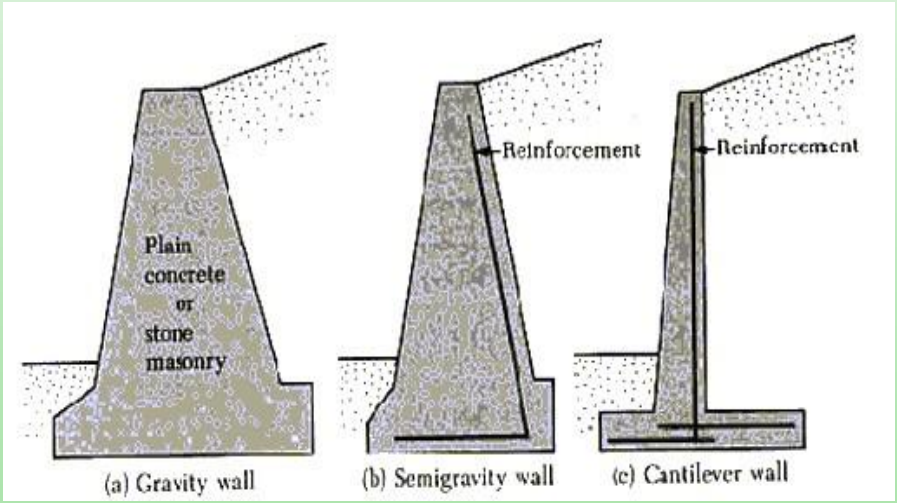
GEOTEHNIČKO INŽENJERSTVO

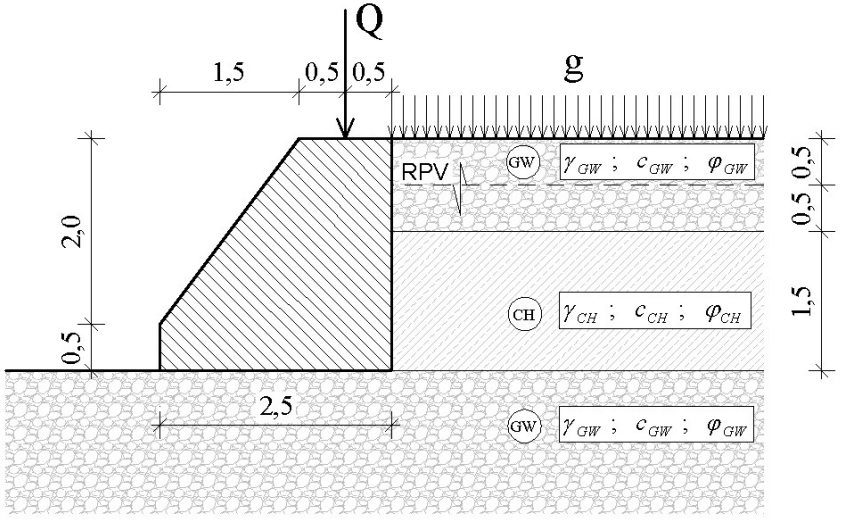
(VII . vježbe)

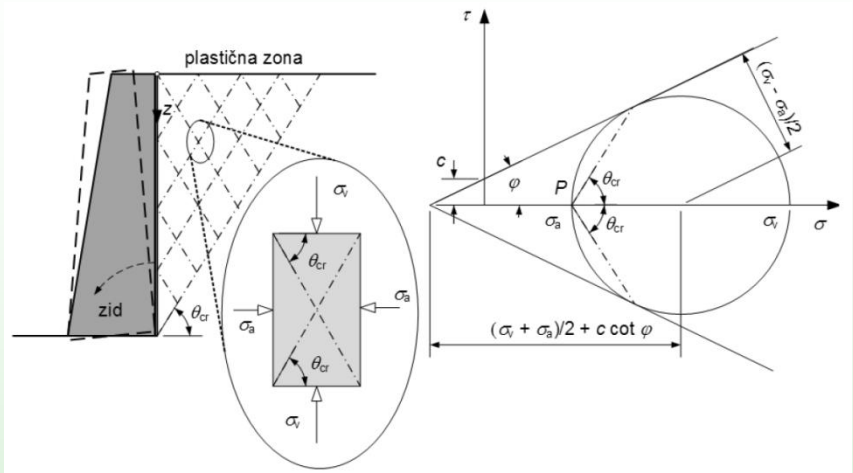
3. program – POTPORNI ZID

POTPORNI ZIDOVI



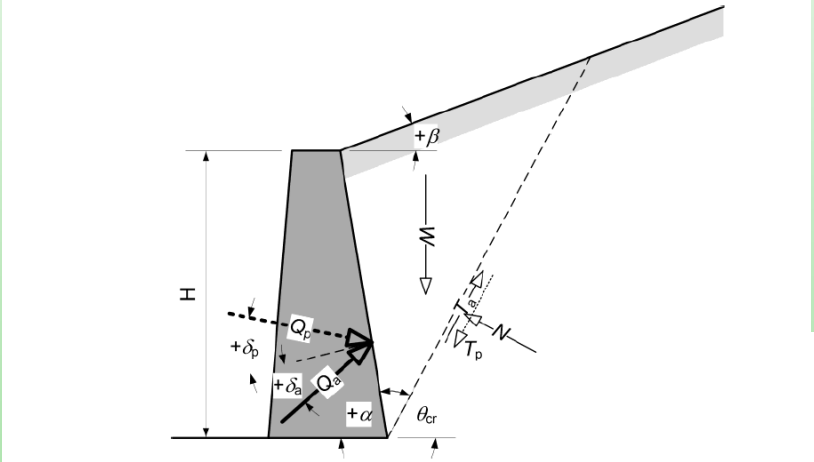
POTPORNI ZID – aktivni pritisak





Slika 5-8 Uz Rankineovo stanje aktivnog tlaka iza zida

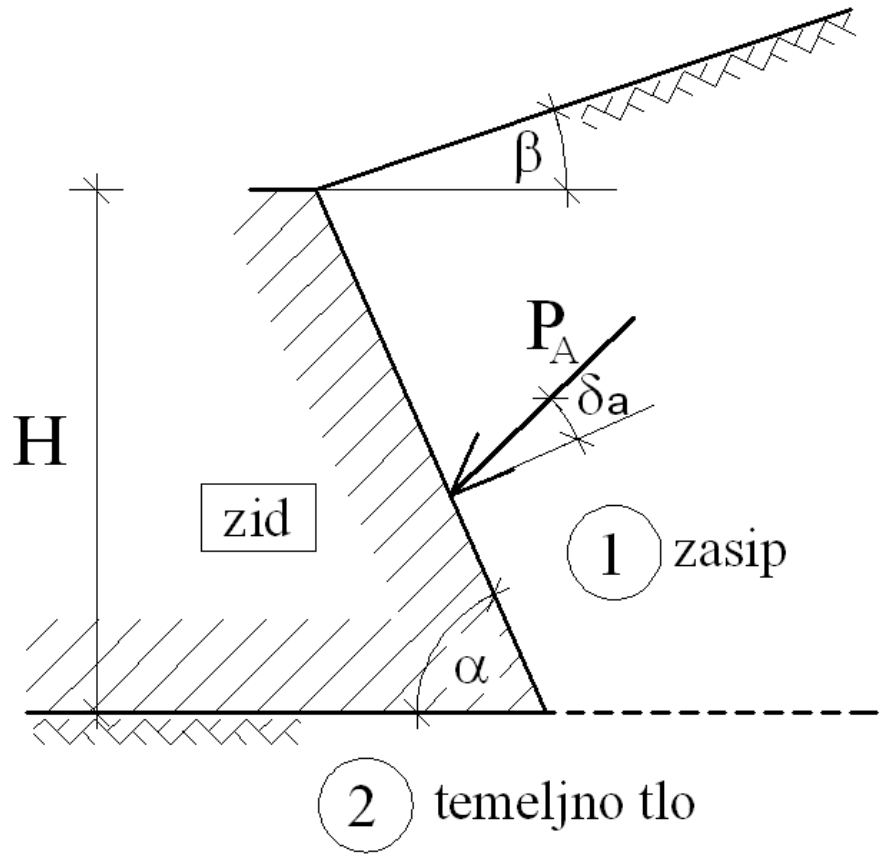
$$K_a = \frac{1-\sin\varphi}{1+\sin\varphi} = \tan^2\left(45^0 - \frac{\varphi}{2}\right)$$



Slika 5-10Pritisak na zid prema Müller-Breslau: sile na klin tla s ravnom kliznom plohom

$$K_a = \frac{\sin^2(\alpha+\varphi)\cos\delta_a}{\sin\alpha\sin(\alpha-\delta_a)\left[1+\sqrt{\frac{\sin(\varphi+\delta_a)\sin(\varphi-\beta)}{\sin(\alpha-\delta_a)\sin(\alpha+\beta)}}\right]^2}$$

POTPORNI ZID – aktivni pritisak



koeficijent aktivnog pritiska:

$$K_A = \frac{\sin^2(\alpha+\varphi)}{\sin^2\alpha \sin(\alpha-\delta_a)\left[1+\sqrt{\frac{\sin(\varphi+\delta_a)\sin(\varphi-\beta)}{\sin(\alpha-\delta_a)\sin(\alpha+\beta)}}\right]^2}$$

ukupno aktivno djelovanje na zid:

$$P_A = \frac{1}{2}\gamma H^2 K_A$$

horizontalna komponenta djelovanja:

$$P_{AH} = P_A \cos(90-\alpha+\delta_a)$$

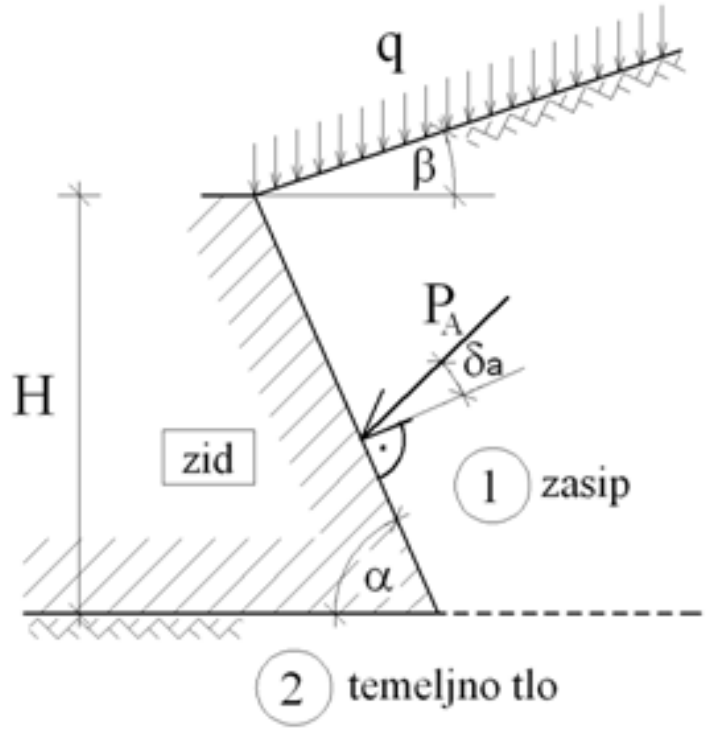
vertikalna komponenta djelovanja:

$$P_{AV} = P_A \sin(90-\alpha+\delta_a)$$

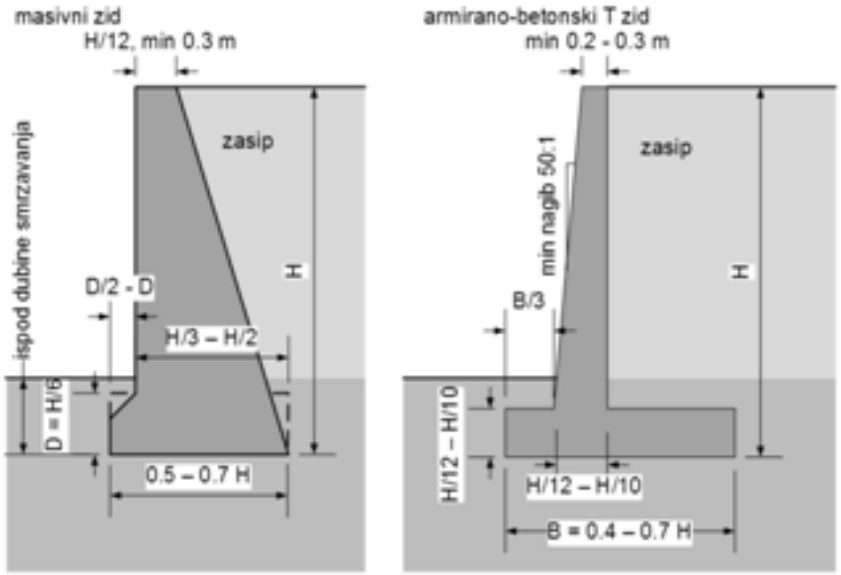
3. PROGRAM – geometrija, profil tla, zadatak

STUDENT:

skica:



okvirne dimenzije zida:



3. PROGRAM – geometrija, profil tla, zadatak

geometrija:

H =	3.0	m
α =	87.0	stup.
β =	8.0	stup.
q =	12.0	kN/m2

tip zida: AB gravitacijski zid

tlo:

1_sloj:	GW		2_sloj:	CL
γ =	18.5	kN/m3	Ip=	20.0
ϕ =	35.0	stup.	p. voda:	prisutna

Rezultati SPT ispitivanja u temeljnom tlu

dubina	B1	B2	B3
[m]	Nspt	Nspt	Nspt
0.5	27	27	
1.5	23	29	27
2.5	27	27	27
3.5			
4.5	26		
5.5	25	26	
6.5			25
7.5		27	26
8.5	28	25	27
9.5		25	

ZADATAK:

* kontrolu stabilnosti zida treba provesti prema proračunskom pristupu: PP3

a) odrediti preliminarne dimenzije zida

b) provesti kontrolu stabilnosti zida na klizanje

c) provesti kontrolu stabilnosti zida na prevrtanje

d) provesti kontrolu nosivosti temeljnog tla (za drenirano i nedrenirano stanje)

e) dimenzionirati zid (odrediti dimenzije zida potrebne da se zadovolje svi uvjeti stabilnosti)

POTPORNI ZIDOVI – ugradnja

GEOTEHNIČKI ISTRAŽNI RADOVI

BUŠENJE I UZORKOVANJE TLA

- geotehnički profil

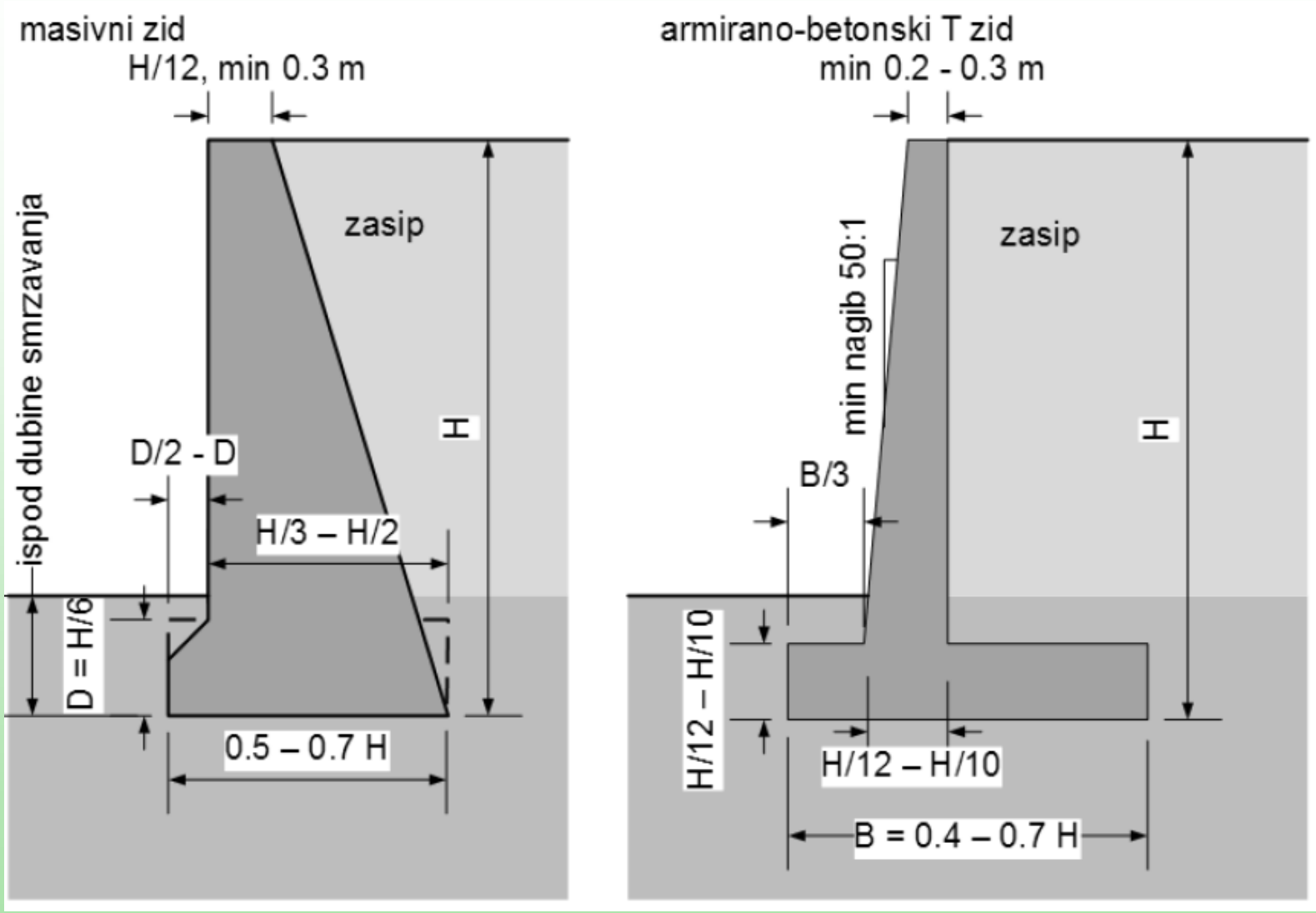
ATTERBERGOVE GRANICE PLASTIČNOSTI

Granica tečenja

Granica plastičnosti

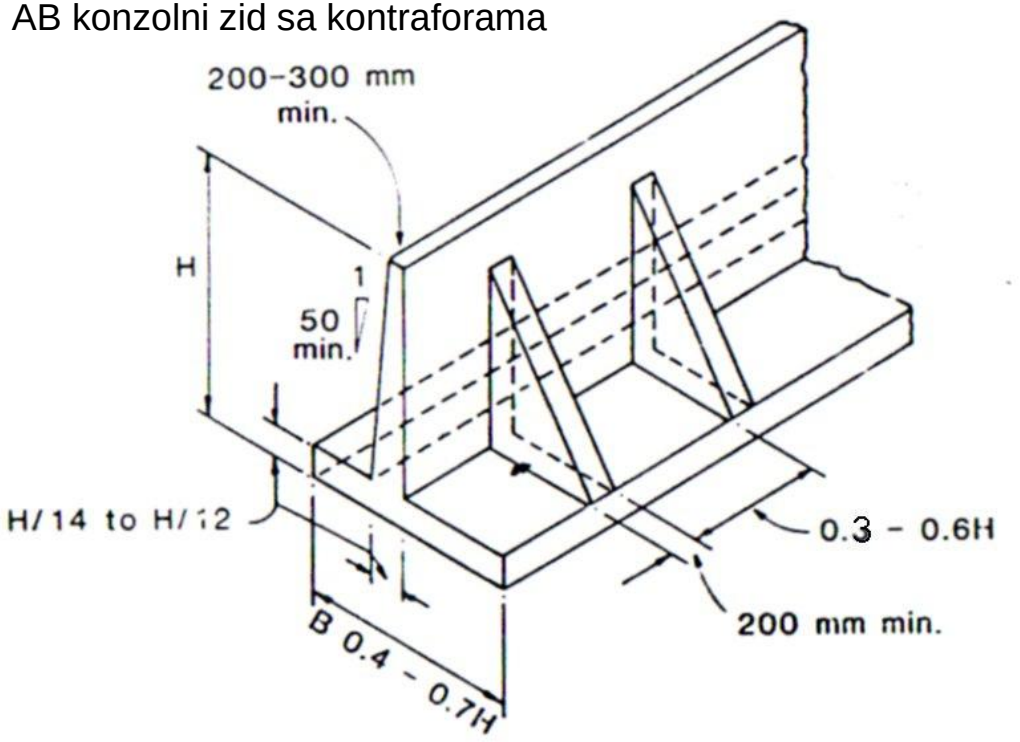
- indeks plastičnosti **Ip**

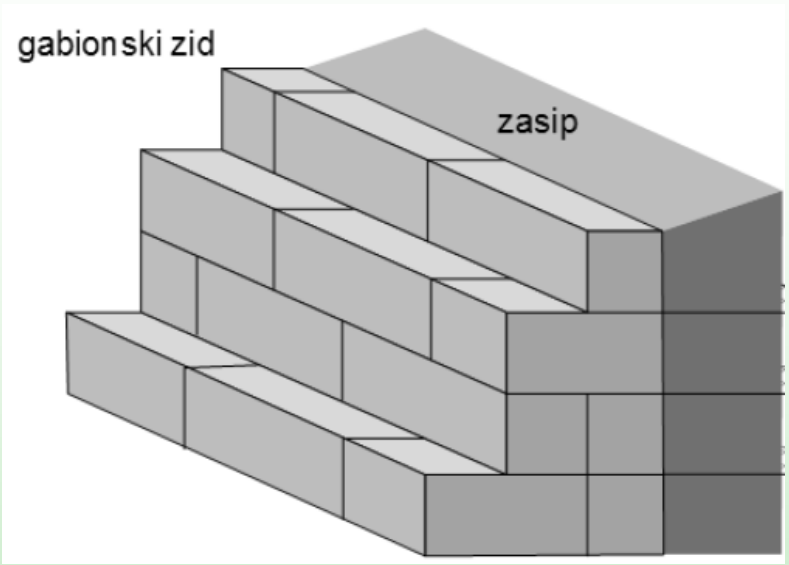
POTPORNI ZID – okvirne dimenzije zida

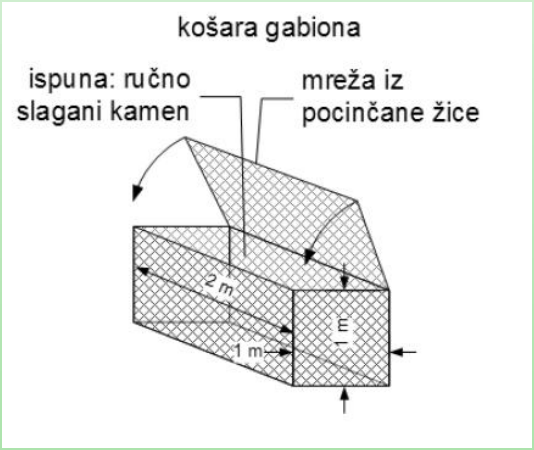


POTPORNI ZID – okvirne dimenzije zida

AB konzolni zid sa kontraforama

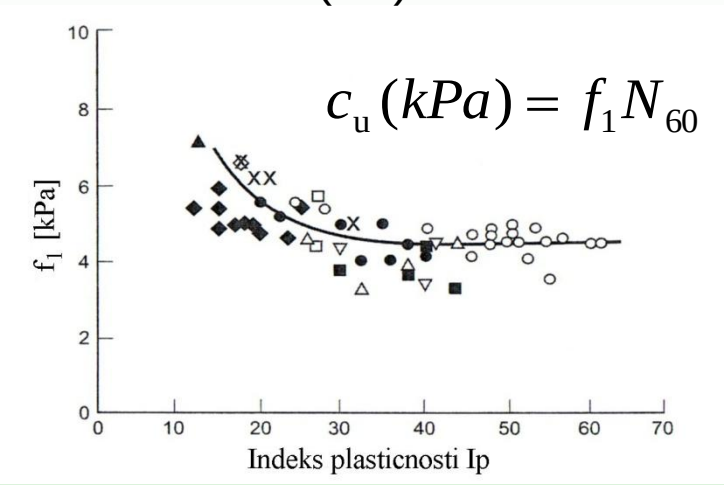


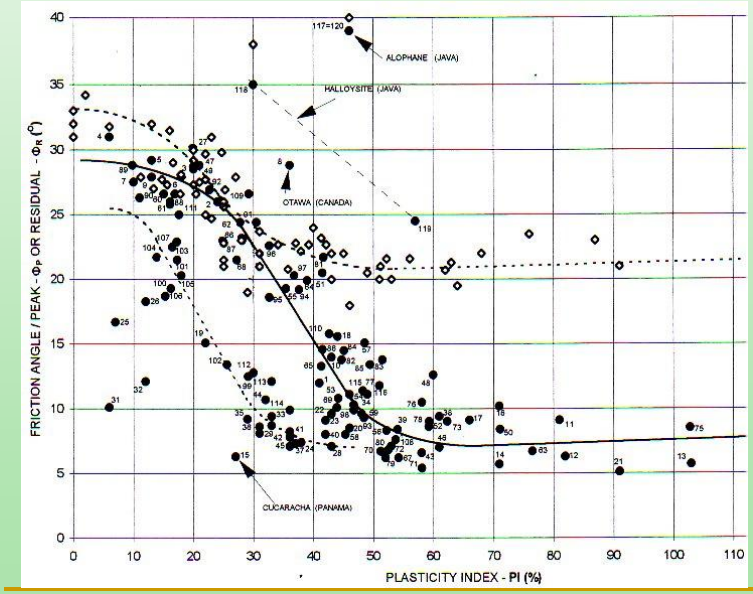




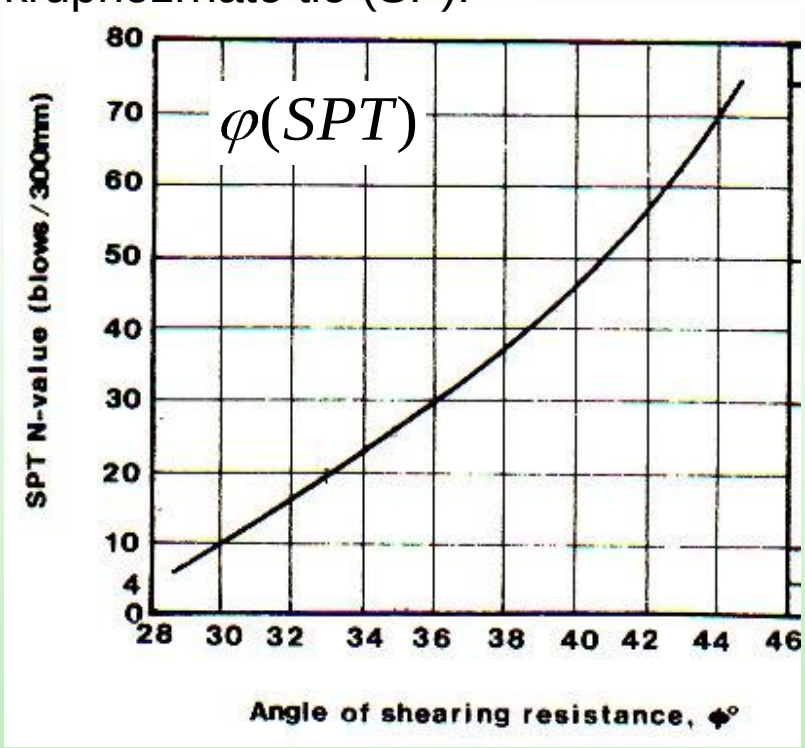
PARAMETRI MATERIJALA

sitnozrnato tlo (CL):





krupnozrnato tlo (SP):



zid:

- AB zid: γ = 25 kN/m^3
- gabion: γ = 23 kN/m^3