**Design and Construction Note**

# 201.07
Drainage Design

## Drainage Design Criteria

Reviewed: 16/08/2018

City of **Perth**

02.7.10 - Loading & Overburden of Pipes:

Steel reinforced concrete pipes shall be designed for installation in accordance with *"AS/NZS 3725:2007 - Design for installation of buried concrete pipes."* with the following exceptions.

Clause 6.5 of AS/NZS 3725 shall be replaced by:

a) The defects of superimposed live loads shall be calculated in accordance with *AS5100.2-2004*

b) Distribution of live loads shall be in accordance with *AS5100.2-2004*

c) Dynamic load allowance shall be as follows:

      i) a value of 0.4 for zero height

      ii) a value of 0.1 for fill heights of 2m of higher

      iii) a linear interpolation between 0.4 and 0.1 for depths between zero and 2m depths respectively.

Construction load cases shall be considered in addition to load cases associated with compaction of fill material.

02.7.11 - Pit energy losses and pressure changes shall be taken into account for the hydraulic grade line analysis. For reliable values of energy losses and pressure changes for different types of pits and junctions, it's recommended that "Missouri Charts" are used.

02.7.12 - Pipe Capacity Assumptions:

1. Pipe capacity for trunk stormwater systems is to be estimated using hydraulic grade line analysis of the drainage system for the relevant design storm and using a suitable computer model.

2. For smaller pipelines, the capacity can be estimated using pipe flowing full at grade assumptions. The adopted pipe velocity when using this method must not be less than 3 m/s.

## 02.8 - Soakage Sump

02.8.1 - The sump for soakage purposes shall be designed to cope with the accumulated storage resulting from the runoff from a design storm of 1 in 10 years ARI to 1 in 50 years ARI depending on its location. A check shall also be made for a design storm of 1 in 100 years ARI in order to determine its impact on the surrounding land and installations.

02.8.2 - In estimating storage requirements a mass - curve technique may be used. An example of this procedure is given in Book Eight, Technical Note 1 of *ARR 1997*. The Council presently uses a simple inflow and outflow hydrograph relationship to analyse the storage capacity of soakwells.

02.8.3 - A soil investigation shall be carried out to determine the soil parameters required for the storage analysis of the sumps.