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Use of Slate in making lightweight Concrete

This research was implemented to develop and to determine that how much self-weight of concrete decreases with the increase of Lightweight Aggregate and what its effect on the strength. Laboratory tests have been carried out to investigate the properties of fresh normal concrete as well as lightweight concrete and the strength development of hardened concrete. Five composition of the concrete mix design were prepared and tested 0% of the Light Weight Aggregate, 10%, 20%, 30% and 40%. The workability was determined for each and every batch separately. The compressive strength test was carried out at the ages of 3, 7, and 28 days to examine the strength development of hardened concrete (normal + lightweight) mixes. Three Standard concrete cylinders were casted comprising of mixed, cured and tested, for analyzing the compressive strength and weight. The results show that water cement ratio increases with increase of Light Weight Aggregate in concrete mix and their strength gradually decreases after the 10% use of LWA. It has been observed with different tests that up to 10% mix of Light Weight Aggregate in normal concrete, the strength increase 12.8% compared to normal concrete. It is practically concluded that addition of Light Weight Aggregate in concrete mix, the dead load reduces about 2.5% with the increase of every 10% batch. The trend of lightweight concrete uses is increases due to their lower dead load, strong thermal, acoustic, environmental, fire retardant qualities and also reduced the building time.

Author: Mr KHAN , Muhammad Aftab (Swedish college of engineering and technology wah cantt)

Co-authors: Mr AHMED, Ibrar (Swedish college of engineering and technology wah cant); Mr BASIT, Abdul (Swedish college of engineering and technology wah cant); Mr UMAR, Muhammad (Swedish college of engineering and technology wah cant); Mr LIAQAT, Nabeel (Swedish college of engineering and technology wah cant); Mr KHAN, Muhammad Nasir Ayaz (Swedish college of engineering and technology wah cant)

Presenter: Mr KHAN , Muhammad Aftab (Swedish college of engineering and technology wah cantt)

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