



CASE STUDY

N1 Pipe Bridge: Pretoria (South Africa)



Introduction:

IBRCD Joint Venture, comprising Basil Read, Roadcrete Africa, DipCivils & Chavani, were awarded the contract to carry out improvements to National Road 1, Section 21: Atterbury to Scientia (N4) interchange. This forms part of the GFIB works packages section D. Borecut was selected to be part of the team for the systematic demolition of the existing Lynnwood Glen pipe and pedestrian bridge spanning both highway carriageways. The pipe and pedestrian bridge structure is unique in that it is 2 separate bridges encapsulated in single abutments. Each of these bridges has "tension bearings" in the abutments which produce a negative cantilever effect over the central column, thus decreasing the mass and increasing the slenderness ratio outside the normal design parameters for similar structures of this span and nature.



CUTTING 700mm deep using 1.5m blade

THE presence of 6 no x 65mm diameter stressing cable ducts running from one abutment, through the bridge to the other abutment, made the cutting process an essential yet very sensitive and critical process. Due to the uniqueness of the existing structure, the critical water services, the critical time constraints for design and construction, and the aesthetically appealing result that the client requires for the soccer world cup, this challenge has certainly kept this excellent team busy.



Diamond wire sawing...

A 1.5m saw blade was used to cut one section, while the diamond wire saw was used to cut the other. Both cuts were completed the same time while a 300 ton crane removed each section with ease. The bridge was removed within 2 days from start. Traffic was diverted to ensure the safety of the public, and while each section were being removed traffic was stopped completely. Borecut could not afford any mistakes as this would delay the job and cause traffic jams on the N1. Thanks to the Metro Police this wasn't a problem.



Removal of each section...

