Forest Industry Safety Alert

Saturated ground fails during road construction

Location: Crystal East FSR near Beaverdell, BC

Date: April 27, 2017

Details of Close Call: A medium-sized excavator was preparing a pilot trail on a new road. Snow depth was over 60 centimetres on approximately 40% side slope and soil types encountered had been well-drained and stable sandy loam.

The hoe reached a point that the design identified as a three metre cut in solid rock which was down slope of a shallow-to-bedrock cleared area. It was observed by the operator that there was snowmelt flowing on exposed rock above the centerline.

As the hoe travelled beneath the bedrock clearing, a deep pocket of soil suddenly gave way and the hoe began to slide below the centerline in a mass of liquefied soil. The operator, who is very experienced, immediately arrested the down slope movement using his bucket and constructed a rough water bar to channel the water flow away from the hoe. By pulling the hoe with the stick/bucket and installing several water bars, he was able to retreat back up the trail toward the starting point.

All work was ceased and the project shut down until drier conditions prevailed. Had the operator not been able to arrest the downslope movement of the hoe, the machine could have slid about another 30 metres down the 30-40% slope to a saturated boggy site and become very stuck *(see photos of the ground conditions on pages 3 and 4)*.

Learnings and Suggestions:

1. The design cross sections indicated solid rock with a very shallow layer of overburden, but the soil was actually a deep pocket of saturated sandy loam. Soil types in cross sections are a "best guess" and can be very different than actual conditions. Always anticipate a surprise and be prepared for it by having a plan.

2. Never work alone without the ability to summon assistance. Always ensure that your method of contact (radio, cell or satellite phone) works at your location and have scheduled check-in times.

3. The area was very wet with melting snow and another spur just built had extreme muddy conditions. Determine what your limits are for constructing in adverse soil conditions and use wet weather shutdown criteria to know when to stop.

4. The operator, with years of experience, had an intuition that the ground ahead would be very poor. Learn to trust your intuition, your inner or gut feelings. Your intuition can be the result of years of practice and experiences, and can come to you without even thinking.

For more information on this submitted alert: Rick Johnson, BCTS Implementation Contractor, pilotpnt@telus.net

The following photos illustrate the poor soil condition.

Photo #1 shows the general conditions leading up to the bad spot.

Photo #2 shows where the hoe starting sinking and sliding.

The soil was more liquid than solid.