

C115462 : MAJOR CIVIL ENGINEERING

KEY WORD : PACKAGE FOR ANALYSIS AND DESIGN OF REINFORCED CONCRETE

TEERAPONG CHOTIWANNAPRUE : INTEGRATED PACKAGE FOR ANALYSIS AND
DESIGN OF REINFORCED CONCRETE PLANE FRAMES. THESIS ADVISOR : PROF.
PANITAN LUKKUNAPRASIT, Ph.D. 72 PP. ISBN 974-581-512-8.

The objective of this thesis is to implement a computer program which integrates structural analysis program with that for reinforced concrete design and includes computation of ductility of members, as well as relative ultimate strengths of column and beam sections at joints, which are essential factors to consider for structures located in rather strong earthquake zones. The first order method of analysis is employed, and design is in accordance with the ACI 318-83 standard on Ultimate Strength Design method. Sections are limited to rectangular shapes and the effect of axial force is neglected in beams. End moments in columns as well as slenderness effects are taken into account. Linking the two parts of programs to run continuously requires careful treatment of data transfer so that uttermost efficiency could be attained in data management. To this end, sections with approximately the same moment (or shear) magnitude are assigned the same group number. As a result, considerable saving in computation time is achieved. In addition, the results which are presented in terms of moment or shear group numbers rather than reinforcement areas are much more convenient to utilize in the detailing process.