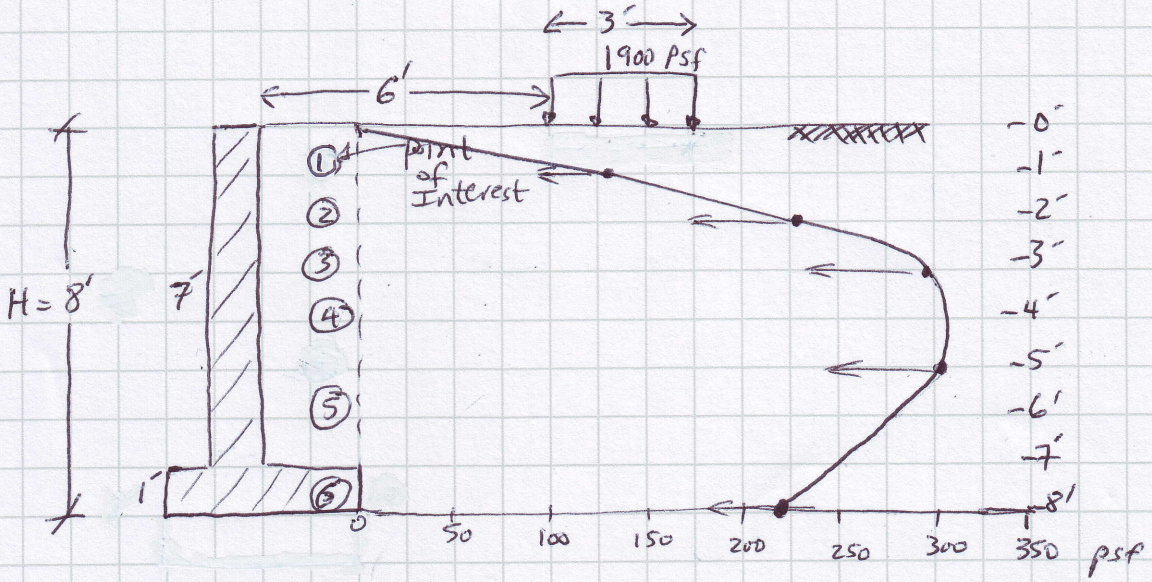
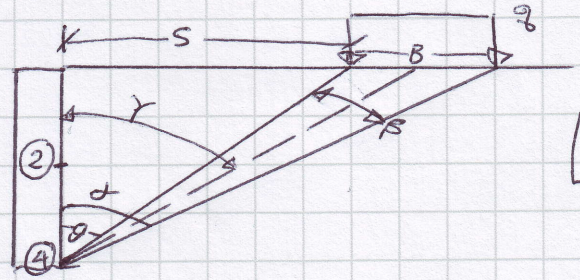
Job No. _____ Date: 4/2011 Client: _____ Sheet 1 of 2

Project: Strip Load Surcharge Computation Designed by: LAA

Design example:





$$\left[1\ \text{Rad} = \frac{180}{\pi} = 57.2956^\circ\right]$$

At ④, $\Delta H = 4'$

$$\alpha = \text{Tan}^{-1}\left(\frac{S+B}{\Delta H}\right)\text{Rad} = \left[\text{Tan}^{-1}\left(\frac{6'+3'}{4'}\right)\right] = 1.153\ \text{Rad} = 66.04^\circ$$

$$\theta = \text{Tan}^{-1}\left(\frac{S}{\Delta H}\right)\text{Rad} = \left[\text{Tan}^{-1}\left(\frac{6'}{4'}\right)\right] = 0.983\ \text{Rad} = 56.31^\circ$$

$$\beta = \alpha - \theta = 66.04^\circ - 56.31^\circ = 9.73^\circ = 0.17\ \text{Rad}$$

$$\sigma_1 = \frac{q}{\pi}(\beta + \sin\beta) = \frac{1900}{3.1416}(0.17 + \sin 0.17) = 204.9\ \text{psf}$$

$$\sigma_2 = \frac{q}{\pi}(\beta - \sin\beta) = \frac{1900}{3.1416}(0.17 + \sin 0.17) = 0.5\ \text{psf}$$

In Radians.

$$\gamma = \frac{\alpha+\theta}{2} = \frac{1.153+0.983}{2} = 1.068\ \text{Rad} = 61.19^\circ$$

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Lateral stress @ -4 ft = $P_{sur.}$

$$P_{sur} = 2\left(\sigma_1 \sin^2(\gamma) + \sigma_2 \cos^2(\gamma)\right)$$

$$= 2\left(204.9 \sin^2(1.068) + 0.5 \cos^2(1.068)\right)$$

(1.068 radians)

$$= 314.7 \text{ psf} \quad (\leftarrow)$$

So if we did this for 1', 2', 3', 4', 5' and 8', we get the following:

Depth, ft	Lateral Stress, psf
1'	129.3
2'	231.4
3'	292.6
4'	314.7
5'	308.0
8'	222.3

Contrary to some practice, there will be lateral stresses on the retaining structure, even if strip load is at a distance greater than 1.0H.