

Experimental investigation on use of pond ash and stone dust as partial replacement of fine aggregate in cement concrete

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Abstract:

The pond ash is a waste product from most of coal based thermal power plants. As the accumulation the pond ash around the thermal power plants is posing threat to environment, its proper management is becoming essential. It is found that it is possible to replace some % of sand by pond ash as fine aggregate in concrete without compromising on strength and durability. In this research work, for experimentation the pond ash is collected from Ukai Thermal Power Plant at Ukai, Gujrat (UTPP) and is checked for the replacement of locally available sand in cement concrete for the strength along with the stone dust which is also a waste material from the stone quarry. Since pond ash is much finer than locally available sand and also does not give the proper grading, hence in this research work, the stone dust is added 10% by weight. In the remaining 90%, the locally available sand is replaced with pond ash in different proportions. The combined grading of locally available sand and pond ash in different proportions and stone dust are used for mix design of M-20 grade concrete. The mix design is done as per BIS: 383:1970 and BIS: 10262:1982 and the quantities of ingredients have been estimated and accordingly concrete cubes as per standard procedure are prepared and tested and the results are analyzed.

Keywords:

Dry Ash, Pond Ash, Stone Dust