

Sustainability in Retaining Wall Construction with Geosynthetics

Authors : Sateesh Kumar Pisini, Swetha Priya Darshini, Sanjay Kumar Shukla

Abstract : This paper seeks to present a research study on sustainability in construction of retaining wall using geosynthetics. Sustainable construction is a way for the building and infrastructure industry to move towards achieving sustainable development, taking into account environmental, socioeconomic and cultural issues. Geotechnical engineering, being very resource intensive, warrants an environmental sustainability study, but a quantitative framework for assessing the sustainability of geotechnical practices, particularly at the planning and design stages, does not exist. In geotechnical projects, major economic issues to be addressed are in the design and construction of stable slopes and retaining structures within space constraints. In this paper, quantitative indicators for assessing the environmental sustainability of retaining wall with geosynthetics are compared with conventional concrete retaining wall through life cycle assessment (LCA). Geosynthetics can make a real difference in sustainable construction techniques and contribute to development in developing countries in particular. Their imaginative application can result in considerable cost savings over the use of conventional designs and materials. The acceptance of geosynthetics in reinforced retaining wall construction has been triggered by a number of factors, including aesthetics, reliability, simple construction techniques, good seismic performance, and the ability to tolerate large deformations without structural distress. Reinforced retaining wall with geosynthetics is the best cost-effective and eco-friendly solution as compared with traditional concrete retaining wall construction. This paper presents an analysis of the theme of sustainability applied to the design and construction of traditional concrete retaining wall and presenting a cost-effective and environmental solution using geosynthetics.

Keywords : sustainability, retaining wall, geosynthetics, life cycle assessment

Conference Title : ICAGS 2018 : International Conference on Advances in Geotechnical Systems

Conference Location : London, United Kingdom

Conference Dates : July 26-27, 2018