HOW TO ENGINEER	Project: Elastic Methods				Job Ref.	
	Section: Nomenclature				Sheet no./rev.: 1	
	Calc. by: RSF	Date: 11/17/2012	Chk'd by	Date	App'd by	Date

NOMENCLATURE NOTES

Strip Load

GRS - IBS = 0

$\alpha = 20° = 0.349$

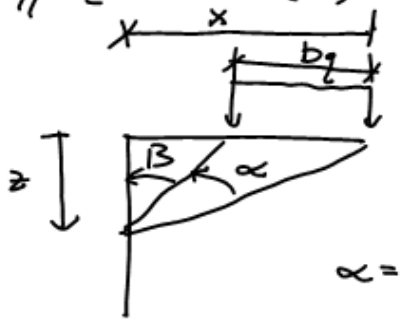
$\beta = 30° = 0.524$

$= 0.4084$

This is For Vertical stress

Also see DAS Text

$$\sigma_{1,q} = \frac{q}{\pi}\left[\alpha + \sin(\alpha)\cos(\alpha + 2\beta)\right] K_a$$



$$\alpha = \tan^{-1}\left(\frac{x}{z}\right) - \beta$$

$$\beta = \tan^{-1}\left(\frac{x - b_q}{z}\right)$$

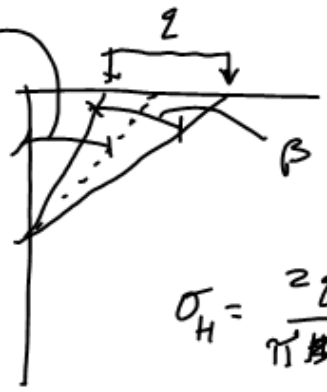
Uss Sheet piling — Civil Tech

$\beta = 20° = 0.349$

$\alpha = 30° + 10° = 40° = 0.698$

$= 0.2896$

* use ½ β, Not half way Between load !!



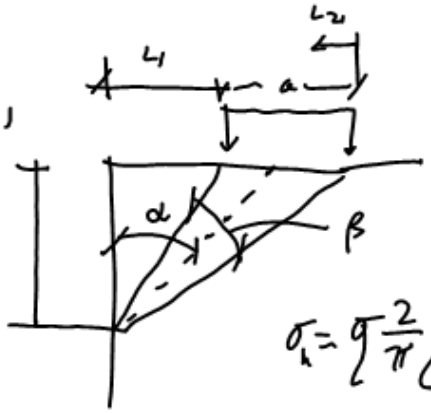
$$\sigma_H = \frac{2q}{\pi}\left[\beta - \sin\beta\cos 2\alpha\right]$$

Caltran

This is Based on Foundation Design, 1962 Wayne C. Teagn Based on Boussinesq ; Mod. By Exp.

Use 0.5 = Flexible

0.75 = Semi Flexible



same

$$\sigma_1 = q\frac{2}{\pi}\left[\beta - \sin\beta\cos(2\alpha)\right]$$

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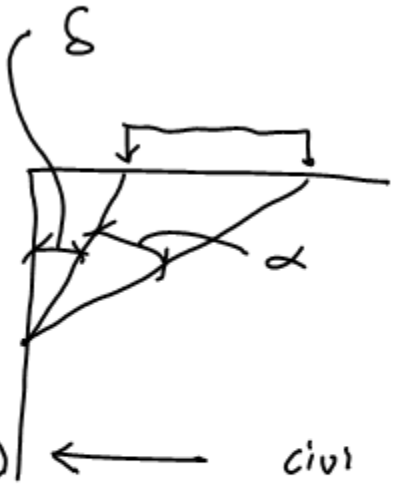
Pg of D - civil tech software



$$\sigma_v = \frac{q}{\pi} \times [\alpha + \sin\alpha \cos(\alpha + 2\delta)$$

$$\sigma_x = \frac{P}{\pi} \times [\alpha - \sin\alpha \cos(\alpha + 2\delta)$$ ← civil

$\alpha = 20° = 0.349$

$\beta = 30° = 0.524$

$= 0.2896$ — Same as others

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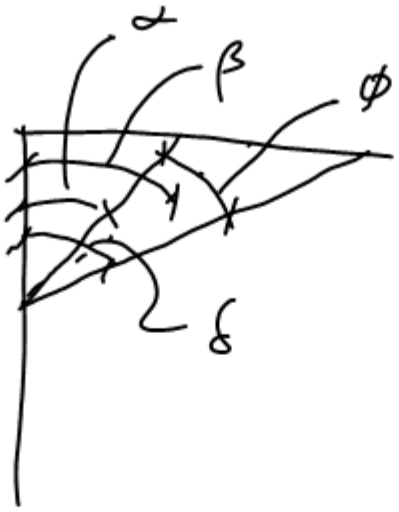


$$\alpha + \frac{\delta - \alpha}{2} = \beta \neq \phi$$

① $\alpha + \sin\alpha \cos(\alpha + 2\delta)$

① $\phi - \sin\phi \cos(\phi + 2\alpha)$

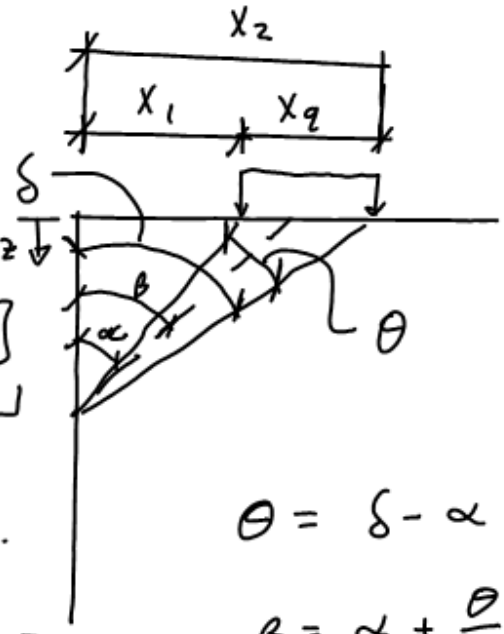
② $\phi - \sin\phi \cos(2\beta)$

$\phi - \sin\phi \cos\left(2 \times \left\{\alpha + \phi/2\right\}\right)$

② $= \phi - \sin\phi \cos(2\alpha + \phi)$

$\alpha + \phi/2 = \beta$

same



Uss Sheet Piling, Caltrans, etc...

$$\sigma_H = K\frac{q}{\pi}\left[\theta - \sin\theta\cos 2\beta\right] \quad (1)$$

Davis & Poulos, Fethi Aziz, etc...

$$\sigma_H = K\frac{q}{\pi}\left[\theta - \sin\theta\cos(\theta + 2\alpha)\right] \quad (2)$$

$$\theta = \delta - \alpha$$

$$\beta = \alpha + \frac{\theta}{2}$$

$$(1) - \theta - \sin\theta\cos 2\beta = \theta - \sin\theta\cos\left(2\left(\alpha + \frac{\theta}{2}\right)\right)$$

$$= \theta - \sin\theta\cos(2\alpha + \theta)$$

$$= (2)$$

Angles

$$\alpha = \tan^{-1}\left(\frac{x_1}{z}\right)$$

$$\delta = \tan^{-1}\left(\frac{x_2}{z}\right)$$

$$\theta = \delta - \alpha$$

$$\beta = \alpha + \frac{\theta}{2}$$