

## **ABSTRACT**

*Indonesia is located in earthquake risk area, thus the construction of seismic resisting structures is important. In general, concrete is used for the structural of buildings, while the use of steel material, special moment frames (SMF) is more commonly used as a seismic force-resistant frame system. According to the standard provision of ASCE/SEI 7-10, the seismic resisting systems for steel buildings are special plate shear walls (SPSW), special truss moment frames (STMF) and other specialized systems. This thesis will present analytical models of SMF and SPSW, which is studied further to determine the potential use in Indonesia. To overcome this, parametric study is used to develop design variations with the SMF system cases on different column distance designed to find the most economical structure. The results of this comparative design study shown that the SMF system is suitable to be applied for the columns distance with short span and verified to be more economical. However, for long span of columns distance the use of SPSW system can be as an alternative.*

**Keywords:** *seismic, special moment frames, special plate shear walls*