

ABSTRAK

Dalam pembangunan gedung bertingkat perlu diperhatikan kualitas dari bahan yang akan digunakan, termasuk beton yang menjadi salah satu unsur penting dalam struktur bangunan. Hal tersebut dikarenakan konstruksi beton sangat rawan terhadap retak, munculnya rongga, agregat kasar yang memisah dari campuran beton (segregasi), dan banyaknya air yang muncul pada permukaan beton (bleeding) sehingga dibutuhkan penanganan terhadap konstruksi beton seperti chipping and concreting, strengthening, grouting, dan patching or sealing. Oleh karena itu, dilakukan studi kasus pada proyek konstruksi X dimana terdapat beton yang berongga, retak, segregasi, serta terlihat tulangan struktur di beberapa tempat pada bagian kolom, balok dan pelat lantai 2 dan pelat lantai 3 yang menyebabkan perlunya pembongkaran. Studi ini dilakukan untuk mengetahui penyebab dari kegagalan beton lantai 2 dan lantai 3. Dari hasil studi diperoleh kesimpulan bahwa adanya nilai kuat tekan beton yang tidak memenuhi kuat rencana sebesar $f_c' 30$ MPA berdasarkan hasil dari core drill test pada balok, kolom, dan pelat lantai 2. Sedangkan untuk kegagalan pada lantai 3 disebabkan oleh lamanya waktu perjalanan truck mixer dari batching plant ke proyek, pelaksanaan pengecoran dan proses pemadatan yang mendekati waktu setting beton menyebabkan beton sulit diratakan dengan vibrator.

Kata kunci: beton, kegagalan beton, pembongkaran, kuat tekan, truck mixer, setting beton, pemadatan

ABSTRACT

In the construction of highrise buildings, it is necessary to pay attention to the quality of the materials to be used, including concrete which is one of the important elements in the building structure. This is because concrete construction is very prone to cracking, the appearance of voids, coarse aggregate that separates from the concrete mixture (segregation), and the amount of water that appears on the surface of the concrete (bleeding) so that it requires handling of concrete construction such as chipping and concreting, strengthening, grouting, and patching or sealing. Therefore, a case study was conducted on construction project X where there were concrete hollows, cracks, segregation, and visible structural reinforcement in several places in the columns, beams and slabs of the 2nd floor and 3rd floor slabs which caused the need for demolition. This study was conducted to find out the causes of concrete failure on floors 2 and 3. From the results of the study, it was concluded that there was a compressive strength value of concrete that did not meet the planned strength of $f_c' 30$ MPa based on the results of the core drill test on the beams, columns, and slabs of the 2nd floor. As for the failure on the 3rd floor, it was caused by the long travel time of the truck mixer from the batching plant to the project, the implementation of the casting and compaction process which was close to the concrete setting time and the design of the reinforcement that was too tight causing the concrete to be difficult to level with the vibrator.

Keywords: *concrete, concrete failure, demolition, compressive strength, truck mixer, concrete setting, compaction*