Abstrak

Penelitian ini membahas tentang perbandingan kontribusi tulangan longitudinal terhadap kuat geser beton tanpa agregat kasar dengan menggunakan formula dalam ACI 318 dan Eurocode 2. Penelitian ini berfokus pada pengaruh rasio tulangan longitudinal ρ terhadap kuat geser beton menggunakan formula dalam ACI 318M-14, ACI 318M-19, dan EC 2 2004. Benda uji berbentuk balok berukuran 110 × 75 × 125 cm^3 dengan rasio penulangan 0,77%, 1,37%, 2,14%, 3,08% , 5,47%, dan 7,72%. Perbandingan dilakukan dengan melakukan plot antara ρ terhadap tegangan geser ternormalisasi, $V_c/b_w d(f_c')^n$, di mana nilai n sebesar 1/2 untuk formula ACI 318 dan 1/3 untuk formula EC 2. Kemudian dibuat juga plot antara ρ dan nilai eksponennya. Berdasarkan hasil penelitian, diperoleh bahwa tren kontribusi tulangan longitudinal sesuai dengan prediksi formula ACI 318M-19 dan EC 2 2004. Penelitian ini menemukan bahwa nilai eksponen untuk ρ sebesar 0,40 untuk formula ACI 318M-19 dan sebesar 0,45 untuk formula EC 2 2004 sesuai dengan hasil pengujian.

Kata kunci: *kuat geser beton, tulangan longitudinal, ACI 318, EC 2*

Abstract

This study discussed the comparison of the contribution of longitudinal reinforcement to the shear strength of concrete without coarse aggregate using the formulas in ACI 318 and Eurocode 2.. This study focuses on the effect of longitudinal reinforcement ratio ρ using the formulas in ACI 318M-14, ACI 318M-19, and EC 2 2004. The test specimens are 110 × 75 × 125 cm^3 concrete beams with a reinforcement ratio of 0.77%, 1.37%, 2.14%, 3.08% , 5.47%, and 7.72%. Comparisons are made by plotting ρ against the normalized shear stress, $V_c/b_w d(f_c')^n$, where the value of n is 1/2 for the ACI 318 formula and 1/3 for the EC 2 formula. Plot between ρ and its exponential value are also made. Based on this study, it was found that the trend of the contribution of longitudinal reinforcement was in accordance with the predictions of the ACI 318M-19 and EC 2 2004 formulas. This study also found that the exponential values for ρ of 0,40 for the ACI 318M-19 formula and 0,45 for the EC 2 2004 formula are in agreement with the test results.

Keywords: *concrete shear strength, longitudinal reinforcement, ACI 318, EC 2*