ABSTRACT

In field conditions the axial load is carried by the column caused biaxial moment. Biaxial moment is the moment caused by the eccentricities of axial load on the two major axis directions, the x axis and y axis. To analyze biaxial bending acting about the column axis, a computer-aided program was developed using Visual Basic 6.0 program based on equilibrium and compatibility analysis of the stress-strain. This program named by BiaxialCol v1.1. In this study, interaction diagram of reinforced concrete column displayed in three dimensional surfaces. Selected column for the current is circle because of the great demand in architectural aspect and also especially for earthquake zone because it can distribute the force uniformly in cross-section columns.

This study also discusses the concept of Unified Design provision already included in the ACI 318-2002 Chapter 9.3.2. Previously, this concept is still in the Appendix / proposal. Therefore, socialization is necessary because of the value of reduction factor ($\phi$) does not depend on the value of $Pu$, but depends on the reinforcement tensile strain rates ($\varepsilon_t$).

This study will analyze several cases that compare the results of the BiaxialCol v1.1 program with existing computer-aid programs, in this case, PCA Col v4.0. Thus the validity of this computer-aid program can be known. The conclusion after analyzing the cases is the differences between the results of analysis using BiaxialCol v1.1 with PCA Col v4.0 ranging from
0%-19.95%. Fewer ratio to compare, fewer the difference of range. Differences in the calculation between PCA Col v4.0 with BiaxialCol v1.1 due to the reduction in block stress area of concrete caused by the number of reinforcement compressed area that also calculated on the resolution methods used by the PCA Col v4.0.

Furthermore, this study still needs to be developed in terms of design purposes, a more detailed explanations and a better display of interface, and it can be continued by adding other effects, such as the effect of slenderness, confinement, using a parabolic curve reduced by the amount of reinforcement compressed area, or using other forms of cross section.

**Keywords:** Column, Axial load, Biaxial bending moment, Visual Basic 6.0, Unified Design Provision, ACI 318-2002, Reduction factor, tensile strain, SNI 03-2847-2002.