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ArcelorMittal South Africa Foundation

Meetse-A-Bophelo Primary School Mamelodi

The project

In 2009, ArcelorMittal South Africa initiated a R250 million school building project, through which ten schools will be built in underprivileged areas around the country. With the building of The Meetse-A-Bophelo Primary School, the Mamelodi Township in Tshwane is the first community to benefit from this multi-million rand project by ArcelorMittal South Africa Foundation, and ArcelorMittal Construction. The remaining nine schools will be built over the next seven years with two schools scheduled for the Eastern Cape and one school each for the other provinces.

All ten schools will be built using light weight steel and Arval panels with the view to promoting the use of steel in domestic buildings.

School profile

Meetse-A-Bophelo Primary School was designed to easily accommodate 1 200 learners at any given time. The site where the new school was built previously accommodated 1500 learners in classes made from prefabricated material. The nett area on plan of the buildings constructed is 3,367m² with a further 1,400m² of walkways and undercover seating areas.

Amount of steel used

Portal frames	101 tonnes
Other steel sections	17,33 tonnes
Lightweight steel	8,10 tonnes
Chromadek roofing	28,47 tonnes
60mm Arval panels total area 4000m²	45 tonnes
Total tonnage	**199,90 tonnes**

Almost 400 Arval steel panels were imported via ArcelorMittal Construction's Haironville plant in France. The multi-coloured panels contain a polyurethane foam filling and take minutes to insert into the structural steel framework exterior.

Budget

The budget for the development of the school was R34,8m (excl. VAT). The budget included all furniture and fees but excluded extensive landscaping over the whole site. The expected final development cost of the project is R 34,3m (excl. VAT) including landscaping costs.

Buildings

The schools consist of:

- An administration building: meeting rooms, offices for the Principal and 2 Vice Principals, staff room, reception, kitchen and toilets.
- A media centre which includes a computer room and library
- Classrooms which can accommodate 1 200 learners
- A laboratory
- An ablution building near the sports fields
- A Nutrition Centre which includes a kitchen and storeroom
- A workshop
- A caretaker's house (2 bedrooms, kitchen/lounge, bathroom).

Labour

A total of 37,428 person days were used to construct the school with 23,788 unskilled and 13,640 skilled person days. Of the total wages paid 1,422 days were paid to women and a further 9,108 days were paid to youths (persons under 35 years).

Labour on site was exposed to various technologies not normally found in domestic or school buildings. These included:

- Raft foundations
- Steel portal frames
- Lightweight steel construction
- Arval panelling
- Windcolor steel windows and flashings
- The Vela Modular Building System consisting of expanded polystyrene (EPS) in lightweight steel framing
- The Ikaya Future House System consisting of EPS core and high tensile, galvanised wire mesh, structural cage.
- Solar heating

Additional labour

The building of the school also brought other socio-economic benefits to Mamelodi. At any stage there were between 60 to 80 workers on site, all previously unemployed and from the township.

Thirty seven women from the surrounding community, who previously volunteered at the school attending to cleaning and school feeding scheme, received formal training in vegetable gardening. They will in future be able to augment the feeding scheme at the school with vegetables grown in the garden in six, low-tech vegetable tunnels. A partnership with ChemCity will ensure that the women have support in maintaining the tunnels. They will also monitor the process for a year after the project has been completed.

Design features

The architect designed the classrooms in three wings around a central nutrition area in order to:

- Group the learning phases together,
- Maximise the area of north-facing facades to promote natural ventilation, heating and cooling,
- Provide a footprint that can accommodate different site conditions, as any gradient over the site is compensated for by the ramps and steps leading from the central core (Nutrition centre). The ramps provide access to the various buildings for pupils in wheelchairs.

Duration of construction

The new school was constructed on the site of an existing school. This meant that the existing school had to remain operational while the new buildings were erected, which increased the time for the completion of construction. The project manager estimates that a similar school on a Greenfield site could be constructed in eight months. The GDE currently allows two years for the construction of a school of this size.

The future

The prototype building at Mamelodi not only makes extensive use of steel in the different building components but also proves that steel can be used cost effectively and aesthetically.

We believe that the Meetse-a-Bophelo Primary School is an excellent example of what can be achieved with steel in the construction environment and our wish is that it will ensure an iron-clad future for the children of the Mamelodi community.

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