steel CONSTRUCTION

Volume 36 No. 3 2012

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SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

OFFICIAL JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF STEEL CONSTRUCTION

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EDITOR'S NOTE

In Steel Construction No. 2 2012 I harped on about the green issue and what individuals can do to give the human race on earth a longer life expectancy.

This issue show-cases some of the Steel Awards 2012 entries that demonstrate how steel plays a significant role in sustainable responsible development. The Living Beehive was created as a 'living' tribute to South Africa's biodiversity for COP17 hosted by South Africa in Durban. The VAAC Centre in Hillbrow has many positive attributes in terms of sustainability by ensuring our future and protecting our heritage, while the article on schools stresses the absolute necessity of educating young people in a safe, attractive and uplifting environment.

The Institute will host the SteelFuture Conference in March 2013. Apart from saving humanity and planet, one of the most important aspects of 'The Future' is innovation. Read Hennie's comment on page 2 and our new development engineer, Amanuel Gebremeskel's invitation to anyone with a brilliant innovative concept (relating to steel construction) to join the SAISC's drive for innovation in steel on page 39. We are very excited about concepts that we are developing in multi-storey building and hope to tell you more about it in the ....future.

You will shortly be able to book your seats for the Steel Awards dinner (6 September 2012) and it promises (again) to be an experience of note. To honour our green theme, Cape Town and Durban will both host their dinners in botanical gardens and Johannesburg, lacking a botanical venue for 800 people, will have Simon Gear, THE green expert in South Africa as master of ceremonies.

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SAISC COMMENT

By Dr Hennie de Clercq,
Executive Director, SAISC

As the human race keeps multiplying and as humankind drifts inexorably to urban centres that become ever denser, there is a growing need for better, more sustainable buildings of several storeys. This trend creates a demand for new ways of building and for innovation, and with that comes huge opportunities for the steel construction industry.

INNOVATION

Innovation is a good thing. Right? Amazing to think that many societies, present and historical, think or thought differently about the matter, elevating constancy rather than innovation to the ideal to strive for. 'God is eternally the same.'

Well, innovation is now right up there with terms like democracy, freedom and fairness: nobody we meet seems to argue with them. Fact is, we don't have a choice. The economics of this day and age requires constant growth to be viable and to grow you have to produce new things and more things all the time, unless you can pump wealth from the ground, as some do. The word stagnation has acquired a negative connotation; if a country stagnates its citizens don't just carry on as usual, they actually get poorer, which few seem to enjoy.

Not all innovation is necessarily good, not even everything that has a beneficial economic impact. A lot of what's new is more a matter of inventing things people don't need, convincing them that they do, and selling it to them. But if we think of seven billion people who need food, shelter and clothing, not to speak of meaningful lives, if we think of the global trend of urbanisation and growing mobility and of the need to protect the environment and the capacity of the earth to carry us all, the challenges are such that huge innovation is needed all the time. Besides, innovation is a major force for social, economic and political transformation. It is the key to the future of the human race.

The Boston Consulting Group ranks South Africa as the 35th most innovative country in the world. That's far behind South Korea, the Netherlands and Israel, but ahead of Italy, Turkey, Russia and Brazil. We are slightly behind China, but share this with them that we put rather little into innovation, for example by doing research and development, but perform rather well in terms of what we achieve. That's clearly an indication of benefiting from other people's ideas and development. That's not exactly ideal, though quite efficient, but it does say that the players in South Africa's economy are not afraid of innovation and that they know how to implement it.

At this stage it may be useful to clarify what we mean by the term 'innovation', firstly by distinguishing it from related terms. Ingenuity is the ability to come up with new ideas, concepts or products. Invention is the act of creating a new idea, concept or product. Innovation only happens when a new idea, concept or product is implemented and has an impact on people's lives. Edison had ingenuity, and the moment he held that light bulb in his hand he could claim that he had invented it, but it only became an innovation when it was produced and sold and used for lighting.

It is clear that innovation requires a need, real or imagined, and somebody to recognise that need and fill it. That requires competent people with creative, production and business skills, relevant existing technology on which to build, and finances.

As the human race keeps multiplying and as humankind drifts inexorably to urban centres that become ever denser, there is a growing need for better, more sustainable buildings of several storeys. This trend creates a demand for new ways of building and for innovation, and with that comes huge opportunities for the steel construction industry.

On page 39 we invite everybody with a penchant for innovation, or with at least a good idea, to contact the SAISC. We are eagerly looking for innovative ideas that can allow us to benefit from steel's inherent strengths and advantages to meet the demand for new buildings in South Africa and further afield.

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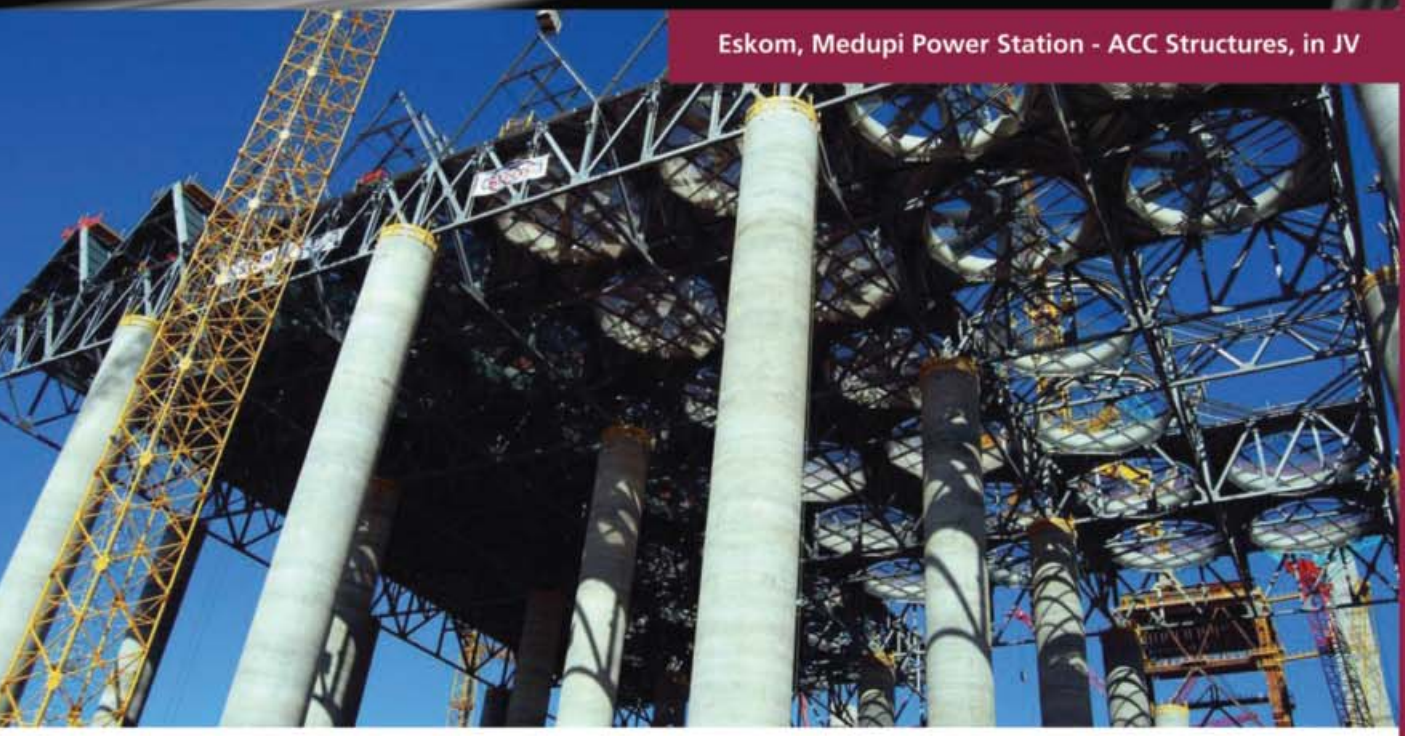
STEEL CONSTRUCTION AND ENGINEERING



Eskom, Medupi Power Station - ACC Structures, in JV

Established in 1987, Cadcon, as a vibrant and reputable entity, has grown into a leading steel construction, designing and engineering organization involved in major projects in and around Southern Africa and internationally. Cadcon operates from their 15 400 m² workshop and office facilities in Centurion, Pretoria, housing state of the art machinery and latest technology CNC plate, beam, angle, cutting, drill and saw facilities serviced by 20 overhead cranes. Cadcon has also implemented the FabTrol System providing drawing management, material nesting, purchasing, inventory control, production and CNC management, shipping and more.

Eskom, Medupi Ducting Supports, Lephalale

Planning and completion of various significant and complex national and international projects on time, for commercial, industrial, mining and plant sectors, serves as testimony putting Cadcon as a leader at the cutting edge, in a rapidly growing and competitive environment. Cadcon has valuable experience in exports of steel products internationally and strong innovative contributions to the whole of Southern Africa.

Overall Winner SAISC Steel Awards 2011
Sandton City - Protea Court Rooflight, in JV

Furthermore, Cadcon's unique packages include the design and supply of buildings through Mictec, Cadcon's in-house engineering design department. Additional services include crane, truck and trailer hire.

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SAISC Development Engineer, Amanuel Gebremeskel.

NEW APPOINTMENT AT THE SAISC

AMANUEL GEBREMESKEL, DEVELOPMENT ENGINEER

Since his move to South Africa, Amanuel has been involved in the promotion and development of multi-storey buildings framed in structural steel. Research and innovation are part of the job but so is identifying potential multi-storey projects and convincing the owner and architect to convert it into a steel project.

We at the SAISC always ask "what do we need to do, and who can do this best?" The SAISC needs to do research that can provide valuable information to spearhead the steel construction industry's drive to enter new markets, such as multi-storey buildings in South Africa. For this and a host of other technical and innovative developments to occur (and to reduce the median age in the office) we need a young brilliant engineer with some experience in the field.

It was difficult to find the perfect fit so it is quite extraordinary that Amanuel Gebremeskel came to work for us in such a roundabout way.

CAREER BIOGRAPHY

Amanuel is a structural engineer who has extensive knowledge in the use of structural steel. He worked with renowned engineers and researchers in North America for ten years before moving to South Africa. In his early years as a consultant he designed and helped construct numerous industrial and architectural steel structures. While in the US he worked on power plant equipment that went into the Secunda power plant in this country. Starting in 2007 he delved deeper into the structural steel industry to develop standards and support the technical marketing efforts of the American Institute of Steel Construction.

Amanuel received both his bachelors and masters degrees from the University of Minnesota. He has authored or co-author various articles, papers and national standards on the use of structural steel in construction. He will continue to do so in South Africa.

AMANUEL'S JOURNEY TO SOUTH AFRICA AND THE SAISC

He was born in Addis Ababa in 1977 under the rule of the notorious dictator Mengistu Haile Mariam who ruled until the early 90s. During his rule Ethiopia was known for the widespread famine that hit the country and a civil war that lasted until 1991.

Despite his country's troubles Amanuel had a happy childhood and often travelled with his mother, who was an instructor for Ethiopian Airlines, to

On his bike during the Cape to Cairo tour.

foreign countries. He even came to South Africa once, but only to see Sun City thus not giving him a real picture of the country.

Amanuel finished high school in Ethiopia and started his studies in engineering at the Addis Ababa University. He decided to move to the US when he was 20 since safety in Ethiopia was becoming more and more of an issue.

Amanuel first met his wife Rebecca in Ethiopia. She moved to the US to study and gained her medical degree. They got married while she was completing her residency in Chicago and together they shared a vision of returning to Africa. They thought of returning to Ethiopia and visited their mother country but discovered that once you leave your country, you return to it almost as a tourist – it is never the same. The 2010 World Cup in South Africa gave the couple enough reason to visit the country. They also used the trip to see if South Africa would be a possible home in Africa.

At the time Amanuel was working for the AISC doing some work with Prof Ted Galambos – who had good relations with the SAISC and lectured in South Africa in 2007. He encouraged Amanuel to visit the SAISC. The World Cup was a remarkable experience for them and talking to Hennie and Spencer opened up the possibility of an engineering career in South Africa - the dream of returning to Africa was becoming a possibility.

After the games he went back to the AISC and continued to work with Kurt Gustafson, an experienced engineer who had worked on notable projects like the John Hancock and Willis Towers (previously Sears Tower) with the likes of Fazlur Khan.

But Amanuel and Rebecca wanted to return to Africa and decided to take the bold step and 'just do it'. They stored their belongings, took two bags with them and joined a group of cyclists who were planning to bike from Cairo to Cape Town. Up until then Amanuel's only biking experience was cycling the 3 kilometres to work and back every day. They did not have the gear, experience or fitness level of any of the other team members.

After the first day or two they were ready to give up, but then Elvis Munis an experienced Tanzanian cyclist motivated them to carry on and in the end they cycled the nearly 12 000kms to Cape Town. They also left revolution behind wherever they went (not of their making). They crossed the border

Amanuel with his wife Rebecca.

from Egypt into Sudan the day before the Egyptian government collapsed. The same happened in Sudan when South Sudan split from North Sudan. These are of course only two of many adventures and stories.

While travelling Amanuel shared his dream of going to South Africa and looking for an engineering job with Elvis (he had since lost contact with the SAISC). Elvis kept mentioning this great guy he did a cycling tour with in Tanzania. He was an engineer in South Africa and Elvis was certain that he would be able to help. Amanuel made nothing of it – "I mean, South Africa is big and the random mention of an engineer was unlikely to deliver any results". But Elvis insisted and in Malawi he sent an email to none other than Hennie de Clercq to tell him about Amanuel. At that time the SAISC was in desperate need of a young engineer willing to work with the Institute. Perfect timing and a perfect match.

AMANUEL'S FUNCTION AT THE SAISC

Since his move to South Africa, Amanuel has been involved in the promotion and development of multi-storey buildings framed in structural steel. Research and innovation are part of the job but so is identifying potential multi-storey projects and convincing the owner and architect to convert it into a steel project. One of the issues with multi-storey steel construction in South Africa is the lack of knowledge of fire protection of steel. Amanuel is working with fire protection companies and SABS to compile a body of knowledge that will be very beneficial to promoting steel multi-storey buildings and the industry as a whole.

As part of this campaign he is developing a website (SteelBuzz) where engineers, architects, steel product suppliers and contractors will be able to get valuable information not only on fire protection but other relevant topics. They will also be able to market their own products and engage in developing the structural steel multi-storey building market.

He has a great deal of interest in the use of technology in construction and hopes to use seminars and other communication mediums to help develop the technical competence of South African engineering. Amanuel is also involved in the development of the SAISC Green Book (the connections handbook that will be available soon).

He feels that the African steel industry is under threat because of the strong Asian presence in Africa and sees the need to build a strong local steel industry. Another challenge is the imbalance of a very small group of very skilled and aging workforce to a large unskilled and semi skilled workforce. He puts forward that instead of trying to train the workforce in a short period of time, which is practically impossible, it may be more practical to design smart systems that are easy to build. This would create a niche for South Africa and Africa to become competitive and a leader in steel construction.

UP CLOSE AND PERSONAL

When you were small you wanted to be a...

Mostly I dreamt of being an inventor, car/motorbike racer or a handyman.

Hobbies and sport:

Sport: *I'm into mountain biking now. I would like to do more road biking and maybe racing in the future.*

Hobbies: *Whenever I can afford it I love travelling. I also do a great deal of reading and writing.*

Other interests: *I am interested in the history, current politics/economics of people – especially in the African context.*

Favourite character / icon / well-known personality:

Zera Yacob (enlightenment philosopher) and Fazlur Khan (structural engineer)

Likes: *Originality* **Dislikes:** *Dogma*

At the moment you are reading...

Architects of poverty, by Moeletsi Mbeki

and listening to... *Troubadour, by K'naan*

When you are not at the office you are most likely to be....

Debating my wife instead of my boss

One thing you would like to achieve while you are employed by the Institute:

Help the Institute spread its knowledge across the continent.

A favourite quote that inspires you:

Until the lions have their historians, tales of hunting will always glorify the hunter.

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KHOMBANANI STEEL (PTY) LTD

By Viv van Zyl,
SAISC Membership Consultant

The combination of an experienced and relatively young management team with a defined commitment to their staff contributes to the company's noticeable 'gusto' which is unsurpassed in the local industry.

With a slogan like 'Passion for Excellence' one can see that here is a company that will leave no stone unturned to achieve this distinction and that is how it has been since they opened their doors in January 2006. Khombanani Steel (Pty) Ltd is a privately owned company which was formed by the directors of Tass Engineering (Pty) Ltd and Mr Lazzy Mabowa to assist in achieving the government's objective of Black Economic Empowerment in our new democracy.

When Tim Tasioulas met co-owner Lazzy, he was the owner of a structural steel erection company and it was through that association that Tim realised there was a great business opportunity waiting to be developed. Together they formed Khombanani, which means 'coming together' in Zulu, and it certainly has made for a great union.

At the outset the newly formed company received a major portion of their fabrication work from a large fabrication company in the area which needed extra capacity to be able to meet its commitments. This was an excellent opportunity for Khombanani and a feather in its cap by being selected to do the job. They proved that they were able to offer the manufacture and erection of steel structures of the highest quality and that they could render outstanding service, on time, and well within budget.

Six years later the directors and their competent staff are very proud of their fully equipped facility and have grown its output capacity to between 150 and 250 tons per month depending on product mix. They welcome an inspection of their work-shop at any time to view their capabilities and attention to quality workmanship.

Lazzy, with his experience, knowledge, manner and positive attitude towards people and his workforce, makes him a great person to work with, says Tim, CEO of Khombanani.

Marten Spencer, the managing director of Khombanani, has a national diploma in mechanical engineering from Technikon Witwatersrand (now part of the University of Johannesburg) and brings his extensive experience of the industry to the top management structure of this formidable company.

KHOMBANANI
STEEL

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The directors of Khombanani – Tim Tasioulas, Marten Spencer and Lazzy Mabowa.

Lazzy Mabowa and production manager, Johann Marais.

Lazzy, with production manager Johann Marais and workshop foreman David Pitswane run the day-to-day production in Khombanani's 3 000m^2 facility. Johann brings his own skills to the company having earned a management certificate and a certificate in engineering metallurgy from Technikon Witwatersrand (UJ).

Tim, who has a degree in industrial psychology from the University of Cape Town, believes that the company's workforce is their single best attribute. Both he and his management team encourage further studies in industry related topics and invest a great amount in training their staff.

Henk van Eden is the production director of Khombanani, and has 34 years experience in the steel industry. He has his national technical certificate NTC 5 and has his red seal certificate as a plater. He has also done the Clive Acton supervisory development course.

Most training is done in-house, with some of the training like the supervisor training programme having been developed by the SAISC specially for in-house company training from the workshop floor. They have recognised that through thorough training, work recognition and ensuring their workforce of a safe working environment, they are able to offer their customers service and quality 'par excellence'. It is important for the company to develop and promote their existing workforce as well as to invest in, and support the broader community where their workforce lives.

The combination of an experienced and relatively young management team with a defined commitment to their staff contributes to the company's noticeable 'gusto' which is unsurpassed in the local industry.

Khombanani is a Level 3 BEE rated contributor to Black Economic Empowerment and is committed to the highest levels of service excellence by practicing a stringent quality control programme based on SABS ISO 9001- 2008.

The company's success is built on recurring business which they cultivate by building long term relationships with sound, loyal and satisfied customers. Another building block to their success has been the establishment of mutually beneficial long-term relationships with their suppliers for the supply of materials, goods and services at competitive prices.

Here are just a few of the recent major projects in which Khombanani has been involved:

- Natalspruit Hospital (± 450 ton) – R16 million
- BRT Phase 1B, 1C & Phase 2 – R28 million
- United Manganese Kalahari – R10 million
- Kusile Power Station – R3.6 million

Marten Spencer believes that Khombanani still has a lot of potential to grow even though the steel fabricating industry in South Africa is taking a bit of strain at the moment.

Khombanani's own premises are situated at 39 Forge Road in Spartan. They boast four overhead cranes in their workshop and have an extensive fleet of trucks, trailers, extendable trailers, mobile cranes and cherry-pickers, to ensure that their products can be transported to site and erected in the most efficient and safe manner possible.

The company's vision is to be recognised as a leading supplier of choice by supplying quality products and rendering an outstanding service to their customers. They undertake to supply and install structural steelwork to the complete satisfaction of their customers, whether it be factories, warehouses, bridges, sports stadiums, towers, satellite antennas, shops or shopping centres of any size.

Khombanani's workshop on 39 Forge Road in Spartan.

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INDUSTRY NEWS IN BRIEF

COSIRA UPLIFTS LOCAL COMMUNITIES WITH TARGETED ACADEMIC AND SPORTS SUPPORT

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"The Cosira Group believes that a corporation's long-term success is built on a strong sense of responsibility for its stakeholders and the larger community of which it is an integral part." says Isabel Correia, Group Human Resources Executive at the Cosira Group.

Brakpan-based Cosira has put its stamp on a number of CSI initiatives in the surrounding township of KwaThema. In late 2011 they provided funding for the very important SAPS-endorsed Child Protection Week. In addition to their financial contribution, they handed out gifts to the children and also assisted with speakers who provided the community with the motivation to empower themselves in these matters. Cosira regularly sponsors food parcels which are sent to a centre for disabled children in KwaThema. A number of their employees also volunteer to provide aid to the centre's staff for a day.

"The main project that we adopted in 2008 as our ongoing CSI effort is the Nkumbulo Comprehensive School in KwaThema," says Cosira's Group Transformation Manager, Thandiwe Makwe. "This high school, whilst populated with many children who either head up households or whose parents are unemployed, has exhibited an incredible willingness to nurture the inherent potential in its learners. It is considered one of the top schools in the township."

Their first project at the Nkumbulo Comprehensive School was equipping the computer centre with 52 computers. The next project realised the desperate need to overhaul the school's four ablution blocks. The upgrades have been phased in over a period of four years and they are currently completing the final elements.

Cosira equipped Nkumbulo Comprehensive School's computer centre with 52 computers.

A driving factor for Cosira is giving the Grade 12 mathematics and science learners at the school an opportunity to follow a tertiary education in those subjects. "We have given last year's top two learners a bursary to study a BSc. in Construction Management at the University of Witwatersrand with financial support for the duration of the three-year course and a career opportunity at the end of their study period should the company be able to accommodate them."

Makwe confirmed that the next exciting project in the pipeline for the school is the construction of new soccer fields. Another initiative is quarterly sponsorships of local soccer teams and this is proving to be very popular with the local community.

Makwe says that the company has decided to embark on a more widespread CSI programme that will encompass the upliftment of schools in other geographical areas in which the Cosira Group operates.

"We will continue to identify areas of need, specifically with regard to enrolling mathematics and science learners within schools that fall into the areas where we are involved in larger projects or those areas adjoining our permanent facilities," Correia concludes.

EAZI SALES & SERVICE LIFTS INDIGO BRANDS' PRODUCTIVITY TO NEW HEIGHTS

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Eazi Sales & Service, a specialist in the sales and service of access platforms and sole distributor of JLG equipment in South Africa, recently delivered a JLG 4069LE electric scissor lift to Indigo Brands, manufacturer and distributor of Yardley cosmetics and other world-renowned brands. The scissor lift will be used for inventory

The JLG 4069LE Electric Scissor Lift from Eazi Sales & Service provides an ideal solution for maintenance and inventory management in narrow aisles and high storage facilities.

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INDUSTRY NEWS

management, such as stock counts and light stock picking, as well as general maintenance purposes such as replacing light bulbs, at its Cape Town warehouse facility.

"Using forklifts to get to height is a very common practice in industry. However, this practice is neither safe nor productive," explains Larry Smith, who heads up Eazi Sales & Service. By following this practice, forklifts that are required to move products in and out of the warehouse, are tied up and this often halts production. The cost of additional labour is also not to be overlooked as a forklift requires an operator as well as warehouse staff to work on the platform or pallet.

While the Occupational Health and Safety (OHS) Act allows for the use of an engineer-certified man basket to be bolted to the forks, it puts the person doing the work at risk as he has no control over the movement of the forklift.

Indigo Brands, having previously used forklifts, required a safer, more productive and practical mobile elevated work platform that would enable the operator to reach heights exceeding 10m, with sufficient space on the platform for the operator as well as stock and maintenance equipment.

The JLG 4069LE Electric Scissor Lift is the ideal solution as it is able to lift over 360kg to a maximum height of 14m, has a deck extension of 91cm and overall width of 1.75m. Rugged terrain tyres allow Indigo Brands to move over rough surfaces between its various warehouses, without difficulty.

Indigo Brands has already reported an increase in productivity. Where it was only able to achieve 50% of its stock taking objectives previously, it now achieves 25% more than the initial objective. In addition, Indigo Brands have also noticed cost-savings on rental costs, as they periodically had to rent a scissor lift for maintenance purposes.

Eazi Sales & Service will also provide training and maintenance services through the Cape Town-based Eazi Access Rental branch, part of the Eazi Group national network.

SOUTH AFRICA'S CONSTRUCTION INDUSTRY SET TO GO GREEN? (www.engineeringnews.co.za)

The much debated and controversial Menlyn Maine development is now in its third year of its development project spanning 10 years. Menlyn Maine is set to become Africa's first green city, one of only 17 worldwide that fall under the Climate Positive Programme. The commitment to an environment-friendly development had been adhered to from the outset – when the suburb's houses were demolished. The brickwork and concrete were crushed and recycled.

"We are trying to build the first green precinct in Africa. The goal is to build Menlyn Maine as a greenhouse gas negative development. We will be one of only a few in the world that are trying to achieve this, and the whole idea is that we can prove that sustainable development can happen in the world. The end goal would be that Menlyn Maine is good for the environment by coming into being," says Menlyn Maine project developer Justin Bowen.

Menlyn Maine is a mixed-use development that includes a mix of office, residential, retail and public buildings. It is situated on 16ha of land, located in the eastern suburbs of Pretoria. Some of Menlyn Maine's green features include storm water tanks built into the structure and roofs of buildings. The water will be treated and circulated for re-use inside as well as outside the building and is expected to provide non-potable water for almost a full year.

This project is the start of many in the country with South Africa's construction industry set to go green – and create new engineering careers – as new energy efficiency building regulations came into effect in November 2011, boosting a growing trend of cutting-edge green architecture in the country.

ANDREW MENTIS REPORTS INCREASING INTEREST IN EXPANDED METAL PRODUCTS SAISC member company

The South African industrial market is paying increasing attention to the many potential applications served by expanded metal.

Elaine van Rooyen, marketing manager of engineering and manufacturing company Andrew Mentis, says this interest is being sparked by the confidence engendered by

Architect's rendition of some of the commercial sections of Menlyn Maine.

expanded metal's inherent structural integrity, which is not compromised during the manufacturing process.

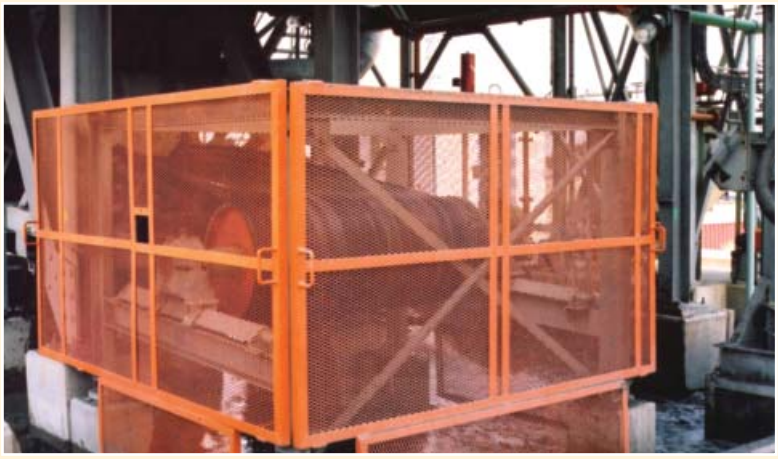
"No material is lost during the manufacturing process, even though the original sheet of metal can be expanded into anything up to ten times its original size," she says. "The result is a mesh which is considerably lighter than the equivalent area of steel plate."

The expanding process creates a network of rigid strands which add strength, while allowing free passage of light and air. The raised mesh or Mentex®, as it is called, can be put through an additional process in which the raised meshes are flattened into the same plane as the sheet of metal expanded. This is known as Flatex®.

Andrew Mentis manufactures both the raised and flattened meshes and the accurate selection of the appropriate mesh depends on the application at hand. The product is normally supplied unpainted, but readily lends itself to any of the normal finishing processes such as painting, stove enamelling, plating and galvanizing.

Mentex® and Flatex® are available in a comprehensive range of sizes, mesh sizes and thicknesses and can be fabricated in any form. The mesh can be bent, shaped to radii, angled or notched, while maintaining its inherent rigidity. It is also available in various mesh sizes, from mini meshes with small openings of 1.4mm by 2mm, and with a thickness of 0.4mm, to larger meshes with 115mm by 300mm openings and a thickness of 6mm.

"In an industry where quality delivers a return on investment in the long-term, a big variety of customers are tapping into our experience and expertise with expanded metal," van Rooyen says. "Its uses are many and varied and are limited only by the vision, creativity and imagination of the designer."



Expanded metal is often used to cordon off areas still allowing visibility but enhancing safety.

ECO EXHIBIT ASSISTS IN GREENING THE WESTERN CAPE'S BUILDING INDUSTRY

Local architects, builders, developers, designers and decorators in the Western Cape have something to look forward to with the launch of a cost-free 'greening' tool. The recent launch of Eco Exhibit, aimed at the commercial and residential building scene, gives trade a free, easily accessible, vetted resource to use when sourcing green building suppliers.

Rayne Neave, granddaughter of Laurie Wale, a pioneer in the SA building industry, is the brainchild and private owner of the permanent exhibition space. Eco Exhibit was created for building suppliers to showcase vetted green products and services with a manned online service as back up, and is situated conveniently off the N1 at Northgate Estate in Ysterplaat, Cape Town.

Both buyer and supplier of environmentally responsible building materials will benefit from this permanent exhibition space.

Products displayed range from cladding, facades and insulation, to piping and stairs as well as sewer treatment and trusses, to name but a few. Eco Exhibit is cost-free to visitors. Trade may either view or receive on-the-floor advice with regard to an exhibitors' product or service at the showroom from Monday to Friday (9am to 4pm) or Saturday to Sunday (10am to 3pm). Alternatively, you can visit their website at www.ecoexhibit.co.za.

Since launching in 2008, Neave and her three-member team have signed on 75 exhibitors, pursuing a heart-felt passion to genuinely increase the easy flow of access to information between manufacturer, buyer and/or consumer, as far as alternative technology and environmentally-considerate products are concerned.

All exhibitors are vetted by Eco Standard, which acts as a filter to check the legitimacy of their environmental claims. This does not serve as a certification or product rating. However, they strongly encourage transparency via official assessment by any recognised certification body.

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DAY 1 **Key note address: To be advised**

THEME 1: MATERIALS FOR STRUCTURES

Case study – Hot dip galvanized steel on deep level *RE (Bob) Wilmot, Hot Dip Galvanizers Association SA;* **Technogrids in mining related structures** *Fritz van Eeden, Horne Group (SA);* **Steel shaft guide products** *AM Smith, D Hill and M Stockwell, Tata Steel Europe*

THEME 2: LIFE CYCLE OF STRUCTURES

Assessing hazards associated with deterioration of mine shaft structures *G Krige, Walker Ahier Holtzhausen (SA);* **Structural Assessment of CIP Tanks** *M Khan, TWP Projects (SA);* **Aspects to consider when using an engineering design company to conduct third party inspections of mining structures** *P Louw, TWP Projects (SA);* **A model to evaluate conveyor structures** *J Ccama and V Anyosa, EPCM Experts SAC Peru*

THEME 3: HEAVY EQUIPMENT

Validation of the finite element model of ring motors for grinding mills *P Petereit & K Tischler, Siemens Germany;* **Machine Start-up Regime – Effect on Resonance** *N Elvin & A Elvin, University of Witwatersrand (SA);* **The use of castellated sections in structures subjected to semi-dynamic loads** *R Szejwallo, ThyssenKrupp (SA)*

THEME 4: PROJECT MANAGEMENT

South Deep vent shaft headgear and shaft *P Collins, Gold Fields (SA);* **Learning points regarding change management** *G Krige, Walker Ahier Holtzhausen (SA);* **Simplifying the project complexity: Going further than eating the elephant in pieces** *V Anyosa, EPCM Experts SAC Peru*

DAY 2

THEME 5: SHAFTS

Capturing mine shaft condition and scheduling maintenance electronically *A Veldtman, Prodispace & G Krige, Walker Ahier Holtzhausen (SA);* **Design of Tall Steel A-Frame Structures for Mine Hoisting** *B Mashford and T Tikka, Stantec Consulting Canada;* **Spillage handling infrastructure for the mid-shaft loading station at Konkola No 4 shaft** *A Bannerman & Z Pulic, TWP Projects (SA);* **Evaluation of shaft infrastructure to meet production upgrade** *I van der Wat & M Khan, TWP Projects (SA)*

THEME 6: DESIGN

Case study: Design of a light weight steel screen support structure (screening unit) *M Mmusi, TWP Projects (SA);* **Connection design for industrial structures – problems and solutions** *Bo Dowswell, SDS Resources (USA);* **Experimental Investigation and Modeling of Non-Uniform Stresses in Steel Silos** *P Trinchero, Macsteel (SA);* **Automated Optimization of Several Mining Structures** *A Elvin, University of Witwatersrand (SA)*

THEME 7: VIBRATION

Comparison of predicted dynamic response results to measured values for a screening plant *M Kahn & M Essack, TWP Projects (SA);* **Minimizing vibration by structural dynamic modification after structural monitoring** *K Li & A Elvin, University of Witwatersrand (SA);* **Human structure interaction: Can minor movement resonate a structure?** *N Elvin and A Elvin, University of Witwatersrand (SA);* **Soil-structure interaction in vibration analysis** *A Masarira, Anglo American (SA)*

PANEL DISCUSSION

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Q&A WITH FANUEL MOTSEPE ON SUSTAINABLE ARCHITECTURE

PRESIDENT OF THE SOUTH AFRICAN INSTITUTE OF ARCHITECTS (SAIA)

By Janine Walker

Fanuel Motsepe, President of the South African Institute of Architects (SAIA).

Fanuel Motsepe is the president of the SA Institute of Architects (SAIA) who, with the International Union of Architects (UIA), has taken part in Cop 17 in Durban. Here are his views on sustainable architecture and what lies ahead.

How do you feel about Cop 17?

Sustainable architecture does not make it onto the Cop 17 agenda on the scale that one would hope. The media focus is on what politicians are doing. What the professions are doing is largely unknown.

Having the International Union of Architects (UIA) at Cop 17 is vitally important but it is sometimes underplayed by the media and politicians.

Buildings are responsible for more than 40 percent of the world's total primary energy consumption and 24 percent of world CO_2 emissions so it is very important that we are heard.

What is sustainable architecture?

Many people see design quality and sustainable design as two separate issues. One tackles aesthetics, the other technical solutions, when they should rather be mutually reinforcing. It is not just how a building looks but how it functions and whether it meets the social, cultural, economic and environmental needs of the people it serves.

The planet's reaction to our consumption of its resources has brought us to our senses and now we are not designing purely for aesthetics and for functional need but also for how best we utilise the resources and the energy around us.

We have seen many architects who have produced ginormous structures which had nothing to do with sustainability – look at Dubai during its boom. Fortunately, there is a groundswell of change and architects are starting to become more creative and competitive in being producers of sustainable built environments.

For many years the word 'sustainable' conjured up images of things that were dreary and unattractive. Think of the Sixties when sustainable buildings were

The Lifestyle Garden Centre, Nsika Architecture & Design (sustainable architecture award winner).

We cannot wait for this natural process of building and re-building to achieve the improved environmental performance we need from the built environment. We need to create more sustainable buildings through retrofitting.

The Dalton Private Reserve, Koop Design (sustainable architecture award winner).

hideous and furniture was reused cardboard and you asked yourself 'who wants to buy this?' Now there's a shift to sustainability that is also aesthetically attractive.

Can you quantify what percentage of buildings in South Africa are sustainable?

The Green Star rating tool grades sustainability from one to five stars. There are currently only nine buildings in South Africa that have been rated as a Green Star building.

The majority of buildings on this continent are not even one star. In the past, the way we were taught and the materials that we used – many imported - did not help to create sustainable architecture. Only now are we responding to the climate of our country and the lifestyle needs of the majority of the people.

Where to from here?

The industry and society have only recently come to their senses and realised we must be more receptive to our context. We must use South African products that respond to the climate. We will then use less air conditioning, for example. We have to understand how our own wind patterns and the sun work. Harnessing the natural elements affords a more sustainable way of living.

In the developing world world, sustainability principles are being applied. People reuse scrap to build homes, they are sparing with their use of water and electricity but they may not be so wise about other issues such as littering.

Building regulations will also have a greater influence moving forward and many buildings and dwellings will have to be retrofitted to make them comply with regulations. New buildings account for only a small percentage of the total building stock each year.

We cannot wait for this natural process of building and re-building to achieve the improved environmental performance we need from the built environment. We need to create more sustainable buildings through retrofitting.

Who is leading the way?

When I was in Japan recently I was impressed at how people were so advanced when it came to respecting how they impact on the environment. It even went to the detail of where the building touches the ground – it was pristine and precise.

Who is driving sustainable architecture?

Architects and engineers are now driving sustainable architecture but they didn't for a long time. Big business and politicians are also key. Once they make the shift everyone will automatically follow suit.

For a long time, architecture has been for the rich but in developing countries architects such as India's Charles Correa have done pioneering work in urban issues and low cost shelters.

Surprisingly not everyone wants a home: a small minority of homeless people do not want a house or a home they simply want enough shelter to protect them from the elements. You may not be able to eradicate homelessness but as an urban planner you need to learn to deal with it.

South African architect Sarah Calburn believes that any boundary wall you erect must contribute something back to the public realm. For example, in our suburbs' domestic workers sit on the pavements and that is where the wall can make a contribution by offering them a place to sit and socialise.

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INNOVATION KEY TO SUCCESS OF LIGHT STEEL ROOFING STRUCTURES

By John Barnard, SASFA director

The lightweight steel trusses that are designed specifically for the low-cost housing market are extremely cost effective. Not only are they lighter and easier to handle, but they can be flat-packed and delivered to the site, which saves significantly on transport costs. Importantly, the ease of assembly and erection has made it the preferred truss system for erectors.

Innovation is one of the keys to the growing success of lightweight steel roof trusses across the spectrum of building applications in Southern Africa.

The heart of the success of the technology is that these trusses are lighter than similar regular timber trusses, and have consistent and reliable properties.

The most important advantage of the system is that the trusses are extremely simple to assemble. Some systems use a quick fixing bolted system with pre-punched holes, enabling easy on-site assembly with no cutting or drilling on site. There is also no requirement for jigs on site for these systems, as the bolt-holes determine the positioning of the web members. As a result, assembly times can be significantly faster thus adding to the overall efficiency of the exercise. There is however alternative systems making use of specialised cold-formed sections which can be cut and jig-assembled on site.

Light steel trusses can be designed to carry heavy concrete roof tiles or profiled steel sheeting. They are sound, cost-effective durable products that comply with the engineering specifications and the designer or owner's functional requirements. They are designed using very sophisticated software programmes, and are made from high strength sheet steel that is galvanised and thus protected from corrosion. The mechanical properties of the steel are consistent and guaranteed, which cannot always be said of all the timber in South Africa.

The lightweight steel trusses that are designed specifically for the low-cost housing market are extremely cost effective. Not only are they lighter and easier to handle, but they can be flat-packed and delivered to the site, which saves significantly on transport costs. Importantly, the ease of assembly and erection has made it the preferred truss system for erectors.

THE SAISC IS CONCERNED ABOUT SUBSTANDARD IMPORTED ROOF SHEETING

On the other hand the quality of imported roof cladding has been a concern of the SAISC and the Institute is determined to make the authorities and the industry as a whole aware of the pitfalls of importing substandard roof sheeting.

SOUTHERN AFRICAN LIGHT STEEL FRAME BUILDING ASSOCIATION

There is simply no system to enforce minimum quality standards when it comes to the importation of many safety critical items. But the area of perhaps greatest concern, as it affects vast sections of the less privileged, is that of roof sheeting where huge quantities brought into the country are of inferior quality in terms of the steel used, the thickness of the steel, the profile of the sheet and, most importantly, the zinc coating, which should prevent rusting.

These roof sheets tend to last for a few years only and usually get severely damaged every time someone climbs onto the roof or if there is a wind slightly stronger than average – the frequency with which roof sheets are blown off under windy conditions is not unrelated to the quality of the product. Ultimately it is the homeowner who can least afford it who suffers the most in these circumstances.

In most developed countries it would be impossible to import substandard products especially those that are safety critical. In Europe for example you simply cannot sell a product that does not have the required quality approval. South Africa and Africa in general, have become a dumping ground for substandard products because of the unwitting, or sometimes unscrupulous client, who are not concerned with quality. They are concerned only with the price and the consequent profits to be made – and in current circumstances they can get away with it.

DELOITTE NEW HEAD OFFICE DEVELOPMENT

Projects like the Deloitte's building are helping to break the myth that quality structures have to be built using heavy masonry or reinforced concrete in their entirety. There is no doubt that the prejudices in South Africa against non-traditional building methods like LSFB are on the wane...

The building was designed to absorb as much natural light as possible with windows and distinctive steel construction on both the north and south sides.

Boogertman + Partners Architects, the globally acclaimed firm associated with such developments as Melrose Arch and the Soccer City stadium, has given the thumbs up to the light steel frame building (LSFB) method. Boogertman's latest high-profile project, the new Pretoria head office of accounting giant Deloitte (part of the new Riverwalk Office Park at the intersection of Garsfontein Road and the N1 Highway) makes extensive use of LSFB.

"We are very excited by the LSFB method for external cladding of multi-storey buildings. It has many unique advantages and we have no doubt that its time has come in South Africa," says award-winning Boogertman architect and director Sterik Gerber, who led the project team.

The deep-orange exterior of the building was achieved using 60mm thick EPS lightweight cladding, fixed to a light steel framework which is bolted to the reinforced concrete structure.

The idea for employing the LSFB method at Riverwalk can be traced to an earlier GD Irons project, the Villa Mall in Pretoria East. "Villa Mall is to date one of the largest projects in South Africa where LSF was used for the external facade walls," says Gerber.

Design of the south facade at Riverwalk was the first challenge on the new site. Working with GD Irons Construction, Boogertman set out to create something that resembled the patterns of the original tree stems on the site. "To achieve these complex shapes and angles accurately, LSFB was the perfect solution," says Gerber.

Abel Botha, construction manager at the Pretoria-based GD Irons, explains that from the contractor's point of view, there are numerous advantages to the LSFB method.

"Firstly, construction is significantly faster. The lightweight steel frame goes up quickly and once it is in place you can enclose the building. That means that internal finishes, such as tiling and painting, and the installation of services can start sooner," Botha says.

"Also, it is not necessary to wait for a completed facade before finalising accurate measurements for windows. Glazing contractors, for example, can start with

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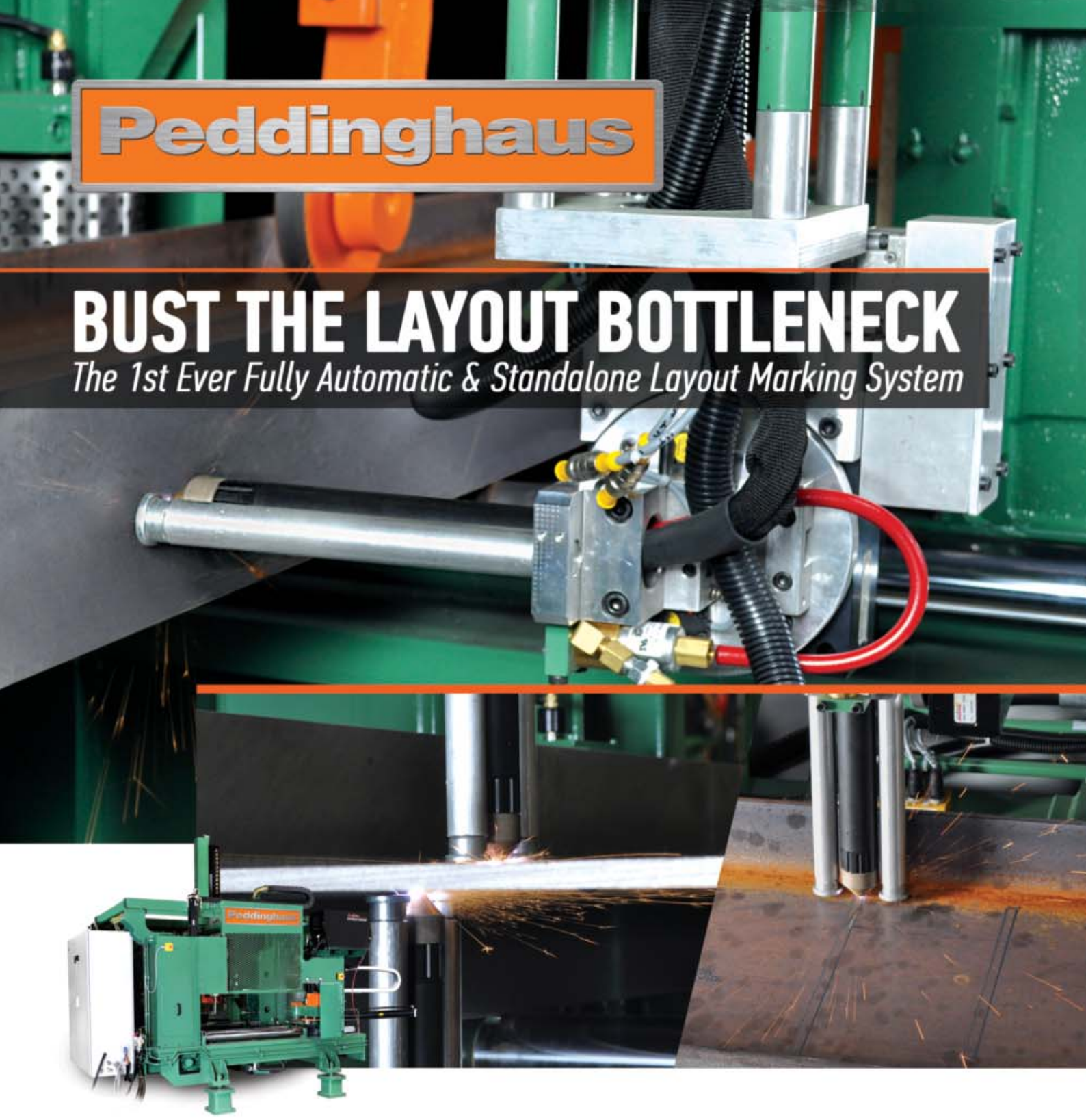

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The Deloitte head office in Pretoria is an excellent example of the advantages LSFB brings to commercial developments.

aluminium frame manufacture even before the light steel frame walling is installed, as the system is extremely accurate. With lightweight steel we are able to work to a tolerance of ±5mm," he says.

Another advantage is that because only a limited amount of masonry work is required on site, LSFB ensures a cleaner and safer construction site during the construction, allowing different disciplines to work concurrently.

In fact, GD Irons has been so impressed with this building method that it is in the process of creating a division that will work solely with light steel framing.

A section of the light steel frame during construction.

The eye-catching deep-orange exterior of the new Deloitte building was achieved using 60mm thick EPS (expanded polystyrene) lightweight cladding, fixed to a light steel framework which is bolted to the reinforced concrete structure. This technology is used extensively in Europe and America but is only now catching on in the mainstream South African building industry. The expanded polystyrene is plastered with a special, colour-impregnated plaster rendering. Two layers, each 4 - 5mm thick are applied, embedding a glass fibre mesh. Because no expansion joints need to be cut, a smooth, waterproof exterior surface is achieved.

The system was implemented locally by GD Irons in conjunction with Saint-Gobain SA, the South African division of one of the largest building material suppliers in the world. It ensures excellent insulation to the perimeter facades, providing comfortable temperatures all year round, thus reducing the demand on air-conditioning for cooling in summer and heating in winter.

Alta Kotze, Deloitte's operational project manager, says that working in the building has so far been a 'great experience'. "The building is aesthetically unique. It was designed to absorb as much natural light as possible with windows and distinctive steel construction on both the north and south sides. To work in the building is a great experience since we feel in touch with the outside world, more so than we would have if it was a conventional masonry structure."

For developers, one of the hidden advantages of the LSFB system is the creation of additional rental space. As Gerber explains: "Traditionally, a reinforced concrete structure is designed to carry the facade brickwork on the floor slabs inside the building envelope. With LSFB, the light steel structure goes on the outside and one gains the width of the walls in useable floor space, which enables additional rental income."

Projects like the Deloitte's building are helping to break the myth that quality structures have to be built using heavy masonry or reinforced concrete in their entirety. There is no doubt that the prejudices in South Africa against non-traditional building methods like LSFB are on the wane and the more people see such quality structures being built, and realise the environmental benefits, the more they are opening up to these new methods of construction. In fact, Boogertman is already busy with the next development where LSF will again be used.

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SHANDUKANI - VODACOM ALTECH ALTRON CENTRE FOR SPECIALISED SERVICES

PART OF THE HILLBROW HEALTH PRECINCT

Steel was the only structural material that the architects felt had the characteristics that were required.

Hillbrow and excellence are words that don't usually go together. But that is to change soon – a health centre of excellence is taking shape within the suburb.

The Hillbrow Health Precinct's prime function will be to offer excellent care for the treatment of sexually transmitted infections (STIs) and HIV/Aids in vulnerable women and children.

Bounded by Hospital, Esselen, Klein and Smit streets, the precinct will be located on the site of the defunct Hillbrow Hospital. It will also be a world-class research and training centre for health professionals. The project is unusual in that it combines inner city rejuvenation with poverty alleviation, primary health care and world-class research on HIV/Aids.

The Hillbrow Hospital site has a long history, going back to 1889 when the town's first hospital was built here. It served the city until 1983, when the new general hospital was built on the Parktown ridge. Interestingly, the hospital served both black and white residents of the city for 35 years, until 1924.

The former 83-year-old, three-storey operating theatre and main x-ray department block, consisting of three operating theatres and an X-ray room is the focus of renovations at present.

It is a private-public sector undertaking. The precinct's private sector partners are Vodacom, Altron and Altech. Vodacom is providing R14 million, while the others are giving R7 million each. The Gauteng province and the City of Johannesburg are the public sector partners. The building is known as the VAAC for Specialised Services and will provide expert medical care to pregnant women and children infected with HIV/Aids and tuberculosis. It has been named Shandukani which means 'asking for change' in Venda.

Steel fitted the conservation principle of adding to the building in a way that clearly differentiated 'new' from old perfectly.

A complete re-fit of services were required and were this was done by suspending it visibly from the arched roof, thereby retaining the original 'form' of the building instead of hiding it in a covered ceiling.

At the 1928 heritage building, for which permission to conduct changes had to be obtained, the lofty theatres will become consulting and delivery rooms, while the crudely constructed extension, the slanted roof level, has been removed and replaced with a glass and steel floor, accommodating a state-of-the-art African-based research centre. (Written by Lucille Davie for www.joburg.org.za)

STEEL FOR CHANGE

Henry Paine + Partners, the appointed architects were asked to design *"a 'happy place' with unintimidating materials, finishes and furnishings; that it should be more like a living room than a hospital"*. The spaces were to be designed to be comfortable for mothers and children as well as for the staff who were to occupy it.

HERITAGE AND CONSERVATION

The well-known architect Gordon Leith designed many of what is, arguably, the best collection of conservation worthy buildings in Johannesburg, making up the Hillbrow Health Precinct. Leith designed the building selected by the client to be adapted in 1927. The two-story load bearing brick building was opened in 1928 as one of the most advanced operating theatre facilities in the then Union.

The building was adapted in terms of the maxim of doing *"as much as necessary and as little as possible to the building"*. As the building had been abandoned for many years it had become severely damaged and waterlogged resulting in the need for a complete overhaul which necessitated a complete re-fit of services as well as the addition of new services required by modern medical needs.

STRUCTURE

The building was not large enough to accommodate all the needs of the new facility and it was necessary to add a third floor over a conveniently located flat roofed area on the north side of the building.

It was clear that a comparatively lightweight structure would be needed to form the new accommodation on the existing flat roof.

The reasons for this were:

- The structure had to be quickly and easily erected in a precinct where the buildings

project team

Developer/Owner:
Wits Reproductive Health and HIV Institute (WRHI)

Architect:
Henry Paine + Partners

Structural Engineer:
Bapedi Consulting Engineers

Quantity Surveyor:
Bham Tayob Khan Matunda

Project Manager:
PM Africa Project Management

Main Contractor:
GVK-Siya Zama Building Contractors (Gauteng) (Pty) Ltd

Steelwork Contractor:
Bronkmann Pipe & Steel

surrounding the site were already occupied.

- The conservation related reason of adding to the building in a way that clearly differentiated 'new' from old added to the rationale.
- The floor area of the new third floor was required to be larger than the existing roof, which necessitated a cantilevered extension over the north facade.
- Good conservation principles require new work to be removable in the future, enabling the building to be restored to its original state.

Steel was the only structural material that the architects felt had the characteristics that were required.

The aesthetic of the building is entirely determined by needs and by the natural characteristics of steel. The new structure was intended to contrast with the original brick building and to provide sun protection to the floor below. The lightweight steel roof was insulated with 100mm of recycled polythene and overhangs the windows to give protection from the summer sun. A lightweight grille also provides privacy from an existing building to the north and supplements protection from the sun and glare.

The building is not air-conditioned, a decision taken from the point of view of sustainability as well as for medical reasons. Infection (TB) control requires maximum natural ventilation and a continuous supply of fresh air (not recycled air as is the case with air-conditioning); the client expressed a strong preference for natural ventilation through opening windows to create pleasant working environments.

The new steel framed part of the building has been designed with sun protection and insulation that will make air-conditioning unnecessary; the old parts of the building were designed by Gordon Leith to be cool in summer. Ventilation and heating (when winter temperatures make it necessary) is provided by a system that allows for adjustment of volume and temperature.

SUSTAINABILITY

Environmental concerns were paramount in the design of the building. 80% of the new steel structure can be recycled and the entire old

The floor area of the new third floor was required to be larger than the existing roof, which necessitated a cantilevered extension over the north facade.

structure has been re-cycled in ways that are sustainable. Should circumstances change at some point in the future, the use of steel makes it possible to dismantle the structure, re-use it, and to leave the building in its original state.

Considering the issues of re-cycling, minimal use of new materials and those of climate control, it would be very difficult to design a building with a smaller carbon footprint than the Shandukani Centre.

Sunscreens provide privacy from an existing building to the north and supplements protection from the sun and glare.

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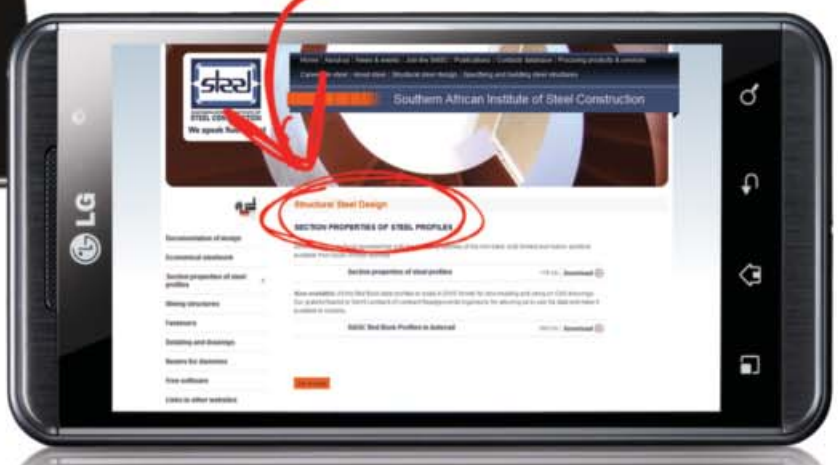

Go to www.smmh2012.co.za and get more info on the Conference on Structures for Mining and Materials Handling (SMMH) 2012 hosted by the SAISC.

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The steel skeletal framework compliments the 'cladding' that is indigenous living foliage.

THE LIVING BEEHIVE

DURBAN BOTANIC GARDENS

The 'Living Beehive' installation comprised a 6 metre high and 17 metre diameter steel structure with 'living' walls, in the shape of a traditional Zulu Beehive hut. The Beehive and the interest it has generated emphasised the key role ecosystems and biodiversity can play, in driving climate stability, green economic growth and development.

The eyes of the world were on Durban in November 2011 for the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP17). These critical climate negotiations provided an excellent platform for South Africa to profile its ideas and initiatives on green issues.

The South African National Biodiversity Institute was a key participant at COP17 and initiated an eye catching and innovative project around the event. They decided to construct a public dome-like space that would be a symbol of South Africa's indigenous biodiversity.

The 'Living Beehive' installation comprised a 6 metre high and 17 metre diameter steel structure with 'living' walls, in the shape of a traditional Zulu Beehive hut. The Beehive and the interest it has generated emphasised the key role ecosystems and biodiversity can play, in driving climate stability, green economic growth and development.

The Living Beehive was opened by Trevor Manuel, Head of the National Planning Commission, as a highlight during the COP17 conference, in the presence of the world media and is now a permanent installation at the Durban Botanic Gardens.

The beehive hut symbolises more than one aspect of sustainability and environmental issues. The structural living wall shell of indigenous plants and the elevated walkway within the living tunnel remind us of our nature-provided resources. The beehive itself refers to the efficient and hard-working bees and the sustainability of the traditional economy of structural steel working in harmony with the productivity of nature.

To comply with the traditional design technique of the original African 'beehive' hut construction, the roof framework was designed as a series of orthogonal arch frames.

In simple terms, as opposed to the 'rondavel' or classic arch dome structural form of radial members meeting at the top central point, the traditional hut uses a series of timber saplings bent into the roof shape progressively at right angles to each other.

This roof structure therefore represents the traditional construction technique, but in this case, structural steel radiused tubes were considered as the only practical and efficient steel section to satisfy structural stability, due to the considerably larger enclosed area.

With the sophisticated 3D structural framework software available, the geometric complexity for fabrication of the steel tubular elements and site connections was simplified to a certain extent. Due to the restricted time available of 10 weeks for the design, detailing, fabrication and erection of the dome structure, walkway framework and access ladder, both site bolting and welding was used for the steelwork connections. The coating utilises an epoxy based system, due to the slightly acidic irrigation fertilizing medium used to continuously feed the planting.

Structural steelwork is acknowledged as a sustainable material, since between 40% and 80% of new steel is made from recycled scrap steel worldwide. It would also be relatively simple to reconfigure this structure for use in another construction. It is therefore considered that the structural steel skeletal framework compliments the sustainable 'green' objective of this installation.

project team

Developer:
Department of Evironmental Affairs

South African National Biodivesity Institute

Client:
Durban Botanic Gardens Trust

Owner:
Durban Botanic Gardens/Ethekwini Municipality

Designer:
Davidson Design Solutions

Designer:
Leon Kluge Garden Design

Structural Engineer:
Young + Satharia

Project Manager:
Thomas Projects

Main Contractor:
Reed Simpson

Steelwork Contractor:
Impact Engineering cc

Detailers/Detailing Company:
Structech

Stainless steel mesh sheets were clipped over the tubular framework as the primary cladding support system.

To maintain the living wall in a sustainable permanent position, stainless steel mesh sheets were clipped over the tubular framework as the primary cladding support system. The horticultural team thereafter utilised a fabric, combining plastic sheeting with a hessian netting enclosed growing medium, hydroponically fertilised, to complete the living surface.

This internationally unique installation is now maintained by the Durban Botanic Gardens, as a permanent public use installation, symbolising the link between natural systems, engineering solutions, human culture, development and achievement.

The uses range from school children educational activities to wedding photographic shoots – or just a place to contemplate the interaction of sustainable structural steelwork with the green role nature has to play in facing the threats of climate changes.

Quote from the Mercury 7th December 2011 "Building a Green Economy".

The Living Beehive, a COP17 legacy project of the eThekwini Municipality, inspires us about a future in which nature and people work together, a future in which society is able to harness the best aspects of economic development, together with the true value of nature. The Living Beehive shows us the possibilities for job-creation, service delivery and economic growth in a truly green economy.

The roof framework was designed as a series of orthogonal arch frames.

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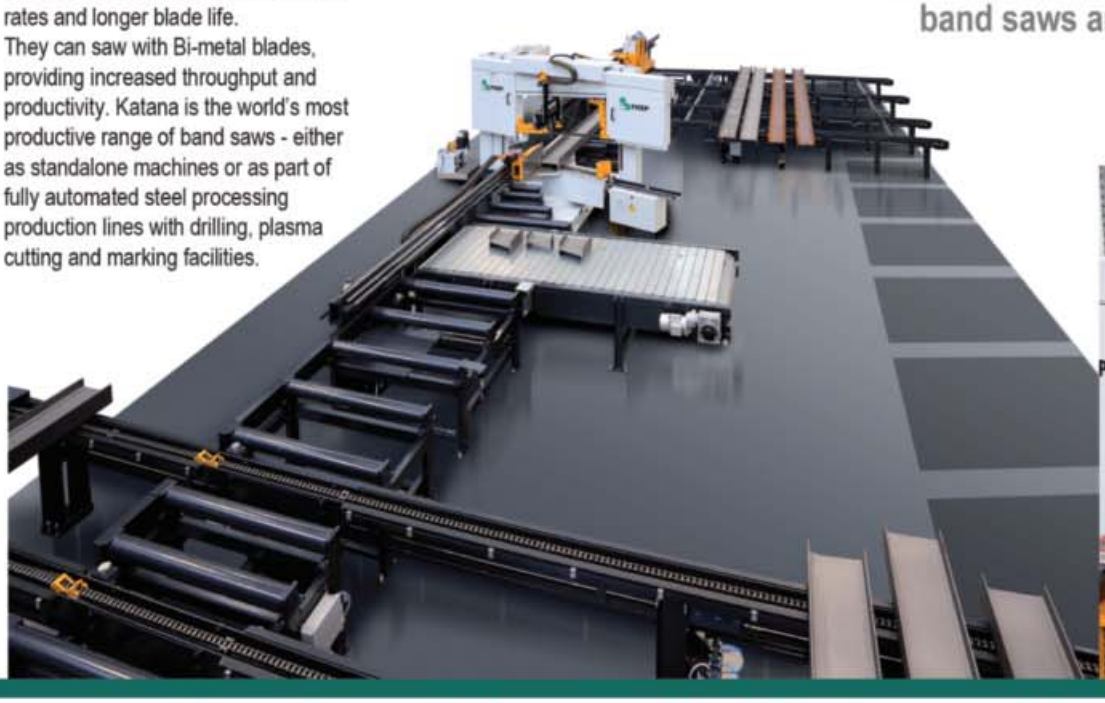

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COMMUNITY DEVELOPMENT – SCHOOLS OF STEEL

We received an encouraging number of school projects for Steel Awards 2012. They all share the steel element, and all of them were developed where there were a dire need for them. Kids need schools to be able to broaden their horizon, interact socially and yes learn. The best of all is that the advantages of using steel were recognised in each project. We highlight two of the entries (one a LSFB project) as well as a children's home.

The Mmankala Commercial & Technical School, Makapanstad, North West.

THE MMANKALA COMMERCIAL & TECHNICAL SCHOOL, MAKAPANSTAD, NORTH WEST

The school was commissioned by the province's Department of Education and provides technical education for high school pupils from the community. The design comprises classrooms and workshops that branch out from a circular covered walkway. The shape of the walkway enables passive surveillance, easy transition between classes and creates a central assembly space as well as making provision for future additions to the school.

The circular walkway is covered by a steel roof. This roof material is ideal for this application as it could be constructed in segments. These segments overlap to form the circular shape of the walkway. The chosen roof construction method provided the flexibility to adapt and adjust the roof and roof levels during the installation process. The roof heights vary to

The Mmankala Commercial & Technical School, Makapanstad, North West.

accentuate and indicate access points to the different classrooms, workshops, administration building and nutrition centre.

The rural location of the site influenced the choice of building material. The considerations of construction materials included the ease of construction, time of construction and the minimisation of building materials on site – the natural answer was "use steel". A steel frame adheres to all of the factors taken into consideration with the advantage of off-site manufacture. The frames could then be transported to site and erected within a short period of time and then filled with masonry using semi-skilled labour from the community.

The educational function of the project dictates that the building materials used ought to be robust and low maintenance. The steel frames comply - perfect for a school and workshop environment. Workshops are divided into theory, practical, storage and ablution areas. The steel in these areas is exposed and used to educate the pupils about steel construction. The exposed structure also enables the retrofitting of technical equipment such as a block and tackle.

The design makes use of steel fenestration and doors throughout the school. Steel pivot window frames with cottage panes are used in classrooms. In the workshops, these windows are placed at a high level to avoid strong breezes on table surfaces. The pivoting of the windows is such that it would promote natural ventilation whilst being easy to open and close. The cottage pane

project team

MMANKALA COMMERCIAL & TECHNICAL SCHOOL

Developer/Owner:
Department of Education North West Province

Architect:
SNAPP Architects

Structural Engineer:
Leko Consulting Engineers (Pty) Ltd

Quantity Surveyor:
Matla Quantity Surveyors (Pty) Ltd

Project Manager:
Matla Quantity Surveyors (Pty) Ltd

Main Contractor:
Sunrise Electrical & Somandla JV

Steelwork Contractor:
MPW Steel Construction (Pty) Ltd

Other:
Lesedi Consulting Engineers (Pty) Ltd

New Jerusalem Children's Home, Midrand, Gauteng.

design of the frames allows for easy replacement of broken glass panes and easy installation of burglar bars. The steel doors are fitted with fixed louvers that permit natural ventilation even though windows and doors may be closed. The steel doors and door frames are painted in bright colours to differentiate between different spaces and also to emphasise the educational nature of the project.

project team

SIHANGWANA PRIMARY SCHOOL

Developer/Owner:
Department of Public Works KZN

Architect:
Kaye & Kaye

Structural Engineer:
MUST

Quantity Surveyor:
RMA Consulting

Project Manager:
VNA Consulting

Main Contractor:
Sixbar Trading 819 cc t/a Sixbar Construction

Steelwork Contractor:
Steel Frame Developments

Detailers/Detailing Company:
Sixbar Trading 819 cc t/a Sixbar Construction

Materials Supplier:
Global Specialised Systems

SIHANGWANA PRIMARY SCHOOL, OBONJENI DISTRICT, KWAZULU-NATAL

The Department of Education KZN has set aside funding for the urgent construction of Early Childhood Development Centers (ECD's). All school curriculums now start with Grade R, however very few schools have these facilities.

They were tasked with the implementation of this project, which included the construction of 75 ECD's in KZN, within a four-month period. The tender document also called for alternative proposals.

Sixbar Construction was awarded ten ECD's in the rural districts of Vryheid and Obonjeni. Sihangwana Primary School is situated in the Obonjeni District very close to the border of KZN and Mozambique. There is no water supply and no formal electricity at this school. Working conditions are extremely difficult and the delivery of materials to site is a challenge on its own.

The award of ten ECD's to the contractor with an alternative method of building, validates the many years of their persistent marketing of light steel frame technology to local government. It also signals the potential of light steel frame technology being acknowledged and utilised as the preferred alternate method of building in solving the backlog and delays of government infrastructure development. The contractor believes that light steel frame technology can become a major employer in South Africa, in the construction industry and improve the economic development in poorer, rural communities.

This ECD was completed within an eight-week period and within budget. Most materials were transported up from Durban. The speed and quality of the product has resulted in Sixbar Construction being named as the top contractor for the entire

project. This reiterates the fact that light steel frame technology is quicker, cost effective and of high quality. It is also a solution to building in remote areas where there is no water and electricity.

NEW JERUSALEM CHILDREN'S HOME, MIDRAND GAUTENG

In March 2012, Africa's first eco-friendly children's home, New Jerusalem Children's Home was opened in Midrand. This structure, made entirely from recycled materials was the brainchild of husband and wife team Sean Wall and Mia Anfield of 4 D+A Architects.

The New Jerusalem Children's Home provides residential care for abandoned, abused, traumatised, orphaned or HIV-positive children and vulnerable youth from 0 - 18 years.

The home started off in 2000 when two sisters, Anna and Phina Mojapelo realised the desperate need in their surrounding community to provide shelter and protection for vulnerable children. Anna and Phina opened up their own homes and started with just one child. Today they shelter over 80 children at a time.

Safintra Roofing identified this development for their ongoing "Great South African Architecture Campaign". The company donated the roof sheeting for this worthy project.

Mia Anfield explains the green element of the project: "Basically we set out to design an environmentally friendly home, which not only would house the children in a safe, comfortable environment but would also teach them about recycling and preserving the Earth." The company set out achieving this various ways, but the most striking feature has to be the clever use of recycled shipping containers sporting elevated cantilever roofs, featuring the Safintra sheeting.

The cantilever roofs are more than just a design feature, they also allow for natural air flow. Sean Wall explains: "The use of steel roof sheeting was an absolute natural choice for us, given the 'green' theme of the project. It is a well known fact that steel roofing provides the greenest solution available in building today. It is completely recyclable, thermally efficient, light-weight and the coating systems, such as aluminium/zinc ensure a durable product."

In addition to this, the project also features, solar-heating – which is a sustainable energy

source used to heat all of the water in the house. A 'bio-box' turns black water into grey water for irrigation purposes. Eco-heat infra red heaters provide warmth in winter and photovoltaic systems convert sunlight into electricity for all the lights in the home. Horizontal and vertical sunscreens were manufactured from a wood/plastic composite and a roof garden provides a thermal mass which aids insulation.

The orientation of the structure also makes the most of what nature has to offer in terms of thermal efficiency and raising the containers above the ground allows for natural cooling airflow.

COSMO CITY SCHOOLHOUSE, JOHANNESBURG

Cosmo City is a pioneering public-private partnership between the City of Johannesburg and Basil Read Developments to relocate previously informal settlements into a socio-economically integrated housing development along with basic infrastructure and public amenities. Located 15 miles northwest of Johannesburg, Cosmo City was first populated just five years ago and will accommodate approximately 70,000 people by the end of 2011. Created as part of the South African government's Reconstruction and Development Program (RDP), Cosmo City is an example for sustainable and socially responsible urbanisation, and has successfully overcome income, racial, and social inequalities that persist in the post-apartheid period.

Cosmo City Schoolhouse, Johannesburg.

The Cosmo City Schoolhouse forms part of the Cornell University Sustainable Design's Schoolhouse South Africa project which promotes education through action, empowerment, and innovation. Over the course of two semesters, students cooperated in an interdisciplinary design-build project. Approximately 28 volunteer students from Cornell University travelled to South Africa, to construct the ECD Center alongside local workers, community members, and skilled craftsmen. Robin Seibert, of Basil Read Developments, assisted with construction management along with his colleagues.

The EDC Center will house a teacher training facility, which will encourage continuous engagement with the local neighborhood. Well-trained teachers will be equipped to participate in the social development of this community.

The centre conserves energy through passive solar design. This allows the building to receive natural daylight for learning throughout the day without the need for additional electric lighting.

The structure can be described as two separate roof structures supported on an innovative sandbag walling system, with simple but elegant cellular beam rafters which were tapered profiled at the ends to create an aesthetic detail.

The main products found in the building are locally sourced – from the earthbags that come from sand around the site, down to every finish. This means that very little energy is used importing materials from other countries into South Africa.

project team

COSMO CITY SCHOOLHOUSE

Developer/Owner:
Schoolhouse South Africa (Cornell University Sustainable Design)

Architect:
Schoolhouse South Africa (Cornell University Sustainable Design)

Structural Engineer:
Tetratech

Quantity Surveyor:
Schoolhouse South Africa (Cornell University Sustainable Design)

Project Manager:
Schoolhouse South Africa (Cornell University Sustainable Design)

Project Manager:
Education Africa

Main Contractor:
Basil Read Developments

Steelwork Contractor:
Spiral Engineering

Detailers/Detailing Company:
Vision Draughting cc

Cellular Beam Supplier:
Macsteel Trading (Pty) Ltd

AN INVITATION FOR BUILDING INNOVATION

We believe we now live in an era when the new demands being made on buildings require innovations. Environmentalists have identified mainly the operation, but also the construction, of buildings as contributing a significant percentage to man-made carbon emissions. This means there is great scope for working to find ways to reduce the energy consumption of our buildings.

The SAISC would like to challenge anyone who has novel ideas about how to create new buildings to come forward. We promise to use our resources to help realise viable dreams where there is a role for steel.

The invitation is for people from all walks of life since novel ideas can involve any aspect of building construction and use. Structural engineers and architects are obvious candidates to make significant contributions to this venture because they are primarily involved in planning and designing buildings. However, steelwork contractors, software vendors, builders, developers, building operators and even building occupants can make very valuable contributions.

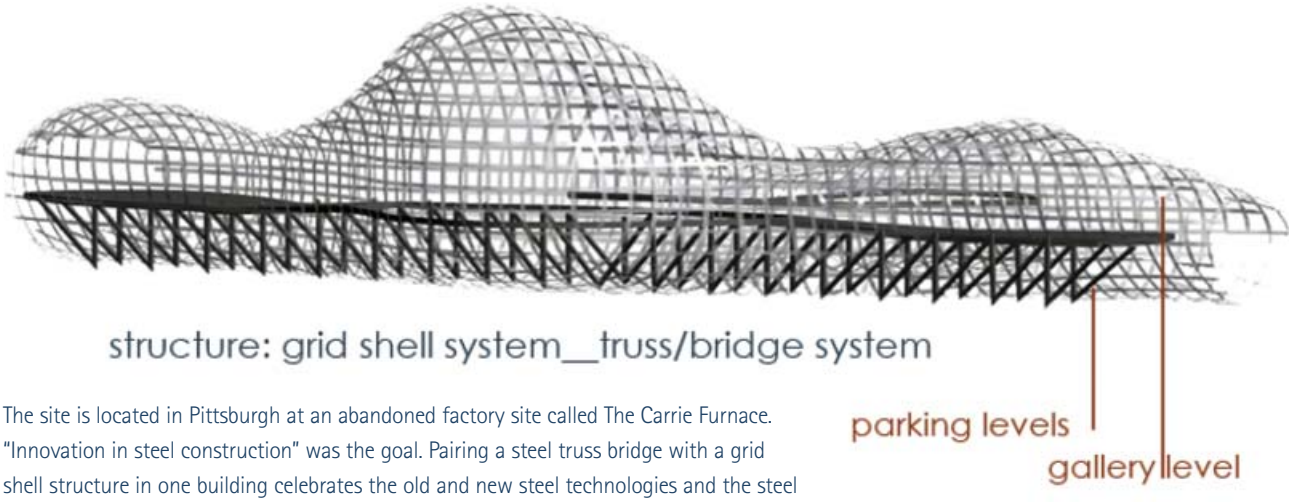
We at the Institute believe that creating an environment that fosters collaboration and creativity will result in innovation. Innovation in building design, construction and use is a proven force for transformation. At the beginning of the 20th century innovations based on steel framing and light cladding made dynamic urban centres like Chicago possible. Over the next century building construction constituted a primary economic driver all over the world with innovations in design and construction providing the basis for people's improved quality of life.

We believe we now live in an era when the new demands being made on buildings require innovations. Environmentalists have identified mainly the operation, but also the construction, of buildings as contributing a significant percentage to man-made carbon emissions. This means there is great scope for working to find ways to reduce the energy consumption of our buildings. Moreover, owners now seek to have buildings which pose minimum risk to the safety of workers and occupants. At the same time they demand fast project delivery and the ability to change the use of the buildings or to sell them for a healthy financial return.

We also believe that the tools for realising novel ideas are now available and affordable.

Advanced off-site manufacturing capabilities coupled with powerful analysis, detailing and Building Information Management (BIM) software can now be

The Cyber Innovation Center in northern Louisiana incorporates a 'force protection' design. Each of the spoke towers has a steel framework to actually provide facility security as well as making an architectural statement. *(http://www.modernsteel.com/SteelInTheNews)*



The site is located in Pittsburgh at an abandoned factory site called The Carrie Furnace. "Innovation in steel construction" was the goal. Pairing a steel truss bridge with a grid shell structure in one building celebrates the old and new steel technologies and the steel industry in Pittsburgh. *(http://open.salon.com/blog/azmara)*

married by clever project managers to produce viable new business models for contractors. In this regard we believe modular construction is surely the way of the future. Innovation in how to interconnect elements and modules on site can open up new opportunities for structural engineers and manufacturers.

We would like to help create an environment where people can come together to innovate but we also wish to reduce technological, business and other risks. For instance, we realise that we have to bring practitioners and researchers together to support viable innovations. But their mere collaboration is also a way to reduce risk because potential pit-falls can be caught early. Protection of rights over ideas is also critical and we will support innovators' intellectual property through patenting and promotion of transparent mediums.

This then is a challenge and invitation to each reader. If you feel that you have innovative ideas regarding buildings involving steel, feel free to contact Amanuel Gebremeskel at amanuel@saisc.co.za.

IT'S ALL ABOUT STABILITY

HOW NOT TO BUCKLE UNDER PRESSURE

By Amanuel Gebremeskel,
Development Engineer, SAISC

For one, checking for stability related limit states is more important than checking for yield limit states because stability failure is unforgiving in its suddenness. Structural failure modes that contain no warning to occupants, such as buckling and non-ductile rupture, must be avoided by the designer at all cost.

Stability is one of those topics in structural engineering that most of us would rather avoid. There are at least two reasons for this. One is that it requires solving differential equations. The second is that even if one knows how to solve eigenproblems, real structures are simply too complex to solve comprehensively.

This article attempts to explain the more relevant aspects of column and frame stability without solving complicated equations. It addresses second order effects and discusses how they are commonly solved in practice. Finally it scans SANS 10162-1 in regards to stability of steel structures and illustrates how the tools within it can be used to comply with the law, carry out preliminary design and check software output.

BUT WHY DO WE CARE ABOUT STABILITY?

For one, checking for stability related limit states is more important than checking for yield limit states because stability failure is unforgiving in its suddenness. Structural failure modes that contain no warning to occupants, such as buckling and non-ductile rupture, must be avoided by the designer at all cost.

Secondly, the South African building regulations state that structures must be stable enough to transfer loads to foundations. Standards such as SANS 10162-1 contain sections 8.7 and 9 that deal exclusively with the stability of steel structures and provide tools that are deemed to satisfy South African law if applied correctly. This means that understanding the requirements of SANS 10162-1 and how they relate to software output is effectively a legal requirement.

SO WHAT IS MEANT BY STABILITY?

For most structural designs, providing stability has much to do with limiting compressive loads in members and frames that have eccentricities which are caused by geometric deformations. The source of the geometric deformations can be manufacturing imperfections or loads imposed during use. Therefore if a column is supplied bowed then it is important to limit the axial loads in it in order to

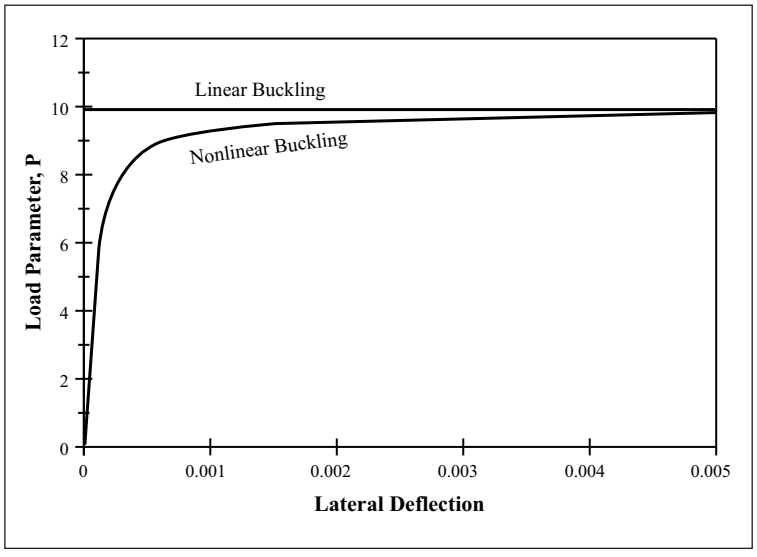


Figure 1: Effect of axial load P and initial deformation on excessive bowing.

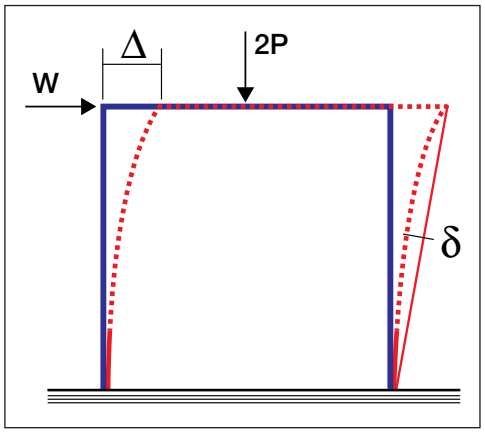


Figure 2: Effect of compressive load P on frame drift Δ and internal column deflection δ.

prevent it from excessive bowing. Of course a straight column would have the same problem if a lateral load were to be applied along its length, or moments at its ends, resulting in a bowed shape.

There are of course instances when an engineer has to solve stability problems that involve members without geometric deformations, but these are rare. Figure 1 plots the two column behaviours on the same graph. In one case a straight column is loaded until it reaches a critical load, at which point it suddenly buckles. This is called linear buckling. If initial bowing is present however, because of the resulting eccentricity between P and the column centre line, the column bows even further as the axial load is increased. This results in nonlinear buckling. We are typically concerned with nonlinear buckling of columns and frames because initial imperfections are quite common and excessive deformations must be avoided.

The same phenomenon is observed for a column, or even moment frame, that is cantilevered up from the ground. If a lateral load is imposed at its top or the frame is not exactly vertical when supplied then adding compressive loads is bound to increase its lateral drift. Limiting the compressive loads in such cases, either to limit excessive drift or prevent total collapse, achieves the goal of providing stability.

AND SECOND ORDER EFFECTS?

The increased frame drifts, or bowing in the case of the columns, are called second order effects because they result from the interaction of the compressive loads with the initial deformations that arise from lateral loads or imperfections. Figure 2 illustrates how P and Δ or δ can interact to give even greater values of Δ or δ until equilibrium is reached.

Second order analysis is somewhat more difficult than linear analysis because one has to account for first order effects – the initial drifts – and then iterate until the compressive loads times the accentuated drifts are equal to the flexural resistance at the centre of the column or the base of the cantilever. Such iterations can of course be time consuming, even for software programs. However iterative methods are popular with structural analysis software and in-house programs because they are relatively accurate and straightforward.

There is yet another way to see the problem. Just as cables can be made laterally stiffer by introducing tension in them, columns can be made laterally softer by introducing compression in them. In fact, it is possible to solve a distinct stiffness reduction for columns and frames for a given compressive load. This is of course a reduction in stiffness that results not from changes in the modulus of the material but from the geometric effects of the compressive load.

One can then solve for the second order drifts directly by applying lateral loads on columns and frames that have this reduced lateral stiffness. There is no need to add the effects on drift of the compressive load because it is accounted for in the reduced stiffness. This turns the problem back into a linear first order problem while it still accounts for second order effects.

THEN HOW DO STRUCTURAL PROGRAMS WORK?

Structural software like Prokon and Fastrak make use of such stiffness reductions to account for second order effects. At times they iterate if initial deflections change the compressive loads in members but their solutions typically require no iteration for building type structures where the compressive loads – gravity loads – remain constant. Programs such as SAP allow the user to input specific stiffness reductions if desired.

HOW ABOUT SANS 10162-1?

SANS 10162-1 has three simple tools that are especially relevant for evaluating stability and checking software output. The first involves accounting for initial frame out of plumbness and softening of columns and beams due to yielding from high axial and bending loads. This material stiffness reduction is of course different from the geometric one that we have been discussing above.

According to section 8.7 these effects must be accounted for by applying a lateral load at each storey that is equal to 0.005 times the factored gravity loads on the storey. This is in addition to other lateral loads such as wind and seismic. After applying all lateral loads a second order analysis must be carried out to determine final forces, drifts and deflections.

Section 8.7 provides a second tool in the form of a simple equation that can approximate second order effects. Software output can be checked by multiplying first order drifts and forces by U_2 to obtain approximate second

order results. Moreover by keeping the value of U_2 below certain limits, say 1.5, it is possible to develop a rule of thumb for securing storey stability. This is equivalent to limiting factored gravity loads on the storey to less than a third of the theoretical critical buckling load of the storey.

A third tool helps to answer a question that keeps coming up involving the design of bracing members. It is never clear how much capacity or stiffness is required from members that are used to brace columns or the compression flanges of flexural members. Section 9.2.7.2 provides a direct method of evaluating how much load is imposed in such members if the initial geometric imperfection in the braced member is known.

Of course iteration is required since evaluation of Δ_b is dependent on knowing P_b. Moreover it is important to note that Δ_b includes not only the deflection of the bracing member but also all the connections involved. If this sounds like too much work, a simplified method is provided in section 9.2.6 where bracing members are designed for 2% of the compressive load in the braced member or flange.

In either case a stiffness limit on the bracing member and its connections is set in sections 9.2.6 and 9.2.7 by limiting Δ_b to a maximum value of Δ_o. These initial imperfections can either come from the requirements of SANS 2001:CS1 as per section 9.2.2 or from actual measurements for existing structures.

READY FOR STABILITY...

This article has attempted to shed light on three areas. First, it has provided a qualitative description of what is meant by column and frame stability for commonly encountered problems. Second, it has addressed the causes and implications of second order effects while providing insight into how structural programs solve them using either iterative or stiffness methods. Finally it has shown how complying with SANS 10162-1 not only satisfies a legal requirement for the structural engineer but also provides quick and easy tools to check for stability and verify computer output.

CORRECTION: Corrosion Specification for Moyo on the Pier

(Steel Construction Vol.36 No.1 2012)

Terry Smith of the HDGASA has picked up an error in the corrosion specification stated in the recent article on Moyo on the Pier *(page 26 Steel Construction Vol. 36 No. 1 2012)*, and bought it to our attention.

The article does reflect what was in the motivation for the Steel Awards entry, but was not the specification stated on the drawings, and not what was carried out on site. Therefore Steel Construction would like to include this correction so that the promotional efforts of the duplex system are not negatively affected, and obviously not to mislead our readers.

Correct Duplex corrosion specification:

1. **Hot dip galvanize to SANS 121 (ISO 1461). Dry abrasive blast in accordance with the International Standard ISO 8501-1:1988 to obtain a surface profile of 25 to 75 microns.**
2. **Clean with reputable galvanising iron cleaner, such as phoscote or equally approved using the methods of cleaning according to HDGASA 01-1990.**
3. **Apply 1 coat of epoxy primer to a DFT of 35 to 50microns. This layer is to be applied 3 to 4 hours after galvanizing for passivation of the galvanizer to be excluded.**
4. **Apply 1 coat of epoxy intermediate with MIO (micaceous iron oxide) to a DFT of 100 to 120 microns.**
5. **Apply final coat of polyurethane sealercoat to a DFT of 30 to 40 microns, colour to architect's specification.**

SAISC GOLF DAY 2012

9 MAY, HOUGHTON GOLF CLUB

CONGRATULATIONS MACSTEEL!

By Marlé Lötter,
Events Manager, SAISC

The 2011 champions, NJR Steel, were there to contest, but had to concede the SAISC Golf Day trophy to a team of the Macsteel Trading stable. Well done to the winning team, hosted by Granville Rolfe!

Hennie thanks Neil Penson for excellent service as MC.

ArcelorMittal sponsored the prize for nearest to pin on the 9th - presented by Adriaan Roux (left) to Dennis Dedwith of the Macsteel Trading team.

The SAISC Golf Day 2012 Champions – Macsteel Trading (left to right): Dennis Dedwith, Chris Soames, Lawrence Wordon, Marius Botes of DSE Fabrication who sponsored the prizes, Granville Rolfe (host) and SAISC director, Hennie de Clercq

The 2011 champions, NJR Steel, were there to contest, but had to concede the SAISC Golf Day trophy to a team of the Macsteel Trading stable. Well done to the winning team, hosted by Granville Rolfe!

The results for 2012 were:

The Winning Alliance – Macsteel Trading (Top score: 87): Granville Rolfe, Chris Soames, Dennis Dedwith, Lawrence Wordon

2nd Best Alliance – Grating World (85): Hans Bothma, Jason Vaughan, Daron, Frik Scheepers

3rd Best Alliance – AVENG Grinaker-LTA DSE Fabrication (85): Elwyn Steenkamp, Frans Kromhout, Marius Botes, R Flora

4th Best Alliance – Macsteel Coil Processing (84): Trevor Cooke, Barry Bruton, Anton Reddy, Rod Cory

5th Best Alliance – B&T Steel (83): Bryan Wilken, Ben Dicks, Josh Vorster, Scott Hollywood

6th Best Alliance – AVENG Trident Steel (82): Jason Graham, Andre de Bruyn, Tim Sewell, Hercu Aucamp

7th Best Alliance – AVENG Trident Steel (81): Bob Harvey, Scott McDiarmid, Mark, Ian

Individual performances:

Highest individual score – Jason Vaughan (Team: Grating World)

Nearest-to-pin on 7th – Frik Scheepers (Team: Grating World)

Nearest-to-pin on 9th – Dennis Dedwith (Team: Macsteel Trading)

Nearest-to-pin on 14th – Marten Spencer (Team: Tass Engineering

Longest drive on 5th – Tim Sewell (Team: AVENG Trident Steel)

Longest drive on 15th – Johan Smit (Team: UWP Consulting)

The SAISC sincerely thanks Neil Penson for his time and great effort as master of ceremonies for the prize giving dinner.

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MACSTEEL
SERVICE CENTRES SA

Marten Spencer of Tass Engineering receives his new Ferrari from Lawrence Wordon of Genrec for hitting nearest to pin on the 14th - Hennie is most likely wondering if this could be better than a bicycle!

This was the second successive year at Houghton Golf Club. While player comments about the venue accessibility, modern clubhouse facilities, food and service were very complimentary (as in 2011), we did receive a number of frowns from a golfing perspective. It seems that the greens were exceptionally hard to negotiate this time around (as one might expect of a preferred course for the SA Opens). We will therefore have a look around at a number of other golf courses in the Johannesburg area before we book for 2013. Your suggestions in this regard are welcome. As far as the weather is concerned it seems that May remains a safe option.

We proudly acknowledge the sponsors of the SAISC Golf Day 2012 (in alphabetical order):

Absolute gifts: Player accessories

ArcelorMittal SA: Hole 16 & the prize for nearest to pin on the 9th

AVENG Grinaker-LTA DSE Fabrication: Prizes for the best alliance

AVENG Trident Steel: Branding water hole 4

B&T Steel: Branding the score cards

Genrec: Branding the carts, branding waterhole 14 and a sponsoring the Ferrari for nearest to pin on 14

Macsteel: Branding Holes 1, 10 & 18

PingPong Communications: Prize for the player who played the most shots

Stewarts & Lloyds: Branding hole 9

Vital Engineering: Dressing the caddies

A big thank you to every host and player of the 34 fourballs, the sponsors, Nadine of PingPong Communications and all the SAISC staff members who helped to make this a great day!

Pictures of teams were printed and taken by players on the day. They were also emailed to hosts. You can visit the SAISC website for a wider selection of golf day pictures: www.saisc.co.za – Home/ News & Events/ Recent events - SAISC Golf Day - 9 May 2012 – Read more

Note: You can request a higher resolution version of any of the pictures from our office – click on the picture and then send the picture title or the identification code to pamella@saisc.co.za.

SAISC GOLF DAY 2013...

This will provisionally be in the month of May – exact date and venue to be advised.

Special request: If you are interested in playing and/or sponsoring next year, please make sure we have you on our mailing list by emailing your details to marle@saisc.co.za – this will not place you under any obligation, but should ensure that you get the event details in good time.

CALENDAR OF EVENTS

SAISC BREAKFAST TALK – NEIL PENSON ON LABOUR RELATIONS
10 July 2012
Country Club Johannesburg, Auckland Park

STEEL AWARDS 2012
6 September 2012
Gauteng – Emperors Palace
KZN – Durban Botanic Gardens
Cape – Kirstenbosch Botanical Gardens

10th INTERNATIONAL CONFERENCE ON ADVANCES IN STEEL CONCRETE COMPOSITE AND HYBRID STRUCTURES (ASCCS 2012)
2 to 4 July 2012
Singapore

14th INTERNATIONAL SYMPOSIUM ON TUBULAR STRUCTURES
12 to 14 September 2012
London, United Kingdom
www.imperial.ac.uk/ists14

SMMH 2012 – STRUCTURES FOR MINING AND RELATED MATERIALS HANDLING INTERNATIONAL CONFERENCE
15 to 18 October 2012
Vanderbijlpark

SAISC AGM
15 November 2012

STEELFUTURE CONFERENCE 2013
5 and 6 March 2013
Sandton

FOR MORE INFORMATION ON EVENTS VISIT OUR WEBSITE – www.saisc.co.za

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Sach-Warr Construction cc
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Zamani Engineering Services cc
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STEEL MERCHANTS & SERVICE CENTRES

Gauteng

Bankos Distributors cc
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Clotan Steel
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Genesis Steel (Pty) Ltd
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Macsteel Service Centres SA (Pty) Ltd*
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Macsteel V R N
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NJR Steel Holdings (Pty) Ltd
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Stewarts & Lloyds Holdings (Pty) Ltd
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Trident Steel (Pty) Ltd*
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Western Cape

Macsteel Trading Cape Town
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STEEL PRODUCT MANUFACTURERS

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Bolt & Engineering Distributors
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CBC Fasteners (Pty) Ltd
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First Cut (Pty) Ltd
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www.firstcut.co.za

George Stott & Co (Pty) Ltd
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www.geostott.co.za

Global Roofing Solutions (Pty) Ltd
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www.global-roofing-solutions.co.za

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Horne Hydraulics cc
Representative: Deon Sharp
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www.horne.co.za

Le Blanc Communications SA
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www.lightingstructures.co.za

Macsteel Roofing
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Macsteel Tube and Pipe
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Mentis Sales
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Project Materials Southern Africa (Pty) Ltd
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PEL Construction
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WJ Engineering (Pty) Ltd
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Hot Dip Galvanizers Association of SA
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Austrian Welding Academy
Bohler Uddeholm Africa (Pty) Ltd
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Traceability Solutions
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Supplier of CNC-controlled steel machinery
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SASFA MEMBERSHIP LIST

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Everite Building Products (Pty) Ltd
Producer of fibre cement board
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Producer of gypsum board
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Saint-Gobain Gyproc SA (Pty) Ltd
Producer of gypsum board
Andre Schlunz
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www.bpbsa.com

Saint Gobain - Isover
Producer of insulation products
Tel: (011) 360 8200
www.owenscorning.co.za

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Fastener and equipment supplier
Mohamed Khan
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www.avlock.co.za

Kare Industrial Suppliers
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Reitze Hylkema
Tel: (011) 941 3170
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www.kare.co.za

Marshall Hinds
Distributor of Tyvek Building Wrap
Brett Goelst
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www. marshallhinds.co.za

Speedfit Africa
Distributer of John Guest Plumbing and associated
technology solutions
Gavin van Heusden
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United Fibre Cement Company
Distributer of fibre cement products
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ckr@cicapglobal.com
www.cicapglobal.co.za

Dezzo Roofing
Profiler and assembler
Brandon Harding
Tel: (031) 713 6571
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Kusasa Commodities 148 (Pty) Ltd
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Johann de Villiers
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Kwikspace Modular Buildings Ltd
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MiTek Industries SA (Pty) Ltd
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SA Steelframe Systems
Profiler and assembler of LSF and trusses
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Siteform Framing
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Stedone Hazycrest Projects (Pty) Ltd
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Tahzade Disaster Management
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Trumod (Pty) Ltd
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Vela Steel Building Systems (Pty) Ltd
Profiler and assembler
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Razorbill Properties 127 (Pty) Ltd
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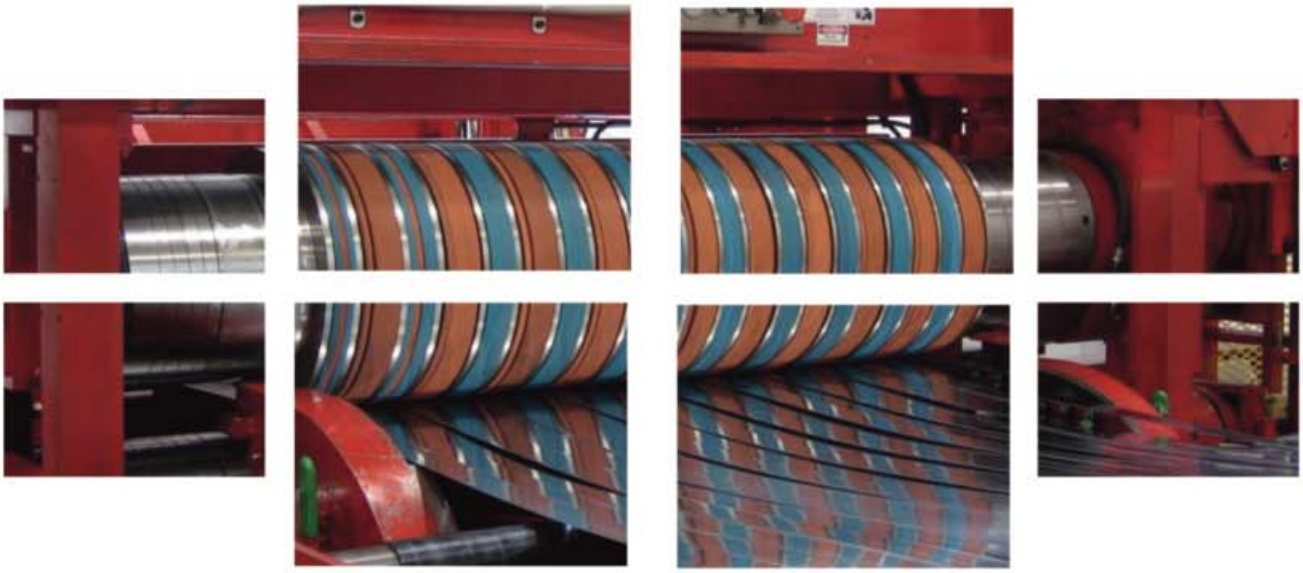

Coil Toll Processing: Precision Cut to length 0.4 - 6mm x 1.8m wide, Slitting 0.4 - 2.5mm x 1.2m wide

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