ASSESSMENT AND FORECAST OF THE CULVERT'S PERFORMANCE WITHIN A ROAD INFRASTRUCTURE MANAGEMENT SYSTEM. LITERATURE REVIEW

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SUMMARY

During the 21st century, within road infrastructure management there is a strong enforcement on preserving assets and prevent roadway collapses. As a result, public agencies have to implement periodic inspections and asset condition assessments. As pavements and bridges also culverts management play a special role in roadway safety, because they prevent roadbed erosion. The scope of this investigation is the assessment and forecast of culverts performance regarding rating condition and network reliability forecast. In addition, it intends to analyze hazards influence in the culvert serviceability, modelling the hazards actions on the infrastructure.

In this paper, is performed the literature review of studies done during the past decade comparing advantages and limitations. Five main subjects are identified in the development of a culvert management system, since the inventory and inspection framework, to forecasting models and risk assessment. Moreover, it will determine the correlation between subjects and will find gaps for improvement.

Keywords: *Culverts management system, culverts inventory, culvert inspection, risk assessment, hazards influence.*

1. INTRODUCTION

The highways infrastructure deterioration became a major challenge in the 21st century for roadway's administration and researchers. An accurate management of periodic inspections and assets condition rating implementation could avoid failures and road collapses. All around the world, road conservation agencies implemented some routines for the assets inventory, inspection and life service estimation, with a special focus on pavement and bridges.

However, in the past decade agencies got more concerned about culverts because they let the water go through the roadbed preserving it from erosion and also, the failure of such construction may lead to the interruption of significant part of the road [1]. Factors such as poor asset management, ineffective maintenance practices or even inadequate inspection programs may result in a sudden failure of the deteriorated underground infrastructures. Deteriorated culverts and drainage structures requires the road conservation agencies to implement proper inventory and inspection programs [2].

Firstly, to make a culvert inventory it is mandatory to establish a database structure taking into account all the components and features that can provide information about the culverts operation and possible behavior during its life cycle. Having significant relevance in particular, the location and surrounding area information, section and material type, culvert age, and flow characteristics. The culvert's service life may differ from its design life, and it depends largely on the supporting soil, local environment and corrosive/abrasive properties