

## ABSTRAK

Perkembangan dunia telekomunikasi terutama industri seluler di Indonesia mengalami peningkatan perkembangan yang sangat pesat baik dari sisi teknologi, variasi layanan maupun jumlah pelanggannya. Saat ini jaringan telekomunikasi seluler di Indonesia sudah mulai beranjak ke jaringan 5G sehingga kebutuhan akan infrastruktur berupa menara telekomunikasi yang berupa bangunan khusus yang berfungsi sebagai sarana penunjang untuk menempatkan peralatan telekomunikasi khususnya untuk keperluan tower *Base Transceiver Station* (BTS) juga meningkat pesat.

Fondasi yang digunakan pada struktur tower SST 41 m 3 kaki adalah fondasi dangkal berupa fondasi rakit.

Hasil analisa struktur tower SST 41 meter didapat gaya tekan = 221,015 kN, gaya tarik = 340,250 kN, gaya geser = 21,242 kN, dan momen = 0,884 kN m. Dan fondasi yang digunakan fondasi rakit dengan dimensi 800 x 800 cm<sup>2</sup> dan tebal 45 cm pada kedalaman 100 cm. Stabilitas fondasi didapat faktor keamanan (FK) gaya angkat = 1,214 dan 1,518, FK daya dukung = 1,64, dan FK geser = 14,12. Volume material beton yang didapat adalah 29,07 m<sup>3</sup> dan volume pembesian yang didapat sebesar 3717,95 kg.

Kata Kunci : tower BTS, fondasi rakit, faktor keamanan (FK), FK gaya angkat, FK daya dukung, FK geser

## ABSTRACT

*The development of the telecommunications world, especially the cellular industry in Indonesia, has experienced a very rapid development both in terms of technology, variety of services and the number of subscribers. Currently, the cellular telecommunications network in Indonesia has begun to move to the 5G network, so the need for infrastructure in the form of telecommunication towers in the form of special buildings that function as a supporting facility for placing telecommunications equipment, especially for the purposes of Base Transceiver Station (BTS) towers is also increasing rapidly.*

*The foundation used in the 41 m 3 legs SST tower structure is a shallow foundation in the form of a raft foundation.*

*The results of the analysis of the 41 meter SST tower structure obtained compressive force = 221.015 kN, tensile force = 340.250 kN, shear force = 21.242 kN, and moment = 0.884 kN m. And the foundation used is a raft foundation with dimensions of 800 x 800 cm<sup>2</sup> and a thickness of 45 cm at a depth of 100 cm. The stability of the foundation obtained by the factor of safety (SF) lifting force = 1.214 and 1.518, SF bearing capacity = 1.64, and SF shear = 14.12. The volume of concrete material obtained is 29.07 m<sup>3</sup> and the volume of iron obtained is 3717.95 kg.*

*Key Words : BTS tower, raft foundation, safety factor (SF), SF uplift, SF bearing capacity, SF sliding*