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NUMERICAL MODEL DESCRIBING STEADY
STATE FLOW TO TILE DRAIN

THESIS BY

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ABSTRACT

A two dimensional numerical model (MONIEM) is developed for the solution of steady state flow in a homogeneous isotropic tile drained soil. Finite difference equations are formulated from the governing flow equation and solved by the iterative successive over relaxation technique .

A digital computer program (MIMO:FTN) appendix (C) has been developed which it does not have any storage problem on PDP-11 digital computer system of the Centre of Excellence in Water Resources Engineering.

The model was first validated by drawing a number of flow nets Fig (4.1) for different computed results showing the effect of D,r and R/K . The solution was then, used to investigate the effect of the depth of the impermeable bed, the rainfall recharge rate and the effect of drain size, on the midpoint water Table height between drains.

The study shows that the model is stable and sensitive to the most important drainage design parameters, such as drain spacing drain radius, rainfall recharge rate and hydraulic conductivities of the aquifer.

From the result of investigating the effect of the depth of the impermeable barrier on the midpoint water - table height between drains it was concluded that for $D/L \geq 0.29$ the depth of the impermeable bed has no effect on the water table height for any R/K ratios.