I. INTRODUCTION

The design requirement expresses the agricultural function of the drainage system in terms that can be used as input information for any of the drain spacing equations or graphs. The agricultural function of the drainage system is to help maximize the economic returns from the farm enterprise. The design requirement should, therefore, express the “optimum” intensity of the drainage system whereby the difference between the increase in financial returns due to drainage and the cost of the drainage system is maximum. Thus, the design requirement carries a heavy burden.

Distinction should be made between the drainage requirement (or drainage criterion), which is the total desired drainage intensity for a given field or region, and the design requirement (or design criterion), which is the difference between the drainage requirement and the existing natural drainage intensity of a given field. Thus, the design requirement expresses the drainage deficiency of a field to be absorbed by the drainage system.

Drainage criteria can be evaluated for a steady-state condition, a falling water table, a fluctuating water table, salinity control, or trafficability of the soil, depending on the main function of the drainage system (Bouwer, 1965).

II. STEADY-STATE CONDITION

For the steady-state condition, which can be described by Hooghoudt’s (1940) equation

\[ P = 4 \, K \, m(2d_e + m)/s^2 \]  \[1\]

the drain spacing \( s \) can be calculated if the drainage coefficient \( P \) and the