

Rehabilitation of crest

Dams for Africa (Pty) Ltd.

Contact details nicholas@damsforafrica.com. Tel +2711 475 8381/2764 , mobile +2782 416 8958

www.damsforafrica.com

The '1951 dam' situated near the village of Mabintwane, Nebo District, Limpopo, was built for crop irrigation and livestock watering – fig 1 is taken from the crest of the dam overlooking the reservoir.

Inevitably a degree of non-uniform consolidation occurred over the years, with the result that the crest became somewhat undulating (see figs 2 & 3). According to the local population the crest has been topped a number of times during heavy storms. When this happens the water starts to flow over the lowest sections of the undulating crest first, and the result is substantially increased erosion of the embankment's downstream slope at such points – see fig 4.

Ideally the crest of an embankment dam should never be overtopped, and here the depth and width of the main and emergency spillways is the determining factor. But where a spillway's capacity is inadequate and the crest is overtopped in heavy storms, such flows should preferably occur as a thin, slow-moving sheet of uniform depth rather than be concentrated as a deep fast-moving flow at low points of the crest. The erosion of the downstream embankment will be substantially less in the former case, particularly if the embankment is well grassed.

In 2002 Dams for Africa constructed a 500 mm wide x 300mm high concrete strip over the full length of the crest (see figs 1, 5, 6) – taking care to make its top horizontal. Not only does this ensure that future topplings will occur as a thin and relatively innocuous sheet of water, but the free board is increased by the additional height added to the crest, ensuring that substantially greater flows will go through the two spillways, thus lessening the occurrence and duration of future crest topplings.

