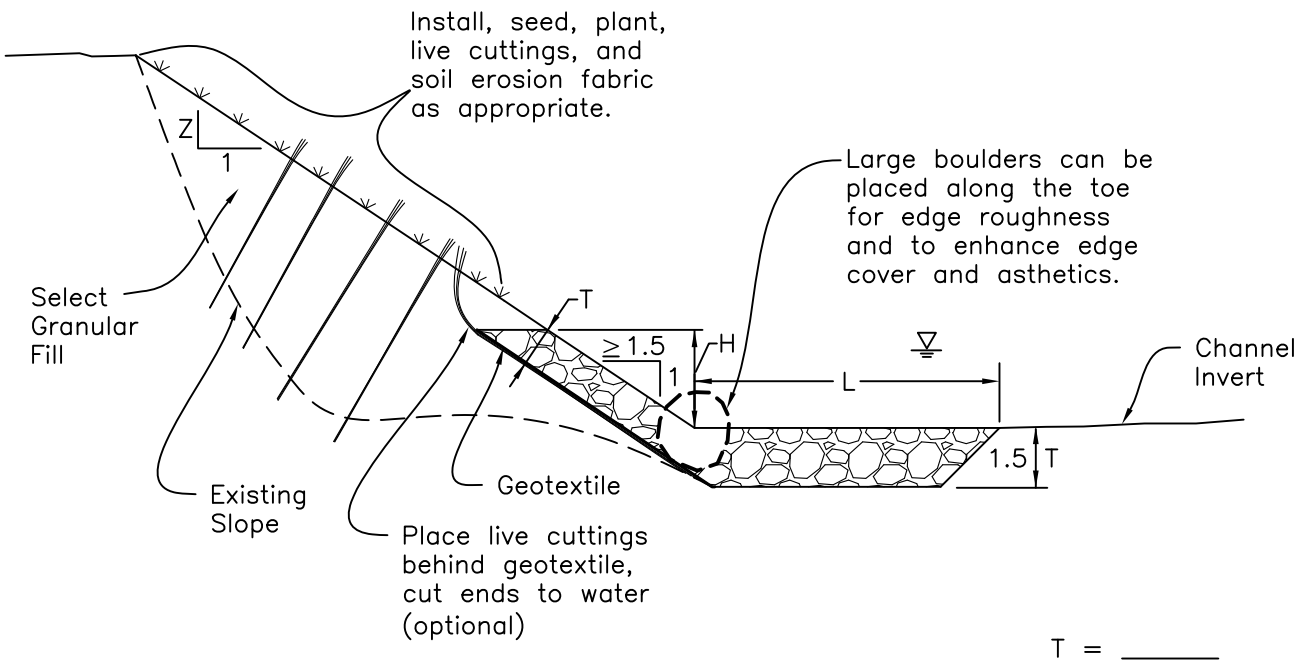
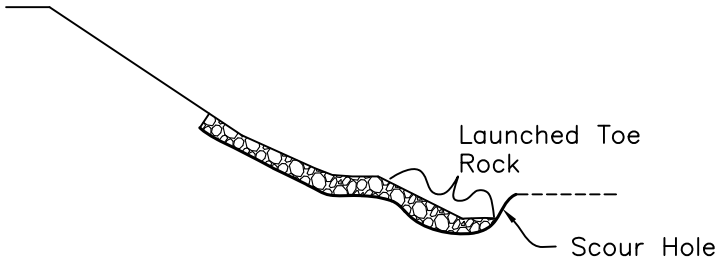


T = _____

H = _____

L = _____

Direction of Bank Seepage	Z
No Seepage	1.6
Parallel to Slope	3
Horizontal Flow	3.3



Rock launches into toe scour to prevent undermining of rock bank protection.

Notes:

- Launchable toe is not applicable if channel invert is to be lined.
- Slope(Z) is based on an infinite slope stability analysis of an angular gravel fill material with $\Phi'=35$, FS=1.1, $\gamma_b=68.5$, $\gamma_{sat}=130.9$.
- A site specific geotechnical analysis is recommended.
- Live cuttings should extend into undisturbed soil and the lowest water table. Cuttings shall be washed in during installation to ensure good soil to stem contact.
- Seeding, live cuttings, and soil erosion fabric is not applicable for railroad embankment due to RR O&M practice.

Conceptual Plan - Not for Construction

N.T.S.

NRCS Natural Resources Conservation Service United States Department of Agriculture

Stone Toe Bank Protection – Granular Soils – Launchable Toe Scour Protection

Designed	Fripp, Doerge, Robinson	Date 06/08
Drawn	K. Miller	06/08
Checked		
Approved		

File Name: Granular Soils.dwg

Drawing Name: Granular Soils

06/16/08

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