Kapasitas Lentur Pelat Beton Bertulang Bambu Untuk Pondasi Dengan Pendekatan Uji 4 Tumpuan

Flexural Capacity of Bamboo Reinforced Concrete Slabs for Foundations with 4 Load Test Approach

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Abstrak

Lentur pada pelat beton bertulang bambu petung merupakan regangan yang disebabkan oleh beban luar. Hubungan beban-lendutan benda uji beton bertulang ukuran 60 x 60 cm^2 retak awal terjadi pada 51 % $P_{ultimate,}$ pelat ukuran 80 x 80 cm^2 retak awal 52 % $P_{ultimate,}$ dan ukuran 100 x 100 cm^2 retak awal 48 % $P_{ultimate}$. Hubungan tegangan-regangan pada pelat ukuran 60 x 60 cm^2 didapatkan nilai regangan beton saat retak awal 0,010 dan saat beban ultimit 0,029, regangan beton ukuran 80 x 80 cm^2 nilai saat retak awal 0,0009 dan beban ultimit 0,026, dan ukuran pelat 100 x 100 cm^2 nilai regangan saat retak awal 0,007 dan beban ultimit 0,023. Kapasitas pelat 60 x 60 cm^2 nilai eksperimen 83,33 kN dan teoritis 79,57 kN dengan selisih 4,51 %, pelat ukuran 80 x 80 cm^2 nilai eksperimen 78,05 kN dan teoritis 73,55 kN dengan selisih 5,78 %, dan ukuran 100 x 100 cm^2 nilai eksperimen 61,11 kN dan teoritis 57,93 kN dengan selisih 5,22 %. Daktilitas pelat ukuran 60 x 60 cm^2 diperoleh nilai sebesar 6,32, pelat 80 x 80 cm^2 sebesar 7,08, dan pelat 100 x 100 cm^2 sebesar 7,02. Dari perhitungan teoritis dan pengujian eksperimen bahwa nilai kapasitas lentur dipengaruhi oleh variasi penampang pelat beton, semakin besar penampang pelat beton semakin besar juga perilaku lenturnya.

Kata Kunci: Kapasitas lentur, Pelat beton, bambu.

Abstract

Flexure in petung bamboo reinforced concrete slabs is the strain caused by external loads. The load-deflection relationship of reinforced concrete specimens of size 60 x 60 cm2 initial cracking occurs at 51% $P_{ultimate}$, plates of size 80 x 80 cm2 initial cracking 52% $P_{ultimate}$, and size 100 x 100 cm2 initial cracking 48% $P_{ultimate}$. The stress-strain relationship of the 60 x 60 cm2 plate size obtained the concrete strain value when the initial crack is 0.010 and at the ultimate load is 0.029, the concrete strain of the 80 x 80 cm2 size value when the initial crack is 0.0009 and the ultimate load is 0.026, and the 100 x 100 cm2 plate size strain value when the initial crack is 0.007 and the ultimate load is 0.023. The capacity of the 60 x 60 cm2 slab had an experimental value of 83.33 kN and a theoretical 79.57 kN with a difference of 4.51 %, the 80 x 80 cm2 slab had an experimental value of 78.05 kN and a theoretical 73.55 kN with a difference of 5.78 %, and the 100 x 100 cm2 slab had an experimental value of 61.11 kN and a theoretical 57.93 kN with a difference of 5.22 %. The ductility of the 60 x 60 cm2 plate obtained a value of 6.32, 80 x 80 cm2 plate of 7.08, and 100 x 100 cm2 plate of 7.02. From theoretical calculations and experimental testing that the value of flexural capacity is influenced by variations in the cross section of the concrete slab, the larger the cross section of the concrete slab the greater the flexural behavior.

Keywords: *Flexural capacity, concrete slab, bamboo.*