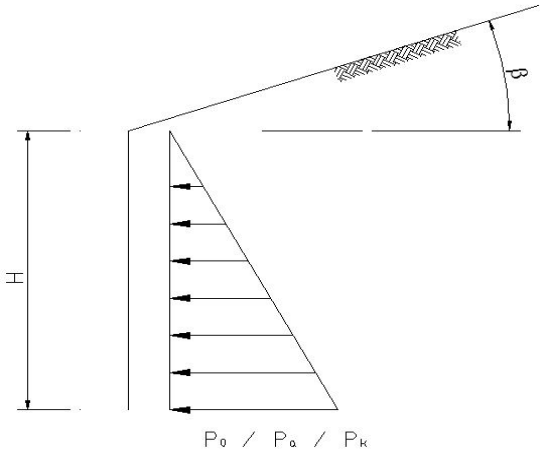
COMPANY NAME			Calculation No.		
			CALCULATION NUMBER		
CALCULATION SHEET			Project No.		
onlinestructuraldesign.com			PROJECT NUMBER		
Project Title:	Project Name		Calc. By	Date	Rev.
			Author	today	0
Subject	Earth Pressure Coefficients K_0(at rest), K_a(active), K_p(passive)		Ckd. By	Date	
	(no wall friction or soil cohesion)		Checker	today	

Calculation of Earth Pressure Coefficients and Soil Pressure
K_0 (at rest), K_a (active), K_p (passive)
(no wall friction or soil cohesion)

per Bowles "Foundation Analysis and design"
Chapters 2 and 11

Soil characteristics

γ =	18	kN/m^3	soil unit weght
ϕ =	35	deg	angle of internal friction
β =	0	deg	soil angle



At rest pressure cofficient

K_0 = 1-sin(ϕ) = 0.43

per Bowles - Jacky's equation
Chapter 2-8 / Formula (2-18a)

Active pressure cofficient

K_a = $\cos(\beta)*\{\cos(\beta)-[\cos(\beta)^2-\cos(\phi)^2]^{0.5}\}/\{\cos(\beta)+[\cos(\beta)^2-\cos(\phi)^2]^{0.5}\}$

K_a = 0.271

per Bowles - Rankine Earth Pressures
Chapter 11-5 / Formula (11-7)

Passive pressure cofficient

K_p = $\cos(\beta)*\{\cos(\beta)+[\cos(\beta)^2-\cos(\phi)^2]^{0.5}\}/\{\cos(\beta)-[\cos(\beta)^2-\cos(\phi)^2]^{0.5}\}$

K_a = 3.690

per Bowles - Rankine Earth Pressures
Chapter 11-5 / Formula (11-8)

Soil pressure at depth H

H = 3.6 m

p_0 =	$\gamma*H*K_0$ =	27.63	kN/m^2	soil pressure at rest at depth H
p_a =	$\gamma*H*K_a$ =	17.56	kN/m^2	soil active pressure at depth H
p_p =	$\gamma*H*K_p$ =	239.12	kN/m^2	soil passive pressure at depth H

References:
FOUNDATION ANALYSIS AND DESIGN (Fifth Edition) - Joseph E. Bowles (McGraw-Hill / 1996)