

ABSTRAK

PENGARUH RIB PADA PERILAKU LENTUR PANEL FEROSEMEN LANTAI DUA ARAH AKIBAT BEBAN MERATA

Oleh

SESA RIDALIZA

Penelitian ini bertujuan untuk menganalisis perilaku lentur panel fero semen pelat lantai dua arah dengan rib di pinggir dan tambahan rib di tengah akibat beban merata, mengetahui pengaruh penambahan rib di tengah terhadap perilaku lentur panel, serta membandingkan hasil pengujian laboratorium dengan analisis numerik menggunakan SAP2000. Hasil penelitian menunjukkan bahwa perilaku lentur panel fero semen terdiri atas fase elastis, retak awal, dan kapasitas maksimum. Retak awal panel terjadi lebih cepat dibandingkan hasil pengujian kuat lentur mortar, namun kapasitas lentur hasil pengujian lebih besar dibandingkan hasil teoritis akibat adanya interaksi mortar, tulangan, dan kawat ayam sebagai sistem komposit. Penambahan rib di tengah meningkatkan kekakuan panel sehingga kapasitas beban meningkat dan lendutan menurun, dimana variasi rib memanjang dan melintang memberikan pengaruh paling signifikan dengan peningkatan kapasitas beban maksimum sebesar 66,52% dan penurunan lendutan sebesar 25,63%. Selain itu, penambahan rib menghasilkan pola retak yang lebih terkendali. Hasil perbandingan dengan SAP2000 menunjukkan bahwa lendutan hasil analisis lebih besar dibandingkan hasil pengujian, sedangkan nilai regangan tarik menunjukkan perbedaan yang relatif kecil sehingga pemodelan SAP2000 masih mampu merepresentasikan perilaku panel dengan baik.

Kata kunci: Panel fero semen, perilaku lentur, rib, beban merata.

ABSTRACT

EFFECT OF RIBS ON THE FLEXURAL BEHAVIOR OF TWO-WAY FERROCEMENT FLOOR PANELS SUBJECTED TO UNIFORMLY DISTRIBUTED LOAD

By

SESA RIDALIZA

This study aims to analyze the flexural behavior of two-way ferrocement floor slab panels with edge ribs and additional middle ribs under uniformly distributed loads, determine the effect of middle rib addition on the flexural behavior of the panels, and compare laboratory test results with numerical analysis using SAP2000. The results showed that the flexural behavior of ferrocement panels consists of elastic, first crack, and maximum capacity phases. Initial cracking of the panels occurred earlier than the mortar flexural strength test results; however, the flexural capacity obtained from the experimental test was higher than the theoretical analysis due to the interaction between mortar, reinforcement, and wire mesh as a composite system. The addition of middle ribs increased panel stiffness, resulting in higher load capacity and lower deflection, where the combination of longitudinal and transverse ribs provided the most significant effect with a 66.52% increase in maximum load capacity and a 25.63% reduction in deflection. In addition, the rib addition produced a more controlled crack pattern. Comparison with SAP2000 analysis showed that the analytical deflection was greater than the experimental result, while the tensile strain values showed relatively small differences, indicating that the SAP2000 model was able to represent the panel behavior reasonably well.

Keywords: Ferrocement panel, flexural behavior, ribs, uniformly distributed load.