



Modelling Heat Transfer Processes for Buried Pipes

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ABSTRACT

This research forms part of the EU Interreg IVB project Inners, <http://inners.eu/>, Inners' aim is to improve understanding of the energy balance within the urban water cycle. The primary aim of this part of the project is to predict heat fluxes in underground pipes. This paper describes the work that has been carried out to model the influence of ground water and infiltrating storm water on the thermal conductivity between a buried pipe and the surrounding soil. Heat transfer along a pipe and in radial direction between soil, water and concrete in steady state conditions was modelled, taking into account the effect of ground water on the soil thermal conductivity. Preliminary laboratory tests showed considerable increase in thermal conductivity when soil is saturated. The model presented was calibrated using experimental data collected at the University of Bradford.

KEYWORDS

Drainage, heat transfer, modelling