

Characteristic Study of Waste Plastic as a Binding Material in Pervious Pavement Blocks

Abstract: Pervious pavement blocks are noteworthy concrete blocks that allow infiltration of storm water through the ground surface into the soil. Pervious pavement blocks are a recognized runoff-reducing substitute for normal pavements in development of sustainable parking areas, sidewalks, gardens. The cavities present in the pervious pavement blocks allows water to percolate through it. The compressive strength of the pervious pavement block is lesser than that of the impervious pavement blocks due to the presence of voids. Also, the strength of plastic based pervious concrete is less than the strength of pervious concrete made using cement as plastic possesses less adhesive property than cement. The study deals on analysis of characteristic of waste plastic as binding material replacing cement in the manufacturing of pervious pavement blocks. High Density Polyethylene (HDPE) is used for the preparation of test specimens of plastic based pervious pavement blocks. Aggregate was heated up to 190°C. After attaining acquired temperature, recycled HDPE plastic chips is added together and constant mixing was done. Mix proportions of plastic were varied from 15% to 30% and aggregate from 85% to 70% by weight with gradation of aggregate 4.75mm-10mm. The standard size of cube (15cm*15cm*15cm) is used for the preparation of sample specimen. The optimum percentage of plastic is 23.8% for the compressive strength 4.98N/mm² with optimum porosity 14.5% for the gradation of aggregates 4.75mm-10mm.

Keywords: HDPE, Pervious pavement block, Porosity, Compressive Strength