

Chapter 8

CONCLUSIONS

In this study, the effects of adjacent inclined rock face on earth pressure at-rest for loose and compacted sand are studied. Base on the test results, the following conclusions can be drawn.

A. For loose sand

1. The distributions of lateral earth pressure are not linearly with depth for the interface inclined at $\alpha = 0^\circ, 45^\circ, 60^\circ, 70^\circ$ and 80° . The measured horizontal pressure p_h is lower than Jaky's solution, and p_h decreased with increasing angle.
2. Without the interface plate ($\alpha = 0^\circ$), the coefficient $K_{o,h}$ is slightly less than Jaky solution. The coefficient $K_{o,h}$ decreased with increasing rock face inclination angle.
3. An empirical relationship between the coefficient $K_{o,h}$ and the interface inclination angle can be established: $K_{o,h,\alpha} = K_{o,h,Jaky} - 0.00462 \times \alpha$. This equation is applicable for loose sand for $0^\circ \leq \alpha \leq 80^\circ$.
4. without the interface plate ($\alpha = 0^\circ$), the point of application h/H of the at-rest earth pressure is located at about 0.33 H above the base of the wall. The total soil thrust rises to higher locations with increasing interface inclination angle.

B. For dense sand

1. After compaction, the lateral stress measured near the top of backfill is almost identical to passive earth pressure. Below the compaction-influenced zone for $\alpha = 0^\circ$, the lateral stresses converge to the earth pressure at-rest based on Jaky's

equation.

2. The extra horizontal stress induced by compaction $\Delta\sigma_{h,ci}$ decreases with increasing α angle. Below the compaction-influenced zone, the distributions of lateral earth pressure are lower than Jaky's solution.
3. The depth of compaction-influenced zone for the dense backfill compacted with the strip compactor decreased with increasing interface inclination angle α . The effective compaction depth is significantly influenced by the amount of energy input.
4. The order of earth pressure coefficient $K_{o,h}$, with the same interface inclination angle α , is $K_{o,h,strip} > K_{o,h,square} > K_{o,h,loose}$. The coefficient $K_{o,h}$ decreases with the increase of the rock face inclination.
5. The point of application h/H of the total thrust rises to a higher location with increasing interface angle. The order of h/H , with the same interface inclination angle α , for compacted and loose sand is $(h/H)_{strip} > (h/H)_{square} > (h/H)_{loose}$.

