

# steel CONSTRUCTION

OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

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## THE METAL CLADDING AND LIGHT STEEL FRAME ISSUE

**Cladding Fasteners:**  
Are we being screwed?

**TRENDS IN STEEL:**  
Communities of Innovation

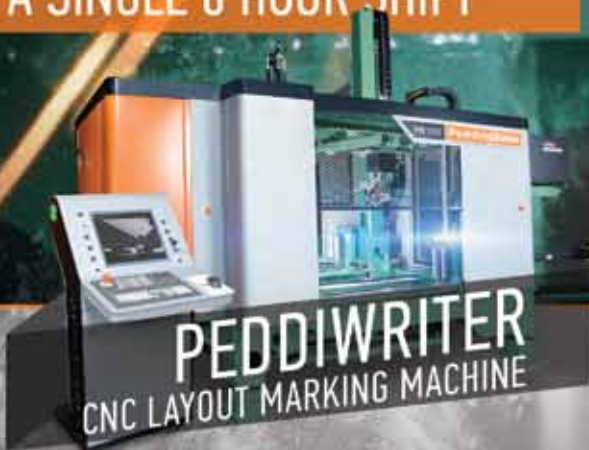
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## in **this** issue...

### SAISC COMMENT

Acknowledging progress and addressing challenges ... 2

### TRENDS IN STEEL

Communities of innovation ..... 4

### PROJECTS:

- AMROD ..... 6
- NMMU B ED Foundation Phase Building ..... 8
- Eco Centre Parys ..... 9
- Kingdom Leadership Centre ..... 10
- 878 Waterfall Estate ..... 12
- Neil Wooldridge Motorsport Workshop ..... 14

### INDUSTRY NEWS

Junk Status – What it means for the construction industry ..... 15

### SAISC SUBSIDIARIES

#### POLASA:

Wealth creation: A dream or reality? ..... 16

#### SASFA:

Mall of Africa: Light steel framing shows its mettle.... 18

#### SAMCRA:

Cladding fasteners: Are we being screwed? ..... 20

### SAISC NEWS

- Steel Awards 2017: Entries ..... 22
- Social snippets ..... 24
- Steel Awards 2017: Table Bookings Open  
7 June 2017 ..... 25
- Steel in Art ..... 26
- Membership list ..... 27

## editor's note



I'm proud to announce that we've received 56 entries (see page 22 and 23 for a sneak peek) across a variety of categories for this year's Steel Awards, and the judging process is in full swing. I must, however, express my sincere condolences to those of you who have constant long commutes to project sites. Between bumper to bumper traffic and the sometimes illogical and counterintuitive instructions of the Google Maps lady, our Steel Awards 2017 site visit road trips have been... slightly vexing at times. (It was suggested that perhaps changing the GPS voice to a male one would result in less obscure routes to our destinations! Hmm. Just remember who has the pack with the padkos in it gents.)

Table bookings for Steel Awards 2017 open on the 7th of June. The event will take place on 13 September 2017 at Emperors Palace (Gauteng), Mount Edgecombe Country Club (Kwazulu-Natal) and the Table Bay Hotel (Cape Town). The enthusiasm for this year's event has been very evident in all of our interactions with project team members. Make sure you book your seats as soon as possible, because space is limited!

Finally, I'd like to extend a hearty "Congratulations" to our new Events and Marketing Communications Manager Liezel on successfully navigating her first SAISC Golf Day. There's a tremendous amount of work that happens behind the scenes to ensure the day runs smoothly. Well done the SAISC team, and to those of you who supported the day by sponsoring or playing! (For more on the golf day, see page 24).

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# Acknowledging **PROGRESS** and addressing **challenges**

By Paolo Trincherio, Chief Executive Officer, SAISC



There are many initiatives on the go to try and secure a future for the South African steel industry. Living in SA, however, seems a bit like playing a fast-moving game of chess with both hands tied behind your back, doesn't it? So how do we move forward and continue to make positive progress with all the curveballs being thrown our way?

Well, we need a plan! This has been highlighted in a recent research report on the downstream industry commissioned by the South African Iron and Steel Institute (SAISD). Obviously everyone shouts, but the trick is to have a plan all stakeholders (downstream and upstream industry, labour and government) can buy into.

Many organizations, associations and government departments including the "Steel Task Team" have been working furiously to solve the problem. Much more co-ordination is needed to draw all the good work together and implement recommendations as fast as possible. I would like to share some of the progress with you and then perhaps highlight some challenges going forward which we have no option but to solve together.

## **Fabricated structural steel, transmission line steelwork and line hardware**

The import tariff has been at the bound rate of 15% for some time already. Designation was implemented in February 2017. Monitoring and implementation are a work in progress.

Codes and Standards and contractual issues need additional work and co-ordination. HS codes which are used to sidestep duties are being addressed and applications to move them to the bound rates are in.

## **Tube and pipe**

Bound rates are still a challenge and designation has been implemented on large bore spiral pipe only. More work needs to be done particularly with the introduction

of safeguards on hot rolled coil. There are applications in to address the bound rates but we may need anti-dumping duties in addition to this.

## **Roofing and cladding**

There is currently a study underway to try and secure bound rates on finished goods and to look at the possibility of anti-dumping. Other initiatives require co-ordination and cooperation of the industry players.

The downgrade is a major concern for construction as it will affect our GDP and gross capital fixed formation which is critical to funding large projects. Designation only helps if it is implemented and Government has funds to implement projects. The time it takes to prepare proper submissions for downstream tariff applications is significant and you have to show that you are an industry in distress.

We have a situation where upstream industry has been protected to some extent but downstream industry is exposed. China indicated a record production in April 2017 and they have a plan! "One belt and road". Finished goods or downstream manufacturers have been moving to imports and a strategy is needed to encourage local manufacturing.

Is comprehensive restructuring of the industry needed? What can we manufacture? Where are we competitive? How do we reinvent ourselves for this new world we are living in? How do we do it as quickly as possible?

No business can survive in an environment of unfair competition and limited work prospects. So the priority is to find new markets both in terms of products and locations to stay in business. A move to get out of junk status as fast as possible coupled with encouraging investment would change the situation quickly, and we can only hope Government is listening.

“A move to get out  
of **junk status**  
as fast as possible  
coupled with encouraging  
**INVESTMENT**  
would change the  
**situation** quickly and  
we can only **HOPE**  
government is listening.”



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# Communities of INNOVATION

By Amanuel Gebremeskel, Technical Director, SAISC

Identifying and developing communities of motivated actors at the steel sector level, for instance, is likely to be more effective at managing sustainability and innovation in our industry as compared to other protective state actions.

This must be one of the most exciting times to live and work in Africa. The potential opportunities for the brave and fearless appear endless. After centuries of supplying Europe, Asia and the Americas with cheap labour and raw materials the continent is ironically turning into one of the more exciting destinations for investments from these same regions.

This is happening because ageing populations in the North are desperately seeking good returns on investment for their life savings. They believe such returns are likely to be found in demographically exploding Africa and South Asia.

Such investments may result in African GDP growth but will not necessarily provide for social development. Social development requires that workers progressively move up the value chain of production and gain higher incomes, thus affording them better goods and services.

In the 18th century the British blocked textile imports from India – one of the largest textile producers at the time – for almost a hundred years until their domestic producers could become competitive. They subsequently invested large sums to develop

the cotton fields and railroads of India to feed British industrialization which was then dominated by the textile industry.

By the mid-20th century colonial India had remarkable infrastructure and a growing GDP but little social development. Indians were relegated to growing increasing volumes of cheap cotton in exchange for expensive finished textiles from Britain. This explains why Mahatma Gandhi's first move at independence was to limit textile imports and return Indians to processing cotton into textiles once again.

A little over half a century later India is back as the second largest textile exporter in the world and social development continues apace. Therefore it is clear that providing effective protection for local industry is key to encouraging industrialization and social development. However this is not enough. Another British ex-colony, Egypt, produced even higher quality cotton than India and gained independence around the same time, but is nowhere in the league of large textile exporters today.

As the first native leader since Biblical Egypt, Gamal Abdel Nasser was extremely popular upon independence and provided protection

for his new textile industry. However neither his popularity nor the protections resulted in sustained success for the Egyptian cotton and textile sector.

The difference between the Egyptian and Indian trajectories may be explained by the fact that Gandhi started independent life by working his famous yarn spinning wheel, while Nasser was busy with grand geo-political ambitions and paid scant attention to weaving technological change and innovation into his society's fabric.

Ghandi was well aware that under British government protection from Indian products *"John Kay invented the flying shuttle in 1734 in Lancashire – one of the first of a series of inventions associated with the cotton woven fabric industry. The flying shuttle increased the width of cotton cloth and speed of production of a single weaver at a loom."*

*In 1761, the Duke of Bridgewater's canal connected Manchester to the coal fields of Worsley and in 1762, Matthew Boulton opened the Sobo Foundry engineering works in Handsworth, Birmingham. His partnership with Scottish engineer James Watt resulted, in 1775, in the commercial*



*production of the more efficient Watt steam engine which used a separate condenser.*

*In 1764, James Hargreaves is credited as inventor of the spinning jenny which multiplied the spun thread production capacity of a single worker - initially eightfold and subsequently much further. Also in 1764, Thorp Mill, the first water-powered cotton mill in the world was constructed at Royton, Lancashire, and was used for carding cotton...<sup>1</sup>*

With the spinning and weaving process mechanized, cotton mills cropped up all over the North West of 18th century England. Britain was developing and now ready to compete with her colonies. With such knowledge in tow Ghandi's India later innovatively adapted many of the technologies of Lancashire and successfully used them in an industry that had novel management and ownership structures never before seen in Britain.

Since the time of the British Industrial Revolution, technological change has come to be viewed as the basis for innovation. Here it is important to distinguish between inventions - physical proofs of concepts - which are critical inputs into the innovative process, and innovation which has an effective impact in either the economic or social sphere.

Moreover as demonstrated by the Indian textile industry innovation need not only encompass the novel machines of an industry but also the management and ownership structures that best fit the new technologies, and the environment in which they are used.

Just like Egypt most African states are still struggling to implement innovation based social development because of a lack of vision at the level of political and industrial leadership, incoherent systems of innovation, and over-reliance on raw minerals and commodities. Even the countries that are partly industrialized are struggling to shift their industries away from supporting

commodity extraction towards satisfying the basic needs of their citizens.

Many African initiatives have relied too heavily on what particular organs of the state ought to do to encourage innovation. In many cases policy has been directed at creating entrepreneurs, and in the case of South Africa even industrialists. These policies are unlikely to work.

The focus should rather shift to creating communities which nurture technical ideas, make investments in risky environments, and divide the benefits so that both investors and personnel are motivated to develop the competences that are needed to pull off sustainable industrialization.

While the entrepreneur is an important agent of innovation, state and industrial policy should focus on encouraging the communities from which applicable technologies, entrepreneurs and institutions can emerge. Thus identifying and developing communities of motivated actors at the steel sector level, for instance, is likely to be more effective at managing sustainability and innovation in our industry as compared to other protective state actions.

Africans today face numerous challenges that require innovative solutions. These include services to supply healthy food, safe housing, sanitation, clean water and clean energy. Along with domestic and exploding foreign investment these can surely provide the demand needed to stimulate innovation.

There are encouraging green shoots around the continent. For instance *"in the arena of clean water, Askwar Hilonga, a Tanzanian chemical engineer, recently developed a low-cost nanotechnology water filter that can both remove chemical contaminants and microorganisms, for which he won the prestigious Africa Prize for Engineering Innovation.*

*In the field of healthcare, the Beninese scientist, Valentin Agon, won another prestigious prize, the 2016 Innovation*

*Prize for Africa, for developing "Api-Palu", a low-cost anti-malarial drug treatment that is based on plant extracts and is already in the market in the Central African Republic, Chad, Burkina Faso and Benin.*

*In renewable energy, the award winning company, Photovoltaic Technology Intellectual Property (PTiP) Innovations, began the manufacturing of its locally-developed and publicly-funded thin film solar panels in Stellenbosch, South Africa, in 2015 in collaboration with a German firm...<sup>2</sup>*

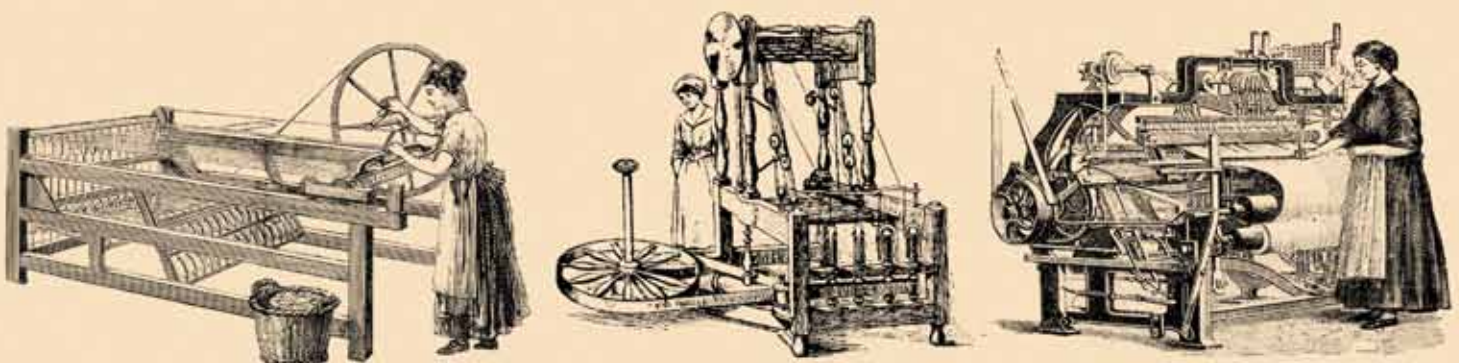
There is no reason why a steel sector mobilization by our industry cannot result in large numbers of innovations that make use of African iron and steel to serve Africans. We need to encourage the innovative communities in and around the steel industry to use local and imported technology, and improve upon them to fit the needs of our society. This will go a long way to sustainable protection of the steel industry.

This would require mobilization of industrial managers, labour unions and relevant organs of the state to provide the space and resources to support these communities of innovation. Just as in Britain and India this will allow temporarily protected innovative industries to serve African needs in the near future. Some of these will then export their products competitively in the long run.

Even the motivation to buy local is greatest when large numbers of people are actively engaged in the creation and production of the goods and services that they use. Ultimately this is what economic sustainability and social development are all about.

<sup>1</sup> Wikipedia article ([https://en.wikipedia.org/wiki/Textile\\_industry](https://en.wikipedia.org/wiki/Textile_industry)) as modified by the author.

<sup>2</sup> Discussions with Dr Diran Soumonni of the Wits Business School as modified by the author.



# AMROD



This large warehouse for the company Amrod, suppliers of corporate gifts, had an extremely short program. From date of order, the steelwork contractors had 13 weeks to fabricate and erect 440 tons of steel. This required them to erect approximately 10 tons of steel per day to be able to meet the program. The team faced many challenges in making this program work, like the tilt up walls, earth works and rain delays as well as the interface of many other trades. Ferro Eleganza are very proud to say that these challenges were overcome and quality assurance never went by the wayside.

The structural framing includes

- Lattice roof structure consisting of girders and trusses.
- Metsec purlins.
- Steel columns sitting on concrete columns.
- Metsec Cladding rails bolted to the outside of steel and concrete columns.

From a cladding perspective – various colours and plain levels were utilised giving the outside of the warehouse an aesthetic appeal. Klip-Tite sheets were rolled on site, as they were too long to transport.

The client was very satisfied with the project and that it was handed over on time. It is a truly beautiful warehouse that is quite visible to all passing the Buccleuch interchange.



## PROJECT TEAM

**Architect:** Empowered Spaces • **Cladding Contractor:** Lowveld Cladding

**Cladding Manufacturer and Supplier:** Global Roofing Solutions

**Main Contractor:** Abbeydale • **Project Manager:** DG Consulting Engineers

**Quantity Surveyor:** Pentad • **Steel Erector and Steelwork Contractor:** Ferro Eleganza

**Structural Steel Detailer:** Ferro Draughting



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# NMMU B ED FOUNDATION PHASE BUILDING



The Matrix...cc won the architectural competition for the design of this building which was designed for students studying to become teachers at foundation phase level. Lecture halls, a resource centre, common space and an office component with an impressive link ramp covered by a floating steel canopy were included. The Matrix...cc deviated from the NMMU masterplan which subsequently orientates the building on a north/south axis which was designed to create a new entrance to the campus on axes with the main campus spire.

Galvanized steel was chosen to eliminate any future maintenance and is in line with The Matrix...cc philosophy which follows a minimal palette of materials often used in its raw form (off shutter concrete, polished concrete floors, face brick).

The cladding was selected for the above reasons, with regards to the minimal palette. The sheeting was curved in certain areas which induced incredible lighting effects from the surrounding township lights at night and the sun during the day.

Because of the limitations with respect to the size of the galvanizing bath, the structural steel was designed as a kit of parts. The sun louvres to the north façade of the building were constructed by means of a series of steel sections steering away from the conventional sun louvres, keeping in line with the philosophy of a minimal palette.

Challenges and solutions included working within tight budget constraints, SMME uprising and innovative information platforms used during the construction process (Plangrid, Basecamp, Revit). Since the project's inception, the building has undergone an intense value engineering process and the project went out to tender at sketch plan stage.



## PROJECT TEAM

**Architect:** The Matrix...cc Urban Designers & Architects • **Cladding Contractor and Manufacturer:** Cladall

**Client/Developer:** NMMU Infrastructure Projects • **Corrosion Protection:** Galvanising Techniques

**LSF Detailer:** The Matrix...cc Urban Designers & Architects • **Main Contractor:** WBHO

**Photographer – Photo competition:** Duker Photography • **Project Manager:** Aproma • **Quantity Surveyor:** KWMH\_QS

**Steel Erector and Steelwork Contractor:** NKS Steel • **Structural Engineer:** Sigma Consulting • **Structural Steel Detailer:** Detail Solutions

# ECO CENTRE PARYS



The client wanted to develop an interesting commercial property comprising offices, a venue for functions and meetings, and a restaurant / coffee shop which would service the offices and function venue. The client also wanted to incorporate 6 x 12m shipping containers into the building. To retain an element of the unique character of the building, several container doors and panels were retained, and remain visible.

Light steel was the logical choice to complement the converted shipping containers, as well as to optimise the structural strength of the building. Light steel also has the advantage that it would not become infested by insects which are drawn to the timbers traditionally used in construction.

Energy efficient lighting and inverter air conditioners were used to minimise the use of electricity, and to provide an optimal platform from which to incorporate solar PV power cost-effectively in the future.

LGS was utilized due to the reduction in mass and also the ease with which it can be site assembled. Even components can be adjusted (using the Ultra-Span system) to ensure a perfect overall finish.

What makes this project special is the manner in which the various materials have been combined in the building to create a really well insulated building that will have reduced operating costs year-round to maintain a comfortable atmosphere.

While the aesthetic appeal has drawn a lot of attention, we have also measured significant benefits from the thermal insulation. Between the insulation and the cross-ventilation, the building remains a comfortable temperature. The air-conditioning can be used to further change the temperature in the building to suit preferences.

The municipality had not encountered a steel building with light steel before, and needed some education regarding the advantages and benefits. Many consumers and end-users have stopped by for information, and thus lots of consumer education has been accomplished through the project.



## PROJECT TEAM

**Architect:** Conradie & Greyvenstein Architects • **Cladding Contractor and Supplier:** Innovation 4 Africa  
**Cladding Manufacturer:** MiTek (purlins) • **Client/Developer:** Peakfull 1111 cc • **Corrosion Protection:** MiTek

**LSF Detailer:** Innovation 4 Africa + MiTek • **Main Contractor:** Innovation 4 Africa

**Photographer – Other submitted images and photo competition:** Innovation 4 Africa

**Project Manager, Steel Erector and Steelwork Contractor:** Innovation 4 Africa • **Structural Engineer:** Gtegn Consulting Engineers cc

# KINGDOM LEADERSHIP CENTRE



The client brief for this project presented EcoStrut with the challenge of building a scissor bowstring truss over a 20m-clear span section with additional mono bow-string truss sections on either side, making a total building width of 42m. The client wanted a light weight structure with curved walls. The LGS system was the best option for this project.

- Roof area: 3 250m<sup>2</sup>
- Weight of materials used: 28 300kg
- Therefore = 8.7kg/m<sup>2</sup>

The client also specified that the two-end projecting dog-leg section hip roofs meet the main bowstring roof on a curved end wall junction. A truly amazing roof structure. The team had to use a crane to lift the trusses in pairs of five into place which was easily achievable due to the product's light weight. This meant it only took one day to erect all 46 trusses of the central main section roof, reducing the time needed on site.

This project show cases how flexible ultra-span (LGS) is and makes a complex roof easy to design and to erect. This project also shows that with the right skilled company a steel roof can be erected cost effectively and in good time.



## PROJECT TEAM

Client/Developer: Joe Singh Group of Companies  
 Steel Erector: Go Green Structures • Steelwork Contractor: Ecostrut  
 Structural Engineer: Maxspan • Structural Steel Detailer: Ecostrut

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- Benmore Gardens Shopping Centre Refurbishment (150t)

- Golden Era Can Line Plant (525t) – Golden Era Group
- Fourways Mall Link Bridges, Ramps, Lift Shaft, Infill Slabs and Roof (250t) - Fourways Precinct



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# 878 WATERFALL ESTATE



This project entailed the development of a new home as per the client's design specifications. The entire house is Light Steel Frame other than the chimney for the fireplace. The client wanted to build a thermally efficient, double story 626 square meter house in less than 12 months, and opted for Light Steel frame because it would have a lower carbon footprint and would be more thermally efficient than brick. The quicker build time and the "sound barrier" quality was a bonus.

The client praised Futurecon, expressing that "The team did really well to involve us where necessary and just drive on until completion. I know special attention was taken to ensure that the snags would be limited even working paint suppliers to ensure that the settling hairline cracks would be avoided.

It was great working with a team that paid attention to all of the details of the build and shared a wealth of experience when required to make critical decisions. Mitchell often took the pain and anxiety out of key decisions that needed to be made in relation to things we would live with for a long time. This included window frame options, underground water management and internal paint colours."

Futurecon delivered on time, on budget with almost zero snags and a client who truly loves the finished project.



## PROJECT TEAM

Architect: SPS Design • Cladding Contractor: Futurecon • Client/Developer: Private  
Main Contractor: Futurecon • Photographer – Other submitted images: Futurecon  
Photographer – Photo competition: Futurecon • Project Manager: Futurecon  
Steel Erector and Steelwork Contractor: Futurecon • Structural Engineer: EMC Engineering

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# NEIL WOOLDRIDGE MOTORSPORT WORKSHOP



This project initially entailed adding one storey to an existing workshop that burnt down. The owner then considered adding a second floor to the building as a renovation option.

The structural framing included

- Installing LSF ring beam and floor joist
- Wall panels
- Roof purlins
- Steel beams

LSF was chosen as a suitable option for the slab over a hollow precast slab due to site access and weight on the original building. It was also chosen due to a quick building time and tight working space / area. The architect has worked with Shospec on various other projects in the past and is a great believer in LSF construction. Special considerations included floor loads, site access and a minimal laydown area.

Due to building regulations and building boundaries the exterior walls needed to achieve a 2HR fire rating as well as bordering on a petrol station. The use of an LSF system allowed for accelerated programme, a reduced labour force, less waste and a tidy and clean site.

What makes this project special is the fact that the floor needed to be designed to take extra loads of 3.5 to 5KN due to manufacturing of racing car chassis and the jig for this. Also notable are the 2HR fire rated walls and load ratings achieved on floor system with LSF.



## PROJECT TEAM

**Architect:** Equilibrium Architectural Solutions cc • **Cladding Contractor (walls):** Shospec (Pty) Ltd

**Cladding Manufacturer (walls):** Shera and Gyproc – Supplied by Capco • **Cladding Supplier (roof):** Four Seasons Roofing

**Cladding Supplier (walls):** Capco Ceiling and Partition Components • **Client/Developer:** Neil Wooldridge Motorsport Workshop

**LSF Detailer:** Steel Frame Developments (Pty) Ltd • **Main Contractor, Project Manager and Steel Erector:** Shospec (Pty) Ltd

**Steelwork Contractor and Structural Steel Detailer:** Barnmaster • **Structural Engineer:** Martin & Associates Consulting Engineers

# JUNK status –

## what it means for the construction industry

**State construction projects are likely to be the first to be affected, ranging from municipal projects and reaching all state-owned enterprises' projects.**

By Chris Bennett, Director MDA Attorneys



South Africa's downgraded status by international agencies is likely to have significant impact on the construction industry as the cost of credit rises, particularly in existing contracts. As a result, the already high risk of non-payment is set to escalate further. This is according to Chris Bennett of MDA Attorneys, a specialist advisory practice for the construction industry.

The first to feel the pain of more expensive credit will be the employers as lenders raise interest rates. This places pressure on employers to fund their projects and reduces their returns. The fact is that there are not many projects built from the employer's cash reserves, and this will mean that more expensive credit will be a widespread blow.

State construction projects are likely to be the first to be affected, ranging from municipal projects and reaching all state-owned enterprises' projects. Already, the controversial nuclear build has been placed in doubt on account of the affordability factor. However other infrastructure projects are also being placed on hold, including those in crucial areas such as water infrastructure.

Aside from delaying or blocking new builds, the effect on employers already engaged in projects is significant. They must keep funding them, cancel or suspend them, with the associated results of doing so.

At MDA Attorneys, we see many matters where employers are not able to pay their contractors either on time or at all. This places many contractors in difficult positions, as most contractors will be unable to finance a project beyond 30 days. Those contractors then also take out loans to keep funding the works in anticipation of payment.

Most at risk are the smaller to medium enterprises, which is particularly devastating for development.

Non-payment or very late payment of contractors is already a major problem, particularly in the public sector. MDA has experienced contractors simply being told by state entities

that there is no money left to pay them. We anticipate seeing more of this as a result of our junk status.

Unfortunately, we also anticipate seeing more business rescue and insolvency proceedings in the construction sector. Making sure one has contracted with a party which can pay (as a contractor) or finish the job (as an employer); and that the contract has sufficient protections, has never been more critical.

Despite being out for comment for a number of years, regulations to ensure prompt payment and rapid dispute resolution have not yet been promulgated. The absence of the regulations, however, does not mean that contractors are without rights. So long as the contractors have complied with their contracts, they should be in a position to make and prosecute their claims.

Parties should not be afraid to exercise their rights and pursue the contractual dispute procedures, judgment for payment certificates, make demands under guarantees, or even terminating the contracts and proceeding to recover damages.

Importantly, payment of certificates or demands under guarantees, and which are not paid, can be recovered legally quite rapidly from a legal perspective. Once judgment is obtained, execution against assets may proceed to recover the debt.

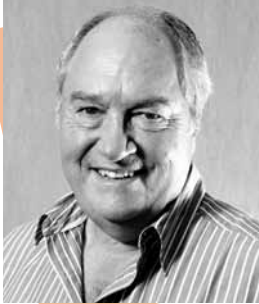
### About Chris Bennett, director MDA Attorneys

Chris Bennett, an admitted attorney is a director of MDA Attorneys. Chris provides commercial and contract advice and has advised on numerous major infrastructure projects. Chris also has extensive dispute resolution experience and deals with many adjudications and arbitrations.

Chris' clients include many major South African and international employers and contractors, a number of whom are listed companies both in South Africa and abroad.

# WEALTH CREATION: *a dream or reality?*

By Kobus De Beer, Director, Polasa



Alternatively stated, every 1 000 tons of fabricated structural steel produced creates or sustains 100 decent jobs. This means that the 150 000 tons of HS7308 products exported from South Africa in 2016 created or sustained 15 000 decent jobs!



South Africa is currently in dire need of ideas and an understanding of how to create the millions of new jobs needed to normalize the South African business community and society.

Politicians and others are proposing often well intended “Radical Economic Reforms”, “Redistribution of Property”, “Accelerated Transformation”, “Free education” etc. that will cost a lot of money we do not necessarily have, each with its enthusiastic supporters and its horrified detractors.

Here is an engineer’s perspective on “Wealth Creation” which is essential for any or all of the above to succeed – and we need these to succeed!

In its simplest form the Wealth Creation formula looks as follows:

$$\text{Items Bought} - \text{Items Sold} = \text{WEALTH CREATED}$$

This WEALTH CREATED (or “ADDED VALUE”) in a company is typically made up as follows:

SALARIES AND WAGES PAID (including benefits)

Plus OPERATING INCOME (used for taxes, interest paid, rental paid, etc.)

Which includes NETT INCOME AFTER TAX (used for dividends and retained earnings)

It is clear from the above that the important numbers for society must be the amounts available for salaries and wages while shareholders look at dividends and the retained value in the business.

A business that solely imports and sells may have excellent nett income results, but the “Wealth Created” is poor and of limited value to the South African community. The money paid to the foreign supplier is lost to the RSA economy.

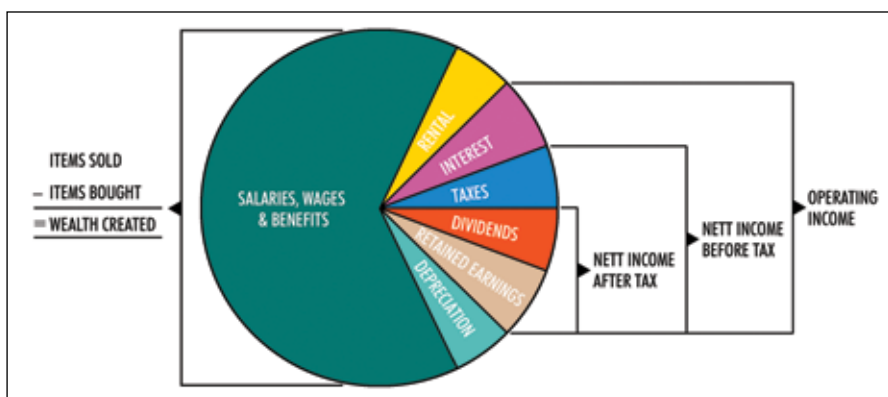
A business that manufactures locally may have poorer nett income results, but the “Wealth Created” is of much more value to the South African community! Have a critical look at the financial results of many of the publicly owned South African companies and appreciate the wealth created (often including 50% for salaries and wages) in addition to looking at reported “headline earnings”. We must support and protect these companies – their survival, growth and ongoing investments hold the keys to a successful country. Too many companies have gone under or left the country in the past few years without much notice or regrets.

Our philosophy must be: “If it can be made in South Africa, it must be made in South Africa.” The above “Wealth Created” calculation excludes the well researched “multiplier effect” which in our industry means that for every 350 people employed making fabricated structural steel, some 1 000 decent jobs are created in the industry!

Alternatively stated, every 1 000 tons of fabricated structural steel produced creates or sustains 100 decent jobs. This means that the 150 000 tons of HS7308 products exported from South Africa in 2016 created or sustained 15 000 decent jobs!

The basic solution is thus to build strongly on our successes and to identify every imported product or item imported into our country that can be locally made and to actively stop the imports and replace these with local supplies. The “designation” of fabricated structural steel products means that the 700 plus government buying offices have to buy South African made products made from South African produced steel. This window will not stay open for very long. Our industries must use the opportunity to become competitive and use this as a base to export from. Our non-government buyers must remain demanding on quality and price, but must also remain aware of the impact of every buying decision.

The above outline is seriously complicated by the industry wide concerns and conflicts associated with the recently imposed import and tariffs and duties. We need to manage this situation as best we can, but the solution of now importing regardless to deal with the situation will lead us even further from becoming a normalized society.





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# LIGHT STEEL FRAMING SHOWS ITS METTLE

By John Barnard, Director SASFA



Another milestone was reached for the light steel frame (LSF) industry in South Africa when Ohlhorst Africa Lightweight Building Solutions was appointed contractors for the design, supply and installation of the light-weight steel facade wall and parapet structure at the Mall of Africa (MOA). "This was one of the largest single phase shopping mall building projects ever undertaken in South Africa and certainly the biggest and most prominent LSF project to date in this country," says Southern African Light Steel Frame Building Association (SASFA) director, John Barnard.

The fact is there have been several projects in recent times all over the southern African region that have confirmed the acceptance of light steel frame building (LSFB) as a mainstream construction method for a wide range of building solutions. None, however, is more significant than the massive MOA structure, which required 217 tons of LSF steel and 25 000m<sup>2</sup> of Saint-Gobain Weber ETICS (external thermal insulation and cladding system) cladding.

Ohlhorst LBS technical and marketing manager, Jacques van Zyl, says that there are many benefits of LSFB and the main considerations in choosing it at the MOA were the speed of the build - the programme required that the building envelope be closed within a few months - and the long-term cost savings. "The LSF/ETICS system ensures weight reduction on the superstructure resulting in significant cost saving on structural steel and concrete. It also provides a durable external cladding with low maintenance requirements further reducing costs over time," he says.

The quantum of weight reduction is well illustrated by comparing brick with LSF/

ETICS. A brick wall has a mass of 450kg per square metre translating into a weight of 11 300 tons over the 25 000m<sup>2</sup> at the MOA. The comparable weight with LSF/ETICS is an astonishing 10% of this - 1 130 tons! Add to this that it would take 1100 truckloads of bricks against 110 loads of LSF and the logistical advantage of LSF/ETICS on the entire construction process becomes abundantly clear," says van Zyl.

The steel used was cold-formed thin gauge light steel frames and, according to van Zyl, what made this project unique was the architect's requirement for 30mm and 60mm protruding, horizontal bands (some in excess of 100 meters in length) to wrap the building and to be completely in line at a height of up to 25m.

The LSF/ETICS system was used to create the bands and the accuracy of the system made this complex specification readily achievable. "It worked well even over the brick portion of the building as the LSF/ETICS system has a tolerance of between 50mm and 70mm in surface inaccuracies. Overall, it was just much easier to create the bands this way as regular plaster bands, not being as accurate as LSF, are notorious for creating water traps affecting the longevity of the structure," he says.

Tia Kanakakis of MDS Architecture, the MOA architects, says that the speed of installation was a major benefit on the project and that the LSF/ETICS lightweight walling system is a far more expedient construction methodology than traditional masonry walls. "Being a lightweight product, it is beneficial for use where there are slab loading limitations. I would definitely recommend the system to other architects or engineers - its benefits far outweigh its limitations, which can always be managed" she says.



LEFT: Mall of Africa showing packs of 'Cavity Bat' insulation supplied by Isover for use in the LSF wall cavities.



building projects, less rework, reduced logistical costs – which are of growing importance due to the escalation of transport costs and general construction inflation – and a drastic reduction of rubble on building sites, when compared with the brick-and-mortar alternative. The piles of broken and unused bricks from the brick sections at the MOA were a glaring example,” he says.

He explains further that LSF is significantly more energy efficient than more traditional construction methods – both with regard to “embodied energy” of the materials and components, as well as “operational energy” relating to heating and cooling of the building over its design life. A research project carried out by the CSIR indicated that a LSF residential building will require less than half of the energy needed to heat and cool a masonry residential building to comfortable internal temperatures. “Furthermore, from an environmental perspective, steel is infinitely recyclable.”

Barnard says that the steel consumption of the LSF industry has achieved notable growth over the past five years. “The biggest growth area is in multi-storey office and commercial buildings, where it is replacing heavy masonry curtain walls and, looking at the advantages and the successes of LSF at the MOA, one can understand why this is the case.”

Van Zyl says the entire team is very proud of this award-winning achievement (the MOA was a joint winner of the Light Steel Frame category at Steel Awards 2016). “This was indeed a project of real class and will remain an example of the massive advantages of the LSF method in a changing world where costs are spiralling and construction efficiency is the name of the game.

Gert Visser of HAGE Consulting Engineers, who worked closely with Ohlhorst LSB, says that, from an engineering perspective, one of the biggest challenges on the MOA project were the extra-large openings and unusually high parapet walls – the LSF walls exceed 6m in height and the parapets are just short of 4m-high, and span 8m between columns. The wind load on the roof parapet walls was a serious issue, which was overcome by reinforcing the LSF wall panels with LSF web joists.

“There is no doubt that use of LSF has opened a whole new world for engineers and architects who are now challenged to become more innovative and creative with their specification of LSF. The Mall of Africa is now the benchmark for what is possible for LSF in construction,” says van Zyl.

An important stipulation on the MOA project was a high R-value – a measure of resistance to heat flow through a given thickness of material and the higher the R-value the greater the resistance – for

the external cladding in order to meet the energy efficiency and energy saving requirements of the project. In the case of LSF/ETICS system at MOA the R-Value was approximately 3.6 as opposed to the standard R-value of less than 0.6 for a double brick wall. “Apart from the substantial energy savings over time, these R-value levels give the architects the freedom to be as creative and as inventive as possible while, at the same time, reducing thermal losses and keeping ambient temperatures comfortable throughout the year at low cost,” van Zyl says.

He adds that in the middle of summer – and even while it was still a building site – it was palpable how cool the building was. “Those working inside commented frequently on this apparent anomaly!”

Barnard says the facts are indisputable. “LSF is a very cost-effective building method, with financial savings emanating from significant time savings to complete

# cladding fasteners:

## ARE WE BEING SCREWED?

By Dennis White, Director SAMCRA



Whilst the subject of the validity of the various performance tests will form the basis of a future article we wish to explain briefly the background to the classification of coatings on fasteners and washers.

Despite having reasonable National Building Regulations, an abundance of National Standards and an admirable Consumer Protection Act we constantly receive complaints from aggrieved parties about the poor performance of products supplied into the cladding market. In previous articles we have highlighted the need to use SANS National Standards as a means of ensuring quality as well as the risks associated with accepting substitutions of products specified by competent professionals. Warranties can be substantially compromised if non-compliant components are used.

Since the opening of our market post 1994 we have had access to the best products the world has to offer, regrettably the converse occurred. The market has become awash with inferior foreign products, sold, at best by gullible vendors, but mainly by rogues with price and a quick profit being the drivers. Suitability for purpose and durability are rarely considered. The vast majority of these products do not comply with either the National Building Regulations, SANS National Standards or other internationally recognized standards.

Fortunately there are a few reputable suppliers that do supply quality and compliant products.

A fact that is not generally appreciated by specifiers, quantity surveyors and project managers is that there is no longer a local manufacturer of self-drilling roof

fasteners. Only a limited range of self-tapping fasteners are manufactured locally. A disturbing trend which has become prevalent in this market is the misleading and often fraudulent claims made by vendors. Products are claimed to have withstood hundreds of hours of salt spray testing or are type class-3 or 4 etc. yet when tested locally fail to meet the applicable test criteria. Some even boldly claim their products comply with recognized standards and when challenged produce certificates issued by questionable or spurious bodies.

Whilst the subject of the validity of the various performance tests will form the basis of a future article we wish to explain briefly the background to the classification of coatings on fasteners and washers. Metals and metallic coatings are vulnerable to atmospheric corrosion in the presence of moisture. The extent of corrosion is dependent on the concentration of pollutants and the amount of moisture. The International Organization for Standardization (ISO) developed a series of standards addressing the corrosivity of atmospheres which were divided into the six categories as detailed below.

CATEGORY	CORROSIVITY
C1	Very low
C2	Low
C3	Medium
C4	High
C5	Very high
CX	Extreme



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The classes for the protective coatings on fasteners as defined in SANS 1273 and numerous other internationally recognized standards match directly with these ISO categories i.e. a class 3 fastener is required in a category C3 atmosphere. Revisions to SANS 1273 will also include washers.

Another area of concern is the weatherproofing gaskets on flanged head fasteners and bonded washers. These can be anything from sealed sponge rubber through various plastics to EVA and EPDM. Gaskets need to be capable of operating at temperatures between -10° to +80°C, be UV resistant and be free of active carbon. Neither sponge based products nor the majority of plastic gaskets meet these criteria. Their early failure lead to premature failure of the fastener and accelerated corrosion of the cladding. Based on historical performance EPDM has proved to be the superior product with a service life in excess of thirty years.

SANS 10400 Part-B and the soon to be released revised SANS 10400 Part-L stipulates a **minimum** design working

life for cladding (including fasteners and ancillary items) of fifteen years. In addition Part-L requires any roof covering competent during its design working life to resist amongst other things:

- Effects of UV radiation without deterioration of its essential properties.
- Chemical attack from common atmospheric gases and saline atmospheres.
- Accumulation of hail after moderate hail storms shall not cause water to penetrate the interior of the building.

It is mandatory to comply with the National Building Regulations of which the various parts of SANS 10400 constitute the minimum deemed to satisfy requirements. It is therefore of paramount importance when specifying or evaluating cladding systems to ensure compliance with SANS 10400 together with the manufacturer's conditions of warrantee.

One fail safe method to achieve this is to insist on products complying, preferably, with SANS standards, failing which other



ABOVE LEFT: Fastener + bonded washer.

ABOVE RIGHT: Fastener with flanged head.

internationally recognized standards. Test results of compliance with such standards should be from a SANAS (SA national Accreditation System) accredited organizations.

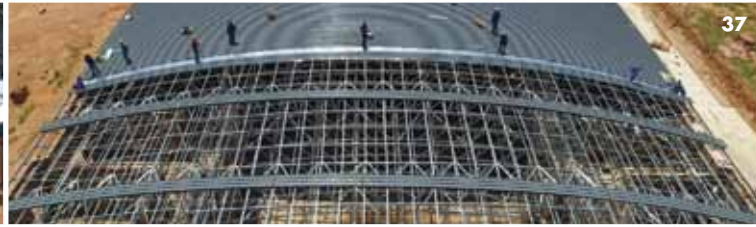
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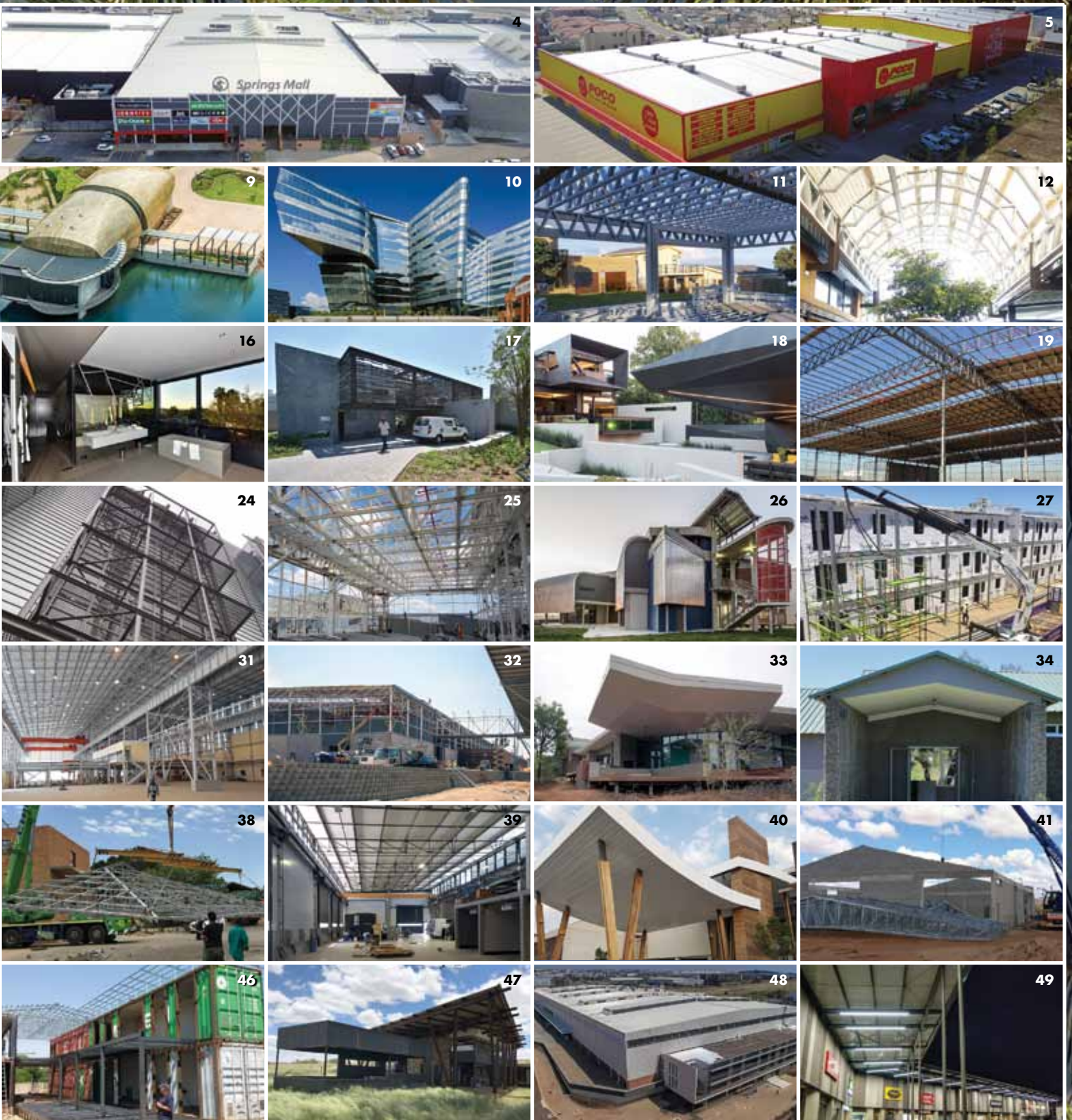


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## STEEL AWARDS 2017 ENTRIES

- |   |  |   |                                    |  |
|---|--|---|------------------------------------|--|
| 1 Amrod                                   | 13 Dinabi Bethlehem                    | 25 BMW H-EMS Roof Lift                            | 34 Ghui Ghui Lodge                 | 47 House Pierce  |
| 2 Rudamans                                | 14 Granger Bay Demountable Parking Lot | 26 NMMU B Ed Foundation Phase Building            | 35 Tongaat Hall                    | 48 Westlake Warehouse and Offices                        |
| 3 Kasane Airport                          | 15 The Dragonfly                       | 27 Stellenbosch University Tygerberg Campus Res 3 | 36 GLA School Hall                 | 49 Fourways Crossing                                     |
| 4 Springs Mall                            | 16 Concrete House                      | 28 Voorpos Primary School Aftercare Centre        | 37 Kingdom Leadership Centre       | 50 Neil Woolridge  |
| 5 POCO Warehouse                          | 17 One Forrest                         | 29 CTICC East                                     | 38 Pickitup Depot Randburg         | 51 Natalspruit hospital                                  |
| 6 Menlyn Reconfiguration Project          | 18 Kloof Road House                    | 30 House Whitfield                                | 39 AHRAC                           | 52 KL Developments                                       |
| 7 Itatile Menlyn Coffee Bar               | 19 265 Sydney Road                     | 31 Roschon Rotable Spares Warehouse               | 40 Kyalami Corner                  | 53 Sumitomo Rubber                                       |
| 8 878 Waterfall Estate                    | 20 Time Square Arch and Globe Bar      | 32 BMW 11385-1 BIW G01-Plant 9.20 NEW BODY SHOP   | 41 Tlhomso Factory                 | 54 Times Square Sun Star                                 |
| 9 Clear Choice Builders Executive Offices | 21 Hazzyview Pedestrian Bridge         | 33 Mjejane Bush Lodge                             | 42 Fleureville Retirement Villiage | 55 Sun City Entertainment Centre Tubular Tree Structures |
| 10 Sasol Head Office                      | 22 Coal Flash Drying Plant             |   | 43 GDE Schools                     | 56 Summit Place  |
| 11 House Fourie                           | 23 Menlyn Mall Signage Tower           |   | 44 House Bredin                    |  |
| 12 Urth Garden Centre                     | 24 No. 5 Silo                          |   | 45 Gujini Hall                     |  |
|   |  |   | 46 Eco Centre Parys                |  |

# SOCIAL SNIPPETS:

## SAISC GOLF DAY 2017

BRYANSTON COUNTRY CLUB, 17 MAY 2017

The SAISC's Annual Golf Day took place on the 17th of May 2017 at the Bryanston Country Club.

A big thank you to all our sponsors who made the event possible, Arcelor Mittal South Africa, C Steinweg Group, Macsteel, SSAB, Vital Engineering and Voidcon.

Congratulations to the winners of the day including:

- Konrad Niewenhuizen from Macsteel (9th Hole, Nearest to pin)
- Mike Pollastrini from Aveng (14th Hole, Nearest to pin)
- Dean Dippenaar from Louwill (7th and 18th Holes, Longest Drive)
- Grant Tilston from NJR Steel (Longest Day)
- Shaun Diggeden from Tudor Engineering (Highest Individual Score)

Overall placements:

- 4th – Macsteel (Tom Cowen, Gert van Staden, Corne Roos and Stefan Smit)
- 3rd – Louwill Engineering (JJ Plenaar, Martyn Swanepoel, Dean Dippenaar, Juan Sliep)
- 2nd – Macsteel (Hilton Mcauliffe, Konrad Niewenhuizen, Peter Schonauer, Johan Burger)
- 1st (pictured below) Tudor Engineering – Wessel van Jaarsveld, Shaun Diggeden, Bruce McKenzie and Bernard Maritz



# The 36th Annual STEEL AWARDS 2017



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Wednesday 13 September 2017

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CT: Table Bay Hotel

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