

Concrete Sewer Pipe Corrosion Induced by Sulphuric Acid Environment

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Abstract : Corrosion of concrete sewer pipes induced by sulphuric acid attack is a recognised problem worldwide, which is not only an attribute of countries with hot climate conditions as thought before. The significance of this problem is by far only realised when the pipe collapses causing surface flooding and other severe consequences. To change the existing post-reactive attitude of managing companies, easy to use and robust models are required to be developed which currently lack reliable data to be correctly calibrated. This paper focuses on laboratory experiments of establishing concrete pipe corrosion rate by submerging samples in to 0.5 pH sulphuric acid solution for 56 days under 10°C, 20°C and 30°C temperature regimes. The result showed that at very early stage of the corrosion process the samples gained overall mass, at 30°C the corrosion progressed quicker than for other temperature regimes, however with time the corrosion level for 10°C and 20°C regimes tended towards those at 30°C. Overall, at these conditions the corrosion rates of 10 mm/year, 13,5 mm/year, and 17 mm/year were observed.

Keywords : sewer pipes, concrete corrosion, sulphuric acid, concrete coupons, corrosion rate

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