

## INTISARI

MIA PRASETYANI, 2021, Evaluasi Kekuatan Struktur Balok Dan Kolom Gedung Lawu Plaza Kota Madiun Akibat Penambahan Jumlah Lantai (dibimbing oleh Lava Himawan, S.T.,M.T)

Peningkatan pembangunan gedung di Indonesia teruslah berkembang diiringi dengan kebutuhan akan kegiatan masyarakat meningkat. Salah satu gedung yaitu Lawu Plaza. Pada tahun 2018 Lawu Plaza mengalami penambahan lantai, sehingga total lantai menjadi 4 lantai. Penelitian ini dilakukan untuk mengetahui kekuatan struktur gedung Lawu Plaza Kota Madiun akibat adanya perubahan fungsi dan penambahan lantai. Selain itu juga memberikan rekomendasi perkuatan, perbaikan dan perawatan struktur pada gedung Lawu Plaza.

Proses analisis struktur menggunakan peraturan SNI terbaru dan bantuan perangkat lunak ETABS v.18.1.1 sehingga didapatkan gaya-gaya dalam berupa aksial, momen dan gaya geser. Dokumen *As Built drawing* digunakan sebagai acuan dalam analisis menggunakan *software* ETABS, beban yang dimasukkan yaitu beban mati, beban hidup dan beban gempa dengan respons spektrum kota Madiun.

Hasil analisis dapat disimpulkan bahwa kolom dan balok struktur eksisting pada gedung Lawu Plaza Kota Madiun mampu menahan tekanan aksial, momen maupun gaya geser akibat penambahan jumlah lantai. Tetapi terdapat beberapa balok yang memiliki kondisi kurang memadai dalam menerima beban, semua balok yang tidak mampu menahan beban tersebut akibat kegagalan lentur dan Torsi. Sehingga rekomendasi perbaikan dengan *local method* yaitu *Steel Plate Jacketing*, Penambahan Bracing, dan Pemasangan *Fyber Carbon FRP (Fibre Reinforced Polymer)* sangat diperlukan. Pemilihan metode perbaikan tersebut tidak hanya dapat memberikan penambahan kekuatan untuk gaya lentur dan torsi tetap dapat menambah kekuatan lentur. Sehingga diharapkan terjadi penambahan kekuatan pada gaya-gaya yang terjadi di balok.

Kata kunci : As Built Drawing, komponen struktur, ETABS, perbaikan

## ABSTRACT

**MIA PRASETYANI, 2021, The Evaluation Of Structural Strength Of Beams And Columns Of The Lawu Plaza Building In The Madiun City Due To The Addition Of The Floor** (*under guidance of Lava Himawan, S.T., M.T*)

*The improvement of building construction in Indonesia continues to grow accompanied by increased community activities' need. One of the buildings is Lawu Plaza. In 2018 Lawu Plaza experienced the floors addition, so that the total of floor becomes 4 floors. This research was conducted to find out the strength of the Lawu Plaza Madiun building structure due to the function changes and floors addition. On the other hand, to providing recommendations for strengthening, repairing, and maintenance of structures in the Lawu Plaza building.*

*The process of structural analysis used the latest SNI regulations and ETABS software assistance v.18.1.1 so that the styles are obtained in the form of axial pressure, torsion, and shear. As Built drawing document is used as a reference in the analysis using ETABS software, the load included are dead load, living load, and earthquake load with the Madiun City response spectrum.*

*The results of the analysis showed that the columns and beams of existing structures in the Lawu Plaza Madiun City building were able to apply axial pressure, torsion, and shear due to the addition of the number of floors. However, there were some beams that had inadequate conditions in receiving loads, all beams that were unable to withstand the load due to bending and torque failure. Hence, the recommendation of improvement with local method is Steel Plate Jacketing, Bracing Addition, and Installation of Fiber Carbon FRP (Fibre Reinforced Polymer) are needed. The selection of the repair method not only can provide additional strength for flexible forces and torque can still increase the bending strength. Thus, it is expected that there is an increase the forces strengths occur in the beam.*

*Keywords: As Built Drawing, structure components, ETABS, repair*