Civil buildings in Indonesia mostly are low-rise buildings such as one floor simple house and two floors simple house and the most damages are caused by earthquake in Indonesia which happened to simple house building. It can be happened because simple house made without help of an architect.

Besides that, the function of brick wall also as a non-structural component, in national rule (SNI 03-2487 2002) causing the influence power and inflexibility of brick wall often not taken into account in the planning of a building. In fact, brick wall is composed by materials of brick and mortar which have certain values of strength and stiffness. It can be seen from many cases of building with earthquake effect, in fact, brick wall shear the lateral burden. The cracks that occur on brick wall shows load transfer from the portal into a brick wall. Strength and stiffness of the brick wall has a significant influence on the performance of a simple house. It is caused by beams and columns dimensions which are not so great.
makes strength and stiffness of portal not so different from strength and stiffness of a brick wall.

Because the development of infrastructure needs a good planning, in this final paper I did behavior study of one floor simple house and two floors simple house with calculates the strength and stiffness of a brick wall. Brick wall is considered as press bracing which modeled as a diagonal equal to the height of the wall. The parameters which reviewed are capacity and ductility structure using performance evaluation of pushover analysis.

After modeling one floor simple house and two floors simple house with calculates the strength and stiffness of a brick wall on 2, 4, and 6 seismic zone, then they are compared with model without calculates the strength and stiffness of a brick wall on each seismic zone. For knowing the differences of performance and power structure between brick wall which just as a load evenly in the planning with the brick wall which are also calculated its strength and rigidity. There are 18 models that compared.

The result of this study shows that the structural system with infilled brick wall has better ductility value and higher base shear capacity compared to the open frame structural system. Additionally, the performance evaluation present the structural system with infilled brick wall are able to achieve the Immediate Occupancy – Life Safety range instead of open frame structural system which is only achieve under the Immediate Occupancy category. Based on these result, it can be concluded that structural system with infilled brick wall have a better behaviour when compared with open frame structural system. Hence the strenght and stiffness of the brick wall needs to be considered in the design process of simple house bilding.

**Key Word: simple house, brick wall, pushover analysis**