## **Acknowledgements**

First and foremost, I thank Allah (subhana wa taala) for endowing me with health, patience, and knowledge to complete this work. I wish to extend my greatest gratitude and gratefulness to my supervisor / Dr. Ali Eltom for his valuable guidance, advice and suggestions throughout this project. His effort and concern, that a ssist me to complete my project.

Acknowledgement is due to all staff of Civil Engineering Department, Sudan University of Science & Technology for the support given to this research through its excellent facilities and for granting me the opportunity to pursue my graduate studies with financial support.

Special thanks to ust. / Abou El Ezz Said and his assistants in concrete laboratory.

Also thanks are due to the company for construction (Shoahq).

A lot of thanks are due to my friends who were provided me with a high level of information. My thanks are extended also to all my colleagues and postgraduates of Construction Engineering Division for their support,

-		·