

Foundation on unsaturated expansive soil

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Abstrak

For centuries humankind has wondered at the instability of earth material, especially clays; one day they are dry and hard, and the next wet and soft. The result are usually excessive deflections and differential movements resulting in damage to foundation systems structural elements and architectural features. Foundation materials that exhibit volume change from change in soil moisture are referred to as expansive or swelling clay soils. Expansive soils many parts of the United States a significant hazard to foundations for light buildings. Swelling clays derived from residual soils can exert uplift pressures of as much as 5.500 psf to 15,000 psf. In the United States alone the damage caused by the shrinking and swelling soils amounts to about 9 billion dollars per year, which is greater than the combined damages from natural disasters such as floods, hurricanes, earthquakes and tornados. South Sumatra local Government is planning to build a new International and Modem Trading Port including Industrial and Ware Housing Estate at Tanjung Api-Api area. Most of soils around Tanjung Api-Api area are expansive soils, so the objective of this study to analize and obtain suitable foundation on unsaturated expansive soil, that can be implemented in Tanjung Api-Api area. From the result of Oedometer test, it can be concloded that the swelling potential value is about 15 percent, and the soil uplift pressure is about 2,0000 psf.