



Rhodesfield intermodal station – where Metrorail meets Gautrain

Rhodesfield Station completed

After a year of construction the R126 million Rhodesfield intermodal station near OR Tambo International Airport has been completed. SA Builder was invited by Rainbow Construction to visit the site in May to see the finishing stages of this project at first hand as it neared completion.

Commissioned by the Passenger Railway Agency of South Africa (Prasa), the Rhodesfield station is situated on the Metrorail railway on the existing Johannesburg-Germiston-Pretoria commuter line. This line also extends towards three primary soccer stadiums, namely the Coca-Cola Stadium, Soccer City, and Loftus. The station is immediately adjacent to the Gautrain line and is designed specifically to integrate Metrorail and Gautrain commuter links. From Rhodesfield Gautrain offers direct links to Sandton and OR Tambo International Airport.

Project management, design and construction supervision was by GIBB consulting engineers.

Gerald Loe, managing director-Building Division of Rainbow Construction and his colleague Thebe Modisakeng, building divisional director, described the overall design concept and some of the numerous challenges faced during construction.

"The station itself comprises an elevated deck, with an area of 3 900 m², situated above the newly constructed platforms," said Loe. This expansive deck is accessed from the eastern and western sides, the western side

having direct on grade access to the Gautrain line. Escalators and stairways provide access from the Metrorail lines below. Ticket offices, rest rooms and management offices are all located on the deck, which has high levels of finishes throughout. The deck also houses a sturdy police holding cell.

Loe explained the construction challenges: "We had to reroute three of the four existing railway tracks concurrent with their 3 500 volt overhead power lines. The fourth line was kept in its original position. In all 3,6 km of railway line was rerouted. We were granted permission by Prasa to erect a 65 m tower crane, slewed over the live lines. The gantries carrying the overhead power cables were assembled at ground level, then erected at night, before the trains ran in the mornings. The power cables were pulled up by rope onto the gantry beams. Construction of the lines and gantries was programmed to finish simultaneously.

To accomplish these extreme challenges, Rainbow Construction applied for occupation of the lines from Metrorail to close each line in turn, then tie each line in and reactivate the line. Occupation was at all times overseen by the consultant project management team, GIBB, who had a full time presence on site.

"We then built the new platforms within these new lines whilst trains were fully operational," said Thebe Modisakeng. The platforms are 275 m long and 9 m wide. The platform edges are finished in high visibility yellow to





The completed deck in the final stages of finishing



View of the Metrorail lines and deck at Rhodesfield Station seen from the Gautrain elevation

enhance commuter safety. These edges also have protruding ridges to aid blind commuters, providing a tangible warning denoting the edge of the platform. The ridges run the full length of each platform and offer a pleasing look from an architectural perspective.

Once the lines had been rerouted and the platforms built, the safety risk reduced considerably. Completion of the deck would reduce the risk further as construction workers would then be working above the trains and high voltage power lines.

Building of the deck across the newly constructed railway lines, power lines and platforms could now commence.



This view shows the relocated Metrorail tracks and newly constructed platforms, spanned by the commuter deck, with the elevated Gautrain line on the right

A hundred and twenty piles were driven into the ground, each between 13 m and 16 m deep. Some of the piling was done adjacent running train lines – making safety an extreme priority. Here the “3 m rule” was rigorously enforced. The rule stipulates that workers may only work 3 m away from the centre point of the railway lines.

Only one train stoppage occurred during the entire construction phase – when a construction truck became stuck only 200 mm outside the allowed 3 m mark. And of course this would be the Blue Train! It was allowed to pass extremely slowly after which the truck was extracted.

Regarding safety, eight certified flagmen were active at all times on the site to control people crossing the lines. Their role was crucial, particularly during piling operations, where they controlled the trains as well.

To support the main deck 88 20-ton beams were craned across the lines into position – a daunting and challenging task. The precast beams were typically each 1 m high, 950 wide and 18 m long.

Precast slabs were then placed over the beams. Each slab is 100 mm thick and has a 40 mm screed applied. The roofs are positioned east and west above the deck, sloping inwards, and carry a central gutter where they meet.

With the station now completed the surrounding Rhodesfield area is now poised to quickly take on an international character and to perform functions of a higher strategic nature as retail and business interests flood in to further develop the area into a significant commercial hub. ■

