# APPROXIMATE ANGLE OF REPOSE FOR

# SLOPING THE SIDES OF EXCAVATIONS

Note: Clays, silts, loams or non-homogeneous soils require shoring and bracing.

The presence of ground water requires special treatment.









Ground Line



|  |  |
| --- | --- |
| Maximum Allowable Slopes for Excavations | |
| Soil or Rock Type | Maximum Allowable Slopes (H:V) 2 |
| Stable Rock  Type A3  Type B Type C | Vertical (90o)  3/4:1 (53o)  1:1 (45o)  1 1/2:1 (34o) |
| Notes:  1 Sloping or benching for excavations greater than 20-feet deep shall be designed by a registered professional engineer.  2 Numbers in parentheses are angles expressed in degrees from the horizontal. Angles have  been rounded off.  3 A short-term maximum allowable slope of 1/2H:1V (63o) is allowed in excavations in  Type A soil that are 12-feet or less in depth. Short-term maximum allowable slopes for excavations greater than 12-feet in depth shall be 3/4H:1V (53o) | |