A trip down memory lane
- the landmark Majuba Cooling Towers

The Majuba Cooling Towers near Standerton for Eskom were the first cooling towers constructed by Stefanutti Stocks, and the first project the company undertook after opening offices in Johannesburg in 1996. The project's worth was more than the company's annual turnover at the time, however, undaunted by the challenge, it was confident in its technical skills and the competence of its teams. The company was also excited by the opportunity to tackle a project that would establish the company in the province.

Three years later, 12 months ahead of schedule, and probably to the disappointment of the competition, the Majuba Power Station cooling towers were complete. The construction techniques applied had not been used in South Africa before and the success of the project was further acknowledged with a Fulton Award for Excellence in the use of concrete.

Constructing the cooling towers

A massive ring beam, measuring 300-metres in circumference and containing approximately 3 400m^3 of reinforced concrete, provided the springing level for the tower.

The shell structure of the cooling towers consists of an 88-sided polygon, with precast columns and lintels that are able to incorporate the changing geometry as the vertical height increases.

The construction of the tower shells required concrete that had a very high workability and rapid strength gains in the first 20 hours (8MPa was achieved). The inclined formwork and the width of the shell wall demanded concrete that would flow from the skip into the form without riding on the reinforcement and with the moving vibrators.

Achieving the strength of 8Mpa in 20 hours meant that the formwork could be removed early the following morning, allowing the cycle to begin again.

A project that would normally take four years was completed one year ahead of schedule.

Fulton Award for excellence in the use of concrete

The citation read as follows:

"The unusually stringent time constraints on this project created the need for construction techniques hitherto not used in South Africa. Intricate shuttering to form an 88-sided polygon and cater for changing dimensions was well handled by the construction team.

"The installation of precast A-frames, the use of rapid strength self-compacting concrete and the overall planning required, were all noteworthy."

(Source: Concrete Beton, Fulton Awards 1999)

Caption:
Page 84 of A Solid Foundation, a Stefanutti Stocks publication, shows some of the drawings and construction at Majuba.