ABSTRACT

While building defects and their causes have been widely researched upon, little has been studied about those specific to wet areas, especially in the Singapore tropical climate. Many industry practitioners are not aware of the defects in wet areas and the roles they play in such defect occurrence. Moreover, with maintainability as a key initiative in the Construction 21 Report, it is imperative that this study focuses on the fundamental aspect of maintainability.

This study analyses the findings of an extensive research on the issue of maintainability of wet areas in high-rise residential buildings in Singapore. Augmented with findings from 173 case studies, a holistic insight to the mechanisms of defects and their causes is derived. Significant defects in wet areas identified in this research include water leakage, efflorescence, reinforced concrete failures (cracks and spalling), paint defects, plastering failure, algae / fungal growth and pipe leakage. This study has also found that the main causes of the above-mentioned defects are grouped broadly into design inadequacies, material inaptness, poor construction methods and practices, and lack of maintenance. Current corrective maintenance measures for these defects and their effectiveness are also discussed.

By focusing on what is lacking in current practices, this study puts forward a list of good practice recommendations covering design detailing, material selection, construction methods and practices, and maintenance requirements, as a guide to improve maintainability under tropical conditions in wet areas.