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A DISSERTATION REPORT

On

"EFFECTIVE UTILIZATION OF GRANITE FINES IN BUILDING PRODUCTS"

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ABSTRACT

India is endowed with one of the best granite deposits in the world and accounts for over 20% of world's resource in granite. Granite reserves in India have been estimated by Indian bureau of mines at over forty three million cubic meters and India is one of the largest exporters of granite and its products. Granite fines are the by-product waste produced in granite factories while cutting granite rocks to the desired shapes and also in polishing granite slabs. Disposal of this granite fines has become a major problem. As a result solid waste management which includes granite fines has become one of the major environmental concerns. Due to scarcity and ever increasing cost of landfill space and awareness about environment and by-product utilization like granite fines becomes an effective alternative for waste disposal. This gives a new solution for sustainable development, avoiding environmental degradation.

Review on literature suggests that incorporation of granite fines in building products as a replacement to fine aggregates compare favorably with that of conventional used building materials. Literature also suggest that using granite fines at optimum percentage of replacement of fine aggregates will not only save large quantity of natural sand but will also reduce the pollution created due to the disposal of this granite fines. In this context, this thesis aims at effective utilization of granite fines in producing different building products like mortar and concrete. It is proposed to study the effectiveness of granite fines locally obtained around Bangalore and is then used as a replacement (partial and complete) for fine aggregates in the preparation of mortar and concrete.

The physical properties of granite fines like specific gravity, water absorption and fineness have been found out experimentally. Tests have been conducted to obtain the strength characteristics of concrete and mortar with and without granite fines and also varied the percentage of granite fines as replacement to virgin sand.

The result shows that the mechanical properties have improved with 20% to 30% replacement of fine aggregates with granite fines for concrete and 50% in mortar. From this, it can be concluded that the granite fines can effectively be used as partial replacement for fine aggregates in building products.