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UTILISATION OF LOW GRADE – UNCONVENTIONAL AGGREGATES IN CONCRETE

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Abstract

The available quantities of high quality natural sand and gravel aggregates for utilisation in concrete are depleting near the main cities in Norway, Sweden and elsewhere in the world. As a consequence, this has led to increased transportation distances of concrete aggregates. In order to reach a more sustainable utilisation of aggregate resources, it is a tendency to use more local aggregate materials, e.g. aggregates from road- and tunnelling projects or natural aggregates with lower quality requirements. However, the characteristics of such materials could vary, i.e. being less favourable compared to previously abundantly available high quality natural aggregates. These new, often low grade local aggregate, or materials with lower quality requirements, introduce new challenges in concrete production. This includes challenges regarding the need for new test methods and different quality control parameters as well as issues related to rheology and mix design of fresh concrete and also the durability aspects of hardened concrete. In this paper we are presenting some recent cases where the challenges of local aggregate materials have been evaluated.

Keywords: Local Aggregates, Test Methods, Mix Design, Durability, Sustainability.