The new access ramp over the railway

Kwapata Pedestrian Facilities

HIGHLY COMMENDED
Community-based Projects Category

KEY PLAYERS

Client
KwaZulu-Natal Department of Transport
Professional team
Naidu Consulting (Pty) Ltd
Main contractors
Izinyoni Trading 154 (Pty) Ltd and BPB Sindi Civils

OVERVIEW

This project in Edendale, Pietermaritzburg, entailed the construction of adequate pedestrian facilities to ensure that learners of Kwapata Primary School could safely cross over an unguarded railway line, the Kwapata River and a wetland to get to school. Using local labour and labour-intensive construction methods, three separate bridge structures – a 78 m long bridge across the wetland, a 20 m long bridge across the Kwapata River and a 17 m long bridge across the railway line have created much needed pedestrian facilities for the community.

DESIGN

The 78 m long bridge across the wetland was constructed using a block and lintel system with a cast *in situ* deck. The element nature of this type of construction was favoured as it facilitated a higher labour proportion. A total of 700 precast blocks and 40 lintels were manually erected into their final position using local labour.

The single bridge spanned 20 m and comprised a T-section across the river whilst the 17 m long bridge across the railway comprised a steel truss with *in situ* concrete. Concrete approach ramps were designed and constructed to accommodate disabled people.

All bridges were linked via 30 MPa concrete footpaths. Readymix concrete was considered for this project as the uncertainty of mixing concrete on site may have caused additional quality concerns. Further access ramps were built at strategic positions along the length of the bridge. The access ramps required retaining structures, and segmental precast block walls were selected for this purpose in order to maximise job creation.

The hydraulic modelling, as well as scour on a pre-existing upstream rail bridge, necessitated protection of the abutments of the new river bridge. Gabions and reno mattresses were selected in order to maximise labour on the project. All excavation, movement of material and placement and compaction for gabion works were undertaken by local labour.

ENVIRONMENTAL CONSIDERATIONS

The wetland in this area had been created through uncontrolled runoff from the neighbouring school. Despite this, the project considered the impact of construction on this. Through initial planning, a designed access area was created for plant onto the site. The access and wetland were rehabilitated after construction and involved vegetating the area. Seedlings were used in the rehabilitation works as opposed to hydro-seeding, as the success rate is higher and the method promotes labour-intensive construction.

COMMUNITY ENGAGEMENT

A labour balancing exercise was undertaken in order to determine the labour required for the project. Following the analysis, it was agreed that 30 people would be employed on the project. Following the labour balancing exercise, and the subsequent discussions, the Department of Transport approved labour-intensive construction (LIC) methods for construction of the scour protection. The approval also authorised a variation from the departmental mandated ministerial sectorial rates of R20.50 per hour.

Teamwork in constructing gabions

The project strategically targeted the poorest of the poor in the community. A household questionnaire helped to identify those in need with respect to their income. Youth and women from households with greatest need were considered.

A formal briefing session was held by EPWP specialists to discuss and explain the EPWP and LIC concepts to the beneficiaries.

CONSTRUCTION PLANNING AND MANAGEMENT

The construction of the gabion works was a labour-intensive exercise, and hence ideal for labour-based construction. The beneficiaries were spilt up into teams of six. Each team was required to undertake work including excavating, loading, hauling, levelling and gabion construction. Teams were allowed to rotate their tasks at their discretion. Despite some initial resistance from the contractor and scepticism about South African labour, the team dynamics worked very well and an element of competitiveness between teams ensured that they exerted themselves in order to achieve the targets. Several teams applied ingenuity in backfilling, compaction and in creating access paths. The teams were also responsible for shaping and compacting the fill embankments.

The works were completed within schedule, budget and quality requirements. All beneficiaries received gabion training and certificates were issued accordingly to all staff.

The representatives from Naidu Consulting with their awards

PROJECT HIGHLIGHTS

- The project allowed for the delivery of highly technical output with due consideration of key elements which could maximise labour.
- Task work enabled the project to be executed within project timelines and specifications.
- The project has prompted the DoT to begin to review its stance on the minimum rates applied to contracts in KZN. This may pave the way for further opportunities for creation of work.
- Staff have been up-skilled to undertake similar works.
- The community was adequately engaged in such a manner, that although other staff were employed from the community and were receiving the SAFCEC rate of R20.50 per hour, the LIC staff understood the difference in their engagement and did not initiate any unrest due to wage disparities.

CONCLUSION

This project has allowed for the creation of a valuable asset which will prevent young children between the ages of six and 12 from crossing unguarded railway lines and wetlands. The community has further directly gained through employment during construction and through the training received. □