

## Deformation Severity Prediction in Sewer Pipelines

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**Abstract :** Sewer pipelines are prone to deterioration over-time. In fact, their deterioration does not follow a fixed downward pattern. This is in fact due to the defects that propagate through their service life. Sewer pipeline defects are categorized into distinct groups. However, the main two groups are the structural and operational defects. By definition, the structural defects influence the structural integrity of the sewer pipelines such as deformation, cracks, fractures, holes, etc. However, the operational defects are the ones that affect the flow of the sewer medium in the pipelines such as: roots, debris, attached deposits, infiltration, etc. Yet, the process for each defect to emerge follows a cause and effect relationship. Deformation, which is the change of the sewer pipeline geometry, is one type of an influencing defect that could be found in many sewer pipelines due to many surrounding factors. This defect could lead to collapse if the percentage exceeds 15%. Therefore, it is essential to predict the deformation percentage before confronting such a situation. Accordingly, this study will predict the percentage of the deformation defect in sewer pipelines adopting the multiple regression analysis. Several factors will be considered in establishing the model, which are expected to influence the defamation defect severity. Besides, this study will construct a time-based curve to understand how the defect would evolve overtime. Thus, this study is expected to be an asset for decision-makers as it will provide informative conclusions about the deformation defect severity. As a result, inspections will be minimized and so the budgets.

**Keywords :** deformation, prediction, regression analysis, sewer pipelines

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