

Surface Erosion and Slope Stability Assessment of Cut and Fill Slope

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Abstract : This article assessed the surface erosion and stability of cut and fill slope in the excavation of the detention basin, Kalasin Province, Thailand. The large excavation project was built to enlarge detention basin for relieving repeated flooding and drought which usually happen in this area. However, at the end of the 1st rainstorm season, severely erosions slope failures were widespread observed. After investigation, the severity of erosions and slope failure were classified into five level from sheet erosion (Level 1), rill erosion (Level 2, 3), gully erosion (Level 4), and slope failure (Level 5) for proposing slope remediation. The preliminary investigation showed that lack of runoff control were the major factors of the surface erosions while insufficient compacted of the fill slope led to slopes failures. The slope stability of four selected slope failure was back calculated by using Simplified Bishop with Seep-W. The result show that factor of safety of slope located on non-plasticity sand was less than one, representing instability of the embankment slope. Such analysis agreed well with the failures observed in the field.

Keywords : surface erosion, slope stability, detention basin, cut and fill

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