

The costs associated with the provision and maintenance of drinking water and wastewater infrastructure represents a significant financial demand worldwide. Maintenance costs are disproportionately high, indicating a lack of adequate durability. The aim of this paper is to study the degradation mode and the responsible factors of deterioration concrete pipe, used in the sewage's city of Rennes (France). Thus, samples taken from different areas of the pipe (Raft, medium and roof) were analyzed using investigation methods in order to illustrate the internal and external rate of damage, caused by effluents and ground. In addition, chemical and mineralogical changes recorded were identified using scanning electron micrographs (SEM). In this research program, chemical and mechanical studies were performed by measuring the compressive and splitting tensile strengths. A phenolphthalein indicator solution is applied to a concrete specimen on a fresh fracture surface to determine the corrosion of steel reinforcement and the diseases advancement (pathologies depth). This study clearly shows the important anisotropy of both, internal and external damage. Finally, recommendations are proposed in line with the environment and possible approaches to sustainability assessment are also imposed