



# CASE STUDY

## N4 Nelspruit: Ring Road Bridge construction - 2010 Fifa World Cup Restructure



### Introduction:

Road users travelling along the N4 Toll Route in and around Nelspruit (Mbombela) now have the option of taking the N4 Nelspruit Ring Road around the central business district. Due to the northern abutment wall on the crocodile river bridge being cast to high, Borecut was called in to cut a section of the abutment wall spanning the entire width of the bridge to allow for the precast beams to be lowered by 500mm. With the beams already in place this, this proved to be a challenging exercise. A method of performing the cuts first, then jacking the beams up aloud for the removal of the section of the abutment wall. Then jacking the beams back down to the correct height proved to be successful.

### Lowering the bridge by 500mm.



### Removal of the abutment wall section



The 'L' shaped section that was removed measured a length of 25 meters, a height of 1.5 meters and width of 1.5 meters. This required a method of diamond wire sawing it into 5 sections for removal. Sling holes aided in securing a chain and attached to an excavator to drag the sections out first then lifted away. A Total of 55 square meters were cut and a total of 10 sling holes were core drilled for removal. The next stage of cutting required trimming the wing walls at a 30-45 degree angle. see below...

### Trimming the wing walls

Four number of wing walls were trimmed ranging between 30 degrees to 45 degrees for aesthetic reasons. The wing walls were 700mm.thick and ranged between 15 to 20 meters in length. The method of wire sawing these walls proved to be a safe and quick method. Due to the right angle shape of the 'off cuts' which caused the weight distribution to be problematic, two number of cranes were used for removing these sections.

