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A Critical Study of the Performance of Self Compacting Concrete (SCC) Using Locally Supplied Materials in Bahrain

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Abstract : Development of new types of concrete with improved performance is a very important issue for the whole building industry. The development is based on the optimization of the concrete mix design, with an emphasis not only on the workability and mechanical properties but also to the durability and the reliability of the concrete structure in general. Self-compacting concrete (SCC) is a high-performance material designed to flow into formwork under its own weight and without the aid of mechanical vibration. At the same time it is cohesive enough to fill spaces of almost any size and shape without segregation or bleeding. Construction time is shorter and production of SCC is environmentally friendly (no noise, no vibration). Furthermore, SCC produces a good surface finish. Despite these advantages, SCC has not gained much local acceptance though it has been promoted in the Middle East for the last ten to twelve years. The reluctance in utilizing the advantages of SCC, in Bahrain, may be due to lack of research or published data pertaining to locally produced SCC. Therefore, there is a need to conduct studies on SCC using locally available material supplies. From the literature, it has been observed that the use of viscosity modifying admixtures (VMA), micro silica and glass fibers have proved to be very effective in stabilizing the rheological properties and the strength of fresh and hardened properties of self-compacting concrete (SCC). Therefore, in the present study, it is proposed to carry out investigations of SCC with combinations of various dosages of VMAs with and without micro silica and glass fibers and to study their influence on the properties of fresh and hardened concrete.

Keywords : self-compacting concrete, viscosity modifying admixture, micro silica, glass fibers
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