steel CONSTRUCTION

OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

Volume 41 No. 1 2017

DESIGNATION OF STEEL PRODUCTS:
What does it actually mean for the industry?

Building design and construction:
Are we promoting or inhibiting innovation?

SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

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Front Cover: Midax House, Zinkwazi Beach (page 12).
Photo by Kierran Allen

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in **this** issue...

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editor's note

By now any of you who have spent more than 10 minutes in traffic will agree that 2017 is in full swing. Gyms are predictably brimming over with the "new year, new me" crowd. As clichéd as it may be there's something about a new year that inspires. Around the corridors of the SAISC there is a cautious optimism about what 2017 will bring. As an industry we still have storms to weather, but perhaps 2017 will be the year we find that sweet spot in the eye of the tornado.

We're happy to start the year by announcing that once again, we have some fantastic sponsors on board for Steel Awards 2017! Be sure to check out page 25 for details. If you'd like to nominate a project for Steel Awards, be sure to do so by the 31 March 2017 deadline!

The SAISC and its subsidiary associations will be offering a wide range of training courses this year. Dates of upcoming courses are available on the SAISC website, in the calendar section.

In addition to key networking events like our Golf Day, we will also be hosting quarterly breakfasts. Keep an eye out for the SteelSpeak eNewsletter, delivered straight to your inbox.

Lastly – if you're experiencing any challenges with receiving your print copy, we now also have a digital version of the magazine available through Joomla. We'd love your feedback and suggestions!

Are we **making progress** as an **industry?**

By Paolo Trinchero, Chief Executive Officer, SAISC

A new year brings time for reflection especially after three years at the helm. It has been really tough for all of us to watch our industry experience ongoing challenges with seemingly no end in sight.

In order to move forward however we need to be critical of what we are doing and whether or not we are making progress to reverse the situation. Designation of structural is a major achievement and should be celebrated.

I have been asked by some members particularly when engaging with the dti or government departments, "Where is your voice". I would like to assure you that we take our role and interests of our members very seriously. The difficulty we have had over the last year in particular is that our members are often in conflict with one another. So this year we are going to make a special effort to bring various parties together to engage and to come up with joint solutions.

From recent economic projections for 2017 we are going to continue to face low growth and uncertainty for some time. The steel industry in particular needs growth and investment in infrastructure. So my five cents worth for government is to please, Stop talking and Start Doing! Stop planning and implement. We have plenty of capacity and would like to help Southern Africa to transform, thrive and grow.

From the SAISC perspective we need to ensure we have the people who can navigate these uncertain times. That means that ongoing skills development should be a top priority. This does not always need to be an expensive or time consuming activity.

The SAISC is offering a number of half day courses and shortening lecture time on others but increasing projects and assignments.

For the first time we will be introducing courses on business development including courses to assist our fabricator members with contracts. In these times of uncertainty and increasing global competition we have to use our available knowledge, resources and technology to kick start our journey back to prosperity. So please join the SAISC and its team in developing young talent in the industry.

Some good news is that ArcelorMittal advised that a contract manufacturing agreement, which is still subject to certain conditions, has now been concluded between ArcelorMittal South Africa, Highveld and Highveld Structural Mill (a subsidiary of Highveld) in terms of which ArcelorMittal South Africa will supply blooms and slabs to HSM for processing into heavy structural steel. We will keep you posted.

The SAISC has never been involved with labour negotiations other than to disseminate information from various employer bodies like the CEA and SEIFSA.

Over the last few years we have been active in many forums and without weighing into the various conflicting views we cannot emphasize enough that as companies you must engage with your employees and work with your respective employer associations to bring about a positive resolution to the negotiations this year.

Good Luck and best wishes for 2017.

"Designation of Structural Steel is a MAJOR ACHIEVEMENT and should be celebrated"

THAT FEELING...

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THINK BUILDING PERFORMANCE

By Amanuel Gebremeskel

Despite many new and beautiful buildings around town it would not surprise many to learn that our present approach to designing and constructing buildings inhibits innovation and change.

Despite many new and beautiful buildings around town it would not surprise many to learn that our present approach to designing and constructing buildings inhibits innovation and change. This reality leaves us lagging most other industries in terms of productivity increases. The problem appears to be that we are bogged down in the process of how to build safely and paying scant attention to the quickly changing environment in which we live. We may have to step back and carefully consider why we are constructing these buildings in the first place.

Performance based building design is an approach which focuses on the objective of a building in order to prescribe desired results rather than the way and method to get things done. In a performance based approach the focus of all decisions is on the required performance-in-use, and the evaluation and testing, of buildings.

Requirement based approaches have been used at least since the time of Hammurabi's code. However over the past century rapid advances in building science and fast accumulation of building capital stock have resulted in performance requirements being buried deep inside building codes and the focus shifting to the ways and methods of building safely and economically. Thus modern building design and construction approaches have limited capacity to accommodate major changes in performance requirements.

Currently the primary driver of change in building performance requirements is an environment of rapid urbanization within the context of very limited access to financial, energy and material resources. If one adds to this the environmental costs that have historically been ignored then the trajectory towards change appears inevitable.

Within such a context one also finds relatively large levels of migration of urban labour towards the service sector as manufacturing shifts towards automated, lower cost or heavily subsidized spaces. Contemporary African urban growth consists of direct migration from rural life to the urban service sector. The demand for buildings in the residential and service sectors is thus large and continues to grow significantly.

Based on the drivers and trends above it may be possible to define performance requirements for buildings in the service sector. If we look at office buildings, for instance, the following four performance requirements can be generated for their design, construction and operation. There is consensus in the industry that the buildings must be:

i Architecturally expressive and economical

ii Flexible to reconfiguration and space optimization

iii Consumers of significantly reduced energy and materials

iv Fast and safe to build and fit for occupancy

In the past developers attempted to achieve as many of these performance requirements as possible given existing methods of construction. A performance based approach would develop methods of construction that can satisfy all of these performance requirements. In other words all decisions would be taken with the goal of satisfying performance requirements rather than compliance with the selected methods of construction.

The past two decades have seen dramatic reductions in the price of various technologies and resources. Some of these are:

- High powered computing and simulation
- Mature testing labs and researchers
- Mature standards, literature and understanding of structures and materials
- Modern and versatile manufacturing capacity

In such an environment it is easy to assume on the one hand that the future holds within it fully integrated design-build project delivery that is paperless and efficient. On the other hand it is possible to envision a future where much resource is spent on developing fully industrialized buildings and securing financial returns based on mass manufacturing and economies of scale.

While both methods of production are discussed frequently neither one is focused on building performance. The first simply replicates with more efficiency the existing project delivery method and neglects early integration of sustainability, speed and safety of construction requirements. The latter sacrifices the ability for architectural expression and easy building reconfiguration and space optimization – while it may satisfy sustainability, speed and safety of construction requirements.

Therefore we need a third method that can satisfy the performance requirements by making full use of increasingly accessible technologies and resources.

As shown in the table below a performance based approach requires the incremental development of building sub-system technologies. These can be manufactured

in mass to cover the cost of development while being used in various permutations to provide architectural and modification freedom. They can also be developed to satisfy sustainability, speed and safety requirements.

Such a method may also encourage small and medium enterprises (SMEs) to participate in performance based innovation since sub-systems and technologies can be quite small or may require little testing and verification. The ease with which structural steel can be handled and fabricated in controlled environments will likely make it the framing material of choice for this method of production.

Such an approach has a critical need for multi-disciplinary collaboration and innovation. Here motivated building owners, design professionals or contractors can take the lead. Multi-disciplinary researchers, testing laboratories and students can be employed to test and verify new systems that satisfy specific performance requirements.

Moreover experienced designers and contractors can be employed to evaluate how existing prescriptive approaches can be combined with novel systems to reduce the cost of testing and verification. They would also form the link between the industry and regulators.

Promoting a shift towards performance based approaches can have significant implications for all parties in the building industry. While many of these may be difficult to anticipate the following list includes arenas that are likely to be affected.

Building codes are presently written with implicit performance requirements and provide prescriptive rules that relate to methods of construction. Performance based approaches would require major changes in how building codes, and thus regulatory officials, operate.

PRODUCTION METHODS

	METHOD I	METHOD II	METHOD III
Project type	*Traditional construction*	*Fully industrialized*	***Partially industrialized***
Product type	*Building components*	*The entire building*	***Building sub-systems***
Product example	*Fabricated or shaped beams*	*New Chinese buildings*	***High insulation light-steel framed walls***
Suited to	*Mature environments*	*Rapid growth environments*	***Innovative environments***
Performance criteria that are satisfied	*Good for I & II Bad for III & IV*	*Bad for I & II Good for III & IV*	***Good for I, II, III & IV***
Process type	*Prescriptive design-build*	*Design-manufacture*	***Design-Manufacture Design-Assemble***
Managerial focus	*Cost reduction for profit*	*Economies of scale*	***End-user needs and economy***
Critical investment	*Project management*	*R&D and manufacturing*	***Technology & information***

Contracts between parties to a building development presently reflect a practice where designing, bidding and building occur in a linear sequence. Performance based approaches will require early involvement of all parties upfront. Moreover full access to all information by all parties at all times requires new ways of sharing risks and writing contracts.

Design today involves specialized professionals who work in silos and provide solutions within their area of expertise. Most performance requirements cannot be satisfied by any one specialist. They require a great deal of multi-disciplinary effort. Thus groups may have to focus on solving specific performance requirements rather than problems of one profession.

Sustainability standards for buildings are currently based on accumulating points based on application of specific products or methods to construction. For instance, as presently written the Green Building Council (SAGBC) incentivizes the steel industry to solve steel production and transportation issues for credits rather than focusing on the performance of the final building.

Safety rules and standards for construction are currently written to solve specific site or shop problems. A more holistic safety performance requirement would shift the work to environments that are safer by, for instance, promoting more modular construction.

Performance based building design is an approach which focuses on the objective of buildings. We would be wise to go back to such an approach because present methods of project delivery are not keeping up with key social needs. Such design however requires careful articulation of important building performance requirements, and intelligent identification of what resources are available to satisfy them adequately.

In our view the steel industry has much to offer here since partial industrialization of building delivery is a viable method of focusing on building performance requirements. Satisfying such requirements in novel ways will be immensely rewarding. The question of how to reconfigure the construction industry to accommodate change, and address the new needs of designers, contractors and regulators, is a challenge yet to be solved. We are tackling this one building project at a time.

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- Serioplast: Warehouse Facility (190t) - ERF 330 Vorna Valley (Pty) Ltd
- Teraco R8 Data Centre (370t) - Teraco Data Environments
- BMW New Facilities Body in White (650t) - BMW SA
- Natalspruit Hospital: Bridge and Doctors and Nurses Accommodation (250t) - Department of Infrastructure and Development
- Government Printing Works (350t)
- Discovery Sandton (500t) - Zenprop
- Integrated Rapid Public Transport Network (200t) - Ekurhuleni Metropolitan Council
- Benmore Gardens Shopping Centre Refurbishment (150t)
- Golden Era Can Line Plant (525t) - Golden Era Group
- EPX Warehouse (225t) - EPX
- Fourways Mall Roof Structure (60t) - Fourways Precinct
- Discovery Corporate Offices Sandton, Skylight Roof (50t) - Growthpoint Properties
- Fourways Mall Link Bridges, Ramps, Lift Shaft, Infill Slabs and Roof - (250t) Fourways Precinct

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Create Café at Alpine Attitude

The detailing and enclosure of the entire structure was done with steel and sheet metal roofing.

PROJECT TEAM

Client / Owner / Developer:
Alpine Attitude Boutique Hotel

Architect:
Nadine Engelbrecht Architects

Steelwork Contractor:
Ranco Ondernemings (Main structure)

Steelwork Contractor:
EJ Fourie Projects (Canopy and smaller steel details)

Steelwork Contractor:
Kare Sheet Metal Products (Stairs)

Cladding Supplier:
Trust Sheeting

Photographer (Photo Competition):
Marsel Roothman, Marsel Roothman Photography

In order to extend the facilities of her boutique hotel, the client acquired a neighbouring property. The property contained an old Pretoria house in dire condition with little surrounding space to expand. The concept proposed to recondition the existing house and freestanding garage into a conference room and café with minimal cost, disturbance and time. The structure of the main house remained intact and only internal walls were removed to accommodate the conference space, kitchen and bathrooms. A steel structure was designed to fit around and over the existing garage walls to add a mezzanine and create space for a café and lounge area. The existing footprint and large portions of the existing garage walls remained intact. Plaster was removed to reveal existing bricks and celebrate the presence of the old.

The structural integrity of the existing garage walls was questionable and a 140 IPE portal frame structure was placed over the existing walls to carry the roof structure, side cladding and additional mezzanine seating space. A cantilevered glass facade was created to maximize views over the trees and invite public views from the adjacent street. No additional brickwork was constructed and the detailing and enclosure of the entire structure was done with steel and sheet metal roofing.

The steel profiles were chosen based on structural strength to create an independent portal frame. The visual aesthetics of the exposed profiles were taken into consideration. A steel structure allowed for easy and quick erection and assembly on site.

Due to the relatively small scale of the project, steel could be used as the only structural and main aesthetic element throughout the design detailing, stairs and balustrades. 'Klip-Lok' sheet metal roofing was bent on site and wrapped around the steel structure to create a seamless connection between the slanted roof and vertical facade. The steel structure is exposed to accentuate the structure. Other material use was kept to a minimum. Shutter boards were fixed to the underside of the metal purlins, to enclose the insulation, and to the steel mezzanine structure to create the floor. The structure is closed off at two sides with glass to act in symbioses with the steel elements.

Steel framed glass walls and gates were added to the new and existing boutique hotel street boundary to invite the public and create awareness of the space behind the walls.

In choosing a brownfield site and renovating an existing building the impact of construction is kept to a minimum. The building footprint remained the same. Construction waste, such as demolished internal walls, was reclaimed and reused on site. Energy efficient appliances and lighting as well as sufficient natural daylight keep the energy demand as low as possible. Natural cross ventilation and sufficient insulation assist in passive cooling of the structure in summer. Steel as a dominant construction material has a high post-consumer recycled content.

In order to compensate for the inaccuracies of the existing structure, all steel profiles were cut and assembled on site. The steel staircase was the only element manufactured as a unit and transported to site for installation.

Gordon Road Girls Learner Support Centre

THE BUILDING WAS THEREFORE DESIGNED TO INCORPORATE THE SCHOOL SURROUNDINGS INTO THE TEACHING SPACES.

The Learner Support Centre is a stand alone building located in a vacant garden corner of the long established Gordon Road Girls School complex, on the Durban Berea The idea of the educational centre has been many years in planning and as the Principal, Johnstone, quoted Winston Churchill in the annual magazine :"we shape our buildings, thereafter they shape us."The building was therefore designed to incorporate the school surroundings into the teaching spaces using glass window walls framed by exposed structural steelwork.

The expression of this building is derived directly for the usage requirements – enclosed spaces are built in concrete and masonry and open or transparent spaces are constructed from steel and glass These structural systems define the aesthetic language of the building and speak directly to the functional aspects of the spaces that they enclose.

The two storey structure is founded into the berea red sands as conventional pad bases The Structure to first floor level comprises a reinforced concrete flat slab and column system to provide sound attenuation, between the floors The structural steel post and roof structure above is constructed using hot rolled and cold formed profile sections.

Located in the coastal region, the corrosion protection required careful attention to the coating of the steel. It was therefore decided to coat the steel with a high specification duplex paint system.

Balustrades are fabricated likewise from flat sections with welded junctions on site. Due to the slenderness of the structure and aesthetic architectural requirements requiring all connections being visible, careful attention was given to the design stage between Architect and Engineer, being essential for this form of structural steelwork As a result the Architecture and Structural detailing were inter-dependent leading to the uniqueness of this entry.

It is considered that the use of featured hot rolled profiled Structural Steel sections as the principal roof and post structural elements within the environment of a well established educational complex, exemplifies the contribution that structural steel can make, in this application.

PROJECT TEAM

Client / Owner / Developer:
GRGS Educational Trust

Architect:
John Smillie Architects

Structural Engineer:
Young & Satharia

Quantity Surveyor:
Schoombie Hartmann Quantity Surveyors

Main Contractor:
Verbaan Construction

Steelwork Contractor:
NIK Projects (Pty) Ltd

Structural Steel Detailer / Detailing Company:
NIK Projects (Pty) Ltd

Photographer:
Kierran Allen, Kierran Allen Photography

Photographer (Photo Competition):
Marsel Roothman, Marsel Roothman Photography

House Blue Crane

Steel also allowed for a lighter structural section and therefore more openness to the environment.

This private residential house is located on the edge of a lake, with unimpeded views of the KZN Midlands. The house is designed to incorporate these views into the living spaces using glass window walls framed by an exposed structural steel building structure.

The geology of the site is complex being located over a fault line. This dictated a light mass structure as being the most cost effective. The first floor level area was therefore constructed in timber ply board over timber joists and structural steel floor beams.

Due to the interaction between the Architect and Structural Engineer required for careful detailing of the building elements, a 3-dimensional model was produced. It is considered that the use of featured standard hot rolled profiled structural steel sections as the principal building structural elements within the backdrop of a unique view site, exemplifies the uniqueness of structural steel in this application.

The building structure comprised a series of structural steel modular frames traversing the lakefront to simplify erection. Simple column and beam structure. Cruciform columns were designed in places to allow for timber cladding to be attached. The site conditions were clay and the house needed to be kept light. Steel also allowed for a lighter structural section and therefore more openness to the environment.

The steel is designed as a skeleton to the house and the selection of materials chosen by the client. It allows natural stone, forest resourced timber, glazing systems and roof cladding to harmonise. Massive solar water heating system to stabilise internal environment (under floor heating). Low energy lighting, natural daylight and ventilation. Recycled timber and stone cladding from demolished buildings. Weathering steel was used for cladding of gatehouse and gates as permanent sculptural elements in the landscape.

PROJECT TEAM

Client / Owner / Developer:
Private Client

Architect:
Koop Design

Structural Engineer:
Young & Satharia

Main Contractor:
Self build – client managed sub contractors

Steelwork Contractor:
Ogilvie Engineering

Photographer (Photo Competition):
Rodger Jardine, Roger Jardine Photography

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Midax House, Zinkwazi Beach

CONSTRUCTION OF THE STEEL STRUCTURE AND LOGISTICS HAD TO BE CAREFULLY PLANNED AND SYNTHESIZED WITH MOBILE CRANE PRESENCE ON SITE.

PROJECT TEAM

Client / Owner / Developer:
Midax Investments (Pty) Ltd

Architect:
David Mealin Architects

Structural Engineer:
Young & Satharia Consulting Engineers

Project Manager:
Summit Construction

Main Contractor:
Omeida Trading 410 cc

Steelwork Contractor:
C.I.S Engineering (Pty) Ltd

Steelwork Contractor:
WPM Construction cc

Structural Steel Detailer / Detailing Company:
C.I.S Engineering (Pty) Ltd

Cladding Supplier:
El-Shaddai Ceilings & Partitions cc

Supplier of GRP cladding:
Excellent Engineering cc

Galvanizer:
Lianru Galvanizers

Structural Steelwork Painter:
Bull Dog Projects (Pty) Ltd

The project entailed the addition of a second level to an existing house situated on the beachfront.

Founding conditions were basically beach sand and the addition therefore had serious limitations in structural weight. In addition the architecture required clear view lines, large open plan areas and quirky overhanging rooms, all which required large spans and cantilever structures. The design had to be exactly matched to the existing ground floor brickwork structure. This was achieved by using a duplex coated structural steel skeleton structure, light weight roof and floor, as well as some composite material cladding.

Midax Investments (Pty) Ltd acquired a beachfront property known as Magai Drive 45 in Zinkwazi Beach in June 2013.
At the time the 1970's designed house was somewhat run down, but the location right on the beach and the sea views offered warranted the investment.

The plan at the time was to add onto the house so as to create a beach house where a 3 generation family could holiday together. The property is however located within the environmentally sensitive area within 100m of the high water mark. As such footprint extensions were, at the time, limited to 50sq meters. This forced planning to consider the addition of a second level. In addition the existing cement tile roof was very dilapidated and as it was considered to be unsafe, the plan for replacing the very heavy roof (some 20tonnes) with a second level living area became very appealing.

Structural engineer Rob Young who, at the time was involved in another Zinkwazi project (the 2015 winner) was approached to act as consulting engineer on the re-build of 45 Magai. Following soil testing and inspection of existing foundations, Rob advised that it would be possible to add a second level provided that the design stayed within 25 – 30 odd tonnes of weight on the existing foundations.

Architect David Mealin, a Zinkwazi resident, was appointed to design the largely "new" house.

He produced a very modern concept which maximised the views, contained large open plan living areas and some quirky features such as overhanging "glass box" bath rooms. He also incorporated the client's wish for a large veranda at ground level, the roof of which doubled as a large (100sqm) deck for the upper levels.

The structural engineers were therefore faced with the following challenges:

- Engineering a reasonably light weight structure which would allow the un-interrupted sea views, large open plan areas and quirky design elements

- Engineering a very corrosion resistant structure capable of withstanding the highly corrosive KZN North coast environment
- Fitting the structure to a fairly complex existing ground floor wall layout.

Rob Young suggested a steel structure with light-weight wooden floor and light-weight aluminium roof for the new upper level.

At this point it must be pointed out that Piet Coetzer, the director of Midax Investments, is also a major shareholder in the Structa Group of Companies, which is one of the larger manufacturers of steel structures in South Africa. Piet has often advocated the use of more steel in buildings in South Africa and here he was presented with an opportunity to practice what he had been preaching. Being a structural engineer himself he duly accepted the challenge and through Structa Konsult, he participated in the design of the staircase and bathroom boxes, while Rob Young designed the primary structures.

In essence the structure consisted of the following elements:

- A concrete ring beam cast onto the existing ground floor walls at the rear of the house
- Fabricated girders spanning window openings on the seaward side of the building and serving as the seaward portion of the ring beam
- An array of I-beam floor beams spanning from the concrete ring beam (where they are anchored), cantilevering over the forward fabricated steel girders to form the deck
- Roof support columns
- I-beam front and rear roof carrier beams
- Wing style roof consisting of pointed I section trusses and lip channel purlins
- Thin skinned box girder 3CR12 sections forming overhanging bathroom structures
- GRP "sandwich" side walls closing off overhanging bath room boxes
- A "floating" staircase
- A mezzanine portion of the floor suspended from the roof to give clear view lines in the entrance

Most of the seaward fabricated beams were not clad externally so as to express the nature of the structure. Where cladding was used the following materials were employed:

- Plaster board on internal surfaces
- Brick walls on the rear wall
- Brick infill on some seaward fabricated girders
- Nutec board

The structure was detailed using the TEKLA system. This was performed by C.I.S Engineering (a Structa Group subsidiary), who was appointed as manufacturer. TEKLA details were used as direct input for plasma cutting and beam cutting and drilling.

In order to achieve an "exact" fit to the existing ground floor walls, these were measured up using sophisticated lazer measurements (performed by Richard Logan surveyors). The layout model developed from the lazer measurements was imported into TEKLA and the structural steel layout super imposed to ensure proper fit up. An anchor bolt drilling template was developed on the same layout.

The TEKLA model was also used to fully integrate the building, structure and services. Where possible the structural elements were modified to incorporate add-ons such as:

- Facia mountings
- Service channels
- Gutter recesses
- GRP sandwich mountings
- Channels for deck and mezzanine frameless glass balustrades

Corrosion protection was achieved by employing a duplex coating of hot dip galvanising and a two part epoxy paint. The first component to arrive on site was the anchor bolt drilling jig. This was assembled and put into place on the existing walls and concrete ring beam. Key anchor bolt positions were marked and drilled, thus ensuring proper fit up of the steel structure.

Construction of the steel structure and logistics had to be carefully planned and synthesized with mobile crane presence on site which had to be minimised (55t mobile crane with 30m reach). The structure was delivered in 3 loads from Gauteng. The loads carried items prioritised to suit the build.

The build was sub contracted to WPM Construction and completed within 14 days of the first steel arriving on site. In total only 3 days of mobile crane presence were required. The long reach of the 55 ton crane allowed sub-assemblies to be lifted in position without damaging any of the protected trees on the site.

From this point onwards the conventional build proceeded up to end March 2016. The owner's satisfaction with the project is illustrated by their entry of the project in the Steel Awards Competitions.

Sol Plaatje University: Wind Driven Solar Shading (Building C002)

THIS SUNSCREEN IS A UNIQUE DESIGN IN THE COMPOSITION OF ITS ELEMENTS.

PROJECT TEAM

Client / Owner / Developer:
Sol Plaatje University

Architect:
Savage + Dodd Architects cc

Structural Engineer:
THS & Associates cc

Quantity Surveyor:
LimCo QS, Arbitration & Project Management cc

Project Manager:
AECOM

Main Contractor:
Trencon Construction

Steelwork Contractor:
RVI Robertson Ventilation Industries

Photographer (Photo Competition):
Colin Savage, Savage + Dodd Architects cc

The Wind Driven Dynamic Solar Shading was developed as a shading device that would provide a skin to the external facade of the courtyard whilst also contributing to the aesthetics of the facade as a customised designed element, rather than an'off the shelf' standard sunscreen. It was conceptualised as a screen with mobile elements that would provide a moving coloured dappled shadow as they move in a light breeze. It is designed as steel framed structure with individual powder coated aluminium rectangular panels with laser cut outs patterns and a coloured perspex panel fixed at right angles to these panels. These are fixed onto an axel that allows them to move in the wind. This sunscreen is a unique design in the composition of its elements and in that is it a mobile driven by the wind to create a pulsating effect.

240 x 252 powder coated aluminium display panels are fixed onto 8mm Ø axel via a pillow ball bearing which allows each panel to pivot when the wind blows. Each panel is held in place with spacer sleeves of 8mm bore to slip over the axel and cut to size to restrict the movement of the bearings along the axel. Each axel is supported by 12 x 80x 4070mm flat steel bar mullions that hang vertically. The axels are supported by the mullion and run horizontally, fixed to the mullions at 290mm centre to centre intervals. Each axel supports 2 panels between each mullion with each mullion fixed at 550mm centre to centre intervals.

This creates a mesh of panels which is 4metres high in four different meshes with four different lengths, the longest of which is 25metres. Each mesh is supported within a 305 x 233 x 10mm I-section frame. The top beam supporting the top of the mullions and the bottom beam are hung from the mullions. The I-beam frame is fixed to the soffit of a canopy concrete slab via 63 x 4 hollow section hangers which allow it to hang 380mm below the slab soffit. Each hanger is positioned along the distance of each mesh at 3 metre centre to centre intervals.

The screen was conceptualised by the Architect who also produced the first physical mock up of the element. A series of renderings were also produced. Technical drawings, renderings and the mock up were then discussed with the main Contractor, Trencon, with a view to identifying a suitable sub contractor who could undertake the detailed design and supply of the element. Three sub contractors were identified and RVI was subsequently given the order. RVI brought on THS & Associates to do the detailed facade engineering. RVI did detailed drawings and a further mock up of the final elements for approval by the Architect. All the components were fabricated in RVI's factory in Modderfontein and transported down to Kimberley for erection on site.

Steel was chosen as the obvious material for an element that could be pre-manufactured off site in the sub contractors factory in elements and assembled on site.

STEEL AWARDS 2017 ARE OFFICIALLY OPEN FOR PROJECT NOMINATIONS!

The annual Steel Awards are by far the highlight of the structural steel industry, providing a platform to showcase excellence in the use of structural steel while connecting with peers, clients and other industry stakeholders.

STEEL AWARDS 2017 WILL BE TAKING PLACE ON 13 SEPTEMBER 2017

AND FOR THE FIRST TIME EVER, WE WILL BE OPENING PROJECT NOMINATIONS EARLY, IN NOVEMBER 2016

Who can nominate a project?

Clients/Developers, Architects, Main Contractors, Project Managers, Structural Engineers, Quantity Surveyors, Fabricators, Merchants, Steelwork Contractors, Steel Detailers, Cladding Suppliers, Cladding Contractors… or any other project team members.

What criteria do the judges consider?

Only structures in which Southern African steelwork contractors played a significant role will be considered. The primary question our Steel Awards judges ask when reviewing project entries is "Does this project illustrate what can be achieved with steel?"

Other factors considered include:

- The importance of steel as a structural component in the project
- Benefits achieved by using steel construction
- Aesthetic appeal
- Environmental sustainability
- Innovation in design, fabrication or construction
- Technical prowess required for realising the project
- Engineering expertise
- Exceptional quality of workmanship
- Satisfaction of client's brief (cost/time efficiency)
- Special details, connections or unique features
- Value to society/community development

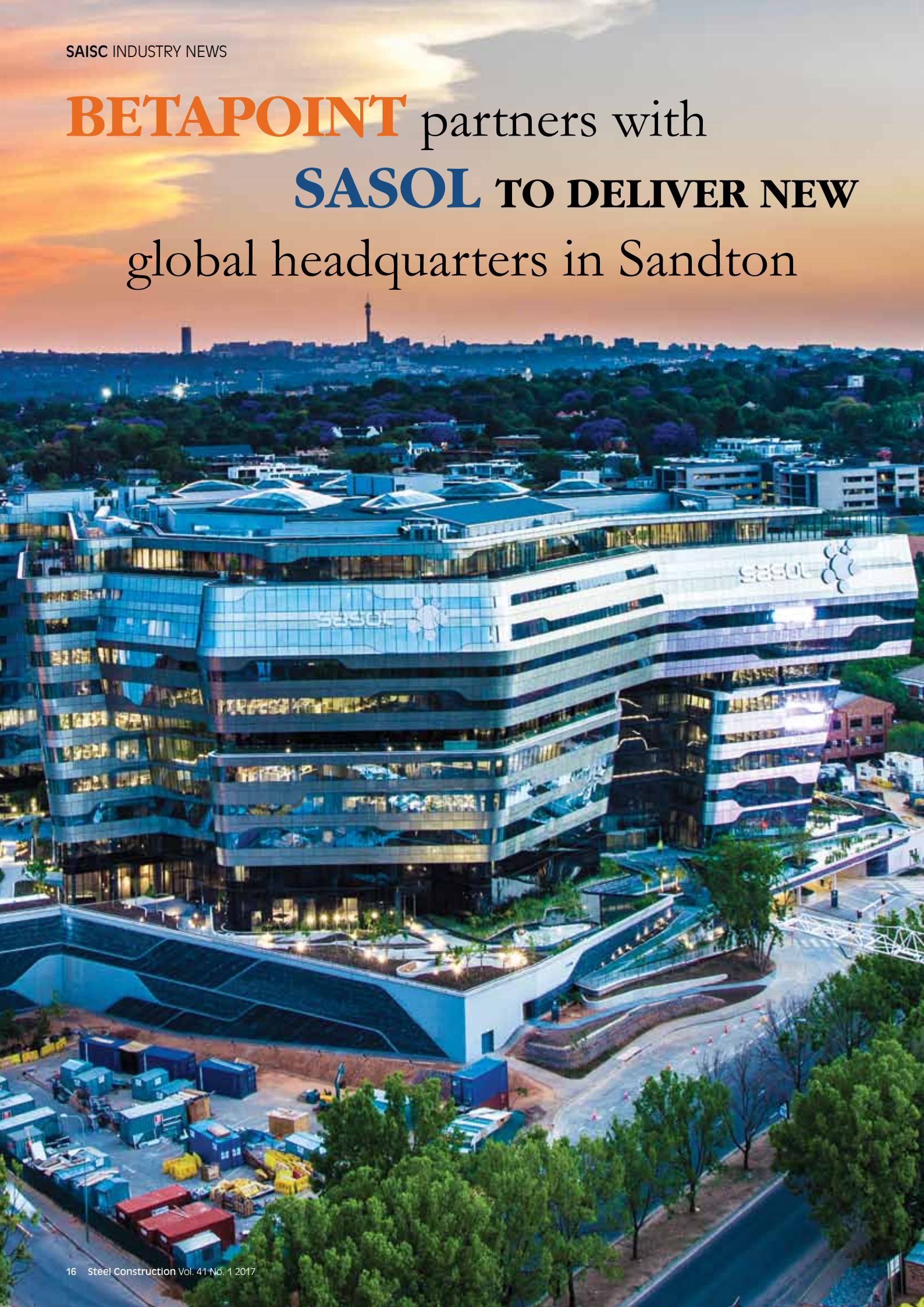
How to nominate a project:

For a detailed guide on the project nomination process and fee, visit www.saisc.co.za or for more information contact Denise Sherman, denise@saisc.co.za / (011) 726 6111

IMPORTANT DATES/ DEADLINES THAT PROJECT NOMINATORS NEED TO BE AWARE OF:

Earlybird discount deadline – 31 January 2017 • Project Nomination Deadline – 31 March 2017

BETAPOINT partners with **SASOL** TO DELIVER NEW global headquarters in Sandton



Johannesburg, South Africa – Betapoint has successfully facilitated the construction of Sasol's 67 000 square meter global headquarters development, Sasol Place, located at 50 Katherine Street, Sandton. The building is co-owned by The Sasol Pension Fund and The Elixir Trust.

As Sasol's strategic real estate advisory and implementation partner, Betapoint deployed a world-class, multi-disciplinary team to advise on all aspects of this high profile initiative. Betapoint led the development of the optimisation strategy, managed the transaction and acted as the project manager and Sasol's tenant representative.

This included providing services from tenant oversight of the architecture, space planning and interior design through to the facilities management service model design and procurement of the service providers. Betapoint recently passed a significant milestone with the commencement of the relocation of 2 500 employees from 11 commercial properties spread across Johannesburg, into Sasol Place.

Adam Sargent, CEO of Betapoint, says: "It is through the efforts and dedication of our team and our close partnership with Sasol that we could deliver a global headquarters that significantly optimises real estate costs, enhances Sasol's brand and drives a high performance culture. In addition, the project was delivered under budget, on schedule and to the highest quality standards in the industry."

Sasol Place comprises 7 parking levels, a ground floor and 10 office floors, and its features include a restaurant with a modern and diverse offering, a coffee shop, a wellness centre, a convenience store, a fitness centre and a dedicated gallery and sculpture garden that will showcase Sasol's continued support of local contemporary artists through its diverse collection.

"Sasol Place exemplifies our vision to create an inspiring 21st century workplace. Over and above the cost-optimisation benefits, our new global headquarters embeds our operating model, enhances our employee value proposition and realises our 'One Sasol, one bottom line' mindset," says Fay Hoosain, Senior Vice President, Strategic Projects at Sasol.

Sasol Place has recently been awarded a 5-Star Green Star design category rating by the Green Building Council of South Africa. This rating further affirms Sasol's desire to reinforce its drive towards implementing best practices around environmental sustainability and employee well-being and embodies Sasol's values as an innovative, sustainable and global chemicals and energy company.

The building design addresses environmental matters such as water recycling and energy efficiency by means of using the latest technologies. For example, intelligent building management systems automatically regulate the use of LED lighting, air conditioning, automated blinds, water usage, escalators and elevators.

A range of natural habitats has been created, with individual indigenous biomes attracting small wildlife, insects and birds, on the external decks, within the grounds, as well as on the rooftop of the building.

Betapoint played an instrumental role in ensuring a spirit of partnership was fostered between the co-owners, Sasol and the other professional teams and sub-contractors. A collaborative and disciplined approach was essential in ensuring a multinational team, based across Africa, Europe, the Middle East, North America and Asia, delivered on Sasol's vision.

"We are proud that, together with our partners, we have created an iconic landmark with approximately 90% of the overall budget channeled back into the South African economy – a significant achievement on such a complex project" says Hoosain.

Betapoint continues to develop a high calibre and diverse team of professionals with a growing international client base. "As an independent professional services firm, with a specialisation in real estate, facilities management and project management, we are passionate about unlocking bottom line business value for our clients" says Sargent.

OPPOSITE PAGE: Sasol Place.

TOP: ????

LEFT: The Betapoint team.

B-BBEE rating and new contract achievements for LIVIERO

Multi-disciplinary contractor Liviero has ended 2016 on a high note, with a significant B-BBEE achievement and the award of substantial new contracts.

The group's Building and Civil Engineering business units have achieved a Level 1 B-BBEE rating, reports Liviero Group chairman Luca Liviero. "This accomplishment places the Liviero companies in a very strong position in the tendering market and will ensure that we are a preferred contractor for existing and prospective clients. It also positions the operations very favourably to meet the increased challenges of the new BEE codes for the construction sector, when these are promulgated," he notes, adding that these revised codes will place more testing obligations on companies.

> With high value artworks on display, and attracting visitors from around the world, the Javett Art Gallery is a very prestigious project that we are proud to be associated with.

New contracts recently awarded to Liviero include Phase 3 at Liberty Midlands Mall in Pietermaritzburg, for client Stanlib, and the construction of the new Javett Art Gallery at the University of Pretoria.

The scope of Liviero Building's R318-million contract at the popular KwaZulu-Natal shopping centre encompasses extensions to the mall and the addition of a new lifestyle centre and structured parking. The lifestyle centre, located adjacent to the mall, features both retail and office components. Upon completion, Liviero's contract will increase the floor space by an additional 22 000m², to a total gross lettable area of over 75 000m².

The company's R223-million contract to build the new art gallery includes the construction of a concrete bridge spanning Lynnwood Road. "With high value artworks on display, and attracting visitors from around the world, the Javett Art Gallery is a very prestigious project that we are proud to be associated with," comments Liviero.

Both the art gallery and Liberty Midlands Mall contracts are scheduled for completion in February 2018.

LISTED NAMIBIAN PROPERTY COMPANY APPOINTS NEW CHIEF EXECUTIVE OFFICER

Oryx Properties Limited, the only Namibian property company listed on the Namibian Stock Exchange, has announced the appointment of Carel Fourie as its new chief executive officer with effect from 1 March 2017.

Oryx Properties has a premier-quality retail, industrial and office real-estate portfolio valued at about R2.326 billion which generates a dependable, sustainable and growing income stream for investors. These include the major Namibian shopping centre Maerua Mall and office block in Windhoek, plus several industrial properties in South Africa.

Fourie, a chartered accountant, brings to his new position extensive experience in both Oryx Properties itself and the real-estate industry in general. He was appointed chief financial officer for Oryx Properties in 2011. In 2014 he took up the position of chief operating officer with the responsibility of participating in the development of the company's investment strategy as well as evolving a management structure for the property portfolio.

Francois Uys, the chairman of the board of Oryx Properties, congratulated Fourie on his appointment, and added, "Oryx is well structured with suitably qualified and experienced staff which gives the board confidence that this is the right way forward. We're completely confident that Mr Fourie is more than capable of taking on his new responsibilities."

LEFT: Maerua Mall.

INSET: Carel Fourie, new CEO of Oryx Properties Limited.

PERFECTLY POSITIONED IN PE: NEW RENTTECH SA sales outlet offers customers greater convenience and service levels

Renttech South Africa, a leader in the sales and rental of top quality welding, lifting, rigging and construction equipment, has moved its Port Elizabeth branch into a new, spacious, state-of-the-art sales outlet.

The move is in line with Renttech South Africa's strategy of expanding and consolidating its national footprint both nationally and regionally. This also follows the opening of a number of other branches to meet customers' requirements for welding, lifting and construction equipment sales and rental wherever they are in South Africa; and in neighbouring sub-Saharan African countries, such as Namibia.

"Situated in Haupt Road, this new outlet offers our valued customers from Port Elizabeth and the greater Eastern Cape region even greater convenience and improved access to our full range of equipment and solutions," says Gerrit van Zyl, Managing Director of Renttech South Africa.

With two busy port terminals, the Coega Industrial Development Zone (IDZ) and the ongoing development of the region's industrial sectors, Port Elizabeth is the dynamic economic gateway to the Eastern Cape region. Positive growth locally – and in Renttech's own business – were key factors prompting the move at the beginning September, van Zyl explains.

"With our new premises, we can now offer superior levels of service, knowledge and expertise to Port Elizabeth's many industrial sectors, including automotive, food and beverage, agricultural, gas and maritime maintenance," comments van Zyl, adding that the new site will improve Renttech's market penetration and consolidate its footprint in the region overall.

He points out that Renttech's success is based on the three pillars of integrity, performance and customer service: "Many of the local industries we supply are key revenue earners for the region and with the opening of our new sales outlet, we reaffirm our commitment to providing the highest levels of service excellence to these sectors."

At the new premises, customers will be able to purchase or rent world-leading welding, power generation and lifting equipment. As an example, the company offers an extensive welding solutions portfolio, including the internationally renowned ranges of metalworking products from Harris, Lincoln and Uniarc.

The new 1 200m² facility is well-staffed by a skilled team of welding lifting and industrial equipment sales specialists." At Renttech, we invest substantially in our people through long-term training initiatives," van Zyl continues.

Today, every Renttech team member offers customers invaluable consultation and advice – supported by in-depth knowledge of every item of equipment.

Apart from these services, the new centrally situated premises will assist Renttech's staff in their provision of timeous on-site technical support. "We stand shoulder-to-shoulder with our customers in maximising the efficiency and productivity of their businesses, by providing industry-critical solutions from our vast range of tried and tested products," he comments.

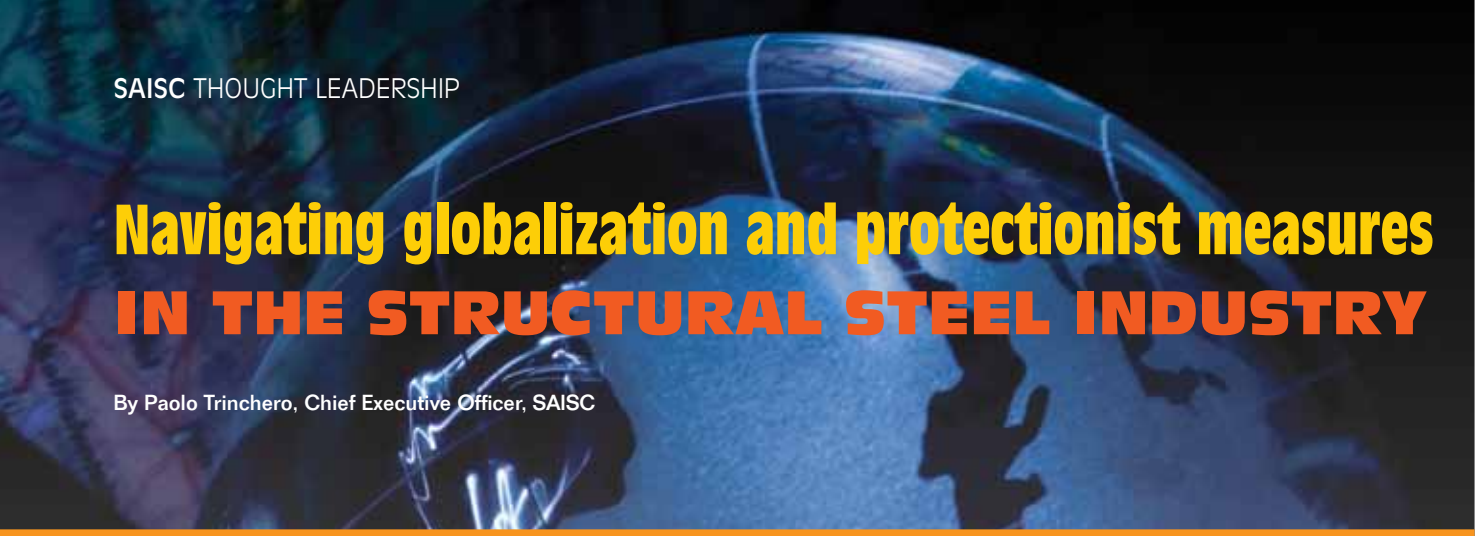
"We look forward to welcoming our many local and also regional Eastern Cape customers to our new premises in Port Elizabeth. We guarantee that they will benefit from the improved access and exposure to our best-in-class industrial products and solutions," van Zyl concludes.

Air Products paves first steps to welding expertise

Air Products has been supporting the South African Institute of Welding's (SAIW) Young Welder of the Year competition since its inception in 2004 with the aim of contributing to the skills development of much needed welders in the country. This year is no different, and the company is still a major supporter of this competition which changed shape and is now known as the Youth Welding Challenge.

According to Josua Le Roux, General Manager and Chairman of Air Products' CSI committee, the sponsorship forms part of the company's corporate social investment (CSI) strategy that is focused on education and training of youth in the country, especially in areas where there is a shortage of skills.

"As a leading supplier of welding gases, we are privileged to make a contribution to the development and growth of young welders in the country", says Sean Young, Air Products' Welding Specialist. Young further mentions that welding is a critical skill in many industries and Air Products believe they can assist in creating an opportunity for young welders to showcase their expertise.



Navigating globalization and protectionist measures IN THE STRUCTURAL STEEL INDUSTRY

By Paolo Trinchero, Chief Executive Officer, SAISC

The SAISC now has to deal with many international design codes and it needs to evolve to cater for the needs of a global industry designing buildings in South Africa, Africa and the world.

From the outset I would like to emphasize that I am not an economist, a marketing guru or a specialist engineer but have become a generalist over the last five years. Not by choice I might add, but by the circumstances in which the steel industry finds itself. Our worlds have been changed by low economic growth, commodity cycles, political intervention, China, protectionist measures, world events and the list just goes on and on. 2017, I hope will bring the needle back a little but it may not.

We have to be experts in local politics, world events and their impact, engineering, finances, phycology, EQ and more (EQ is for the Italian temperament). Having watched a number of the presentations at Davos, the beauty of technology today, one struck me in particular a panel discussion where Singaporean academic Kishore Mahbubani discussed how Singapore adapts to a rapidly changing environment in a multipolar word.

There is great uncertainty on how the world will respond to Brexit and a Trump presidency. What impact will this have on our construction markets and ability to compete and export? Can we have some protection to level the playing fields from competing country government subsidies and maintain our ability to compete on the international stage or is it all or nothing approach.

This piece is not intended to be a great academic work but to get us thinking about our place in the world and how we as the SAISC need to evolve into a body that can change very rapidly to the environment in which we find ourselves.

Let's focus on the steel supply chain for a moment and steel construction in particular but we could just as well refer to a number of manufacturers in the steel industry. We have local and international clients with very different approaches to investment and returns. Some long term and some short. We have government and private companies. Government clients are political animals by their very nature. In South Africa in particular, policy and ideology have become leavers in their procurement and investment decisions. From a private point of view government policy and the horizon is important. Bad policy leads to an investment holiday. This can just as well apply to any country you are living in. So we have a situation where some business can evolve for local conditions but others may have to export, globalize and or relocate.

Once we move past the client and we get to architecture and design. We now find ourselves in an environment where many firms have globalized. They have offices and staff all over the world and can lever their expertise and costs to suit. The barrier to entry or opportunity to globalize is found in building regulations, design codes and standards. The great move to modern technology and building information modeling lends itself to a global approach. What happens when design is global and procurement is not. The SAISC now has to deal with many international design codes and it needs to evolve to cater for the needs of a global industry designing buildings in South Africa, Africa and the world.

The steel mills find themselves in a storm where we have too much capacity around the world. Some countries have modern mills which are efficient and others well, the less said the better. Government subsidies have had a significant impact on distorting the steel supply chain. So price is a major determinant, but quality and new materials should be a benchmark we are willing to consider. From a global perspective many of our design and construction firms have become used to procuring from anywhere in the world. **Can we turn the clock back?** Barriers in the form of tariffs are common place and are likely to stay with us for at least the next 5 years. (The GM of a German steelmaker recently gave a 5 to 7 year horizon.) In addition to this many countries are introducing non-tariff barriers in the form of specialist codes and standards.

Civil Contractors, Structural Steel Fabricators and Component Manufacturers are also impacted by the environment. We have projects that can be designed anywhere in the world today to different codes and standards. This impacts on the input material and the standards to which a company has to manufacture. The impact of tariffs can be significant and the response of countries to tariffs on downsteam goods will impact on exports.

So an inability to get the balance right can impact on the supply chain and can ultimately destroy an entire industry.

We can't put Pandora back in the box. We have to recognize that we have to evolve and do it quickly. Our major challenge will be to influence stakeholders to embrace rapid change and react quickly. This includes government departments.

Southern African Institute of Steel Construction

Golf Day 2017

17 MAY 2017, BRYANSTON COUNTRY CLUB

Date and Venue:
Wednesday, 17 May 2017
Bryanston Country Club

Format of play:
28 Four ball teams, 2 Scores to count
18 Handicap for players without a handicap

R 6000 per 4 ball team includes:
2 x 2 Seater Carts
2 Caddies per team
Player Shirts & Caps
Lunch, Dinner & Prize Function
Soft drinks on the course
Selected wines at dinner
(cash bar for other drinks)

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

Player Booking Enquiries
Denise Sherman - denise@saisc.co.za
(011) 726 6111

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

DESIGNATION of steel products and components FOR CONSTRUCTION

Well done to all involved!

National Treasury has published an instruction note that from the 1st of February 2017 steel products and components for construction have been designated. The SAISC started the process with powerlines in 2009 and applied for designation of power station steelwork in 2012. Many people and government departments have been involved and we need to thank the dti for their help and support.

What does this mean?

It means that government buyers must specify only locally produced steel products and components on government projects.

Table 1a: MINIMUM LOCAL CONTENT FOR STEEL VALUE-ADDED PRODUCTS

Steel Construction Materials	Components	Local Content Threshold
Fabricated Structural Steel	Latticed steelwork, reinforcement steel, columns, beams, plate girders, rafters, bracing, cladding supports, stair stringers & treads, ladders, steel flooring, floor grating, handrailing and balustrading, scaffolding, ducting, gutters, lanunders, downpipes and trusses	100%
Joining/Connecting Components	Gussets, cleats, stiffeners, splices, cranks, kinks, doglegs, spacers, tabs, brackets	100%
Frames	Doors and windows	100%
Roof and Cladding	Bare steel cladding, galvanised steel cladding, colour coated cladding	100%
Fasteners	Bolts, nuts, rivets and nails	100%
Wire Products	All fencing products: all barbed wire and mesh fencing, fabric/mesh reinforcing, gabions, wire rope/strand and chains, welding electrodes, nails/tacks, springs and screws	100%
Ducting and Structural Pipework	Non-conveyance tubing fabricated from steel sheeting and plate with structural supports	100%
Gutters, Downpipes and Launders	Fabricated materials made from sheeting associated with roof drainage systems	100%

Table 1b: MINIMUM LOCAL CONTENT FOR PRIMARY STEEL PRODUCTS

Steel Construction Materials	Local Content Threshold
Plates (>4.5mm thick and supplied in flat pieces)	100%
Sheets (<4.5mm thick and supplied in coils)	100%
Galvanised and Colour Coated Coils	100%
Wire Rod and Drawn Wire	100%
Sections (Channels, Angles, I-Beams and H-Beams)	100%
Reinforcing Bars	100%

A brief summary of the designated products is summarized in the tables below left.

This is an important break-through for our Industry as it recognizes the major role played by the Steel Construction Industry in developing the country and achieving job preservation and job creation.

The dti acknowledges that the designation instrument is only as strong as the level of compliance by departments and SoCs. Detailed compliance guidelines have now been produced in collaboration with the National Treasury, which will guide the auditing and reporting frameworks.

We need to work with the dti to ensure, training and capacity building are done with institutions that lead public procurement and strategic sourcing and monitoring and evaluation is necessary. This has started to bear fruit in the power line industry under the guidance of POLASA.

It is clear from the above that the work the SAISC had been doing for some time to create awareness and appreciation for the contribution our industry is making and can make has now borne fruit. Our products, namely "Fabricated Structural Steel" can typically achieve a 100% local content requirement and therefore contribute meaningfully to meeting local content targets on other products such as harbour cranes, etc.

All government buyers will not fall over themselves to now insist on buying South African and we as an industry will have to make every effort to hasten compliance. Any suspected import of fabricated structural steel has to be reported and investigated. Although mines and others are not bound by "designation", it provides a strong basis from which to encourage private industry to support local industry.

Our industry dare not relax, as the underlying assumption is that we will improve competitiveness and maintain high levels of engineering excellence and quality. Our members must redouble their export efforts as this is the best proof of competitiveness and productivity.

SASFA training course for building contractors at SANDF Durban

November 2016

By John Barnard, Director SASFA

The course is GROWING IN POPULARITY, *as an increasing number of building contractors, developers, architects and engineers* WISH TO BECOME MORE KNOWLEDGEABLE ABOUT LSFB, *also on a practical level.*

ABOVE RIGHT: SANDF students in the lecture room.

SOUTHERN AFRICAN LIGHT STEEL FRAME BUILDING ASSOCIATION

www.sasfa.co.za

On request by the SANDF, SASFA presented a 5-day training course for light steel frame building contractors at the Old Fort Rd Military Base in Durban. It was intended to qualify their foremen and artisans in light steel frame building, in preparation for a building project on the site. Building of 5 three-storey blocks (accommodation and offices) is planned.

The course is growing in popularity, as an increasing number of building contractors, developers, architects and engineers wish to become more knowledgeable about LSFB, also on a practical level.

The course will be presented again in February 2017 at the Marley Building Systems training centre in Germiston.

The course was split into two sections:

Steel frame materials, components, and erection (3½ days), covering introduction, the steel making process and properties of coated steel sheet, followed by sections on foundations, manufacturing of light steel frames and trusses, construction tools, wallframe set-out, handling, loads, floor framing, wall framing, roof structures, planning and the installation of services, and

Internal lining, external cladding and insulation (1 day), covering the properties, manufacturing and benefits of glasswool insulation, acoustics, energy efficiency, environmental issues, storage and handling of glasswool and tools and installation methodology.

This was followed by a section on gypsum plasterboard, covering properties, storage and handling, cutting, tools and application for walls, ceilings and finishing.

Finally fibre cement board for external cladding was addressed, including the installation of the vapour permeable membrane, sizes and availability of fibre cement boards and planks, fixing accessories, installation guidelines, and door and window frame installation detail was presented.

As part of the course, the students had to write two tests to assess their understanding of the subject matter. Certificates of successful completion were issued to those who passed the tests.

The students of Regional Works Unit Kwa Zulu Natal under the command of Capt (SAN) S. Mashigo who enrolled for the course included amongst others plumbers, electricians, and project managers. Col E Jacobs coordinated arrangements for the course from the SANDF's side.

The SASFA members who supplied support for the course and made it possible were Saint-Gobain, Martin and Associates, and Simpson Strong-tie. Bosch Tools illustrated their wide range of equipment suitable for use in the LSFB industry.

NOT ALL PRODUCTS ARE EQUAL

THE RISKS ASSOCIATED WITH ACCEPTING ALTERNATIVE PRODUCTS TO THOSE YOU HAVE SPECIFIED

By Dennis White, Director SAMCRA

Following on our recent article titled ***Are you getting what you specified*** the question arises as to how one evaluates tendered alternatives. When it comes to cladding it is vitally important that the performance of entire cladding system (sheets, method of attachment and ancillary items) is evaluated. The foremost criteria that influence performance are:

- Structural properties
- Waterproofing capabilities
- Installation
- Durability
- Maintenance

Structural properties

By far the greatest component is the geometry of the profile (±80%) with the combination of size (particularly the depth) and spacing of the ribs having the most influence. Thickness and strength of the base material contribute the balance. Cladding has to resist both gravitational (downward) and wind (invariably upward) forces. Under upward loading a cladding system is only as good as the resistance provided by the anchors (fasteners, clips, cleats, etc.) that attach it to the supporting structure.

A little known fact is that most span tables are based on the gravitational loading requirements only. Resistance to uplift from wind action, if indicated at all, is generally quoted as a nominal uniformly distributed load independent of span. Some tables contain notes and reduction factors relating to location and size of a building, others do not differentiate. It must be remembered that when it comes to metal cladding one size does definitely not fit all with regard to wind loading. Even if the geometry, base metal and anchor mechanism appear to be the same it is necessary to check the wind load capabilities of a cladding system.

Another factor to consider are manufacturing tolerances for the base metal. Locally produced coil is manufactured within a tolerance of ±0.02mm whereas imported coil, depending on country of origin, could have a tolerance of ±0.05mm. it is also important to establish if the quoted thickness is TCT (total coated thickness) or BMT (base metal thickness i.e. thickness of steel core excluding coatings).

Waterproofing capabilities

Water carrying capacity and the method of sealing the junction between profiled sheets and ancillary items together with side and end laps determine the waterproofing capabilities. The type of fastener used to attach ancillary items to the profiled cladding has a major influence on both the waterproofing and structural performance of a system.

Installation

Is the cladding system going to be installed by an approved and competent installer whose workmen have been trained by the manufacturer. This is an important factor as many installers use transient and/or sub-contracted labour. Failure to comply with this requirement can have a negative impact on warranties.

Durability

Durability is dependent on thickness and type of coating. Not all coatings perform equally in a given environment. In our opinion it is best to insist on compliance, preferably with SANS standards, failing which other internationally recognized standards for both the manufacture and performance testing of the materials. It is of the utmost importance that the durability of the protective coatings on exposed fasteners is equal or better than that on the cladding. As almost all roofing fasteners are imported it is important to establish that the protective coatings comply with SANS 1273.

Maintenance

Maintenance requirements for a system can have a significant influence on the life cycle costs of a cladding system and also need to be consider.

In our opinion insisting on compliance with SANS standards, which are written for local conditions, will greatly reduce the risks when assessing alternatives.

SAMCRA
SOUTHERN AFRICAN METAL CLADDING AND ROOFING ASSOCIATION

www.samcra.co.za

THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL AWARDS 2017

THE 36th EVENT AND 7th STEEL AWARDS PHOTO COMPETITION

MAIN SPONSOR
AVENG Trident Steel

13 September 2017

Emperors Palace, **JHB**

Table Bay Hotel, **CT**

Mount Edgecombe Country Club, **KZN**

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For more information, contact

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POLASA QUO VADIS 2017?

By Kobus De Beer, Director, Polasa

The Powerline Association of Southern Africa (POLASA) has now been in operation for some four years and the questions can correctly be asked "How are they doing? How do their results compare to the brave "Vision and Mission" statements adopted at inception? And most importantly: Can POLASA still add value to members in the Powerline industry in 2017?

Just to refresh our memories:

POLASA Vision & Mission

- *Vision:* The Powerline Association of SA (POLASA) supports the development and maintenance of the full spectrum of the power line industry to ensure a viable and sustainable network of companies that can support the growth and maintenance of the grid for the transmission and distribution of electricity in Sub Saharan Africa.
- *Mission:* The core purpose of the association is to provide all the stakeholders in the power line industry with a common platform to address matters of common interest and concern. Core activities include continuous improvement of the industry in terms of quality, productivity, investment, job creation, skills development and retention, technological development, safety and social responsibility which could include assisting members to achieve their transformation aspirations.

A series of meetings were held with ESKOM and Power Line Industry participants to agree on some of the main drivers for POLASA:

- Sustainable flow of work
- Maintaining and growing existing jobs and skills
- Protecting and preserving the industry / Ensuring Sustainability of the Industry
- Being part of the "SA Industrial Strategy"
- Relevance to members and ESKOM

Sustainable workloads and maintaining industry skills

This objective is being partly achieved as illustrated by the various orders recently placed by ESKOM plus those still in the pipeline. SEE TABLE. This is a demanding jump from much lower levels of activity before and are resulting in new challenges.

Some successful contractors are already concerned about follow-on work in earlier disciplines! The highest built achieved in the

AFTER: BURNING PLATFORM 2016

PROJECT	TYPE	AWARDED TO	STATUS	VOLTAGE (kv)	LINE LENGTH (km)
Hendrina-Gumeni A	PANEL	Babcock Ntuthuto Powerlines	Completed	400	44
Hendrina-Gumeni B	PANEL	OptiPower Projects	Completed	400	40
Kappa Sterrekus Sec A	PANEL	Mkhulu EDP	Completed	765	60
Kappa Sterrekus Sec B	PANEL	Viscas Corporation	In progress	765	60
Kappa Sterrekus Sec C	PANEL	Babcock Ntuthuto Powerlines	Completed	765	60
Medupi-Massa	World Bank	Viscas Corporation	Completed	400	42
Borutho Witkop	World Bank	Conco	Completed	400	48
Ingwedi Loop Ins	World Bank	Babcock Ntuthuto Powerlines	Completed	400	64
Medupi-Borutho A	World Bank	Inabenza	In progress	400	88
Medupi-Borutho B	World Bank	Inabenza	In progress	400	90
Gromis -Oranjemund	PANEL	OptiPower	In progress	400	131
Ferrum-Nieuwehoop A	PANEL	Babcock Ntuthuto Powerlines	In progress	400	133
Ferrum-Nieuwehoop B	PANEL	Babcock Ntuthuto Powerlines	In progress	400	125
Masa-Ngwedi A	World Bank	Babcock Ntuthuto Powerlines	In progress	765 and 400	80
Masa-Ngwedi B	World Bank	Babcock Ntuthuto Powerlines	In progress	765 and 400	80
Masa-Ngwedi C	World Bank		Under evaluation	765 and 400	80
Masa-Ngwedi D	World Bank	Jyoti Structures	To start - awarded 01/07/2016	765 and 400	80
Masa-Ngwedi E	World Bank	Mkhulu-Imab Consortium	To start - awarded 08/07/2016	765 and 400	80
Kusile/Kendal-Zues A	PANEL	Babcock Ntuthuto Powerlines	Awaiting environmental permits	400	90
Kusile/Kendal-Zues B	PANEL	Conco	Awaiting environmental permits	400	90
Ariadne Eros A	PANEL	Jyoti Structures	To start - awarded 01/06/2016	132 and 400	100
Ariadne Eros B	PANEL	Jyoti Structures	To start - awarded 01/06/2016	132 and 400	75
Ariadne Venus	PANEL	Edison Power Group (EPG)	To start - awarded 10/06/2016	400 and 275	123
Everest Merapi	PANEL	Mkhulu EDP	In progress	400	115
Upington-Nieuwehoop A	PANEL	In negotiations - Conco	Under evaluation	400	45
Upington-Nieuwehoop B	PANEL	In negotiations - Optipower	Under evaluation	400	45
					2068

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

last decade was 780km in one year executed by some 12 contractors.

The current compacts: (Orders for 2 068km listed, 400km completed):

2015 / 6 year: 346km done (March to February Financial year.)

2016 / 7 year: 525km for Compact

2017 / 8 year: 746km (Total 1 617km – including 1 550 of 400kV lines.

POLASA Propose to convene a hands-on workshop with members and ESKOM to table concerns and to explore joint solutions.

The skills pool is not growing the same people are merely circulating between Contractors with very little new blood is coming intosupervisory and middle management positions.

Protecting and preserving the industry as part of SA Industrial strategy

This objective is being achieved and implementation will benefit ESKOM and the industry for the foreseeable future. Following extensive homework by POLASA and ESKOM with the DTI, the Treasury published an Instruction Notice in October 2015 that Power Line Hardware will be designated.

"Designation" implies that 100% South African content must be procured. Power pylons were formally designated in 2012.

? POLASA drafted and published an information leaflet to facilitate implementation of the Treasury Designation Instruction Note?.

A series of meetings held were held with various ESKOM functionaries, breaches were reported and investigated. Workshops were held to update ESKOM's "LAP" lists and SAP numbers. A series of information sessions were held with Eskom Senior buyers and in the regions.

Other areas of mutual interest

POLASA is this year organized into six major areas of activity and interaction with ESKOM key executives:

Design and Engineering (Robin Page / Nick van der Mescht); SHEQ and Training (Zola Hlatshwayo); Component supply & LAP lists (Sagren Moodley / Billy Oosthuizen); Commercial & Contracting (Peter Ramaite / Nick vd Mescht); Project Execution (Gary Whalley / Nick vd Mescht); Export Promotion (Vincent Kanyongolo) and Transformation (Vincent Kanyongolo / Peter Ramaite).

Members are encouraged to participate in any or all of the above areas of endeavors.

SAISC COURSE SCHEDULE FOR 2017

FEBRUARY	
Thursday 16th	Business Development in the Steel Industry (Half Day Course)
Thursday 23rd	Business Development Projects for 2017 (Half Day Course)
Tuesday 28th	Practical Course for Structural Steel Management and Estimating
Wednesday 29th	Practical Course for Structural Steel Management and Estimating (15 Lectures on Tuesday and Wednesday mornings)
MARCH	
Thursday 2nd	Simple Connection Design Part 1 (Half Day Course with Assignments)
Friday 3rd	Estimating for Quantity Surveyors (Half Day Course)
Thursday 9th	Simple Connection Design Part 2 (Half Day Course with Assignments)
Friday 10th	Managing Cash Flow
Thursday 16th	Moment Connection Design Part 1 (Half Day Course with Assignments)
Friday 17th	Estimating for Quantity Surveyors (Half Day Course)
Thursday 23rd	Moment Connection Design Part 1 (Half Day Course with Assignments)
Friday 24th	Equipment or Machinery Purchases and Payback Calculations
Thursday 30th	Portal Frame Design Part 1 (Half Day Course with Assignments)
Friday 31st	Legal and Contractual Tips for Structural Steel Fabricators
APRIL	
Thursday 6th	Portal Frame Design Part 2 (Half Day Course with Assignments)
Friday 7th	Design Drawings and Specifications for Engineers and Draughtsman
MAY	
Thursday 4th	Heavy Industrial Buildings Design – full day
Friday 5th	Heavy Industrial Buildings Design – full day
Thursday 11th	Low Rise Steel Framed Office Building Design Part 1
Thursday 18th	Low Rise Steel Framed Office Building Design Part 2
Thursday 25th	Low Rise Steel Framed Office Building Design Part 3
JUNE	
Thursday 1st	Low Rise Steel Framed Office Building Design Part 4
Friday 2nd	
Thursday 8th	High Strength Low Alloy Steels in Construction
JULY	
Thursday 6th	Design of Plate Girders
Thursday 13th	Metal Building Systems Design and Checking
Thursday 27th	Design of Pedestrian Bridges
AUGUST	
Thursday 3rd	Layouts of Industrial Buildings
Friday 4th	Layouts of Industrial Buildings
Thursday 10th	Tips and Rules of Thumb for Designing Steel Structures – Half Day Course
Thursday 17th	Bending, Curving and Cambering Steel – Half Day Course
SEPTEMBER	
Thursday 28th	Designing Steel Structures to International Codes
OCTOBER	
Thursday 12th	Low Rise Steel Framed Office Building Design Part 1
Thursday 19th	Low Rise Steel Framed Office Building Design Part 2
Thursday 25	Low Rise Steel Framed Office Building Design Part 3
NOVEMBER	
Thursday 2nd	Low Rise Steel Framed Office Building Design Part 4
Thursday 17th	Road Bridge Design
Friday 18th	Road Bridge Design
Thursday 23rd	Design of Steel Silos
Friday 24th	Design of Steel Silos

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