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OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

Volume 40 No. 4 2016

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PUBLISHED BY
Southern African Institute of Steel Construction
1st Floor, Block C
43 Empire Road, Parktown West
P O Box 291724, Melville 2109
Tel +27 (0)11 726 6111
Fax +27 (0)11 482 9644
info@saisc.co.za
www.saisc.co.za

EDITOR
Denise Sherman
Tel +27 (0)11 726 6111
denise@saisc.co.za

ART DIRECTOR
Sandra Addinall
Tel +27 (0)11 868 3408
cbtdesign@adcot.co.za

REPRO & PRINT
Camera Press
Tel +27 (0)11 334 3815

ADVERTISING
Viv van Zyl
Tel +27 (0)16 349 6839
Cell +27 (0)82 492 8603
Fax +27 (0)86 647 2788
viv@lantic.net

SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION (SAISC)
Chief Executive Officer
Paolo Trinchero
paolo@saisc.co.za

Technical Director
Amanuel Gebremeskel

ISF Director
Neels van Niekerk
neels@isf.co.za

SASFA Director
John Barnard
john.barnard@saol.com

SAMCRA Director
Dennis White
dennis@saisc.co.za

POLASA
Kobus de Beer
kobus@saisc.co.za

CHANGES TO THE MAILING LIST:
Please notify us of any changes to the mailing list at info@saisc.co.za

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in **this** issue...

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editor's note

"I have yet to experience my first Steel Awards evening, but wow, there is an astounding amount of literal and figurative legwork that goes into putting this showcase event together. The Steel Awards 2016 judging process has been a whirlwind of flying and driving and deliberating in long meetings. Our travels took us from the SAISC boardroom to many sites across Gauteng, Kwazulu-Natal, the Western Cape (and even Namibia) to visit a selection of the many amazing projects entered.

While the projects were varied in their tonnage and use of structural steel, what I found inspiring was the pride of each engineer, contractor and architect we encountered. In a turbulent local and global economy it's encouraging to see the resilience, excellence and innovation out there in the industry.

In this edition of Steel Construction we focus on Metal cladding and Light Steel Frame Building. We've profiled some dynamic projects and as always, shared valuable technical insight. For something a little... different (and fitting with our 60s theme for Steel Awards)... be sure to check out Paolo's article on page 33.

Lastly, I am proud to announce that bookings for the 35th Annual Steel Awards are now officially open! For details on the event see page 32. Join us as we celebrate the SAISC's 60th year and showcase excellence in use of structural steel.

Food for the soul: seeking out and **celebrating excellence** in challenging times

By Paolo Trinchero, Chief Executive Officer, SAISC

With challenges like Brexit, slow growth (SA and global conditions), elections, commodity prices, interest rates (US and RSA), China rebalancing or slow down, Government policy etc. dominating the headlines – let us not get too negative over the challenges we are facing.

How is the out of the box thinking going at the moment? Have you found a new one?

Having done quite a bit of travelling for Steel Awards, government department meetings and customers visits (believe it or not), despite obstacles we have seen some encouraging signs and met passionate and innovative thinkers across a wide range of contexts.

Steel Awards as always provides food for the industry's soul as there is so much innovation, hard work and passion displayed for all to see. This years awards are not going to disappoint, so please keep those diaries open for the 15th of September 2016.

Government departments you may ask? Yes. We have spent an enormous amount of time with dti, ITAC, SARS and the IDC to name a few, together with other associations. Although there is always frustration from our members and media directed at government, let me tell you, there are many passionate hard working people in every one of these departments trying to assist the industry. I would like to thank our members who sent through contributions for the various committees in which we are currently involved. This may be hard for some members to hear but it is often the lack of participation from the industry which is preventing things from moving forward more quickly.

Customers? Yes, customers. That means you – our members. I am amazed that on my travels I have seen new equipment installed and clear innovation displayed, despite some companies having been through more than one round of retrenchments. This has been food for my soul. I'd like to encourage our members to share their experiences with each other. We can all benefit from seeing a bit of light at the end of what seems like a very long tunnel.

As you all know by now, we never finish a commentary without referring to innovation. I have had a bit of fun writing about an Italian innovation which is mentioned a little later in the magazine in the article "Is the steel industry going to POT, or are we just green?". I would like to request our members to participate from time to time by submitting their innovative projects to the magazine. Many companies have invested in energy saving initiatives which could be of benefit to everyone, so please share.

"Having done quite a bit of travelling for STEEL AWARDS, government department meetings and customers visits (believe it or not), despite obstacles we have seen some ENCOURAGING signs and met passionate and INNOVATIVE THINKERS across a wide range of contexts."

THAT FEELING...

...it's Friday, you've worked hours to get the design, drawings & schedules out. There are still late changes to make, rebar clashes are certain, and the project team are meeting the client about more changes. You still need quantities, to model and schedule the rebar. The design team want your model. The contractor needs to plan the project, design & manage formwork, plan the rebar delivery...
The week is finished, you're finished, the work is far from finished. If only you could have solved the problems ahead of time. The guys on site will just have to make it work...

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Light Steel Frame Buildings: Sustainable, Durable and Comfortable

By Denise Sherman, Editor, Steel Construction Journal

"The South African LSFB market has grown by 38% over the last 5 years. Although it's very popular in the residential market, its growth in usage is not limited to residential applications."

While some may view Light Steel Frame Building as the "new kid on the block", this "kid" has grown up and is developing a solid reputation as a sustainable, durable and efficient way of building.

Saint-Gobain Gyproc has done a great job of shifting public perceptions through their Stand 47 Case Study, an LSFB home constructed in Monaghan Farm eco-estate. As Editor of Steel Construction (and a brick and mortar home dweller) I had the privilege of experiencing the famed comfort and convenience factors of Stand 47 first-hand.

The case study details the entire process, from the initial drafting of an accomodation schedule to design and construction. This thorough approach makes it a valuable educational resource as well as an effective experiential marketing tool, used to illustrate the LSF building methodology for homeowners, contractors and even, the local Tshwane municipality.

"One of the challenges we had when building Stand 47 in 2013 is that the Tshwane Municipality didn't fully understand how this alternative building method met the required SANS legislation. To solve that problem, we invited the Municipality representatives into the Saint-Gobain offices, where John Barnard of the Southern African Light Steel Frame Building Association (SASFA), demonstrated that it not only met the requirements but actually exceeded them" says Michelle Cerruti,

ABOVE, RIGHT AND OPPOSITE PAGE: Saint-Gobain's Stand 47 Case Study, interior and exterior. So comfortable, quiet and relaxing, we didn't want to leave!

Residential and Hotel Sector Manager for Saint-Gobain Gyproc.

LSFB has gained a lot of ground over the last few years. "The South African LSFB market has grown by 38% over the last 5 years." asserts John Barnard. Although it's very popular in the residential market, its growth in usage is not limited to residential applications.

"The types of building projects have also changed, from largely middle and upper income residential projects, to a mixture of residential and commercial / office building projects" says Barnard. The retail sector is also demonstrating a keen interest in LSFB. "The fast food industry (McDonalds, Burger King, KFC) has opted for LSFB for construction of their outlets, to capitalise on the benefit of the accelerated building process possible with LSF. Several multi-storey office buildings have been built using LSF curtain walls with External Thermal Insulation Composite Systems (ETICS) as the external cladding. The largest of these projects is the Mall of Africa, with 27 500 sq m of ETICS external cladding" notes Barnard.

In reality, LSFB systems have a number of virtues when compared to traditional "brick and mortar" building methods, both in terms of sustainability and longevity.

In terms of sustainability:

- The mass of LSF walls is less than 10 % of the mass of masonry walls, which implies reduced handling and logistical costs.
- Waste is minimised with LSFB – less than 2% waste is quoted for steel, versus 10 to 15% for bricks, mortar and sand.
- LSFB is a dry process, and does not use or waste any site water.
- It has a much lower embodied energy, compared with heavy building materials.
- LSFB, built according to SANS 517, provides superior insulation which results in significant savings in energy needed for heating and cooling buildings to comfortable levels.

With regard to longevity:

According to a 10 year research program of the International Lead Zinc Research Organisation ILZRO, the light steel frame inside the building envelope (of a correctly built LSFB), will last for several hundred years. The external cladding (fibre cement board, or plaster and mesh) is very similar to a plastered masonry wall, glasswool insulation is inert, and does not degrade with time, and gypsum board internal lining

is a proven in office buildings. With proper maintenance, LSFB will last at least as long as a masonry wall. The materials will in all probability outlast both the design and the purpose of the building.

Professionals in the industry have remarked that the biggest misconception when it comes to this building methodology is the cost. Many people think that LSFB is cheaper than brick. It's not. The material costs are in most cases slightly higher, and this is where people get an initial shock. The benefits however come from speed of erection and the running costs of the building over its life. The very real benefits of multi comfort such as warmth and acoustics cannot have a direct value attached unfortunately. These factors are clearly demonstrated in Stand 47. Aside from the warmth, the sound insulation was a very pleasant surprise. The difference between interior (where all you could hear was quiet hum of the fridge) and exterior (construction hammering an angle grinder noise from a neighbouring construction site) was remarkable.

After experiencing the comfort factors of an LSFB home for myself, I can say with confidence that my Stand 47 #RestPilot experience has persuaded this brick and mortar home-dweller to build her future home using LSFB.

For summary of the design and building process of Stand 47 visit http://www.stand47.co.za/building/

ABOVE: Aerial view of Mall of Africa. LSFB was chosen over brick because of speed of construction.

LEFT: Store feature brick look-alike LSFB wall.

BELOW LEFT AND RIGHT: Mall of Africa is one of the largest recent LSFB projects, with 27 500sqm of ETICS external cladding.

CLADDING: BACK to Basics

by BSi Steel

If one discusses cladding, I am quite certain that it would be up to individual interpretation what that actually means. Some may interpret it as flashings, some a material coating, some actual material with a coating. I have tried to cover all interpretations and kept the following information as simple and precise as possible to provide some insight into the meaning of "cladding." In essence cladding is the waterproof envelope of a building.

In the case of roofing it would either be a pierced fix or concealed fix profile produced a steel coated material in the desired profile (Corrugated, IBR, Widespan and/or a number of patented concealed fix designs).

The steel base material is most commonly protected by a galvanized (Z) or Aluminium-Zinc Coating (AZ) both of which offer different types of protection.

Galvanized coating

The mild steel is continuously hot-dipped into an almost pure zinc formula to cover the material and this provides a sacrificial layer in the form of a shiny zinc coating, which can be supplied in various spangles to create a different surface appearance. As zinc has a corrosion rate one tenth that of steel a Z275 coating will protect the mild steel substrate for between 10 and 15 years, depending on environment.

Aluminum zinc coating

The mild steel is continuously hot-dipped in a formulation of aluminum, zinc and silicon. The addition of aluminum increases the protection factor by almost 4 times in a marine environment thereby providing a tougher barrier between the mild steel substrate and the elements.

The above materials are available with an organic coating, in a range of colours, under various copyrighted names e.g. in the coated and painted mild steel substrates in the form of Chromadek (Mittal produced) and Colorplus (Safal produced). These coatings in addition to being aesthetically pleasing provide an additional barrier to corrosion.

Flashings

The generic term for a number of specially formed designs which in broad terms are roofing components to seal the transition of areas of cladding (valleys, hips, ridges, barge, etc.) or where cladding joins masonry or decorative trim.

These flashings are produced from the above materials to ensure compliance and compatibility with the cladding materials to ensure the roof sheeting flows in design. It is advisable not to mix colour coated materials from different suppliers as each paint system has unique weathering characteristics.

Bullnosing and curving of roofing sheets is a process that is applied after the production of the profiled roof sheets and is a process rather than additional component as is the case in in Flashings.

BSi Steel (Pty) Ltd Roofing, is located at Kliprivier (Meyerton R59) and produce an IBR, Corrugated and Widespan Profiles in the mentioned materials. Bullnosing, curving and flashings are supplied to your specification.

Are you getting WHAT you specified?

by Dennis White, SAMCRA Director

You've chosen a profile (cladding system). You've selected a material grade and thickness plus a coating system. You've included all these details in your specification, so... the cladding is sorted... right? Not quite.

To an increasing number of entrepreneurs this is merely an invitation to do business and let the buyer beware. Specifiers are particularly vulnerable when it comes to generic profiles (systems) or copyrighted brands that have or are in the process of becoming generic by misuse.

First off you need to understand the difference between a cladding profile and cladding system. The profile defines the geometric shape of the individual lengths of material whilst a system pertains to the profile together with the anchoring system plus all the ancillary items that combine to provide the waterproof envelope to a building.

The most common generic components are:

1) Cladding systems-corrugated (iron), IBR or box rib and concealed-fix.
2) Grade of material-CQ (commercial quality) and fullhard
3) Thickness – 0.4 0.45 0.47 0.50 0.53 0.55 0.58 0.60 and 0.80mm
4) Coatings – galvanized, Aluzinc (Zincalume), colour-coated (Chromadek), aluminium and stainless steel.

Theoretically we have a single corrugated cladding profile available in two widths 8,5/76 and 10,5/75. The 8,5 and 10,5 are the number of pitches between corrugations and the 76 is the pitch (distance) between the crests of individual corrugations measured in millimetres. The depth is fixed at 18mm (±1mm). In recent times numerous widths and/or depths as low as 16mm have been foisted on an unsuspecting public. There is a noticeable difference in the spanning capabilities of 18 and 16mm deep corrugated cladding. IBR was a copyrighted name of a box-rib (trapezoidal) profile with specific geometry that was introduced in the 1960's which has subsequently become the generic name for all box-rib profiles. The original profile had a cover width of 686mm, five ribs spaced equally at 171,5mm, the ribs were 37mm deep, 35mm wide at the top and 69.5mm at the base. Today there are profiles with much shallower and narrow ribs being passed off as IBR. Most reputable roofing profilers produce an IBR that complies with the original and market a variety of weaker profiles under various brand names.

It must be remembered that the spanning capabilities of a profile are directly proportional to the square of the depth of the ribs. There have been several generations of concealed-fix profiles ranging from narrow standing seams to trapezoidal ribs or a combination of the two. Klip-Lok although a copyrighted profile is trending toward becoming a generic name (with numerous corruptions of the spelling) for concealed-fix profiles with trapezoidal spring snap ribs.

BELOW: 0.58mm Chromodek Charcoal, 26 200m Klip-Tite sheeting was used to clad the Cell C Warehouse, an entry in the 2015 Steel Awards.

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- Eastgate Refurbishment (1 600t) - Liberty Properties
- Menlyn Maine Central Square (250t) - Menlyn Maine Investment Holdings
- South African Breweries, Conveyors, Buildings, Stairs - SAB Alrode and SAB Chamdor Brewhouse (350t)
- Gautrain O.R. Tambo Platform Extension (100t) - Gauteng Provincial Government
- Rosebank Towers (130t) - Abland
- Natalspruit Hospital: Bridge and Doctors & Nurses Accommodation (250t) - Department of Infrastructure and Development
- Government Printing Works (300t)
- Discovery Sandton (220t) - Zenprop
- Integrated Rapid Public Transport Network (200t) - Ekurhuleni Metropolitan Council
- Golden Era Can Line Plant (525t) - Golden Era Group
- EPX Warehouse (225t) - EPX
- Northgate PV Support Structure/Car Ports (100t) - Sasol Pension Fund
- Aeroton Roof Jack (3 800m²) - Capital Property Fund
- Fourways Mall Roof Structure (60t) - Fourways Precinct
- Discovery Corporate Offices Sandton, Skylight Roof (50t) - Growthpoint Properties
- Lusaka Health Centre - Shimizu Corporation

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Grades of material are now described, in line with international practice, by minimum yield strength measured in mega-pascals (MPa). CQ has become 230 and fullhard 550. An intermediate grade of 300 MPa has been introduced. Unfortunately there is no uniformity in the prefix used to describe the grades e.g. G550, ISQ500 etc. generally material up to and including 0.53/5mm is 550 MPa, 0.55/8 is 300MPa and thicker material 230MPa.

> The extremely high levels of UV radiation experienced in Southern Africa quickly reveal the quality of the pigments and resins used. It is therefore advisable to specify brands with a proven track record rather than accept an unproven paint system.

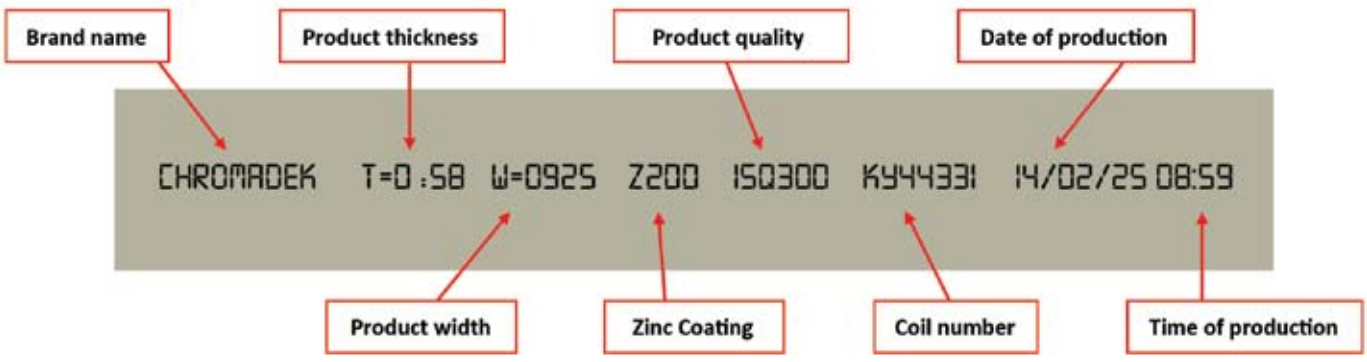
Thickness is the total coated thickness of the coated material (steel core plus coating) rolled to a tolerance of ±0.02mm. Certain unscrupulous roll formers are substituting 0.48mm material for 0.50mm etc. In an attempt to address this problem the National Regulator for Compulsory Specifications has agreed that the shortly to be published revision to SANS 10400 Part-L will require: *all coil used for the manufacture of metal cladding to be indelibly marked 50mm in from each edge and at not more than three metre intervals, with amongst other data the weight and type of any metallic coating and identification of any other coating applied to the coil.* Local cladding manufacturers refer to this indelible marking as branding.

A large portion of the population are not aware that galvanized (or more correctly zinc coated) material is available with different thicknesses of the coating ranging from Z100 to Z600. The Z denotes the coating is zinc and the number the total mass of the coating, measured in grams, to both sides of a square metre of material. As the durability of a coating is basically proportional to thickness a Z275 coating will have a service life expectancy 2.75 times that of a Z100 coating. Zincalume, ZincAL and Aluzinc (which has effectively become a generic name) are all copyrighted names for 55% aluminium-zinc coatings. Similar to zinc coatings they are available with different thicknesses of the coating ranging from AZ100 to AZ200 with durability being proportional to thickness. There are other aluminium-zinc coatings available with the percentage aluminium varying from as low as 5%. These coatings are normally denoted as ZA. Colour coated (pre-painted) material is available with either a galvanized or 55% aluminim-zinc coated substrate. The overall performance of these products in a given environment is dependent on the combination of paint system, the thickness of individual layers plus type and thickness of the underlying metal coating. Not all paint systems are equal. Performance of paints is directly linked to their formulation plus quantity and quality of the ingredients used. Paint systems with the same formulation composed of lesser quantity and quality of materials will not have the same durability as those made with better quality materials. The extremely high levels of UV radiation experienced in Southern Africa quickly reveal the quality of the pigments and resins used. It is therefore advisable to specify brands with a proven track record rather than accept an unproven paint system.

Prior to the RSA becoming a member of the World Trade Organization (WTO) cladding products available locally were comparable, however, that is no longer the case. Our market is being flooded with inferior materials and products where price is considered over performance. When considering the life cycle of products never has the expression penny wise, pound foolish been more relevant.

The growing incidence of counterfeit documents pertaining to quality and composition of materials is cause for concern. We therefore encourage the insistence of branded materials as a means of ensuring the components supplied are what were specified.

Branded coil has been available in the RSA for over fifteen years, mainly as an option to the more reputable cladding manufacturers. Fortunately two local and one foreign mill have adopted a policy of supplying branded product only. In addition to the minimum data detailed above their branding contains the name of the producer mill, production date and batch number.



High praise for SAMCRA standard setting

By Alan Browde

The Southern African Metal Cladding and Roofing Association (SAMCRA) has received high praise for the way it is helping to set industry standards in the metal cladding and roofing industry in the SADC region. This is according to Sally Stromnes, Marketing Planner and Co-ordinator for the Safal Group in Africa.

"SAMCRA – and specifically its director Dennis White – is closely involved in the writing of improved building standards and providing significant guidance on best practise installation methodologies to the metal roofing and cladding industry throughout the region," Stromnes says. "In order to have a world-class metal cladding and roofing industry it is essential that construction standards and materials are not only appropriate to Southern African conditions, but that they are also commonly understood and adhered to. In this regard Dennis, with his decades of experience in the field, is doing a sterling job to raise awareness and knowledge levels in the industry."

SAMCRA – and specifically its director Dennis White – is closely involved in the writing of improved building standards and providing significant guidance on best practise installation methodologies to the metal roofing and cladding industry throughout the region

She adds that correct and appropriate specifications are at the foundation of a successful installation. "Plain ignorance or a lack of compliance can lead to installation failures which have a hugely negative impact on the reputation of the roofing industry throughout the region. Although we still have a long way to go, there is no doubt that Dennis and his SAMCRA team are making a palpable difference to the situation," Stromnes says.

Stromnes emphasises that the two most critical areas where standards have to be effective, is in the installation detailing, and in tight materials specification.

"Installation detailing and fastidious attention to on-site standards are areas where measures to save time or money will backfire very quickly. Flashings that restrict or can't cope with roof drainage, compromises on material thickness, swarf and debris collection on the roof during installation, and poor sheet alignment

are just some examples of problems that will lead to the need for expensive and unnecessary remedial work within a short space of time.

"Fasteners are another small but critical component that is vastly under-rated. It is incredibly short sighted economy to save a few cents on a fastener if it cannot offer a life span at least equal to that of the sheeting. Many contractors try to save money on the fastener as it is seemingly such a small part of the total cost of the roof but, in fact, it is the fastener, not the sheeting, that is the most frequent cause of roofing failure" Stromnes says.

Fasteners are also critical to obtaining a fire rating on cladding, and South African standards require that side-laps are stitched together to protect buckling between purlins in the unfortunate event of fire. This needs to be written into specifications by the professionals, and needs to be adhered to by the installer.

"Unfortunately, 'best practice' is often not common practice, because profit gets in the way. In the long term, this undermines the perceptions created for the entire industry. We must find ways to promote the adoption of best practice, to develop a code for the industry as a whole, and to ensure that it is enforced, to the benefit of those who work with metal cladding systems, and those who invest in them.

"SAMCRA is playing a huge part in making building standards mandatory or, at the very least, in ensuring that they are a series of very strong recommendations which investors have a right to insist upon" Stromnes says.

Stromnes continued by saying that this applies equally to any market, and particularly emerging African markets. The Safal Group as a whole, with operations in 12 countries in Southern and Eastern Africa, is committed to being part of the upliftment of standards in all its markets. "SAMCRA regularly conduct training session for our technical, sales and marketing personnel in order to improve their technical knowledge and their familiarity with building standards. From Safal Group's point of view, our expertise is critical to enable us to guide our clients in the appropriate and correct specification, installation and maintenance of our products, giving them the investment value they have a right to expect and demand."

Stromnes maintains that, given the increasing number of projects being undertaken by South African professionals, contractors and roofing installers in African countries, the quality of locally supplied products and the availability of technical support services is a critical differentiator for the Safal Group. "Every one of our Group Operations is able to support our clients with technical advice and guidance, from design and specification stages through to installation and sign off," she says.

Stromnes has rolled out SAMCRA training for technical and sales staff in Safal Group operations in SADC (South Africa, Namibia and Botswana) as well as Tanzania, Kenya, Uganda, Rwanda and Ethiopia. "Dennis White has the professional knowledge and field experience to provide indispensable insights on installation best practice in the field and on the engineering of metal roof and side cladding systems for specific conditions in Eastern and Southern Africa," she says.

"The Safal Group will continue to partner with SAMCRA in the training of its staff and of practitioners in the Metal Roofing and Cladding industry in all its operating countries. The raising of standards will improve value for all players in the value chain and will improve the reputation of steel roofing and cladding as a material of choice for durability and performance," she concludes.

The Safal Group is the largest metal sheeting company in Africa and has been a key player in the industry for over 50 years. It is able to provide the key components of a complete metal roofing system, all from one trusted source.

Many contractors try to save money on the fastener as it is seemingly such a small part of the total cost of the roof but, in fact, it is the fastener, not the sheeting, that is the most frequent cause of roofing failure.

CALENDAR OF *Courses* and *Events*

SEPTEMBER

15 Steel Awards (JHB, DBN, CT)

16 Steel Day

26 September – 1 October
SASFA Builders Course (CT)

OCTOBER

6 Member Breakfast (JHB)

NOVEMBER

3 SAISC AGM (JHB)

7 POLASA AGM (JHB)

ENQUIRIES:

Events: marle@saisc.co.za
Courses: tiana@saisc.co.za
SASFA: john.barnard@saol.com
POLASA: kobus@saisc.co.za
SAMCRA: dennis@saisc.co.za

METAL CLADDING AND LSFB PROJECTS

The SAISC has taken great care to make sure all project role players are acknowledged as per the information supplied in the Steel Awards project entry forms. If you were involved in any of these projects and your details are either incorrect or have been omitted, please let our Editor know – denise@saisc.co.za

Mall of Africa Façade and Parapet Walls

PROJECT TEAM

Client / Owner / Developer:
Atterbury Waterfall Investment Company

Architect:
MDS Architecture

Structural Engineer:
HAGE

Quantity Surveyor:
NWS

Project Manager:
GHC Africa

Main Contractor:
Group 5 / WBHO

Steelwork Contractor:
Ohlhorst Light Building Solutions

Steelwork Contractor:
Clotan Steel

Cladding Supplier:
Weber St Gobain

The project entailed enclosing of the building envelope, with LSF and ETICS (External Thermal Insulation and Cladding System) cladding, approximately 20 000 sqm. Structural framing included 0.8mm LSF, 90mm x 38mm cold-formed lip-channel profiles, assembled into wall panels on site, with typical 600mm x 600mm CTC grids. Frames placed slab to ceiling, column to column. Cold-formed thin gauge steel frames were used for the light weight design, accuracy and speed of installation.

The architect's requirement for protruding, horizontal plaster bands, some more than 100 meters in length, to wrap the building and be exactly in line, at a height of up to 25 meters. Furthermore, a high R-value was required for the external cladding to achieve the required energy efficiency (reduced need for heating and cooling).

ETICS with LSF offered the architect freedom to express his design. It is a clean and fast process, reducing the need for scaffolding and allowing other trades concurrent access to the site. The use of LSF and EPS (Expanded Polystyrene) cladding requires less or no crane time, rapid installation, reduced need for cleaning operations, and ensures weight reduction on the super structure resulting in savings of structural concrete. It provides a durable external cladding with low maintenance requirements.

The wind load on the roof parapet walls, some 3.m meter in height, was overcome with the reinforcement of wall panels by using a LSF joist, turned on its side.

This is one of the largest single phase building projects in the southern hemisphere and the building programme required the building envelope to be closed within a few months. The required installation dates were met on time and contributed significantly to keeping the project on track. Main contractor and architect satisfied with time to install, thermal and aesthetic results.

What makes this project special is the sheer size, and importance of the project to confirm LSF as a viable commercial cladding system for large facades. It will be visible on the Midrand skyline for decades to come.

This is one of the largest single phase building projects in the southern hemisphere.

Maerua Mall Joyful Noise

PROJECT TEAM

Client / Owner / Developer:
Oryx Properties (Pty) Limited

Architect:
Sven-Erik Staby Architects t/a Staby Designs

Structural Engineer:
Windhoek Consulting Engineers (Pty) Ltd

Quantity Surveyor:
Senekal Allen & Partners

Project Manager:
Razorbill Properties 127 (Pty) Ltd

Main Contractor:
Razorbill Properties 127 (Pty) Ltd

Steelwork Contractor:
Razorbill Properties 127 (Pty) Ltd

Structural Steel Detailer / Detailing Company:
Razorbill Holdings (Pty) Ltd

Cladding Supplier:
Gyproc

Electrical Engineer:
SCE Consulting Engineers

Mechanical Engineer:
SCE Consulting Engineers

A rooftop parking lot was converted into an indoor kids playground were mother could leave kids under supervision whilst doing their shopping. The structure was designed in lightweight steel frame with a suspended floor also from lightweight steel frame.

The existing concrete parking lot was close to its maximum safe design load resulting in a challenge to built the envisaged facility whilst staying within the safe structural limitations of the concrete structure. The second limitation was the allowable time for project execution in order to be ready for the December holiday period. Therefore the client opted for the LSF solution.

The facility has over purlin insulation, a high roof height 6m with exposed LSF trusses to the area below. Cladding was done in accordance with SANS 517 standard and the internal playrooms were airbrush painted by artists from England.

The site waste was very low using the LSF technology, transport costs and volumes were very low due to the low mass.
The building was insulated using Isover cavity bat to negate the high Namibian temperatures during summer. The site waste was very low using the LSF technology, transport costs and volumes were very low due to the low mass.

The building was insulated using Isover cavity bat to negate the high Namibian temperatures during summer. IBR Chromadec roof sheeting was utilised further enhancing the weight saving of the total structure.

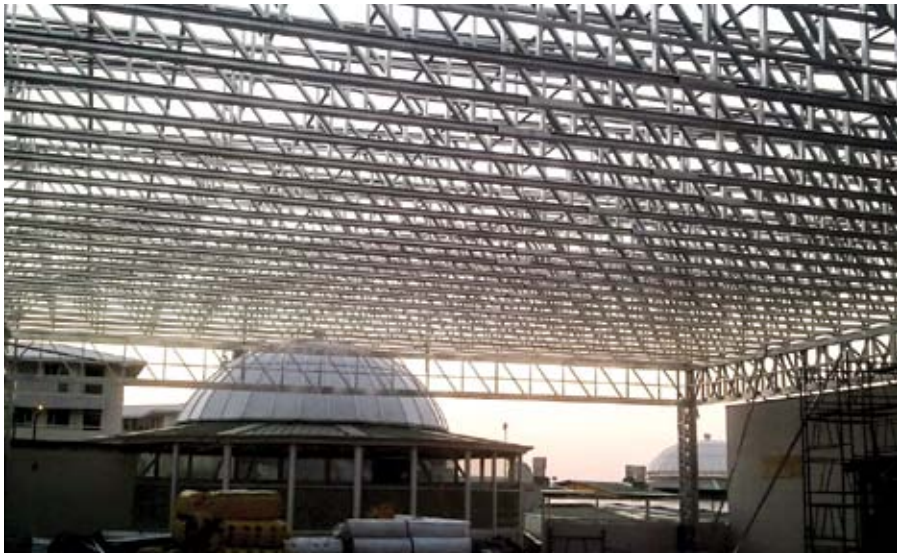
All export arrangements were done by contracted transporter companies and no challenges were experienced.

Staying within the save working load of the existing concrete structure.

This was overcome by designing a LSF suspended floor system in conjunction with using laminated steel trusses to reach the required spans instead of heavy steel sections.

Getting building materials into the working area through a multilevel parking lot.

Interlinks with material was off loaded on ground floor and the carried in by hand through the parking lots. In some cases temporary wooden walkways were built over the existing roof adjacent to the project and LSF members were then carried over this walkways into the construction site.



The structure was designed in lightweight steel frame with a suspended floor

The working time during the preparation phase was limited to the period that the shopping centre was closed (between 20h00 at night and 08h00 at morning) and the project had to be completed in 3 months.

Razorbill adapted light industrial equipment and employed it on the breaking out of the tar slab of the old parking lot thereby accelerating the preparation phase.

Materials from demolishment were transported by chutes to ground level during night and loaded onto trucks for removal.

The LSF panels and trusses were preassembled and stored close by for installation thereby reducing assembly and installation time.

By utilizing local craftsmen cost were kept to a minimum for labour. The general quality and discipline of the Namibian people made the work a pleasure.

Utilizing local labour, joint transport loads through transport coordinators, design optimisation from a lifting and hoisting perspective. Using LSF as a solution.

The Project was completed within the anticipated time whilst accommodating shop fitting during the construction phase.

The LSF made it possible to fully utilize the area without major structural changes.

This is one of a very few projects where all those qualities traditionally advocated by LSF industry are coming to its full right namely:

Clean neat construction site, fast construction, maximise on existing building structures by adding another storey without foundation changes, easy handling of materials, low transport costs, reduced project cost due to fast track program and a well insulated building.

The project had the advantage of providing work to local people during construction .

It was a pleasure working on a well planned development for a client like Oryx and its Architects and Principal agents, who understood the benefits and challenges of LSF.

Siteform New Office

PROJECT TEAM

Client / Owner / Developer:
Siteform Framing Pty (Ltd)

Main Contractor:
Siteform Framing Pty (Ltd)

Structural Steel Detailer / Detailing Company:
Siteform Framing Pty (Ltd)

Cladding Supplier:
Buco

Siteform needed more office space due to the expansion of our business, therefore we decided to construct a multipurpose building that will resolve our space problem and serve as a live show house for prospective customers. We therefore included various different design features as well as finishing details to demonstrate how LSF could be utilised in the residential market and what could be done to meet the clients expectations.

We built a double storey house, changed the roof structure to accommodate a loft area. The ground floor consist of a LSF joist floor that is fixed on I-Beam stub columns that in turn is fixed to concrete bases. A double volume area by the front entrance accommodates a LSF staircase that leads to the first floor, which is also a joist floor. A 10m x 8m floor area above the board room is supported by square tube columns and an I-Beam which is finished to a bulkhead. A hot rolled "floating" staircase leads to the 2nd floor attic complete with bay windows.

Due to our active role in LSF building manufacturing and supply we were compelled to demonstrate confidence in the building method that we are selling to our customers.

Due to the spacious boardroom and open plan reception area, we experienced some challenges with the structural integrity of the first floor that would become the actual office. Therefore we had to bring in some hot rolled profiles to distribute the loads. Further this three storey building is quite exposed to the elements of especially high winds, as we are situated on the open plains of the Free State with no trees and or high buildings in our immediate vicinity.

A hot rolled "floating" staircase leads to the 2nd floor attic complete with bay windows.

Barn House

PROJECT TEAM

Client / Owner / Developer:
Friedrich & Wilna Strey

Architect:
Strey Architects

Structural Engineer:
Hull Consulting Engineers

Project Manager:
Friedrich Strey

Main Contractor:
Friedrich Strey

Steelwork Contractor:
Tsipe Staalwerke (Hot rolled steel portal frame manufacturing and erection)

Steelwork Contractor:
Clotan Steel (Supplier, roller and assembly of light gauge steel frames)

Structural Steel Detailer / Detailing Company:
Strey Architects

Cladding Supplier:
Bluescope Steel – Southern Africa (through Clotan Steel)

Wet Work:
Mega Construction

Aluminium doors and windows with double glazing:
Alugro Aluminium

Barn House is a Case Study single family house, experimenting with different building methods, insulation methods and construction methods.

The main house is constructed of a reinforced brick and concrete basement with a hot-rolled steel portal frame to carry pre-cast concrete slabs, clad in S-profile sheeting as wall cladding and roof sheeting

The South garage is constructed of a light gauge steel frame and clad in S-profile sheeting as wall cladding and roof sheeting

The North garage is constructed with a timber portal frame with magnesium oxide and insulation board SIPs (Structural Insulated Panels) and clad in S-profile sheeting as wall cladding and roof sheeting.

The idea with case study house was to compare 'traditional' brick-and-mortar building methods in South Africa with 'alternative' building methods

Southdowns Estate architectural guidelines requires for a Transvaal or Victorian farm vernacular or 'Barn' style architecture: A hot-rolled steel portal frame was chosen for the main structure to resemble a contemporary barn structure

A light gauge steel frame (LSF) was chosen for the South garage to resemble a shed or 'typical' farm structure.

Steel, LSF and sheet metal roofing material are not traditional building materials for houses in South Africa, especially not when the house design was conceived about 10 years ago. In the mean-time the use of hot-rolled steel and light gauge steel

frame building methods has become more common in domestic architecture. Sheet metal cladding was considered 'inferior' in the past and mostly used as cladding for railway housing or in mining communities, or for 'informal' housing.

This project shows that steel, LSF and roof sheeting can be used in a contemporary way for contemporary housing and other buildings.

The biggest challenge designing & building this house was to convince everybody from the builders to the public that a house can be build better, quicker & more economical with 'alternative' building methods like hot-rolled steel, LSF & sheet metal cladding than the traditional brick-and-mortar.

If anything out of the 'norm' is tried in the building industry, tenders come in at triple the usual price. Therefore, the only way to try out something out of the 'norm' is to try it yourself. Experimentation is thus time consuming and expensive, but necessary if one wants to push the boundaries of architecture and construction.

An architect usually never get chance to actually experience the buildings he designs, so it is great to see that, that which was intended with a design, was actually realised. Living in a building we have not only designed, but also built, is a surreal experience and an honour. The building works and feels as it was intended.

We are finally enjoying the house after 3 years of designing, 7 years of building and 1 year of living and experiencing it.

This project shows that steel, LGS and roof sheeting can be used in a contemporary way.

Zimbi Lodge

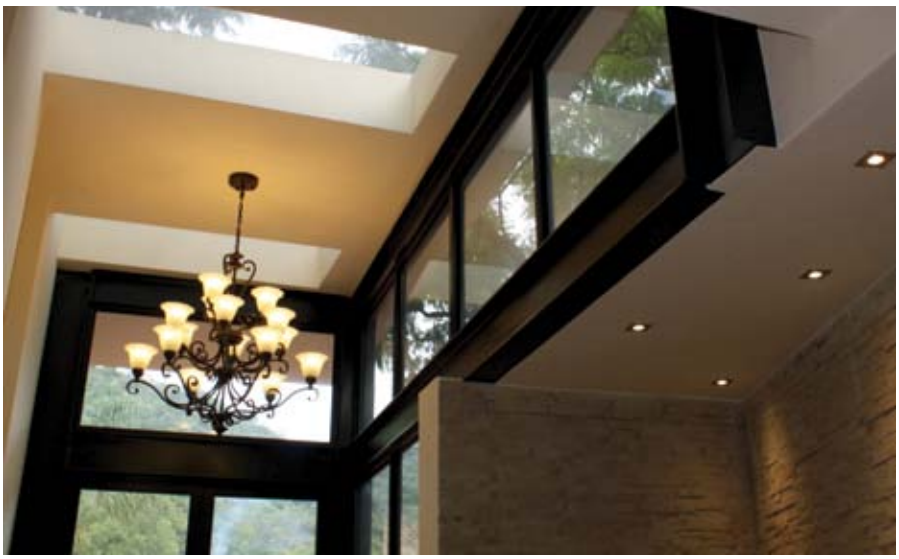
PROJECT TEAM

Client / Owner / Developer:
Braam Beukes

Architect:
Tudor Engineering & Draughting cc

Steelwork Contractor:
Tudor Engineering & Draughting cc

Structural Steel Detailer / Detailing Company:
Tudor Engineering & Draughting cc



Nestled in the majestic Waterberg region of Limpopo you will find Zimbi Lodge boasting with breathtaking panoramic views of mountains and bushveld. Due to the amount of steel used in the design, the Lodge's name is derived from Thabazimbi, which in Zulu means mountain of iron, thus the name Zimbi was chosen.

The idea for Zimbi Lodge was conceived in 2009.The project commenced in 2012 and was completed towards the end of 2015.

Being in the steel industry, the owner specifically asked that the Lodge showcase his skills in steel manufacturing without building an entire steel structure therefor the design of Zimbi Lodge depicts the balance between nature in its purest form and architectural as well as engineering innovation.

The structural framing of the Lodge includes: access walkways; roof truss support details; window- and door framing; lodge decking-, marquees tent supports as well as a steel staircase housed in a steel and glass frame that provides access to the underground wine cellar.

The design of the roof trusses included the use of wood as a top cord, the introduction of steel framed posts and a steel cable that acts as a bottom cord.

The design of Zimbi Lodge consists of four distinctive elements: superior lodges, a Main Lodge, an outside leisure & entertainment area and a wine cellar.

Access to the four superior en-suite lodges is via steel bridge-links through private doors onto a curved access walkway, which is covered with Rhodesian teak decking.

Zimbi's four modern lodges are designed as a one-bedroom en-suite unit with a west-facing deck overlooking the unspoilt bushveld.These lodges cater for comfort during all seasons and have an eye height glazed fireplace, private garden, -outdoor shower and -steel deck that is enclosed by stainless steel handrails & brackets which is combined with commercial steel handrail panels.

The main lodge is placed midway between the 4 lodges and hosts a reception area which is a double volume framed and glazed foyer with an exhibition of roof-lighted hunting trophies encased on the side wall; large dining area; baronial chefs kitchen; lounge; bar and colonial room.

Access to the four uperior en-suite lodges is via steel bridge-links.

Leading from the main lodge through folding stacker doors is the outside leisure and entertainment area which consist of: the marquees tent and braai boma; a large curved pool and a pool/patio deck, whereof the support columns for the patio roof is constructed from a combination of wood and structural steel.The structural support posts for the marquees tent have been included in the design of both the boma and pool deck.

A proper interlinked subterranean Wine Cellar was built under the floor of the outside pool/patio deck.The wine cellar is Zimbi's hidden gem and can be accessed from the bar area through a steel-and-glass connection that houses the steel stairs.

The protection of natural flora was of highest importance during design and construction, thus the lodge footprint was fitted between existing trees and today forms an integral part of the aesthetics of Zimbi Lodge.

The soil condition, uneven ground and heavy rainfall posed to be challenges during construction but were overcome by extra foundation reinforcement and lifting of the foundations in order to optimize the views.

The remote location of the lodge required that structural manufactured items had to be planned and designed to accommodate normal transport and ease of installation.

The site has a significant slope from North to South that required careful planning with regard to both the top- and underwater flow into a storm water management system that feeds the *vleidam* situated outside the Lodge footprint.

Water sealing of the underground wine cellar posed as a huge stressor during the construction phase

The view of the Lodge is towards the South West and all the facilities had to be designed in a manner where the view is optimized and unobstructed.

Dabmar Manufacturing Plant

PROJECT TEAM

Client / Owner / Developer:
Dabmar Manufacturing Plant, Dundee

Architect:
Architecture Fabrik

Structural Engineer:
Dabmar (Gantry Structure) + Factory Structure

Quantity Surveyor:
Shospec (Pty) Ltd

Project Manager:
Shospec (Pty) Ltd

Main Contractor:
Shospec (Pty) Ltd

Steelwork Contractor:
Shospec (Pty) Ltd – For LSF Office Block and Workshop Cladding

Steelwork Contractor:
Churchyard + Umpleby (Pty) Ltd – For Gantry

Steelwork Contractor: Barnmaster (stairs and canopy)

Structural Steel Detailer / Detailing Company:
Dabmar

Cladding Supplier:
Capco Ceiling and Partition Components

Roof Cladding:
Four Seasons Roofing

The project consisted of external cladding of Manufacturing Plant and complete construction of LSF double story office block and entertainment deck.

- External cladding of Manufacturing Plant – 65m x 17m x 10m high perimeter.
- LSF double story office – 1 200m² over both floors.
- Entertainment deck – 230m².

Shospec were provided with a complete structural steel skeleton for the factory envelope and gantry crane. This was designed and erected by client. Shospec were then responsible for the roofing and side cladding of the building.

Exterior wall cladding comprised of 90mm LSF C-section bracketed to structural girts on the main structure.Walls were then cladded with 200mm pre-painted Shera Shiplap planks over an 18mm T and G OSB board and Tyvek Membrane. Internally cladded with 15mm Firestop Gypsum and 102mm Cavity batt insulation in wall cavity.

The total cladded wall area was approximately 1 300m², excluding openings.

Shiplap cladding was 10m high in 6m modules. All planks were pre-painted. This eliminated additional cost for painting and height access and achieved a quick and complete wall cladding system.

Shospec were involved in the entire process from design to completion of the office block (excluding lying of slab). Comprising of a double storey office block 42.5Lm x 14m (W) x 9.0m (HT) (1 200m²).

LSF was chosen due to the clients open mind towards modern construction methods.

The 1st floor level is 4.4m high due to clearance required on the ground floor for stores and racking height.

The office block design has a modern feel with large glazed openings, clean cut lines and dramatic structural features. Double volume areas with overhead walkways and a canter levered boardroom make this office block unique. The client is able to enjoy the spectacular views as 80% of the 1st floor office walls are double glazed glass shopfronts (3.0m HT).

Furthermore a 240m² LSF deck was constructed with a parking area below. Included on the deck is a sunken in fire pit with walkways connecting the internal and external spaces.

LSF was chosen due to the clients open mind towards modern construction methods and extensive overseas travel. The architect originally from Australia had previous experience building in the method and so was able to capitalise on the benefits of LSF. The client wished to have a building with a softer continental look from the outside, for this reason Shiplap cladding was used on both the office block and the factory for 80% of the cladding.

Our client was impressed with Shospec's previous track record and past client relationships. He was confident from the onset of the project that this building would be a success.

The client wanted a world class product to benchmark his company to his international client base. He wanted his premises to be energy efficient furthermore providing a comfortable working environment temperature in the factory and office block for the benefit of his employees.

Grey College – Jock Meiring Science Centre

PROJECT TEAM

Client / Owner / Developer:
Grey College

Architect:
Typology Architects cc

Structural Engineer:
WSP

Quantity Surveyors, Principal Agent and Project Managers:
BAU

Main Contractor:
Bright Skies Trust

Steelwork Contractor:
SITEFORM

Balustrades Contractor:
A&D Services (Pty) Ltd

Cladding Supplier:
Siteform Framing (Pty) Ltd

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Eileen Pretorius
011 861 7102
eileen.pretorius@trident.co.za

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Kara Jansen van Vuuren
016 889 4110
kara.jansenvanvuuren@arcelormittal.com

steel
STEEL CONSTRUCTION

Industry NEWS IN BRIEF

MSA Africa fall arrest business set to soar following global acquisition

MSA Africa's potential for growth in local market share in 2016 is considerable, following the late-2015 acquisition of UK-based Latchways by the MSA Group. Latchways is a specialist in the design and manufacture of horizontal lifelines and vertical fall arrest systems that are used in the utilities, telecoms, construction and aircraft market segments.

Latchways employs around 250 people globally and had 2015 revenues of approximately US$50-million. The transaction is valued at around US$190-million, and significantly broadens the global MSA Group's existing line of fall protection products, while strengthening the company's position in the global fall protection market, which is estimated to be up to US$2-billion globally.

MSA Africa director Colin Oliver indicates that the Latchways range is entirely different, yet perfectly complementary to the MSA range of fall protection solutions. He believes that the product range now has a better reach into Africa, thanks to a larger network of existing resellers and distributors that have direct support from the OEM.

"This synergistic partnership offers a high-quality turnkey solution to the market that is backed up with unrivalled after-sales service. Adding the Latchways range to our existing solutions is beneficial to our customers, as we now provide the end-user with a comprehensive portfolio of fall arrest solutions that can be used individually, or in conjunction with one another," he states.

Oliver anticipates that MSA Africa has the potential to grow its fall arrest business significantly during the course of 2016. "This acquisition holds enormous potential for us to dramatically expand our specialised fall protection portfolio to potentially become the largest across existing Sub-Saharan African markets, while penetrating new sectors, such as aviation," he concludes.

Perspective, innovation and positivity: the keys to successfully mastering current economic challenges

In challenging circumstances it is refreshing, at the very least, to hear one of the most experienced figures in South Africa's engineering sector offer an unabashedly positive view of the country's future. That may be because Ian Fraser, Managing Director of RTS Africa Engineering, has the advantage of the long view. "I was born in 1940, and things were challenging then, to say the least," Fraser remarks.

Fraser does not diminish the seriousness of current political and economic events, but maintains they must be kept in perspective. "In many ways, we've been here before. The rand dropped in value overnight by about 70% after P.W. Botha's 'Rubicon' speech. Commodities internationally have crashed previously. Both Fitch and Standard & Poor's kept South Africa at junk status for several years after the advent of democracy," he says.

The answer to the challenges now, as then, is to keep on keeping on: "Down at the 'coalface', we just get up in the morning and we go out and do it," he comments. In Fraser's case, this has involved building a specialised engineering company with noted expertise in dust extraction, hydrogen generation and boiler tube leak detection.

Fraser's work also brings him into contact with several other industries, including the glass, steel and energy sectors. He encounters businesses that are struggling, but also companies that are booming in spite of local and global economic uncertainty.

"To give you just one example: we have a fabricator in Pretoria who does all our metal work for us and is extremely busy. So the critical question is: Why are some not able to do it, and others are?" he asks.

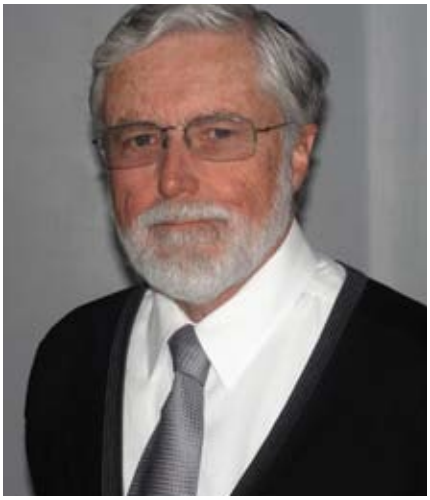
"I have to say that I believe the key issue here is innovation. You have to remain aware of what is changing. The minute you let technology pass you by, you are lost."

BELOW LEFT: Colin Oliver, MSA Director.

BELOW CENTRE: Ian Fraser, Managing Director of RTS Africa Engineering.

BELOW RIGHT: Gerrit van Zyl, Managing Director of Renttech South Africa.

OPPOSITE PAGE: UNISA Students visit Robor.



In summary, Fraser advises: "There is obviously massive opportunity here, and we have to go out and get it. There is absolutely no profit or advantage to be gained from being negative."

Cost and energy-saving benefits to the Namibian mining sector through Renttech SA's branch SA Welding in Walvis Bay

Renttech South Africa's pan-African expansion strategy is well on track with the company's new branch in Namibia. Featuring a broad range of well-known names in welding machinery and consumables, lifting and rigging equipment, as well as diesel generators and compressors, Renttech – situated in Walvis Bay, Namibia and trading as SA Welding locally – is focused on the country's mining industry.

However, the company is also well positioned to service the maritime, engineering and civil industries along the West coast and further afield.

Operating in Walvis Bay since mid-2014, Renttech's Namibian branch SA Welding combines the benefits of local support and product knowledge with global technology solutions. These are evident in their portfolio of brands such as Lincoln, Harris and Gentec; as well as Renttech's own well-known UniArc and UniLift ranges.

For the past two years Renttech in Namibia has been meeting a growing demand for its rental equipment in the country's mining industry, particularly its range of diesel generators and top-brand welding equipment.

The company is also supplying a major 'greenfields' project at one of Namibia's major uranium mines, providing the necessary equipment and consumables for the construction of a process plant; as well as on-site technical support for the duration of the project, an estimated two and a half years.

"Being able to offer on-site technical and project support for as long as required is an important part of Renttech's customer service offering. To date, we have ensured an on-site presence on the mine since the beginning of the contract, ensuring all equipment and consumable requirements are being met on a daily basis and that there is therefore minimal down time. This is part of our 'total package' solution," says Gerrit van Zyl, Managing Director of Renttech South Africa.

Welding equipment supplied by Renttech for the uranium mining project includes the company's engine-driven, multi-process welding machines; inverter welding packages; the Harris and Gentec ranges of gas welding and cutting equipment; and various welding consumables such as torches, stainless flux-cored wires as well as various SMAW and GTAW consumables. Also in demand are Renttech's diesel generators and diesel compressors, gouging machines and personal protection equipment (PPE). In addition, the company has supplied various abrasives, power and hydraulic tools to the mine's on-site operations.

Renttech's own Unilift range of lifting and rigging equipment is also being used extensively on site. Produced at its manufacturing facility, Kelmeg Lifting Services, lifting accessories such as polyester slings, web slings and endless round slings can be customised to specific on-site requirements. Renttech also supplies a host of other lifting/rigging equipment, such as chain blocks, wire ropes, beam clamps, lever hoists and shackles.

With versatility, cost-savings and energy efficiency always in mind, Renttech has ensured that its product range is able to withstand harsh, outdoor environments, with special applicability to pan-African mining operations.

A case in point is the company's own highly versatile MultiArc 350 amp inverter which is a robust yet lightweight unit, offering the user an easy transition between multiple welding processes.

"The MultiArc 350 is ideally suited to various mining operations: it is robust, compact and generator-compatible while having a built-in arc-safe function to meet the relevant mining safety specifications addressing acceptable OCV (open circuit voltage) limits for welding machines," notes Johan van Breda, Business Development Manager at Renttech in Namibia.

"Also the dual voltage of 380V and 525V enables flexibility on a mining operation, be it workshop, boilershop or plant, without risk of damage to PC boards," van Breda explains.

"At Renttech it is not just about selling or renting equipment. Rather, it is about providing full on-site support and service – that is, ensuring the best overall solution for the customer that will be optimally efficient and productive– thereby providing great return-on-investment.

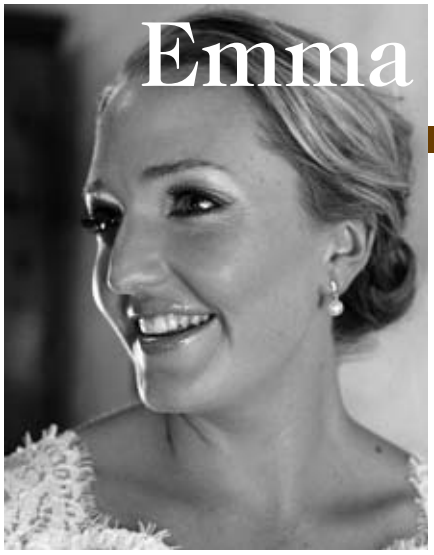
Robor exposes UNISA students to the practical world of work

Robor recently hosted a delegation of UNISA Science Campus under graduate students. The main purpose behind this initiative is to expose students to the practical world of what they are studying at the university.

Concepts taught include the following; Mechanical design, Engineering drawing, Maintenance engineering, Vibrations, Production engineering, Operations management, Just-in-time, Lean manufacturing, Supply chain management, and different manufacturing processes.

Mike Longworth presented the Robor safety induction as well as an overview of Robor. The students were then taken through both the Primary and the Value Add Manufacturing sections, followed by refreshments in the HR Training Centre. Two more visits by UNISA students to Robor have been organised for later in the year.

New Generation Program alumna



Emma Nel shares her steel story

I studied civil engineering at Stellenbosch University (BEng), graduating in 2010. During my final year, in the subject of Detailed Design which focussed on steel structures, I had the privilege of being taught by Professor Peter Dunaiski. His course ignited my interest in steel and the detailed design of structures using steel.

As an acknowledgement of the keen interest I had developed in steel, Professor Dunaiski offered me a bursary to study my Masters of Science in structural engineering under his guidance and supervision starting in 2011. Tragically on the 14th of September in 2011 he passed away. He was irreplaceable as a mentor and icon in the steel industry and his presence is missed greatly by all who knew him. I will forever be grateful to him for the way in which the opportunities that he afforded me have changed my life.

TOP: Emma Nel.

ABOVE: The New Generation Programme participants at Steel Awards 2011.

The New Generation Programme

In 2011 I was one of 3 students from Stellenbosch University selected to attend the New Generation programme hosted by the South African Institute of Steel Construction (SAISC). Being a part of this programme was a very exciting opportunity. We were exposed to award winning designs exhibiting the versatility of structural steel. The structures highlighted its competence as a standalone material and celebrated steel as an architectural feature.

In addition to attending the Steel Awards, we were taken around to various sites in Johannesburg that exhibited inspiring uses

EXCITING DESIGN WORK

Over the last two and a half years (from feasibility to detailed design and fabrication), I have had the wonderful exposure opportunity to do the structural design component of an entire treatment plant for a marine vessel. This entailed the detailed design of the steel structures making up the treatment plant component of the most advanced marine diamond sampling and exploration vessel in the world. This year the structures have been fabricated and are due to be rigged on board in August when the vessel (SS NUJOMA) arrives from Norway.

There could be no greater tribute to the use of steel in structural design than this project exhibits. The entire structural design component (in excess of 700t of steel), as well as the vessel on which it shall be constructed, which constitutes the structures "foundations" is all made of steel. Through this project I have seen steel in all its glory, with its endless applications and versatility. It has been a vertical learning curve, which I can only imagine is incomparable to any other opportunity I could have had, and has cemented my love of steel and interest in the industry.

I will remain a Steel ambassador and hope to contribute to the industry in any way possible moving forward.

of steel. We visited structures including Protea Dome in Sandton through to flight simulators and the inspired steel structures that house them. One of the lasting memories from the programme was getting to see steel being manufactured on an extremely large scale. It was an experience that remains with me to this day.

In response to this inspiring opportunity, I feel it is rather telling of the New Generation programme that the SAISC wrote, "The SAISC congratulates and thanks all the mentors and top performers who participated in New Generation 2011 and hope to hear the following names in the future of this industry." I was fortunate to be one of those top performers, and now proudly am a part of this dynamic industry.

Present work in the steel industry

I am presently working for ET-Global which is a specialist structural engineering consultancy in Cape Town. We focus on the onshore and marine mining industries. ET-Global works closely with process and mechanical engineers to deliver a holistic design solution to the mining industry. The aspect I love the most it that 90% of the design work is purely in steel. The structures are also designed with unusual boundary conditions ranging from their support (in the marine industry) to the equipment which they are required to support. Much of the mining equipment used in processing/treatment plants is vibrating equipment which requires dynamic tuning of the structures on which it is sitting. This is a hugely interesting portion of the design of the steel structures and also exhibits the strength and versatility of steel beautifully.

ABOVE: Emma on site vists as part of the New Generation Programme.

Patrick Pereira of RETECON recently visited the Ficep facility in Italy. Inspired by their history of resiliance he penned some thoughts for Steel Construction

AUTOMATION

A key factor in being future fit as a fabricator

By Patrick Pereira, Retecon

Contact Details:
Retecon (Pty) Ltd
Tel.: +27-11-976-8600
Cell: +27-82-821 6974
Email: ppereira@retecon.co.za
Web: www.retecon.co.za

ABOVE AND BELOW: FICEP showroom.

Ficep's story is one of two families brought together by the same entrepreneurial spirit. In 1930, the Colombo and Giuliani families created "Fabbrica Italiana Cesoie e Punzonatrici SA", with headquarters in Milan and factories in nearby Gazzada, where it was easier to find the space needed to develop their activities.

Coming out of the gloomy years of the Second World War, Ficep offered an important contribution to rebuilding Italy's construction heritage after the war.

In the '60s Ficep set itself up as a model company, both from an organizational point of view, with modern management, and from the work place quality point of view with the creation of a progressive social infrastructure, such as health services, a recreational and welfare center for workers and professional training courses.

In 1965, the company made an important technological leap forward, with the shift to electronics and the production of innovative automatic numerical-controlled lines for the steel fabrication machinery division.

In decades of continual development the real constant remains the original families' guiding hand, which continues to set the company direction, inspired by quality and innovation.

From the '90s onwards, in the face of the growing phenomenon of delocalisation, Ficep made a precise choice, against the tide of the rest of the market, by deciding to keep all its production lines and know-how in Italy, and demonstrating a deep attachment to its own territory and roots.

Whilst facing aggressive competition in terms of prices, Ficep has made the most of its own internal organization in planning a logical network of companies, with small, satellite, highly-specialized and flexible firms, which enabled it to make management savings without renouncing the highest standards of quality.

In the meantime, the international aspects of the Group have reinforced with continued expansion, seeing the creation of direct subsidiaries all over the key markets around the world.

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MTMA

ABOVE AND BELOW: FICEP Headquarters in Gazzada, Italy.

Retecon and Ficep

Retecon began representing Ficep in 1991 and soon after that first machine was sold, A13.34NT angle processing machine. This machine is still in operation, however not at its original owner.

Ficep prides its self on the range of angle line processing machines offered, which happen to be the preferred machine for the tower manufacturing industry in South Africa. We have large volume lattice tower manufactures, who invested highly on the dependability and reliability of these machines.

Here we are 25 years on and with about 150 traceable Ficep machines installed throughout South Africa and Retecon continues working hard with Ficep to supply our local industry with equipment to all facets of the structural steel industry.

My two cents on the future of structural steel industry

With the current state of our structural steel manufacturing industry, it is clear that automation of manufacturing process is becoming a must for the survival of this industry in South Africa.

More and more I hear all kinds of reasons from small to medium fabricators why they cannot invest in CNC equipment. "Is too expensive", "I don't have the work to pay the machine", "it will take many years to pay off the machine" and so on.

The old aged question comes to mind: "What came first, the chicken or the egg?".

How can you expect to get the work if you don't have any technology in the shop and are using old manual methods to cut, drill and punch? The work is out there, it's scarce but it's out there, companies are not going to give work to fabricators that, when they inspect their shops, find only a 40 year old cropper and a radial arm drill in the corner, which has seen better days.

All my, then small, customers that invested in technology have work in their shops. Sure that the volume of work slows down, but it also pics up. When it does you need the technology to be able to take on the work. The pool of well-prepared fabricators is small and clients are spoilt for choice of who gets the job. In my opinion, the longer fabricators hold back on investing in CNC equipment the more difficult it's going to become for them to get work when it does pick up.

We all know that the South African structural industry is crossing tough times, but if it's going to survive the current slump plaguing the industry, companies have to consider investing in CNC equipment. Efficiency and productivity is what makes a successful fabricator and this cannot be achieved by working "the old fashion way".

During my visit to Ficep factory in Italy I saw equipment being manufactured to be installed in African countries like Algeria, Ethiopia and Kenya. It dawned on me that our northern African neighbors have caught on to automation of fabrication workshops. South African fabricators need to take note of the technologies that are available to them in the market or our industry may end up being overtaken!

The Retecon Group as it is known today was established in 1969 by Burkhard Herrmann supplying tooling to the South African industry. At that time we were known as Traconsa as an abbreviation of TRAns-CONtinent SA. Here we are 47 years later looking back at the goals we set and achieved at the outset when we chose the name Retecon as an abbreviation of REliable TEchnical CONsultants.

Over the years we have gained vast experience, expertise and success.
We look back to the period of transfer from conventional machines to computer numerically controlled (CNC) machines as a challenging one.

It has tested us and our clients alike. 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.
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The SAISC and guests from the Department of Trade and Industry

TAKE A ROAD TRIP TO KUSILE POWER STATION

by Kobus De Beer, Director, Polasa

POLASA
POWER LINE ASSOCIATION OF SOUTH AFRICA
www.polasa.co.za

The Southern African Institute of Steel Construction (SAISC) believes in informed decision making. For the past three years we've arranged a visit for DTI, IDC, Treasury, SARS Customs and others to the Kusile Power Station Construction Site near Bronkhorstspruit. The objective is for visitors to experience the size and scope of the largest construction project in the Southern hemisphere, where world class fabricated structural steel is used extensively. Our host was Mitsubishi Hitachi Power Systems Africa (Pty) Ltd.

The six boiler houses at Kusile are in varying degrees of construction with the first unit heading for completion within this year. To see a 17 000 ton fabricated structural steel building rise 110m into the sky supported by four 3m x 3m square fabricated steel columns on each corner is impressive! There is no substitute for being there in person and experiencing the dynamics of this world class project. The massive roof structure is lifted into position using strand jacking and the boiler and all ancillary equipment hangs from this roof. A number of the largest construction cranes used in the world are working here.

The short bus ride provided an excellent opportunity for networking as well as showcasing the activities of the SAISC and current projects our members are involved in.

The excursion was used to highlight some of the many unseen aspects of structural steel fabrication and construction:

- The overall design of the power station is the responsibility of the main contractors (Mitsubishi Hitachi Power Systems Africa (Pty) Ltd and Alstom) who have to specify how this complex system, comprising six coal fired boilers, six steam driven generators with air cooling must operate to each reliably achieve the required 800 MW electricity output for many years.
- Based on this the main structural steel contractor then has to do detailed designs and drawings to ensure that the structural steel components will comply with the specified dimensions and strength requirements. It is also very important to design for ease of construction as many pieces have to be fitted at height and rely on matching lengths and holes!
- The steel used has to comply with strict requirements of chemical content, properties and dimensions and every piece of steel must be traceable to its original casting or batch.

- The fabrication process requires optimal designs and detailed drawings balancing functionality, efficient manufacture and construction within strictly specified tolerances. Shop drawings are of extreme importance as the main means of communication with the buyers, planners, stockyards, fabrication workshops, assemblers and welders, painters, quality assurance and others.
- All the pieces must be made in the right sequence and supplied in balanced quantities so that construction can proceed smoothly.
- Transport to and storage of fabricated structural steel products on or near the site is a major requirement – every piece must therefore be marked and good records kept of these continually changing stocks!
- Provision must be made for bad weather and working in muddy conditions!
- Someone had to calculate the costs in advance and someone else must now make sure that it works out as estimated!
- Every working person in the factory and on site has to be formally qualified to do his or her job, must be safety trained, must be equipped with personal and working safety equipment, and tools they are qualified to use. They must also be managed to work efficiently and be paid fairly and on time.

The site visit was followed by a visit to the GENREC Engineering works in Wadeville, Germiston where some of the Fabricated Structural Steelwork that included the massive columns weighing up to 70 tons were manufactured. It was sobering and disappointing to see this workshop that last year still had 2 500 people employed is now down to 250.

There is no doubt that our industry is facing some very challenging conditions. The SAISC is committed engaging stakeholders, raising the concerns of our members and together, finding a way forward. We received excellent feedback from the various participants on this excursion, and some of them will want to go again to see the progress made next year.

The Department of Trade and Industry has responded very positively by formally designating a range of fabricated structural steel and related products. "Designation" is an instruction to all State Owned Enterprises such as ESKOM, Transnet, TPT, the Ports Authorities, Provinces and Municipalities to purchase 100% of their requirements for these products made in South Africa! This will immediately have a positive impact on local job creation and preservation, and will serve South Africa well with all its future major capital projects.

Thank you so much for the visit to Kusile. It feels so good to witness such good work using mostly our very own raw materials! The project is enormous! history in the making.

– N Dlambulo, Director: Ferrous Metals, Industrial Development Division

I'd like to express my sincere gratitude to all of you for a well planned and executed tour/visit on Friday.

I've personally been on many tours across the world and the tour on Friday is right up there... amongst the best. The talk/presentation on the bus whilst travelling was an excellent idea. You'll very cleverly maximised the day and made best use of a captive audience.

– S Moodley, Chairman: Metpress

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STEEL AWARDS 2016

Thursday, 15 September 2016

Venues: JHB - Emperors Palace
CT - Table Bay Hotel
DBN - Mount Edgecombe Country Club

Cost: R 900 p/p (incl VAT) - JHB
R 800 p/p (incl VAT) - CT & DBN
5% discount for 10 or more people

60S THEME, IN CELEBRATION OF THE SAISC'S 60TH YEAR!

Dress: Retro/ Classic 60s Formal Style (For some great examples/ inspiration see the TV Series "Mad Men" or the model Twiggy).

Steel Awards provides a great opportunity to :

- Network with key industry role players
- Gain insight into top industry projects of 2015
- Celebrate excellence in the use of structural steel
- Be wined and dined - complimentary drinks & cash bar
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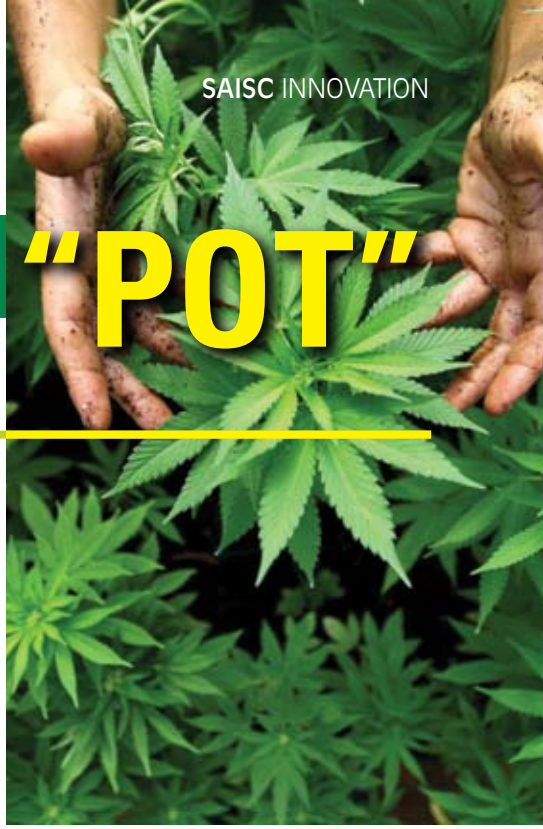
Is the steel industry going to "POT"

OR ARE WE JUST GREEN?



By Paolo Trinchero, Chief Executive Officer, SAISC

Farmers around the Ilva steel works in Italy are using Cannabis to help clean up polluted soils in the region.

The extraordinary ability of the plant to not only survive in pollution-hit soils, but also to clean them, was discovered in the early 1990s by agriculturalists carrying out experiments in the radioactive earth around Chernobyl, Ukraine.

As you all know by now Steel is a "green" material. It is 100 % recyclable and has no competition when it comes to its utility and reusability.

Manufactured from the most abundant element on earth, iron, steel can be recycled or reused endlessly without detriment to its properties. This unique characteristic gives all steel a high value at all stages of its life cycle. The recovery infrastructure for steel recycling is highly developed and highly efficient, and has been in place for decades.

Energy consumption and carbon dioxide emissions from steelmaking have been reduced by 50% over the past 40 years and work is underway to reduce this further.

By-products from iron and steel-making, including sludges, slags and dust, are beneficially used by the construction industry in a range of products including roadstone, lightweight aggregate and as cementitious material used as a substitute for Portland cement.

We came across a very interesting series of articles on how to clean up environments that have been exposed to heavy industry. Farmers around the Ilva steel works in Italy are using Cannabis to help clean up polluted soils in the region.

The extraordinary ability of the plant to not only survive in pollution-hit soils, but also to clean them, was discovered in the early 1990s by agriculturalists carrying out experiments in the radioactive earth around Chernobyl, Ukraine.

The plant is very effective at removing pollutants and as a result there are now around 100 farmers around the Ilva plant who are experimenting with the crop.

Don't get too excited however as the farmers are growing a legal variety of the Cannabis Sativa plant which contains extremely low-levels of the psychoactive compound THC. While this makes the plants useless for recreational smoking, they still have plenty of more interesting uses such as producing hemp fibres, bio-fuels, animal feed and insulation. A local building company, Vilbrotek, is already experimenting making materials from hemp, while one of two hemp processing plants in Italy is in Taranto.

The correct term is phyto-remediation which is the direct use of green plants and their associated microorganisms to stabilize or reduce contamination in soils, sludges, sediments, surface water, or ground water. First tested actively at waste sites in the early 1990s, phytoremediation has been tested at more than 200 sites around the world. Because it is a natural process, phytoremediation can be an effective remediation method at a variety of sites and on numerous contaminants. However, sites with low concentrations of contaminants over large cleanup areas and at shallow depths present especially favorable conditions for phytoremediation.

Environmental concerns are becoming increasingly important, this is illustrated by the impact it has had on the business rescue of the troubled Evraz-Highveld Steel. Some Mills have followed the opposite approach and have spent extensive amounts of money remediating polluted land and ensuring that the environment is cleaned up.

The recent introduction of carbon taxes illustrates the importance of environmental concerns across the supply chain. From an energy perspective many companies have been reducing their energy consumption through the use of solar water heaters and solar PV panels. Companies have been collecting rainwater to cleaning vehicles and some have been recycling water in their production processes.

We have a number of fabricators that have been keen environmentalists over many years. What if we could co-ordinate our efforts across the industry to show that we not only work with a material that can be recycled but we are working together to limit our environmental footprint. We welcome articles or new snippets from our members on how they are tackling environmental issues in order to foster innovation and improve our energy efficiency.

Survival Kit for 21st CENTURY LEADERSHIP

By Deshun Deysel

Deshun holds an International Certificate in Business Coaching from the IDM School of Coaching. She has spent many years researching the link between thinking and doing. This research included embarking on high altitude mountaineering expeditions on the highest peaks of 5 continents – including two expedition to Mt. Everest and 3 to Mt. Kilimanjaro. Having put cognitive/behavioral theory to work in her own life, Deshun created a unique tool to assist others in making the connection between effective thinking and effective doing. The Peak Performance Toolkit™ provides a platform for Self-Reflection and actionable tasks in 5 Areas of Effectiveness© for personal and career success.

Contact Details:
Tel: (011) 482 3996
Cell: 071 588 4949
Email: deshun@deshundeysel.biz

In light of recent events in the United Kingdom around the Brexit Referendum; the world of leadership has been tilted sideways ever so slightly. Okay, almost cataclysmically!

It's not just that we are suddenly aware of how campaigning can so easily and (possibly) misguidedly sway the collective thinking of the masses. It's also that todays' leaders are in a double-bind about how to allow the masses to decide, while they're cringing secretly about the aftermath and management of said decisions.

Where does one begin to understand how to lead in times like these?

In a recent (pre-Brexit) conversation with my good friend and thought leader, Pete Laburn, we discussed the critical issues affecting leaders today. Basically our thoughts can be distilled into the following points.

Leaders must:

Know what to do, when you don't know what to do

To put it simply, the world has never before faced the enormous range of instability and uncertainty it faces today. Here we're talking about the current refugee crisis, religious fundamentalism, the relativity of morals and values – all with the simultaneous rise of nationalism and right wing extremism and the very real possibility of global economic instability – again! Today's leaders must have a well-developed instinct or 'gut-feel' when it comes to responding to the complexities of the world in the 21st Century.

Lead from WHO you are

The problem today is that leaders don't know who they are. They have become constructs of what they think the organization wants. The billion dollar 'Leadership Industry' has created formula after formula on how to lead, but quite frankly, most of it applied to 30 ago, when the world was in a different space.

Technological advances are playing a huge role in how those who are being lead, process information. For a 21st Century leader, the most important challenge is to go back to the drawing board within themselves first. Who am I? What do I stand for? Do I trust myself? Can I expect others to trust me? What values and principles govern my performance? These are questions that those in leadership positions must ask if they are to develop their discernment muscles to deal with the issues this century will be throwing at us.

You cannot lead anything you're not connected to

If the current election campaign in the USA, the student/service delivery protest upheaval in South Africa and the Brexit shockwave has taught us anything, then it is this: Too many of those in leadership positions have absolutely no clue what is happening in the minds of their constituents. They spew forth empty rhetoric and regurgitate stale promises. On the other hand; those in positions of followership have new tools with which to inform themselves or, indeed, create their own belief systems. The landscape has shifted and the world's so-called leaders are missing the boat!

How to survive leadership in the 21st century

Not surprisingly, many great organizations are recognizing that engagement and transparency leads to collaboration and innovation. Thanks to the Internet, there already exists a massive free-flow of information. Why not adapt to this? I highly recommend that you become friends with the followers.

1. Be transparent. Those you lead (followers) will find out soon enough anyway.
2. Followers play an important role in leadership outcomes. They're smarter than you think.
3. Not all followers are created equally.
4. Followers can be equipped to underpin the efforts of leadership.

Therefore, leaders can no longer 'Keep Calm and Carry On' with an outdated approach. The times and circumstances we're in require more. We must then, require more of ourselves, and those we lead, to confidently step into the mandate for effective 21st Century leadership.

SOCIAL SNIPPETS:

By Marlé Lötter, Events Manager, SAISC







Spencer Erling's Farewell

9 June 2016, Country Club Johannesburg (Auckland Park)

How does one get the direct attention of far over a hundred different persons, representing several generations and even spanning different continents, for a single event on rather short notice? The simple answer: Say goodbye to Spencer Erling!

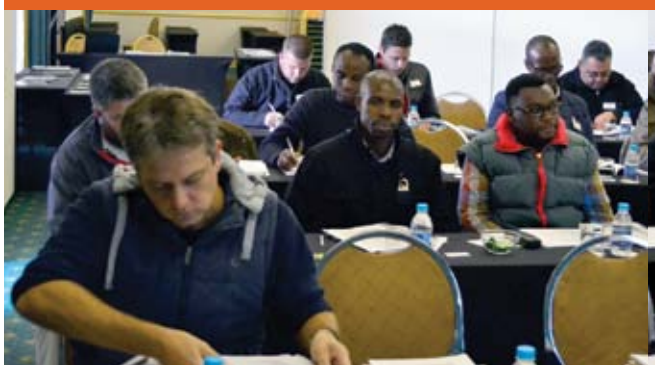
The SAISC arranged a special farewell cocktail function on 9 June 2016 at the Country Club Johannesburg for director Spencer Erling, who finally retired after official employment at SAISC since 2001 and a very busy and varied career in the broader construction industry since his BSc Eng Degree in 1966. Attendance was confirmed for over 100 guests, with a number of others irked that they could not be in the country at the time. Many of the guests had walked several industry miles alongside Spencer. Some started out as his students to later become industry fellows of note. All present shared great respect for his contribution to steel construction on so many levels. Many special messages were received by SAISC from local and international colleagues, also on behalf of several companies, universities and sister associations – some of these were shared on the night and all of them were brought together in commemorative book which was presented to Spencer at the function. SAISC wishes Spencer all of the best in whatever he endeavours in this new life space.




SASFA SANS 517 and SANS 10162:2 Design Courses

1 & 2 June 2016, Sunnyside Park Hotel, Johannesburg

Seen at the SASFA Design Courses According to SANS 517 (LSFB) and SANS 10162:2 (Cold formed steel), with presenters John Barnard (SASFA), Etienne van der Klashorst (Stellenbosch University) and Mike Hull (Hull Consulting Engineers).




SAISC MEMBERS

STEEL PRODUCERS

ArcelorMittal South Africa
Representative: Mohamed Adam
Tel +27 16 889 9111
Mohamed.Adam@arcelormittal.com
www.arcelormittal.com

Columbus Stainless (Pty) Ltd
Representative: Lucien Matthews
Tel: +27 13 247 2805
matthews.lucien@columbus.co.za
www.columbus.co.za

Davsteel
Representative: Martin Friedman
Tel: +27 16 980 2121
friedmnm@capegate.co.za
www.capegate.co.za

Scaw South Africa (Pty) Ltd
Representative: Dudu Ndlovu
Tel: +27 11 621 1524
d.ndlovu@scaw.co.za
www.scaw.co.za

STEELWORK CONTRACTORS

Eastern Cape

Industrial Services Group
Representative: Errol Thomson
Tel: (043) 707-2700
ethomson@isgeng.co.za
www.isgeng.co.za

Uitenhage Super Steel cc
Representative: Ginkel Venter
Tel: +27 41 922 8060
ginkel@uss.co.za

Free State

Delevex 818 CC t/a BRD Construction
Representative: Francois van der Merwe
Tel: +27 51 434 1238
francois@brdk.co.za
www.brdk.co.za

Gauteng

Bankos Distributors cc
Representative: Greg McCree
Tel: +27 11 026 8359
gregm.bmg@vodamail.co.za
www.bmgprojects.co.za

Bessemer Africa (Pty) Ltd
Representative: Fritz Hoogendyk
Tel: +27 11 762 5341
bessemer@iafrica.com

Betterect (Pty) Ltd
Representative: Nicolette Skjoldhammer
Tel: +27 11 762 5203
nicolette@betterect.co.za
www.betterect.co.za

Boksan Projects cc
Representative: L Boksan
Tel: +27 11 316 2172
laszlo@boksan.co.za

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

Cadcon (Pty) Ltd
Representative: Richard Butler
Tel: +27 12 664 6140
richbutler@cadcon.co.za
www.cadcon.co.za

Central Welding Works
Representative: Stephen Horwitz
Tel: +27 12 327 1718
stephen@cwwpta.co.za

Ferro Eleganza (Pty) Ltd
Representative: Chris Narbonese
Tel: +27 12 803 8035
admin@ferroe.co.za
www.ferroe.co.za

Genrec Engineering
A division of Murray & Roberts Ltd*
Representative: Fergus Derwin
Tel: +27 11 876 2309
fergus.derwin@murrob.com
www.genreceng.co.za

IVMA Engineering cc
Representative: Mauro Munaretto
Tel: +27 11 814 3124
ivma@ivma.co.za
www.ivma.co.za

Khombanani Steel (Pty) Ltd
Representative: Tim Tasioulas
Tel: +27 11 975 0647
accounts@khombanani.co.za

Linrose Engineering Gauteng (Pty) Ltd*
Representative: Jorge Pereira
Tel: +27 11 827 0314
linrose@icon.co.za
www.linrose.co.za

Louwill Engineering (Pty) Ltd
Representative: Deon Kotzé
Tel: +27 11 818 5186
deon@louwill.co.za
www.louwill.co.za

MAC Engineering cc
Representative: Mino Carniel
Tel: +27 11 814 1834
mino@maceng.co.za
www.maceng.co.za

Magnet Engineering (Pty) Ltd
Representative: Diniz Belo
Tel: +27 11 908 3500
magnetgr@global.co.za
www.magnetengineering.co.za

Midvaal Structures (Pty) Ltd
Representative: Rudi Stoltz
Tel: +27 16 365 5961
rudi@steelstructures.co.za
www.steelstructures.co.za

MM & G Mining & Engineering Services (Pty) Ltd
Representative: Dawie Vos
Tel: +27 11 914 4740
dvos@mmg.co.za
www.mmandg.co.za

MPW Steel Construction (Pty) Ltd
Representative: Nic Tallarico
Tel: +27 11 450 3380
nic@mpwtalmac.co.za
www.mpwtalmac.co.za

NJW Engineering Services cc
Representative: Nick Van Deventer
Tel: +27 12 541 3931
nick@njw.co.za

PH Projects
Representative: Andries Du Plessis
Tel: +27 11 828 0427
engela@phgroup.co.za
www.phgroup.co.za

SE Steel Fabrication (Pty) Ltd
Representative: David J Essey
Tel: +27 11 953 4584
sesteel@icon.co.za

Sectional Poles (Pty) Ltd*
Representative: Phil M Koen
Tel: +27 12 348 8660
pkoen@sectionalpoles.co.za
www.sectionalpoles.co.za

SMEI Projects (Pty) Ltd
Representative: Sandy Pratt
Tel: +27 11 914 4101
afpratt@smei.co.za
www.smei.co.za

Spiral Engineering cc
Representative: Colin Kirkland
Tel: +27 11 474 9119
colin@spiralengineering.co.za
www.spiralengineering.co.za

Steel Band Construction cc
Representative: Steven Smit
Tel: +27 44 874 6554
steelband@icon.co.za

Tass Engineering (Pty) Ltd
Representative: Tim Tasioulas
Tel: +27 11 975 0647
tim@tasseng.co.za
www.tass.co.za

Tegmul Engineering (Pty) Ltd
Representative: Toby Esterhuizen
Tel: +27 16 362 2007
tobie@tegmul.co.za

Trentbridge Engineering cc
Representative: David Hunter
Tel: +27 16 365 5327
trentfab@intekom.co.za

Tudor Engineering & Draughting cc
Representative: Braam Beukes
Tel: +27 11 914 5163
tudora@mweb.co.za

Van Driel's Steel Construction
Representative: Robby van Driel
Tel: +27 16 341 6102/5
vdriel@mweb.co.za

Viva Steelfab Engineering (Pty) Ltd
Representative: Collen Gibbs
Tel: +27 11 454 3405
colleng@vivaeng.co.za

WBHO Services North
Representative: Andrew Breckenridge
Tel: +27 11 265 4000
andrewb@wbho.co.za
www.wbho.co.za

KwaZulu-Natal

Avellini Bros (Pty) Ltd
Representative: Pietro Avellini
Tel: +27 31 464 0421
ravellini@iafrica.com

BNC Projects (Pty) Ltd
Representative: Sunthosh Balchund
Tel: +27 31 902 3777
balchunds@bncprojects.co.za
www.bncprojects.co.za

Churchyard & Umpleby*
Representative: Keith Ball
Tel: +27 31 701 0587
keith@candu.co.za
www.candu.co.za

Cousins Steel International (Pty) Ltd
Representative: Adam Oldfield
Tel: +27 31 312 0992
adam@cousinssteel.co.za
www.cousinssteel.co.za

Impact Engineering cc*
Representative: Douglas Nidd
Tel: +27 32 947 1054
impact@saol.com
www.impacteng.co.za

Ogilvie Engineering
Representative: Allan Olive
Tel: +27 31 700 6489
allan@ogilvieengineering.co.za

Rebcon Engineering (Pty) Ltd
Representative: Warren Butler
Tel: +27 31 705 5851
warren@rebcon.co.za
www.rebcon.co.za

SpanAfrica Steel Structures (Pty) Ltd*
Representative: James Pinnell
Tel: +27 33 346 2555
jamesp@spanafrica.co.za

Mpumalanga

B & T Steel*
Representative: Bryan Wilken
Tel: +27 13 665 1914
marketing@btsteel.co.za
www.btsteel.co.za

Da Costa Construction Welding cc
Representative: Tobie Oosthuizen
Tel: +27 17 647 1130
tobie@dcconstruction.co.za

GPM Services
Representative: Wessel Venter
Tel: +27 71 697 5802/
+27 82 452 9306
wessel@gpms.co.za
www.gpms.co.za

Steval Engineering (Pty) Ltd
Representative: Willie Swanepoel
Tel: +27 13 758 1015
willie@steval.co.za
www.steval.co.za

Tubular Holdings (Pty) Ltd*
Representative: Mike Lomas
Tel: +27 11 553 2012
mlomas@tubular.co.za
www.tubular.co.za

North West

Rutherfords
Representative: Cecil Rutherford
Tel: +27 18 293 3632
cecilr@rutherfords.co.za
www.rutherfords.co.za

Steel Services and Allied Industries*
Representative: Kevin Harris
Tel: +27 18 788 6652/3
kevinh@steelservices.co.za
www.steelservices.co.za

Western Cape

Inenzo Water (Pty) Ltd
Representative: Jan Cloete
Tel: +27 21 948 6208
admin@inenzo.com
www.inenzo.com

Mazor Steel cc
Representative: Shlomo Mazor
Tel: +27 21 556 1555
judy@mazor.co.za
www.mazor.co.za

Prokon Services (Pty) Ltd
Representative: Martin Lotz
Tel: +27 21 905 4448
martin@prokonservices.co.za
www.prokonservices.co.za

Union Structural Engineering Works (Pty) Ltd
Representative: Mike N Papanicolaou
Tel: +27 21 534 2251
michael@unionsteel.co.za
www.unionsteel.co.za

DEVELOPING/EMERGING CONTRACTORS

Four Tops Engineering Services cc
Representative: Essau Motloung
Tel: +27 72 229 9128
fourtopseng@vodamail.co.za

Masanda Trading cc
Representative: Corne Masanda
Tel: +27 21 857 5744
corne@masanda.co.za

WEP Engineering (Pty) Ltd
Representative: Julie Wepener
Tel: +27 11 967 1574
wepeng@vodamail.co.za
www.steelstructureswep.co.za

Zamani Engineering Services cc
Representative: David Nkosi
Tel: +27 13 656 1978
admin@zamaniengineering.co.za

STEEL MERCHANTS & SERVICE CENTRES

Gauteng

Aveng Trident Steel*
A division of Aveng Africa (Pty) Ltd
Representative: Eileen Pretorius
Tel: +27 11 861 7102
eileen.pretorius@trident.co.za
www.avengtridentsteel.co.za

Macsteel Service Centres SA (Pty) Ltd*
Representative: Dave Dawkshas
Tel: +27 11 871 0000
dave.dawkshas@macsteel.co.za
www.macsteel.co.za

Macsteel Trading Corporate Services
Representative: Granville Rolfe
Tel: +27 11 871 4677
granville.rolfe@mactrading.co.za

Macsteel VRN
Representative: Jimmy Muir
Tel: +27 11 861 5200
jimmy.muir@vrn.co.za
www.vrnsteel.co.za

NJR Steel Services (Pty) Ltd*
Representative: Greg Mollett
Tel: +27 11 477 5515
gmollett@njrsteel.co.za
www.njrsteel.co.za

SSAB SA (Pty) Ltd
Representative: Raymond Rautenbach
Tel: +27 11 724 5046
Raymond.Rautenbach@ssab.com
www.ssab.com

Stewarts & Lloyds Holdings (Pty) Ltd*
Representative: Mandy de Lange
Tel: +27 11 553 8500
mandyd@sltrading.co.za
www.stewartsandlloyds.co.za

TW Profile Services (Pty) Ltd
Representative: Leon Coetzee
Tel: +27 894 3031
leonc@twprofile.co.za
www.twprofile.co.za

KwaZulu-Natal

Macsteel Trading Durban
Representative: Marcus Nel
Tel: +27 31 913 2600
marcus.nel@mactrading.co.za

Western Cape

Macsteel Trading Cape Town
Representative: Maria Francis
Tel: +27 21 950 5506
maria.francis@mactrading.co.za

Transcape Steels (Pty) Ltd
Representative: Carl van Rooyen
Tel: +27 21 534 3211
carlvr@transcape.co.za
www.transcapesteels.co.za

STEEL PRODUCT MANUFACTURERS

Gauteng

Augusta Steel (Pty) Ltd*
Representative: Nico Erasmus
Tel: +27 11 914 4628
nico@augustasteel.co.za
www.augustasteel.co.za

George Stott & Co (Pty) Ltd*
Representative: Johan Venter
Tel: +27 11 474 9150
johanv@geostott.co.za
www.geostott.co.za

Macsteel Tube and Pipe
Representative: Peter Curr
Tel: +27 11 897 2100
peter.curr@mactube.co.za

Mentis Sales*
Representative: Andrew Mentis
Tel +27 11 255 3200
andrew.mnt@mentis.co.za
www.mentis.co.za

Project Materials Southern Africa (Pty) Ltd*
Representative: Neil Myburgh
Tel: +27 11 465 4247 or
+27 79 898 2086
neil.myburgh@pmpiping.com

Robor (Pty) Ltd*
Representative: David van Staaden
Tel: +27 11 977 2029
davidvs@robor.co.za
www.robor.co.za

Robertson Ventilation International (RVI) *
Representative: Eric Whelan
Tel: +27 11 608 4640/1
ericw@robventind.co.za
www.robventind.co.za

SCAW South Africa (Pty) Ltd
Representative: Donna Penrose
Tel: +27 11 876 2669
dpenrose@scaw.co.za

Swasap (Pty) Ltd
Representative: Derek Anderson
Tel: +27 11 873 6666
derek@swasap.com
www.swasap.co.za

Vital Engineering & Angus Mcleod (Pty) Ltd*
Representative: Dodds B Pringle
Tel: +27 11 898 8500
dodds@gratings.co.za
www.gratings.co.za

Void Pro Manufacturing (Pty) Ltd*
Representative: Andries Botha
Tel: 0861 106 275
info@voidcon.co.za
www.voidcon.co.za

KwaZulu-Natal

SBS Water Systems (Pty) Ltd*
Representative: Desere Ray
Tel: +27 31 716 1820
info@sbstanks.co.za
www.sbsgroup.co.za

Northern Cape

Rufco Engineering*
Representative: Gandeloro Ruffini
Tel: +27 53 313 1651
info@rufco.co.za
www.rufco.co.za

North West

Almec Manufacturing cc*
Representative: Joan Basson
Tel: +27 18 469 3202
joanalmec@gds.co.za
www.almecmanufacturing.co.za

International

Ficep SpA*
Representative: Nick Blackwell
Tel: +39 0332 876 111
nick.blackwell@ficep.it
www.ficepgroup.com

CORROSION & FIRE PROTECTION TO STEEL

Gauteng

Armco Galvanisers (Pty) Ltd
Representative: Dave Fensham
Tel: +27 11 974 8511
mail@armco.co.za
www.armco.co.za

Bulldog Projects (Pty) Ltd
Representative: Mike Book
Tel: +27 11 825 1070
mike@bulldogprojects.co.za
www.bulldogprojects.co.za

Corrosion Institute of Southern Africa
Representative: Lynette van Zyl
Tel: +27 10 224 0761
manager@corrisa.org.za
www.corrisa.org.za

FSD Fire and Security Distributors (Pty) Ltd
Representative: Corne White
Tel: +27 21 510 5258
admin@fire-and-security.co.za
www.fire-and-security.co.za

Hot Dip Galvanizers Association of SA
Representative: Robin Clarke
Tel: +27 11 456 7960
hdgasa@icon.co.za
www.hdgasa.org.za

Pyro-Cote cc
Representative: Trevor Miller
Tel: +27 11 864 5205
pyrocotejhb@pyrocote.co.za
www.pyrocote.co.za

CRANES

RGM Cranes
Representative: Ian O'Hara
Tel: +27 11 422 3690
ian@rgm.co.za
www.rgmcranes.com

CONSULTING ENGINEERS & PROJECT MANAGERS

Gauteng

AECOM SA (Pty) Ltd*
Representative: Siphokuhle Dlamini
Tel: +27 12 421 3500
siphokuhle.dlamini@aecom.com
www.aecom.co.za

Anglo Operations Ltd
Representative: Kurt Waelbers
Tel: +27 11 638 9111
kurt.waelbers@angloamerican.com
www.angloamerican.com

Aurecon South Africa (Pty) Ltd
Representative: Tomme Katranas
Tel: +27 11 305 0300
Tomme.Katranas@aurecongroup.com
www.aurecongroup.com

Arup (Pty) Ltd
Representative: Ric Snowden
Tel: +27 11 218 7600
ric.snowden@arup.com
www.arup.com

Bigen Africa Services (Pty) Ltd
Representative: Johann Human
Tel: +27 12 842 8840
johann.human@bigenafrica.com
www.bigenafrica.com

Clearspan Structures (Pty) Ltd
Representative: Jeff Montjoie
Tel: +27 11 823 2402
jmo@clearspan.co.za
www.clearspan.co.za

Consultaurie Design (Pty) Ltd
Representative: Mark Phillips
Tel: +27 11 234 6787
mark@ctauri.com

DRA Projects SA (Pty) Ltd
Representative: David Haines
Tel: +27 11 202 8600
david.haines@draglobal.com
www.draglobal.com

EDS Engineering Design Services (Pty) Ltd
Respresentative: Hergen Fekken
Tel: +27 12 991 1205
hergen@edseng.co.za
www.edseng.co.za

Fluor South Africa (Pty) Ltd
Representative: Carlo Zambon
Tel: +27 11 233 3400
carlo.zambon@fluor.com
www.fluor.com

Group Five Projects (Pty) Ltd
Representative: Rowan Cashel
Tel: +27 10 060 1730
rcashel@groupfive.co.za
www.groupfive.co.za

Hatch Goba (Pty) Ltd
Representative: Morne Fourie
Tel: +27 11 239 5422
mfourie@hatch.co.za
www.hatch.co.za

Imbabala Contractors
Representative: Michael Mamotte
Tel: +27 11 902 2952
mikem@imbacontra.co.za
www.imbacontra.co.za

International Drafting Services (Pty) Ltd
Representative: Frans Vivier
Tel: +27 11 472 4466
frans@idrafting.co.za

Malani Padayachee and Associates (Pty) Ltd (shortened version MPA (Pty) Ltd)
Representative: Malani Padayachee-Saman
Tel: +27 11 781 9710
admin@mpaconsulting.co.za
www.mpaconsulting.co.za

MDS NDT Consultants (Pty) Ltd
Representative: Shaun Green
Tel: +27 11 615 7240
info@mds-skills.co.za
www.mds-skills.co.za

Phenix Construction Technologies (Pty) Ltd*
Representative: Kobus Marais
Tel: +27 11 395 1520
KOBUSM@phenix.co.za
www.phenix.co.za

Pollock Williams James & Partners cc
Representative: Tim James
Tel: +27 11 679 2282
pwp@iafrica.com

Tenova TAKRAF Africa A Division of Tenova Mining and Minerals (Pty) Ltd
Representative: Richard Späth
Tel: +27 11 201 2347
richard.spath@tenova.com
www.tenovagroup.com

WAH Engineering (Pty) Ltd
Representative: Graham Cross
Tel: +27 11 888 2150
grahamc@waheng.co.za

WSP Group Africa (Pty) Ltd
Representative: John Truter
Tel: +27 11 300 6000
john.truter@wspgroup.co.za
www.wspgroup.co.za

KwaZulu-Natal

DMV Richards Bay (Pty) Ltd
Representative: Le Roux Fourie
Tel: +27 35 789 1828
admin@dmvrb.co.za

Gavin R Brown & Associates
Representative: Gavin R Brown
Tel: +27 31 202 5703
gavbrown@global.co.za
www.gavbrown.co.za

Young & Satharia Structural & Civil Engineering
Representative: Rob Young
Tel: +27 31 207 7252
rob@yands.co.za
www.yands.co.za

Mpumalanga

Bulkcon cc
Representative: Desmond Enslin
Tel: +27 17 811 7520
desmond@bulkcon.co.za
www.bulkcon.co.za

Hlakani Engineering Services (Pty) Ltd
Representative: Gerhard Holtshauzen
Tel: +27 13 246 1824
gerhard.holtshauzen@hlakani.co.za
www.hlakani.co.za

Ijubane Projects (Pty) Ltd
Representative: Willie Greyling
Tel: +27 13 243 4390
willie@glps.co.za
www.glps.co.za

Lategan Bouwer Civil & Structural Engineers
Representative: Anton Van Dyk
Tel: +27 17 634 4150
avandyk@latbou.co.za
www.latbou.co.za

Western Cape

By Design Consulting Engineers
Representative: Barend Oosthuizen
Tel: +27 83 287 1995
barend@bydesign.org.za
www.bydesign.org.za

Bergstan South Africa
Representative: Alan Davies
Tel: +27 21 487 4900
alan@bergstan.co.za
www.engineer.co.za

Kantey & Templer (Pty) Ltd
Representative: Chris Von Geusau
Tel: +27 21 405-9600
chrisvg@kanteys.co.za
www.kanteys.co.za

Mondo Cané cc
Representative: Rob Chalmers
Tel: +27 21 852 2447
rob@mondocane.co.za
www.mondocane.co.za

SMEC South Africa (Pty) Ltd
Representative: John Anderson
Tel: +27 21 417 2900
john.anderson@smec.com
www.smec.com

WorleyParsons RSA
Representative: Mushir Khan
Tel: +27 11 218 3000
mushir.khan@worleyparsons.com
www.worleyparsons.com

International

Walsh Draughting Services
Representative: Donal Walsh
Tel: 00 353 57 8624913
walshds@eircom.net
www.walshds.ie

CIVIL ENGR CONTRACTORS

Basil Read (Pty) Ltd *
Representative: Tirisano Tlhomelang
Tel: +27 11 418 6372
ttlhomelang@basilread.co.za
www.basilread.co.za

Maccaferri SA (Pty) Ltd*
Reprgmesentative: Adriano Gilli
Tel: 087 742 2710
Adriano.gilli@maccaferri.co.za
www.maccaferri.co.za

SUPPLIERS OF GOODS AND SERVICES TO THE INDUSTRY

Cadex Systems SA (Pty) Ltd*
Representative: John Swallow
Tel: +27 11 463 1857
johnswallow@cadexsa.com
www.cadexsa.com

Bentley Systems South Africa (Pty) Ltd
Representative: Tennyson Maimbo
Tel: +27 11 253 3016
tennyson.maimbo@bentley.com
www.bentley.com

Dram Industrial Painting Contractors
Representative: Martin Gossayn
Tel: +2711 660 7594
admin@dram.co.za
www.dram.co.za

First Cut (Pty) Ltd
Representative: Steve Van Wyk
Tel: +27 11 614 1112
stevev@firstcut.co.za
www.firstcut.co.za

Lindapter International
Representative: Louise Foster
Tel: +44 (0) 1274 521444
lfoster@lindapter.com
www.lindapter.com

Peddinghaus Corporation of South Africa
Respresentative: Ian Walker
Tel: +44 771 442 9860
ian@peddinghaus.co.uk
www.peddinghaus.com

Retecon (Pty) Ltd
Representative: Hans-Peter Neth
Tel: +27 11 976 8600
neth@retecon.co.za
www.retecon.co.za

Southey Holdings (Pty) Ltd
Representative: Ben Garrad
Tel: +27 11 579 4600
bgarrad@southey.co.za
www.southeycontracting.co.za

Voortman Steel Machinery B.V.
Representative: Pieter van Grol
Tel: +31 548 53 63 73
p.vangrol@voortman.net
www.voortman.net

POLASA MEMBERS

ARB Electrical Wholesalers (Pty) Ltd
Representative: Jason Burke
Tel: +27 31 910 0201
jasonb@arb.co.za
www.arb.co.za

Avlock International (Pty) Ltd
Representative: Tommy Holmes
Tel: +27 11 748 7000
tommy@avlock.co.za
www.avlock.co.za

Babcock Ntuthuko Powerlines
Representative: Gary Whalley
Tel: +27 11 739 8240
gary.whalley@babcock.co.za
www.babcock.co.za

CIS Engineering (Pty) Ltd
Representative: Christo Marais
Tel: +27 16 422 0082
christo@cisengineering.co.za
www.cisengineering.co.za

Consolidated Power Projects (Pty) Ltd
Representative: Leon Heymans
Tel: +27 11 805 4281
leon@conco.co.za
www.conco.co.za

Cullin Africa (Pty) Ltd
Representative: Krish Chetty
Tel: +27 11 848 1400
krish@cullin.co.za
www.cullin.co.za

IMAB Power
Representative: Fleming Adamson
Tel: +27 11 814 6248
fleming.adamson@imab.co.za
www.imab.co.za

KEC International Limited
Representative: Sumant Srivastava
Tel: +27 11 018 4000
srivastavas@kecrpg.com
www.kecrpg.com

McWade Productions (Pty) Ltd
Representative: Marc Hindle
Tel: +27 11 316 2262
march@mcwade.co.za
www.mcwade.co.za

Metpress (Pty) Ltd
Representative: Sagren Moodley
Tel: +27 11 825 5334
sagren@metpress.co.za
www.metpress.co.za

Mkhulu Electro Distribution Projects (Pty) Ltd
Representative: Marcello Lamperini
Tel: +27 11 814 4169
info.mkhulu@oribi.co.za

Pfisterer (Pty) Ltd
Representative: Geoff Myburgh
Tel: +27 33 397 5409
geoff.myburgh@pfisterer.co.za
www.pfisterer.co.za

Powerpro Technologies & Training Facility
Representative: Ernest Coetzee
Tel: +27 11 739 4200
ernest@powerpro.co.za
www.powerpro-training.com

Preformed Line Products
Representative: John Buyers
Tel: +27 33 397 5800
johnb@preformedsa.co.za
www.preformedsa.co.za

Ramagale Holdings (Pty) Ltd
Representative: Peter Ramaite
Tel: +27 11 234 4045
peter@ramagale.co.za
www.ramagale.co.za

SCAW Metals Group
Representative: Dudu Ndlovu
Tel: +27 11 621 1524
d.ndlovu@scaw.co.za
www.scaw.co.za

Siyazama Professional Management Services
Representative: Enrica Furlan
Tel: +27 11 814 4169
info@siyazama-training.co.za

Structa Technology (Pty) Ltd
Representative: Hercules Rossouw
Tel: +27 16 362 9100
hercules@structa.co.za
www.structa.co.za

Tel-Screw Products (Pty) Ltd
Representative: Ronald Teleng
Tel: +27 11 917 9710
info@telscrew.co.za
www.telscrew.co.za

TESMEC SA (Pty) Ltd
Representative: Simone Fiorini
Tel: +27 11 397 2386
info@tesmecsa.co.za
www.tesmecsa.co.za

The Aluminium Federation of South Africa
Representative: Mark Krieg
Tel: +27 11 455 5553
markk@afsa.org.za
www.afsa.org.za

TLE (Pty) Ltd
Representative: Cesare Di Giacomo
Tel: +27 11 242 6611
cesare.digiacomo@tle.za.net
www.tle.za.net

Tricom Structures (Pty) Ltd – A subsidiary of Robor
Representative: Nick van der Mescht
Tel: (011) 971-1600
nvdmescht@tricom1.co.za
www.tricom1.co.za

EMERGING MEMBER

Down Low Construction & Projects 56 cc
Representative: Calvin Mutize
Tel: +27 84 993 5599
dlc56projects@gmail.com
www.dlcgroup.co.za

SAMCRA MEMBERS

ALLIED PRODUCTS

AMPA Group (Pty) Ltd
Representative: Rudi van Niekerk
Tel: +27 11 398 8000
rudiv@ampa.co.za
www.ampa.co.za

Ash & Lacy South Africa (Pty) Ltd
Representative: Dion Marsh
Tel: +27 11 792 9283
dion.marsh@ashandlacy.com

Kare Industrial Suppliers (Pty) Ltd
Representative: Reitze Hylkema
Tel: +27 11 334 0922
reitze@kare.co.za
www.kare.co.za

PIA Solar SA (Pty) Ltd
Representative: Colin Muller
Tel: +27 41 366 1911
colin.muller@piasolar.com
www.piasolar.com

Rigifoam (Pty) Ltd
Representative: Kevan Riley
Tel: +27 11 421 0313
kevan@rigifoam.com
www.rigifoam.com

Saint Gobain Construction Products South Africa (Pty) Ltd Isover Division
Representative: Bernard Asquith
Tel: +27 12 657 2800
bernard.asquith@isover.co.za
www.isover.co.za

ASSOCIATE

Property Diagnostic Services
Representative: Geoff Legward
Tel: +27 21 975 1559
geoff@propertydiagnostics.co.za

CONTRACTOR

Chartwell Roofing (Pty) Ltd
Representative: Mike Read
Tel: +27 83 625 1557
mike@chartwellroofing.co.za
www.chartwellroofing.co.za

Doublejack Construction (Pty) Ltd
Representative: Jason Knight
Tel: +27 11 828 3453
jason@doublejack.co.za

MJ Cheater & Co Natal (Pty) Ltd
Representative: Raymond Smyly
Tel: +27 31 465 1368
ray@mjcheater.co.za
www.mjcheater.co.za

Roofline (Pty) Ltd
Representative: Terry Thorp
Tel: +27 11 900 3250
tthorp@roofline.co.za
www.roofline.co.za

Tate & Nicholson A division of Southey Holdings (Pty) Ltd
Representative: John Humby
Tel: +27 11 464 0910
jhumby@southey.co.za
www.southey.co.za

PRODUCER/MILL

ArcelorMittal South Africa
Representative: Nic de Jager
Tel +27 16 889 4319
nic.dejager@arcelormittal.com
www.arcelormittal.com

BlueScope Steel SA (Pty) Ltd
Representative: Wayne Miller
Tel: +27 21 442 5420
wayne.miller@bluescopesteel.com
www.bluescopesteel.co.za

SAFAL Steel (Pty) Ltd
Representative: Raghu Raghuram
Tel: +27 31 782 5500
mraghuram@safalsteel.co.za
www.safalsteel.co.za

PROFILER/MANUFACTURER

BSi Steel Limited
Representative: Viv Proudfoot
Tel: +27 33 846 2222
viv@vmarketing.biz
www.bsisteel.com

Clotan Steel*
Representative: Danie Joubert
Tel: +27 16 986 8000
daniej@clotansteel.co.za
www.clotansteel.co.za

Global Roofing Solutions (Pty) Ltd A Division of Consolidated Steel Industries (Pty) Ltd*
Representative: Johan van der Westhuizen
Tel: +27 11 898 2902
johan@globalroofs.co.za
www.global-roofing-solutions.co.za

Heunis Steel (Pty) Ltd
Representative: Anton Heunis
Tel: +27 12 372 0021
anton@heunis.co.za
www.heunis.co.za

Macsteel Roofing
Representative: Dave Reid
Tel: +27 11 878 7500
dave.reid@macroofing.co.za

Safintra South Africa (Pty) Ltd*
Representative: Rainer Straussner
Tel: +27 11 944 6800 / 0861 723 542
rainers@safintra.co.za
www.safintra.co.za

SASFA MEMBERS

MAJOR MATERIAL SUPPLIERS

ArcelorMittal South Africa
Producer of steel
Melvin Hickers
Tel: +27 16 889 4046
Melvin.hickers@arcelormittal.com
www.arcelormittal.com

Everite Building Products (Pty) Ltd
Producer of fibre cement board
Andrew de Klerk
Tel: +27 11 439 4400
adeklerk@groupfive.co.za
www.everite.co.za

Marley Building Systems
Supplier of gypsum board
Annemarie Robertson
Tel: +27 11 82 568 1358
annemarie.robertson@marley.co.za

Saint-Gobain Gyproc SA (Pty) Ltd
Producer of gypsum board
Garry Powell
Tel: +27 12 657 2800
Garry.powell@saint-gobain.com
www.gyproc.co.za

Saint-Gobain Isover
Producer of insulation products
Garry Powell
Tel: +27 12 657 2800
Garry.powell@saint-gobain.com
www.isover.co.za

OTHER MATERIAL AND COMPONENT SUPPLIERS

Kare Industrial Suppliers
Distributor of fasteners
Reitze Hylkema
Tel: +27 11 941 3170
reitze@kare.co.za
www.kare.co.za

Marshall Hinds
Distributor of Tyvek Building Wrap
Denise Paul-Montanari
Tel: +27 21 706 3496
denisem@marshallhinds.co.za
www.marshallhinds.co.za

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Tel +27 82 895 6513
fbasson@strongtie.com
www.strongtie.com

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Gonaseelan Govender
Tel: +27 31 309 5561
intercon@iafrica.com
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Brandon Harding
Tel: +27 31 713 6571
brandon@dezzo.co.za
www.dezzoroofing.co.za

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Jean Pierre Louw
Tel: +27 41 372 2113
jp@genesiscivils.com
www.genesiscivils.com

Innosteel (Pty) Ltd
Profiler and assembler
Len Lategan
Tel: +27 11 794 5436
info@innosteel.co.za

Kwikspace Modular Buildings Ltd
Profiler and assembler
David van Zyl
Tel: +27 11 617 8000
davidvz@kwikspace.co.za
www.kwikspace.co.za

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Uwe Schluter
Tel: +27 11 237 8700
marketing@mitek.co.za
www.mii.com/southafrica

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Tshepo Mashigo
Tel: +27 16 455 3344
tshepom@monlframes.co.za
www. monlframes.co.za

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LSF manufacturer and assembler
Andre Schlunz
Tel: +27 21 577 2601
andre@pholaco.com
www.pholaco.com

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Manufacturer
Rajan Harinarain
Tel: +27 74 184 8881
rhconstruction1@gmail.com
www.rhconstruction1.co.za

Razorbill Properties 127 (Pty) Ltd
Manufacturers and erectors of LSFB
Vernon van der Westhuizen
Tel: +27 16 423 1749/50
vernon@razorb.co.za
www.razorb.co.za

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Profiler and assembler
Johan Fourie
Tel: +27 51 451 2166
info@siteform.co.za
www.siteform.co.za

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thandimakae@webmail.co.za

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Mulder Kruger
Tel: +27 11 363 1960
mulder@trumod.co.za
www.trumod.co.za

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Antonie Vermaak
Tel: +264 61 42 7700
a.vermaak@wv-construction.com
www.wv-construction.com

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Wayne Miller
Tel: +27 21 442 5420
Wayne.miller@bluescopesteel.com
www.bluescopesteel.co.za

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www.clotansteel.co.za

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www.scottsdalesteelframes.com

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Leon Bekker
Tel: +27 21 933 0052
leon@ufcc.co.za
www.ufcc.co.za

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Bapedi Consulting Engineers
Structural engineers
Boitumelo Kunutu
Tel: +27 11 326 3227
tumi@bapediconsult.co.za

By Design Consulting Engineers
Structural engineer
Barend Oosthuizen
Tel: +27 21 883 3280
barend@bydesign.org.za

C-Plan Structural Engineers (Pty) Ltd
Structural engineer
Cassie Grobler
Tel: +27 11 472 4476
cassie@cplan.co.za

Hage Project and Consulting Engineers
Structural engineer
Gert Visser
Tel: +27 16 933 0195
gert@hage.co.za

Hull Consulting Engineers cc
Structural engineer
Mike Hull
Tel: +27 11 468 3447
hull@iafrica.com

Martin & Associates
Consulting Engrs
Tel: +27 31 266 0755
ibu@martinjw.co.za

ASSOCIATE MEMBERS

AAAMSA Group
Promotion of fenestration, insulation and ceiling systems
Hans Schefferlie
Tel: +27 11 805 5002
aaamsa@iafrica.com

ABSA Bank
Provider of building finance
Deon Brits
Tel: +27 11 350 3287
deonbr@absa.co.za

CSIR (Built Environment)
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Llewellyn Van Wyk
Tel: +27 12 841 2677
lvwyk@csir.co.za
www.csir.co.za

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Robin Clarke
Tel: +27 11 456 7960
robin@hdgasa.org.za
www.hdgasa.org.za

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Rob White
Tel: +27 83 456 4989
robwhite@icon.co.za
www.izasa.org

National Association of Steel-Framed Housing Inc New Zealand (NASH)
Carl Davies
www.nashnz.org.nz

National Association for Steel framed housing Australia (NASH)
Ken Watson
www.nash.asn.au

Pretoria Institute for Architecture
Institute for architects
Mauneen Van Wyk
Tel: +27 12 341 3204
admin.pia@saia.org.

Standard Bank
Provider of home loans
Johann Strydom
Tel: +27 11 631 5977
Johanjj.strydom@standardbank.co.za

Steel Framing Alliance (USA)
Mark Nowak
www.steelframingalliance.com

University of Cape Town
Dept of Civil Engineering
Educational
Sebastian Skatulla
Tel: +27 21 650 2595
sebastian.skatulla@uct.ac.za

University of Pretoria
Faculty of Engineering
Educational
Riaan Jansen
Tel: +27 12 420 4111
riaan.jansen@up.ac.za

University of the Witwatersrand
School of Mechanical Engineering
Educational
Terrance Frangakis
Tel: +27 11 717 7333
terrance.frangakis@wits.ac.za

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www.bakhusele.co.za

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Pieter Reyneke
Tel: +27 11 915 0891
info@dalmar.co.za
www.dalmar.co.za

Delca Systems (Pty) Ltd
Project management, civil and structural engrs, QS
Dr Mercy Mafara
Tel: +27 31 266 5900
info@delca.co.za
www.delca.co.za

E4 Construction (Pty) Ltd
Building and construction
David Welsh
Tel: +27 11 465 5200
+27 82 688 9988
david@e4construction.com
www.e4construction.com

Ecoframe
Building and construction
Paul Nicolas
Tel: +27 16 423 1750
pnicolas@ecoframecc.co.za
www.ecoframecc.co.za

Group Five Housing (Pty) Ltd
Developer and builder
Paul Thiel
Tel: +27 10 060 1555
pthiel@groupfive.co.za
www.groupfive.co.za

InnoGreenBuild (Pty) Ltd
LSFB Construction
Mike van Rensburg
Tel: +27 71 850-4992
innogreenbuild@gmail.com

Ithala Construction cc
Building/construction
Martie Weppenaar
Tel: +27 31 462 8168
ithalacons@iwebz.co.za

J and S Building and Civils cc
LSF Construction, building and civils
Hashim Amra
Tel: +2783 302 6768
hashim@jnsbuildingandcivils.com
www.jnsbuildingandcivils.com

Kevamy Investments cc
Specialized joinery and Supply of equipment
Jacqueline Madombwe
Tel: +27 76 112 4808
jmadombwe@gmail.com

Lakeshore Trading 102 cc
Construction and training
Linky Delisile
Tel: +27 31 706 3695
deli@lakeshore.co.za

Legna Creative Enterprises cc
Erector and builder
Angel Mazubane
Tel: +27 31 563 1371
angel@legnacreative.co.za
www.legnacreative.co.za

Light Steel Innovations (Pty) Ltd
Erectors, cladding and project management
Riaan Swanepoel
Tel: +27 16 931 0118
Tel: +27 82 495 4461
riaan@lsiprojects.co.za

Ohlhorst Africa LBS (Pty) Ltd
Installing LSFB material
Sergio Ferreira
Tel: +27 12 327 2411
info@ohlhorst.co.za
www.ohlhorst.co.za

PropUs Investment
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Ntobeko Ngcobo
Tel: +27 31 702 5919
info@propus.co.za
www.propus.co.za

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Bjorn Kahler
Tel: +27 33 386 0100
bjorn@shospec.co.za
www.shospec.co.za

Silverline Group
Developer and builder of LSFB
Charl van Zyl
Tel: +27 21 933 0052
charl@silverlinegroup.co.za

SMC Africa
Detailing, design and construction
Andrew Dewar
Tel: +28782 491 2717
andrew@smcafrica.com
www.smcafrica.com

Stag Homes cc
Developer and Project manager
John Schooling
Tel: +27 21 794 0904
johns@stagprop.com
www.stagprop.com

Top Plan
Construction and alterations
Sarel Oberholzer
Tel: +27 21 903 3189
info@topplan.co.za
www.topplan.co.za

Zamadunga Business Enterprise
Building, construction and renovation
Thandi Ngcobo
Tel: +27 31 701 5431
info@zamadunga.co.za

Zimbabwean Framers Pvt Ltd
LSF Erection and renovaion
Quintin Bruff
Tel: +263 772 2881 05
quintinbruff@gmail.com

ASTPM MEMBERS

Africa Pipe Industries
Jan Jansen van Niewenhuizen
Tel: +27 16 971 1908
janjvn@africapipe.co.za
www.africapipe.co.za

Barnes Tubing Industries (Pty) Ltd
Andy Smith
Tel: +27 11 923 7340
andy@barnestubing.co.za
www.barnestubing.co.za

Hall Longmore (Pty) Ltd
Kenny Van Rooyen
Tel: +27 11 874 7300
kenny.vanrooyen@hall-longmore.co.za
www.hall-longmore.co.za

Macsteel Tube and Pipe (Pty) Ltd
Werner Petrick
Tel: +27 11 897 2100
werner.petrick@mactube.co.za
www.macsteel.co.za

New Concept Mining (Pty) Ltd
Charles Hart
Tel: +27 11 494 6000
charlesh@ncm.co.za
www.ncm.co.za

Pro Roof Steel Merchants (Pty) Ltd
Peter Potgieter
Tel: +27 16 450 5800
peter@proroof.co.za
www.proroof.co.za

STEASA MEMBERS

ArcelorMittal SA Seamless Tube Division
Roche Bester
Tel: +27 16 889 8802
roche.bester@mittalsteel.com
www.mittalsteel.com

Barnes Tubing Industries (Pty) Ltd
Andy Smith
Tel: +27 11 923 7340
andy@barnestubing.co.za
www.barnestubing.co.za

Hall Longmore (Pty) Ltd
Jose de Castro
Tel: +27 11 874 7336
jose.decastro@hall-longmore.co.za
www.hall-longmore.co.za

Honingcraft (Pty) Ltd
Gerhard Hauptfleisch
Tel: +27 11 824 5320
gerhard@honingcraft.co.za
www.honingcraft.co.za

Pro Roof Steel Merchants (Pty) Ltd
Peter Potgieter
Tel: +27 16 450 5800
peter@proroof.co.za
www.proroof.co.za

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