

Predicting Tunnel Deterioration via Subsurface Brine Flow at Tidal River Crossing

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Progressive aging of various infrastructure is making maintenance more important. In urban areas, many reinforced concrete railway tunnels, constructed using the cut-and-cover or shield methods, are beginning to show signs of degradation due to material deterioration. Cases of rebar corrosion caused by chloride ions have been reported, particularly in tunnels crossing tidal rivers. Since repeated repairs are often required due to chloride attack, preventive maintenance is expected to reduce maintenance efforts. This study proposes a method for predicting deterioration via subsurface brine flow, and demonstrates its application through a model case.