

## C115386 : MAJOR CIVIL ENGINEERING

KEY WORD : ELASTIC-PLASTIC/RIGID FRAMES/P- $\Delta$

SUNYA PETHNIUM : AN ELASTIC-PLASTIC ANALYSIS OF RIGID FRAMES  
CONSIDERING P- $\Delta$  EFFECTS. THESIS ADVISOR: PROF. THAKSIN THEPCHATRI,  
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This research presents the principle of the first-order elastic-plastic response of plane frames including the P- $\Delta$  effects. The reduction in the plastic moment capacity due to axial forces and in-plane stability effects are considered. The proposed algorithm consists of a simplified second-order elastic-plastic analysis in which the reduction in flexural stiffness of the members due to axial forces is neglected.

It can be concluded that the proposed principle is equivalent to the second-order elastic-plastic analysis problems. The predicted maximum load factors are about 1-12% below from those obtained by the second-order elastic-plastic analysis. A large number of repetitive calculations are avoided, resulting in an enormous saving of computer time with respect to those of the second-order elastic-plastic analyses without substantial discrepancies.