

Effects of the Slope Embankment Variation on Influence Areas That Causes the Differential Settlement around of Embankment

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Abstract : On soft soil areas, high embankment as a preloading needed to improve the bearing capacity of the soil. For sustainable development, the construction of embankment must not disturb the area around of them. So, the influence area must be known before the contractor applied their embankment design. For several cases in Indonesia, the area around of embankment construction is housing resident and other building. So that, the influence area must be identified to avoid the differential settlement occurs on the buildings around of them. Differential settlement causes the building crack. Each building has a limited tolerance for the differential settlement. For concrete buildings, the tolerance is 0,002 - 0,003 m and for steel buildings, the tolerance is 0,006 - 0,008 m. If the differential settlement stands on the range of that value, building crack can be avoided. In fact, the settlement around of embankment is assumed as zero. Because of that, so many problems happen when high embankment applied on soft soil area. This research used the superposition method combined with plaxis analysis to know the influences area around of embankment in some location with the differential characteristic of the soft soil. The undisturbed soil samples take on 55 locations with undisturbed soil samples at some soft soils location in Indonesia. Based on this research, it was concluded that the effects of embankment variation are if more gentle the slope, the influence area will be greater and vice versa. The largest of the influence area with h initial embankment equal to 2 - 6 m with slopes 1:1, 1:2, 1:3, 1:4, 1:5, 1:6, 1:7, 1:8 is 32 m from the edge of the embankment.

Keywords : differential settlement, embankment, influence area, slope, soft soil

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