Part 5

BACKSLOPE FAILURES, CANYON CLEAN OUTS, AND CUT-FILL TRANSITIONS
Keyways are usually constructed with temporary oversteepened slopes, as sketched above. When these slopes fail, the sliding material must be removed and recompacted as the fill is brought up.
Backcuts are temporary excavations, usually made at steep inclinations to minimize volume. **Backslope failures** are usually triggered by: 1) strain relaxation and dilation sufficient to cause strain softening; 2) accelerated creep, due to rapid unloading, and, least often; 3) absorption of moisture, such as rainfall.
- **Canyon cleanout excavations** can provide significant challenges for equipment access.
- The engineering geologist should check these excavations for evidence of past seepage and emplace adequate underdrainage.
The deepest overexcavations usually occur in “canyon cleanouts”, similar to that shown here. Ample subdrainage is always recommended along the axes of former watercourses.
Typical canyon cleanout and subdrain details. The UBC specifies 9 cubic feet of drain rock per lineal foot of subdrain and a perforated collector pipe.
Fill wedges tend to **settle differentially**, as sketched here. The horizontal component of this settlement can pull wood frame structures apart, causing loss of structural integrity.
Cut-fill transition lots are known for exhibiting problems with differential settlement and/or differential heave. They are especially vulnerable to earthquake-induced settlement and structural damage.
Cushion fills are typically employed on cut-fill transition lots slated for development.

Los Angeles County requires 3 feet overexcavation below the deepest element of the foundation.

Rogers (1992) recommended fill thickness differential of < 15%, shown at bottom left.