

ON-SITE

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R28,50



- 105 Corlett Drive
- SAFCEC: On construction sector fatalities
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105 CORLETT DRIVE; AN EYECATCHING OFFICE BUILDING

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Trevor Williams Consulting Engineers

Baseline Project Management

Gavin Edwards

Insite Landscape Architects

Tiber Bonvec Construction



Photography: Michelle Venter



Photography: Michelle Venter

A prominent A-Grade office building recently completed on Corlett Drive and overlooking the M1 highway, derived its conceptual design from a number of sources including its location and context, the choice of materials and the accommodation requirements and is characterised by wrapped gable-ended form floating above a two storey concrete podium.

The building comprises three levels of basement parking, a ground floor with a landscaped podium at highway level and three pods which are used for reception and waiting area, separate training room and a separate office upper ground with a mezzanine in one of the pods. First and second floors house office space and the roof top cones provide an entertainment area and executive dining facility.

The structure is designed to simulate the look of jewelry box supported on three glittering conical forms covered in reflective Caïman metal cladding with slot windows to highlight verticality of the cone forms. Computer software was used to generate a taut collection of forms that challenges traditional expressions of materials like concrete and glass and steel cladding. Generous landscaping on the podium softens the structure for the occupants.

With a high visibility for passing motorists on the elevated freeway, the unique structure acts as a landmark. Carla Soudien project architect from Paragon Architects says, "The design is based on a glazed box which appears to float, supported by three conical forms

clad in Caïman, supplied by Arcelor Mittal.

On the north and south elevations, a reflective laminated Solarshield S30 has been specified and on east and west elevations a tinted Eclipse Grey Advantage glass has been specified as well. Ivan Lin assisted with glass specification and sound insulation.

Steel columns clad in a layer of galvanized sheeting which form the weather line and the final layer of Caïman cladding on a special sub structure made up of 'omega Rails', which form a gap between cladding layers for ventilation. Steel structure workshopped between, 3D model of steel structure submitted by the steel sub-contractor, overlaid onto the Revit model for co-ordination

and then approved (process of designing structure and approving shop drawings cut short to ensure information could reach site faster) - challenging to co-ordinate this process between steel, cladding and glazing-subcontractors, with each junction being unique because of the unusual forms. 3D technology played a large role in enabling the design to be co-ordinated and workshopped between the engineer, architect and steelwork sub-contractor.

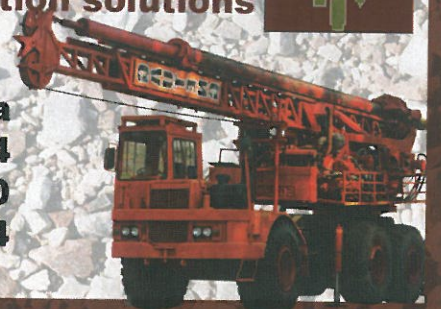
The interface between steel structure, cladding and glazing installation proved to be challenging due to the unique and unusual forms created.

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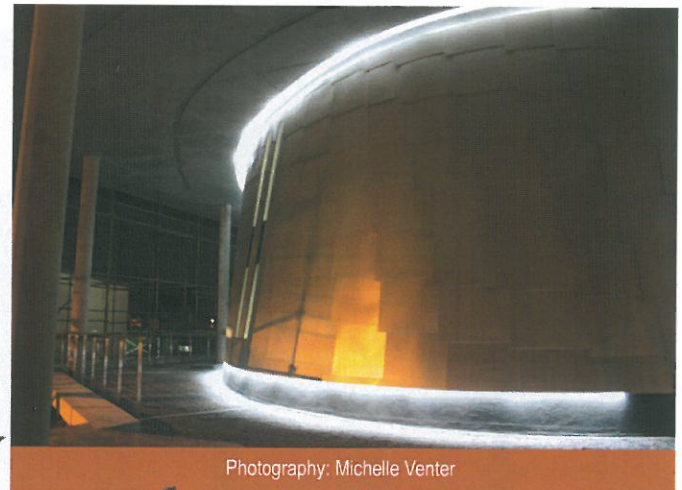
Glazing in these cone forms highly –reflective for the narrow strip windows and dark at entrance shop fronts to accentuate the folding forms of the cones. The roof cones have a lightweight soft roof on steel structure and the internal walls of the cones are clad in skimmed and painted dry walling, in sculptural forms which appear to be folding and pull away from the structure in places to make dramatic envelopes of space. The windows are punctures in these walls, with slanted sills and tapered reveals.

The cones structures have a band of lighting at their base and head to give the impression that the forms are floating, and at night will appear to be divorced from the concrete form below and above.

Its ground floor podium will have winding strips of cold cathode lighting in the soffit which will lead the user to entrance doors and enhance the playful forms of the

cone structures. The reception cone is to have striking barrisol light inserts in the ceiling bulkhead to give the space an even warm glow. The building base is a combination of brickwork and concrete walls clad in African Blue Slate River Walling with contrasting 'band' of louvres in silver to break up the scale of the basement's bulk.

The ground floor podium floor finishes are of a combination of polished Concrete walkways with saw-cut pattern and inlay of slate tiles at entrances in a formation similar to the river walling on the basement façade. Its infill landscaping is indigenous, water-wise, low maintenance, with tall grass-like planting on the perimeter to soften the edge of the building and hide the balustrade. The roof landscaping is similar to the ground floor landscaping with a combination of polished concrete walkways and



Photography: Michelle Venter

indigenous, waterwise landscaping, composite timber decking and gravel pathways.

The concrete box form encompasses two levels of offices with the uniqueness of its curved gables highlighted by striking slot windows making vertical 'slashes' in the form. The dark glass in the slot windows again used to emphasize the matt texture of the concrete box.

The main glazed facades single glazed in a slightly reflective glass, in an effort to move away from very black glass which complies with heating, cooling, glare requirements.

Mario Ferreira, from Tiber Bonvec Construction, outlined the challenges faced at the magnificent office building saying, "The challenge lies in constructing an off shutter slab and off shutter



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recesses without damaging the soffit while other work is proceeding above that level. The curve itself up to the joint, along with the recesses for strip windows as well as the gable ends, forms part of the entire cast in order to achieve a seamless finish. This type of work, including the building of the slit recesses, doubles the amount of time taken to complete this task." He said the lower slab of the podium was cast in two parts with the curved gable ends being part of the slab.

"Special steel shutters were fabricated by 'PERI' for the construction of the curved gables. The shutters were split into 2.470m lengths and comprise an external shutter with a floating internal shutter. We used a crane to install the shutters for the construction of the lower curved gable ends, and then removed the shutters, reversed them and fixed

them into place for the construction of the upper curved gable ends. "Our methodology was to fix the rebar and cast the majority of the podium lower flat section initially and then tie in the curved sections. Once those were cast, we built the vertical walls of the podium as separate sections before tying the upper curved gable ends into the walls and starting on the upper slab of the podium."

Mario said a total of 2 000 m³ of concrete was required for the entire podium. In addition, 600 m³ of concrete was used for the first floor slab, and the same amount for the second floor slab.

He further explained that, 'Our initial intention was to erect a batch plant adjoining the site but since there is a council park directly opposite we opted to use Ready-Mix concrete on demand. The construction of the

cones was also an unusual aspect of the build, undertaken by fixing steel vertical posts between the ground floor and the first floor. Galvanized steel sheets and waterproof membrane were then fixed to the steel frames prior to the cladding being applied on the exterior.

Bulk earthworks were undertaken by Diesel Power and Stefanutti Stocks completed the lateral support as sub contractors to Diesel Power. "There was a lot of hard rock on the site which sits on a granite formation and this forced us to change our methodology for the preparation of our bases," says Mario. "60 to 70 percent of our bases had to dowel into the rock to commence with the columns. We sub contracted Gauteng Piling to undertake the drilling into the rock from 2.8m to 3.5m deep. We then doweled and grouted in Y32 and Y40 rebar.

Rock removal was a major challenge because of the hardness of the material. Overall, this unexpected geological issue added an extra four weeks to site preparation and the high water table has resulted in a large volume of water flowing into the site and additional sumps have been constructed. A pumping system designed by JKJ Pumps was installed to manage the water flow.

Having a total quantities used in the construction of the building comprising concrete of 6 400 cubic meters, re bar of 703 tons and stock bricks of 405 000, a total of 250 people, including sub contractors, were employed on the construction site at the peak of the build period.