



METODE PERBAIKAN PELAT BETON BERTULANG DENGAN PENGAKU RANGKA BAJA

INTISARI

Seringkali dalam perencanaan struktur pelat lantai beton bertulang menggunakan analisis statik, tanpa dilakukan analisis karakteristik dinamik. Kondisi demikian akan menyebabkan struktur menjadi kurang baik bila struktur pelat beton bertulang tersebut menerima beban dinamik yang mendekati frekuensi alaminya, sehingga terjadi resonansi. Perbaikan karakteristik dinamik harus dilakukan agar struktur stabil saat menerima beban dinamik.

Tujuan penelitian ini adalah untuk mengetahui peningkatan karakteristik dinamik pelat beton bertulang dengan memberikan pengaku rangka baja. Pelat beton bertulang diasumsikan satu arah (*one way slab*) dengan tebal 6 cm, lebar 50 cm dan panjang bentang 400 cm. Pengujian dilakukan pada pelat beton bertulang tanpa dan dengan pengaku rangka baja, serta variasi penempatan pelat-baut pendukung rangka baja.

Hasil penelitian menunjukkan bahwa frekuensi alami pelat beton bertulang yang diberi pengaku rangka baja mengalami peningkatan kekakuan dan nilai frekuensi alami sebesar 371,320% yaitu dari 4,334 Hz. menjadi 20,386 Hz. Sedangkan pelat beton bertulang yang diberi variasi dukungan mengalami peningkatan frekuensi alami maksimum sebesar 167,539% menjadi 13,50 Hz.



***METHOD OF REINFORCED CONCRETE SLAB
RETROFIT BY ADDING STEEL TRUSS STIFFENER***

ABSTRACT

In the design of structural reinforced concrete slab, static analysis is often used, without taking into account dynamic analysis. This condition will give unsatisfactorily result, especially if the dynamic frequency excitation of the live load closes to natural frequency of the reinforced concrete slab. It can cause resonance.

The purpose of this research is to know the effect of the additional steel truss beneath the slab on the overall stiffness of the structure. Reinforced concrete slab structure is assumed to be a one way slab with 6 cm thick, 50 cm wide and 400 cm long. Three samples were provided for the test. One sample was arranged in such that the steel truss joint supported the slab through flexible support (bolt-plate connector) and transferred the load to the slab supporting system. The other sample was arranged in such that the all steel truss joints were fixed to the slab. The rest was one without steel truss for reference.

The result of the test showed that reinforced concrete slab with steel truss stiffener increased the natural frequency of about 371.320% (from 4.334 Hz. to 20.386 Hz). While, by placement of various bolt-plate connector at the steel truss stiffener it increased the natural frequency of 167.539%, i.e. from 4,334 to 13.50 Hz.