ABSTRACT

Columns are an important element in a building structure because if a collapse occurs in the column it can cause a total collapse of the entire building. In column planning, there are many possible variations in cross-section shape and placement that can be used. Configuration factors for building structures related to floor plans can also influence the behavior of structures during an earthquake. Against this background, a study was conducted on the Comparison of Capacity Curves at Multi-storey shaped-L Building with Variations of Columns Placement Orientation.

In this study, four L-shaped floor plans were modeled, each using a different column cross section. Model 1 uses a rectangular column cross-section placed lengthwise in the direction of the global axis X, model 2 uses a rectangular column placed lengthwise in the direction of the global axis Y, model 3 uses a rectangular column placed combination, and model 4 uses a square column. Modeling was carried out on the 2013 ETABS program and then compared the pushover analysis capacity and ductility curves based on the FEMA 356 method.

The results of pushover analysis, the model that can withstand the largest shear direction x-direction is model 1 of 22035,364 kN, while the model that can withstand the basic shear force in the direction of y is model 2 of 21717.27 kN. The model that has the highest ductility value in the direction of x among the other models is model 2 of 3.512. While the biggest y direction compared to other models is model 1 of 2,921. In model 3 shows stiffness stably in both directions with stiffness values in the x-direction of 59090.788 kN / m and in the y-direction of 55111,289 kN / m, meaning that it is not large in one direction but also not small in the other direction. In model 4 the stiffness in the direction of x is 62162,726 kN / m in the y-direction of 53578.25 kN / m.

Keywords: pushover, capacity curve, stiffness, inertia, ductility.