

**Use of off shore sand, crushed rock sand and dune sand as an alternative to river sand**

Several environmental problems have arisen from extensive mining of river sand. A research project was therefore initiated to examine the suitability of off shore sand crushed rock sand and dune sand as an alternative to river sand.

Above materials were tested for their suitability for application as building sand for (mortars, plasters and renderings ) and as fine aggregate in concrete mixes. The materials were tested for compliance with the relevant standards. The performance in different applications were examined in comparison to that of river sand.

In a similar study done by the University of Moratuwa it was reported that-

- (a) Concrete with dune sand gave the highest strength as well as the workability.

- (b) Crushed rock sand could be used to partially replace river sand (upto about 25-30%) in concrete and the strength would be increase moderately.
- (c) Off shore sand could be used in concrete with full replacement of river sand with marginally low strengths but resulted in poor workability.

Similar results were observed in the trials carried out at the NBRO. It was further observed that-

- (a) If river sand is completely replaced by crushed rock sand, marginally higher strengths could be achieved. However if the fine fraction is reduced, appreciable increase in strengths could be achieved.
- (b) Strength of concrete mixes made with dune sand could be further improved by blending it with 25% crushed rock sand or mixing with river sand in equal proportions.

In case of masonry applications the following funding may be considered to be significant.

- (a) Dune sand was vary fine (98% passing 1.18mm sieve) and thus it could be used without sieving in wall plasters and renderings.
- (b) All the dune sand samples tested complied with zone limits specified for use in mortars and plasters in BS 1198,1199 and 1200: Specifications for building sands from natural sources.