

Abstract No 18

Performance and design of corroded culvert rehabilitation using invert paving.

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An experimental campaign was undertaken to assess the impact of deterioration and rehabilitation on the performance of a horizontal ellipse culvert using invert paving (placement of a reinforced concrete slab across the corroded invert of the culvert). A corroded horizontal ellipse culvert buried to cover depth of 0.45 m and tested using simulated tandem axle loading. The culvert was then rehabilitated using the paved invert technique and tested again under the same loading arrangement before being loaded up to its ultimate capacity. The testing revealed how bending moments developed in the reinforced concrete at the invert and load capacity was controlled by tensile cracking. Bending moments also increased in the wall of the corrugated steel culvert directly above the haunches where the slab terminates. Finite element analysis has then been performed to develop a design tool for estimating invert bending moment, to facilitate design of the reinforcing steel.

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