



DII-01

**Feasibility of quarry dust to replace river sand as fine aggregate of concrete**

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High cost and scarcity of river sand is one of the main problem faced by construction industry of Sri Lanka today. Many alternatives have been evaluated to replace river sand including sea sand and artificial aggregates to name few. Quarry dust is one other alternative fro river sand. Quarry dust is a byproduct of metal crushing. Partial replacement of river sand with quarry dust is widely practiced. However, full replacement of river sand with quarry dust is viewed with skepticism. Possible loss of workability and increase shrinkage are some of the reasons for the reluctance to the use of quarry dust in concrete. In this study possibility of the use of quarry dust to fully replace river sand as fine aggregate in structural concrete is explored. In this study total of 27 mixes with control mixes with sand as fine aggregate were studied to find guidelines for the use of quarry dust in structural concrete. Shrinkage and strength of quarry dust concrete is compared with convention concrete with river sand as aggregate. Furthermore, fly ash is explored as a means of increasing the performance of quarry dust mixes with 30% of cement replaced with fly ash. Results show that quarry dust can be effectively used as 100% replacement to sand in concrete. It has been revealed that use of quarry dust increase the water demand in achieving the intended workability compared with control mixes with sand as fine aggregate. Use of fly ash in concrete mixes is also explored to help improve the properties of quarry dust concrete. The use of fly ash is found helpful to reduce water demand of the quarry dust concrete. Furthermore, fly ash is also found to have has a greater potential in reduced the shrinkage of quarry dust concrete which is reportedly high compared with control mixes. Compressive strength of quarry dust concrete for given water cement ratio is found to be always higher compared with control mixes with river sand as the fine aggregate

*Keywords:* concrete, fine aggregate, quarry dust, river sand, compressive strength, shrinkage,