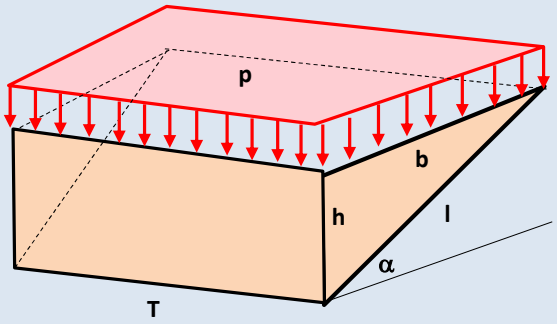
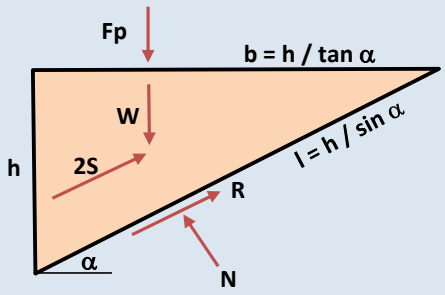
SIMPLIFIED 3D SINGLE-BLOCK WEDGE VERTICAL SLOT-CUT STABILITY ANALYSIS

PROJECT INFORMATION	
Project Name	
Project No.	
Project Location	
Analyzed By	
Reviewed By	

INPUT PARAMETERS	
Analysis Description	
Height of Vertical Slot-Cut Trench, h	5.00 feet
Width of Vertical Slot-Cut Trench, T	7.00 feet
Uniform Surcharge Pressure at the Surface, p	72.00 psf
Total Unit Weight of Soil, γ_t	120.00 pcf
Friction Angle of Soil, ϕ	30.00 degrees
Cohesion of Soil, c	100.00 psf



SINGLE-BLOCK SOIL FAILURE WEDGE



FORCES ON SOIL FAILURE WEDGE

SUMMARY OF COMPUTED RESULTS	
At-Rest Earth Pressure Coefficient, K_o	0.500
Critical Failure Angle, α	62.433 degrees
Length of Soil Wedge Top, b	2.610 feet
Length of Soil Wedge Bottom, l	5.640 feet
Weight of Soil Wedge, W	5.482 kips
Resultant Surcharge Force, F_p	1.316 kips
Side Shear Resistance, S	1.029 kips
Force Normal to the Soil Wedge Bottom, N	3.146 kips
Computed Factor of Safety, FS	1.298 > 1.25, OK

REFERENCE:

Zhou, Y. and Pond, E., 2013. "A Simplified Approach for Evaluating 3D Slot-Cut Slope Stability," Proceedings of ASCE Geo-Congress 2013, pp. 1300-1309.