PERFORMANCE OF GROUND IMPROVEMENT BY PRECOMPRESSION AND VERTICAL DRAIN

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ABSTRACT: Ground improvement is required when construction has to take place on geotechnically unsuitable material such as soft clay. This paper discusses the performance of ground improvement by pre-compression and vertical drain implemented for the construction of permanent campus of Universiti Malaysia Pahang (UMP) in Kuala Pahang, Pekan. The comparison was made in terms of engineering properties of the soil such as shear strength and compressibility characteristics before and after improvement and the achievement of criteria in terms of time and post construction settlement. The soil investigation showed that subsoil profile consisted of four layers whereby the thickness of compressible layer varies from 6 to 14 m. Settlement monitoring showed that the required pre-construction settlement was achieved in less than six months after the completion of ground improvement by pre-compression. Installation of the vertical in swampy area further reduced the consolidation time to about one month. The undrained shear strength (*Su*) of the soft compressible layer increased from 6 - 30 kPa to about 67 kPa while the compression index (*Cc*) decreased from about 0.2 - 0.6 to about 0.33. The coefficient of consolidation (*Cv*) of the soft soil layer decreases from $6m^2$/yr - $21m^2$/yr to about $2.11m^2$/yr - $3.64m^2$/yr due to compaction and consolidation process.

Keywords: Soft Soil, Pre-compression, Vertical Drain