

The showroom typology is based on a bubble-like design



Barloworld and Caterpillar 'bubble' showroom a winner at SAISC Steel Awards 2020

Paragon Architects is proud to be associated with the Barloworld and Caterpillar Head Office and Showroom in Isando, Johannesburg, developed by the Eris Property Group. The flagship project was nominated for the Southern African Institute of Steel Construction (SAISC) Steel Awards 2020 by steelwork contractor Central Welding Works. It was a winner in the commercial category and received a commendation in the architectural category in a virtual awards ceremony live-streamed on 15 October.

The 3 200 m² showroom 'bubble' was built to face directly onto the R24, commanding immediate attention with its striking. It consists of two sections, one for tracked Caterpillar heavy industrial equipment and the other for machines with tyres. Architecturally the only straight feature in the double structure is the glass frontage. The curved roofs and sides had to seal with the straight lines to make the structures weatherproof and thermally-insulated.

A steel girder framework provided the tracked-shape design of each of the two bubbles, with large spanning trusses carrying the roof, all sitting on a specially-devised grid to accommodate the different sized equipment required. The two ends of the building consist of curved structural steel and horizontal sheeting that both cantilever 15 m out from the base and are 15 m high. This presented an engineering challenge to keep the deflections within allowable limits while also keeping the structural elements economical and within the allowed sizing envelope, especially since the large cantilevered bowing also carried a flushed glazed façade with stringent allowable deflections. Stressed cables were used to hang the bowing cantilevered arches from the remainder of the roof. "It was a unique project in that we had to design an office environment and integrate it with a building big enough to accommodate large earthmoving equipment," Paragon Project Architectural Technologist David Cloete comments. Hence the showroom typology focused on a 'bubble' design in imitation of the curved shape of an excavator tread, a signature component of a Caterpillar excavator. While the shape provided the volume and extent that such a showroom required, it also posed a range of structural challenges. The integrity of the 'bubble' design was ensured by maximising the grid distance and using steel as the main structural element.

The 4 500 m² project actually consists of two elongated buildings, namely a double-storey north building and a three-storey south building linked by an enclosed glazed bridge. The buildings sit lightly on a landscaped podium that floats above a semi-basement parking level. The fact that the site faces north allowed Paragon Architects to create an elongated, highway-facing structure to ensure maximum exposure.

The flush-glazed unitised façade with performance-glass affords the main view into the showroom. An important benefit of the 'bubble' shape is that the canopy of the top edge has a 3.5 m cantilever, which not only gives excellent shading in summer, but is exposed in winter, which heats the internal space naturally. "We wanted a truly distinctive structure that required out-of-the-box thinking to push the boundaries of what is possible.

Paragon Architects was approached to assist us in realising this vision," explains Aashen Laloo from developer and client Eris Property Group. "At the end of the day we have a landmark heavy industrial equipment showroom in close proximity to OR Tambo International Airport that is a tribute to the entire professional team behind it, from the architect to the engineer, as well as to the entire structural steel industry," concludes Central Welding Works MD Stephen Horwitz.