facility developed by the Joe Singh group. The challenge was to build a scissor bow-string truss over a 20m clear-span section with additional mono bow-string truss sections on either side, making a total building width of 42m. In addition the client wanted the roof structure to combine two end-projecting dog-leg hipped roof sections with the main roof section on a fully curved end wall – a significant challenge in itself!

"This was a particularly complex job," says Uwe Schluter, GM of the Ultra-Span (LSF) division at MiTek,

South Africa. "But ultimately this project showcased how flexible Ultra-Span LSF steel is and how it makes it possible to design and to erect a complex roof safely, cost-effectively and on time."

He adds though that this is only possible if the contracting company has the requisite skills. "In this regard, I must compliment EcoStruct's Jacques Cloete who designed this structure on the MiTek 20/20 roof structure software package with full 3D resolution, which certainly helped in achieving all the complex curves and jointing lines," Schluter says.

The result was an extremely lightweight 3,250m² roof structure utilizing only 8.7kg/m² of LSF sections, roll-formed using ArcelorMittal's high strength galvanised steel sheet. This meant a total mass of only 28.3 tons of LSF for the entire roof structure.

John Barnard, Southern African Light Steel Frame Building Association (Sasfa) director, says that one of the keys to this project was the assembly of 'clusters of trusses' on the ground - which significantly increased the safety of the process - and then the lifting of them with a mobile crane with long reach - which increases the speed of the process. "The combination of low mass, safety and speed translates into cost-effectiveness," he says. To achieve this, EcoStruct utilized a 160-ton crane with a reach of 42m, enabling the erector to lift simultaneously five pre-assembled braced roof truss clusters into the final position. "This meant that it took only one day to lift all 46 trusses of the main roof into position thereby greatly reducing the total time spent on site," Barnard says.

The second project, the Global Leadership Academy (GLA) School Hall in Jeffrey's Bay - joint-winner of the LSF category at Steel Awards 2017 - also illustrated the advantages of the MiTek Ultra-Span (LSF) product in the erection of large complex roofs. The project entailed the establishment of a world class, green education facility on a tight budget with the main challenge for architect Jacobus Scott being to come up with innovative solutions for a multi-use gathering area, which required a long span roof design. He turned to the MiTek Ultra-Span (LSF) system for the solution and this was perfect in these



circumstances.

"The MiTek team designed and installed a cost-effective solution that not only looks impressive, but also effectively solved design and engineering problems that could never have been overcome with a traditional roofing system," says Uwe Schluter of MiTek.

All trusses were designed to span parallel to the traditional supports, essentially producing trusses also serving as purlins. Ultra-Span girders were created at the ends to support short span trusses to comply with the required minimum ceiling height.

This idea was also adopted in the middle section of the roof to act as stability braces for the window panels, which were made with MiTek's LSF wall framing product to allow for very specific window sizes, and to provide flat surfaces for the fixing of such windows. These window panels were manufactured in several parts to ease installation.

In typical Ultra-Span style, the 19m trusses were preassembled in braced pairs and then lifted into their final position on the roof ensuring fast



erection of the roof structure and other installation works to continue on a stable platform.

Satisfied customer, Stefan Kleyn from the GLA, says the MiTek team designed and installed a cost-effective solution that not only looks impressive but is also an extraordinary feat of engineering.

Barnard says that these two projects are indicative of an area of construction where LSF is increasingly playing an important role. "It is not only perfect for complex, long-span roofing structures, but LSF building is becoming increasingly relevant in a construction environment that is facing rising costs in materials and transport and in an end-user environment where energy costs are soaring and environmental issues are paramount," he concludes.



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POLASA NEWS

KOBUS DE BEER
DIRECTOR, POLASA

POLASA WELCOMES A NEW CHAIRPERSON

The POLASA (Power Line Association of SA) Board members are nominated and elected (or re-elected) every year. This happened at the 6 November 2017 Annual General meeting. Key positions are also rotated. We are therefore pleased to announce that at their first meeting on 4 December the new Board unanimously appointed a new Chairman for the following period:

Congratulations to Zola Hlatshwayo of Mkhulu Electro Distribution Projects who has been serving on the Board for the past two years! We look forward to her leadership!

Special thanks and appreciation was expressed for the work done by each of the serving Board members. These are the previous Chairman, Mr Vincent Kanyongolo of Dyambyini Construction & Project Solutions, the Vice Chairman, Sagren Moodley of Metpress. Peter Ramaite of Ramagale Holdings, Gary Whalley of Babcock Ntuthuko Powerlines, Robin Page of Trans-design and Dave Muller of Pre-formed Line Products SA.

We wish them well for the new year!



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INDUSTRY UPDATE

THE GOOD NEWS

UPDATES FROM OUR TEAM, OUR MEMBERS AND THE BROADER CONSTRUCTION INDUSTRY



▲ **TASS Engineering** will be celebrating its 50th year in business in 2018!

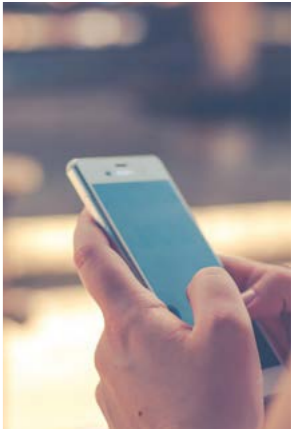


▲ **CADCON** has been in business for just over 30 years in 2018, and will be releasing a publication celebrating their growth as a business and showcasing the projects they have completed.

▶ **FIRST CUT** and European partner Julia are now providing customers with a lower cost per cut solution using the “Iron Lady” circular saw blade. See https://www.saisc.co.za/featured_content/first-cut-press-release-iron-lady/ for details



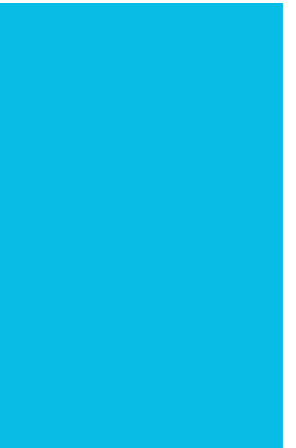
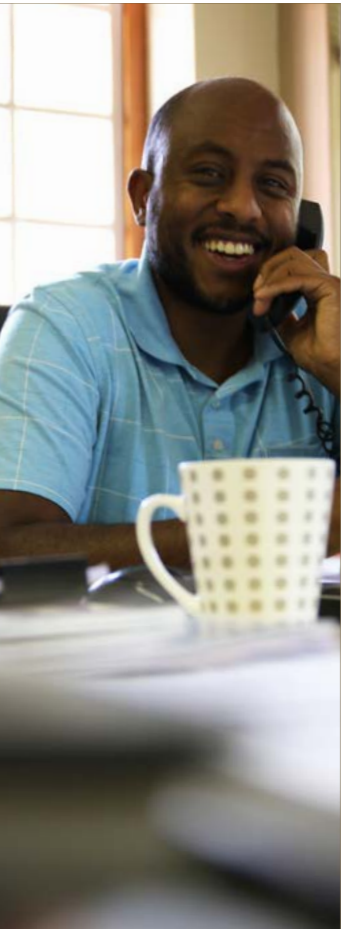
▶ **THE SAISC** will be hosting Instagram walks in 2018 to engage photography enthusiasts and develop a passion for steel among members of the public. For more on these walks visit: <https://www.saisc.co.za/events/beauty-of-steel/>



▶ **KRU DETAILING** was awarded Best Service Based Company in SA at the 2017 Business Excellence forum & Awards. Well done!



▶ **The SAISC** launches a new **networking event** for young (physically or at heart!) engineers, architects and final year students. For more on #Re_Construction (taking place in Maboneng at the Bioscope on 21 February 2018) visit: <https://www.saisc.co.za/>

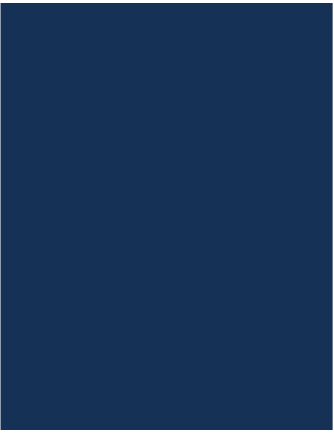


TELL US YOUR GOOD NEWS!

Let us know what you're celebrating as a company, or what you're proud of that we can share with the industry!

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▶ **AMANUEL GEBREMESKEL** Technical Director at the SAISC is going to be a dad... to twins!



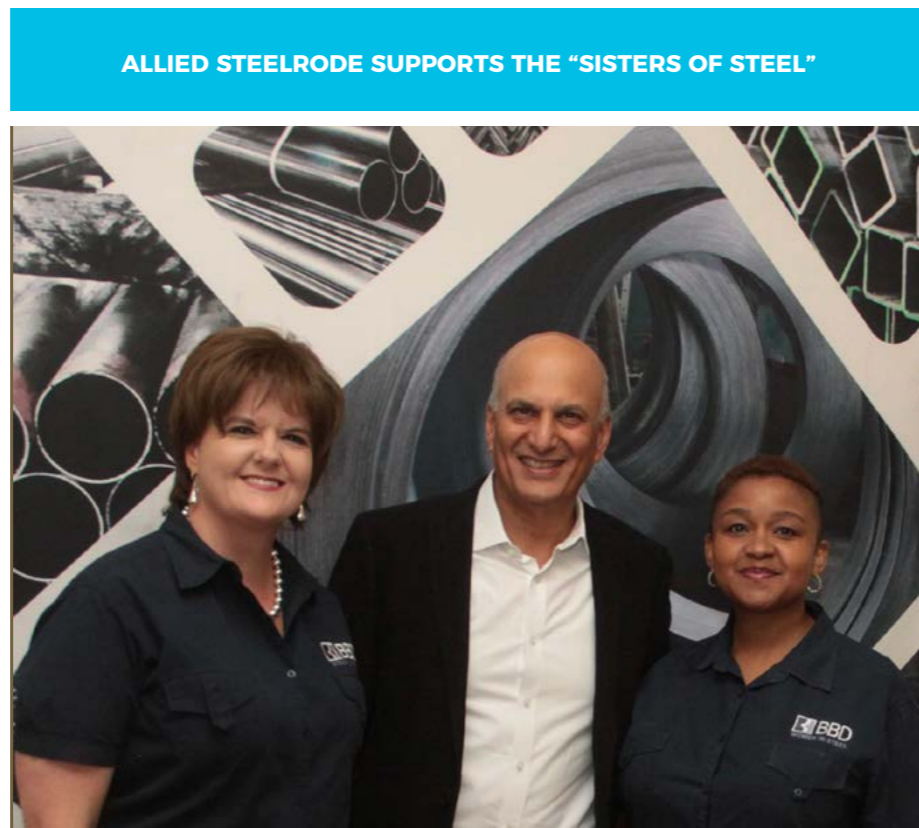
The steel business has always been perceived as a male preserve. However, in Rosslyn, north of Pretoria, there are two vibrant women who are challenging this traditionally-held perception on a daily business – literally, the ‘sisters of steel’. Gwen Mahuma and Monika Pretorius are respectively Business Development Director and Managing Director of BBD Steel Supplies.

Since its inception in 2014 – and despite the extremely tough economy of recent years – the business has doubled its turnover every year since then. From a three-person start-up, it now employs 27 people in a 75 percent black women-owned business, working from a well-equipped 4000 m2 facility.

Mahuma and Pretorius have both had previous experience in the steel sector. “While we also have a similarly strong entrepreneurial drive, we realised early on that we needed to have the synergistic benefit of a senior, successful industry player and mentor,” explains Mahuma. They found such a strong supporter and mentor in seasoned steel supplier and processor, Allied Steelrode.

“From our side, we had been contemplating establishing a branch in Pretoria to service the automotive heartland and other industry sectors in this region,” says Chadha. However, when Pretorius and Mahuma called on Allied Steelrode at its facility in Alrode, the commonality and synergy between the two companies in terms of a dedication to quality, customer service, integrity and reliability was evident to Allied Steelrode’s CEO, Arun Chadha.

“Much like Allied Steelrode, BBD



ALLIED STEELRODE SUPPORTS THE “SISTERS OF STEEL”

is owner-driven by self-made entrepreneurs; and, as such, also has the decision-making agility, flexibility and robust approach required to succeed in today’s challenging and dynamic steel market,” Chadha explains.

With the strong ethical and operational alignment of the two companies, an agreement was speedily concluded. “We thought it was very important - rather than opening our own branch - to assist and empower women already in the steel sector here in Pretoria,” he adds.

“Every parastatal in this country – and many in the private sector too - want to see empowered women in business. And while there are many women in business in South Africa, there are very few top executive women in the steel business, which has always been

very male-dominated,” Chadha continues.

“The potential for a fully woman-owned steel company in Pretoria is excellent as this an area experiencing good industrial growth. There is also no major steel business in this area, as most are based in Johannesburg, some with minor outlets in Pretoria.

Asked what differentiates BBD from its competition, Mahuma explains that – like mentor and supporter Allied Steelrode - the company places a great emphasis on customer service excellence and quality.

“For us it is not just about selling steel, we really get to understand our customers and work with them to find tailor-made, optimal solutions,” she says.

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