

ABSTRAK

This study aims to determine the effect of varying connection lengths (L_d) on the strength of light-gauge steel connections subjected to axial compressive loading. The test specimens utilized G550-grade C-channel light-gauge steel profiles with connection lengths (L_d) of 10 cm, 15 cm, and 20 cm. Testing was conducted using axial compressive loads to determine load capacity, stiffness, ductility, and failure patterns. The results indicate that increasing the connection length tends to enhance both the capacity and stiffness of the connection. Maximum capacities for L_d values of 10 cm, 15 cm, and 20 cm were 3.003 kN, 6.30 kN, and 6.45 kN, respectively. Corresponding stiffness values were 1.23 kN/mm, 2.57 kN/mm, and 2.63 kN/mm. Ductility values obtained were 1.552, 4.417, and 9.51. The increase in capacity became relatively marginal at an L_d of 20 cm, whereas ductility increased more significantly. Connection failure was generally characterized by local buckling and deformation in the connection zone. These results demonstrate that variations in L_d influence the behavior and capacity of light-gauge steel connections. **Keywords:** Light-gauge steel, Ductility, L_d , Axial compressive loading, Connection.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh variasi panjang sambungan (L_d) terhadap kekuatan sambungan baja ringan dengan pembebanan aksial tekan. Benda uji menggunakan profil baja ringan kanal C mutu G550 dengan variasi L_d 10 cm, 15 cm, dan 20 cm. Pengujian dilakukan menggunakan beban aksial tekan untuk memperoleh kapasitas beban, kekakuan, daktilitas, serta pola keruntuhan sambungan. Hasil penelitian menunjukkan bahwa peningkatan panjang sambungan cenderung meningkatkan kapasitas dan kekakuan sambungan. Kapasitas maksimum pada L_d 10 cm, 15 cm, dan 20 cm masing-masing sebesar 3,003 kN, 6,30 kN, dan 6,45 kN. Nilai kekakuan berturut-turut sebesar 1,23 kN/mm, 2,57 kN/mm, dan 2,63 kN/mm. Nilai daktilitas yang diperoleh sebesar 1,552; 4,417; dan 9,51. Peningkatan kapasitas mulai relatif kecil pada L_d 20 cm, sedangkan daktilitas meningkat lebih signifikan. Keruntuhan sambungan umumnya ditandai dengan tekuk lokal dan deformasi pada daerah sambungan. Hasil tersebut menunjukkan bahwa variasi L_d berpengaruh terhadap perilaku dan kapasitas sambungan baja ringan.