



Mechanisms and causes of embankment slope failure at Talaimari location of the Rajshahi City Protection Embankment, Bangladesh

Y. A. Khan

Department of Geology and Mining, University of Rajshahi, Rajshahi 6205, Bangladesh. (younus@ru.ac.bd)

Two shallow slides were occurred at Talaimari location of the Rajshahi City Protection Embankment (RCPE) recently. The Ganges river side slope of this part of the embankment was protected with concrete-block lining just before the flood season of 2008. The failures were took place during the first drawdown of the river water within the two months of the construction of concrete-block lining. Several slope stability analysis methods including Finite Element (FE) and Limit Equilibrium (LE) were used for these two failed slopes. Stability analyses of these failed slopes revealed the primary failure mechanisms and causes. The pore water pressure during the rapid drawdown of river water suddenly reduced the shear strength of the embankment soil and the weight of the concrete block resulted additional shear stresses. Study showed that the seepage related erosion of the embankment soil caused major contribution for slope failure. Due to the loosening of the embankment soil particles, the newly settled concrete-blocks were readjusted and the overall stress-strength equilibrium was lost and hence caused failures.

The present paper suggests further study in detail for the greater safety of this embankment as well as the Rajshahi City.