ABSTRAK

Perkembangan industri telekomunikasi seluler di Indonesia mengalami peningkatan yang sangat pesat baik dari sisi teknologi, variasi layanan maupun jumlah pelanggannya. Sering dengan hal tersebut kebutuhan akan infrastruktur berupa menara telekomunikasi yang berupa bangunan khusus yang berfungsi sebagai sarana penunjang untuk menempatkan peralatan telekomunikasi khususnya untuk keperluan tower BTS juga meningkat pesat.

Pondasi yang dapat digunakan pada struktur tower SST adalah pondasi dalam dan pondasi dangkal. Pondasi yang direncanakan adalah pondasi tiang dan pondasi rakit.

Hasil analisa struktur tower SST 100 meter didapat resultan gaya perletakan pada beban maksimum sebagai berikut : Fx = Fy = 472,096 kN, Fz = 733,821 kN, Mx = My = 25.352 kN. Hasil analisa kapasitas daya dukung didapat pondasi tiang pancang = 23.376,11 kN, pondasi rakit tebal 1 meter = 37.081,59 kN, dan pondasi rakit dengan tebal 1,2 meter = 37.838,19 kN. Tahanan terhadap gaya angkat pada pondasi tiang pancang = 19.115,99 kN, pondasi rakit tebal 1 meter = 3.651,50 kN, dan pondasi rakit tebal 1,2 meter sebesar = kN. Penurunan pada pondasi tiang pancang = 1,01 cm, pondasi rakit tebal 1 meter = 2,71 cm, dan pondasi rakit tebal 1,2 meter = 6,81 cm. FK terhadap guling pondasi tiang pancang = 3,59, pondasi rakit tebal 1 meter = 2,57, dan pondasi rakit tebal 1,2 meter sebesar 3,04. FK terhadap geser pondasi tiang pancang = 80,23, pondasi rakit tebal 1 meter = 25,66, dan pondasi rakit tebal 1,2 meter sebesar 25,80.

Kata Kunci : tower, pondasi tiang, pondasi rakit, kapasitas daya dukung, gaya angkat, penurunan, FK guling, FK geser

ABSTRACT

The development of the cellular telecommunications industry in Indonesia has experienced a very rapid increase both in terms of technology, variety of services and the number of customers. Often with this the need for infrastructure in the form of telecommunications towers in the form of special buildings that function as supporting facilities for placing telecommunications equipment especially for BTS towers also increases rapidly.

Foundations that can be used in SST tower structures are deep and shallow foundations. The planned foundation is the pile foundation and the raft foundation.

The analysis result of the 100 meter SST tower structure results in the resultant of the placement force at the maximum load as follows: Fx = Fy = 472,096 kN, Fz = 733,821 kN, Mx = My = 25,352 kN. The results of the bearing capacity analysis found the pile foundation = 23,376.11 kN, 1 meter thick raft foundation = 37,081.59 kN, and raft foundation with a thickness of 1.2 meters = 37,838.19 kN. The uplift force on the pile foundation = 19.115.99 kN, 1 meter thick raft foundation = 3,651.50 kN, and 1.2 meter thick raft foundation equal to = kN. Settlement in pile foundation = 1.01 cm, raft foundation 1 meter thick = 2.71 cm, and raft foundation 1.2 meter thick = 6.81 cm. SF overtuning to pile foundation = 3,59, 1 meter thick raft foundation = 2.57, and 1.2 meter thick raft foundation of 3.04. SF sliding to pile foundation = 80.23, raft foundation 1 meter thick = 25.66, and 1.2 meter thick raft foundation of 25.80.

Key Words : tower, pile foundation, raft foundation, the bearing capacity, uplift force, settlement, SF overtuning, SF sliding