Optimal Design of Subsurface Conveyance System Based Bio-Ecological Drainage System Simulation

Water Resources and Hydrologic Engineering | Published: 28 February 2024

Volume 28, pages 2564–2570, (2024) Cite this article

Sai Hin Lai, Ren Jie Chin, Eugene Zhen Xiang Soo, Lloyd Ling & Hamed Benisi Ghadim

Abstract

As urbanization grows in size, the problems of flash floods and water pollution are expected to worsen, so viable and cost-effective solutions are essential to reduce the impacts. The Bio-Ecological Drainage System (BIOECODS) was developed to demonstrate the use of 'control at source' approaches to urban stormwater management. This research attempts to analyse the optimal design of a subsurface conveyance system (modular conduit) that is available in a case study with a BIOECOD project. This modelling exercise uses a novel technique to merge the surface and online subsurface flow. Through the InfoWorks SD software, the BIOECODS model has been calibrated and validated using rainfall events with different intensities, rainfall amounts, and durations. The developed model was then further analysed to obtain the optimum design of online subsurface modular conduit in the BIOECODS project, according to different scenarios. The results