UR1974_15

Test pits near the intersection of Queechy Road and Penquite Road, Launceston.

W.L. Matthews

Test pits were dug to examine subsurface conditions at 149-151 Penquite Road [EQ143108]. Mr Tanner, the owner, proposes to build six flats contained in a single building with three storeys on the western side and two storeys on the eastern side.

TOPOGRAPHY AND GEOLOGY

The land surface on the western part of the area slopes at about 5-8°. It steepens on the eastern part to a slope of about 15°. North of the area there is a steep decline down to Queechy Road and to the south the land surface also steepens and rises for about 30 m to the terrace on which Queechy High School stands.

The terrace is underlain by quartz gravel with clay and sand which in turn is underlain by Tertiary sediments made up of partly consolidated lithic sand and clay. Exposures of these sediments can be seen in recent road cuttings along Penquite Road, above the level of the land examined. Sand beds appear to make up about 50% of the material in the section and there are thin clay seams interbedded with the sand. Measurements on one of these clay seams suggested a dip of 23°E and a strike of 15°. This dip direction is approximately parallel to the contours of the land examined. An apparent westerly dip nearby suggests variable dip direction over short distances. The massive clay areas have some zones rich in limonite seams. Good exposures of the sand beds can also be seen along the access road to Scotch College recreation ground, about 200 m to the north-west of the property.

The logs of three test pits dug on the land are as follows:

HOLE 1

Depth (m)	
0-0.6	Sandy soil.
0.6-3.0	Partly consolidated lithic sand, iron oxide nodules up to about 0.3 m across at 1.4 m. Some areas of red blotchy clayey sand.

The hole was dry and the material fairly hard.

HOLE 2

Depth (m)	
0-1.7	Sandy soil and partly consolidated sand.
1.7-3.0	Grey fissured clay, some red iron oxide staining.

The clay is hard, has a low moisture content but breaks easily into angular fragments.

HOLE 3

Depth (m)	
0-0.5	Sandy soil.

HOLE 3 (continued)

Depth (m)	
0.5-1.4	Stiff fissured grey clay, reddish iron oxide stain, becoming sandy towards base.
1.4-2.7	Clayey sand and hard lithic sand.

DISCUSSION OF STABILITY AND RECOMMENDATIONS

The nearest known landslips to Mr Tanner's property are situated some 500 m along the side of the ridge to the east where the slopes are steeper. Small slumps in clay zones have occurred in cuttings in Penquite Road where the batter is about 45°.

The presence of partly consolidated sand and stiff clay suggests that the material has the capacity to bear the proposed building. However it is proposed to excavate to a depth of about 5 m on the steeper eastern part of the property and construct a vertical retaining wall on the face of the cut. The excavation of this material will remove a large amount of support from the land uphill from the cut and depending on the underlying materials, could result in slips developing in this area. If it is proposed to proceed with the excavation, then information on materials at depths greater than the depths of the pits should be obtained as any slip surface that might develop around the excavation would probably extend below the depth of the planned excavation. This information would also be necessary to design a retaining wall that would replace the support removed by the excavation. It is recommended that two or three cored drill holes or auger holes with undisturbed sampling at selected intervals be drilled to depths of 10-15 m on the eastern part of the property. The information obtained from these drill holes should be used in the design of the proposed retaining wall. The design of the retaining wall, which should be undertaken by an engineer, should ensure that the soil behind it is free draining.

If fill is to be deposited on the land then it should be left at an angle of slope as near as possible to that of present slope.

CONCLUSIONS

The test pits indicated that the material underlying the property should bear the proposed building. Deep cuts around steep slopes should be avoided if possible, but if it is proposed to continue with present plans, further investigation of the area around the large cut should be undertaken. Drilling is recommended. Any fill deposited on the land should be left at a low angle.

[5 March 1974]