

Innovative Usage of Recycled Waste Materials in Roads

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Abstract

Priority waste materials currently generated in Australia include construction wastes, demolition wastes, glass fines, waste tyres, plastics, industrial wastes and organic wastes. The increase in generation of these wastes have led to significant research over the past decade on the reuse of recycled waste materials in geotechnical engineering applications. An estimated 7.9 Mt of wastes, which accounts for 36% of Australia's current landfilled waste, have the potential to be diverted into civil engineering applications, such as for the design and construction of roads, railways and ports. This paper discusses recent advances in the usage of recycled materials in pavement geotechnology projects in Australia. Recycled materials have been evaluated in the laboratory and new specifications successfully developed, to incorporate their usage in pavement geotechnology and ground improvement applications. Recycled materials are increasingly being used in unbound and stabilised pavement applications. In addition, industrial wastes such as fly ash and slag have also been evaluated in recent years as alternative binders to Portland cement in pavement and ground improvement applications. Several unique field case studies in Australia, where recycled materials have been used in roads and footpaths, as well as the development of several prototype testing equipment will also be discussed. Ongoing research projects on new priority waste materials will also be briefly discussed.