

ABSTRACT

In high-rise building structure, seismic lateral and wind load are determining factors. Multi outrigger structure is a solution to resist overturning moment and resulting lateral displacement in the building construction.

Static pushover and elastic analysis in ETABS 9.5 were done to 60 stories building model which total height is 240 m. Five variations modeling were designed with total 1- 5 outrigger and optimum performance positions $\frac{1}{(n+1)}$, $\frac{2}{(n+1)}$, $\frac{n}{(n+1)}$ to the height of building. Five variations of modeling were used to determine each structural performance and behaviour. Observation of structural performances and building behaviours included ductility (μ), seismic reduction factor (R), seismic extra factor (f_2), and other structural performances and behaviours such as time period, displacement, drift and maximum moment. Observation findings were used to find out the most optimum and economical outrigger variations which are referred from available longitudinal reinforcement.

Performance analysis of static pushover in multi outrigger structure based on SNI 03-1726-2002 showed that building structure with more outriggers had smaller reduction factor and tend to be more elastic. Building behaviour analysis showed that time period was getting more rigid, while it did not occur in the building displacement and drift. The used of double outrigger structure was the most optimum and economical compared to the other variations since it produced lower displacement, drift and longitudinal reinforcement,

Keywords: outrigger, static pushover, performance, ductility factor, seismic reduction factor, SNI 03-1726-2002.