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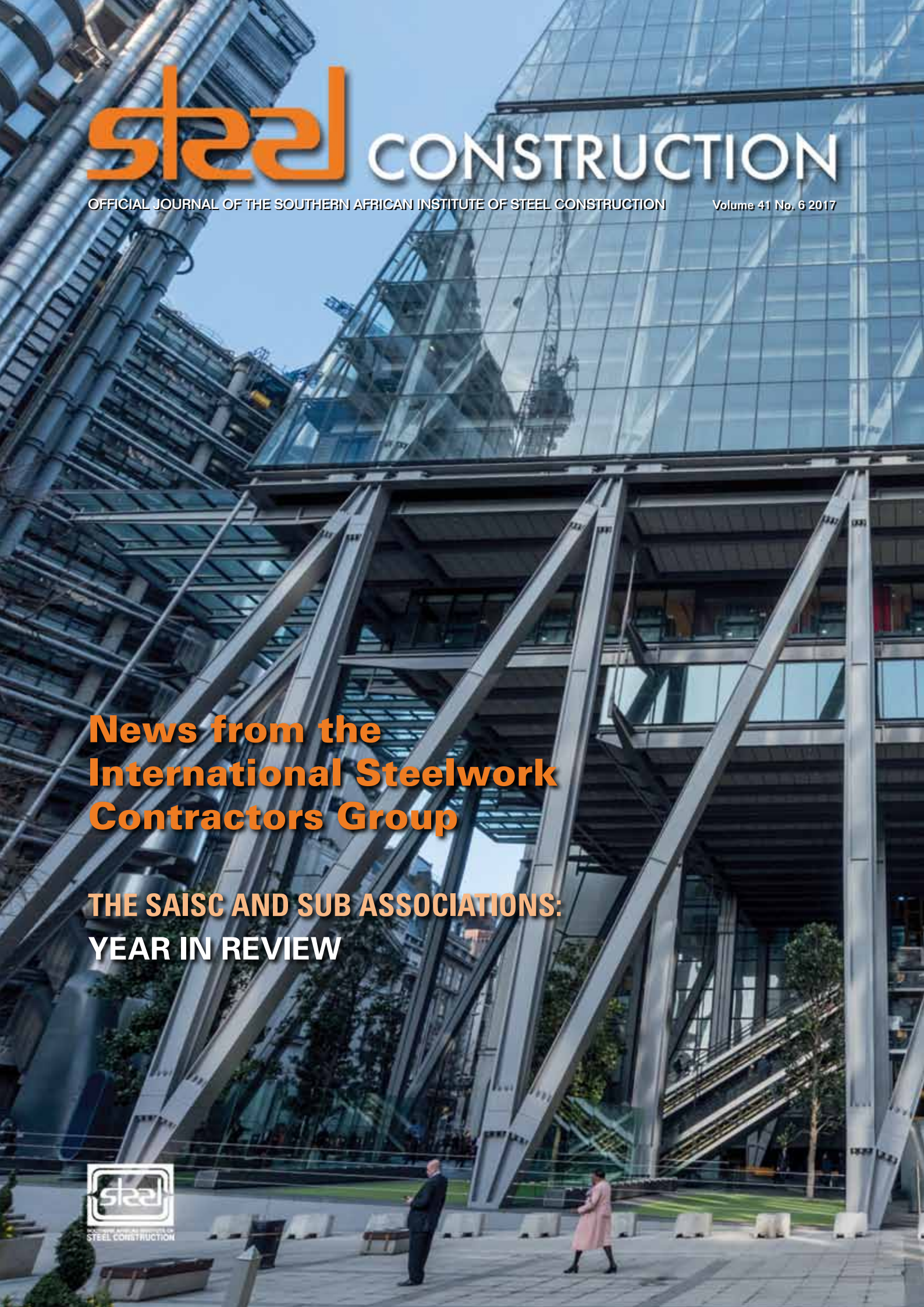

News from the International Steelwork Contractors Group

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Front Cover:
Leadenhall building,
BCSA Design Awards 2017

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in **this** issue...

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editor's note

This has been both a challenging and rewarding year in terms of the SAISC's marketing and communications department. We said goodbye to a valuable resource in Marle – officially the Events Manager at the SAISC but a treasure trove of information when it comes to the nuances of all things steel – especially Steel Awards.

In order to get a better understanding of our member needs and concerns, we're engaging marketing representatives within our member companies. We've had a few really productive meetings so far and look forward to meeting more members, getting a better understanding of their concerns and aspirations for 2018 and beyond, and seeing where we can add value. If you would like to set up a meeting, please feel free to get in contact with either myself or Liezel. We would be honoured to hear your ideas on how we can create, innovate and do things better.

The Steel Construction Journal has continued to receive both praise for its content, and support from advertisers who recognise its credibility as an industry publication. One of the avenues we'll be exploring further in 2018 is a more media rich digital version of the magazine, which will open up a wider range of possibilities for advertisers, including video and audio content.

Keep an eye out for our fresh look Steel Construction Journal in 2018. We have a few great surprises up our sleeves for the new year.

STEEL: A global and local snapshot of 2017

By Paolo Trinchero, Chief Executive Officer, SAISC

The last edition of steel construction for 2017 focuses on international projects. I thought it would be good to report on a visit to London for the International Steelwork Contractors Group (ISCG) and share with you that the SAISC is in the process of revaluating its key strategic objectives particularly with reference to where we are and where we need to go when approaching the last two months of 2017 moving into early 2018.

What made the ISCG so interesting was that despite challenges of political uncertainty and unfair imports, business conditions in other parts of the world are reasonably good. The rest of the world has similar problems yes, but they do not have to deal with anywhere near what we have to deal with in terms of the quantum of uncertainty and shear corruption that has had a massive impact on investor confidence and projects in particular. I can only hope with the rest of our members that the South African compass returns to true north in the New Year.

> "Like most of our sister organizations **THE FOCUS** has of **necessity** moved from purely **educational** and **TECHNICAL** matters to marketing, business development, **legal** and lobbying."

The SAISC finds itself at a crossroads. We have done many things together with many organizations that have not yet borne fruit for our members and we need to focus on what will make a difference in the short, medium and long term.

We have designation for fabricated structural steel and a whole host of products which should provide a market for local manufacturing, if the economy could just get going. On the tariff side despite the challenges posed by protecting the upstream steel mills first, many downstream products now have bound rates and there is a process in place to provide for products not made in South Africa. It is by no means perfect but I can only encourage members to continue to engage with each other to stabilize the supply chain in a very weak market. Do we spend a little more time on these issues to get them right? Do we spent time on ensuring that the policy that is in place to support the industry is enforced?

Over the last year we have not put sufficient resources and time into the technical and skills development that we all know is crucial to the long term success of our industry. So like everyone else out there we have been in survival mode for far too long and we have to break free from activities which will not make a difference and assist you our members in the medium and long term.

Like most of our sister organizations the focus has of necessity moved from purely educational and technical matters to marketing, business development, legal and lobbying. Those associations which have strong funding bases have been able to complement their strong technical and educational focus while smaller associations such as ours try to keep an iron in all the fires which makes it difficult to continue to offer an excellent service. How do you feel about our service?

It is with this in mind that we ask our members to engage with us to ensure that we focus in the right areas to essentially make a difference. These last two years have been particularly challenging as we have to keep our members across the supply chain happy with conflicting views on just about everything. So, how do we protect local manufacturing, (upstream, midstream and downstream) how do we stay competitive, how should we train and improve our skills base, how do we encourage trade and continue to export, how do we formulate a workable China plan?

In summary we need to work together on an industry plan that will allow for better decision making and better strategy and it goes without saying that an ethical compass is required.

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INTERNATIONAL STEELWORK CONTRACTORS GROUP

London, October 2017

By Paolo Trinchero, Chief Executive Officer, SAISC

The International Steelwork Contractors Group is a collection of associations which have a passion for steel construction. (BCSA UK, AISC USA, ASI Australia, CISA Canada, SCNZ New Zealand and the SAISC). The meeting provides the forum to meet with other associations, discuss common problems and different approaches to solving them, visit best in practice fabricators and an opportunity to meet really interesting people with a passion for all things steel.

This article is intended to give some feedback and highlights of the visit without getting into too much detail. Follow up articles on specific topics will be included in Steel Construction particularly where we can collaborate with our international colleagues in advancing the industry.

What makes a visit such as this so rewarding is the ability to visit fabricators, spend time with them and walk through their facilities while discussing pressing industry challenges and opportunities.

The first two fabricator visits were to SH Structures in Thirsk followed by Severfield in Dalton.

S H Structures is a specialist structural steelwork contractor who designs, manufactures and installs complex structures.

The company showed us their extensive portfolio with award winning projects in most sectors including education, health, sport, museums, public buildings,

infrastructure and artworks. What was unique and interesting was the interfacing with other materials which included glazing, ETFE, Tensile Fabrics and Timber. Here was a company which prided itself on providing services that most fabricators would contract out. South African fabricators would do well to consider their approach as it means to ensure that they are no longer considered as merely sub-contractors. The factory looks like a typical South African fabricator but the engine room consists of highly skilled managers, technical staff including detailers and highly skilled artisans with a passion for difficult steelwork. For those of you who are interested please visit their website and spend a little time on the Kelpies, Falkirk Project *(http://www.sbstructures.com/projects/the-kelpies-falkirk/).* Truly awe inspiring tubular steelwork and cladding at its best.

Most large fabricators over the years have visited Severfield in Dalton. I had not been to the facility since 2005 and was excited to see improvements to the facility. The London High-Rise multi storey steel frame market is healthy judging by the tonnages of steel moving thorough the factory.

Serverfield is widely recognized for their iconic structures and engineering excellence. They operate on an international scale and the site we visited covered 55 acres. Dalton forms the hub for much of Severfields activity. The site boasts 10 state of the art production lines where modern manufacturing and painting are undertaken in a controlled environment. They have a capacity of 1 500 tons of steel per week. The streamlined, high volume and efficient nature of the facility is geared for strong repeat business in the structures market particularly high rise. This is a fabricator who has moved from jobbing to manufacturing and made a success of it. Again it is the engine room that deserves a more thorough investigation as many of the products manufactured have been the result of innovation and collaboration of associations such as the SCI and BCSA, steel mills and their own technical and management teams.

They have a large in-house design department and drawing office with state of the art 3D and BIM capabilities which sadly many of our larger fabricators have lost over the years. Partnering with their clients is considered key to delivering large projects. *Please go to their website for more information (http://www.severfield.com).*

William Hare, the last of our fabricator visits, is one of the UK's leading steelwork contractors. It has a significant international presence and capability with facilities in the UAE, India and the Philippines. The company is Family owned and traces its origins back to 1888. Those in the steel industry will appreciate what a challenge it is to keep a firm in the family and a going concern over more than three generations.

The Scarborough site is the largest in the group and it has benefited from significant investment upgrades to become the UK's first robotic fabrication, assembly and welding line. The most impressive aspect is the owners and managements approach to pushing the envelope forward and recognizing that sometimes it is better to be in early in order to learn and improve than to wait on the sidelines for others to eat your lunch. It again became clear that the engine room combined with the well thought out layout of the factory and modern equipment contributes to the success of this business *(www.hare.com).*

In summary there are many areas where our fabricators have similar equipment but what is lacking in some of our facilities is the engine room. It's not enough to have drilling lines and to subcontract out your engineering and detailing. It's key to look at the whole package.

The remainder of the week was spent on Structural Steelwork Country Briefings, Market Updates, Steel Market Development, Competitive pressures from other industries, Building Information Modelling, Steel in Fire, Skills Development and Collaboration between the various institutes and associations.

In order to do these topics justice it would be better to spend a little more time on each in follow up articles.

A heads up for our steel contractor members is that the next meeting will be held in Australia in 2019.

BCSA DESIGN AWARDS 2017

The LEADENHALL BUILDING, London

Article and Images Source: British Constructional Steelwork Association, https://www.steelconstruction.org/design-awards/2017/

THE LEADENHALL BUILDING PROVIDES THE PUBLIC WITH A UNIQUE AND DRAMATIC NEW SPACE AT GROUND LEVEL, OFFERS TENANTS SOME OF THE MOST DESIRABLE OFFICE SPACES IN THE CITY, AND FORMS A SENSITIVE AND ELEGANT ADDITION TO LONDON'S SKYLINE.

The Leadenhall Building is a 224m high steel-framed commercial office tower in the City of London. In order to meet the client's aspiration for a landmark tower on this sensitive site, the architects proposed a wedge-shaped building. This produced the highest office floors in the City, while minimising the impact on a cherished view of St Paul's Cathedral.

The use of steel is fundamental to the value of this building. It is visibly integrated into the architecture to an extent that is highly unusual for a skyscraper, creating a powerful tectonic quality which enables people to appreciate and take delight in the way that the building is constructed.

Panoramic lifts were placed on the vertical north elevation so they could serve all the office levels. As a result there is no central core, and stability is provided by the perimeter braced steel 'megaframe' placed outside of the building envelope.

This steel design allows the floors to be exceptionally open, with views in every direction and spans of up to 16m, so that there are only up to six internal columns within floorplates of up to 43m x 48m, making them very flexible and attractive to tenants.

At the bottom of the building, floors are cut away and hang from the levels above, creating a vast open space, the 'galleria', which connects and relates directly to the surrounding public realm, regenerating the local environment and creating new pedestrian routes.

The architects wanted the building to express its engineering systems wherever possible. This significant challenge demanded a holistic and creative approach, with the engineers and architects working closely together from the outset. The most striking example of this is in the 'megaframe'. Alternative bracing arrangements were proposed, studied and then optimised, leading to an arrangement that is both structurally efficient and architecturally coherent. Vertical columns are provided where they are most needed, on the east, west and north faces, and a diagrid structure on the more lightly- loaded south face. Connections are made through a family of separate fabricated node pieces. This ensures that the complex geometrical relationships between members are always resolved within welded joints and the site connections remain simple and standardised.

Within the 'galleria', floor beams are exposed, enhancing the character of the space. At level 5 these project beyond the 'megaframe' to form a canopy over Leadenhall Street. The levels below are suspended via hangers whose bespoke end connections provide a seamless transition between the rods and the supporting steel beams.

The 'megaframe' columns and braces around the 'galleria' are unrestrained over a height of 28m. Standard 'megaframe' sections are therefore subtly adapted, with tapering webs and additional stiffening plates, to significantly increase their buckling resistance without undermining the node connection principles or aesthetic proportions.

Steelwork is corrosion protected and fire protected where required. In external areas, epoxy intumescent coatings are employed for durability. Cast intumescent caps were placed over the ends of the 'megaframe' fasteners to preserve the 'nuts and bolts' aesthetic.

The most complex steelwork details were developed in workshops based around Arup's Tekla BIM model. The model fed directly into the procurement process where it was used to explore the construction methodology and co-ordinate the temporary works. It also fed directly

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into the steel fabrication models, driving automated shop processes.

80% of the building was constructed offsite, reducing waste and improving quality, safety and programme.

All wet concrete was eliminated above level 5 by replacing conventional composite floor slabs with an innovative precast concrete panel system. The panels have pockets which enable dowels to be installed into the neighbouring units via cast-in couplers to provide diaphragm action. These dowels pass through circular openings in shear tabs pre-welded to the tops of the steel beams, to provide the required shear connection.

The primary steel system within the north core was built as a series of storey-high tables, with the services and concrete floor slabs pre-attached to them, minimising the number of crane lifts required.

The building was predicted to move sideways to the north during construction. An innovative approach was deployed to counter this, known as 'active alignment'. The structure was initially erected straight and movements regularly monitored. At a later point, adjustments were made to the 'megaframe' diagonals which pulled the building back sideways, reversing the gravity sway. This allowed the 'megaframe' nodes to be fabricated with a simple orthogonal geometry and improved the overall accuracy of construction.

The Leadenhall Building provides the public with a unique and dramatic new space at ground level, offers tenants some of the most desirable office spaces in the City, and forms a sensitive and elegant addition to London's skyline.

Judges' Comment

This project had a committed client, architectural and engineering excellence, fabrication precision and construction ingenuity and innovation. They all combined to make a project whose achievements are even greater than the sum of the parts.

Structural steel is rigorously controlled to generate an architecture that is clear and legible throughout the building. Like most ground-breaking projects there were lessons to be learned, but the client and the team persevered to achieve final success.

This world-class project is an exemplar for large commercial buildings.

PROJECT TEAM

Architect Rogers: Stirk Harbour + Partners
Structural Engineer: Ove Arup & Partners Ltd
Steelwork Contractor: Severfield
Main Contractor: Laing O'Rourke
Client: C C Land

Article and Images Source: British Constructional Steelwork Association, https://www.steelconstruction.org/design-awards/2017/

THE ALTERNATIVE DESIGN USING STEEL HAS MADE IT POSSIBLE TO OBTAIN THE AESTHETIC AND FUNCTIONAL GOAL, WHICH IS TO MINIMISE THE VISUAL IMPACT ON THE SURROUNDING LANDSCAPE, WHILE ALSO PROVIDING AN ECONOMIC AND DURABLE SOLUTION.

The T-PYLON

The T-Pylon is a structure of only few parts that can be erected quickly and requires virtually no maintenance. It is designed to carry 2 x 400kV, but can be modified to alternative specifications, and is the result of a design competition in 2011 to find a 21st Century power pylon design for Nationalgrid UK. The challenge was to find an alternative to conventional lattice towers that minimised the visual impact on the landscape, whilst being cost-effective and functionally superior.

The use of steel for the T-Pylon has allowed for unique geometries. Contrary to conventional lattice tower designs, the arms of the T-Pylon are slightly raised, which gives the pylon a more optimistic and positive appearance. The few parts making up the pylon have been welded together and subsequently painted white. The tower design is shorter and leaner than traditional lattice towers resulting in improved aesthetics and reduced environmental impact. The use of a monopile foundation also minimises the overall cost, installation time and environmental impact of the T-Pylon.

The alternative design using steel has made it possible to obtain the aesthetic and

functional goal, which is to minimise the visual impact on the surrounding landscape, while also providing an economic and durable solution.

The steel structure is designed in accordance with Eurocode 3 and fabricated in accordance with BS EN 1090-2 to Execution Class 3. The structural steel specification for the flanges, monopole and transition piece is for S355J2 to BS EN 10025-2 for thicknesses up to and including 50mm, and either S355NL to BS EN 10025-3 or S355ML to BS EN 10025-4 for thicknesses over 50mm. The steel plate also has to be accompanied by a Type 3.1 specific inspection certificate according to BS EN 10204.

A radical innovation is the re-assessment of the conductor/cable arrangement. The prismatic configuration of the cables allows a reduction in the pylon's height of more than 30%. The footprint of the power lines, as well as the electro-magnetic field (EMF) radiation, is thus reduced.

The most remarkable characteristic of the T-Pylon design is that all conductors are carried by a single attachment point. Traditionally, such a structure would have three separate arms – each carrying an individual conductor.

This unique attachment point was studied closely to ensure its robustness and resistance to fatigue. Complex analysis and physical loading tests were carried out to simulate climatic conditions such as extreme winds and ice loads. Investigations were made into the dynamic performance of the structure under simulated vibrations.

The pylon is made from S355 steel plates that are curved and welded to form cylindrical sections. The shaft is fabricated in either one or two pieces according to the length needed, the requirements for hot dip galvanizing, and transport limitations. The steel plate thickness used for the shaft is optimised according to the design load cases and varies from 22mm at ground level to 14mm at the top.

At the top of the shaft a cast node connects the shaft to the two arms. The node is cast in one piece to ensure the optimal load transfer from the arms to the shaft. The result is a highly effective and smooth node that transfers the shape and forces from the arms to the shaft. The node is connected to the arms and shaft by non-visible internal bolts.

Dynamic external wind loads experienced on the pylon arms result in a bending moment at the pylon foundation. However, the cast node must withstand the transfer of internal stress from compression and tension at the node due to the pylon arm distributed load case. The cast node is designed to withstand both the magnitude and the dynamic behaviour of the load case. At the end of the arms another node connects the insulator configuration to the arm in an aesthetically pleasing way. Again, the node is connected to the arms by non-visible internal bolts.

For the UK market the pylon is hot-dip galvanized and painted light grey. This duplex coating system gives the pylon an expected lifespan of at least 80 years. For other markets the pylon can be produced in stainless steel or weathering steel.

The design of the shaft is similar to the design of towers for wind turbines. Consequently, it was possible for the steelwork contractor to use the experience from wind turbine towers to produce the shaft using automated processes in controlled factory conditions. Maximising the offsite fabrication simplified on-site operations and reduced the number of operatives required for the installation process.

The new designs have significantly reduced maintenance requirements compared to traditional lattice towers. The durable coating system and lack of edges and bolted connections increases the future maintenance intervals and makes re-painting the towers much faster. Also, no anti-climbing devices are needed for the monopole shaft, which would otherwise require frequent replacement.

Judges' Comment

The T-Pylon represents a generational step change in power transmission hardware. Analytical design from first principles included re-examination of arrangements for insulation and maintenance.

The result is a family of compact pylons which can be deployed in sensitive landscapes, with prefabrication enabling consistent finish, smaller land take and speedy erection. This is a steelwork design classic.

PROJECT TEAM

Architect: Bystrup

Structural Engineer: Bystrup

Main Contractor: Balfour Beatty Power Networks

Client: Nationalgrid UK

POLASA members were very interested in this T-Pylon "Design Classic" project that won a BCSA (British Constructional Steelwork Association) Steel Design Award this year. It was entered by the Architects and Structural Engineers, Bystrup and constructed for Nationalgrid UK by Balfour Beatty Power Networks.

Knowledgeable POLASA members expressed admiration but questioned the practicability of transporting to and erecting these in difficult terrain and to ensure the quality requirements associated with site welding and corrosion protection. The cost of shaped welded steel structures do not compare well with conventional methods, so the client must be willing to pay for the aesthetics!

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www.polasa.co.za

Creative ARTS

by Leif Johnson, SE, PE, Ron Klemencic, SE, PE and John Hooper, SE, PE

GIVEN THE SITE, FOUNDATION AND ARCHITECTURAL DEMANDS, STRUCTURAL STEEL – 4 600 TONS OF IT – WAS THE BEST FRAMING CHOICE TO BRING THE PROJECT TOGETHER. ITS LIGHT WEIGHT AND HIGH STRENGTH-TO-WEIGHT RATIO DECREASED GRAVITY LOADS AT THE FOUNDATION AND MINIMIZED SEISMIC MASS.

Options for the structural design of the San Francisco Museum of Modern Art (SFMOMA) expansion were constrained from the beginning.

The unique site and foundation demands, along with compact architectural programming, limited possible structural strategies. However, in the end, these constraints sparked an innovative design using structural steel that met the economic and structural performance requirements, and helped make the largest modern art museum in the U.S. a resounding success.

Foundation constraints

The original SFMOMA, designed by Mario Botta/HOK (architect) and Forrell-Elsesser (structural engineer) in 1992, included a 4-ft, 6-in.-thick mat foundation. This foundation was extended beyond the footprint of the superstructure to allow for an expansion of similar height to the existing building, which is approximately 100 ft tall. So when the design architect, Snøhetta, unveiled their vision for a 200-ft-tall tower nestled directly east of the existing building and spanning two blocks from Minna Street to Howard Street, it became apparent to the design team that the existing mat foundation would struggle to support the proposed structure. Accommodating a building twice the height of what was originally anticipated would require a 6-ft-deep mat foundation. However, demolishing the existing mat foundation would pose too great a risk for the existing building due to loss of flexural continuity, and the option of drilling large piles through the existing mat foundation was not economically feasible. Therefore, the proposed solution was to retain the existing mat foundation and support the expansion on a series of full-story-deep concrete stiffening walls with embedded steel columns. The "egg crate" solution, as it was referred to by the design team, would create an occupied foundation or stiffened box – the existing mat foundation as the lower flange, the interior walls as stiffened webs and the grade-level slab as the upper flange. The walls would be positioned to spread load from the superstructure while still allowing for the architectural program within the basement.

By spreading the load with a stiff network of walls, the existing reinforcement in the mat foundation could be reused and the large loads could be distributed to allow for epoxy doweling between the new and existing structure. The steel columns were encased in the walls with steel fi ns and headed studs to effectively transfer and spread the large forces from the superstructure to the foundation.

Architectural constraints

In order to fit in the long, narrow site, the proposed expansion could be no wider than approximately 100 ft and extended nearly 300 ft in length. This aspect ratio forced all steel columns to be positioned along the exterior of the building for open galleries and circulation. In addition, the building bridges over Natoma Street, as well as a loading dock, further restricted column placement.

The combination of these constraints meant that the number of columns had to be minimized. Therefore, the load per column would be much higher than "typical" for a 200-ft-tall tower – which only further complicated the foundation egg crate design. At the most heavily loaded columns, large cruciform-shaped walls were required to spread out the load and to avoid overstressing the existing mat foundation in flexure and shear.

Lateral bracing system

Given the long spans required for the open galleries – up to 55 ft – and the desire for a 20-ft cantilever on the east side of the building, structural steel was the logical choice. Built-up plate girders up to 90 in. deep were required to



BELOW: Leif Johnson is a senior associate, Ron Klemencic is chairman and CEO and John Hooper is a senior principal and director of earthquake engineering, all with Magnusson Klemencic Associates.

achieve the spans and ensure acceptable vibration performance, and braced frames were strategically located in permanent partition walls along the length of the floor plate. The design team explored various lateral bracing systems that would be compatible with the structural steel gravity system. Buckling restrained braces (BRBs) was selected for two important reasons:They provided the highest level of ductility to minimize loading on the existing foundation, and they allowed for better "tuning" of lateral stiffness to combat torsion under wind and seismic loading. The building employs 156 BRBs in all. Structural engineer MKA worked with the BRB supplier, Corebrace, to more accurately define the yielding and overstrength characteristics of each brace, and brace connections were developed with both pinned and welded types for aesthetics.

Nonlinear analysis

The AISC Seismic Provisions for Structural Steel Buildings (ANSI/AISC 341, available at www.aisc.org/specifications) allow for a nonlinear analysis to decrease predicted seismic induced column demands, including demands at the foundation— and this document was critical to the success of the museum's design. If the columns were designed for the simultaneous yielding of all of the braces for the full height of the building, as with a traditional capacity design approach, the axial demands at the base would be too large to resist by the egg crate walls and new foundation. By analyzing the nonlinear behavior of the structure during maximum seismic ground shaking, MKA was able to more accurately predict the column forces and the demands for the column-to-foundation connections. Geotechnical engineer Treadwell and Rollo provided MKA with 11 pairs of site-specific ground motions, and MKA analysed the performance using a nonlinear model of the building. By adjusting the BRB distribution and sizes, MKA tuned the building to dissipate sufficient seismic energy and meet all strength and deformation requirements.

Erection process

Adopting a design-assist mindset, MKA and erection engineer Hassett Engineering collaborated early in the schedule to develop connections that would accommodate safe and efficient erection. 3D modeling was implemented during preconstruction and continued through the construction phase. This was critical not only for MEP clash detection but also due to the complex 3D geometry of the exterior curtain-wall-to-steel interface. As the site was bordered by existing buildings to the east and west as well as roadways on the north and south, there was no lay-down area outside of the project footprint. There were three truck unloading areas, all on active roadways or alleys, and deliveries were limited to one truck at a time. Three or more trucks a day were staged at remote locations, and each steel delivery had to be properly sequenced to go from truck-to-hook and erected into place.

Given the site, foundation and architectural demands, structural steel – 4 600 tons of it – was the best framing choice to bring the project together. Its light weight and high strength-to-weight ratio decreased gravity loads at the foundation and minimized seismic mass. Structural steel also facilitated long spans over galleries and large cantilevers along the curved east façade and its incorporation into BRBs helped balance the stiffness of the long, skinny floor plates while also limiting the foundation loads under seismic forces. Ultimately, these demands were met with an economical structural steel design, which included an innovative foundation concept and brought Snøhetta's vision to life. The expansion, which opened last year, is a timeless and inspiring design that enhances an already prominent museum and creates a new icon for San Francisco.

PROJECT TEAM

Owner: San Francisco Museum of Modern Art

General Contractor: Webcor

Architect of Record: EHDD, San Francisco

Design Architect: Snøhetta, San Francisco

Structural Engineer: Magnusson Klemencic Associates, Seattle

Erection Engineer: Hassett Engineering, Castro Valley, Calif.

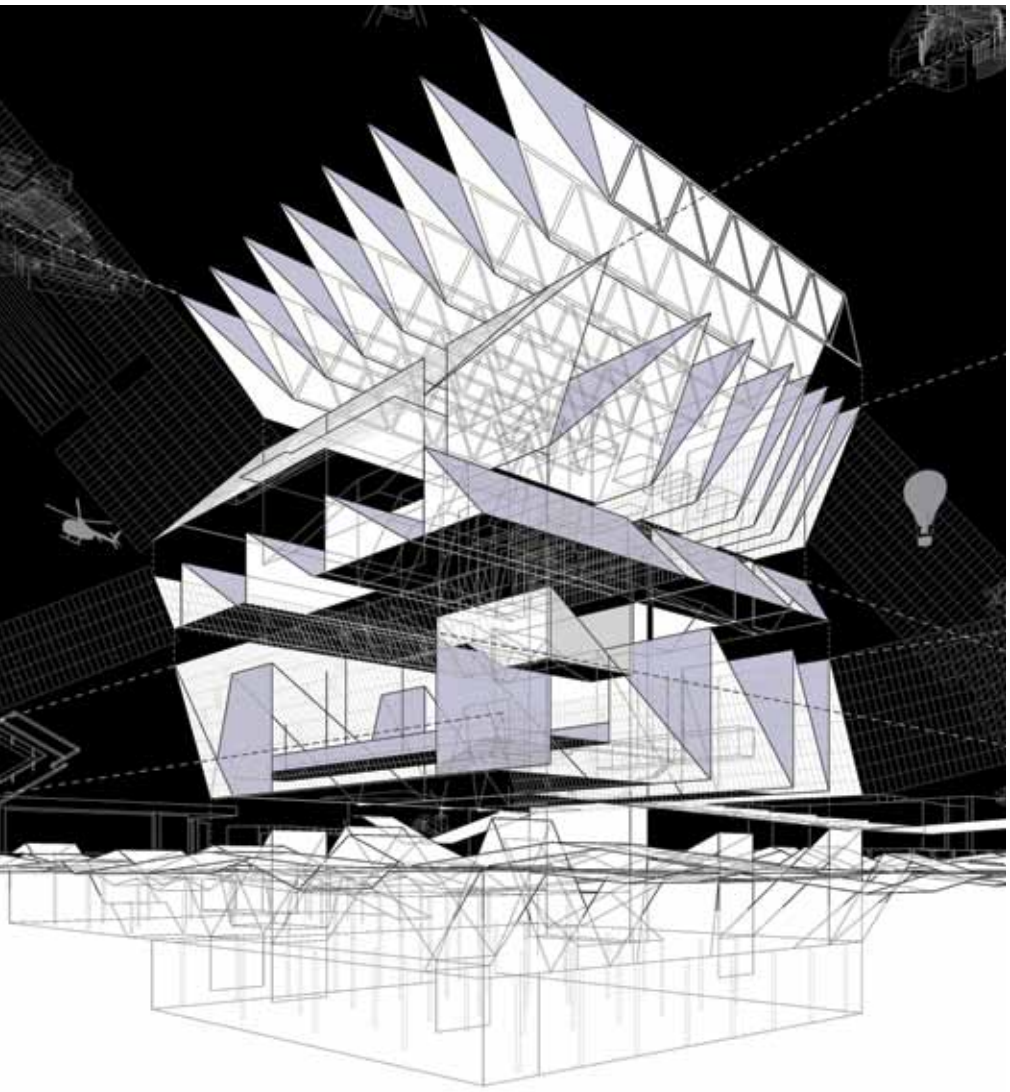
STEEL TEAM

Fabricator and Erector: SME Steel Contractors, West Jordan, Utah

BRB Supplier: Corebrace, LLC, West Jordan, Utah

Detailer: Pro Draft, Inc., Surrey, B.C., Canada

The FUTURE of Museums?



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THE 2017 STEEL DESIGN STUDENT COMPETITION ENCOURAGED STUDENTS TO TAKE ADVANTAGE OF THE MANY VARIED FUNCTIONAL AND AESTHETIC USES FOR STEEL AS A BUILDING MATERIAL.

The 2017 Steel Design Student Competition has recognized nine exceptional projects, in two categories, that explore a variety of design issues related to the use of steel in design and construction.

The 17th annual competition, administered by the Association of Collegiate Schools of Architecture (ACSA) and sponsored by AISC, offered architecture students the opportunity to compete in two separate categories. Category I challenged students to design a museum, exploring ways in which design and imagination can create a popular visitor destination and a city focal point. Category II was an open competition with limited restrictions that encouraged students to investigate steel with a great amount of flexibility.

The competition encouraged students to take advantage of the many varied functional and aesthetic uses for steel as a building material. The 2017 jury for Category I – Museum consisted of:

- Julian Bonder, Wodiczko + Bonder and Roger Williams University
- Hazel Ruth Edwards, Howard University
- Steven Tipping, Tipping Structural Engineers

The jury for Category II – Open included:

- Jeffrey L. Day, MinDay Architects and the University of Nebraska-Lincoln
- Elizabeth Golden, United 4 Design and University of Washington
- Elizabeth Martin-Malikian, Kennesaw State University

The competition had more than 1 200 student and faculty participants and received more than 400 submissions (213 in Category I and 188 in Category II). The jurors awarded First, Second, Third and two Honorable Mentions in Category I, and First, Third and two Honorable Mentions in Category II Open. The selected projects will be on view at the 106th ACSA Annual Meeting in March 2018 and NASCC: The Steel Conference in Baltimore in April *(see www.aisc.org/nascc for more information)*.

You can get more information and see more renderings of all the winners at *www.acsa-arch.org/2017SteelWinners.*

Winners: Category 1 – Museum

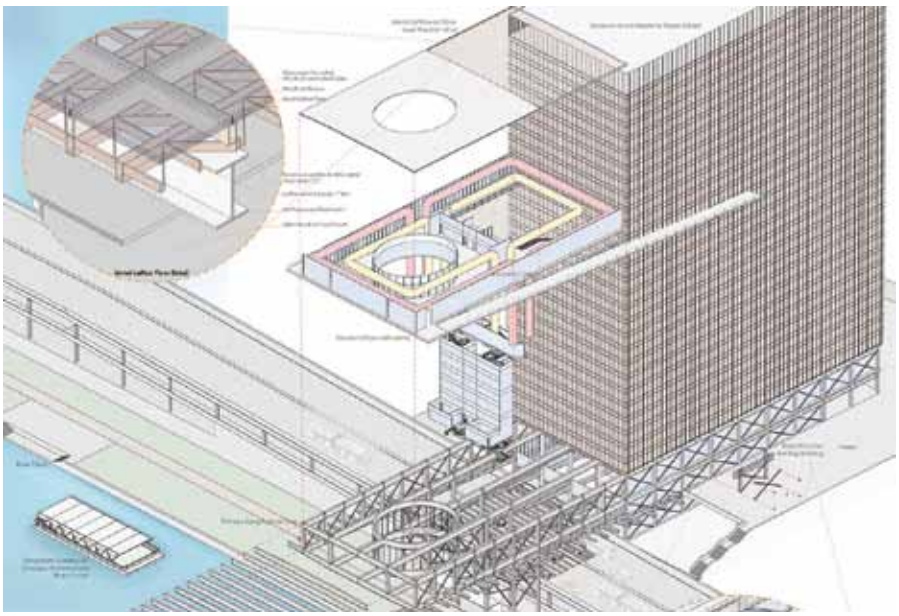
First Place: Museum of the 20th Century

Student: Justin Foo, Cornell University

Faculty Sponsor: Andrea Simitch

The Museum of the 20th Century in Berlin borrows its initial spatial strategy from the adjacent Mies van der Rohe. New National Gallery and a constructional affinity to Mies' investigations into steel construction. A series of stacked and initially planar surfaces are subsequently deformed in response to program, site, orientation and structure. The fold acts as a mediator between the harsh Cartesian rationality of Mies and the lyrical tectonism of Scharoun. The fold is further used as an operative strategy that allows for the mixing of programs – not just blurring the line between the public and private but also between the programs themselves, as one surface defines the surface of the other. The changing orientation of each plate "collects" the architecture of the city as part of the museum experience, and the building's crown-like roof allows soft northern light to illuminate the art within.

The main museum entry faces the New National Gallery while the public plaza entry orients itself toward Potsdamer Platz, with the height of the overall proposal establishing itself as a visible landmark from this important transportation hub. The transformation of the urban landscape further expands this strategy of assimilation and transformation between these two icons as it undulates and stacks to initiate the sequence into the museum. A sequence of ramps and stairs leads to an elevated public plaza at the center of the museum, which operates as an extension of the city's urban fabric, locating art as central to the urban experience. This pedestal in turn elevates the special galleries for maximum views of the surrounding context.



Second Place: Museum of Architecture: Over and Under

Student: Nahid Akram, University of Illinois, Urban-Champaign

Faculty Sponsor: Kevin Hinders

Most people's perception of architecture is based upon the sculptural quality of buildings. The intricate aspects of architecture (its infrastructure, systems, etc.) are often sealed away behind the image of that sculpture. The Museum of Architecture: Over and Under, seeks to educate the public on "behind the curtain" aspects of architecture.

Chicago, a city with rich modern architectural history, is a perfect location for such a project. The Illinois Center, a Miesian development near the edge of Chicago Loop, has a huge repository of intricate infrastructure, including a network of pedways that can be entered from the surrounding buildings/blocks and an under-occupied, raised plaza that provides a base for the thirty-story Miesian steel buildings. A new structure will synergize with this existing context to form a new museum complex. Coupled with the existing Chicago Architecture Foundation River Cruise, this museum will teach museum visitors about the complex workings of structure, mechanical systems and transport. It will also show the impact of architecture on the built environment and its meaning.

Third Place: Loop, Sculpture Museum in Indianapolis

Students: Wei Lin and Meghna Majethiya, University of Illinois, Urbana-Champaign

Faculty Sponsors: Scott Murray and Marci S. Uihlein

The Sculpture Museum is a new addition to the Indianapolis Museum of Art (IMA), whose 152 acres comprise the existing main Art Museum, the 100-acre Art and Nature Park, historic homes and performance spaces. This new proposed addition acts like a link between the main museum and the park, with a canal flowing across the site, which includes a 60-ft elevation drop. Currently, visitors must walk downhill from the main museum and walk across the Waller Bridge to reach the Art and Nature Park. The central concept lies in taking best advantage of the topography and scenic vistas found at the site. The design team started by connecting the highest and the lowest points of the site, spanning the museum across the canal while making sure not to obstruct the view of the canal. The other idea was to create openings in certain locations of the building so as to have vantage points that offer good views to the rest of the campus. The building form reinforces the circulation path of the visitors through the building.

2017 CANADIAN STEEL Conference

THE CANADIAN STEEL CONFERENCE IS THE CANADIAN STEEL INDUSTRY'S ONE AND ONLY NATIONAL EDUCATIONAL, BUSINESS DEVELOPMENT AND EXECUTIVE NETWORKING EVENT, AND THE LARGEST GATHERING OF STEEL INDUSTRY STAKEHOLDERS IN THE COUNTRY.

The Canadian Institute of Steel Construction (CISC) held their highly acclaimed Canadian Steel Conference in Calgary, Alberta from Sept 27 - 29, receiving rave reviews and accolades from all the delegates and exhibitors in attendance.

The Canadian Steel Conference is the Canadian steel industry's one and only national educational, business development and executive networking event, and the largest gathering of steel industry stakeholders in the country.

This year's technical program delivered a range of expert led sessions covering popular topics and high- profile projects such as the new Champlain Bridge, Calgary's new Central Library and Edmonton's Rogers Arena & Ice district.

Delegates praised the high calibre of the speakers, and enjoyed networking and socializing at our various receptions and events over three action-packed days.

We would like to thank all our delegates, exhibitors, and staff for your support. We look forward to welcoming you in Halifax next year!

A story of innovation – Calgary New Central Library

The New Central Library, located in the vibrant East Village downtown, will be one of Calgary's most important and distinctive cultural institutions with signature design led by renowned international architecture firm Snøhetta.

The New Central Library will occupy 278 000ft², including public space, and 40 000 square feet for future library expansion. The building structure will be built over Calgary's busiest LRT line which bisects the site and occupies approximately 40% of the site area. The Library's design will put a strong emphasis on public accessibility and community-oriented spaces with 80% of the building, including collections areas, allocated to public space.

Challenge

Build a new landmark civic building with an anticipated high level of community engagement over an existing, busy LRT line that bisects the site on a radius with minimal disruption to its operation.

Solution

Entuitive developed a transfer system that creates the opportunity for a contiguous floor plate above the LRT line with a regular grid system that maximizes future flexibility. This forms the basis for the Encapsulation – a new concrete structure that clear spans approximately 12 meters across the existing Calgary Transit South East corridor LRT tracks just north of the exiting CP Rail tunnel. It is the first time in Calgary's history that an active LRT line has been encased to enable an above-grade development project – an achievement which Calgary Municipal Land Corporation (CMLC) refers to as "a real feat of engineering".

PROJECT FACTS

Location: Calgary, Canada

Architect: Snøhetta (Design Architect), DIALOG (Executive Architect)

Client: Calgary Municipal Land Corporation (CMLC), Calgary Public Library and the City of Calgary

Size: 278 000ft²

Role: Structural Engineering Consultant

Budget: $245M

http://www.entuitive.com/project/calgary-new-central-library/

http://yycnewcentrallibrary.com/

https://youtu.be/xG3veRBg2i8

Rogers Place

Rogers Place, the new home of the Edmonton Oilers, is the most modern arena in the NHL. The building is double the size of the team's old home and features the largest centre-hung high-definition scoreboard in the world.

While the word "big" is used often in describing the completed facility, "fan experience" and "collaboration" were key features of its design and construction. Every aspect of the building was thought out in detail and everything was kept out of view of the fans. Moment frames keep concourses free of obstructions, mechanical units larger than a city bus are hidden away and insulated so as not to be heard, and electrical services have just eight feet of wall space to route conduit from electrical rooms.

"There was great collaboration on the project," says Serge Dussault, Vice President, CANAM Structures. "We had the luxury of being put on board very early and we were given a period of time to go back into the design to make improvements.

"One challenge we had was the thermal contraction and expansion of steel in the construction phase due to weather. We were able to incorporate some details that would deal with the differences in temperature that no one could predict."

The arena roof presented another challenge, Dussault says. "In an arena we cannot do it all from the outside. You'd need gigantic cranes and you also don't have the real estate outside the building." CANAM, the erector, and the consultant had done many arenas and had enough experience to redesign the construction and arrange the exit of equipment on the project. "We basically redesigned the roof. It was totally different from the original, from 10 or 12 planar trusses to two box trusses. Major early collaboration on the roof made a big difference."

The architect, engineer, contractor, fabricator, and erector all worked with 3D models to facilitate collaboration. Many components were prefabricated offsite. These all interfaced with the fabricator's structural steel and required coordination prior to arriving on site. The fabricator's BIM detected any clash and provided solutions before steel fabrication started.

For this project, the fabricator manufactured 9 000 tons of structural components and created 8 000 drawings.

To illustrate the scale of some of the steel components, the truss that sits directly over center ice measures 338 feet long and weighs 400 tons.

PROJECT TEAM

CISC Fabricator/ CISC Detailer: Canam Group Inc.

CISC Engineer: DIALOG

CISC Erector: Walters Group Inc.

Rogers Place Construction – Start to Finish:
https://www.youtube.com/watch?v=zuhuGqiivK0
https://www.cisc-icca.ca/projects/rogers-place/

Innovation

In the coming year we must pay particular attention to the small and young firms that are focused on new technologies and modes of business, since that is where the vast bulk of innovation and employment is likely to originate.

We have been working on novel innovative products within the Institute for years. With the virtual absence of new funding for such initiatives we focused this year on supporting innovators outside the Institute. In 2017 we sought out the students, academics, government officials and firms that are keen to do things in a new way and exerted much energy to support them. Work in innovation remains the most important and exciting arena in our industry.

Much of the blame for the underperformance of the South African steel industry can be attributed to unfair competition from industrialized and industrializing countries. However the fact that productivity levels are not keeping up with these countries can likely be attributed to a lack of domestic innovation. This was the gist of a report that was published by the World Bank last September.

"The study found that productivity in South Africa fell by 6% between 2007 and 2016 as a result of insufficient investment in innovation, while private research and development (R&D) spending had declined by 40% since 2009... Four per cent of firms invested in R&D at least once between 2009 and 2014, but, of these, only 4.9% invested every year."

And all this despite large economic returns of well above 100% for those who did make such investments. Moreover it is well known that productivity gains improve overall employment and boost GDP growth. According to the World Bank, in South Africa, a 1% gain in productivity would increase demand for jobs by more than 0.2% while raising real wages by between 0.9% and 1.8%.

More intriguing is the finding that productivity gains in gold mining, social housing and machinery equipment would have the largest impact on job creation: a key national priority. South Africa also has a very low number of small and young firms when compared with other emerging markets, where such firms played a leading role in driving innovation.

There is little question that the steel industry can, and should, play a leading role in supporting such firms to drive innovation in all three sectors. Despite the lack of sufficient funding, we anticipated the World Bank findings and, technical work at the Institute over the past year has focused on exactly such initiatives.

A new category on Innovation was introduced into the Steel Awards judging and various technological and business innovations were recognized at the dinner gala. For instance collaboration between Union Steel and their engineers delivered a demountable parking structure at the V&A in Cape Town. This technology shows great promise as a sustainable solution to the urban parking problem facing many large African cities.

It was also exciting to recognise a young and small business that specializes in financing, supplying and operating student housing for Universities. Despite coming from outside the industry the firm found light steel framed modular construction methods to be the only way to achieve their goals. Government officials who are in charge of social housing provision were immensely impressed by the project, and our industry's potential role in innovating to solve the national housing crisis has been recognized.

Our greatest challenge remains the development and retention of academics who are experts in steel to lecture and carry out research at the largest Universities. Despite this we have been able to support Master's degree level work on costing of buildings, roof sheet profile optimisation and development of novel fire protection techniques over the past year. We are also supporting those academics who have innovation in their blood and work with firms in our industry to support R&D.

The Institute was particularly focused on supporting work on fire resistance this year and will continue to do so over the coming years. As such we organized an industry talk by Marco Antonelli, an expert on fire resistance from Europe, in order to understand where our industry sits relative to competing industries. For instance we learnt that while fire protection can routinely cost over 50% of the steel cost in South Africa the average cost in Europe is closer to 15%. It was obvious from the talk that large financial returns await fabricators and engineers who can integrate fire resistance into their design, fabrication and erection.

We expect technical and business innovation in the area of fire resistance to lead all others in the near future. Innovation in this area will also have a direct bearing on penetrating the multi-story building sector and innovating in the office, hospital and housing arena.

The basis for innovation in any sector are the standards to which the industry works. Just as one cannot expect innovation in online services without maintaining the http standard, it would be absurd to expect innovation in the use of steel without maintaining the SABS standards that relate

to steel. As such the Institute has re-established a technical committee that can drive standards development in 2017.

With the retirement of Hennie as the Chair of the SABS committee in charge of SANS 10162-1, select members of the new SAISC technical committee will soon be meeting to draft the next version of SANS 10162-1 with Paolo as the new Chair.

The year also saw the publication of a new SANS standard on the use of structural steel to resist earthquakes. A peer reviewed paper on the new SANS 10160-4 steel provisions was published in the SAICE Journal in April and Amanuel, who led the effort on behalf of the Institute, gave talks on seismic design at various venues in Johannesburg and Cape Town.

The Institute has continued to maintain its existing publications. The Red Book and Green Book in particular remain popular. In fact the Red Book is so popular that engineers continued to specify standard South African sizes and profiles contained within it despite a whole year in which locally manufactured products were not available. This allowed AMSA an opportunity to enter the rolled structural steel market last April.

However the Institute has been unable to secure funding to develop new publications covering structural steel tubes, composite members and fire resistance. We continue to rely on our partners at Universities to fund and undertake such work.

We hope that our efforts over the past year have helped to support innovation in our industry. We thank all the workers, students, academics and managers who have invested their time and resource into R&D despite the difficult economic conditions. They are ultimately the saviours of the industry, and according to the World Bank, the national economy.

In the coming year we must pay particular attention to the small and young firms that are focused on new technologies and modes of business, since that is where the vast bulk of innovation and employment is likely to originate. Large established firms must surely focus on internal innovation, but they should also seek out and create a conducive environment for development of small firms that they can eventually acquire or partner with.

ALLOYING ELEMENTS IN CHINESE IMPORTED STRUCTURAL STEEL

The Chinese Government offers export incentives to exporters of steel. These advantages are aimed mainly at manufactured and semi- manufactured products, and take the form of exemption of export duties, VAT reductions and other incentives. General structural steel does not attract export incentives but alloy steel is included. As a result of this, many manufacturing mills are adding small amounts of alloying elements to structural steel, in order to maximise export incentives. This allows the exporters to enter the market with more favourable pricing.

The alloying elements used are mainly Boron (B), Chromium (Cr) and Titanium (Ti). While these additions are very small they will still have some effects on the behaviour of the steel. It is probable that the effects will not be significant in most applications but users should still be aware of possible complications. This is particularly true for steels, which are to undergo welding.

Boron has been the main addition in the past but the trend appears now to be towards Chromium and Titanium. Boron is a cheap additive and the level of required alloying additions very small, but it would appear that the Chinese authorities are looking less kindly at alloying with Boron.

Chromium will have the effect of increasing the CEV (Carbon equivalent) value which will affect welding parameters, depending on the amounts of the additions. The higher the CEV, the less "forgiving" steel is when welding and more precautions are required with welding parameters such as pre-heating. Main use of Chromium as an alloying element is in stainless steels to increase corrosion resistance and tool steels in combination with Carbon to increase hardness.

Titanium, is added to alloy steels as a grain refiner, and is used in stainless steels to stabilise welding. There is an effect on hardness and toughness will decrease (especially in combination with Boron).

The addition of these alloying additions is not for technical reasons or to improve steel quality, but to render them more saleable.

Structural steels will not benefit from the additions. As we do not generally utilise these elements in structural steel production, we do not have a great deal of experience with the consequences of their presence.

There will be affects of these elements on welding parameters which may or may not be deleterious and although the small quantities will probably not affect performance in the majority of cases, we should still be aware of their presence.

Recent introduction of duties on imported Chinese steel have made them less attractive, but they are still competitive and we see imports continuing.

Bruce Saxby is a Metallurgical Consultant and is contracted to ISILO Steel, BSI Steel and Qinisa Steel Merchants.

HOW CAN YOU BECOME A MEMBER OF THE SAISC?

SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

ADVANTAGES OF BECOMING A MEMBER OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION (SAISC)

- Belonging to an organisation that is highly respected both in South Africa and outside the country's borders.
- Accessing the Institute's database and meeting the right people at SAISC events and functions.
- Promoting your organisation to clients, the professions, main contractors and others in the steel industry.
- Obtaining advice on technical, contractual or business matters from the extensive and constantly growing body of knowledge and experience concentrated at the Institute.
- Keeping up to date on new developments and opportunities in the industry.
- Saving by benefitting from member discounts on publications, courses and events.

INDIVIDUALS CAN JOIN IN ONE OF TWO CATEGORIES

Professional Membership is for structural engineers, technologists, technicians, architects, quantity surveyors and project managers who are proficient in structural steel design and construction and are registered with a statutory council for the particular profession.

Associate Individual Membership is for any person who does not qualify for Professional Membership, but wants to be associated with the Institute. This includes Students.

COMPANIES CAN BECOME MEMBERS IN ANY OF THE FOLLOWING CATEGORIES

Steel Producer Membership for companies that are primary steel producers.

Steelwork Contractor Membership for fabricators and erectors of structural steelwork.

Associate Corporate Membership for companies and organisations with an interest in structural steel, including professional firms, clients of the steel construction industry, associations, companies that provide goods or services to the steel construction industry, and other companies in the broader steel industry.

Developing Membership for small, newly established steelwork contractors who need assistance.

To request a membership application form, or more information on membership fees, email Tiana Ferreira - tiana@saisc.co.za

ISF YEAR IN REVIEW 2017

The ISF has increased the marketing of South African fabrication capacities to the African Oil & Gas markets by now also taking part in oil & gas conferences and exhibitions locally and abroad as delegates, speakers and panel members.

For the past year the South African steel industry environment, including the structural steel environment, was dominated by the agreement between the main local mill, ArcelorMittal and the South African Government.

This agreement resulted in a perceived potential import protection threat and expected resultant higher steel prices. Fabricators in the export markets must quote well ahead and therefore the unknown timing of the expected import protection, coupled with no expectation of increased export rebates from the mills, resulted in higher and more uncompetitive tenders with the resultant 20% drop in exports materialising from early 2017 and predicted to further decline.

Contrary to the dti Minister's recent public comments, the downstream industry was not properly consulted and does not enjoy similar adequate value-added goods import protection. In fact, the ISF unsuccessfully attempted to interact with the dti Management on this matter since 2014. The so called incentives introduced for the downstream steel industry is viewed in general as meaningless for our industry.

As feared, upstream protection without adequate downstream protection and without an agreement on export rebates is having a major negative effect on both the local and export value-added steel industries.

The further introduction of Safeguards was totally unexpected and is adding to the frustration of primary steel converters.

South Africa is becoming less and less competitive in the value-added steel international markets, new mining projects in Africa are scarce and the expected Mozambican LNG, coal mining, power stations and transmission lines did not materialised in this period. This led to only an average of 3 700 tonnes per month of fabricated structural steel going through our marine ports with 3 100 tonnes per month shipped overland to other SA Customs Union countries and a further 3 400 tonnes shipped overland to other SADC countries.

The comparative edge South Africa still enjoys in landlocked Southern African countries will reduce over time as new East-West rail and road linkages are being established from the Atlantic and Indian Ocean shores.

The ISF has increased the marketing of South African fabrication capacities to the African Oil & Gas markets by now also taking part in oil & gas conferences and exhibitions locally and abroad as delegates, speakers and panel members.

A new disturbing fact is emerging: the international market has started to question our capacity to deliver on larger projects e.g. the LNG projects in Mozambique. This follows the substantial reduction of capacity when comparing e.g. the capacity of our five largest fabricators in 2012 to the current situation. We do know that ramping up capacity can normally be fairly easily achieved but the outside world tends to measure immediately available capacity.

It was hoped that a change of Zimbabwean President would occur in 2017 as the general belief is that this would immediately result in major economic recovery resulting in large supply potential for South African contractors. Unfortunately this did not occur.

The ISF took part in the Pacific Steel Construction Conference in Shanghai towards the end of 2016 and were advised that China will increase their fabrication of steel structures by 30 million tonnes within three years. We were not advised

www.isf.co.za

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which part of the 30 million tonnes is planned for Africa.

Members that acted early and downsized their operations, shifted their focus to smaller brownfield mining extensions, warehousing, storage, etc. as well as following modern shifts in these markets, manage to maintain the largest part of their export markets. There is a marked drop in exports for large scale projects.

The ISF continues to promote a change in strategic focus by its members. The most important shift is the continued increase in the African marketplace to receive solutions rather than product. The demand for ex-works or FOB fabricated structures remains low. The market for un-erected structures for large projects is fiercely competed for by the Chinese and other Eastern fabricators and on an increasing basis, also from the Middle East and Europe. Our competitors tend to become part of bidding consortiums and do not wait for the award to main contractors to commence their marketing efforts.

Metal Building Systems (pre-engineered) manufacturing is slowly gaining ground with one member regularly producing MBS for export.

The highlights for the past year include the following:

- the successful completion of the ISF Business Plan as approved by the ISF, SAISI and the dti;
- the new additional oil & gas focus of the ISF and members resulting in establishing better relationships with the UK based industry including the CCS J/V procurement office based in London for the Anadarko LNG project.
- the ISF visited a large number of EPCMs and mining houses including Perth, London and Toronto.
- the ISF continued to interact with the Government on various subjects including the national export strategy, Trade & Investment Africa, as well as the steel industry in general. The ISF CEO also serves on the Governmental Steel Committee on steel tariffs, etc.
- the ISF has been recognized as the most active association in respect of the Mozambique LNG projects and "Maximising African Content in African Projects" and was invited as guest speaker throughout South Africa, the Africa Infrastructure conference, Oil & Gas Africa conference, Japan-Africa Business Forum in Tokyo, etc.

2017 A MOST CHALLENGING YEAR

By Dennis White, Director SAMCRA

Following a moderate start the past year has proved to be one of the most challenging in several decades for the cladding industries. Regrettably two members ceased activities. Progress with the publication of the revised versions of SANS 10400 Part-L (Roofs) and our cladding code together with the reviews of SANS 10400-XA (Energy usage) and SANS 1273 (Fasteners) has been exasperatingly slow due to holdups within the SABS (mainly a shortage of skilled personnel to process work completed by the workgroups) and in the case of SANS 10400-XA ineffectual chairmanship of the workgroup. Our attempts to find competent parties to establish test facilities have not been successful, however, we are exploring other alternatives.

On a brighter note we have continued to participate in a number of CPD workshops for professionals and have a number of workshops in the pipeline including one for quantity surveyors. During September we were again invited to present a workshop to the final year architectural students at Tshwane University. Unfortunately our workshops for the architects, quantity surveyors and engineers as well as building inspectors at the Department of Public Works (DPW) has been delayed due to a lack of funds at the DPW. Our draft for a workshop to be presented to consulting engineers is complete and we will submit it for CPD accreditation during November. Following this we will begin work on a presentation to insurance underwriters and developers designed to induce them to become members as well as support SAMCRA members. We continue to act as paid technical consultants to an increasing number of parties including developers.

During the year we published numerous articles on a variety of subjects pertaining to metal cladding which have been well received. In recent months we have received requests from other associations to submit articles for publications in their journals together with requests for permission to publish some of our articles. Our website is proving popular (average ???? visits per month). It has also been a source of requests for assistance, information and enquiries about our activities. Currently we are developing a FAQ's (frequently asked questions) portal which will be followed by a Cladding 101 portal.

SAMCRA is currently brokering an initiative for a safeguard against profiled cladding being imported at a third of the local cost for coil.

Future work items are the establishment of a training programme for installer of cladding and draft of a cladding handbook/s.

SAMCRA
SOUTHERN AFRICAN METAL CLADDING AND ROOFING ASSOCIATION
www.samcra.co.za

2017 SASFA YEAR IN REVIEW

By John Barnard, Director SASFA

SASFA's mission is to develop and grow the Southern African and export markets for light steel frame building.

LSFB has developed into a viable alternative building method for a range of low to medium rise buildings in South Africa during the past ten years. The steel consumption of this industry has grown to some 20 000 t/yr of high strength galvanized steel sheet, as well as significant volumes of cladding and lining materials, fasteners and insulation. LSFB is increasingly being used in multi-storey office and commercial buildings, where it is replacing heavy masonry curtain walls.

The following is a brief summary of SASFA's activities and achievements during the past year.

Publicity

Growing the awareness of light steel frame building as an environmentally friendly and sustainable building method is one of SASFA's primary objectives. The target audiences range from the professions – engineers, architects and QS's – to builders, the building material supply chain, building authorities and financial institutions right down to prospective clients. The major promotional activities were:

- Media articles: some 53 media articles were placed in 12 prominent publications to expand awareness of LSFB.
- Steel Awards: 19 LSFB entries were received – a third of the total number of Award entries! Two projects were selected by the judges as joint winners of the MiTek sponsored light steel frame building category – façade walls of the the 11-storey Assupol building in Summit Place Office Park, Pretoria, and the roof structure of the GLA School Hall in Jeffreys Bay. The three storey student accommodation project on the Tygerberg Medical campus of Stellenbosch University received a special commendation.
- A 40-page glossy pamphlet was published and distributed through Construction World to commemorate SASFA's 10 years of existence.
- A quarterly informal newsletter is sent to members to keep all informed about developments in industry.
- SASFA website: continues to draw more than 800 visitors per month, and serves as an important source of information for all.
- Industry feedback meetings were held in Johannesburg and Durban. It serves as an excellent forum for networking.

SOUTHERN AFRICAN LIGHT STEEL FRAME BUILDING ASSOCIATION

www.sasfa.co.za


Light steel the answer for rebuilding Knysna?

Free State home rent-free to fire victim

- SASFA was invited to present LSFB to the Council of the Built Environment. They are considering training opportunities.
- In order to present LSFB as an option to replace the hundreds of houses lost in bushfires, SASFA arranged a well-attended half day seminar in Knysna, with support from ArcelorMittal, Marley Building Systems and Saint-Gobain. Several architects are now considering LSF for new projects, and the first replacement LSF house is already being built.

Training

As part of the strategy to protect and enhance the quality of LSF buildings, SASFA offers a number of training courses, focusing on the designers, building contractors and building inspectors.

- The 6-day LSF training course for building contractors was presented in Durban, Alberton and Cape Town, to a total of 50 attendees. This brings the total number of people who have successfully completed the course to 392.

  Apart from locals, we also had students from Dubai, Ethiopia, Namibia and Zimbabwe attending, illustration of the growing interest in LSFB in Africa.
- An annual lecture to University of Pretoria final year building science students was delivered to a group of 60 students. We were also invited to lecture to a group of 100 Architecture students.

Technical

- SASFA had an energy efficiency study carried out by a consultant on the 11 storey Assupol building (clad with LSF Etics) in the Summit Place Office Park in Pretoria. The study was sponsored by Saint-Gobain.
- SASFA started a series of inspections to evaluate the durability of older LSF buildings in marine environment. It confirmed that steel within the building envelope will show very little corrosion.

Codes and standards

- SASFA is represented on the SABS committee SC98C, which is responsible for all standards dealing with steel and aluminium in building and construction.
- A thorough revision of SANS 517 has been concluded, and the SABS is currently finalizing the changes.

Support by the banks

After a meeting with senior management at Nedbank, they agreed to grant bonds to deserving LSF building projects. All the banks now support LSFB in principle.

Committees

SASFA's Exco, Technical and Training committees met on a two-monthly basis, involving 23 industry specialists from 16 member companies.

Quality monitoring

Several code compliance investigations were carried out on LSF buildings, on request.

Industry statistics

SASFA undertook its annual industry survey to quantify LSFB activity in Southern Africa. Demand for LSF reflected the zero growth in buildings completed reported by Statssa. Steel usage for roof structures showed growth, against a slight decline in complete buildings.

Membership and finances

A survey was carried out to determine SASFA's value proposition to its members. We received membership applications from 9 companies, offset by 11 membership suspensions and two resignations.

SASFA's actual income during the past year was 15% below budget, reflecting the tough conditions in the market place. It was however more than offset by a 18% reduction in expenditures.

2017 ASTPM & STEASA Year in Review

The tube and pipe industry make up a key part of the steel industry in Southern Africa. Like all steel manufacturers they have been under immense pressure from rising input costs and competition from imports and challenging market conditions.

The SAISC recognized this importance and has been caretaking these associations for some time now. We are happy to report that we were able to get most of the original members back to the table in May 2017 and we have together with the membership appointed Mr Keitumetse Moumakoe to run and manage STEASA from September 2017. I am confident that he will make a significant contribution to the tube and pipe sector.

The SAISC is currently considering the most efficient way of getting the ASTPM to work with the SAISC to align their objectives and goals.

A significant amount of time has been spent on strategic initiatives which the SAISC and its sub associations have been working on for some time. Some of these are listed below:

- Tariffs, Safeguards and Anti-Dumping (Midstream and Downstream)
- Designation and localization
- Export Competitiveness
- ASTPM – SAISC Projects – Growing the market
- Codes and Standards
- Product Ranges and Grades
- Steel vs other materials
- Tubular Columns

A new business plan has been submitted to the dti for approval and a more focused country approach to exports is being developed with the help of other export associations (ISF) and role players.

2017 POLASA *Year in Review*

By Kobus De Beer, Director, Polasa

The Association was formed as an independent sub-association of the SAISC (Southern African Institute of Steel Construction) during 2013 to focus on the needs of the South African power line producers and constructors in view of work lost to importers and a number of companies shutting down. POLASA has gone from strength to strength over this difficult period.

Four years ago the "burning platform" was the lack of work and the lack of continuity of work placed with industry. ESKOM also had serious problems to provide unrestricted access to line construction sites due to delays in right-of-way approvals, water licenses and the many requirements to accommodate local communities.

Today the industry has more than 2 000km of new lines on order of which some 1 000km still has to be built in the current and next financial years – the new "burning platform" is to find resources and balance the work flow between the number of competing companies, also from Europe and Asia.

The terms of reference and purposes of the Association

Membership of the Powerline Construction Association is open to all approved contractors for and suppliers of ESKOM's transmission and distribution line requirements.

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

POLASA is managed by an elected Board of Directors from the industry, each focusing on specific areas of relevance.

There are no barriers to participation by foreign companies pre-qualified and approved to manufacture and build lines in South Africa for ESKOM.

The purpose of the Association is to actively promote the development, growth and flexibility of its members in South Africa and to facilitate participation in training and education as well as the development of export markets in collaboration with the SAISC activities.

POLASA objectives

Key short-term focus areas of POLASA:

- Preservation of existing jobs and skills in the industry in line with Government aspirations for job creation;
- Protection and preservation of the local industry by driving localisation in the face of dumped product (whether through price or sub-standard supply);
- Safety within the industry; and
- Training to address the skills shortage and age profile within the industry.

In the face of a depressed local market, POLASA will need to increase its focus to serve its members into Southern Africa (SADC countries), where the transmission infrastructure build programme looks positive in the near term.

POLASA actively seeks to add value to ESKOM's actions and requirements by creating platforms to facilitate high level bilateral discussions between ESKOM and industry.

Currently regular meetings with ESKOM executives take place in areas of common interest such as Safety, Design, Engineering, Quality, Contracting and Execution, etc.

The Association fully supports healthy competition between entities but endeavours to resolve issues that restrict the industry from performing at optimum levels of productivity, quality and safety. Strict compliance with anti-competitive legislation is maintained.

Designation

POLASA was instrumental in providing supporting evidence for the Department of Trade and Industry (dti) to recommend that the following products be formally "designated" i.e. that these products must be fully locally made in South Africa, including the supply of all steel required:

- Powerline hardware – 100%
- Steel power pylons – 100%
- Monopole Pylons – 100%
- Steel substation structures – 100%
- Street lighting steel poles – 100%
- Steel lattice towers & masts – 100%
- Power line hardware – 100% (repeated?)

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POLASA has actively supported ESKOM in implementing the above, particularly regarding buying practises in the various districts and remote locations. All POLASA members are being encouraged to use the opportunity to develop more productive and cost effective facilities and to actively pursue export markets.

The SAISC publish various design and engineering handbooks, conducts education and training courses, organise seminars, talks and conferences, publishes quarterly journals and maintain international contacts in the fields of structural design, fabrication and construction. This is extended to include transmission line requirements where appropriate.

STEEL AWARDS 2017

GAUTENG, EMPEROR'S PALACE

KZN, MOUNT EDGECOMBE COUNTRY CLUB











CAPE TOWN, TABLE BAY HOTEL











SOCIAL SNIPPETS

SAISC AGM









POLASA AGM



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