

ABSTRACT

Indonesia is an earthquake-prone zone. Seismic activity in Indonesia is getting higher from time to time. Consequently, a building safety against seismic is primary needs. The engineer develop so many structural system that can absorb seismic energy so that structure still steady stand after earthquake. However, in practice there are so many structure get heavy damaged. Inappropriate structural system used cause seismic energy absorption not centralized in the element that designed to dissipate or yield. One of this system is concentrically braced frame. In this system, yielding is considered to occur in bracing as a dissipated element. However, this system is not well performed due to buckling at the brace that caused pinched on hysteric curve and finally cause brittle failure. If this happen, failure possibility in other element is possible to happen and it affects global stiffness of buildings.

As the time go flies, it is developed a system that the failure is expected to be ductile. This system is called buckling-restrained braced frame. This system is designed to buckling restrained when large compression force happened and caused brittle failure. For that purpose, the brace is developed to be surrounded by the plain concrete around the brace to prevent out-of-plane buckling and decrease brace axial capacity. The brace can be erected with the various configuration to get the most efficient configuration system. However, every configuration has its own characteristic so that produce differences on every configuration. Analysis result shown that the inverted V type configuration is the most efficient structural system because the system has the shortest period and the smallest interstory drift compared to other configurations.

Keywords: earthquake, energy dissipation, concentrically braced frame structures, buckling restrained braced frame structures, brace configuration.