

SECTION 4 — ENGINEERING GEOLOGY

TR3-120

Landslip on Dobson Highway Near Glenora

by Terence D. Hughes

Landslips have occurred close to the highway on the crest of the hill between the Glenora Area School and the Glenora homestead.

Here the ground is composed of at least three basalt flows with clay, sand and gravel beds between them. Smaller areas of tuff may be seen in road cuttings. Two series of cracks are occurring in the ground, large cracks twenty feet in length and several feet deep in the hillside above the road, and smaller ones in the outer periphery of the road and parallel to it. These two sets may be related but they appear to spring from different causes.

Below the road, a large quarry has been excavated. This extends on either side of the old road and across the railway line. Most of the material taken from this quarry represents the central basalt flow, although sand and boulder beds containing basalt boulders of older flows show at the base of the quarry in the railway cuttings.

The cracks formed at the top of the hill are caused by basalt parting along joint planes and this has happened for a number of reasons.

1. The opening of the quarry at the base of the hill has interrupted the natural balance of the ground.
2. An abnormally wet season has caused more water than usual to seep through the top basalt flow and lubricate the clay beds below, thus causing movement in the clay.
3. The basalt above the clay is extremely well jointed and breaks very easily along major vertical joints. When this clay moves the basalt above it cracks and opens along joints.
4. The vibration of continuous heavy traffic on the road and any blasting in the quarry would aggravate this cracking tendency.

The cracks along the edge of the road may possibly be due to the opening of basalt joints below the road but it is more probably due to the poor material of the batter on the lower side of the road.

The principal remedy is, of course, adequate drainage. This should consist of a fairly deep trench drain along the inner side of the road with supplementary drains extending into the hill. The position of these batters should be at intervals (say 50 feet) in the clay below the top basalt flow. As exposed in the cutting, the base of this flow is extremely irregular and its position at any particular locality away from the cutting cannot be predicted. A close boring campaign would give useful information but it is not considered necessary at this stage.

An additional precaution should be the placing of extra filling in the old quarry below the road. It is very important that this fill should commence from the bottom and not be tipped over the top. Unfortunately the material to be removed from the top side of the road cannot be used for this fill as it contains too much clay.