

ABSTRAK

STUDI KINERJA PELAT DAN BALOK BETON BERTULANG DI GEDUNG E FAKULTAS TEKNIK UNIVERSITAS LAMPUNG AKIBAT GETARAN

Oleh

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Pada umumnya lantai gedung perkuliahan akan mengalami beban hidup yang berasal dari berbagai aktivitas di atasnya. Pergerakan beban hidup di atas lantai ini akan menghasilkan getaran pada struktur lantai dan dapat menimbulkan ketidaknyamanan bagi pengguna gedung.

Studi ini bertujuan untuk mengevaluasi getaran lantai ruang kelas dengan metode pengujian di lapangan dan analisis numerik menggunakan *Software* SAP2000. Untuk perhitungan mengacu pada peraturan ISO 2631-2 : 2003 dan Steel Design Guide 11th Series “Floor Vibration due to Human Activity”.

Berdasarkan hasil pengujian lapangan, didapatkan kuat tekan beton pelat dan balok bertulang antara K-350 dan K-400 termasuk karakteristik beton mutu sedang dan didapatkan frekuensi pelat lantai berkisar 12,94 – 23,29 Hz dengan akselerasi antara 0,235 – 1,13 m/s². Sedangkan berdasarkan analisis numerik didapatkan hasil frekuensi getaran sebesar 8,0515 Hz dan frekuensi akibat beban berjalan sebesar 8,13 Hz dengan akselerasi frekuensi alami dibawah 0,5%g sehingga struktur tersebut kaku.

Kata kunci : Balok, pelat, getaran dan akselerasi.

ABSTRACT

STUDY OF VIBRATION PERFORMANCE ON REINFORCED PLATE-BEAMS IN E BUILDING ENGINEERING FACULTY UNIVERSITY

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In General, the plate of building will restrain the live load from various activities on it. Furthermore, this live load may produce structural vibrations which cause the inconvenient condition for the users.

The study aims to evaluate the vibrations of the plate based on testing on field and numerical analysis using SAP2000 Software. The analysis calculations according to ISO 2631-2 : 2003 and steel design guide 11th series floor vibrations due to human activity.

The measurement on field shows that the compression strength of reinforced concrete for the plate and beams are between K-350 and K-400 which means both of them are medium quality concrete in addition. The frequencies of plate are between 12,94 - 23,29 Hz with the acceleration rates of 0,235 - 1,13 m/s². The numerical analysis results that the frequencies of plate in 8,0515 Hz and 8,13 Hz frequencies due to walking load with the accelerations under 0,5% g. Based on both of analysis is concluded that the plate E building is a rigid structure.

Key words: Beam, plate, vibrations and acceleration