

ABSTRAK

Abstrak - Indonesia termasuk daerah rawan gempa tektonik maupun vulkanik. Setelah menerima beban gempa, kolom berpeluang mengalami deformasi yang menyebabkan selimut beton terkelupas sehingga tinggal inti beton yang harus mempertahankan kekuatan dan daktilitasnya. Untuk itu kolom beton harus diperkuat tulangan lateral yang cukup pada bagian yang menerima beban puncak berupa momen maksimum. Penelitian Antonius dkk (2012) menghasilkan fakta baru bahwa penambahan serat kawat baja pada beton dapat meningkatkan daktilitas. Penelitian ini mengkaji kombinasi kemampuan tarik tulangan lateral dengan peningkatan daktilitas beton akibat penambahan serat baja dan pemasangan tulangan lateral, dengan cara melakukan eksperimen di laboratorium konstruksi.

Pengujian dilakukan terhadap variasi mutu beton benda uji baik yang mengandung serat baja ataupun tidak dengan konfigurasi tulangan lateral yang berbeda-beda. Hasil pengujian divalidasi nilai peningkatan tegangan kekang beton saat beban puncak (K) terhadap model-model yang telah dikembangkan peneliti sebelumnya. Hasil penelitian menunjukkan bahwa peningkatan kekuatan dan daktilitas beton berserat terkekang dipengaruhi oleh : (1) kuat tekan beton (f_c'), (2) konfigurasi dan rasio volumetrik tulangan lateral (ρ_s), (3) jarak antar tulangan lateral (s), (4) ada tidaknya serat baja pada beton.

Kata kunci : tulangan lateral, kekangan, serat baja, kolom persegi

ABSTRACT

Abstract - Indonesia is a tectonic and volcanic earthquake area. After receiving the seismic load, the column has the opportunity to deformates which causes the concrete blanket has been exfoliated and so that the concrete core remains its strength and ductility. For this reason, concrete columns must be reinforced with enough lateral reinforcement in to receives the peak load in maximum moments. Antonius et al's research (2012) yields a new fact that the addition of steel wire fibers in concrete can increase ductility. This study examines the combination of lateral reinforcement attractiveness with increased concrete ductility due to the addition of steel fibers and lateral reinforcements, by means with do experiments in a construction laboratory. Specimen tests are carried out on variations compressive strength of the concrete f_c' of the specimen either containing steel fibers or not with different lateral reinforcement configurations. The test results will be validated the value of the increase confined concrete stress during peak load (K) to the models that had been developed by the previous experts. The results showed that the increase in strength and ductility of confined fibrous concrete was influenced by : (1) concrete compressive strength (f_c'), (2) configuration and volumetric ratio of lateral reinforcement (ρ_s), (3) distance between lateral reinforcement (s), (4) whether or not there are steel fibers in concrete.

Keywords: lateral reinforcement, confined, steel fiber, square column