

# Storms River Mouth new foot bridges

Constructing pedestrian suspension bridges, while coping with heavy seas and high tides in an environmentally sensitive area that is virtually inaccessible for normal modes of construction, is what this unique project was all about

## PURPOSE OF THE PROJECT

Driven by strong winds and hot conditions, a devastating bush fire swept through the Tsitsikamma National Park in 2007, resulting in the polywood tourist pathway catching fire and burning at high intensity, causing damage to the rock faces and vegetation in the immediate vicinity of the pathway.

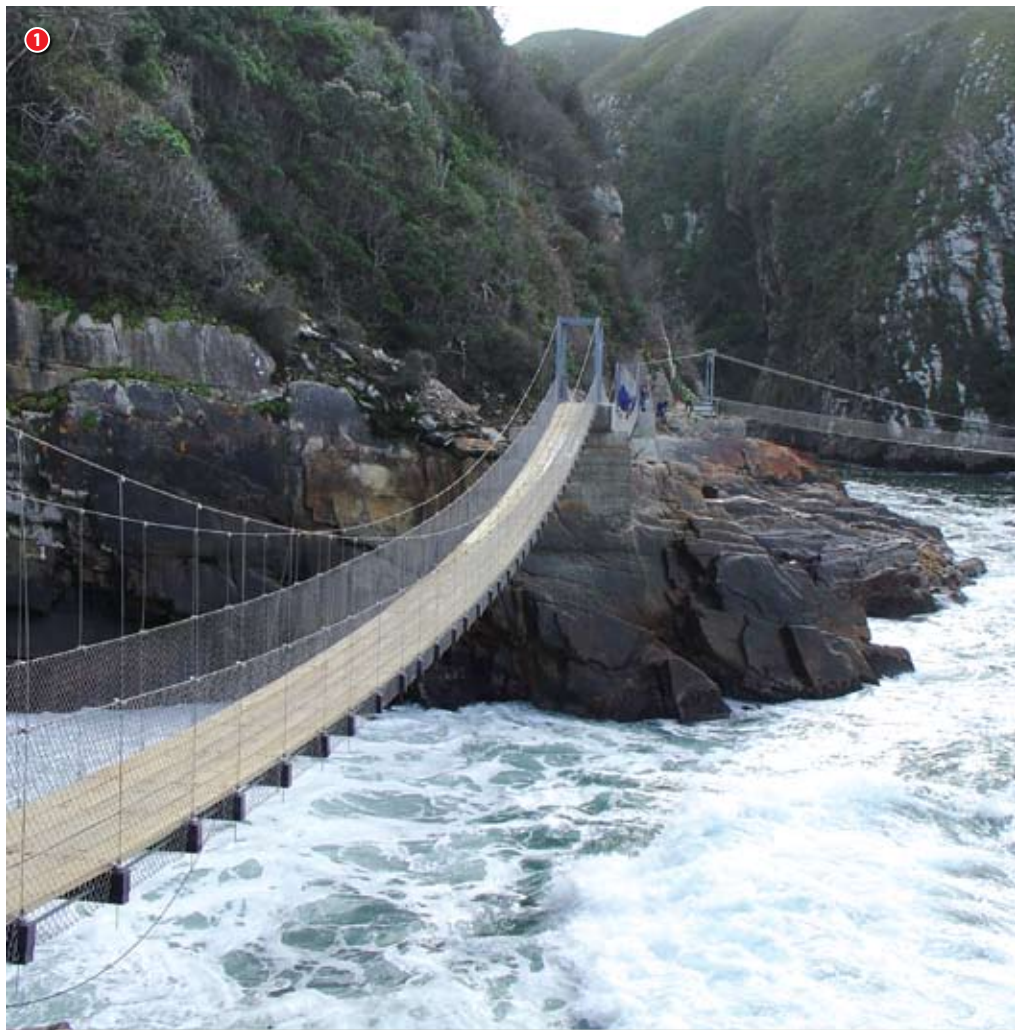
In order to restore access to the Storms River mouth and to the existing suspension bridge over the mouth, as well as to the other trails in the park, an alternative route needed to be found which would avoid the damaged areas, but would have minimal impact on the general sensitive topography and environment.

After some investigation and evaluation of alternative options, it was decided to erect two new suspension bridges across the deep gullies at the sea's edge and connect these with new walkways to the original system.

## DESIGN APPROACH

The foremost criterion in designing the new bridges was to make allowances for

- 1 Safe above the waves – newly constructed pedestrian suspension bridges at Storms River Mouth



## STORMS RIVER MOUTH – NEW FOOT BRIDGES

### Technical Excellence category

#### KEY PLAYERS

**Client** SANPARKS

**Professional Team** Aurecon SA (Pty) Ltd

**Main contractor** John Skinner Construction (Pty) Ltd

**Major Subcontractors and Suppliers** Haggie Rand – cables and cable fittings

the manual carrying in of all materials, as access to the site was not possible by vehicle, boat or helicopter. In addition, the bridge design had to take into consideration the harsh environmental conditions due to the proximity of the sea, and also had to ensure that future maintenance would be minimal and

could be carried out without need of access other than walking to the site.

These constraints led to the selection of a suspension bridge supported on cables anchored to modular galvanised steel structures with polywood walking surfaces and stainless steel fittings used wherever possible.

The Tender Site Inspection was carried out from a launch provided by SANPARKS, as reasonable foot access to the sites simply did not exist.

## CONSTRUCTION

All materials and support works were carried in by hand along a 1 km winding boardwalk, which was steep in places with steps, and which was also still being used by tourists.

In order to bring in the materials, the contractor manufactured unique carrying containers, not unlike an old-style sedan chair, which could be carried by two people, safely and with health and safety criteria in mind. The heavy suspension cables were unwound from their drums and carried in by a long team of labourers in 'snake' fashion.

The positioning of the tower bases needed to be carefully finalised on site after rubble and detritus had been removed, taking into account the nature and stability of the rock spurs and the height above the surf in heavy sea conditions and spring tides. The anchor pins were drilled in using a compressor which had been partially dismantled and also carried in.



Concrete aggregates and cement were carried in, in 30 kg loads and stored in weatherproof containers at the easternmost (farthest) pier position. Concrete was mixed with a small mixer which likewise had to be partially dismantled and carried in. Water was obtained by a gravity siphon from the perennial stream near the start of the walkway, also 1 km from the site, and regulated by a simple garden tap at the outlet.

Access from the eastern pier was created by erecting a scaffold and temporary walkway virtually on the beach. This survived most tidal activities, but sustained fair damage during the severe storm in mid-2009 which also caused extensive damage along the whole Southern Cape coast.

Once the bases had been shuttered and cast, the structural steel towers were erected and the cables pulled into position using the temporary scaffold and walkway. Lastly the walking deck, hand guide cables, side protection, etc, were all fitted before the bridges were connected to the existing walkways with new plywood access routes.

### **PUBLIC INTEREST**

With tourists and other members of the public continuing to visit the park, control of the contractor's yard in terms of neatness and planning was important, as well as the interaction with hikers walking along the existing walkways. Favourable comments and reactions were the order of the day, and many of the workers became the subjects of holiday snaps taken back to the far corners of the world.

Public reaction to the completed project has been very positive, especially now that the original walkway that had been destroyed in the fire has been reinstated, creating a circular route encompassing the bridges on the coastline and the forest on the return loop.

### **UNIQUE CHALLENGES**

■ As mentioned above, the biggest challenge was the site access, necessitating a special design approach and innovative ways of getting materials to site and executing the work on the very small and steep site footprints.

- Removal of all surplus rubble and materials also had to be done by hand.
- The use of the "Working for Water" job creation scheme presented unique challenges due to the low pay rates and the difficulty of motivating staff not used to construction conditions.
- Minimising the impact on the immediate environment and on the ongoing visits by tourists.

### **SPECIAL MENTION**

The spirit of cooperation between the Tsitsikama Park management, SANPARKS staff and Board, the Contractor and the Consultant was key in this unique project. Incidents such as rock falls, wash-aways and storm damage, which could have had a major impact on the progress, were dealt with in a joint and proactive way to the benefit of all concerned. □

- ② All materials and support works were carried in by hand
- ③ Not the easiest site conditions – centre pier under construction