

Theatre of light for Sandton's Protea Court

Central to Sandton City's recently launched extension is the Protea Court, so named for its lift shaft (the 'Protea' stem), which bursts out at the top into an awe-inspiring petal-like canopy that forms the rooflight. The multi-volume entrance lobby accesses two levels of retail, two levels of parking and an additional two future levels of parking by means of escalators and passenger lifts. The architect on this multiple award winning project, Tia Kanakakis of MDS Architecture, wanted a lighting scheme that would accentuate the non-stylised, contemporary architecture of the Protea Court and capture the mood and spirit of the development. In this article we look at two sides of the coin – Tia Kanakakis' decision to use the services of a lighting designer for this prestigious installation and her brief to Paul Pamboukian and Associates, and PPA's interpretation and implementation of that brief.

Chatting to Tia Kanakakis ...

LiD: Do you often use independent lighting designers for your projects?

TK: We do recommend, from time to time, that our clients use independent lighting designers when the nature of their project warrants the specialist input provided by a lighting designer.

LiD: Why did you choose to do so for the Protea Court project?

TK: The Protea Court formed part of the extension of the Repositioning of Sandton City Phase 1 and was a key component of the design. The intention of the court was to create within Sandton City's shopping centre precinct a unique element that would excel in every design aspect and introduce substantial natural light into the centre. We wanted the design intent to be carried through when the space was viewed at night from within the centre and externally from

Rivonia Road. The Protea Court is the only pedestrian entrance into the shopping centre and this was to be the focal street address for Sandton City.

Its roof gave us the opportunity to use a 'new' technology with a material that translates the dynamic design intent of the tilted dome design, and provides a suitable lightweight option for use over the centre when the remainder of the Sandton City master plan design is implemented. The roof has been created with a product called Texlon, which is made up of multiple layers of foil known as ethylene-tetra-fluoro-ethylene (ETFE), a modified polymer. Texlon is an innovative technology used worldwide but has been used for the first time in South Africa on the Protea Court roof. It was selected for its light weight quality and as an environmentally-friendly climatic envelope for the roof. Texlon, or ETFE, consists of pneumatic cushions restrained in aluminium extrusions, supported by a

lightweight structure. The cushions are inflated with low pressure air to provide insulation and resist winds. The ETFE material does not degrade under ultraviolet light or atmospheric pollution and is translucent to allow natural daylight through.

The challenge stemmed from how to illuminate the Texlon and how to light the court when traditional lighting methods could not be suspended below the roofing material. Although we had strong ideas about the lighting scheme, we required the technical knowledge of lighting designers to formalise and complement the design process. For this reason, our client decided to employ the services of a company (Paul Pamboukian and Associates (PPA)) that specialises in the field to assist with the internal and external lighting design of this distinctive element at Sandton City.

LiD: What effect were you hoping to achieve with

the lighting – i.e. what was your brief to the designers?

TK: The lighting design had to complement the court design and highlight special elements such as the ETFE roof, the bifurcating columns and the lift shaft, which was clad with the most superb mosaic of stainless steel and white mosaic glass. The brief was to design a specialist lighting installation that would illuminate the court and that consisted of static lighting as well as intelligent lighting to the roof.

The challenge was to provide a lighting solution other than the traditional suspended lighting evident in most grand spaces.

LiD: Was PPA able to interpret what you had in your mind's eye into reality?

TK: We have great respect for PPA; they worked with us and fulfilled our architect's brief and vision for the





lighting. We had strong views on how we wanted the court to be illuminated and they never disputed or compromised our vision. They were integral to the 'theatre of lighting' envisaged to complement the non-stylised, contemporary architecture of the court and we worked well together.

LiD: What un-thought-of possibilities did the lighting designers suggest? Was there an element of surprise?

TK: PPA came up with the great concept of a light wall for the two upper levels of the Protea Court, which back up onto the parking areas situated above the retail levels.

Though we would not permit any lighting elements to be suspended from the roof of the court, we nevertheless had to provide adequate illumination to the parkade entry levels into the court and this

posed a considerable challenge due to the volume of the space. The light wall concept proved to be a very successful idea; it allowed us to be creative with the shape of the wall and PPA provided advice and technical assistance with the technology and the lighting level calculations.

The wall has also created a fantastic background to the court, when viewed from the exterior at night.

LiD: Did the ideas PPA brought to the table influence the way you saw your design?

TK: We had strong design ideas about what we wanted from the lighting design. PPA assisted in achieving what we visualised.

They did not challenge the design intent but rather enhanced the process to achieve the design with creative lighting ideas and their excellent technical knowledge of current and cutting-edge lighting

systems. They also provided mock ups of most of the lighting elements, which greatly assisted us and the client in seeing what we would get before implementation on site.

LiD: Did ideas on the lighting change the treatment of certain spaces?

TK: I can't actually say that they did. However, the ideas applied to the intelligent lighting to showcase the ETFE roof certainly exceeded everyone's expectations and have provided a world class architectural element that is beautifully highlighted by subtle and creative lighting.

LiD: How much was the design driven by energy consumption requirements and environmental considerations?

TK: The design of the entire Phase 1 extension, com-

prising an additional 30 000 m² of retail space, was driven largely by energy consumption requirements and environmental considerations. In fact, through the application of energy saving criteria outlined by the professional team throughout the existing public areas of the shopping centre and the new extension, and the energy criteria imposed on new tenants in the southeast extension of Sandton City via the Tenant Criteria Document, the project team estimated a 3,5 MVA saving on energy usage.

This allowed the 30 000 m² extension to the centre to proceed without an application to Eskom for additional power.

All through the mall and in the Protea Court the lighting consists of energy efficient LED and fluorescent fittings, linked to the central BMS system, which manages usage and consumption throughout the day and at night.



Bringing the brief to light...

Very few people in South Africa specialise in 'lighting design' and most architects rely on the services of the consulting electrical engineer or the lighting company supplying the lighting hardware to interpret and install the lighting they (the architects) envisage. Lighting design is an art and the lighting designer, in addition to being creative and original, is technically proficient and able to conceive and draw the plans for the lighting installation that the architect wishes to see. Anthony Tischhauser explains how PPA brought to life Tia Kanakakis' vision for Protea Court.

Protea Court is the new pedestrian entrance to an expanding Sandton City. South of the Gautrain Station on Rivonia Road, it marks a radical new approach to the shopping precinct in Sandton being entirely hidden from the street and only accessed through parking garages. The eight storey domed court, created by MDS Architecture (in a joint venture association) is glazed to the street side and covered with a translucent skin, naturally lit by day. Architecturally, it introduces an urban element in giving Johannesburg's largest shopping area a public face. It also marks the completion of Phase 1 of the shopping mall expansion.

By day, the glass skin façade of the atrium hints at the interior and by night the lighting dissolves through the sheets of glass to reveal the cylindrical volume, drawing views in and across its full depth. The pneumatic pre-stressed cushion roof with high insulation qualities and styled on a Protea flower 42 m wide is supported by an off-centre mosaic-clad column. With minimal downlighting, the space is mainly lit from the top of the stem outwards, enhancing the 146 double-layered transparent segmented, triangulated or rhomboidal cushions through continuous sequences of projected light. The impression is soft due to the absorbing quality of the cushion material. Three rings of programmed exterior LEDs also light the cushions adding to the three-dimensional reading of the envelope while making it interestingly visible at a distance.

On entering, the cantilevered bi-convex glass floor is lit by continuous cold cathode tubes that follow the curved lattice beams. They feed through circular cut-outs in the steel structure to give a rich uninterrupted opaque feeling. Reflections from the different materials illustrate the effect of a live and specular environment caused in this case through the extensive

glazing, the EFTE light transmitting sheeting (used for the first time in South Africa) and the lift core. To enhance the effect, further layers of light are added to create real sparkle, making a feature of what could have been a problem.

The main 32 m tall, 4.5 m wide support connecting floor to roof is fitted with custom made neutral daylight LED mosaics (15x15x200mm) randomly inserted and flush with the finish to create interest. Not seen during the day, at night they add life. A layer of vertical front light from theatrical ETC Source 4 HID profiles shoots across the space to introduce a golden glow to the shiny curved mosaic surface. The outer bifurcating roof supports are side-lit from in-ground floor mounted MH up-lights to mould the steel structure.

Cycloramic intensely lit double-layered vertical wall surfaces on the upper floors illuminate the space in order to omit downlights and mould the walkways through grades of light. The intensely back-lit (with extra long-life fluorescents) double skin walls on the upper floors give a silhouette effect to passers-by. In turn, the off-set support columns are also silhouetted to create drama and give dimension to the space. This feature was an answer to the architects' concern that the area between the upper floor surface and cylinder edge may appear grey as there is no ceiling to contain light. It was then applied to the floor below.

The roof cushions are further given a glowing three-dimensional feel through a continuous slow rhythmic breath of changing monochromatic colour – various combinations of warm and cool pastels – achieved by mixing RGB and White for more flexibility. Static accent illumination of the 12 individual roof beams defines the domical structure from its springing point. Interrupting sporadic colour bursts on the hour illuminate the structure and define time. For special events the RGB and White colour system is programmed to open like a flower from the stem outwards. DWR was responsible for the complex programming of the highly versatile yet efficient low energy lighting of the roof: 115x50 W and 12x125 W Robe Anolis LED spotlights.

The piazza in front of Protea Court, a meeting point and future pedestrian node, is animated to give a strong night-time presence. An unusual and welcome civic gesture; it forms the basis for the foot-link to the Gautrain Station.