

Improvement of : Active Lateral Earth Pressure Coefficient of Sand Backfill Against Steel-Plate Retaining Wall in Case of with and without Surcharge Load

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ABSTRACT

This research is aimed to determine active lateral earth pressure coefficient (K_a) of sand backfill against steel-plate retaining wall in case of with and without surcharge load. By measuring the deflection of the wall, K_a could be back calculated. The steel wall of 2.5 mm in thickness, 1.2 m in width and 0.8 m in height was constructed in the test pit (WxLxH 1.2x1.7x0.8) and the set of 9 dial gauges were equipped in front of the wall to measure the wall deflection. Sand backfill was compacted to reach dry density of 1621 kg/m³ (medium dense sand) with internal friction angle of 25.03 degrees and dry density of 1683 kg/m³ (dense sand) with internal friction angle of 28.63 degrees. Water was used as the surcharge load by building steel frame with plastic to hold the water on top of the sand backfill. Test results of K_a were obtained lower than K_a from theory 7 time in case of sand backfill and 5 time in case of surcharge load. Cause of the difference between test and theory is the friction between wall and side of the pit, the large deflection of wall (and thus error of using beam equation), and increasing of soil internal friction angle of sand backfill due to capillary effect.