ACKNOWLEDGEMENT

The Author wishes to express his profound gratitude and indebtedness to Prof. H. Sudarsana Rao, Rector and Professor of Civil Engineering, for his invaluable guidance and constant co-operation throughout this thesis. It has been pleasure and privilege to work under his guidance. His encouragement and guidance during the tenure of the present investigation have been invaluable.

The author is thankful to Dr. C. Sasidhar, Professor and Additional controller of Examination, department of civil engineering for his invaluable support and excellent cooperation at every stage of this investigation.

The author wishes to express heartfelt thanks to Dr. A. Rama Chandra Murthy, Senior Scientist CSIR-SERC, Chennai, who helped me a lot during my investigation. The Author expresses sincere thanks to management of Neyveli Lignite Corporation Limited, Neyveli for supply of Class C Fly ash for my research work.

The author wishes to express the deep sense of gratitude to Prof. K. Lal Kishore, Vice-Chancellor, Prof. H. Sudarsana Rao, Rector, Prof. K. Hemachandra Reddy, Registrar, for providing an opportunity in this university. The author wishes to express the deep sense of gratitude to Prof. K. B. Chandrasekar, Director, Research & Development, JNTU Anantapur, for his valuable suggestions and encouragement.

The author wishes to express sincere thanks to Prof. V. Shankar, Prof. K. Govinda Rajulu, Prof. B. Uma Maheswar Gowd, Prof. V. Bhaskar Desai, Prof. E. Keshava Reddy, Directors JNTU Anantapur, and Prof. K. S. R. Anjaneyulu, Principal JNTU College of Engineering, Anantapur.
The author wishes to express sincere thanks to Dr. Vaishali. G.Gorpade, Associate professor and head of civil engineering. The author expresses heartfelt thanks to Dr. N.V.Ramana, Assistant professor. The author wishes to heartfelt thanks to Mr. B. Pavan Kumar, Adhoc lecturer, department of civil engineering, JNTU college of Engineering, Anantapur for his help during my doctoral work.

The author wishes to express sincere thanks to faculty members of Civil Engineering, staff of Concrete laboratory, JNTU College of engineering, Anantapur. I am extremely thankful to the personnel of Strength of Materials Laboratory especially Mr. Nallappa for their timely help, in carrying out experimental work.

The author wishes to express sincere thanks to faculty of Structural Engineering Division and Centre for Disaster Mitigatio

The author records deep gratitude to his Uncle Shri.P. Raghu Ramaiah and Aunt Smt. P.Sujathamma for their constant encouragement and moral support throughout his life.

I wish to thank my wife Smt. P.VenkataRamani for her constant encouragement, patience and mighty support throughout the period of this thesis work. I thank my beloved children P.Suvarna Lakshmi and P.Thridamna Sri for their encouragement and cooperation.

I thank almighty for his grace and kindness during entire course of my doctoralthesis work.

P.RAMA MOHAN RAO