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A comparative study on the productivity of precast and Cast-In-SITU concrete construction in South Africa's higher rise commercial building projects

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2014-09-10
http://hdl.handle.net/10539/15496

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ABSTRACT

The South African construction industry is diverse in nature and faces various challenges. A sense of urgency in project delivery has grown significantly, which has fed the need for new construction methods to be used in an attempt to improve productivity. Precast concrete in particular has been the preferred route to eradicate poor productivity and improve project delivery times. However, the building environment of South Africa is unique to the rest of the world and these circumstances may have a profound effect on the use and productivity of precast concrete construction in South Africa. This study identifies the various factors influencing the selection of precast concrete as a construction method in high rise commercial construction projects in South Africa. The main objectives of the research is to understand the construction process, to identify factors affecting productivity and finally identify factors affecting the selection of precast concrete construction in South Africa. A review of current literature relating to precast concrete and cast-in-situ concrete was conducted from which questionnaires were developed to evaluate the information through a South African perspective. A sample population of 30 individuals representing a variety of contractors were selected for the distribution of questionnaires .The conclusion to the research did not only highlight major differences in techniques but yielded overall results that portrayed South Africa's dislike with precast concrete construction. The results obtained identified that expertise, technology, and excessive costs make precast concrete a technique in South Africa that is not viable, particularly for productivity improvement. The precast building process has therefore much to overcome before being accepted as a norm in the industry.

DEDICATION

I lovingly dedicate this research report to my wife, Munira, for her continued support and understanding while I was completing this research. She has been my inspiration and has made it possible for me to succeed. I also dedicate this to my parents and parent-in-laws who have given me wisdom and showed me the value of perseverance.

ACKNOWLEDGEMENT

I would like to thank my supervisor, Dr. Senthilkumar Venkatachalam, for his contribution and support to my research. I also wish to thank all my friends, family and respondents for their valuable participation and insights.

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LIST OF ACRONYMS

NPCA = National Precast Association

PCA = Precast Concrete Association

CPCI = Canadian Precast Concrete Institute

STC = Sound Transmission Class

VOC = Volatile Organic Compounds

CMA = Concrete Manufactures Association