STABILITY ANALYSIS OF SUTT PLN TOWER AND SLOPE REINFORCEMENT PLANNING AROUND THE TOWER (CASE STUDY OF SUTT T.09 SEGOROMADU – PETROKIMIA GRESIK)

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ABSTRACT

Tower is a construction that can bear it self-load, wind load, and the load of the conductor. Tower foundation which received loads and forces that act on the tower must be made stronger and without interruption so the tower did not collapse. Tower Anomali PLN APP Surabaya SUTT 150 kV T.09 (Segoromadu – Petrokimia Gresik) as one of the main tower that connect electricity along Java Island therefore the stability of it should not be interrupt. At first, PT. PLN build the tower on steady and flat land. But then, PT. Semen Gresik dug the limestone for cement material on 1960 to 1990. Land around the tower were left undug so the tower seems to stand on the small hill. The condition has gotten worse because of erosion and human activities such as excavation for road and house subgrade so the slope is feared unsafe. Thus, to overcome PLN worries, the slope stability analysis performed such as the study of soil properties, also force and load analysis which were happened using 3 softwares: DxStable, Plaxis, and Geoslope.

Based on the test results of the safety factor from three softwares, obtained the smallest safety factor are from Plaxis with SF = 1.540 where the value is greater than SF minimum = 1.25, which means the slope stability around the tower are safe. In the future, the conditions of the landslide around the slope of Tower SUTT PLN T.09 (Segoromadu - Petrokimia, Gresik) is assumed to undergo weathering so slope stability conditions become unsafe.
To overcome the sliding slope/land failure due to rotten soil that occurs due to changes in parameters, the ground anchor tie back: type of grouting with concrete grouting and a head anchor: a concrete retaining blocks has been chosen as the slope reinforcement. The ground anchor, has a stressing force value (K) at 13.234 Ton. To withstand the force, tie back grouting were injected with a diameter of 20 cm and a length of 2 m. The ground anchors installed at 4 anchors per 6 meters or by 6 anchors on each side.

**Keywords**: Slope stability analysis and planning, Tower SUTT PLN, Segoromadu Petrokimia Gresik, calculations and modeling program (Plaxis, Geo-Slope, DxStabl), safety factor, land reinforcement alternatives, ground anchor tie back grouting.