

INTISARI

Dalam perkembangan dunia konstruksi penggunaan metode konvensional dalam pekerjaan pelat untuk gedung bertingkat semakin tidak efektif dan efisien. Oleh karena itu dikembangkanlah metode *semi precast* sebagai salah satu solusi untuk mengatasi hal tersebut. Penelitian ini bertujuan untuk mengetahui karakteristik dinamik pelat *semi precast* dan pelat monolit, pengaruh digunakannya *shear connector* dengan jarak bervariasi pada elemen pelat komposit, lendutan statis, *displacement mode*, *curvature mode* dan beda absolut *curvature mode* untuk setiap kondisi retak.

Penelitian ini menggunakan 5 benda uji, yaitu 1 benda uji pelat monolit dan 4 benda uji pelat komposit dengan jarak antar *shear connector* yang divariasikan jaraknya. Metode pengujian dilakukan dengan memberi beban statik dan beban dinamik pada pelat. Beban statik digunakan untuk memberikan kerusakan pada pelat dan untuk mengetahui lendutan statis. Beban dinamik digunakan untuk mengetahui karakteristik dinamik pelat, *displacement mode*, *curvature mode* dan beda absolut *curvature mode*.

Hasil penelitian menunjukkan bahwa : ada perbedaan frekuensi alami dari tiap pelat pada kondisi sebelum dibebani yaitu pelat monolit sebesar 14,84 Hz, Pelat komposit tanpa *shear connector* sebesar 13,45 Hz, Pelat komposit jarak antar *shear connector* L/4(100)-L/2(150)-L/4(100) sebesar 13,62 Hz, Pelat komposit jarak antar *shear connector* L/3(100)-L/3(150)-L/3(100) sebesar 13,46 Hz dan Pelat komposit jarak antar *shear connector* 100 mm sebesar 15,97 Hz dan juga ada penurunan frekuensi alami seiring besarnya penurunan frekuensi alami. *Displacement mode* pelat utuh lebih kecil dibandingkan pelat rusak dan *displacement mode* terbesar terjadi pada tengah bentang, *curvature mode* dan beda absolut *curvature mode* menunjukkan adanya kerusakan pada pelat. Pola retak yang terjadi pada pelat monolit dan komposit umumnya retak lentur dan terjadi ditengah bentang.

Kata kunci : *precast*, komposit, karakteristik dinamik, *curvature mode*

Abstract

As the construction world continues to develop, the use of conventional methods to construct slabs for storeyed buildings becomes increasingly ineffective and inefficient. Therefore, the semi precast method is developed as one of the solutions to overcome this issue. This research aims to determine the dynamic characteristics of semi precast slabs and monolithic slabs, the effects of the use of shear connectors with varying distances on the elements of composite slabs, the static deflection, the displacement mode, the curvature mode and the absolute difference of the curvature mode for each cracked condition.

This research used 5 (five) specimens, 1 specimen of monolithic slabs and 4 specimens of composite slabs where the shear connectors were put at varying distances. The testing was carried out by placing a static load and a dynamic loads on the slabs. The static load was used to cause damage to the slabs and to determine the static deflection. The dynamic load was used to determine the dynamic characteristics of the slabs, the displacement mode, the curvature mode and the absolute difference of the curvature mode.

The findings suggest that: There are differences in the natural frequency of each slab before the load had not been placed on the slabs, specifically 14.84 Hz for the monolithic slabs, 13.44 Hz for the composite slabs without shear connectors, 13.62 Hz for the composite slabs whose the distance of the shear connectors is equal to $L/4(100)-L/2(150)-L/4(100)$, 13.46 Hz for the composite slabs whose the distance of the shear connectors is equal to $L/3(100)-L/3(150)-L/3(100)$ and 15.97 Hz for the composite slabs whose the distance of the shear connectors is equal to 100 mm. Moreover, the findings also suggest that there is a decrease in the natural frequency in line with the magnitude of the decrease in the natural frequency. The displacement mode of the intact slabs is lower than that of the damaged slabs and the highest displacement mode is found at the central part of the span, the curvature mode and the absolute difference of the curvature mode indicate the damage to the slabs. The common crack pattern found in the monolithic and composite slabs are flexural cracks and are found at the central part of the span.

Keywords : precast, composite, dynamic characteristics, curvature mode