

Investigation of Failures in Wadi-Crossing Pipe Culverts, Sennar State, Sudan

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Abstract : Crossing culverts are essential element of rural roads. The paper aims to investigate failures of recently constructed wadi-crossing pipe culverts in Sennar state and provide necessary remedial measures. The investigation is conducted to provide an extensive diagnosis study in order to find out the main structural and hydrological weaknesses of the culverts. Literature of steel pipe culverts related to construction practices and common types of culvert failures and their appropriate mitigation measures were reviewed. A detailed field survey was conducted to detect failures and defects appeared on the existing culverts. The results revealed that seepage of water through the embankment and foundation of the culverts leads to excessive erosion and scouring causing sever failures and damages. The design mistakes and poor construction were detected as the main causes of culverts failures. For sustainability of the culverts, various remedial measures are recommended to be considered in urgent rehabilitation of the existing crossings.

Keywords : culvert, erosion, failure, sustainability

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