World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:12, No:03, 2018

Adherence Induced Formwork Removal in Small-Scale Pull-Off Tensile Tests

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Abstract : Nowadays buildings' construction is performed by pouring concrete into molds referred to as formworks that are usually prefabricated metallic modules. Defects such as stripping may possibly form during the removal of the formwork if the interfacial bonding between the concrete and the formwork is high. A new pull-off tensile test was developed in our laboratory to simulate small-scale formwork removals. The concrete-to-formwork adherence force was measured on bare and coated formworks with different surface signatures. The used concrete was a mixture largely used on building sites and contains CEM I Portland cement and calcareous filler. The concrete surface appearance and the type of failures at the concrete-formwork interface have been investigated. The originality of this near-to-surface test was to compare the laboratory-measured adherence forces to the on-site observations. Based upon the small-scale laboratory test results, functional formwork specifications with low adherence to concrete was proposed in terms of superficial signature characteristics.

Keywords : concrete-formwork adherence, interfacial bonding, skin formwork functionality, small-scale pull-off tensile test
Conference Title : ICCCCT 2018 : International Conference on Cement, Concrete and Construction Technology
Conference Location : Miami, United States
Conference Dates : March 12-13, 2018