

Dalam konstruksi sebuah gedung diperlukan struktur yang kuat yang mana sudah direncanakan atau didesain dengan sedemikian rupa serta sudah dilakukan analisis sebelumnya.

Gedung Laboratorium IPA dan Gedung Olahraga di SMA Muhammadiyah 3 Yogyakarta direncanakan memiliki 3 lantai dan 1 *bezment*. Struktur lantai pada gedung tersebut direncanakan terdapat lower ground dan ground floor. Dalam proses konstruksi pembangunan gedung tersebut, telah dilakukan re-design pada lantai yaitu penambahan elevasi setinggi 70 m dari elevasi lantai *lower ground*. Hal tersebut berpengaruh terhadap pembebanan. Mengacu pada Peraturan Pembebanan Indonesia untuk Gedung (1983), beban mati pada kondisi awal hanya berupa material beton konvensional sedangkan beban mati kondisi penebalan pelat akan bertambah berupa bata ringan dan bondek. Dengan demikian perubahan elevasi pelat lantai akan mempengaruhi pembebanan, maka dibutuhkan evaluasi terhadap kekuatan struktur existing. Selain pada pelat lantai, juga terjadi *re-design* pada struktur atas yaitu balok, dengan melakukan perubahan pada dimensi yang digunakan.

Pada *re-design* struktur atas yaitu balok terdapat pengurangan balok anak yang awalnya 4 buah menjadi 3 buah. Selain itu, pada balok B2-1 (40 x 70) mengalami *re-design* menjadi balok B2-1 (40 x 70) dan B2-2 (40 x 60). Setelah dilakukan *re-design* dan analisis struktur dengan bantuan software ETABS dan perhitungannya, maka bangunan Gedung Laboratorium IPA dan Gedung Olahraga SMA Muhammadiyah 3 Yogyakarta tersebut dinyatakan aman.

Kata Kunci : *Re-design*, Struktur Atas, Balok

In construction of a building a strong structure is needed which has been planned or designed in such a way and has been analyzed previously.

The Science Laboratory Building and Sports Building in Muhammadiyah 3 Yogyakarta High School are planned to have 3 floors and 1 bezment. The floor structure of the building is planned to have a lower ground and ground floor. In construction process of the building construction, a re-design has been carried out on the floor, namely the addition of elevation as high as 70 m from the lower ground floor elevation. This affects the loading. Referring to the Indonesian Load Regulations for Buildings (1983), the dead load in the initial condition is only in the form of conventional concrete material while the dead load in the thickening condition of the plate will increase in the form of light brick and bondek. Thus the change in elevation of the floor slab will affect the loading, so an evaluation of the strength of the existing structure is needed. In addition to the slab, there was also a re-design of the upper structure of the beam, by changing the dimensions used.

The re-design of the structure above the beam there is a reduction in the joist which initially 4 pieces to 3 pieces. In addition, the B2-1 (40 x 70) beam was re-designed into B2-1 (40 x 70) and B2-2 (40 x 60) beams. After re-design and structure analysis with the help of ETABS software and calculations, the Science Laboratory Building building and the Muhammadiyah 3 Yogyakarta High School Sport Building were declared safe.

Key Words : Re-design, Upper Structure, Beam