

EARTH SLIP AT EXCAVATION SITE

Type of building work

The project involves erection of 4 units of 2-storey terrace house each with a basement. There was a 2.3m high earth retaining rubble wall at the boundary with the adjacent house. An open-cut with a slope was adopted for the excavation, and the slope was protected with a layer of 300mm thick mass concrete.



Figure 1: Excavation was carried out near the base of existing rubble wall

What went wrong

When the site was cut down by 2.7m, a slip developed causing the existing rubble retaining wall to rotate and tumble down. The boundary wall of the adjacent house and the perimeter drain were also damaged.



Figure 2: The failed rubble retaining wall

Investigations revealed that the contractor had excavated for pile caps along the whole length at the foot of the slope, instead of a small stretch at a time. The design also did not take into account weakening of the soil due to rain.

Learning points

- a) Precautionary measures must be put in place to prevent deterioration of slope due to weather.
- b) If the design necessitates a particular sequence of construction (such as excavation of pile cap in a specific sequence), this should be clearly shown on the drawings.
- c) The professional engineer should visit the site regularly to confirm that the construction sequence is in accordance with the design assumption, and the site supervisor should be vigilant to ensure that precautionary measures are put in place.
- d) If the excavation is carried out near the base of an existing earth retaining structure, a check on possible reduction in passive resistance must be carried out.
- e) Soil parameters should take into account the most severe situation.
- f) Design must cater for loading condition due to over-excavation.