

Thesis title:

Development of Soil Based Wall Putty for Tropics

Abstract:

Buildings are important structures as shelters; which fulfil one of the basic needs of humans. But the building construction sector has identified as an industry which creates major environmental impacts. Therefore green and sustainable construction practices are the new trend in the present world. Present building construction sector uses different walling materials with different surface roughness values. Hence, wall finishers naturally come to smooth wall surfaces. Smooth walls surfaces provide benefits, such as; improve indoor air quality with a low dust level, good interior light level and avoid fungus and moss growth, etc. Wall putty is the most common wall finisher use to smooth wall surfaces. Wall putty is a thick mixture of finely powdered calcium carbonate; normally found as lime (calcite), which occurs naturally in chalks, limestone and marbles. Lime extraction results in environmental degradation and natural resource depletion. Also, lime burning emits greenhouse gases and results global warming and climate change. Those environmental impacts of lime based wall putty can be eliminated by replacing it with soil based (natural) wall putty. Further, in drinking water treatment plants due to backwashing of rapid sand filters and release of accumulated sludge in sedimentation tanks; which is similar in texture to clay. Total solid sludge production of water treatment plants in Sri Lanka can be estimated at 3333.33 m³ per month and it will be a possible replacement to traditional wall putty. In order to develop soil based wall putty, it is proposed that identification of water treatment plant sludge properties should be done. After identifying properties of sludge using laboratory tests, suitable admixture will be selected to develop soil based wall putty. After that durability strength and other relevant properties of the developed soil based wall putty will be tested in tropical climatic conditions.